MXES Immersion Training for EAM

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MXES Immersion Training for EAM

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MXES Curriculum for EAM

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Key

- Instructor-Led Training
- Virtual Classroom Training

For Training Info, Course Descriptions, and Availability, go to:

Web: http://www.mro.com/corporate/mroservices/training/
E-mail: TrainSVC@mro.com
Fax: 781.280.2201

Foundation

Course #	Course Name	Length	Delivery Options	Prerequisites
MED0138	MXES Navigation & Querying	½ day, or 3-hr virtual		None

Upgrade

Course #	Course Name	Length	Delivery Options	Prerequisites
MED0136	MXES for EAM - New Features	3 days		None (Note: for users upgrading from Maximo 5)

Implementation

Course #	Course Name	Length	Delivery Options	Prerequisites
MED0146	MXES Immersion Training for EAM	5 days		MXES Navigation & Querying
MED0155	Maintenance Best Practices Using MXES	2 days		None

End-User / Functional

Course #	Course Name	Length	Delivery Options	Prerequisites
MED0137	System Administration for MXES	3 days		MXES Navigation & Querying
MED0139	Inventory Management Using MXES	3 days		MXES Navigation & Querying
MED0143	Work Management Using MXES	3 days		MXES Navigation & Querying
MED0147	Using SQL with MXES	1 day		MXES Navigation & Querying
MED0148	Workflow Management Using MXES	5 days		MXES Immersion Training for EAM (Note: Extensive hands-on Maximo experience preferred)
MED0150	Purchasing with MXES	3 days		MXES Navigation & Querying
MED0151	Developing MXES Reports with Actuate	TBD		MXES Navigation & Querying, Using SQL with MXES
MED0152	Contract Management Using MXES	TBD		MXES Navigation & Querying
MED0153	Using the MXES Application Designer	TBD		MXES Navigation & Querying, System Administration for MXES
MED0154	The MXES KPI Manager (VCT)	3-hr virtual		Using SQL with MXES

Flip for Curriculum Path by Role

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Suggested Curriculum Path by Job Role

MXES for EAM

Course Name	Manager Track	Implementation Track		Developer Track			Administrator Track			End-User Track				
	Managers, Supervisors, & Directors	Maximo Implementation Team Members	Maximo Upgrade Team (from MX 5)	Maximo Developer / Maximo App Support	Report Writer	Workflow Developer	Maximo Admin	Database Admin	Report Admin	Maintenance Personnel	Inventory Personnel	Contracts Manager	Accounts Payable / Receiving Personnel	Procurement Personnel
MED0138 MXES Nav & Query (1/2 day)		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
MED0136 MXES for EAM - New Features (3 days)			✓											
MED0137 System Admin for MXES (3 days)		✓		✓		✓	✓	✓						
MED0139 Inventory Mgmt Using MXES (3 days)											✓			
MED0143 Work Mgmt Using MXES (3 days)										✓				
MED0146 MXES Immersion Training for EAM (5 days)		✓	✓	✓		✓	✓	✓						
MED0147 Using SQL with MXES (1 day)					✓			✓	✓					
MED0148 Workflow Mgmt Using MXES (5 days)						✓								
MED0150 Purchasing with MXES (3 days)													✓	✓
MED0151 Dev. MXES Reports w/ Actuate					✓				✓					
MED0152 Contract Mgmt Using MXES												✓		
MED0153 Using MXES App Designer		✓	✓	✓										
MED0154 The MXES KPI Manager (3 hours)					✓				✓					
MED0155 Maintenance Best Practices Using MXES (2 days)	✓	✓	✓											

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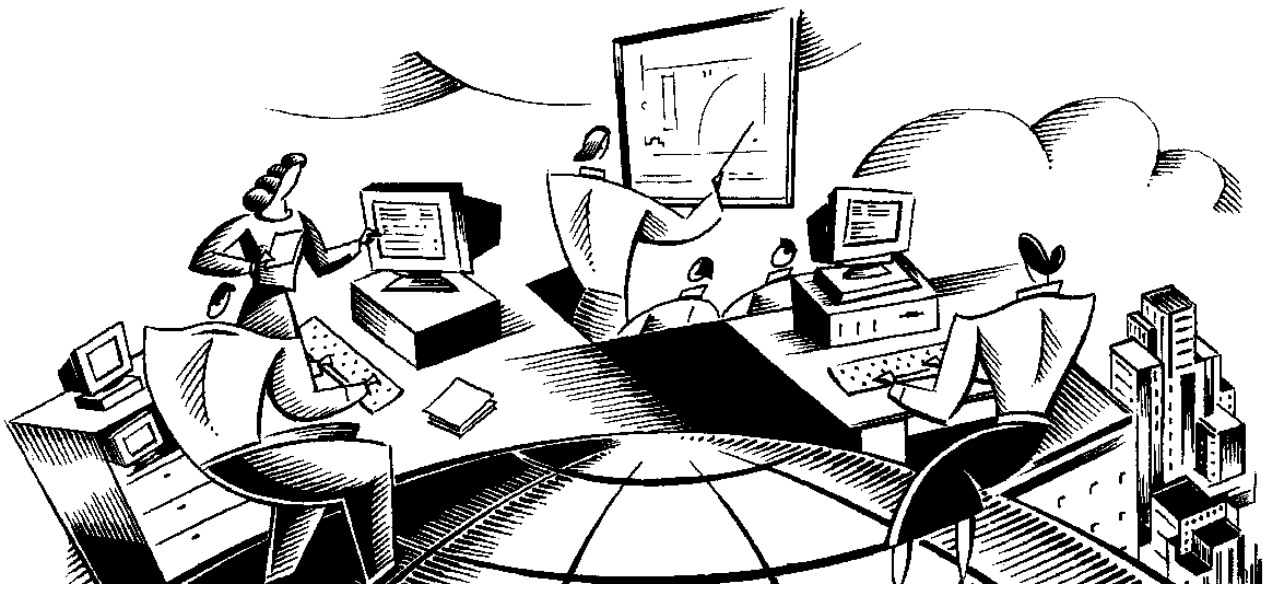
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MXES Immersion Training for EAM

Unit 1: Course Overview



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In This Unit

This unit contains the following chapter:

Chapter	Subject
1	SAM, Maximo, Configuration, and Implementation Overviews

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Unit Overview

Welcome

Welcome to *MXES Immersion Training for EAM*. This course provides the basic knowledge and skills needed by implementation teams to implement the asset life cycle, work order, inventory, procurement, and service management capabilities of Maximo to maximize revenue generation and service availability, mitigate risks, and enhance legal compliance for your organization.

These benefits are made possible by incorporating the best practices for maintenance and materials management in relation to strategic asset management (SAM) and Maximo use.

Unit Purpose

This unit introduces you to:

- the organization and design of this course,
- the Maximo product structure and the applications that comprise it, and
- strategic asset management concepts.

Unit Learning Objectives

After completing this unit, you should be able to:

- describe the objectives and outline of the course and match them with your learning objectives;
- identify outputs and key performance indicators (KPIs) that support asset management processes for various business areas;
- identify the structure and components of Maximo;
- navigate the Maximo Start Center applications; and
- query the database using various search methods and techniques.

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Course Overview

General Description of Maximo

Maximo is an integrated software package that brings convenient, automated asset management activities to your desktop. This information helps you:

- analyze costs and asset status,
- manage inventory and labor resources, and
- plan maintenance and service activities.

Course Goal

The goal of the course is to provide you with an understanding of Maximo features and functionalities and what Maximo can do for your organization.

Course Objectives

When you have completed this course, you should be able to:

- analyze business processes as they relate to strategic asset management;
- describe and use the different Maximo applications as they relate to various business processes;
- describe the roles and responsibilities of each implementation team member; and
- discuss MRO Software strategic asset management recommendations as they relate to:
  - tools and job aids,
  - best practices, and
  - philosophies and methodologies in maintenance, service, and procurement processes.

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Course Overview continued

Course Audience

This course is intended for people who will be implementing Maximo.

Maximo implementation teams can include, but are not limited to, the following members:

- IT project manager
- Maximo administrator
- Maintenance personnel
- Procurement personnel
- Inventory personnel
- Lead report writer
- Database administrator
- Trainer

Course Equipment

One PC per student. PC hardware requirements to run Maximo standalone include:

- Pentium 1.6 GHz or greater
- Microsoft Windows 2000 or XP
- 2 GB RAM

Course Prerequisites

MXES Navigation & Querying or demonstrable working experience with MAXIMO 5.x or greater.

You also should be comfortable using a personal computer, the Microsoft Windows operating system, and Internet Explorer 6.x or greater.

Contact MRO Software Professional Services for more details.

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Course Overview continued

Your Learning Objectives



We previously stated the basic objectives for this course; however, most important are the learning objectives *you* bring to the course. We want to be sure that these are clearly stated, mutually understood, and achieved.

List your objectives in the space below. We will conclude the course by asking you whether you have met your objectives. If you have not, we will then address your questions and unmet objectives.

-
-
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Course Structure

Introduction

In this section we introduce you to the organization of this course, list the units and chapters, and briefly describe each one.

Teaching Units

This course has been organized into teaching units. A unit focuses on a theme and is comprised of chapters that support that theme. Each unit gives an overview of common terms, applications, and concepts used in each chapter.

Unit/Chapter Organization

In an open school, each chapter will be presented in the order listed in the table below.

Unit/Chapter	Name	Description
Unit 1	**Course Overview**	An overview of course goals, organization and structure, and conventions.
1	SAM, Maximo, Configuration, and Implementation Overviews	An introduction to strategic asset management (SAM) concepts, an overview of what Maximo is, and guides to configuration requirements and the implementation methodology.
Unit 2	**Setting Up Maximo**	Learn to insert records in the most efficient order so that information is ready when you need it to create and build on other records.
2	Setting Up Organizations and Sites	Learn to use the *Organizations* application to set up multiple organizations and sites.
3	Creating Locations	Learn to use the *Locations* application to organize and set up location and location hierarchies.
4	Entering Person Records and Registering Users	Learn to use the *Labor* and *Crafts* applications to enter crafts and personnel in Maximo, create user groups, and register users using the *Security* application.
5	Setting Up Inventory Items	Learn to use the *Item Master* and *Inventory* applications to set up items and rotating assets in Maximo.

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Course Structure continued

Unit/Chapter Organization Continued

Unit/Chapter	Name	Description
6	Entering Asset Records	Learn to use the *Assets* application to organize and enter assets into Maximo, as well as creating asset hierarchies.
Unit 3	**Using What You've Got: Work Management**	An overview of the work order lifecycle and applications used for work management.
7	Entering Supporting Records for Work Management: Job Plans	Learn to set up job plan templates in Maximo using the *Job Plans* application to support work management records.
8	Entering Supporting Records for Work Management: Preventive Maintenance	Learn to set up scheduled or routine maintenance activities using the *Preventive Maintenance* application to support work management records.
9	Proactive Work	Learn to use the *Preventive Maintenance* application to generate work orders based on meter-based and time-based frequency.
10	Reactive Work	Learn to use the *Quick Reporting* and *Work Order Tracking* applications to create and process reactive maintenance work orders.
Unit 4	**Using What You've Got: Material Management**	An overview of the procurement lifecycle process and applications used for materials management.
11	Entering Supporting Records for Material Management: Companies	Learn to use the *Companies* application and input company details to support the procurement processes.
12	Requisitioning	Learn to use the *Purchase Requisitions*, *Purchase Orders*, *Receiving*, and *Invoices* applications to create and process purchase orders throughout the procurement lifecycle.
13	Reordering	Learn to use the *Inventory*, *Purchase Orders*, *Receiving*, and *Invoices* applications to create and process purchase orders generated through reorder.

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Course Structure continued

Unit/Chapter Organization continued

Unit 5	**Maximo Working for You**	An overview of additional applications that can be implemented to extend Maximo capabilities.
14	Setting Up Additional Maximo Applications	Learn to use the *Classifications*, *Failure Codes, Warranty Contracts,* and *Item Master* applications.
15	Automating the Approval Process	Learn to use the *Workflow* application to automate the approval process.
16	Asset Management	Learn to incorporate data from additional implemented applications to support asset management activities.
17	Putting It All Together	Complete a group exercise in which you use what you have learned in this course.
Appendices		
A	Tools	Describes tool concepts used in Maximo, along with procedural information regarding creation and management.
B	Meters	Provides meter definitions used in Maximo and procedural information regarding usage of meters.
C	Safety Plans	Describes the Safety module and its applications. Discusses how these applications work with Maximo asset and location records.

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Course Structure continued

Chapter Structure

Each chapter in this student guide is an individual teaching module, designed to provide an overview of its topic(s) and then provide in-depth instruction and practice.

Each chapter contains the following components:

- Subject matter overview and objectives

  This component provides orientation and perspective for the chapter, along with learning objectives.

- Instruction in concepts and procedures

  In this part of the chapter, the instructor and the text review relevant concepts, components, and procedures.

- Hands-on practice

  You will practice most of the important procedures and concepts introduced by the instructor. You will have opportunities for brief hands-on practice during the body of the module and, in some cases, longer hands-on practice in a workshop at the end of the unit.

Class Activities

As you go through this course you will participate in four methods of instruction, usually in this order:

- The instructor will give a brief overview of the objectives and content of each chapter.
- The instructor will introduce and demonstrate procedures and concepts.
- You and the instructor will work through a procedure together, or you will work through a procedure on your own.
- You and the instructor will briefly discuss how the procedure can be modified or enhanced to suit your business needs.

Case Scenarios

The exercises in this course allow students to practice using Maximo in the context of a series of hypothetical working case scenarios.

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Typographical Conventions

Introduction

We use a number of typographical conventions and icons in our course books.

Conventions Used in the Course Materials

Here are some of the conventions you will see most frequently in the course materials:

Convention	Usage	Example
Italics	Introduces or emphasizes a term	A *system* is a single instance of a Maximo database.
Boldface	Indicates that the word or phrase names a menu item, field, button, or keyboard key	From the **Go To** drop-down menu, select **Administration**.
Arial font	Indicates that this is text you type into a field	Type ASSET_NDX8 in this field.
`Courier` font	Indicates programming code, a system message, or part of a screen display	Maximo displays the following message: `Work order 1000 status changed to APPR.`

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Typographical Conventions continued

Icons

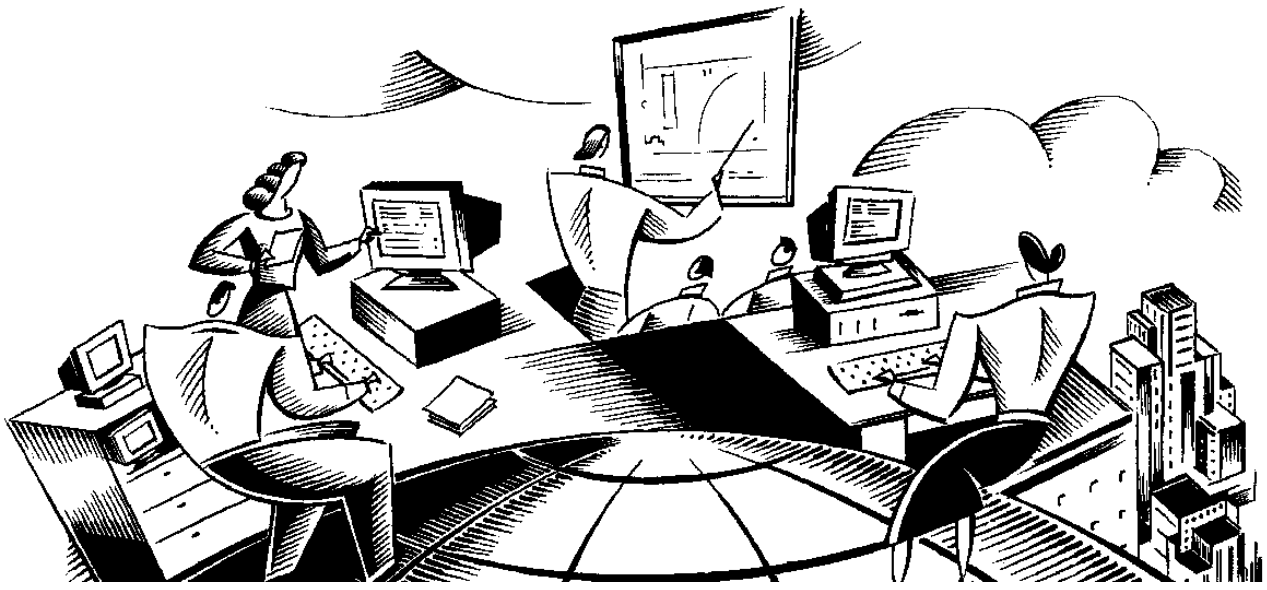
You will see several icons throughout this student guide. This table explains what they mean.

This icon…	Indicates…
	A procedure that you will practice on your own or with guidance from an instructor
	A paper-and-pencil exercise
	A special note or reminder
	A warning or cautionary note
	A question-and-answer session with the instructor, or a group discussion
	Your role in the next exercise is changing, e.g., from manager to user
	The data you are being asked to enter will be used in another exercise
	A challenge question or exercise
	An industry best practice, tip, or suggestion
	A recording that provides additional course content is available

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MXES Immersion Training for EAM

Chapter 1: SAM, Maximo, Configuration, and Implementation Overviews



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In This Chapter This chapter contains the following topics:

Topic	See Page
Chapter Overview	1-1
Strategic Asset Management	1-2
Business Reporting and Analysis	1-7
Configuration Overview for Maximo	1-14
Implementation Methodology Overview	1-16
Overview of Key Roles	1-21
Chapter Summary	1-29

Chapter Overview

Introduction

The focus of this chapter is to familiarize you with strategic asset management (SAM) and how Maximo can be used to manage an organization's assets.

We will also discuss configuration requirements and implementation methodology, as well as the roles of the implementation team.

Learning Objectives

When you have completed this chapter, you should be able to:

- describe SAM;
- discuss performance indicators that are important to your organization and industry;
- identify Maximo reporting output;
- identify areas in which Maximo can be used to manage assets and streamline business processes for work and materials management;
- discuss basic Maximo hardware recommendations and server software configuration requirements; and
- list the steps of the standard MRO Software Maximo implementation methodology.

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Strategic Asset Management

Introduction

This section will discuss what SAM is and how Maximo can be used to manage an organization's strategic assets.

What Is a Strategic Asset?

Strategic assets are those assets that are directly or closely associated with revenue generation or that are critical to the mission of the organization. They include the following types of assets:

- Tangible
- Fixed
- Physical
- Capital

For example, manufacturing companies depend on assets' uptime to meet production goals; for them, plant floor *machinery* is clearly strategic. Hotels, hospitals, and airports require trouble-free *facilities* to deliver the quality of service their customers and users expect. Public transit and over-the-road transport companies depend on the reliability of their *fleets* to move people or goods. Financial services companies rely heavily on *computer systems* to manage transactions and maintain positive customer relationships that drive their business. All of these are strategic assets.

What Is SAM?

SAM does the following:

- Manages and optimizes the business processes related to fixed, physical, or capital assets that have a *direct* and *significant* impact on achieving corporate objectives.
- Takes an enterprise-wide view of asset performance and the tools required to drive maximum return on asset investment.
- Drives corporate performance by extracting greater lifetime value from asset investment.

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Strategic Asset Management continued

Four SAM Categories

SAM is focused on four broad categories of fixed, physical, and capital assets: *Production*, *Facilities*, *Fleet*, and *IT*.

The table below describes these four categories in greater detail.

Asset Category	Description
Production	Production assets are generally understood to be those involved in discrete or process manufacturing. This includes, for example, robots on the assembly line at an automobile plant, or the steppers used in computer chip manufacturing. However, the definition of production assets is considerably broader. In the utility industry, for example, production assets are turbines and compressors used for power generation; they also include the transmission and distribution assets that deliver output to end users. In the telecommunications industry, the antennas and microwave towers involved in producing and delivering output to customers are also production assets.
Facilities	Facilities assets include types of buildings, from corporate headquarters, casinos (e.g., MGM Grand), and museums (e.g., the Louvre), to stadiums, shipyards, and passenger terminals (e.g., Zurich Airport). Maintaining these facilities can involve mechanical, HVAC, and electrical systems, as well as landscaping and parking lots. There are also many specialized facilities, such as clean rooms, surgical theaters, laboratories, and satellite ground stations.
Fleet	Fleet assets are often over-the-road vehicles such as cars and trucks; however, this category also includes airborne fleets (aircraft), rolling stock (rail cars), and marine assets (passenger boats and ships). Companies might have mission-critical fleet assets around which the core of their business is built; for example, a commercial shipping company depends on its trucks and aircraft. Vehicles for a public transit organization like Long Island Railroad also fall into this first category. Additionally, companies might have enterprise fleet assets that are important to the overall function of an operation but do not directly generate revenue, such as employee shuttle buses, repair trucks, or forklifts.
IT	The operations of most companies today are critically dependent on the organization's IT infrastructure. On the hardware side this includes servers, desktops, laptops, cell phones, PDAs, hubs/routers, and telecom assets. Software is equally important in day-to-day operations, and ensuring software license compliance is an important part of IT asset management.

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Strategic Asset Management continued

Why SAM?

With pressure mounting to improve financial performance in the face of a difficult economic climate, companies are looking in all directions to increase revenue, reduce costs, and mitigate risks. SAM is a more sophisticated and comprehensive approach to extracting greater lifetime value from asset investment; it is one relatively unexplored avenue that offers an opportunity for significant gains.

Objectives of Strategic Asset Management

There are five main objectives of asset management:

- *Investment*—Minimize funds invested to achieve business objectives.
- *Ownership cost*—Minimize cost to ensure a required level of performance.
- *Commercial return*—Maximize the value that the assets add to the business.
- *Strategic value*—Optimize the market value and flexibility of the asset base.
- *Risk*—Manage commercial, health, and environmental risks.

SAM and Maintenance, and Asset Performance

Maintenance activities generate the demand for replacement assets, system assemblies, and components. Therefore, the assets producing the revenue stream, the parts that keep the assets running, and the procurement processes by which those parts are obtained are all linked to a company's efforts to maximize its assets' performance and the five objectives of asset management, ultimately affecting the corporation's bottom line.

Asset Performance Discussion



How do you measure asset performance?

Determine the metrics needed to define the required performance measurements and the maximum cost metrics for those assets strategic (critical) to the organization.

In establishing asset performance metrics at your organization, what assets would you choose? What factors/criteria would you use in making that determination?

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Strategic Asset Management continued

SAM and Maximo

Because maintenance operations generate a lot of data, an abundance of information can be derived to guide maintenance activities to greater levels of productivity and cost-effectiveness.

Maximo tracks and reports data and processes associated with maintaining assets. Examples include:

- parts catalogs, inventory, work orders, purchasing details, and supplier data, as well as
- asset failures, causes, and remedies.

Consequences of Haphazard Asset Management

Corporations can pay a high price for failing to synchronize asset management among different categories of strategic assets in a way that includes all levels of management within the organization.

- Without a unified solution for managing labor priorities across the enterprise, downtime of the assets could be unnecessarily extended.
- Conflicting maintenance activities among different assets lower productivity, extend downtime, and elevate costs.
- Limited labor resources could be assigned work orders for preventive maintenance that could be deferred while emergency maintenance needs for production line assets go unmet.
- Companies have no understanding of lifetime repair costs for key assets; as a result, they cannot make comparative, strategic decisions about repair, replace, or run-to-failure for different assets that impact budgets for the entire company.

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Strategic Asset Management continued

Class Discussion



As a class and with the instructor, have discussions around the following questions:

- What assets drive your organization?
- How are your strategic assets managed?
- Does your organization capture the costs associated with its asset(s)?
- Has your organization looked at ways to optimize asset performance? If so, how?
- Do you think of what you are working with as an asset?
- Are the assets you work with critical to the corporation's operations?
- Are your purchasing and inventory functions tied into asset maintenance?
- Is there an incentive for you to optimize asset performance? If so, what?
- From what you understand at this moment, do you think Maximo can help you improve your bottom line? If so, how?

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Business Reporting and Analysis

Introduction

In the previous section, the fundamentals of SAM were introduced and discussed. This section will focus on introducing *key performance indicators* (KPIs) and asset management.

Definitions

Performance metrics measure performance internally. Measurements compare current performance relative to previous performance or established performance goals.

Benchmarking is examining performance metrics of outside organizations/ resources. Benchmarking involves comparing data from other leading organizations both similar and dissimilar to your company.

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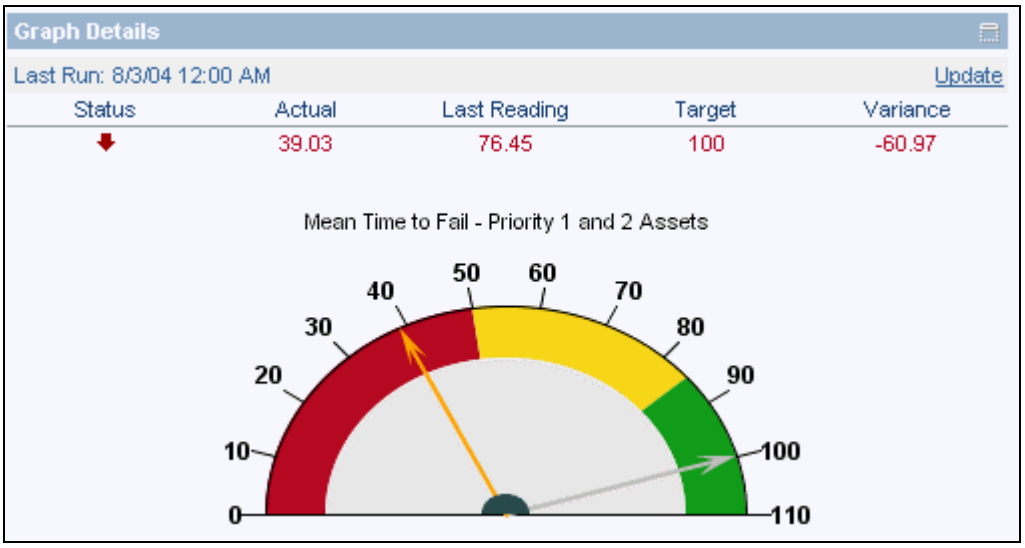
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Business Reporting and Analysis continued

What Are Key Performance Indicators (KPIs)?

A *KPI* is a measurement of the activity in support of an established goal or result. Some defining characteristics of KPIs are as follows:

- They are high-level snapshots of a business or organization based on specific predefined measures.
- They are generally applied to activities, functions, and practices that are critical to a business's success.
- They compare current performance relative to previous performance or established performance goals.



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Business Reporting and Analysis continued

Key Performance Indicators Example

Some key performance indicators (KPIs) are:

- Return on asset (ROA)
- Overall equipment effectiveness (OEE)
- Expenditure/capital replacement value
- Maintenance cost per unit of output
- Mean time between failures (MTBF)
- Mean time to repair (MTTR)
- Mean time between work orders (MTBWO)
- Maintenance cost/estimated replacement cost (ERV)

World-Class Benchmarks

Some world-class benchmarks and performance goals are:

- **Maintenance costs**
  Total maintenance costs/total manufacturing costs <~10%
- **Planned maintenance**
  Planned maintenance/total maintenance >90%
- **Maintenance overtime**
  Maintenance overtime/total maintenance time <5%
- **Maintenance rework**
  Work orders reworked/total work orders 0%
- **Inventory turns**
  Turns ratio of spare parts > 3
- **Training**
  Maintenance workers receiving > 40 hours/year > 90%
- **Safety**
  Injuries per 200,000 maintenance hours < 2

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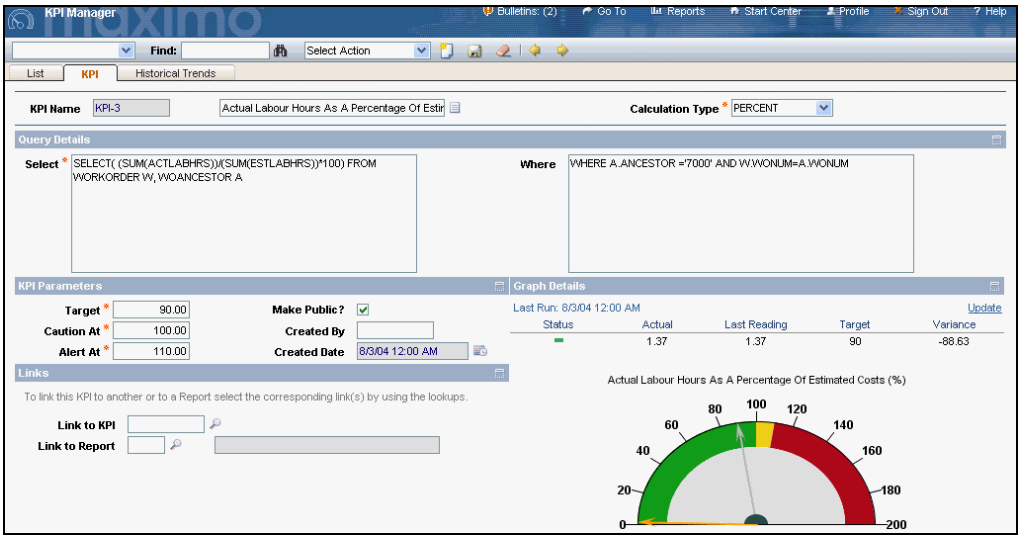
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Business Reporting and Analysis continued

Maximo Reporting Module

Maximo has a **Reporting** module that allows users to maintain reports and KPIs.

In the Reporting module, Maximo provides the **KPI Manager** application, which helps users create needed KPIs. Maximo permits users to add KPIs to their Start Centers, thereby allowing them to more easily monitor key performance indicators against performance goals.



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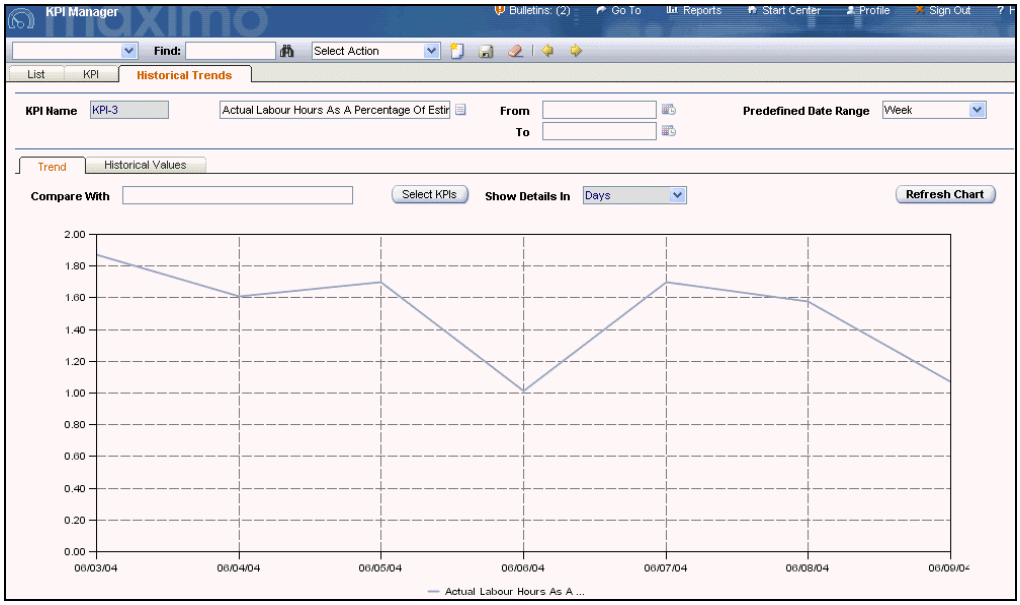
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Business Reporting and Analysis continued

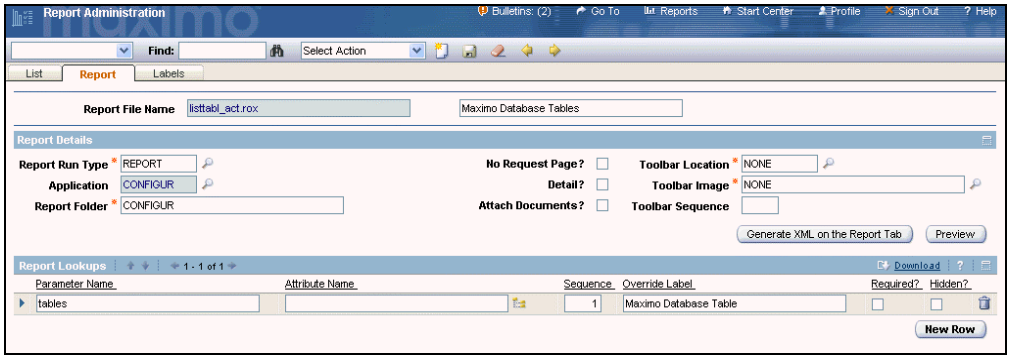
Maximo Reporting Module

continued

The KPI Manager application provides a **Historical Trends** tab that provides a history of the KPI both graphically and in a tabular format.



The **Reporting** module also contains the **Report Administration** application, which can be used to preview a request page, add parameters to a report, display the report as a toolbar icon, delete a report, and attach documents to a report.



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Business Reporting and Analysis continued

Identify KPIs Up Front



It is a better business practice to identify KPIs before implementing Maximo. By doing so, Maximo and its features can be modified with these informational needs in mind.

Note: It is never too late to identify KPIs. Earlier is better, however; doing it sooner will result in better return on investment (ROI) measurement.

KPIs Do Not Give Answers

While KPIs do not deliver magic answers, they will tell you what is happening in your organization. The excerpt below, written in response to an article on asset breakdowns, illustrates this point.

> "A better picture would give, not simply the number of breakdowns, but the consequences of those breakdowns, such as:
>
> - The financial value lost due to breakdowns (whether by lost production, lost customers, or other means)
> - The number of injuries, labor-hours lost, and fatalities, caused by breakdowns
> - The number of environmental infractions caused by breakdowns
>
> I can illustrate the importance of this by giving a catastrophic example. If you only had two breakdowns in the last three years, but if—because of these breakdowns—your plant is on the verge of being closed—then you should be examining your PM program, even though you "only had two breakdowns in three years."
>
> Simply noting that the breakdowns are taking place is not likely to provide the information needed to prevent them. However, noting both the breakdowns *and their consequences* might provide the information you need to decide whether you need to conduct a more detailed review."
>
> Dana Netheron, Jan. 2003 - Plant Maintenance Web site

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Business Reporting and Analysis continued

Discussion Forum



Does your organization have established KPIs? If so, what are they? If not, is KPI development part of your Maximo implementation? If it is, what would your organization like to measure? Does your organization associate cost metrics to its KPIs? Why should cost or "value" associations be made to KPIs?

SAM, KPIs, and Maximo

Together, SAM, KPIs, and Maximo provide value to an enterprise in a variety of dimensions:

- Management can make prioritized investment decisions for allocating limited budget, labor, and material based on more complete information with a longer planning horizon, rather than simply tracking historical maintenance events.
- Educated decisions that allocate limited labor resources can be made in a way that flexibly balances long-term maintenance strategies and immediate repair requirements.
- Repair history and historical maintenance costs can be used to project future budget requirements and determine total cost of ownership for large asset investments.
- Operating management can intelligently match labor skills and expertise to specific requirements of different types of assets.
- With more complete information, companies can achieve clarity of focus on those key assets that are most directly tied to division or corporate objectives. Concentrated focus on, and investment in, the most critical assets translates into a higher ROI.
- Lifetime cost of ownership information can be used to create strategies that standardize assets and parts, yielding more efficient maintenance efforts, lower parts inventory, and more vendor leverage to negotiate lower acquisition costs.
- Operations management can reconcile relative urgency and priority of asset management needs on a plant-wide, division-wide, or perhaps enterprise-wide basis.

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Configuration Overview for Maximo

Introduction

Maximo Enterprise Suite (MXES) is an n-Tier application, meaning one or more tiers (servers) can be used. The focus of this section is to familiarize you with some of the standard hardware and software configuration needs for each tier. Maximo can run on either a single or multiple servers, depending on the number of concurrent users required and hardware used.

Configuration Overview

Maximo is a SAM solution provider with several integral components: end-user applications, system administration applications, a relational database, and reports.

Maximo consists of Web-based user applications and database administration accessed through Internet Explorer.

Maximo stores and maintains data about your company's assets in a relational database. Maximo uses the data in the database to provide you with reports that help you analyze costs and assets' status, manage inventory and labor resources, and plan maintenance activities.

With each of these components— end-user applications, system administration applications, database, and reports—there are system requirements. This section will help you understand these requirements.

Connectivity

Maximo allows some flexibility in the way software servers are used and connected.

In less complex situations, with a small number of users, one or two "boxes" might be all that are needed to run all the servers and software.

In more complex situations with a large number of users, more sophisticated strategies can be used, requiring that some servers and applications run on their own "box." However, many configurations and tools can be used.

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Configuration Overview for Maximo continued

Hardware and Software Configuration

The table below presents current Maximo Enterprise Suite hardware/software considerations.

Note: MXES will support additional configurations during the upcoming year. This document represents the requirements for General Availability release only.

Dedicated Servers	Hardware	Software
Client Workstation	512 RAM or greater	• Microsoft Windows 2000 or XP • Internet Explorer 6.0
Application Server BEA WebLogic and Maximo are installed on this server	• 2-4 processors recommended • 2 GB memory per processor • 1.5 GB or greater disk space for Maximo Enterprise Suite and Java/Web server components	• Microsoft Windows 2000 or 2003 Server • BEA WebLogic 8.1 SP3 bundled with Maximo • Internet Explorer 6.0
Database Server This server contains and manages the Maximo Database.	Refer to vendor specifications for hardware requirements	Oracle 9.2.0.6 or 10.1.0.3
Reports Server	• 1 GB RAM per processor • 610 MB free disk space	• Microsoft Windows 2000 or 2003 Server • Actuate iServer Release 8.0 bundled with Maximo
Administrative Workstation	• Intel-based Pentium 1 GHz memory per processor • 512 MB RAM or greater	• Windows 2000 or Windows XP • Internet Explorer 6.0
V2 03/10/2005		

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Implementation Methodology Overview

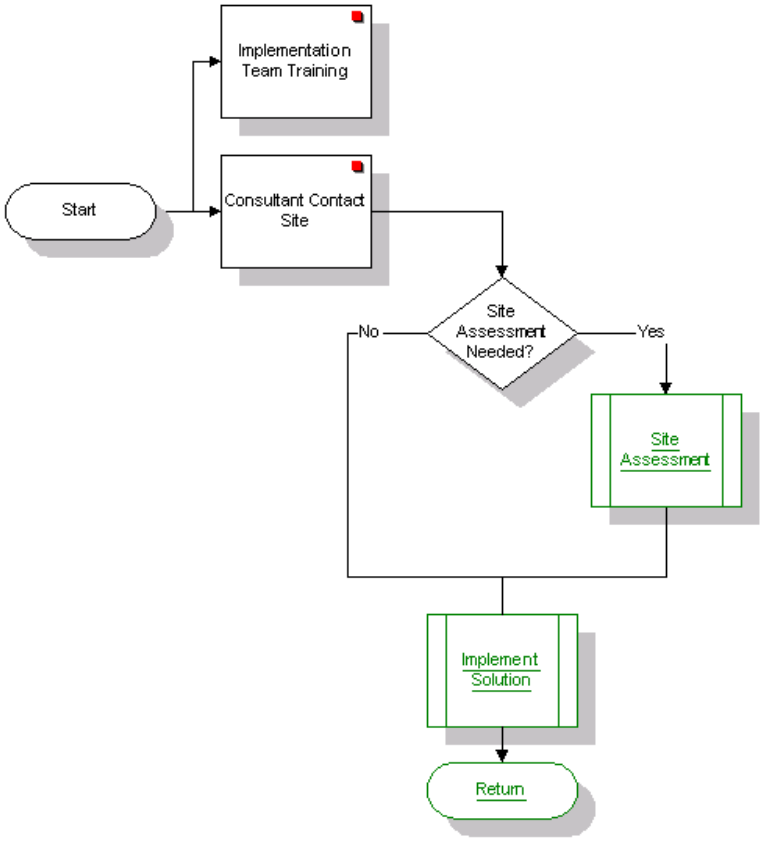
Introduction

MRO Software uses a standard operating procedure (SOP) to assure a consistent and quality implementation. However, the SOP is tailored to the specific needs of the various clients and situations.

The following diagrams provide overviews of the MRO Software SOP flow.

Implementation Workflow

A broad overview of the MRO Software implementation is presented below:



More complex situations often require a formal *Requirements Definition Workshop*. After the Requirements Definition Workshop is completed, if necessary, MRO Software consultants and the client team go to work on the implementation.

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Implementation Methodology Overview continued

Requirements Definition Workshop

A Requirements Definition Workshop is a detailed review of existing maintenance management practices to determine a best-practice approach to maintenance and materials management and the system configuration required to support the maintenance environment.

MRO Software consultants typically conduct a Requirements Definition Workshop. There are two basic phases: *Data Collection* and *Analysis and Reporting*.

- The *Data Collection* phase can last from a few days to a few months, depending on the size and complexity of the organization.

  Information about the organization's maintenance and materials management practices, procedures, and environment is gathered. Also, information concerning the information systems environment that will host Maximo is collected.

  During this phase, the consultant typically interviews people in several functional areas, such as maintenance, inventory control, accounting, purchasing, and IT. The consultant also examines current business practices; reviews existing documentation, catalogs, assets, and locations to be maintained; and tours facilities.

- The *Analysis and Reporting* phase, typically shorter than the *Data Collection* phase, includes analysis of collected data and synthesis of this analysis into a final report.

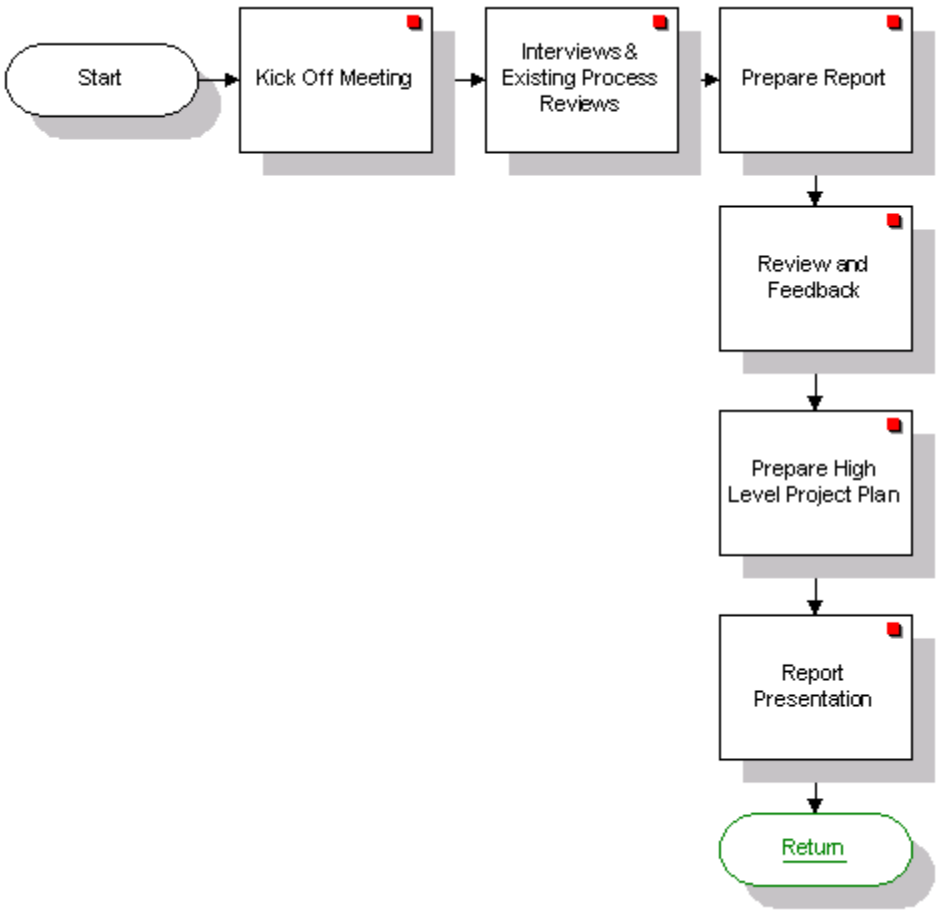
  The Requirements Definition Workshop Report examines the organization's existing environment and business practices and provides detailed recommendations for improving and implementing those practices within Maximo.

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Implementation Methodology Overview continued

Requirements Definition Workshop Process

A Requirements Definition Workshop typically follows the flow presented below.



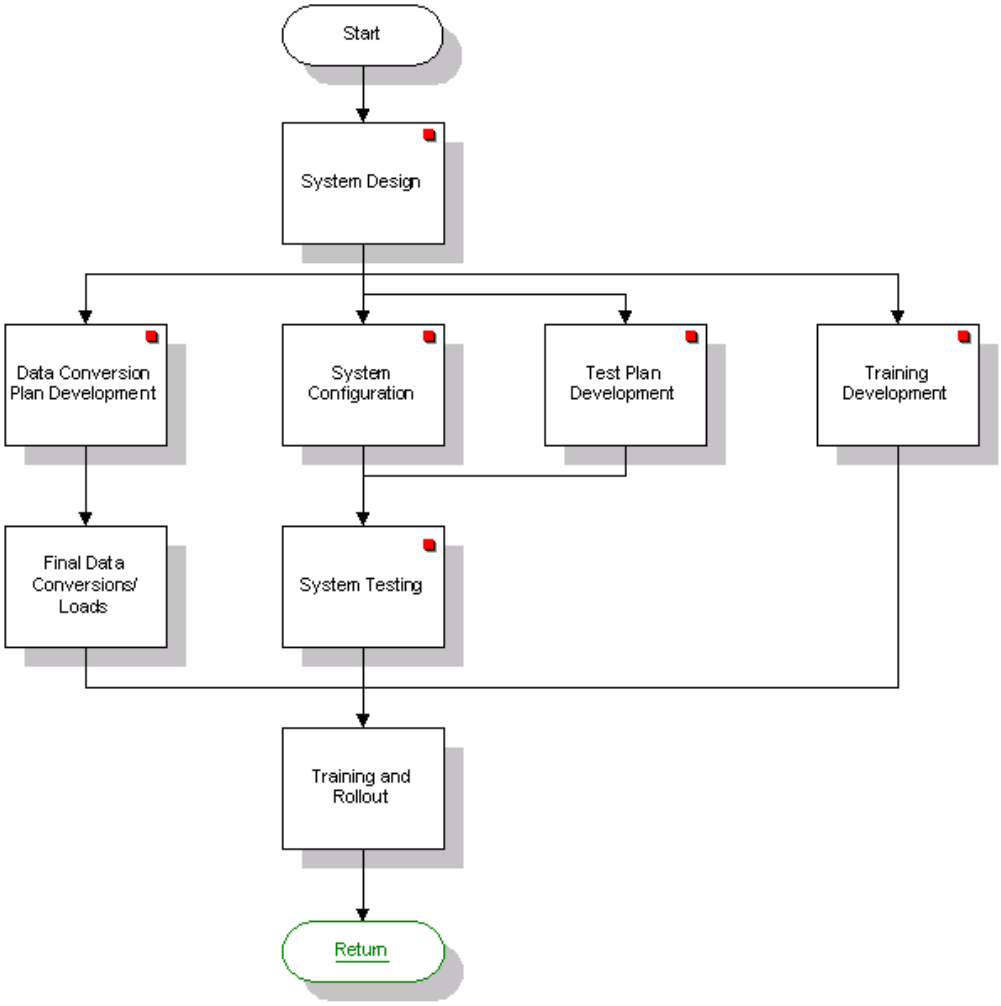
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Implementation Methodology Overview continued

Solution Implementation Process

After initial analyses are complete, the implementation process begins. The diagram below indicates the implementation process flow.



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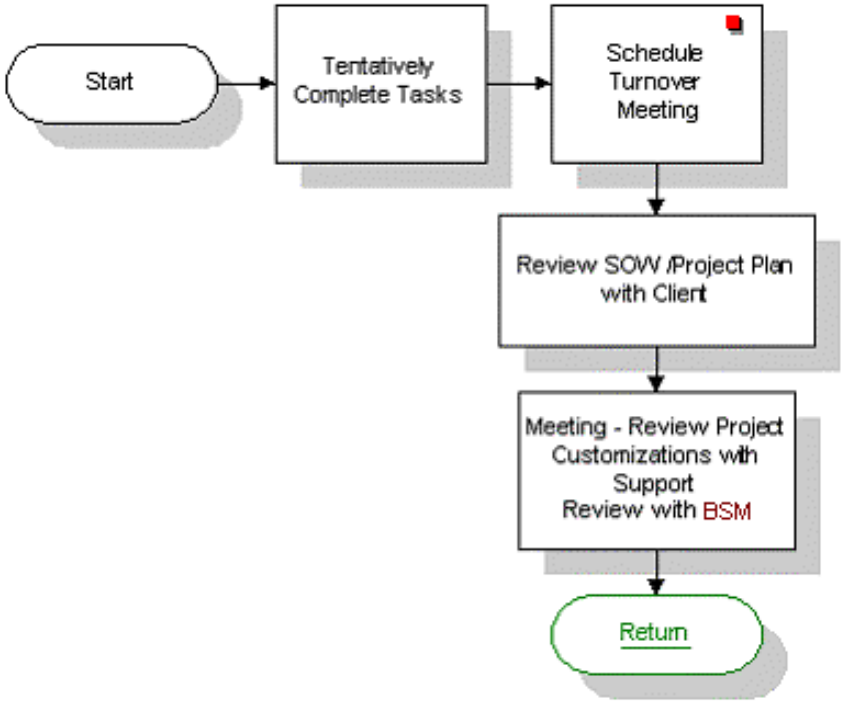
Implementation Methodology Overview continued

Post-implementation Workflow

After the work is essentially completed, MRO Software consultants work with clients to review the completed project tasks, the *Statement of Work* (SOW), and the *Project Plan*.

This process ensures that all the work is done to the expectations of the client.

The diagram below illustrates the process.



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Overview of Key Roles

Introduction

There are a number of key responsibilities in a typical Maximo implementation. In some organizations, a number of people will have more than one responsibility. In larger organizations, individuals might play a key role that fulfills only one responsibility.

This section provides an overview of the key roles and responsibilities of the people playing a part in the Maximo implementation.

Implementation Groups

There can be multiple teams involved with a Maximo implementation. The roles of these teams change from implementation to post-implementation.

The following table indicates the groups that are generally assembled for a Maximo implementation, along with the roles and responsibilities of each. Each organization will have its own variation on these groupings, depending on business processes, complexity of the implementation, available resources, and so forth.

Group	When to Meet	Roles/Responsibilities
Steering Committee	Monthly	• a very high-ranking oversight committee (a committee that oversees the project) • responsible for decision-making • obtains funding • receives monthly or weekly status updates from the Core Team project manager • provides overall guidance, vision for the future, and a corporate mission statement

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Overview of Key Roles continued

Implementation Groups continued

Group	When to Meet	Roles/Responsibilities

Core Team	Weekly	• provides a sounding board for the Project Implementation Team
		• represents users from respective teams and cross-sections of departments; ensures that the needs of the user community are met and proper business processes are implemented
		• defines the detailed Maximo mission statement
		• involved with Signature Security setup and process flow builds (data flow charts)
		• The Core Team should also include:
		  ○ potential Maximo administrator
		  ○ a report writer
		  ○ an Oracle/SQL server database person
		  ○ a trainer
		  ○ a procedure builder
		  ○ a documentation person for changes made to the system
		• typically involved in setting up development and test instances

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Overview of Key Roles continued

Implementation Groups continued

Group	When to Meet	Roles/Responsibilities
Project Team	Daily	• most members are 100% dedicated to project • attend all Core Team meetings • might include outside contractors (other than MRO Software) • includes the following positions and the percentage of time expected to spend on the project: o IT Project Manager–25% o Maximo Administrator–100% o Lead Report Writer–100% o Technical Expert (MRO consultant)–100% o JSP Editing Coordinator–100% o Database Configuration Coordinator–50% o ORACLE DBA–10% o Trainer–100% o Documenter–100% o Change Manager–100%
Ongoing Support	Daily	o IT Help Desk–10% o Network Services

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Overview of Key Roles continued

Implementation Groups continued

Group	When to Meet	Roles / Responsibilities
System Administration	Daily	• The Maximo administrator performs the following functions–100%: o makes future decisions on design changes (screen and database), priority of enhancements/product tailoring o controls and approves report alterations o reads Maximo User Forum to glean valuable peer information o attends annual User Group meeting o conducts problem resolution with software vendor o runs regular error checks o is responsible for overall data accuracy and integrity

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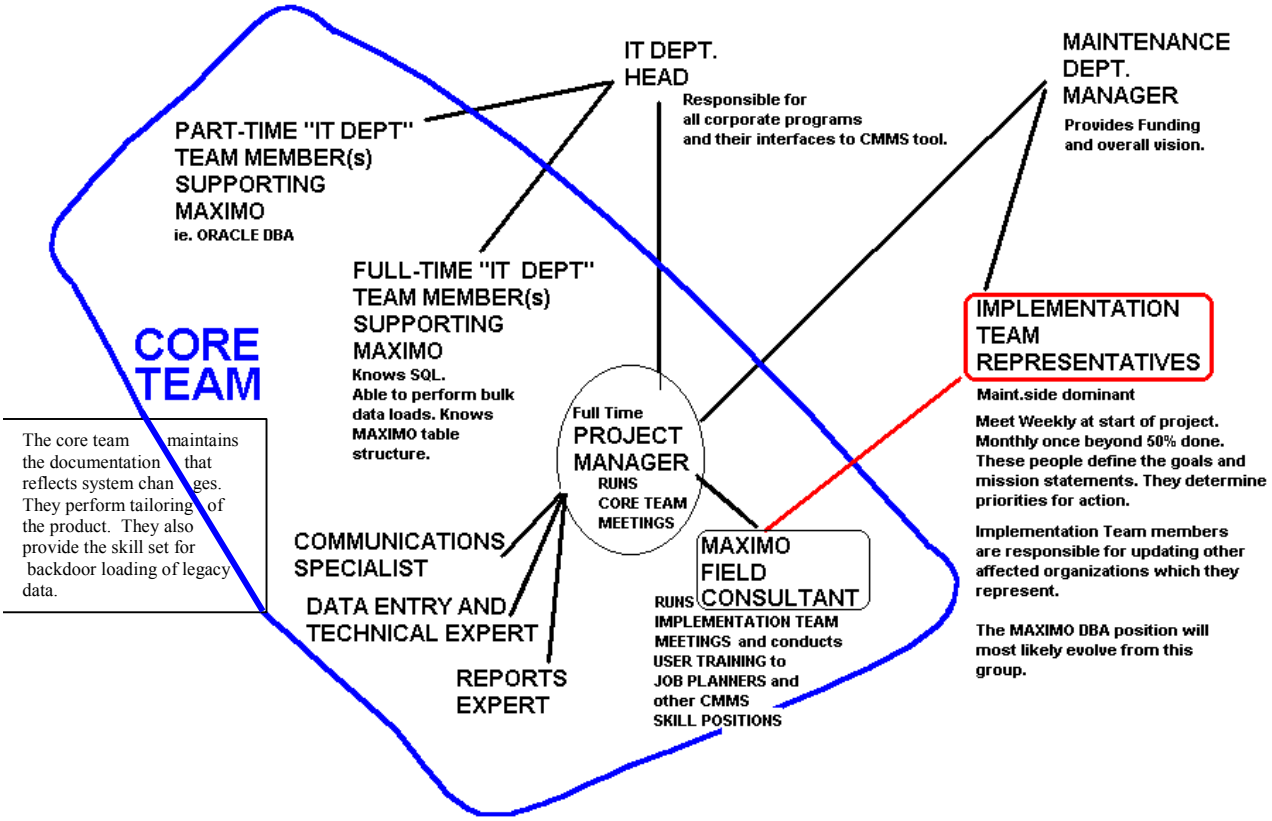
Overview of Key Roles continued

Core Team

Of all of the groups involved in a Maximo implementation, the core team is the one that is the closest to the project on a daily basis.

The following graphic provides some context for the relationship of the core team to the other players.

Although each situation will be unique, the graphic helps MRO Software clients to begin thinking about responsibilities, roles, and interrelationships of the team.



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Overview of Key Roles continued

Class Questions



As a class and with the instructor, discuss the following questions:

- Why are you here?
- Why are you on the implementation team?
- Why did you purchase Maximo?
- What are you expecting Maximo to do, as compared to what you are doing now?

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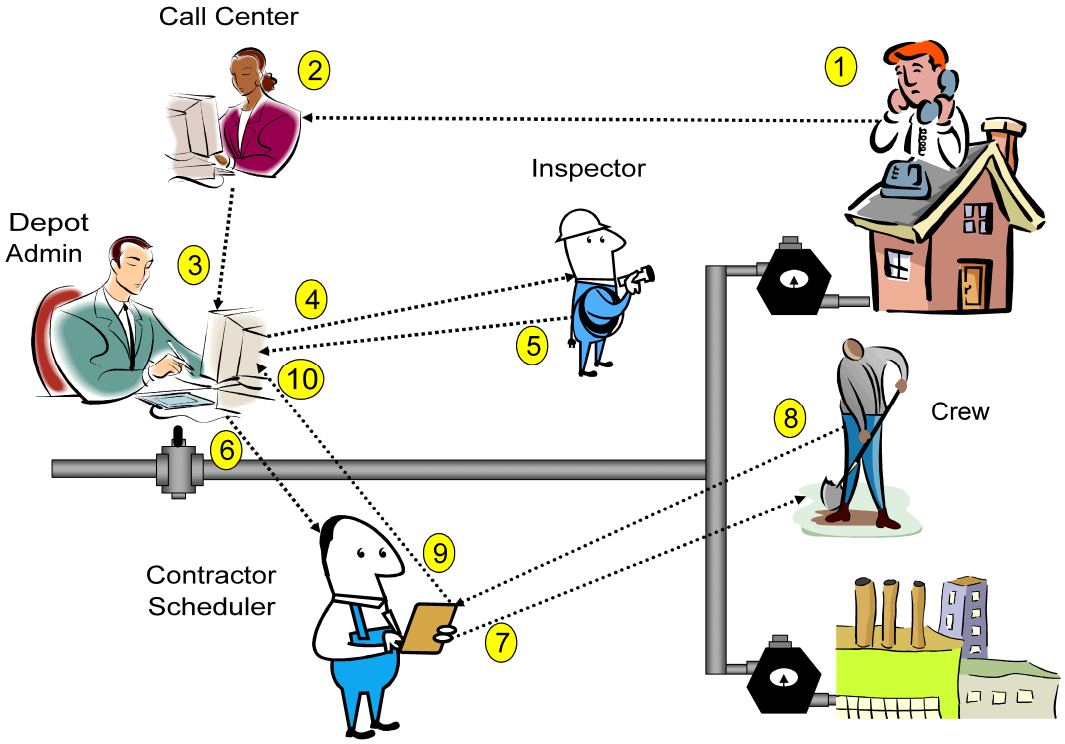
Overview of Key Roles continued

Group Exercise



Part of your job on an implementation team will be to examine and document your business processes.

This goal of the following exercise is not to focus on Maximo per se, but to start thinking as a part of an implementation team about your organization's own business processes and the kinds of questions that need to be answered. Break into groups and spend approximately 20–30 minutes identifying areas that could be streamlined and where an integrated system like Maximo could be implemented to help make this company's work process more efficient. Remap the processes if necessary. When you are finished, the instructor will lead the class through discussions based on each group's suggestions. Again, the goal is to start having you think about your organization's own business processes and the kinds of questions that need to be asked and answered. There is no right or wrong answer.



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Overview of Key Roles continued

Scenario

A water company has contacted your team to help it with a variety of its asset management problems. Although there are many problems, you decide to focus on the work request to work completion process. While mapping out the process, you discover the following:

1. The customer typically recognizes a water problem, e.g., no water pressure.
2. The customer contacts the call center and describes the problem. The call center acknowledges that it has had several complaints today regarding the same issue. The customer is assured that the complaint will be given to the right resources to handle the problem.
3. The responsible depot receives an incident report faxed from the call center.
4. Depot administration raises a work order in its legacy system requesting that an inspector go to the site to verify the problem.
5. The inspector returns to the depot the following morning and gathers up all new work orders and proceeds to the field. Sometime during the day, or the next day, or the next day…the inspector determines that in fact there is a problem. In the meantime, the customer has contacted the call center repeatedly for a status. The call center indicates that it will have to contact the depot and get back with them.
6. The inspector returns to the depot and provides the completed work order to Depot administration. Depot administration then raises another work order for the preferred contractor to complete the repairs to a potential leak outside of the residence.
7. The contractor receives the work order the following day and proceeds to prioritize and schedule work. His lead man is free and he decides to give this problem to him, as the customer complaints about lack of response have finally made it to the depot.
8. The lead man gathers up his partner and they head to the job site. The leak is detected and repaired after a long delay created by a trip to two storerooms to find the part.
9. The completed work order is given to the contract scheduler, after a quick check to make sure everything is complete. Then a copy is created, with the original going back to Depot administration.
10. Depot administration receives the completed work order the following day and enters the labor and materials into the system (to be used later for invoice matching). The work order is closed. No other information is entered into the system. The call center is not notified of the completed work.

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Chapter Summary

Strategic Asset Management (SAM)

Strategic assets are those assets that are directly or closely associated with revenue generation or that are critical to the mission of the organization. They include the following types of assets:

- Tangible
- Fixed
- Physical
- Capital

Objectives of SAM

There are five main objectives of asset management:

- *Investment*—Minimize funds invested to achieve business objectives.
- *Ownership cost*—Minimize cost to ensure a required level of performance.
- *Commercial return*—Maximize the value that the assets add to the business.
- *Strategic value*—Optimize the market value and flexibility of the asset base.
- *Risk*—Manage commercial, health, and environmental risks.

Four SAM Categories

SAM is focused on four broad categories of fixed, physical, and capital assets:

- Production
- Facilities
- Fleet
- IT

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Chapter Summary continued

SAM and Maximo

Because maintenance operations generate a lot of data, an abundance of information can be derived to guide maintenance activities to greater levels of productivity and cost-effectiveness.

Maximo tracks and reports data and processes associated with maintaining assets. Examples include:

- parts catalogs, inventory, work orders, purchasing details, and supplier data, as well as
- asset failures, causes, and remedies.

Maximo Out-of-the-Box Reports, KPIs, and KPI Dashboard

Maximo has a *Reporting m*odule that allows you to maintain your reports and KPIs. Maximo also enables you to place KPIs on the Start Center, allowing you to monitor key performance indicators against performance goals.

What Are Key Performance Indicators (KPIs)?

A KPI is a measurement of the activity in support of an established goal or result. Some defining characteristics of KPIs are as follows:

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Chapter Summary continued

SAM, KPIs, and Maximo

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Chapter Summary continued

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Chapter Summary continued

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- The *Analysis and Reporting* phase, typically shorter than the *Data Collection* phase, includes analysis of collected data and synthesis of this analysis into a final report.

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Overview of Key Roles

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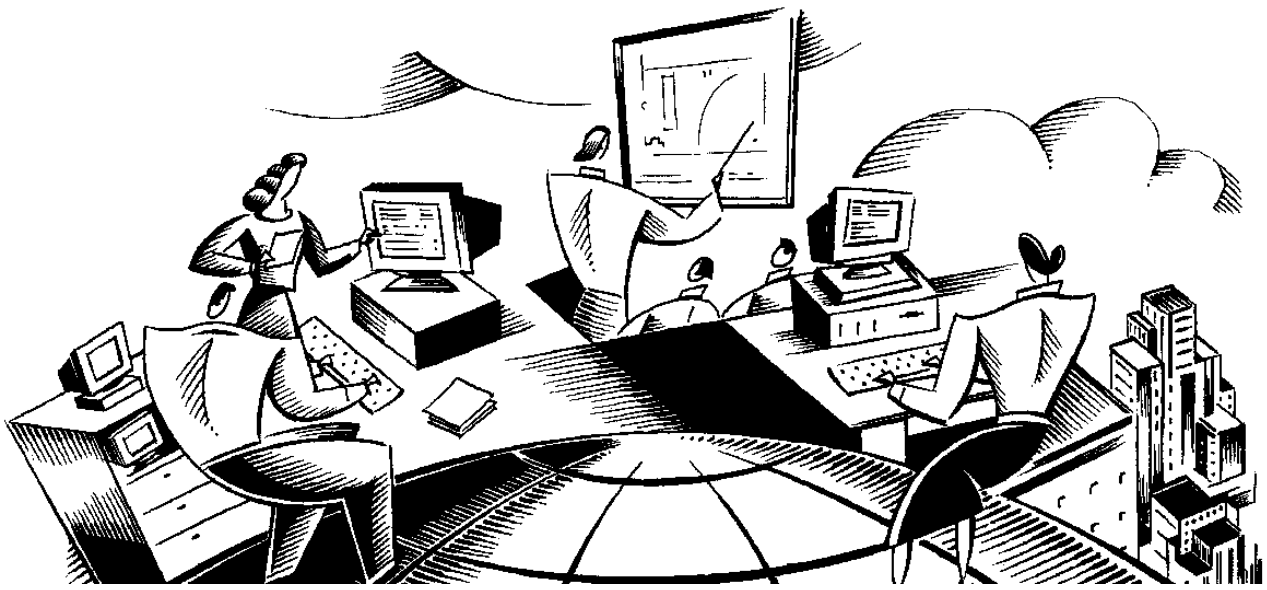
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MXES Immersion Training for EAM

Unit 2: Setting Up Maximo



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In This Unit

This unit contains the following chapters:

Chapter	Subject
2	Setting Up Organizations and Sites
3	Creating Locations
4	Entering Person Records and Registering Users
5	Setting Up Inventory Items
6	Entering Asset Records

Unit Overview

Introduction

Before using Maximo you must enter data into the database, and determine and configure application setup options so that you can "act" on the database.

Entering Supporting Data and Course Approach



Many Maximo applications serve principally to record data that is used by other applications. For example, labor records are entered so they can be referenced on work orders. With Maximo, supporting data is not required and can gradually be entered over time. This approach benefits you almost immediately without requiring you to initially collect and enter substantial amounts of data. This course follows that convention.

In this unit, you will initially set up "building block" data. Later, in Unit 5: "Maximo Working for You," you will enter more supporting data.

Special Note: Shared vs. Independent Databases



- Throughout this course there could be up to 20 participants accessing the same database. If you are *sharing* a single database, your instructor will assign you a two-digit student number (for example, 01–20) to avoid confusion and/or conflicting records in the database.

  Some exercises throughout this course will have an *xx* appended to data entry items. Whenever an *xx* is appended, substitute your assigned student number for the *xx*.

- If you are taking this course in an *independent*-database environment—that is, your database is independent from other students' databases and the instructor's database—student numbers are unnecessary. You can simply do the exercises using the records indicated, without adding a student number.

If you are not sure whether you are sharing a database, check with your instructor.

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Unit Overview continued

Unit Focus

In this unit, each chapter focuses on different aspects of entering records into the database and also on giving an overview of the different application setup options available with Maximo. This unit focuses on using those applications that are primarily used to "build" or to set up the Maximo database.

Data structures created in this unit's chapters will be part of the work orders created in Unit 3: "Using What You've Got: Work Management" and in purchase orders created in Unit 4: "Using What You've Got: Material Management."

Learning Objectives

When you have completed this unit, you should be able to:

- describe the various database relationships,
- describe the applications primarily used to set up Maximo,
- discuss what you need to consider when organizing data,
- discuss techniques and methods for determining your data requirements, and
- describe the different application setup options available with Maximo.

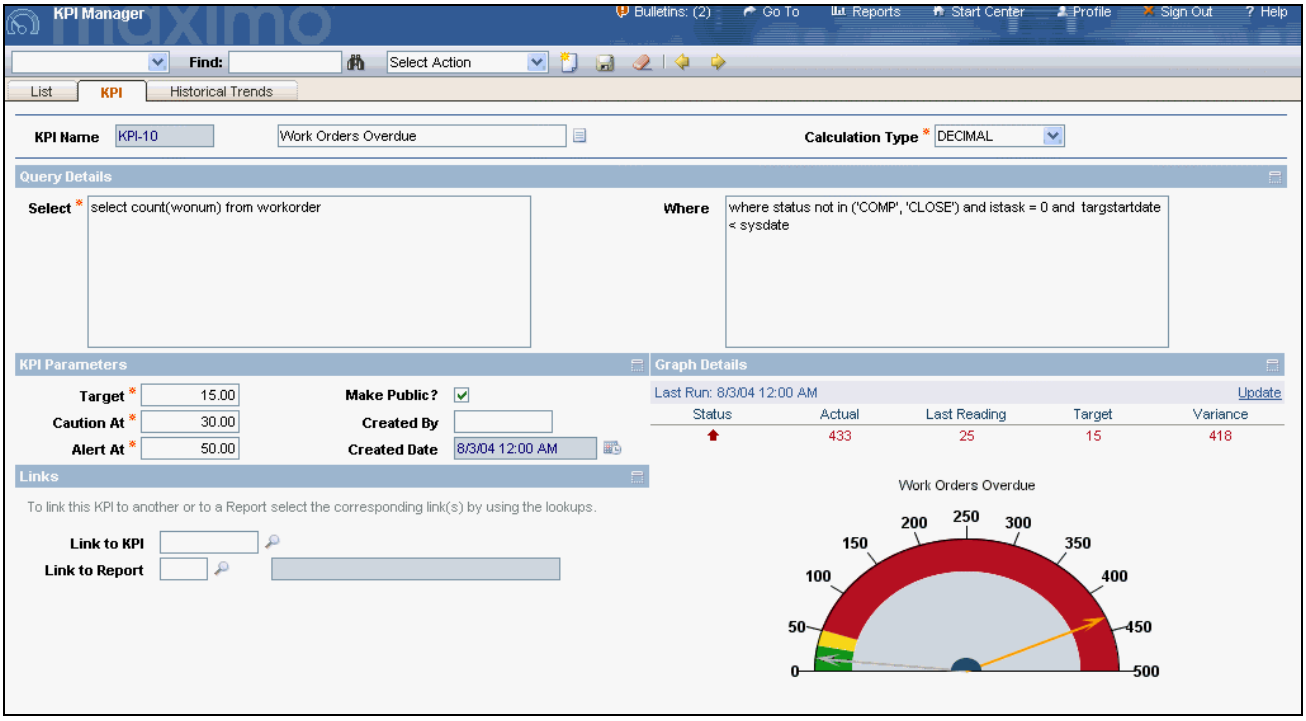
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Unit Overview continued

Reporting and Performance Indicators

Setting up Maximo requires that you examine in detail not only your maintenance, inventory, and procurement processes, but also your organization's reporting needs and what performance indicators to analyze. Knowing what needs to go into your database will help you get the most out of it.



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Entering Data Overview

Introduction

As introduced in Unit 1, Maximo applications function to *build* or *act on* the database. Although many applications build *or* act on the database, some applications can do both. In this unit's chapters, we will focus on those applications that are primarily used to *build* a Maximo database.

Check-in

√

A *database* is a collection of data organized so that its contents can be easily accessed, managed, and updated. In Maximo, the data within the database consists of records that you or the system administrator enter.

Database Building Applications

To acquaint you with the Maximo modules and applications that are used to set up Maximo, here is a brief overview of each module's applications and a description of their functionality.

Module	Application	Description
Preventive Maintenance	Preventive Maintenance	Holds templates for scheduled work.
	Master PM	Allows you to create associated PM works and manage PM schedules.
Inventory	Inventory	Enables you to enter, display, and update information on each inventory item.
	Item Master	Allows you to build templates and define the items stocked in storerooms. These templates can serve as models to build location and asset hierarchies.
	Storerooms	Allows you to add new storeroom location records and view items associated with any storeroom from your site.
Assets	Assets	Allows you to enter and display detailed data on assets.
	Locations	Defines where an asset is placed and allows tracking of assets that might be placed in multiple locations.
	Meters	Allows you to create meter names and define meter attributes to track asset performance.
	Meter Groups	Allows you to define a logical grouping of meters that will exist in a Meter Group.
	Failure Codes	Holds templates for failure hierarchies.

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Entering Data Overview continued

Database Building Applications continued

Module	Application	Description
Planning	Job Plans	Holds templates for the operations, labor, materials, services, tools, and work assets required to do a specific job.
	Routes	Lists related work assets, which are considered "stops" along the route.
	Safety Plans	Holds templates for safety plans and associated hazards, precautions, and lock outs/tag outs.
Resources	People	Allows you to create, modify, view and delete Maximo users, labors, asset owners, supervisors, and workflow recipients.
	Person Groups	Allows you to create, view, and modify person groups. Person groups consist of people, who may or may not be workers.
	Crafts	Holds templates for the crafts, including skill levels and rates of standard and premium pays.
	Labor	Holds data on individual employees based on personal and craft information.

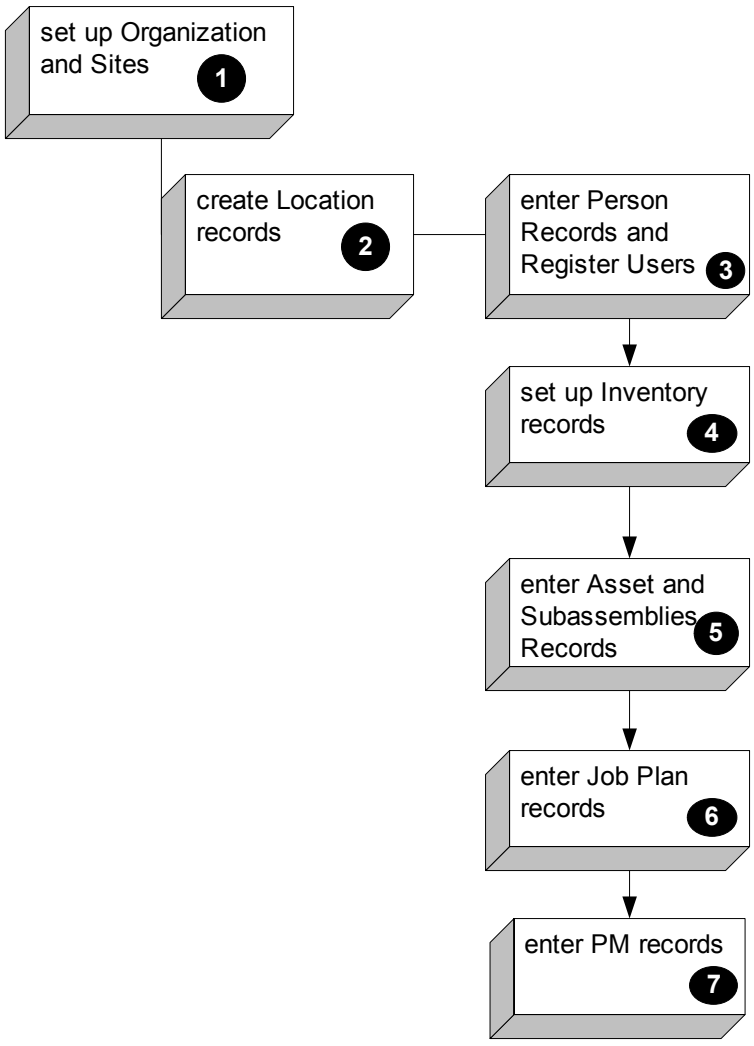
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Setting Up the Database

Process Flow

As discussed, there are numerous possibilities for what and when data is entered into Maximo. For this unit, we will assume that setting up Maximo will follow the flowchart below.

Important Note: Before entering data into Maximo, you need to register the users who will be entering the data into the system. After you create locations, you can go back and associate a location to the labor record.



Stage	Description
1	Set up your organizations and sites using the **Organizations** application.
2	Create locations and then organize them into a hierarchy and system using the **Locations** application.
3	Enter person records and register users using the **Resources** application.
4	Set up parts and inventory items in your storerooms using the **Item Master** and **Inventory** applications.
5	Enter assets and subassembly records using the **Assets** application.
6	Identify labor, materials, services, and tools to create job tasks using the **Job Plans** application.
7	Set up maintenance schedule templates using the **Preventive Maintenance** application.

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Setting Up the Database continued

Note



Important Note: Before entering data into Maximo, you need to register the users who will be entering the data into the system. After you have created your locations, you can go back and associate these initial users to a location. For further information, see Chapter 4: "Entering Person Records and Registering Users."

Smart Numbering vs. Autonumbering

It is important to understand what data is being added into the database, but it is equally important to know and understand how records are to be identified once they are in Maximo.

A common discussion that comes up is how records are going to be identified. While Maximo allows for automatic numbering, some organizations have their own internal identification system in place.

There are use cases for smart numbering and automatic numbering; what needs to be discussed is when it makes sense to use one numbering format over the other.

Class Discussion



How does your organization currently identify its location, inventory, and asset records?

Through class discussions, make a case for when and where automatic numbering would make sense and when smart numbering would make sense.

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Setting Up the Database continued

Procedure: Inserting Records into the Database

The general procedure for inserting a record into the database is as follows:

Step	Action
1	Open the application from the Start Center modules or the Navigation bar **Go To** drop-down menu.
2	Click the **Insert Record** toolbar button. 
3	Enter a value in the key field, and then type in a description for it.
4	Enter a value in each of the other required fields.
5	Click **Save** to save the record.

Note



Although this unit focuses on building the database, we enter only a few data items, because the intent of this course is to show you how the Maximo applications work together. However, in actuality, implementing Maximo involves mass loading/converting much data.

MRO Software Professional Services can help in this matter by providing their expertise.

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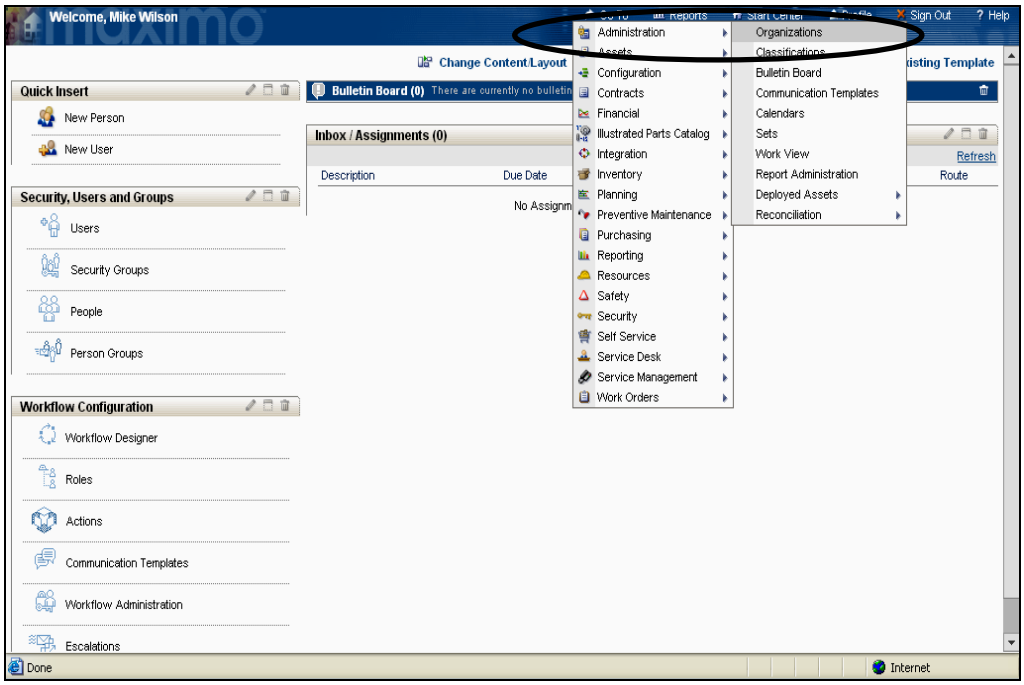
Organizations Application Options

Overview

While thinking about what data needs to go into Maximo, you also have to consider your organization's business process and practices and what actions you want Maximo to take when certain records are entered or when certain transactions occur.

For example, when you set up inventory, you decide to set up your system to automatically generate a purchase order when inventory levels reach a certain point. Another example is adding spending limits to your users.

Applications setup options are activated in the Organizations application in the Administration module.



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Organizations Application Options continued

Setup Options

The following options are available from the Organizations application:

- Work Orders
- Inventory
- Assets
- Drilldown
- Preventive Maintenance
- Safety Plans
- Purchasing
- Labor
- Workflow
- E-Commerce
- Autonumbering



In this unit, as well as units 3 and 4, these Organizations application options will be demonstrated and discussed in greater detail.

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Chapter 2: Setting Up Organizations and Sites



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In This Chapter This chapter contains the following topics:

Topic	See Page
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Overview of Multisite and Multiorganizational Strategy	2-4
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Chapter Overview

Introduction

Maximo is structured to contain and use your asset and maintenance information in a strategy that uses multiple levels of organizations and sites.

The way in which multisite strategy is implemented has a direct effect on the setup of the Maximo modules and applications.

Learning Objectives

When you have completed this chapter, you should be able to:

- describe and understand the Multisite/Multiorganizational strategy,
- plan and create organization and site levels,
- describe the functions of the Organization, Addresses, and Site tabs, and
- identify applications that are affected by Organizations.

Chapter Focus

The focus of this chapter is to familiarize you with multiorganizational and multisite data strategies

Users and Setup



For this course, when you access Maximo modules and applications in the Start Center you should be signed in as:

Username: **wilson** and Password: **wilson** (case sensitive, use all lowercase)

Note: Because this user has universal access to data and functionality, you will use Wilson for most tasks in this course, except where otherwise indicated.

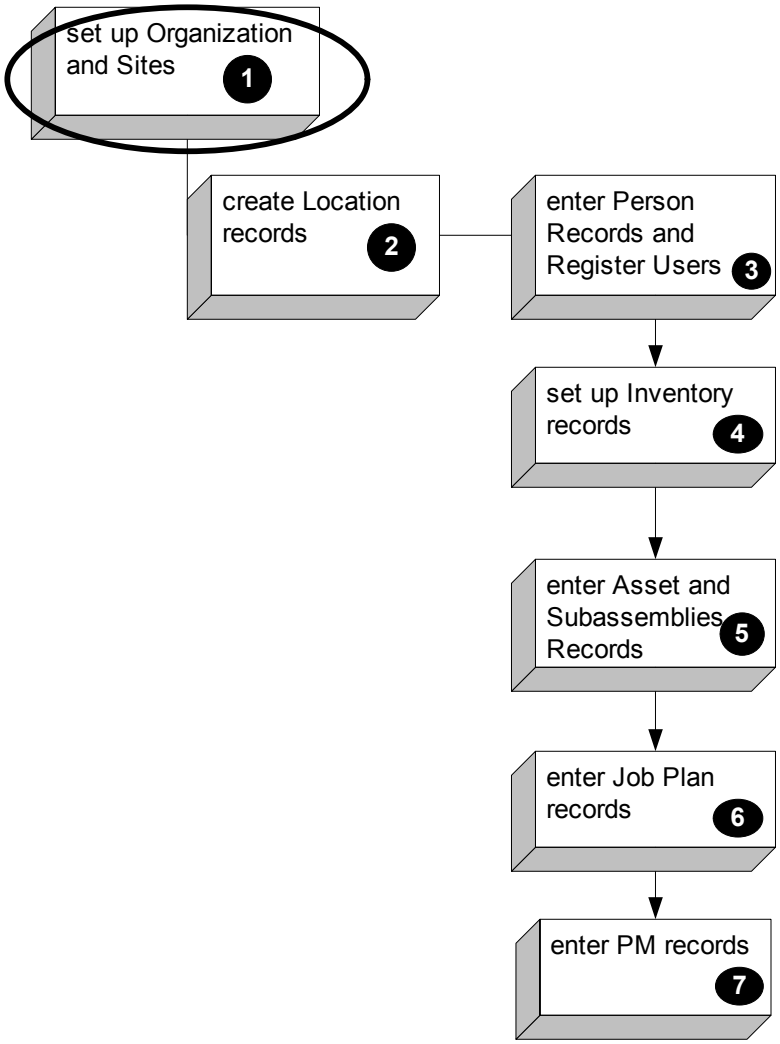
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Chapter Overview continued

We Are Here

You can set up your organizations and sites using the **Organizations** application.



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Chapter Overview continued

Implementation Considerations

When planning an organization setup, you must examine your business model and decide how to logically divide your company's locations and divisions into Maximo organizations and sites. A highly organized data model creates a number of implications to consider:

- Which parts of the organization need to access data from other parts, and which parts of the organization will not have access to data from other parts of the organization?
- Is integration with legacy systems and other systems required?
- Will system administration need to be divided up between sites or organizations?
- Who will have access to what sites?
- Can one Maximo database meet all your asset management needs?

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Overview of Multisite and Multiorganizational Strategy

Introduction

Multiorganization and Multisite is an implementation strategy of Maximo that lets different company sites share data from a single database, while keeping their operations separate. Rather than installing multiple instances of Maximo, a company can now install Maximo once, and multiple sites can access the same database.

Organization and Site Defined

In the Multisite environment, the terms *organization* and *site* are used.

- An *organization* is a major division of a company, which contains one or more sites. Sites belonging to the same organization use the same currency and share the same options for work orders, assets, labor, and other types of data.
- A *site* is a subdivision of an organization that might track inventory and other data separately from other sites. Certain site information is unique to the site and is not visible to other sites even though they belong to the same organization and share the same database. Generally, sites:
  - belong to the same organization,
  - use the same *currency*, and
  - share the same options for work orders, assets, labor, and other types of data.

Sites and organizations are logical divisions of a company determined by what types of operations are performed at certain locations, and what data can be shared by certain locations.

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Overview of Multisite and Multiorganizational Strategy continued

Why Use a Multisite Setup?

Many customers install Maximo at several facilities. These facilities might share common business practices, and might have other practices that are unique to each facility.

Example:

A utilities company owns several power plants, two water treatment plants, and a water distribution system. The business practices among the power plants are similar, but the water treatment plant has very different business practices.

In the above example, a multisite implementation enables different company sites to share data from a single database while still keeping their operations separate.

This setup allows:

- multiple sites to access a shared database while operating under independent business rules, and
- facilities to share purchase agreements and vendors while keeping work orders and job plan data separate.

By using a Multisite setup, you categorize your company's facilities into sites and organizations.

Sites and organizations are logical divisions of your company determined by:

- what types of operations are performed at each location, as well as
- what data can be shared by each location.

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Overview of Multisite and Multiorganizational Strategy continued

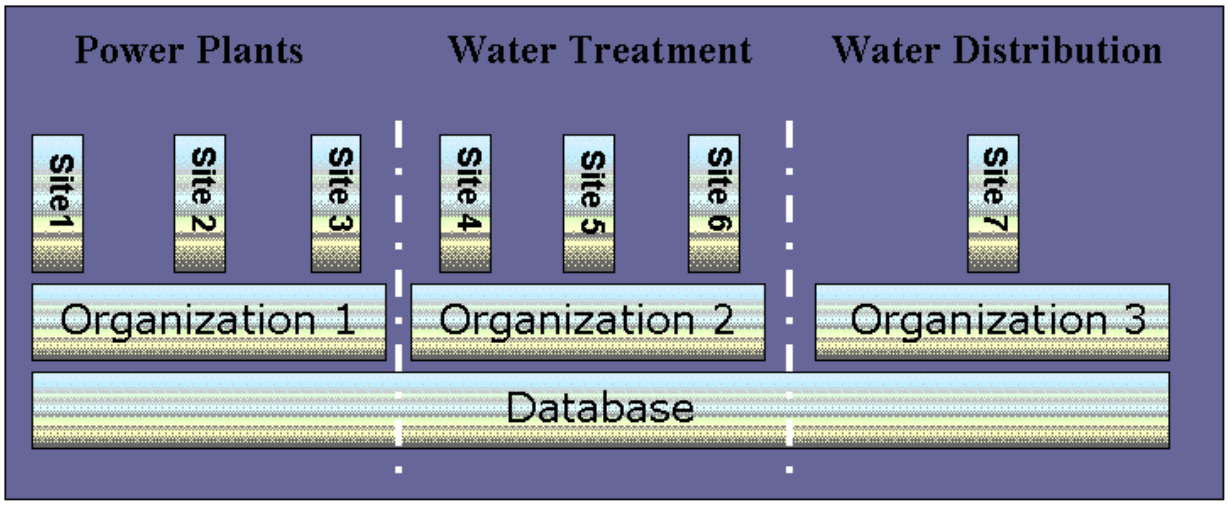
Three Levels

The Maximo database and multisite setup specifically allows clients to organize their data to more closely match their logical (organizational) structure.

Some elements reside at the *database* or *system* level and are available for the entire company.

Other elements reside at the *organization* level and are available only to users in a particular organization.

Finally, some data is available only to users at specific *sites* in an organization.



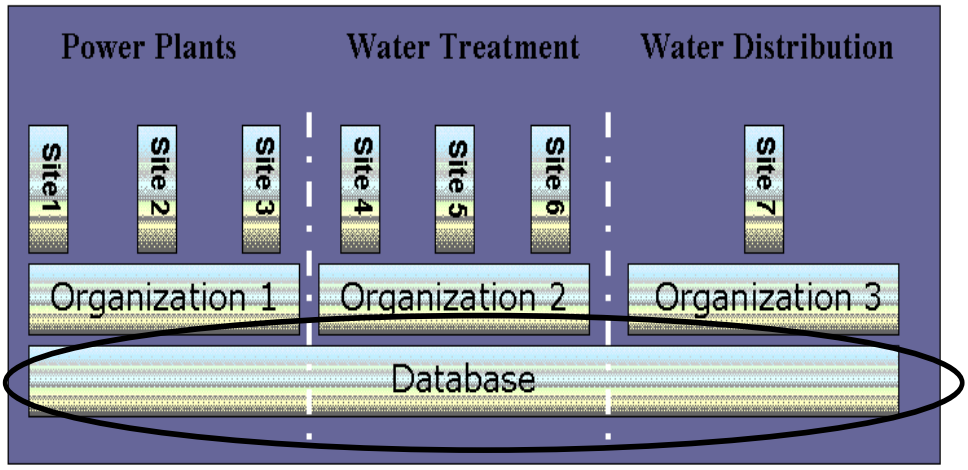
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Overview of Multisite and Multiorganizational Strategy continued

Database Level

This is information is generally used across the entire enterprise.



Data Stored at System Level

Data stored at *system level* generally affects all applications in the *organization and site levels.*

Refer to your database and/or Maximo administrator for further information.

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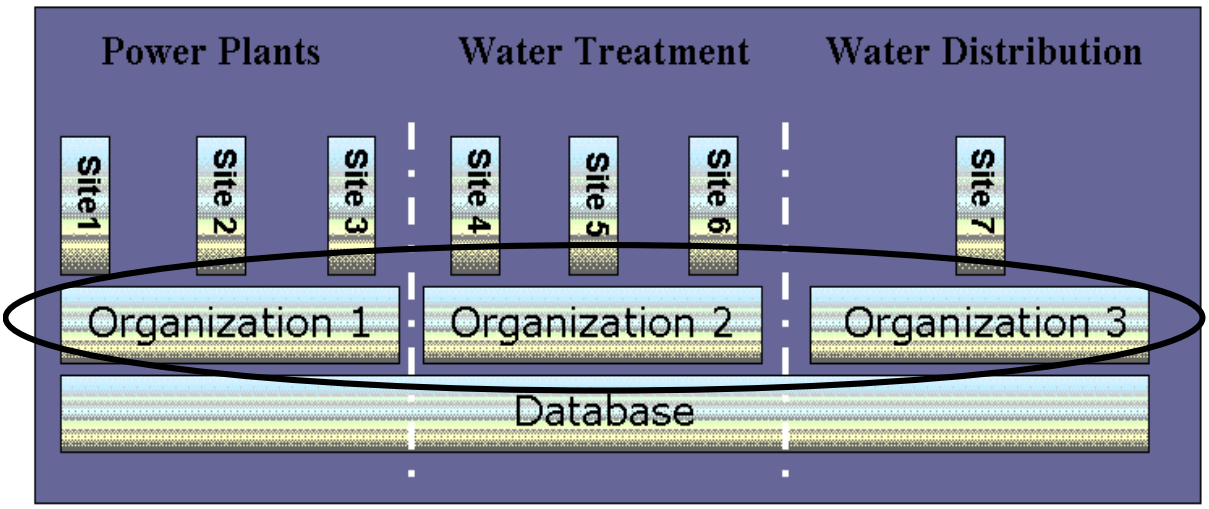
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Overview of Multisite and Multiorganizational Strategy continued

Organization Level

- Any data that pertains to an organization is identified by an ORGID.
- The chart of accounts and base currency are defined at the organization level, and each individual site would inherit the same for its organization.
- Vendors, items, labor, and purchase agreements are defined at the organization level, so that the sites belonging to that organization can share them.
- A database can have many organizations, and each organization can have one or many sites.

Addresses for sites that are used to specify the Bill To and Ship To in the purchase orders (POs) are defined at the organization level with an address code.



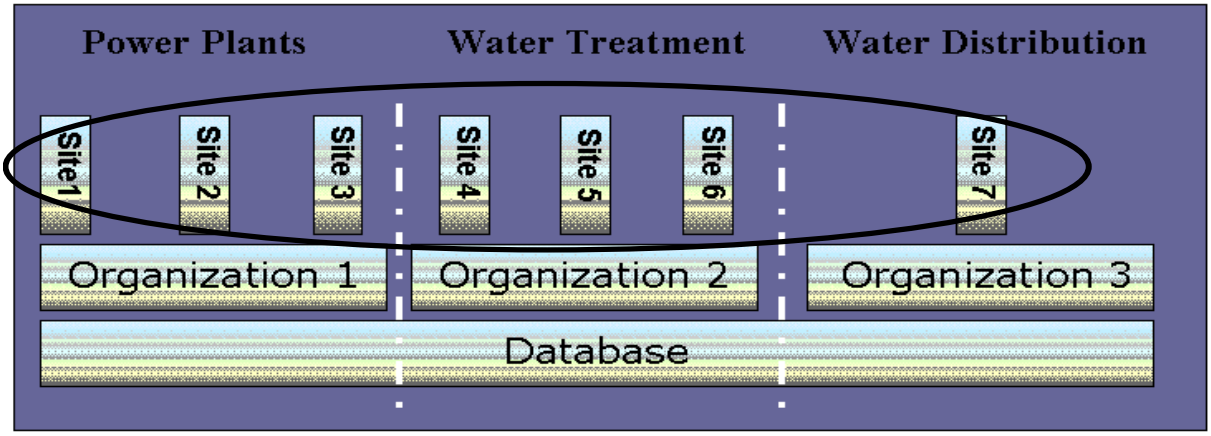
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Overview of Multisite and Multiorganizational Strategy continued

Site Level

A *site* belongs to an organization. An organization can have more than one site. All work management data, such as assets, locations, work orders, job plans, safety plans, PM, and so forth, are defined at the site level. This means that each site would have its own set of assets, locations, work orders, job plans, and so on that is not shared by other sites.



Key Details of the Site Level

Key details surrounding the use of the site level in a Maximo database are as follows:

- A site identifies a logical work location, for example, a plant or facility.
- A site belongs to only one organization. However, many sites could belong to the same organization.
- All transactions are carried out within a site (work orders, PRs, POs, invoices, issues, and transfers).
- Assets and locations belong to a site.
- Assets and locations must be unique within a site.

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Overview of Multisite and Multiorganizational Strategy continued

Data Stored at the Site Level

- A *site* represents a facility; in our example, the site is a power plant. An existing Maximo installation in a work location is analogous to a site. A site belongs to an organization, and any data that pertains to a site is identified by a SITEID.
- All work management data, such as assets, work orders, job plans, safety plans, PMs, and so forth, is defined at the site level. This means that each site would have its own set of assets, work orders, job plans, and so on that is not shared or viewed by other sites. However, assets can be moved from site to site.
- A Maximo user can be granted access to one or more sites in your organization.

Numbering Considerations



While assets are not shared, they can be moved from one site to another site. When analyzing your organization, you need to consider the numbering format.

If you want to move a unit of an asset from one site to another, the asset's number must be unique at the organization level to perform the move. If there is already a unit of the asset with the same asset number at the site to which you want to move the selected unit of the asset, Maximo will not allow the asset to be moved.

Multi-Language

Multi-language is supported via one language per organization in Maximo. Maximo allows for multiple organizations in the database, with each organization allowed to have a different language.

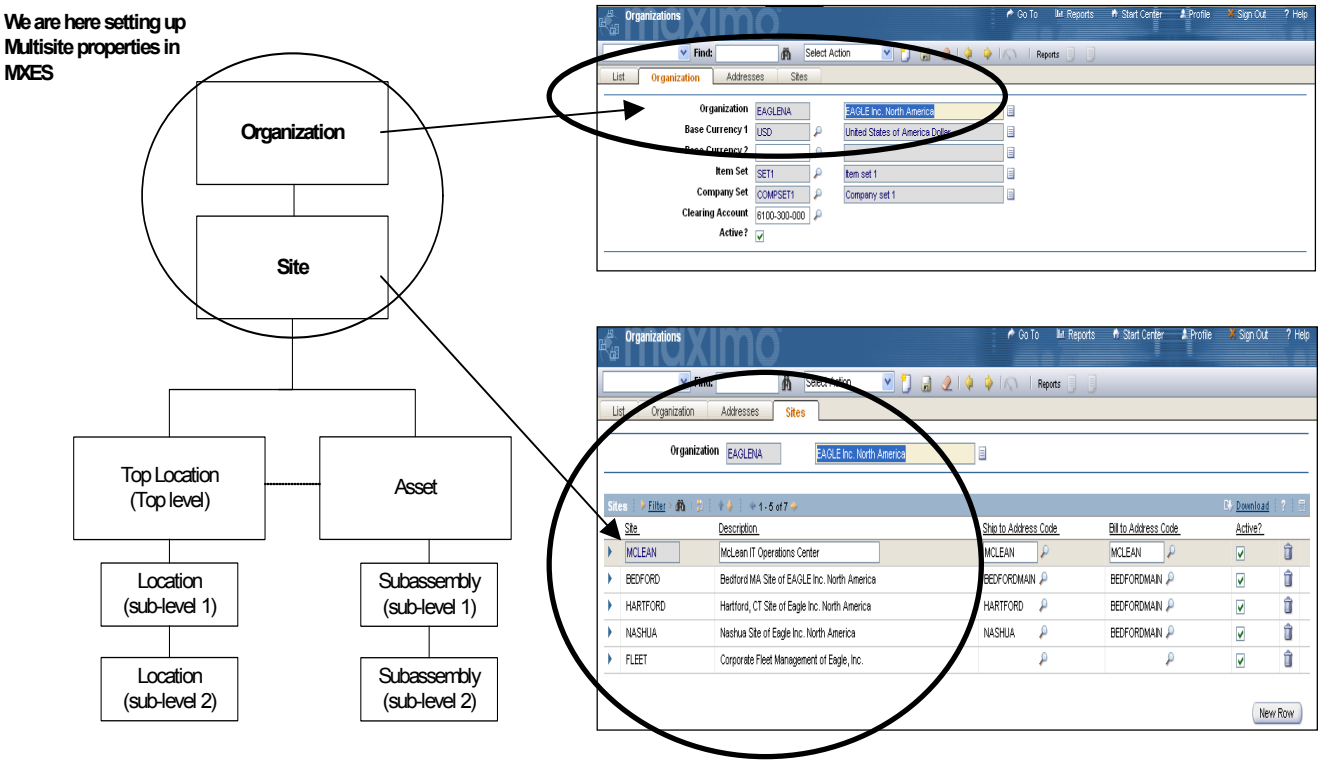
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Overview of Multisite and Multiorganizational Strategy continued

What Does It Look Like in Maximo?

Maximo uses the following hierarchical format when referencing the organization, sites, locations, and assets. Right now we are focused on the organization and site levels. The organization *Eagle Inc. North America* has five sites: McLean, Bedford, Hartford, Nashua, and Fleet.



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The Organizations Application

Introduction

Use the Organizations application in the Administration module to create organizations and sites, and to create and change certain system defaults, such as the Ship To and Bill To addresses for POs.

The Organizations application enables you to do this by allowing specific data to be organized at one of the following levels:

- Organization
- Site

Pre-Setup Information



Organizations contain some key information that must be set up before activating the organization. This information includes:

- Item set
- Company set
- GL elements and sufficient data to create clearing account

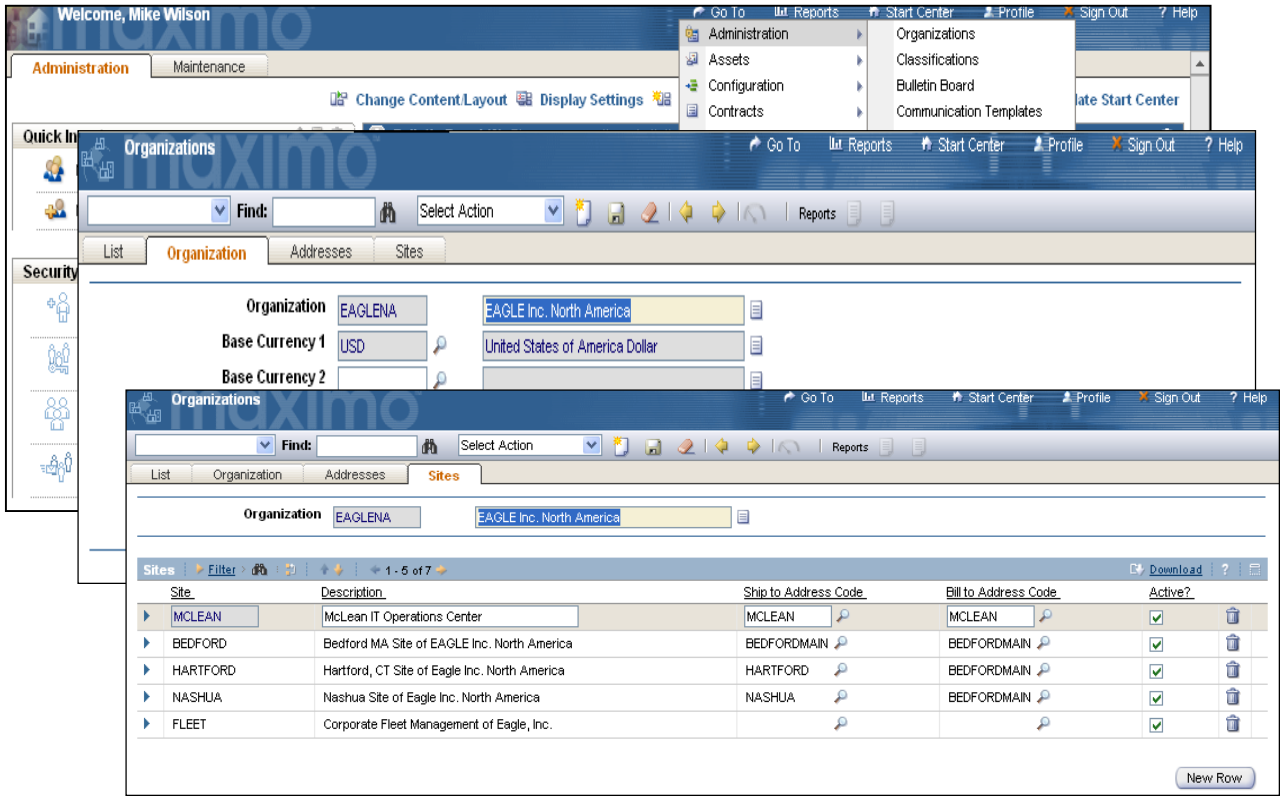
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The Organizations Application continued

The Organizations Application

After an analysis is done of your company and the organization and site structure is determined, you can set up your sites using the **Organizations** application. The Organizations application lets you enter, modify, and configure options for organizations and sites.



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The Organizations Application continued

Organizations Application Tabs

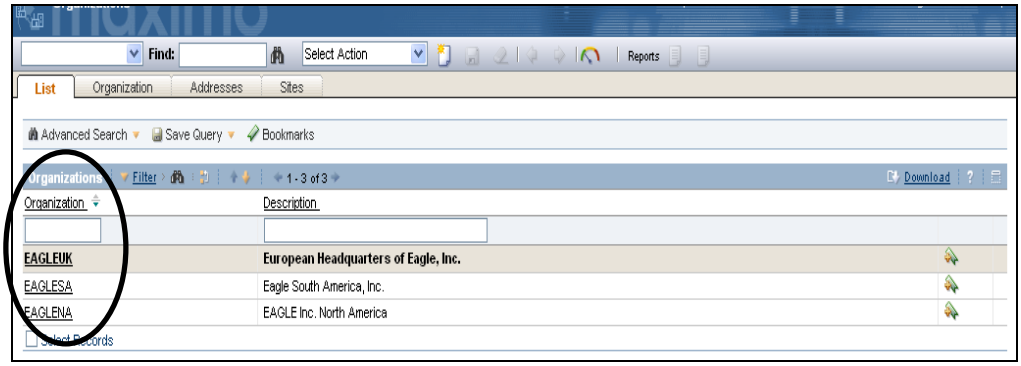
The Organizations application has four tabs:



Use this tab…	To…
List	Perform criterion-based searches for records.
Organization	Define new organizations or modify existing ones.
Addresses	Specify shipping and billing addresses at the organizational level.
Sites	Define new sites or modify existing ones.

Organization Lists

You can view the organization lists from the Organization List tab.



From the list, you can see that you have access to three organizations: EAGLEUK, EAGLESA, and EAGLENA.

Organizations can be composed of different *sites, users,* and *user groups* where Maximo applications can be applied.

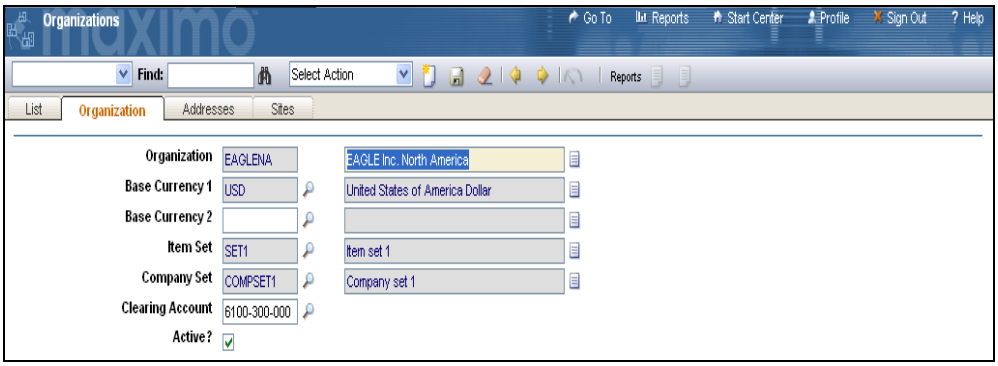
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The Organizations Application continued

Organization Tab

You can add, modify, inactivate, or enable organizations from the **Organization** tab.



The Organization tab contains the following fields:

- Organization ID
- Description
- Base Currency 1
- Base Currency 2
- Item Set
- Company Set
- Clearing Account
- Active? (check box)

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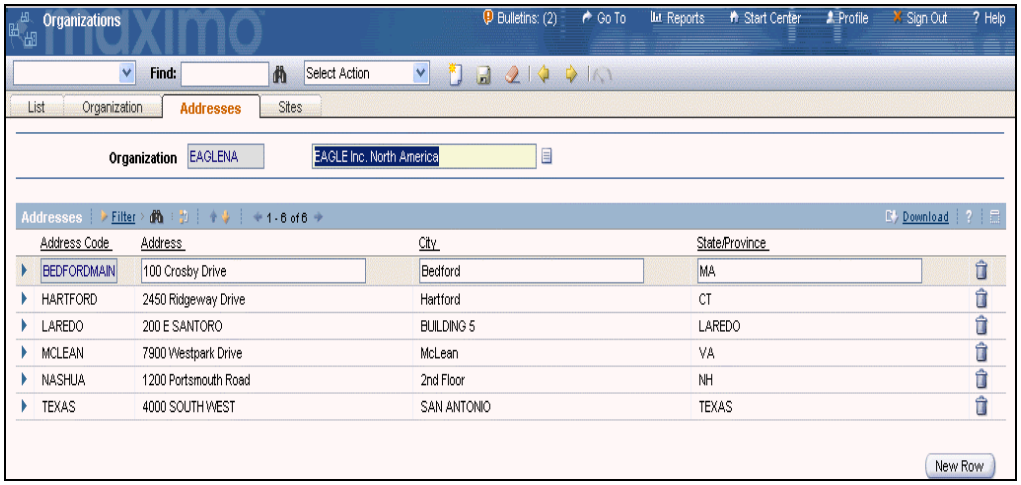
The Organizations Application continued

Address Tab

Addresses for sites and the Bill To and Ship To information for POs come from the **Address** tab.

The Address tab has two sections:

- One shows the list of addresses that are currently defined under the selected organization.
- The other section is an expanded address that displays the table row details, which is used for editing and adding address information.



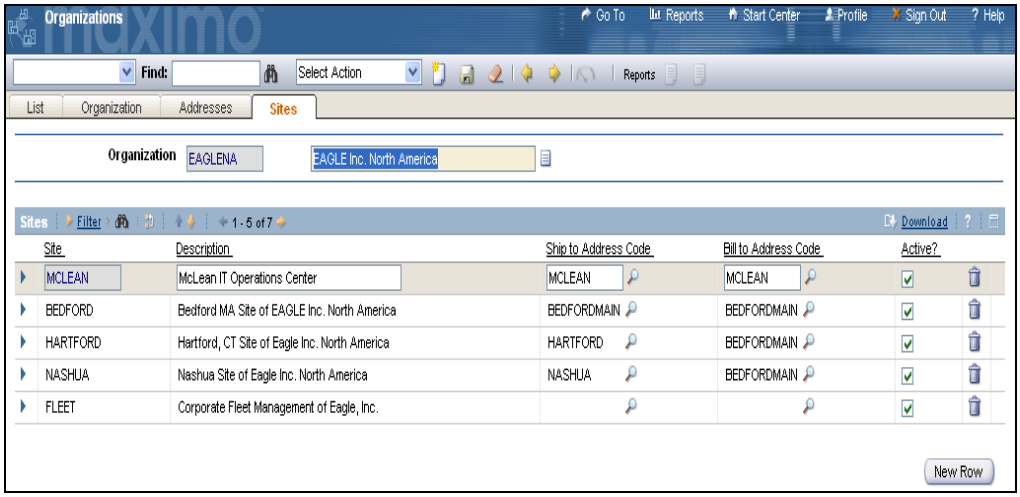
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The Organizations Application continued

Sites Tab

The **Sites** tab is used to define sites within an organization.



The **Sites** tab has two sections:

- The first section shows the list of sites that are currently defined under the selected organizations.
- The other section is an expanded site record that displays the row details that can be used for editing or adding new sites.

Deleting a Site

As with an organization, you can also delete a site.

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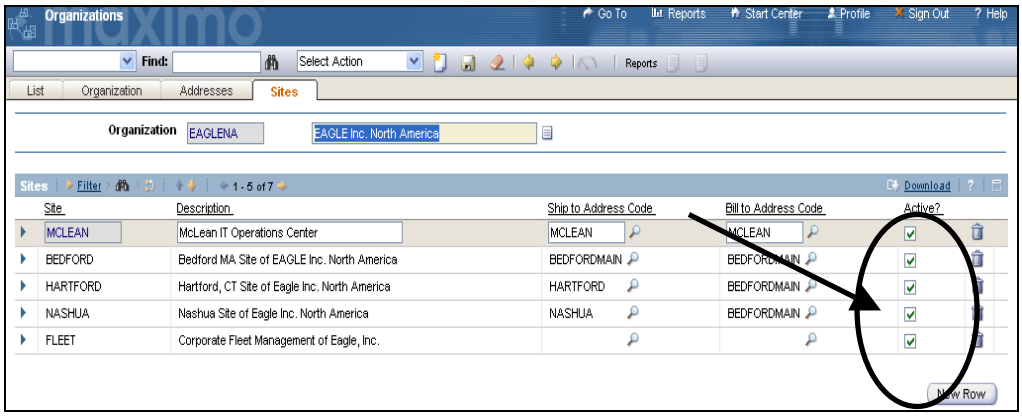
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The Organizations Application continued

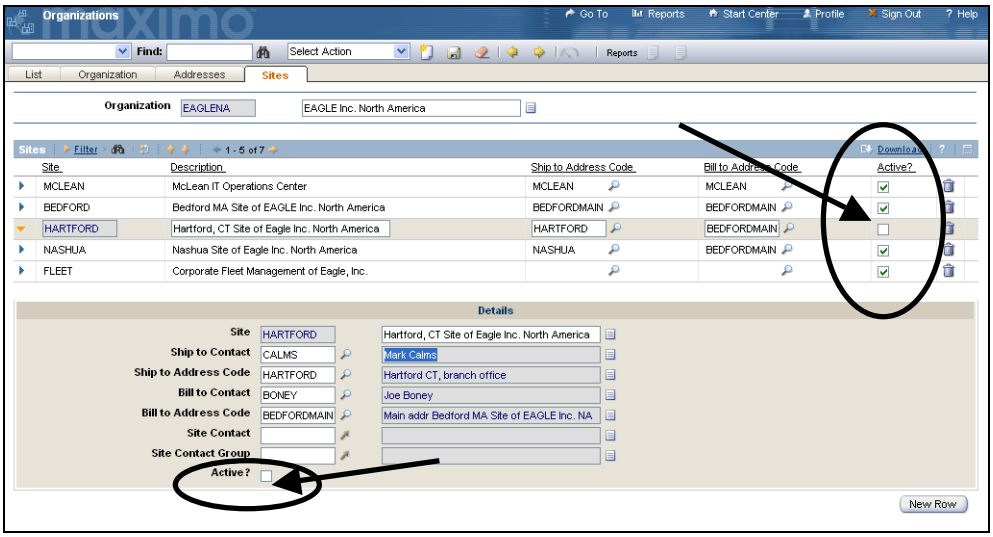
How Do I Inactivate a Site?

If you want to keep an organization and some of its sites available but you want to inactivate one or more of its other sites, do the following:

1. From the **Sites** tab, select the line for the site to be inactivated.
2. Uncheck the **Active?** check box.
3. Click the **Save** icon.



Note: After inactivating a site, the **Active?** column on the inactive site is cleared, as shown below. This allows you to view, at a glance, which sites in an organization are active and which are inactive.



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Organizations Application Options

Introduction

This section gives an overview of application setup options available at the organization and site levels. More detailed use of these options is covered in subsequent chapters.

Select Action Menu

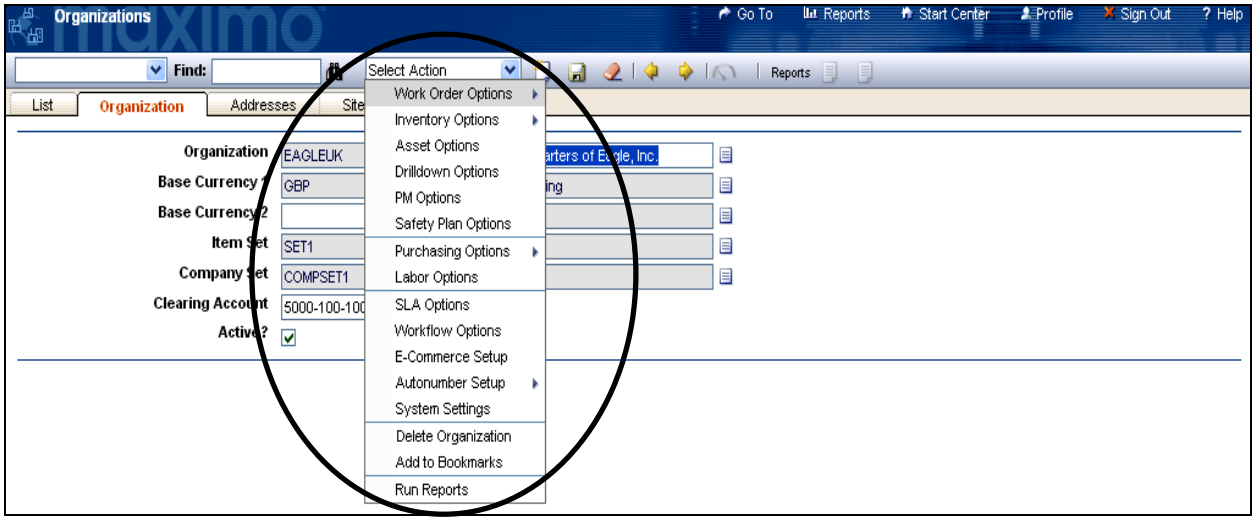
The **Select Action** menu enables you to carry out a number of functions, including:

- changing/configuring application options
- setting SLA options
- setting up E-Commerce and Autonumber
- deleting organizations
- running reports
- adding bookmarks



The **Select Action** menu is not fully available while you are on the **List** tab.

Note: Options for various applications will be covered in more detail in the application chapters later in this course.



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Organizations Application Options continued

Keep in Mind



When setting organization-level options, keep in mind the following considerations:

- Options defined at the organization level apply to all sites within that organization.
- Sites within the same organization can share data, whereas sites in different organizations cannot unless they belong to the same *set*.

Organization-Level Settings

The following application options contain organization-level settings:

- Inventory Options
- Work Order Options
- Assets Options
- PO Options
- Invoice Options
- Labor Options
- SLA Options
- Drilldown
- Preventive Maintenance
- Safety Plans
- Workflow
- E-Commerce
- Autonumber

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Organizations Application Options continued

Description of Organization-level Options

The following table describes options available at the organization level. Remember, options set at the organization level will pertain to all of the organization's sites.

This organization-level option…	Allows you to…
Work Order	• Define, edit, add new work types, or modify existing work. • Specify edit rules to specify which work order properties can be edited for a given work order. • Display dialog boxes and work order prompts. • Set actual start dates.
Inventory	• Configure inventory orders. • Set ABC breakpoint options, negative availability, and negative current balances. • Specify whether Maximo creates an approved or unapproved purchase requisition (PR) or purchase order (PO) when a reorder request is generated.
Assets	• Determine which asset status changes to record and set the default meter reading weight factor. • Determine whether the drilldown for the Assets field opens to the Asset hierarchy or the Location hierarchy.

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Organizations Application Options continued

Description of Organization-level Options continued

This organization-level option…	Allows you to…
PO	• Require users to get approval to convert PRs to POs. • Have Maximo change the PR status to CLOSED automatically after all PR lines have been copied to POs. • Have Maximo add standard service costs to direct-issue items only. • Have Maximo create an approved PO automatically from an agreement type PO when the PR is approved. • Have Maximo automatically close POs on Invoice approval.
Invoice	• Set tolerances by user group for how closely an invoice must match a PO to be accepted in automatic invoice matching. • Set the upper and lower amounts and percentages columns, and enter the amounts and/or percentages by which an invoice and PO can differ and still be matched. • Set variance limits for tax charges.
Labor	• Automatically approve inside and/or outside labor. • Indicate whether outside labor will require a PO by default.
SLA	Set single or multiple service level agreements.
Autonumber	Set Autonumber for system-, organization-, set-, and site-level settings.

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Organizations Application Options continued

Keep In Mind



When setting site options, keep in mind the following considerations:

- Certain data options are set individually from site to site.
- Settings for one site do not affect data in other sites, even if they belong to the same organization.

Site-level Settings

Site-level data options can be set up for some data types, including:

- Inventory Options
- Work Order Options
- Workflow Options
- PM Options
- E-commerce

Description of Site-level Options

The following table describes the options available at the site level. Remember, options set at the site level are set individually and settings for one site do not affect data in others sites.

This site-level option…	Allows you to…
Work Order	• Set site-level work order task ID numbering. • Generate work orders without running Maximo, using the WOGEN cron task.
Inventory	Specify the default issue and order costs you want Maximo to use.
Workflow	Specify whether Maximo will automatically enter records into Workflow when they are created.
PM	• Have Maximo evaluate the selected records to determine which PMs are due to generate work orders. • Generate work orders for the selected master PMs (and children if applicable) and PMs that are not master PMs.

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Sharing Data Across the Organization

Introduction

Maximo uses the concept of sets to help organizations share data among themselves.

Sets are groupings of information that a number of organizations can mutually see and access, thereby allowing these organizations to share the data in the sets.

This section will explain this sets concept, which affects quite a few aspects of Maximo.

Types of Sets

There are two types of sets used in Maximo:

- *Item* sets for assets
- *Company* sets for vendors and other external business entities with which organizations do business

Although there are two set *types* used, there can be multiple sets of each type, thereby allowing various organizations to share these sets among themselves.



Note: Each organization can use only one item set and company set, so only organizations that share these same sets can share data.

Sets 101

If two or more organizations share a set of items or companies, they can use the same data in their internal transactions and can share this same data among all the organizations that use it.

Note: Organizations do not have to share *both* items and companies. However, only the item and/or company sets that are mutually employed can be shared between organizations.

The following graphic might help you to better understand the sets concept.

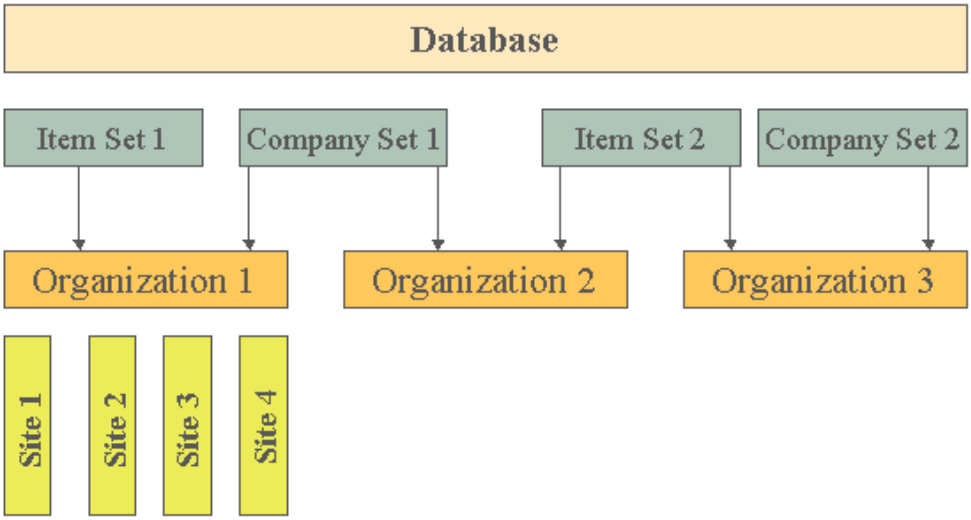
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Sharing Data Across the Organization continued

Graphical Overview

The diagram below shows the interrelationships between database, sets, organizations, and sites.



Follow these bullets to interpret the diagram above:

- Item sets are created at the system (database) level using the Sets application.
- As items are added to inventory or vendors are added within Maximo, they are associated with a set.
- As organizations are created, they must be associated with an item and company set.
- Organizations that share sets of items and vendors can share assets and vendor-related transactions with each other.
- Sites within these mutual organizations can, as a result, share information in the sets.

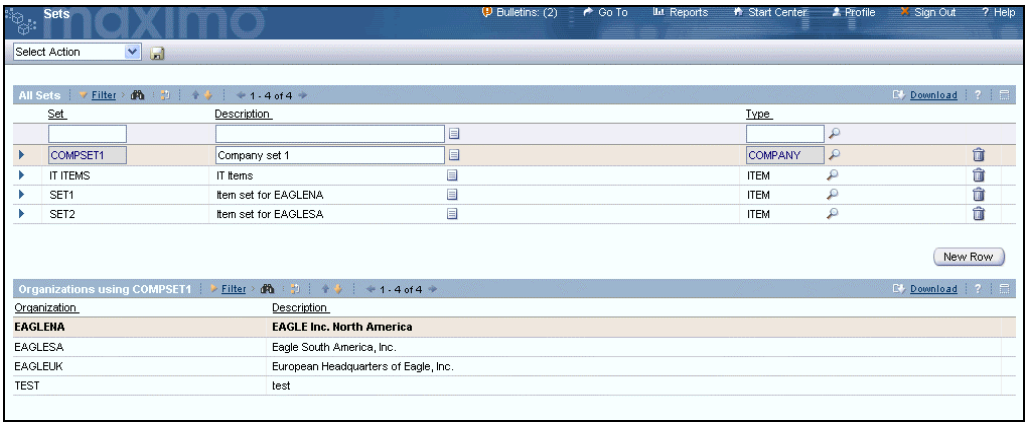
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The Sets Application

Introduction

You use the Sets application to create a framework for sharing item and company (vendor) data across multiple organizations.

Maximo stores both item and company master records in sets. These sets exist above the organization level so that organizations can share the same data.



Sets and Organizations

The following relationships apply to sets and organizations:

- You can create as many item and company sets as your business practices require.
- You *must* associate each organization with one, *and only one*, company set.
- You *must* associate each organization with one, *and only one*, item set.
- The same item or company set can by used by multiple organizations.



Note: You must create at least one item set and one company set before you can create *any* organization.

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The Sets Application continued

Applications That Use Sets

The following Maximo applications use set-related data:

- Item Master
- Tools
- Company Master
- Master PM
- Job Plans

As we move through the course and interact with some of the applications, you will see how sets play a role.

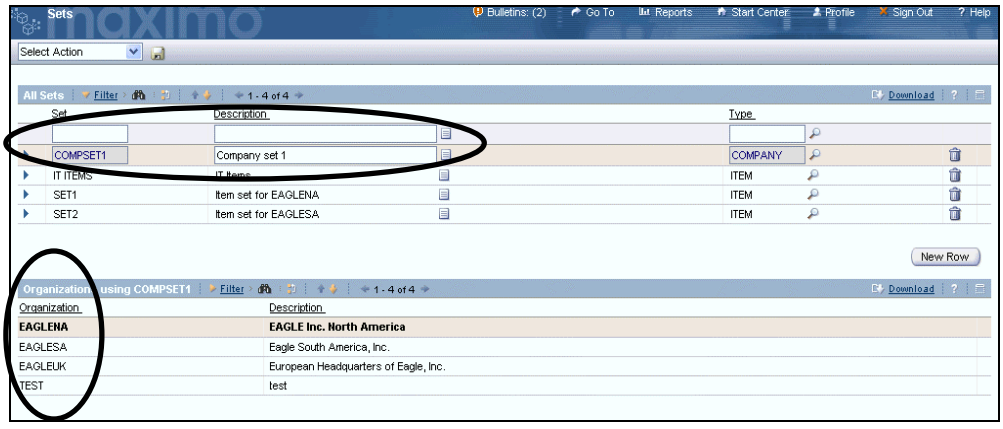
Walking Through Some Applications

Walking through a few applications will provide yet another way to show you how sets work. Let's start with the Sets application.

The Sets Application

Access the **Sets** application from the Administration module.

Click through the listed sets on the screen to see which organizations are associated with them.





The sets do not inherently contain any items or vendors. They are just indicators. You create the sets in this application and put items and vendors into the sets using other applications.

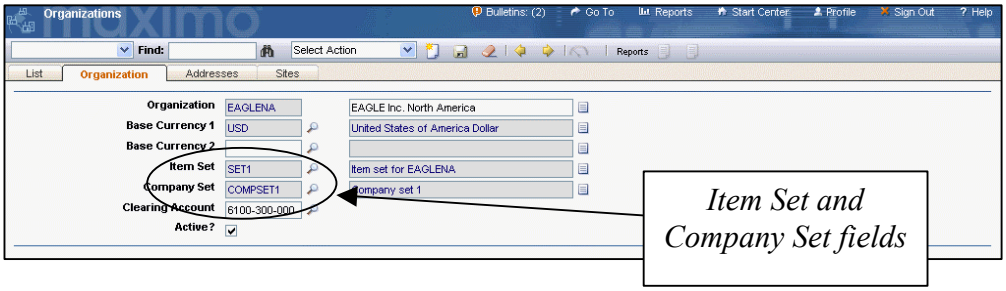
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The Sets Application continued

Sets and the Organizations Application

Access the **Organizations** application from the Administration module. Select an organization from the list and view the Organization tab.



Using the Item Set and Company Set fields, you associate organizations with sets of items and companies. If you check the Sets application, you will see a list of associated organizations for each set.

Organizations that use the same set of items or companies can use these resources among themselves.

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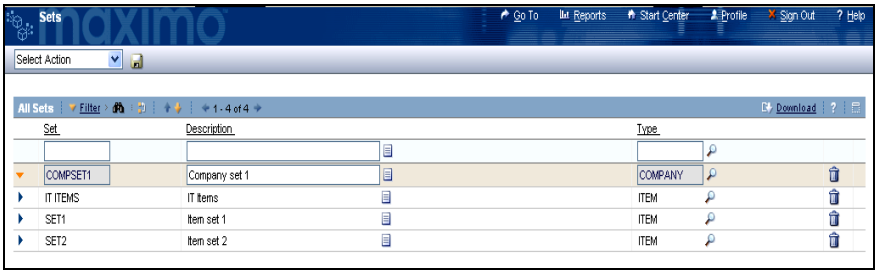
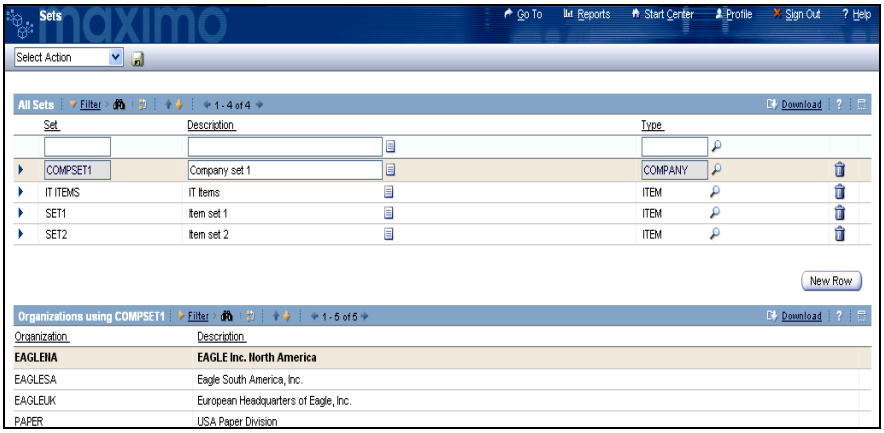
The Sets Application continued

Accessing the Sets Application



You can use the **Sets** application to view which organizations share the same item and company sets or to create new sets.

Organizations with the same item or company sets can share data between the organization and site levels.

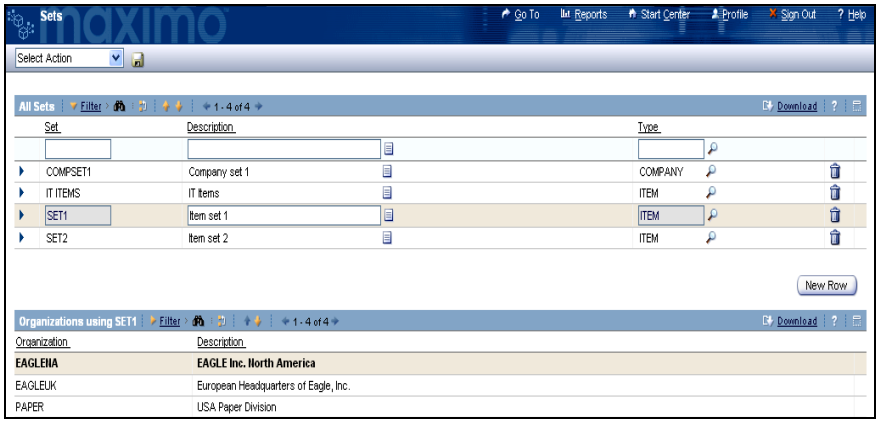
Step	Action
1	Access the **Sets** application from the **Administration** module. Result: The Sets application opens as shown below: 
2	Click on **COMPSET1** to view the organizations using COMPSET1. Result: Maximo displays the organizations using COMPSET1:  Note: The organization that you will create in the following exercise will use the COMPSET1 company set.

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The Sets Application continued

Accessing the Sets Application continued

Step	Action
3	Click on **SET1** to view the organizations using SET1. Result: Maximo displays the organizations using SET1:  Note: The organization that you will create in the following exercise will use the SET1 item set.

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Setting Up Organizations and Sites

Introduction

In planning a multisite implementation, you must examine your business model and decide how to logically divide your company's locations and divisions into Maximo sites and organizations.

Example 1: At first glance you might decide to designate your Texas plant as an organization, with its four buildings as sites.

Upon closer inspection, you might find that the four different buildings all share certain operations, storerooms, and personnel. It might be more efficient, therefore, to consider all four buildings collectively as a site.

Example 2: You might have a plant in America and another in Brazil that operate essentially the same and produce the same material.

It might seem ideal to consider both locations as sites in the same organization. However, differences in currency and tax codes make it easier to treat each location as a different organization.

Implementation Note



When setting up your organizations and sites, it is important that you give them identification codes and descriptions that will be easily recognizable to users. Identification conventions need to be established before setting up Multisite.

Exercise

This exercise has you set up Multisite for the XYZ Paper Company's (org) Paper division and its two plants (sites):

- Each plant is located in a different state within the United States.
- One site is in Indiana and uses the same billing and shipping information as the organization.
- The other site is in Maine and requires different shipping information, but uses the same billing information.



Note: We are adding an organization and site into the system where other organizations and sites have already been added.

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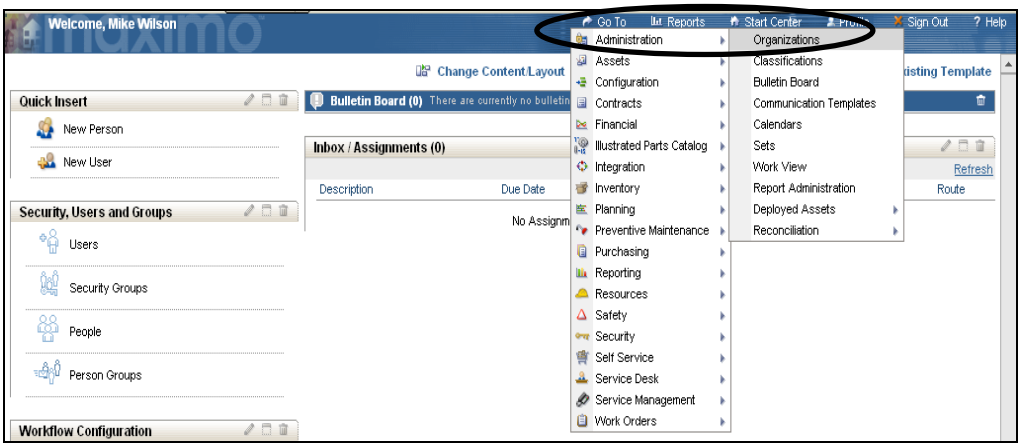
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Setting Up Organizations and Sites continued

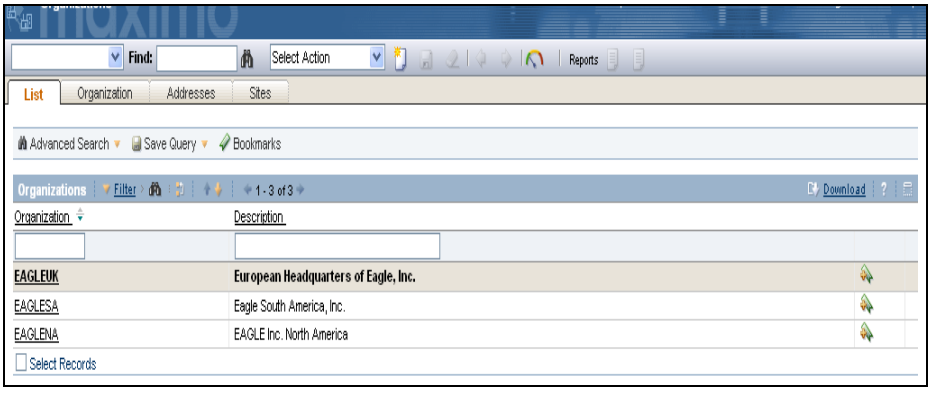
Adding an Organization



You access the **Organizations** application from the **Administration** module in the Maximo **Start Center**.



Note: The following exercise assumes that sets records have previously been created in Maximo.

Step	Action
1	Access Maximo with the following information: • **User:** wilson • **Password:** wilson Note: The password is case sensitive.
2	Open the **Administration** module and select **Organizations**. Result: The Organizations application opens to the List page. 

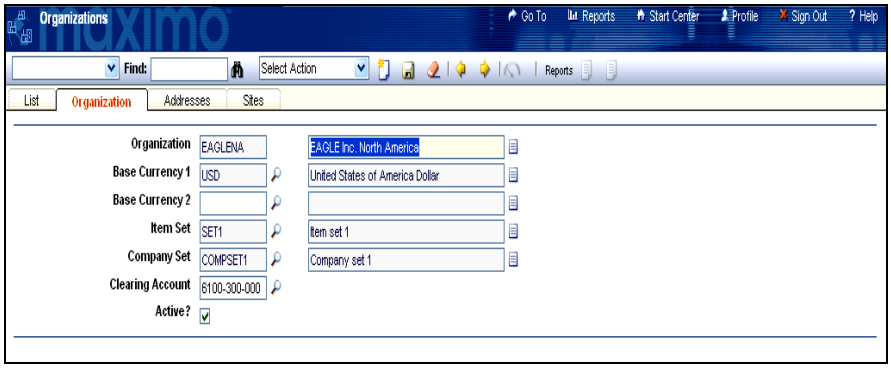
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Setting Up Organizations and Sites continued

Adding an Organization

continued

Step	Action
3	Click on the **Organization** tab. Result: Maximo displays the Organization tab, as shown below. 
4	Click the **New Organization** icon.  Result: A blank new organization form displays, ready for your input. 

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Setting Up Organizations and Sites continued

Adding an Organization continued

Step	Action
5	Enter the following information for the new organization: **Field** — **Value** **Organization** — PAPER **Organization Description** — USA Paper Division **Base Currency 1** — USD **Base Currency 2** — CAD **Item Set** — SET1 **Company Set** — COMPSET1 **Clearing Account** — (*Leave blank for now*) **Active?** — *(Unchecked)* Hint: Use the **Select Value** button to enter the data. Notes: • This exercise assumes that sets records have previously been created in Maximo. • Maximo will require a *GL clearing account* to be activated before you can activate a new organization. Consult your instructor for more details.

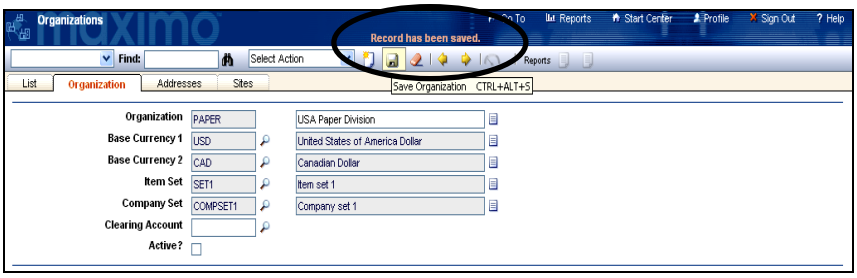
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Setting Up Organizations and Sites continued

Adding an Organization

continued

Step	Action
6	Click the **Save** icon.  Result: The new organization is saved into the database. 

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Setting Up Organizations and Sites continued

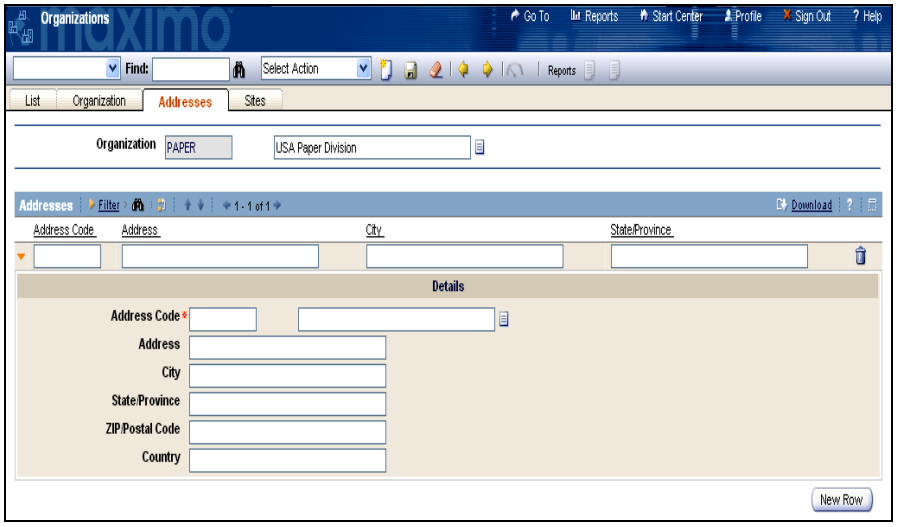
Adding Address Information



After adding an organization to the database, you must add address information. Specify shipping and billing addresses at the organizational level.

The sites attached to the organization will use these addresses for their POs and other relevant documents.

To include these key addresses, follow the steps below:

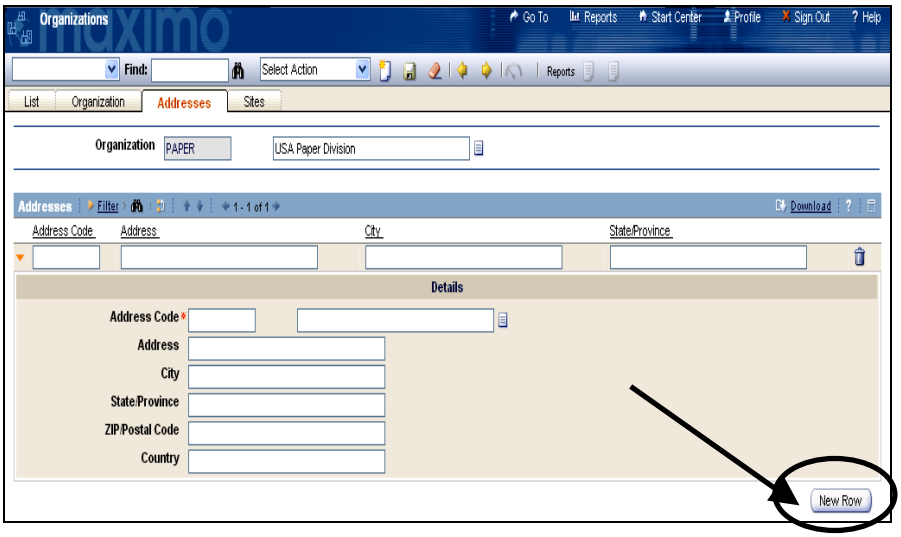
Step	Action
1	Click on the **Addresses** tab. Result: Maximo displays the Addresses tab, as shown below. 

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Setting Up Organizations and Sites continued

Adding Address Information continued

Step	Action
2	Click the **New Row** button to access the input form for the new address. Result: Maximo displays the Address tab, as shown below. 
3	Enter the following shipping address information: **Field** — **Value** **Address Code** — PAINSH **Description** — Paper Div - IN Shipping **Address** — 2398 Emerald Drive **City** — Kensington **State/Province** — IN **Zip/Mail Code** — 46219 **Country** — USA

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Setting Up Organizations and Sites continued

Adding Address Information continued

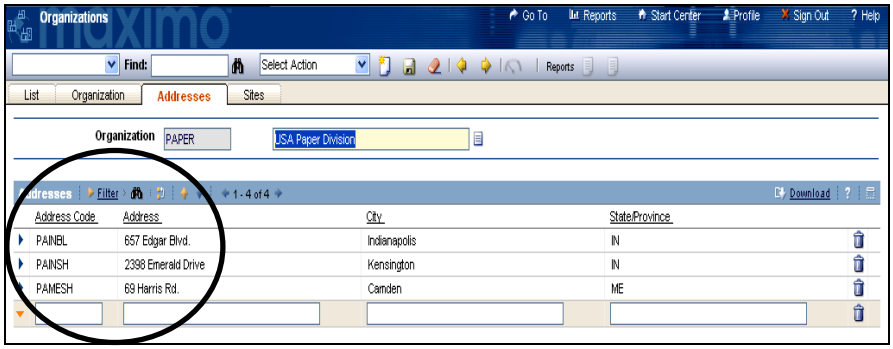
Step	Action
4	Click the **New Row** button. Result: The new address will be stored, and a cleared form becomes available for an additional new address.
5	Enter the following additional new address for billing information. **Field** — **Value** **Address Code** — PAINBL **Description** — Paper Div – Billing **Address** — 657 Edgar Blvd. **City** — Indianapolis **State/Province** — IN **Zip/Mail Code** — 46216 **Country** — USA
6	For the Maine site, enter the following for shipping: **Field** — **Value** **Address Code** — PAMESH **Description** — Paper Div – ME Shipping **Address** — 69 Harris Rd. **City** — Camden **State/Province** — ME **Zip/Mail Code** — 02150 **Country** — USA

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Setting Up Organizations and Sites continued

Adding Address Information continued

Step	Action
7	Click the **Save** icon. Result: You now have three addresses within the PAPER organization from which to choose when setting up sites. 

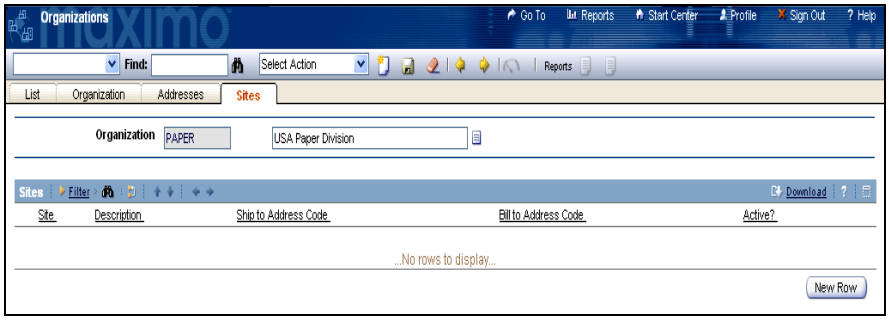
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Setting Up Organizations and Sites continued

Adding Sites

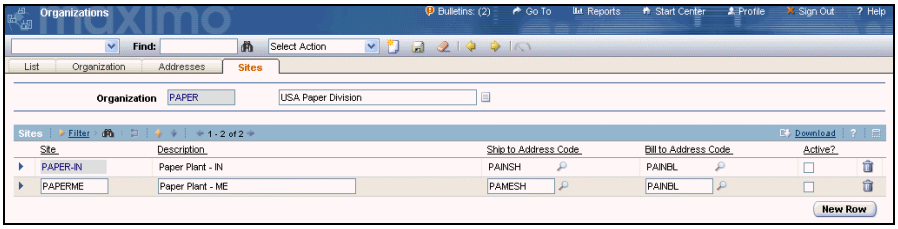
To add site information, follow the steps below:

Step	Action
1	Access the **Sites** tab by clicking its label. Result: Maximo displays the Sites tab, as shown below. 
2	Click the **New Row** button and enter the following information to create an Indiana site: **Field** — **Value** **Site** — PAPER-IN **Description** — Paper Plant - IN **Ship To Address Code** — PAINSH **Bill To Address Code** — PAINBL Hint: You can use the Select Value icon for the last two fields, if you want.
3	**Save** the record. Result: You now have created a site record for the Indiana paper plant.

continued on next page

Setting Up Organizations and Sites continued

Adding Sites continued

Step	Action
4	Create a site for the paper plant in Maine. Use the following information: **Field** **Value** **Ship To Address Code** PAMESH **Bill To Address Code** PAINBL Note: Use the same Sets information as used for the Indiana plant. Result: Two sites have been added to the Paper Division: Indiana and Maine. 

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Setting Up Organizations and Sites continued

Class Discussion



Sweet Stuff, Inc. has two operations approximately 20 miles apart under its Massachusetts (MA) division: one in Waltham (WM), and another in Peabody (PB). WM has two warehouses and PB has one.

Two separate engineers maintain the assets at WM and PB independently. However, one branch (WM) handles procurement inventory requirements for both operations because their assets are similar.

By setting up the WM and PB branches as separate sites, what does this allow them to do regarding:

- Inventory management?
- Procurement?
- Other benefits?

Discussion Considerations



While the solutions/considerations offered below are not the only ones, they can serve to facilitate discussion in the class.

Setting up the WM and PB branches as separate sites allows the following:

- Regarding inventory management
  Setting up MA as an organization and WM and PB as sites will allow those sites to view each other's warehouses. This enables the sharing of inventory and allows inventory levels at each site to be lowered, which will reduce costs.

- Regarding procurement
  With one site handling the procurement, orders for the two sites are separate, but they can use the same purchase agreement to buy parts; this results in a volume discount.

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GL Account and Organization/Site Activation

Introduction

As we discussed earlier, when you create a new organization in the system, it is not yet activated. You cannot activate it until you:

- Specify GL account formats
- Create GL accounts

Section Focus

This section is a *brief* overview of formatting and creating GL account data. For more in-depth information on this topic, please refer to the *System Administrator's Guide* or the *Finance Manager's Guide*.

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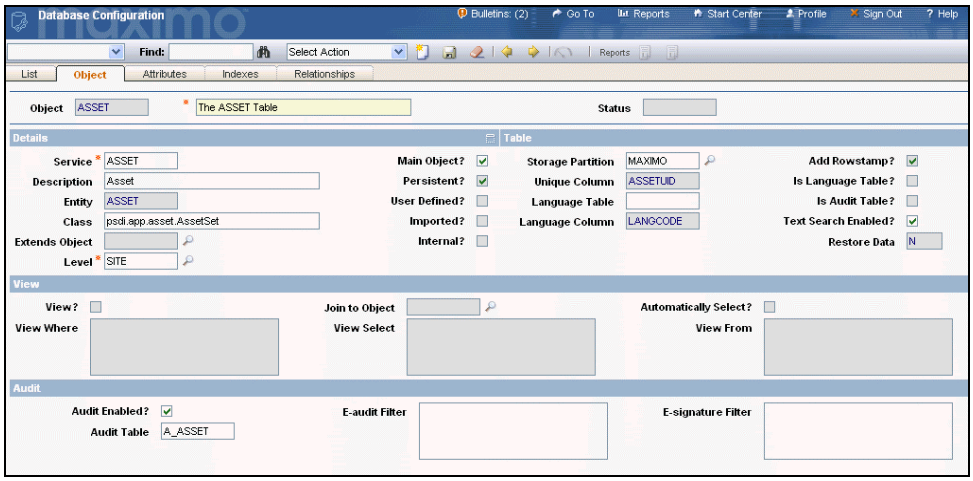
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GL Account and Organization/Site Activation continued

GL Account Configuration

You use the **Database Configuration** application to create and specify GL accounts, and to create or modify the objects and attributes used by Maximo applications. This can include:

- Changing column definitions
- Attaching domains to columns
- Creating new user defined objects
- Adding new columns to existing objects
- Creating and dropping indexes
- Creating views to look at data from a single or multiple objects
- Specifying GL account formats
- Setting the amount field format
- Updating statistics on indexes to improve database performance
- Configuring Maximo with multiple languages
- Setting up electronic signatures and electronic audit records



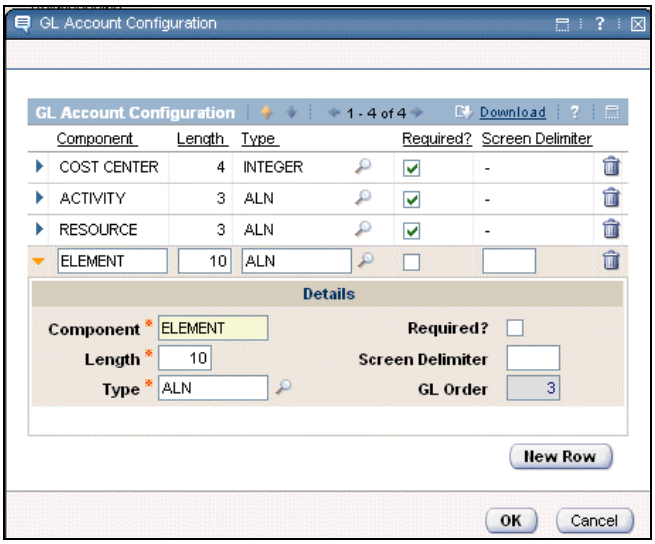
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GL Account and Organization/Site Activation continued

Account Components

Each general ledger account code consists of a number of distinct components (also called *segments*). In Database Configuration, you define the account code format using the **GL Account Configuration** Select Action.



Account Code

For any account code, you can:

- Define up to 20 components.
- Include a total of up to 254 characters/digits, not including delimiters (unless you choose to include the delimiters as part of the account code).

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GL Account and Organization/Site Activation continued

Implementation Consideration



When specifying your GL accounts, use delimiters to separate components when they are displayed on the screen. For example, you might use hyphens to separate components: 6100-400-SAF.

Note: By default, Maximo writes account strings to the database in a concatenated format, without delimiters.

GL Order and Component Sequence

The order of the GL Account components is displayed in a sequential format, with the leftmost component in the string representing the highest level. For example, in the MAXDEMO database, four component levels are defined:

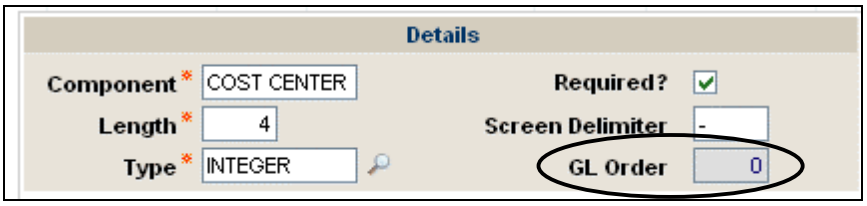
Component 1 = Cost Center

Component 2 = Activity

Component 3 = Resource

Component 4 = Element

The **GL Order** field indicates component sequence. When entering the GL Order, start with 0 to represent the highest level.



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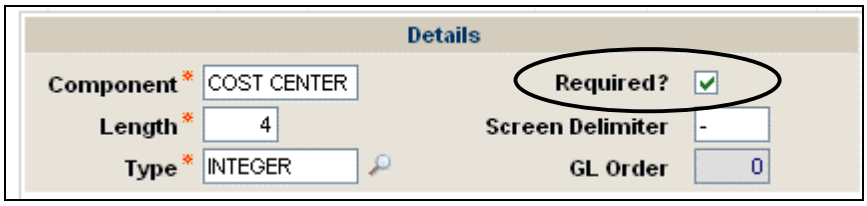
GL Account and Organization/Site Activation continued

Required Field

Within an account code, a component might be required or optional, but optional components must come at the end of the sequence.

For example, you cannot have the second component optional and the third component required. If you do, you will receive an error message when you save.

To indicate that the component is required, select the **Required?** field.



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GL Account and Organization/Site Activation continued

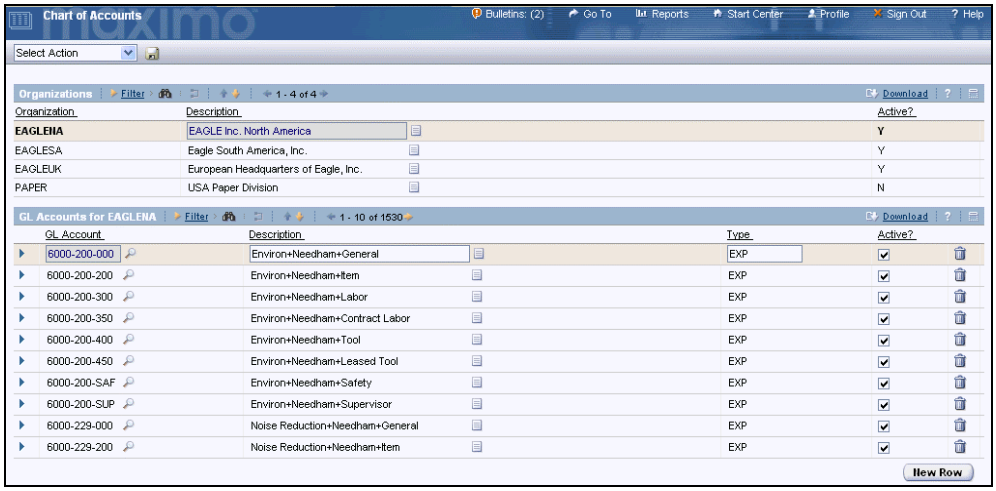
GL Accounts and Organizations

Maximo stores GL accounts at the organization level. Therefore, each organization must have its own chart of accounts system, and GL accounts cannot be shared across organizations.

Chart of Accounts

In Chart of Accounts, you specify which components are valid for use in Maximo. You use the **Chart of Accounts** application to:

- Create, view, and modify general ledger account codes and components.
- Set up financial periods.
- Set up a number of default GL accounts, including an organization account, company-related accounts, and external labor control accounts.
- Define resource codes.
- Specify GL validation options.



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GL Account and Organization/Site Activation continued

Reminder: Minimum Requirements



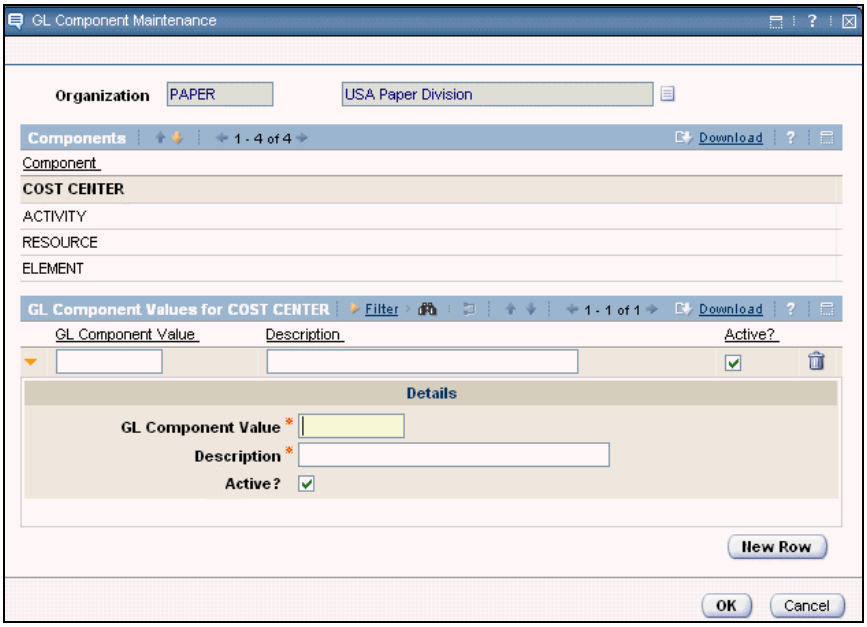
As we discussed, an organization must have a GL clearing account before you can make it active.

Therefore, after you create an organization you must, at a minimum, have one Chart of Accounts to create a clearing account for the organization. You can create or download other accounts as well.

Defining the GL Component Code

Before you can create the GL account codes for an organization, you have to define them for the organization.

You access the **GL Component Maintenance** dialog box from the **Select Action** menu to enter and edit component codes.



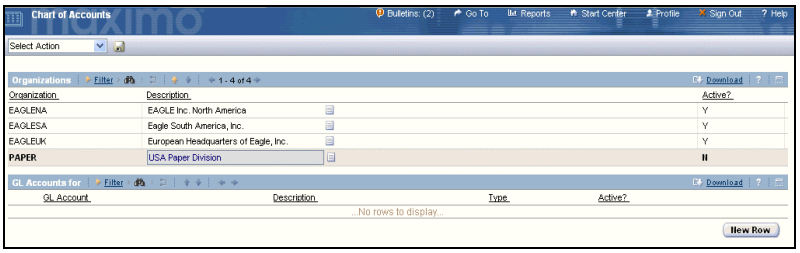
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GL Account and Organization/Site Activation continued

Defining GL Account Components

Follow the steps below to define the components codes for the PAPER organization.

Step	Action
1	From the **Financial** module, select the **Chart of Accounts** application.
2	From the organizations list in the Chart of Accounts application, click on the **PAPER** organization. Result: The Paper organization is highlighted and the **GL Accounts for** table window should not contain GL accounts. 

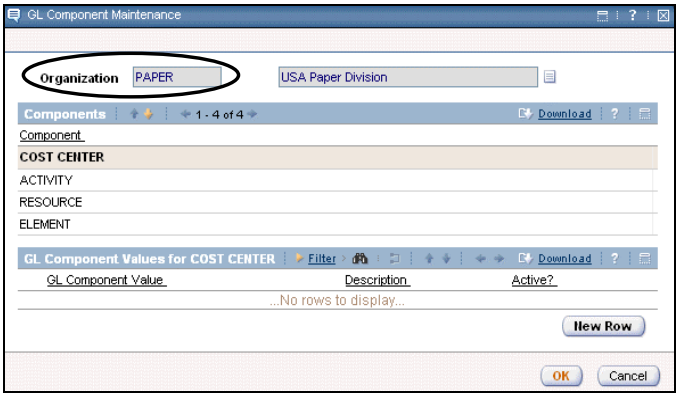
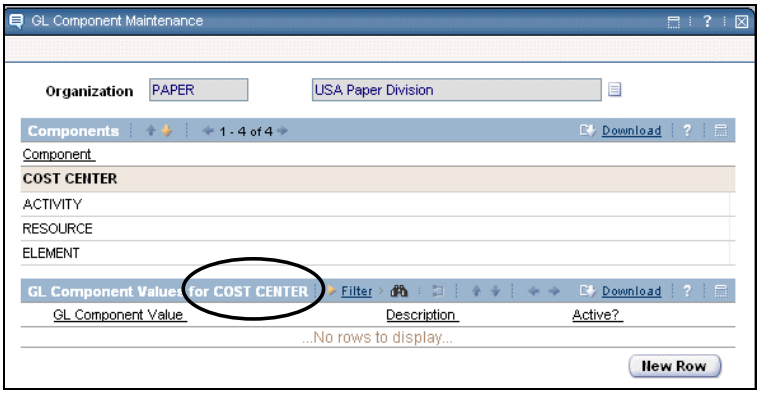
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GL Account and Organization/Site Activation continued

Defining GL Account Components

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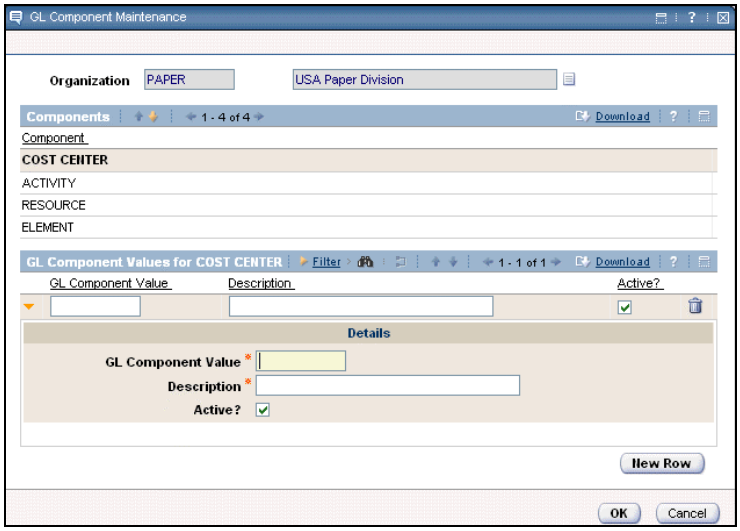
Step	Action
3	From the **Select Actions** menu, select **GL Component Maintenance**. Result: The GL Component Maintenance dialog box opens. The Components table window lists the names of the components in the selected organization, PAPER. 
4	In the **Components** table window, click on the **COST CENTER** component. Result: The **GL Component Values for** table window indicates the COST CENTER component. 

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GL Account and Organization/Site Activation continued

Defining GL Account Components continued

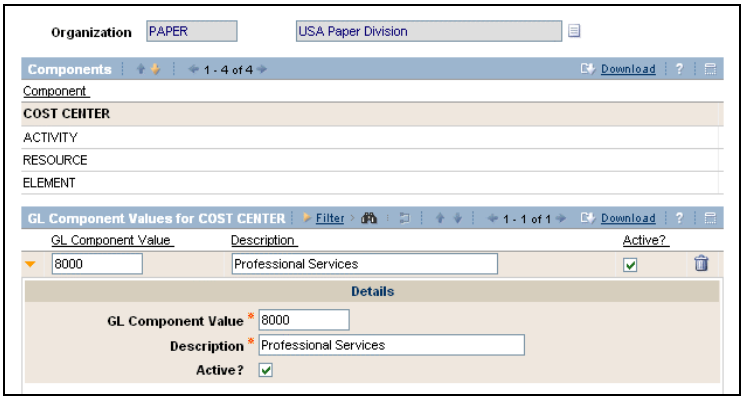
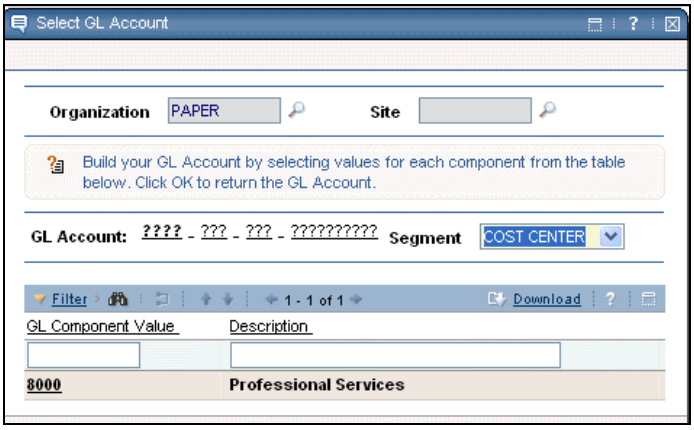
Step	Action
5	Click **New Row**. Result: The Details section opens. 

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GL Account and Organization/Site Activation continued

Defining GL Account Components

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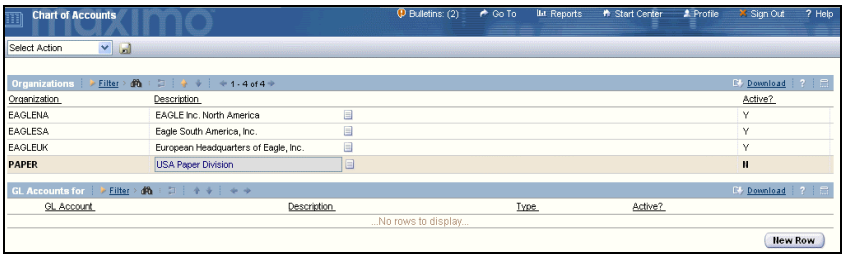
Step	Action
6	Enter 8000 in the **GL Component Value** field and enter Professional Services in the **Description** field. Note: Remember you formatted the GL account codes using the GL Account Configuration action in Database Configuration.  The **Active?** check box is selected by default. Users will be able to select this component value when they use the **Select GL Account** dialog box.  To make the component value inactive, clear the **Active?** check box. The value will not appear in the **Select GL Account** dialog box.

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GL Account and Organization/Site Activation continued

Defining GL Account Components continued

Step	Action
7	Highlight the **ACTIVITY** component. In the **GL Component Value** field, enter 100. In the **Description** field, enter Education.
8	Highlight the **RESOURCE** component. In the **GL Component Value** field, enter 001. In the **Description** field, enter General.
9	Click **OK**. Result: You are brought back to the Chart of Accounts screen. 

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GL Account and Organization/Site Activation continued

Creating GL Accounts

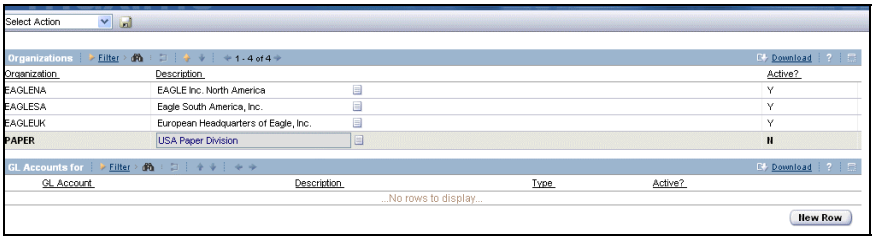
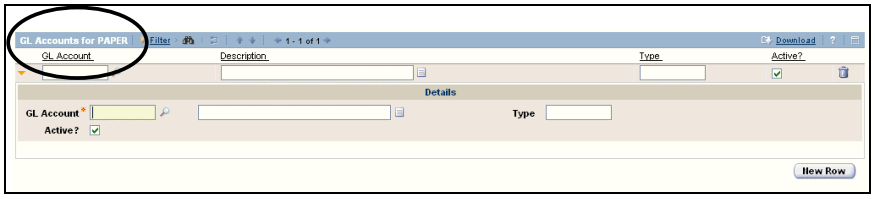
After the component codes are defined for an organization, you can create the GL accounts for the organization.

GL account codes are created by linking together the previously established component values.

Creating an Organization's GL Account



Follow the steps below to create a GL account for the PAPER organization.

Step	Action
1	In the **Organizations** table window, select the **PAPER** organization by clicking on it to highlight it. Result: The PAPER organization is highlighted. 
2	Click **New Row**. Result: The **GL Accounts for** table window indicates PAPER. 

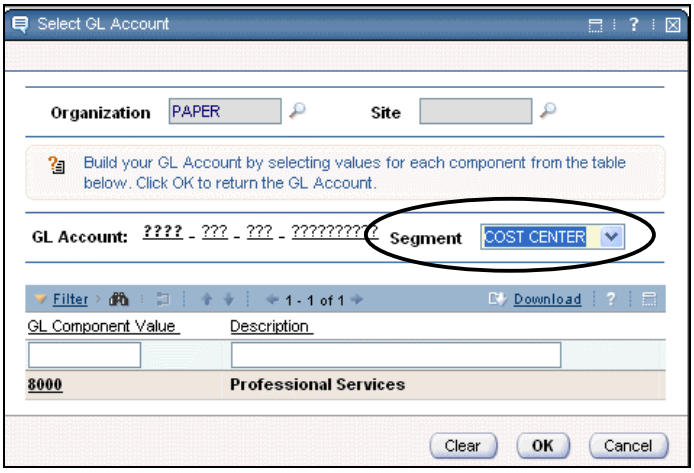
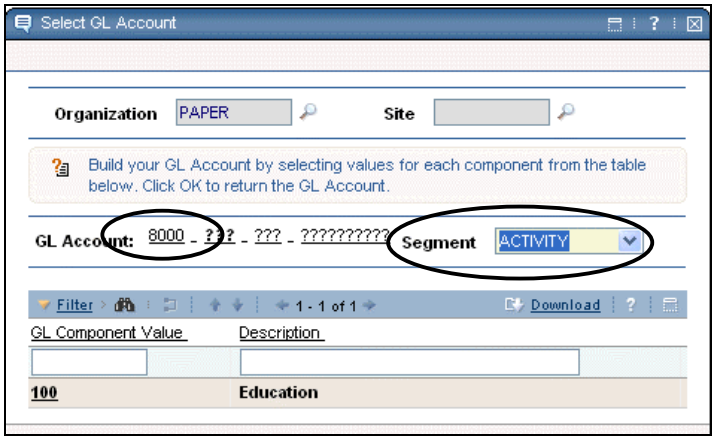
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GL Account and Organization/Site Activation continued

Creating an Organization's GL Account

continued

Step	Action
3	Click on the **GL Account** field **Detail** button. Result: The Select GL Account dialog box opens. Because we only defined one component code value (8000) for the COST CENTER segment, only one is displayed. 
4	Click on **8000**. Result: 8000 is the first segment and ACTIVITY now populates the Segment field. 

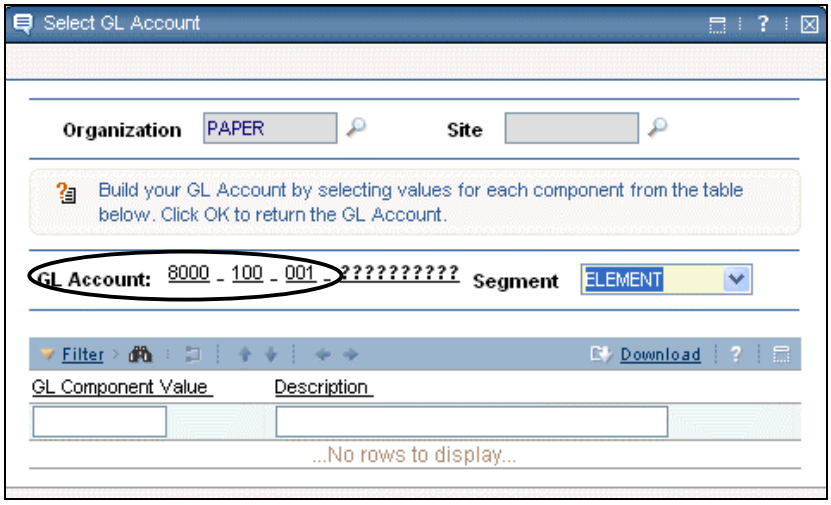
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GL Account and Organization/Site Activation continued

Creating an Organization's GL Account

continued

Step	Action
5	For each segment, enter the defined value. (Remember, there will be only one per component because that's all we entered.) Result: When finished, your GL account should look like the one below. 
6	Click on **OK**. Result: You are returned to the GL Account screen.
7	Save your changes.

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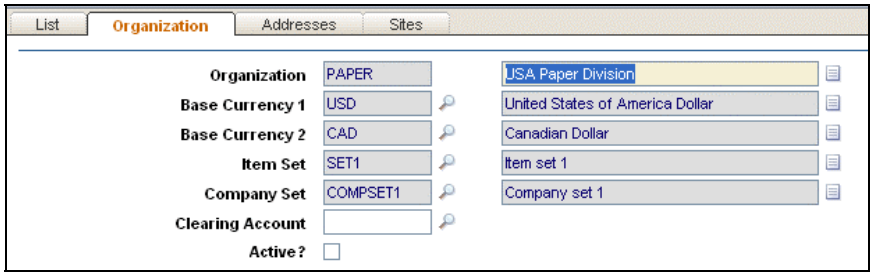
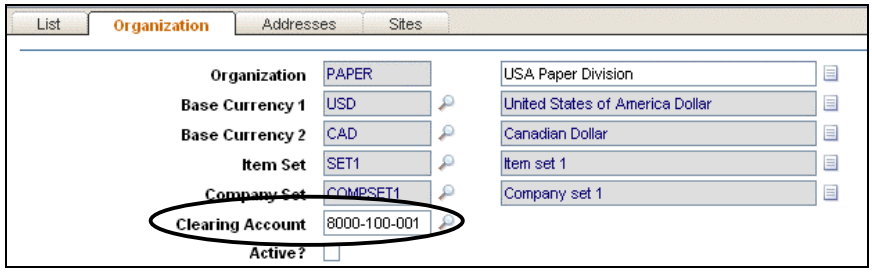
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GL Account and Organization/Site Activation continued

Activating the Organizations and Sites



After a GL account has been established for an organization, you can activate it. Follow the steps below to activate the PAPER organization.

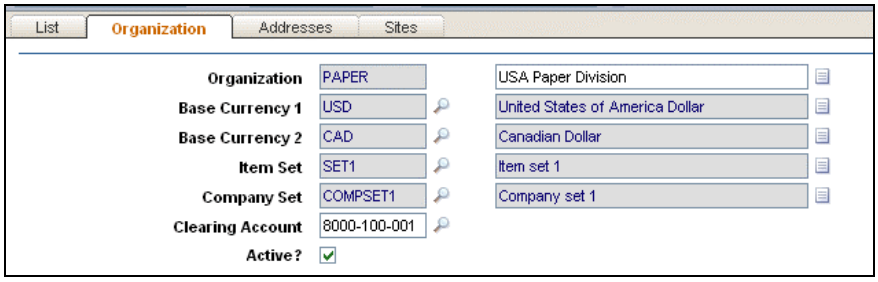
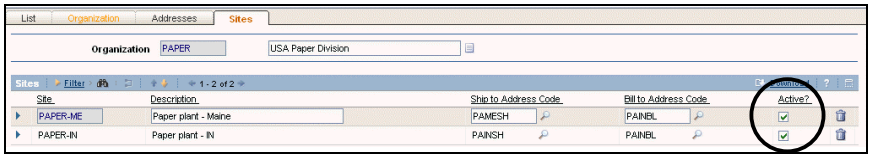
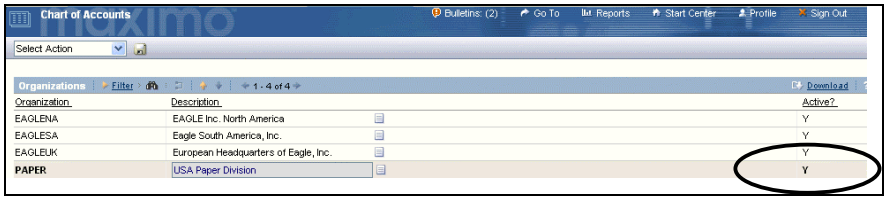
Step	Action
1	Go to the **Organizations** application.
2	Retrieve **PAPER**. Result: Your screen should look like the one below. Notice that PAPER is not activated. 
3	In the **Clearing Account** field, click on the **Details** button and select the GL account components for this organization. Hint: Remember, we defined and created only one component per segment. Result: Your screen should look like the one below. 

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GL Account and Organization/Site Activation continued

Activating the Organizations and Sites continued

Step	Action
4	To activate this organization, click on the **Active?** field and then **Save** the record. Result: Your screen should look like the one below. 
5	To activate the sites, click on the **Sites** tab, select the **Maine** and **Indiana** sites by clicking on the **Active?** field, and then **Save** your record. Result: Your screen should look similar to the one below. 
6	To check that the selected GL account is active, you can go to the **Chart of Accounts** application. Result: The PAPER organization is Active. 

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Removing Organizations and Sites

Introduction

After records in most applications are created and used, Maximo limits:

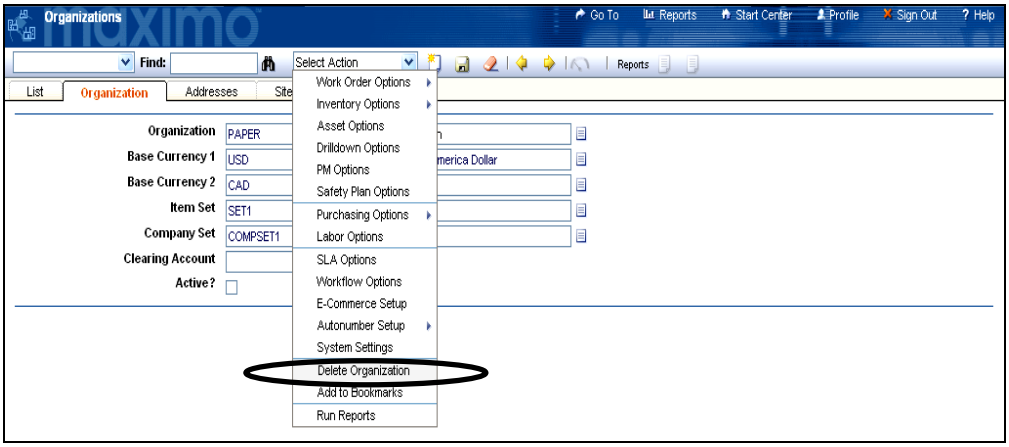
- which records can be permanently removed (deleted),
- when they can be deleted, and
- by whom they can be deleted.

These limitations are in place to safeguard database integrity. Without having to delete this information from the database, Maximo allows records to be *inactivated*. Inactivating instead of deleting allows the information to remain in the database, but it is flagged as unavailable for use.

Deleting an Organization

You can delete an organization from the system *only if there are no sites associated with it.* When you delete an organization, the record is removed from the database table Organization.

To delete an organization, access the organization from the **Organization** tab and select **Delete Organization** from the **Select Action** menu. This removes the organization and all its information from the database.



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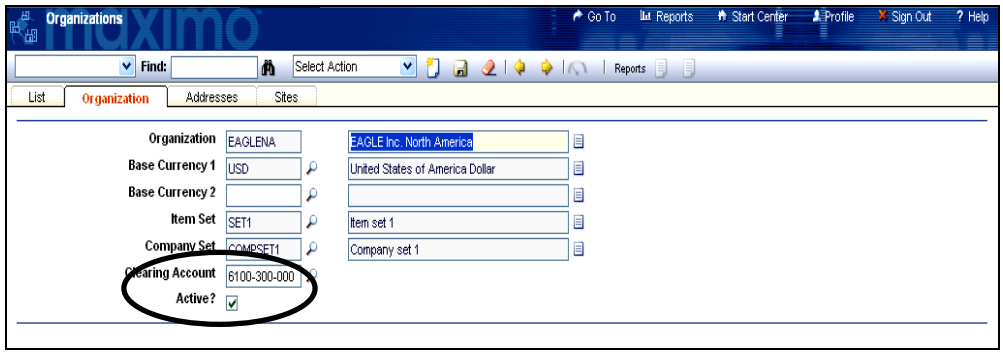
Removing Organizations and Sites continued

Inactivating an Organization

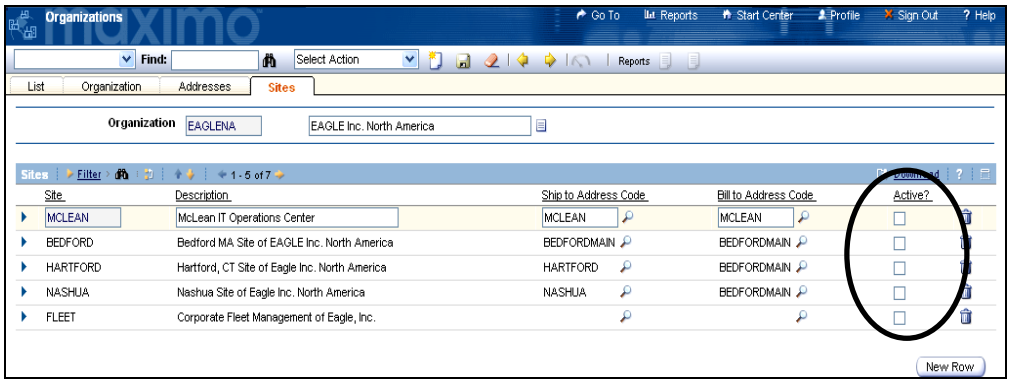
As opposed to deletion, an organization can be inactivated whether or not it has sites. You always have the option to reactivate an inactivated organization. Some characteristics of inactivated organizations include:

- Users cannot access or make entries into the inactivated organization.
- Users cannot log in to sites at that organization.
- Records are not affected that refer to the inactivated organization.

To inactivate an organization, access the EAGLENA organization from the **Organization** tab and clear the **Active?** check box, as shown below. Then click the **Save** icon.



Result: After you inactivate an organization, the **Active?** column on the **Sites** tab shows all sites as being inactivated (unchecked).



Note: To enable an organization, check the **Active?** check box. Sites attached to the organization are not automatically activated. You must activate each site *manually* by *checking* the **Active?** check box..

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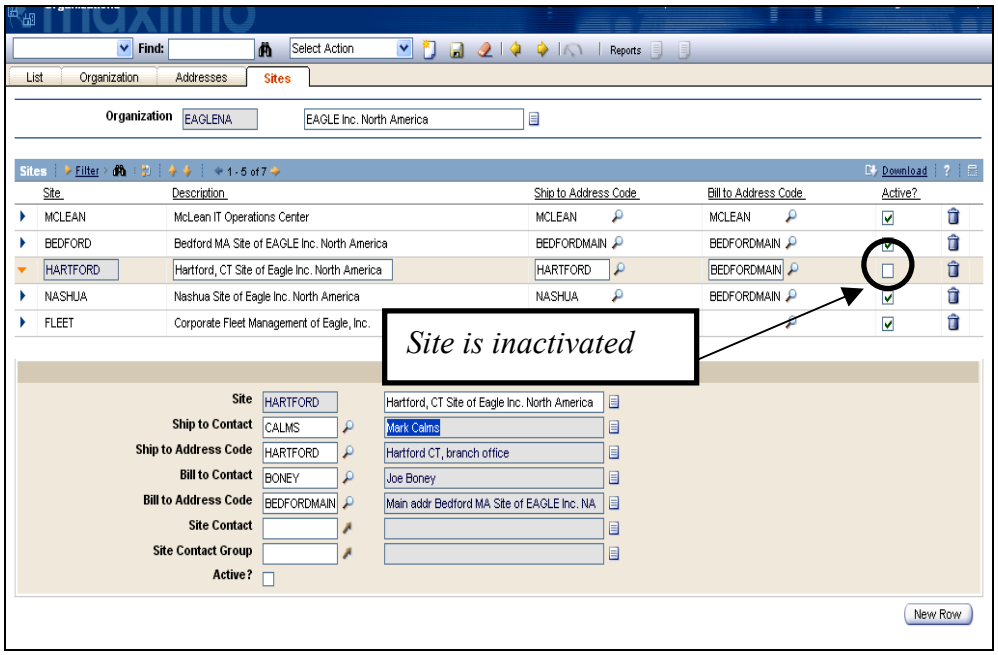
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Removing Organizations and Sites continued

Inactivating a Site Within an Organization

You can inactivate a site at any time. Inactivating a site prevents users from accessing the site, but does not remove records from the database that refer to the site. If you want to keep an organization activated and want to inactivate one or more of its other sites, do the following:

1. From the **Sites** tab, select the line for the site to be inactive.
2. Clear the **Active?** check box.
3. Click the **Save** icon.



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Chapter Summary

Organization and Site Defined

The terms *organization* and *site* are concepts used in the multisite environment.

- An *organization* is a major division of a company that contains one or more sites. Sites belonging to the same organization use the same currency and share the same options for work orders, assets, labor, and other types of data.
- A *site* is a subdivision of an organization that might track inventory and other data separately from other sites. Certain site information is unique to the site and is not visible to other sites even though they belong to the same organization and share the same database. Generally, sites will:
  - belong to the same organization,
  - use the same *currency*, and
  - share the same options for work orders, assets, labor, and other types of data.

Sites and organizations are logical divisions of a company determined by what types of operations are performed at certain locations, and what data can be shared by certain locations.

The Organizations Application

After an analysis is done of your company and the organization and site structure is determined, you can set up your sites using the Organizations application. This application lets you enter, modify, and configure options for organizations and sites.

Three Levels

The Maximo database, and Organizations specifically, allows clients to organize their data to more closely match their logical (organizational) structure.

- Some elements reside at the *database* or *system* level and are available for the entire company.
- Other elements reside at the *organization* level and are available only to users within a particular organization.
- Finally, some data is available only to users at specific *sites* within an organization.

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Chapter Summary continued

The Sets Application

You use the Sets application to create a framework for sharing item and company (vendor) data across multiple organizations.

Maximo stores both item and company master records in sets. These sets exist above the organization level so that organizations can share the same data.

Types of Sets

There are two types of sets used in Maximo:

- *item* sets for assets, and
- *company* sets for vendors and other external business entities with which organizations do business.

Each organization can use only one item set and company set, so only organizations that share these same sets can share data.

However, only the item and/or company sets that are mutually employed can be shared between organizations.

Sets and Organizations

The following relationships apply to sets and organizations:

- You can create as many item and company sets as your business practices require.
- You *must* associate each organization with one, *and only one*, company set.
- You *must* associate each organization with one, *and only one*, item set.
- The same item or company set can by used by multiple organizations.

Note: You must create at least one item set and one company set before you can create *any* organization.

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MXES Immersion Training for EAM

Chapter 3: Creating Locations



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In This Chapter This chapter contains the following topics:

Topic	See Page
Chapter Overview	3-1
Locations and Systems Overview	3-5
Locations Application	3-8
Location Hierarchies and Systems Setup	3-22
Managing Locations	3-40
Chapter Summary	3-45

Chapter Overview

Introduction

One of the principal benefits to using Maximo is the ability to track maintenance costs against your various assets and operating locations. To track and monitor work and costs by location, you first need to create the location where the asset is to be located and based.

A location is used to define where an asset physically is and what it is doing. Work orders can be written against a location only where the asset operates.

Chapter Focus

The focus of this chapter is to familiarize you with locations and systems as defined in Maximo.

Learning Objectives

When you have completed this chapter, you should be able to:

- describe a location and location hierarchy;
- describe a system and system hierarchy;
- describe the advantages of implementing a system hierarchy;
- navigate the Locations application;
- create a location and a location hierarchy; and
- associate locations with systems to create a system hierarchy.

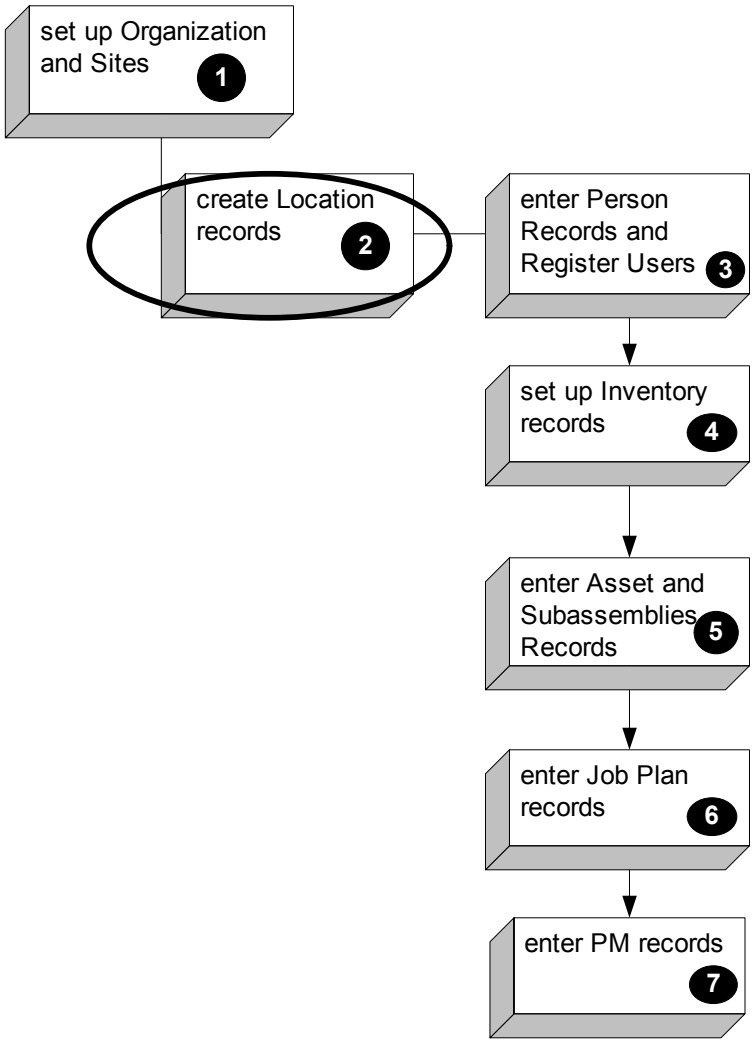
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Chapter Overview continued

We Are Here

You can create locations and then organize them into a hierarchy and system using the **Locations** application.



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Chapter Overview continued

Implementation Questions to Consider

- Do you have a plant layout indicating the overall dimensions of your organization/ site (can also indicate product lines, assets, departmental boundaries, workstations, offices, etc.)?
- Is the location naming convention standardized?
- Are the critical high-priority locations identified?
- What are the base criteria in choosing your critical locations?
- Do you review and prioritize your critical system on a periodic basis?
- Are critical assets identified with locations?
- Are storeroom/warehouse locations and layouts adequate to reduce wasted travel and waiting time?
- Does your location hierarchy adequately support the business requirements?

Implementation Tips



- Identify high-priority operating locations and enter them first. Low-priority locations can be phased in later.
- Creating and using location hierarchies lets you track work and costs individually, as well as rolling up costs hierarchically.
- Creating location hierarchies and systems will enable users to easily find locations, as well as any associated assets.
- Have a predefined formatting and identification procedure in place. The documentation should be graphically laid out well for your location hierarchy. This documentation can act as a map as you identify and enter locations and systems into Maximo.

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Chapter Overview continued

Implementation Consideration for GL Accounts

If you are tracking records and transactions by general ledger (GL) account codes, you should consider how you will be using GL accounts when you are creating your location and asset records and their hierarchies and systems.

It is possible to assign GL accounts to location records, to asset records, or to both. On records or transactions for which you specify a location and an asset identifier (a work order, for example), the GL accounts of the asset and the location will be merged if you have GL accounts for both records.

For more information, refer to the *Financial Manager's Guide*.

Benefits to Users

Properly designed Maximo locations and systems enable you to:

- look at the history of an asset and see where it has been located in the plant
- look at the cost of the location, in comparison to other locations, to see the trends
- easily find assets for work orders
- look at the costs from a more detailed level
- look at the costs from a corporate level
- pinpoint the problem areas in a system
- analyze maintenance problems and trends to quickly determine what needs to be done to reduce downtime and costs
- quickly distinguish environment problems versus asset problems
- create PMs for locations or assets

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Locations and Systems Overview

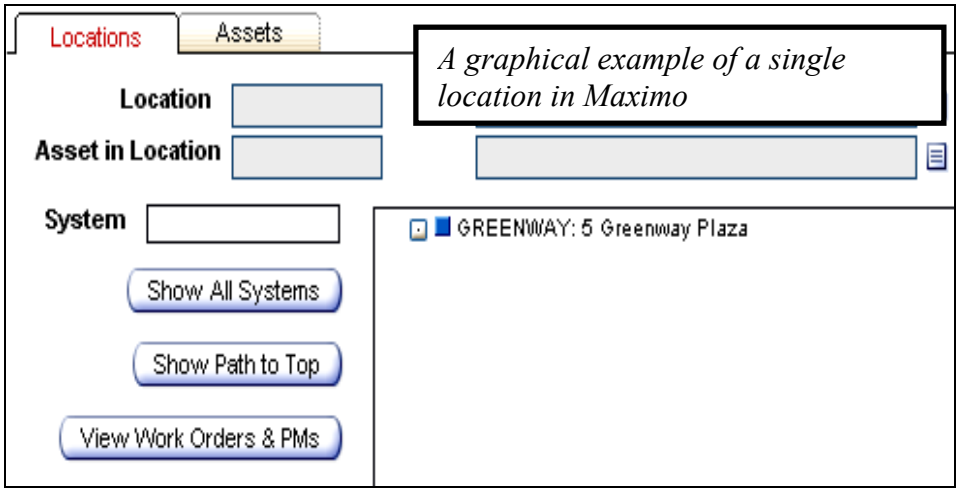
Introduction

Location and system hierarchies should be an integral piece of a site implementation; they are the backbone of the system. A well-thought-out hierarchical design makes it easier to track assets and costs as related to locations.

In addition, the time and thought you invest in planning the locations and systems creates a more strategic approach in navigating the Assets/Locations menus.

Location

Locations are like addresses; for example, if you live at *5 Green Way Plaza*, you may start out in a tent, then a trailer, then a building. So, even though the structure you are in changes, the address remains 5 Green Way Plaza. If you apply the same logic to locations and assets, locations normally do not change; however, the assets that reside at the location might change.



A graphical example of a single location in Maximo

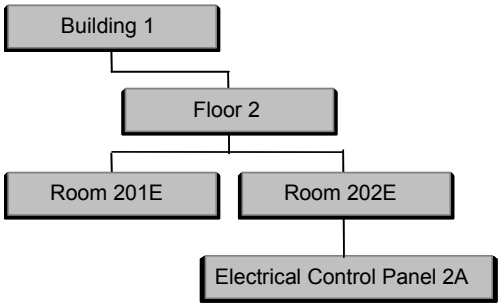
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Locations and Systems Overview continued

Location Hierarchy

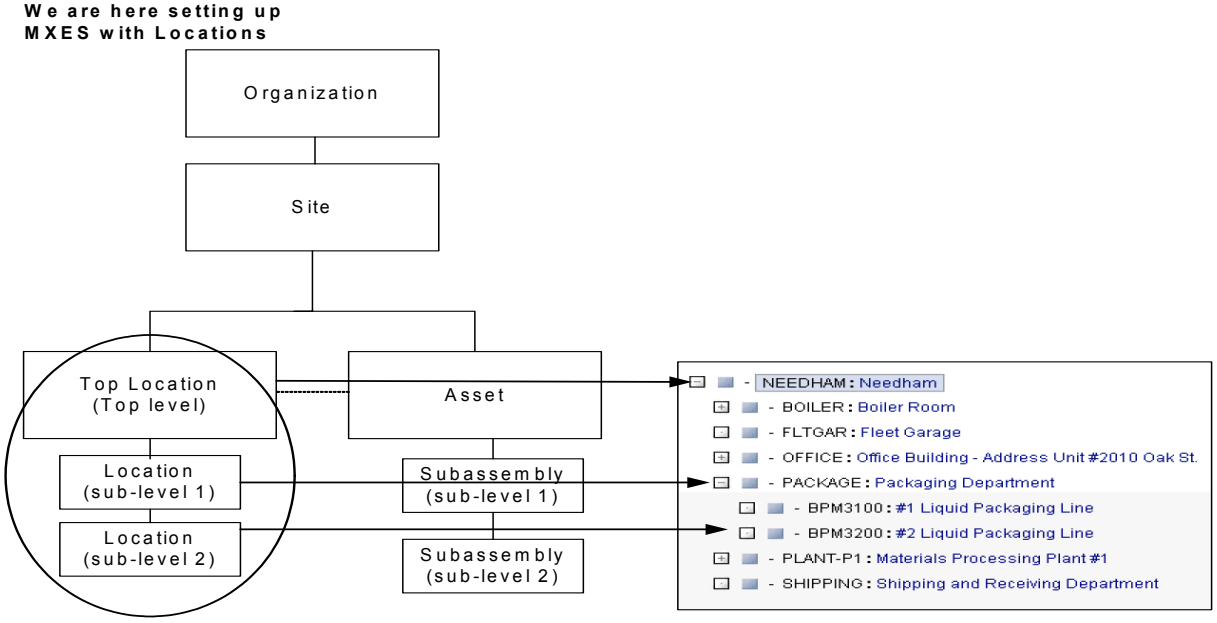
Location hierarchies let you group assets and locations into areas of responsibilities. A location hierarchy can be designed to include all locations in your plant against which work orders are written, and can track the movement of assets into and out of locations. Maximo identifies location hierarchies as *systems*.



Parent-Child Design

The Maximo location hierarchy uses a parent-child design. In this design, the parent is assumed to be one level up from the current location.

In the example below, *BPM3200: #2 Liquid Packaging Line* is a child of *PACKAGE: Packaging Department* and *PACKAGE: Packaging Department* is a child of *NEEDHAM: Needham (Site).*



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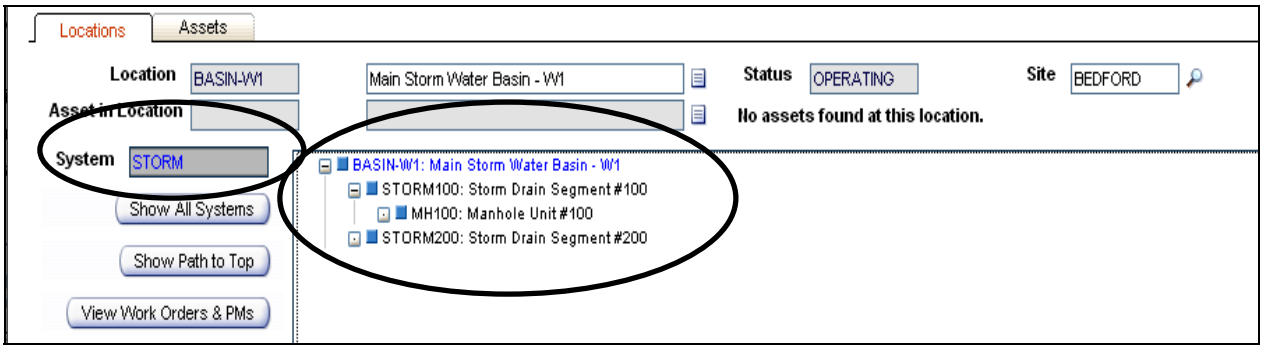
Locations and Systems Overview continued

System Definition

In Maximo, a *system* is an identifier or reference consisting of locations associated with a particular focus or responsibility. In most cases, a system functions to identify *location hierarchies* or *location networks*.

- Location hierarchies have a parent-child branching relationship.
- Location networks can have multiple parents and have no defined branching relationships.

The system is identified as **STORM** *and consists of Storm Drain Segments and Manhole Locations.*



Implementation Tip



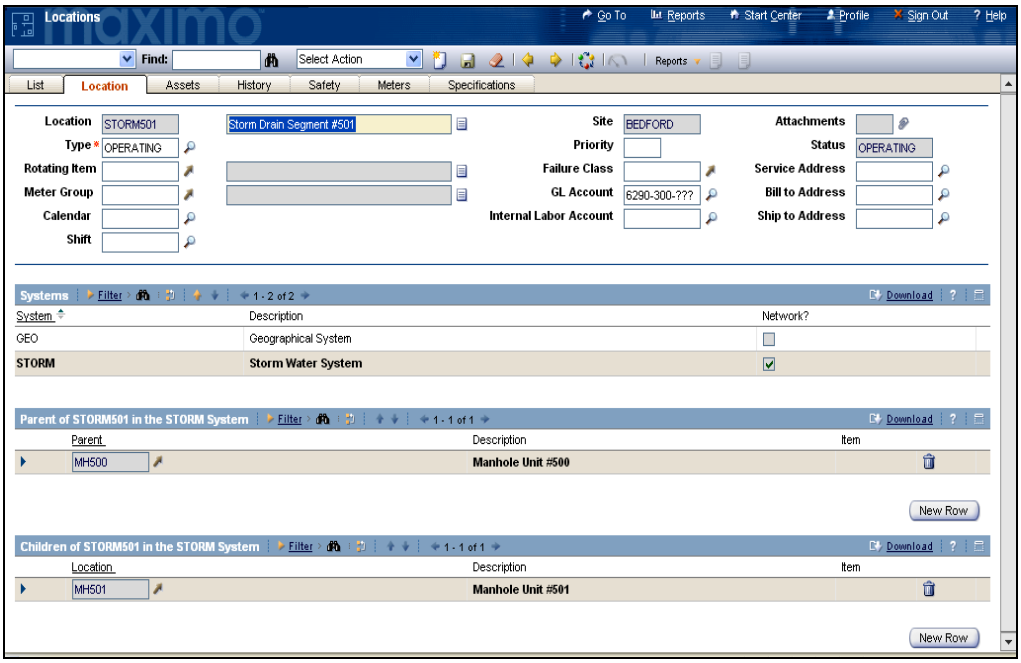
When creating systems, first create a "primary system," one intended to be the system to which all your operating locations belong. Having all your operating locations tied together in one complete primary system provides a solid foundation for using locations and systems. It might be the only system your site needs for tracking assets.

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Locations Application

Locations Application

The **Locations** application lets you enter and maintain operating locations for assets and organize these locations into a logical hierarchy. The Locations application screen contains multiple pages designated by tabs, and is accessed from the **Assets** module in the Start Center.



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Locations Application continued

Locations Tabs

The Locations application is comprised of seven tabs.



Use this tab…	To…
List	Enter and save searches.
Location	Enter or view detailed information specific to a location. The only required fields on this page are Location and Type.
Assets	Display the assets, if any, at the selected location.
History	Display the history of the asset's movement transactions into and out of the location.
Safety	View, add, or delete safety records associated with the selected location.
Meters	View, add, or modify meter records associated with a location.
Specifications	Enter or view specifications for the location as recorded in the Classifications application.

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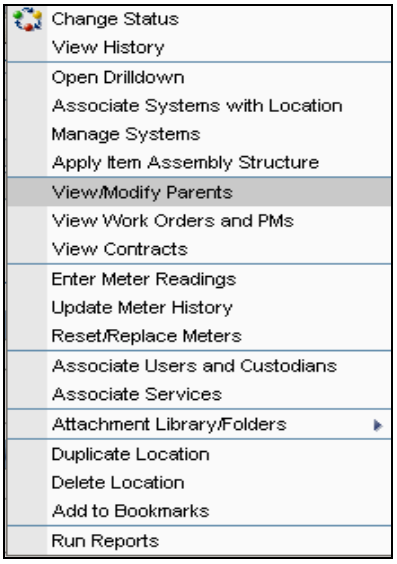
Locations Application continued

Locations Select Action Menu

The **Select Action** menu contains specific actions associated with the Locations application. Among the actions you can perform with this menu are:

- selecting a status of a location (decommissioned, not ready and operating)
- viewing the location and system hierarchy (Open Drilldown)
- managing and associating systems with a location
- changing or modifying location parents
- viewing work orders, PMs, and routes
- editing and updating meters associated in a location
- managing contracts, users, and services associated in a location

Some of these actions will be explained in this chapter, but for a detailed explanation of this menu consult the *Maximo User's Guide*.



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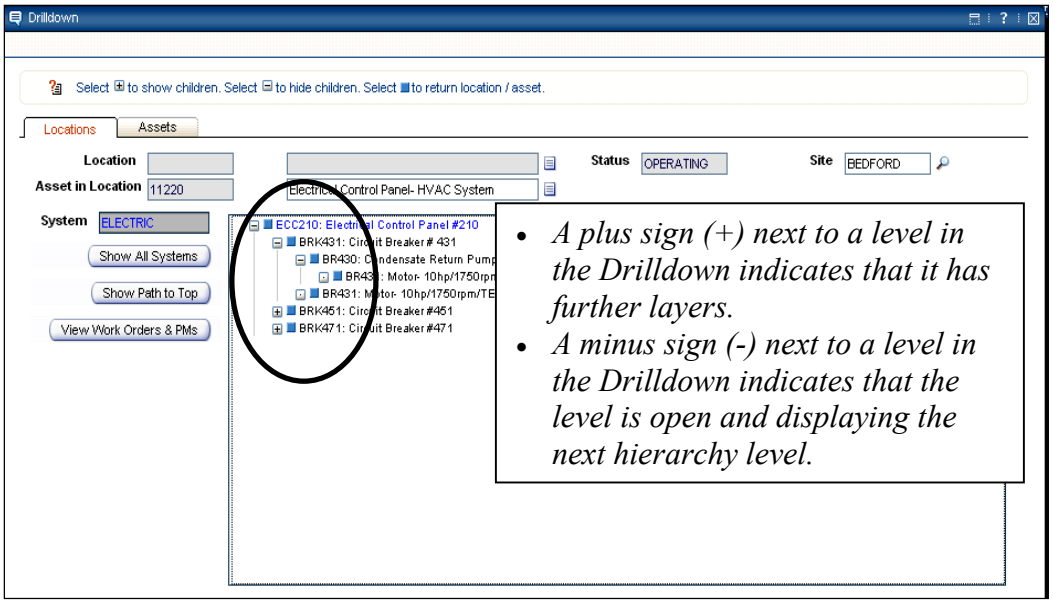
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Locations Application continued

Using the Locations/ Assets Open Drilldown Menu

The **Open Drilldown** action allows you to view the complete hierarchy of locations and assets The Location/Assets Drilldown is a standard lookup that lets you find a location or asset by navigating a graphical hierarchical tree. The Drilldown displays systems created in the **Locations** application and item assembly structures built in the **Assets** application. You can:

- Switch back and forth between **Locations** and **Assets** by selecting the appropriate tab on the Drilldown.
- Select a location, and then switch views to see assets at that location.
- Drill down to an asset, then switch views to see its location and the system(s) that location belongs to.
- Show all the systems available for a particular site.



Field/Button	Description
Location	The name of the location.
Status	The status *(decommissioned, not ready,* and *operating)* of the location.
Asset in Location	The number of the assets (if any) at this location.
System	The system(s) associated with this location.
Show Path to Top	Click to view the parent hierarchy of the highlighted location or asset.
View Work Orders & PMs	Click to view work orders and preventive maintenance records for the selected location or asset.

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Locations Application continued

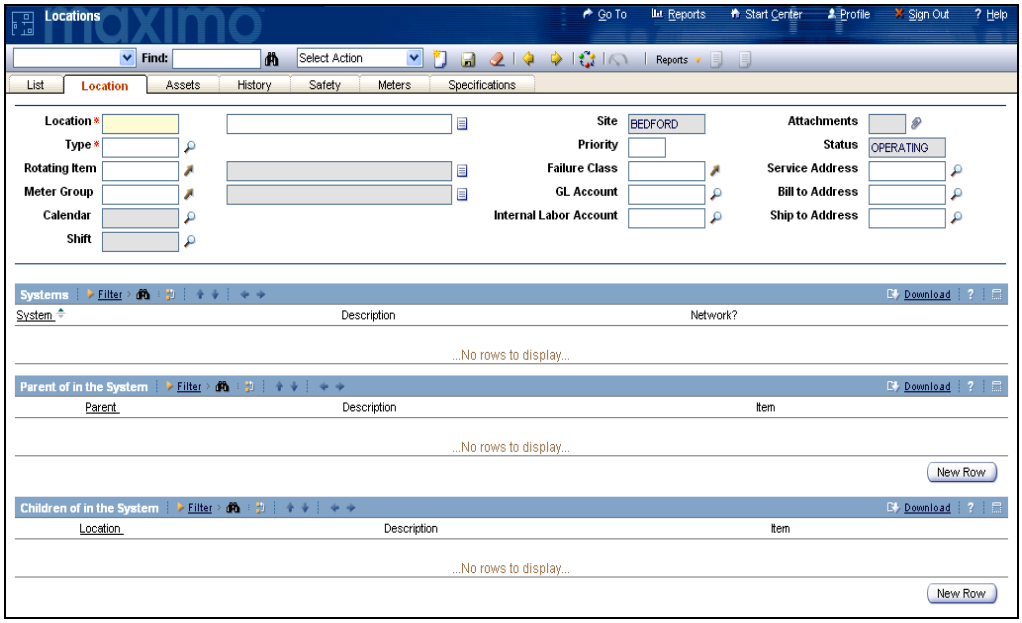
Child Display Limits



For any given parent, a limit can be set on the number of child locations/assets records displayed in the hierarchy. When the limit has been reached, a message box appears.

Location Tab

Use the **Location** tab to enter or view detailed information specific to a location.



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Locations Application continued

Location Types

For tracking and accounting purposes, there are several types of locations defined in an out-of-the-box Maximo implementation.

These types are added to location records in the **Type** field.

Location Type	Description
Courier	Used to track assets that a courier is holding until they are received into another location.
Holding	Generally used to identify areas where assets are temporarily stored prior to tracking procedures such as serialization and inspection.
Labor	*Associated* as location records so that you can track assets and inventory issued to specific individuals, such as: • Expensive tools • Safety gear
Operating	Generally used to identify the physical spaces where your assets operate.
Repair	Used to track assets when they have been removed from an operating location for repair.
Salvage	Used to track assets as they move to a salvage location.
Vendor	Used to track assets as they move to a vendor location.

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Locations Application continued

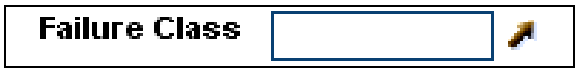
Modifying Location Types

You can add/modify location types using **Application Designer**, which is in the **Configuration** module. For more information on how to do this, refer to the *System Administrator's Guide.*

Better Practice Tip: Failure Class Field



Identifying a failure class with a location allows you to conduct failure analysis and trending. Creating failure classes will be discussed in detail in Chapter 14: "Setting Up Additional Maximo Applications."



Better Practice Tip: Priority Field



Identifying a priority scheme for locations allows you to focus on location assets that are critical to the organization's operations.



Priority ranking in Maximo is 1 (low) to 999 (high). You can create and associate a value list on most of the priority fields to limit the choice. For more information on how to do this, refer to the *System Administrator's Guide*.

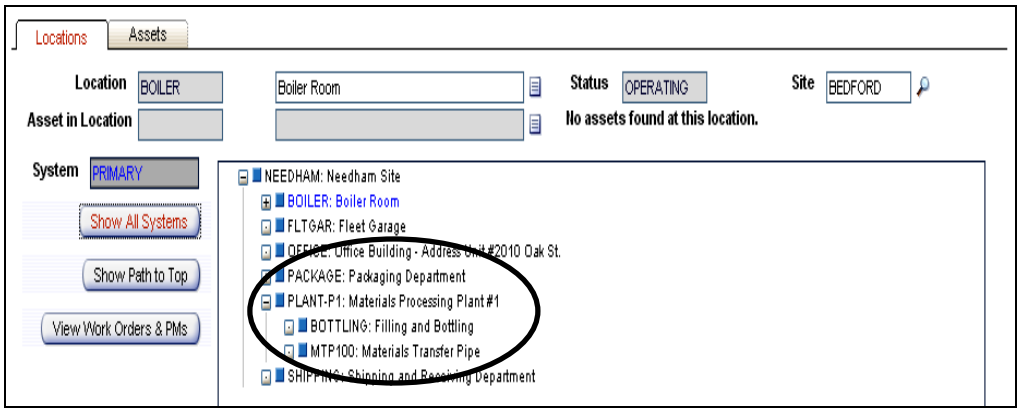
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Locations Application continued

Exercise Scenario

Our organization "Eagle, NA Bedford site" is going to add another operating location, *Bottling*, to its primary system – Needham, Materials Processing Plant #1, PLANT-P1. The Needham primary system encompasses all of its locations.



Note: During your implementation planning, you should discuss how deep your location hierarchy should go. The depth of the hierarchy would be determined by the need for data granularity and the value of that granularity, versus the cost of the work required to set up and maintain the hierarchy.

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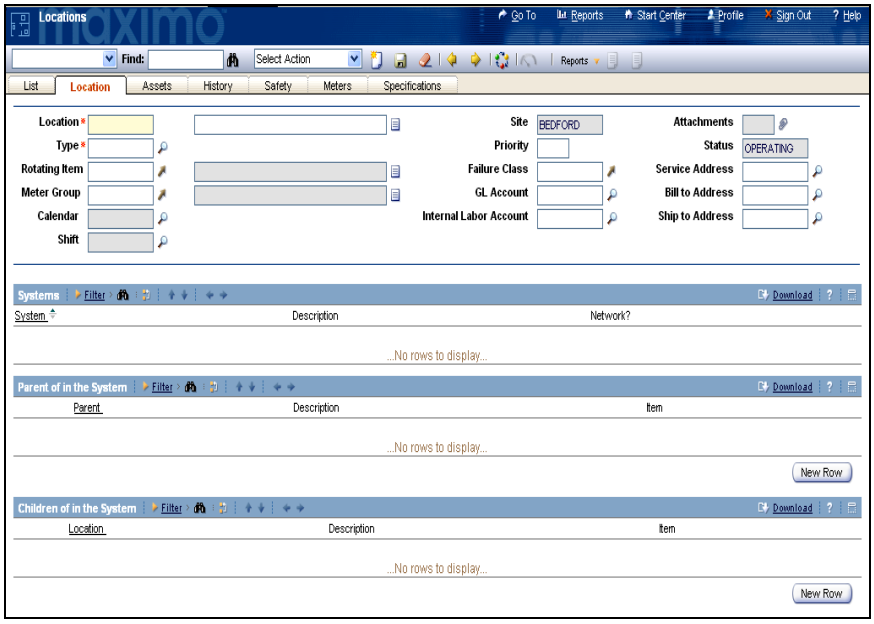
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Locations Application continued

Creating an Operating Location

To add a new location, follow the steps below.

Note: You must be signed in to the Bedford site.

Step	Action
1	Open the **Locations** application, located in the **Assets** module.
2	Create a new location record by clicking the **New Location** icon: Result: The Location tab displays, ready for you to enter a new location. 

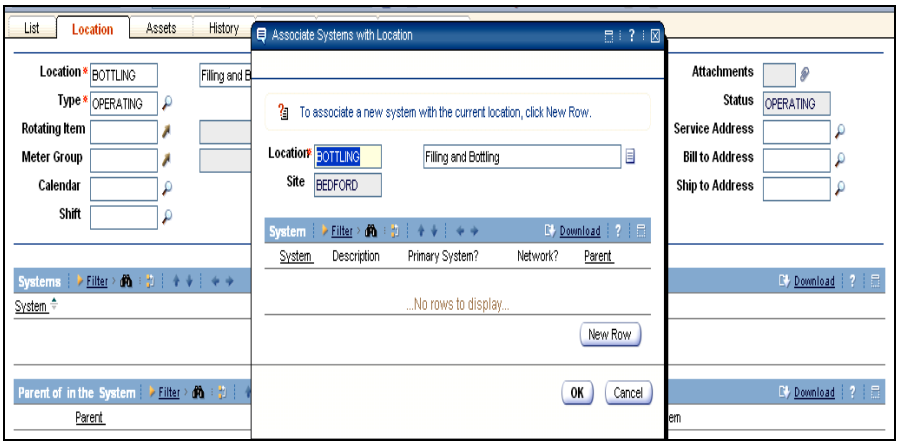
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Locations Application continued

Creating an Operating Location

continued

Step	Action
3	Enter the following information: **Field** **Value** **Location** BOTTLING **(Description)** Filling and Bottling **Type** Operating **Priority** 2 Hint: Use the Select Value icon where applicable.
4	From the **Select Action** menu, choose **Associate Systems with Location**. Result: The Associate Systems with Location dialog box opens. 

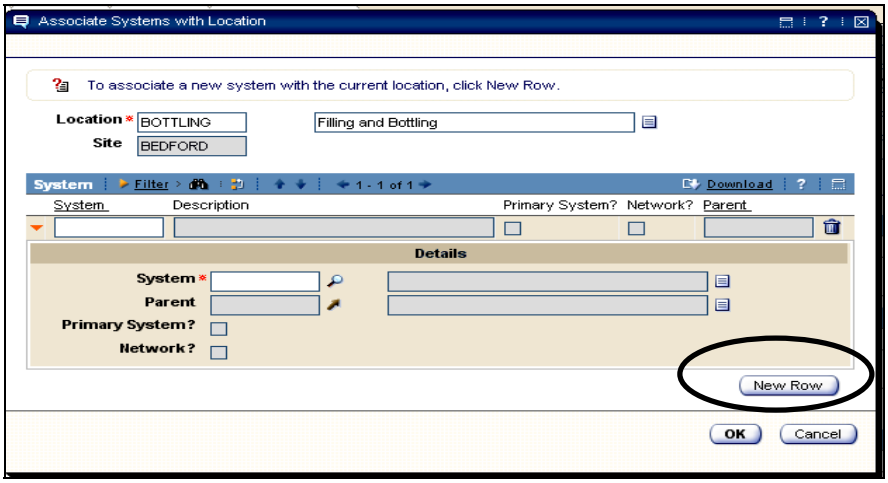
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Locations Application continued

Creating an Operating Location

continued

Step	Action
5	Click **New Row**. 

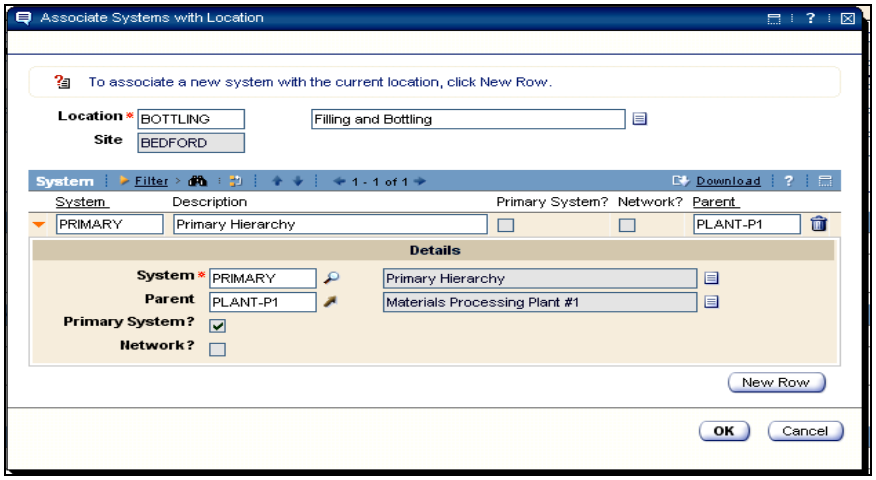
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Locations Application continued

Creating an Operating Location

continued

Step	Action
6	Enter the following information: **Field** **Value** **System** Primary **Parent** PLANT-P1 Hint: Use the Select Value icon where applicable. Result: Your display should be similar to the graphic below: 

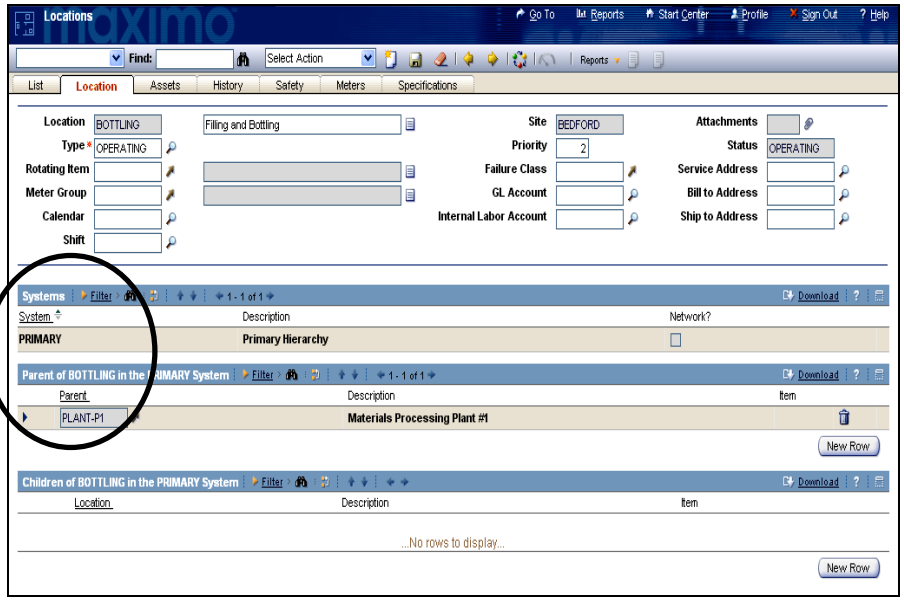
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Locations Application continued

Creating an Operating Location continued

Step	Action
7	Click **OK**. Result: PRIMARY is recorded in the Systems subtab and PLANT-P1 is the parent of BOTTLING in the PRIMARY system.



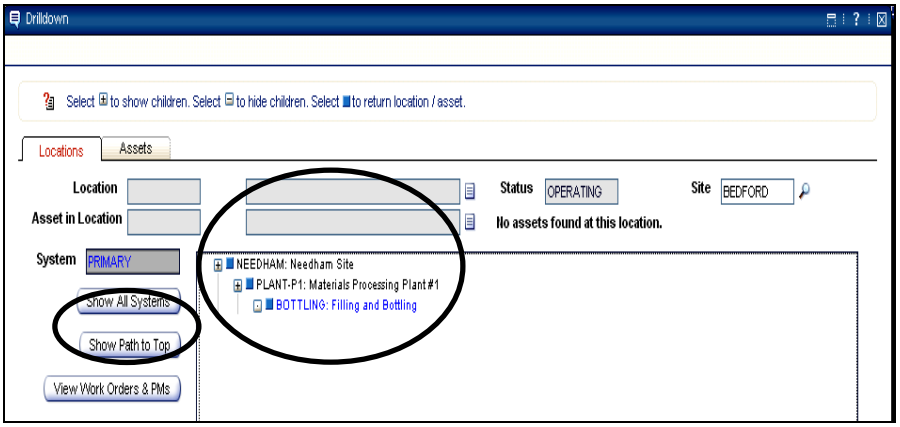
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Locations Application continued

Creating an Operating Location

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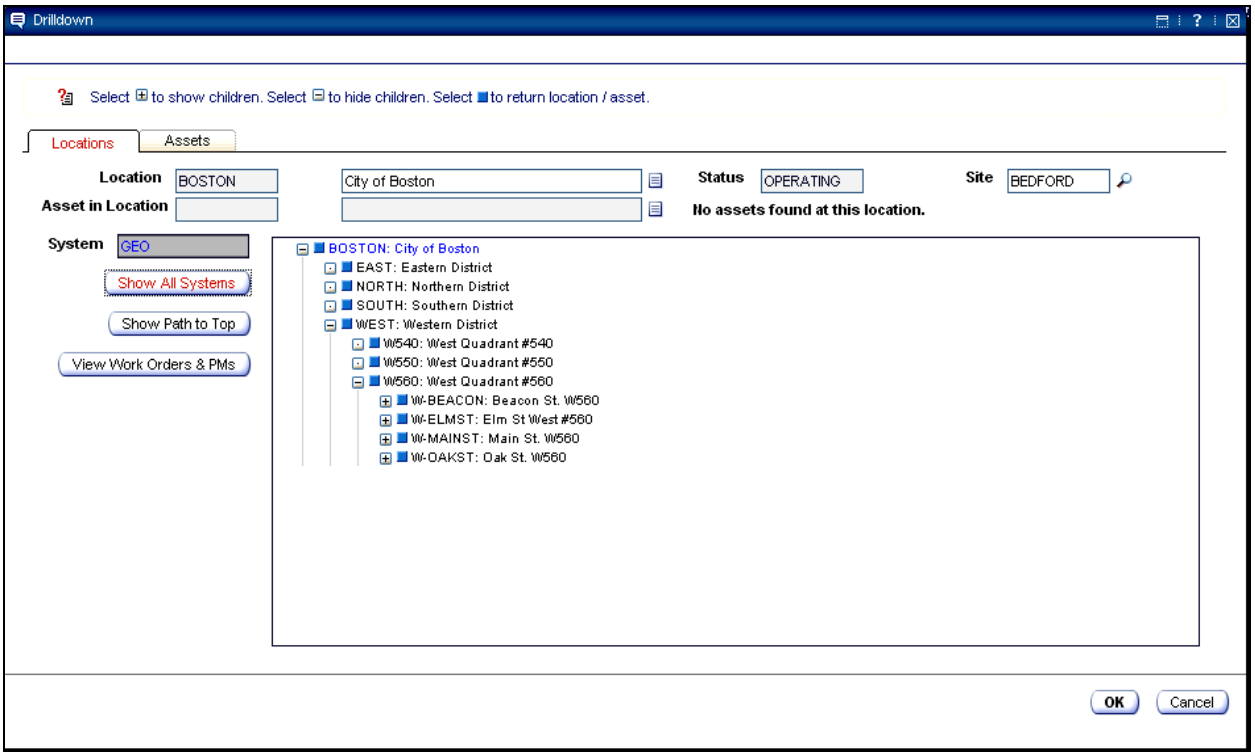
Step	Action
8	From the **Select Action** menu, select **Open Drilldown** and click **Show Path to Top**. Result: BOTTLING is now included in the location hierarchy system for the Needham site. 
9	Click **Save** and exit.

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Location Hierarchies and Systems Setup

Introduction

In the **Locations** application, you create hierarchical or network systems to organize your locations. Depending on your needs, you might have one system or multiple systems. This section offers some approaches and considerations when setting up location hierarchies and systems in Maximo.



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Location Hierarchies and Systems Setup continued

Field Examples: Setup Approaches



The following two examples are from the field. Both are different approaches that have been taken when implementing their system and location structures into Maximo. Company names have been changed and dialog has been edited.

Note: These examples are meant to act as a springboard for discussion and thought generation only. These examples are not meant to imply that one approach is better than another.

Company #1 Example

To meet the corporate and site reporting and maintenance management needs, our company decided that we would start with one primary system and locations would have the following format: First the major site would be identified, then the site location, the building, the floor, the room, and the assets location. After the room level, it then would be up to that particular site location to create the specific location for assets.

Our location identification translated into this format:

BO1-1-B25-F1-R101D-COMP01 AIRCOMPRESSOR 01 (description)

Our location hierarchy translated into this format:

B01- (Major site)
1- (Site location)
B25- (Building)
F1- (Floor)
R101D- (Room)
COMP01 (Assets location)

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Location Hierarchies and Systems Setup continued

Company #2 Example

Over the years we have come to realize that the best approach is to keep it simple. Here is what we have done:

I. **Company**
  A. **Country**
    1. **Site**
      a. **Building**
        1) **Function,** e.g., HVAC, B&G, Landscaping, Electrical—things that belong to a building
      b. **System** (i.e., things that tend to span buildings)
        1) **Function**, e.g., Steam, Water, Gas, Electrical Distribution, Landscaping, Parking, Fire Systems

We then attach assets and their subassemblies to the function location and write work orders against the assets.

This type of location hierarchy requires almost zero maintenance because there is seldom any change (companies, sites, buildings, systems, and functions rarely move). When you start adding details like rooms, and then creating systems for different views, you add to the maintenance requirements, and the maintenance grows exponentially with systems.

One Last Suggestion from the Field

Start building your location hierarchy with *one system*—a geographical view ("helicopter view") works well. Do *not* allow anyone to create additional systems until your primary hierarchy works for you. You will save yourself endless problems. Wait several months before cutting additional systems, which is the same as tagging existing locations from your primary hierarchy to say: "You also belong to this other system."

When you are comfortable with this, then you can start building new stand-alone systems in their own hierarchies.

We tend to place all levels of the asset hierarchy at the same location, which makes reporting by location easy to do (e.g., the bottom level of the location hierarchy is the top of the asset hierarchy).

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Location Hierarchies and Systems Setup continued

Location Hierarchy Performance Considerations



Depending on the *shape* of the location hierarchy design, a large number of locations and/or assets records could affect the performance of the drilldown display when there are a large number of children, that is, greater than 200, for any given parent.

For example, if the shape of hierarchy follows a perfectly symmetrical structure of 10 children for each parent, a five-level hierarchy could have 100,000 records within the five levels and have very good performance.

On the other hand, if the shape of the hierarchy were asymmetrical, and a single parent had 2,500 children, the performance would be less than satisfactory even with fewer records in the hierarchy.

The cause of this performance issue is not with Maximo or the database, but with how the browser handles the JavaScript reading the drilldown.

Three-Step Process

There are three steps to creating a system:

1. Create a location.
2. Create a system.
3. Associate systems with a location.

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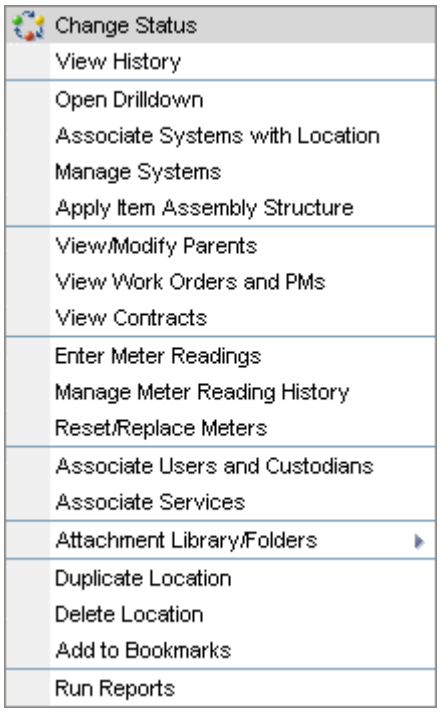
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Location Hierarchies and Systems Setup continued

Creating and Managing Systems

Use the **Manage Systems** action to:

- Add a new system.
- Select a system to be the primary system.
- Change a hierarchical system to a network system.



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Location Hierarchies and Systems Setup continued

Hierarchical System Creation



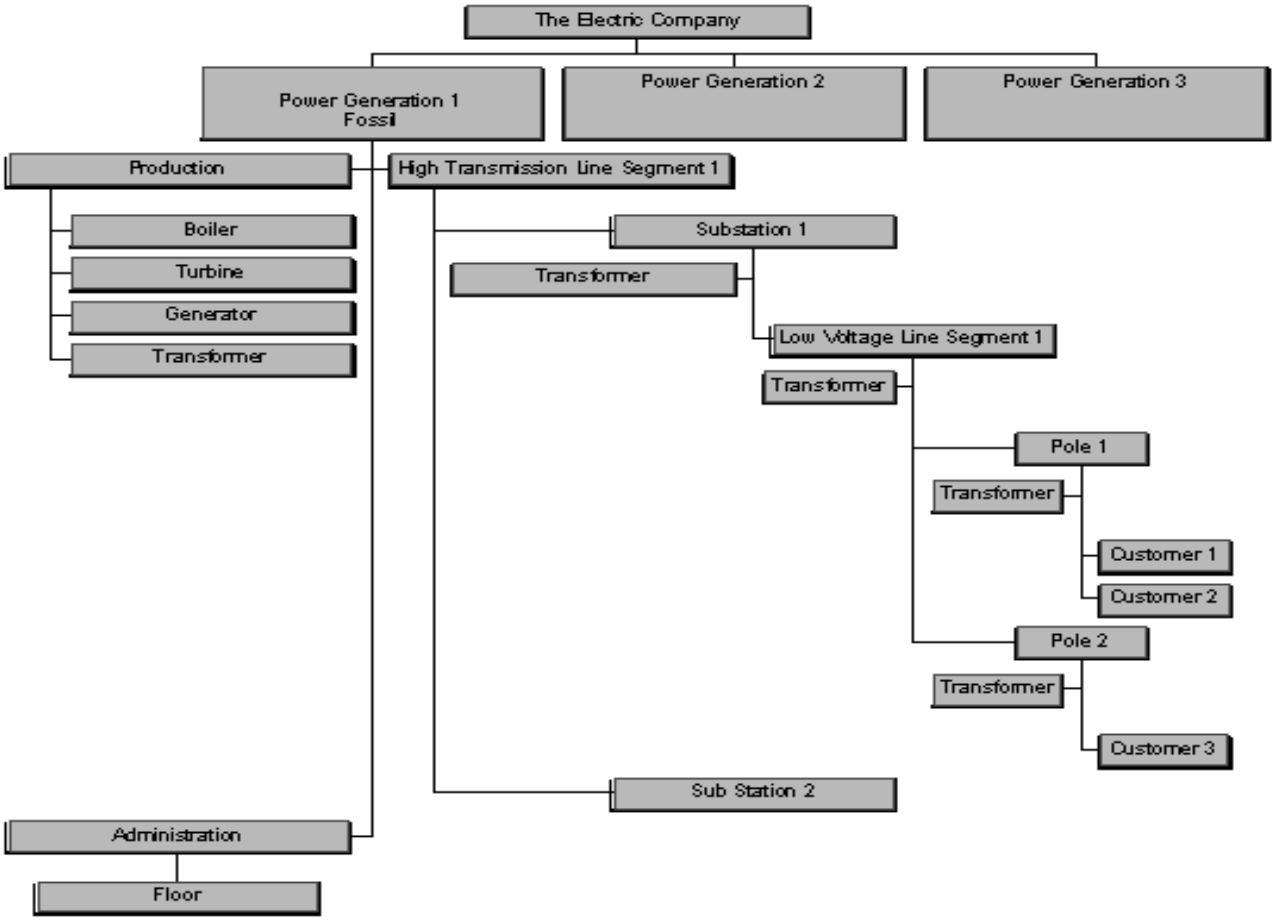
- The first location you create in a new system becomes the top-level location in the system. You cannot change this. For every location you add to the system after that, you will have to specify a parent location.
- Only Operating locations can be part of a system.

Exercise Scenario



Question: Looking at the layout, where could systems be used?

This layout is for educational purposes only.



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Location Hierarchies and Systems Setup continued

Exercise Scenario Continued

Answer: **In addition to a "Primary" system that geographically lays out the Electric Company, another system could be created that lays out the Electrical System, e.g., Transformer, High-Transmission Line Segment, Substation, Pole, Transformer.**

Based on a partial layout of the Electric Company, in this exercise we will create a location hierarchy that geographically lays out the Bedford Power Generation unit (Production and Administration areas) and then create a "Primary" system that we will associate to the location hierarchy.

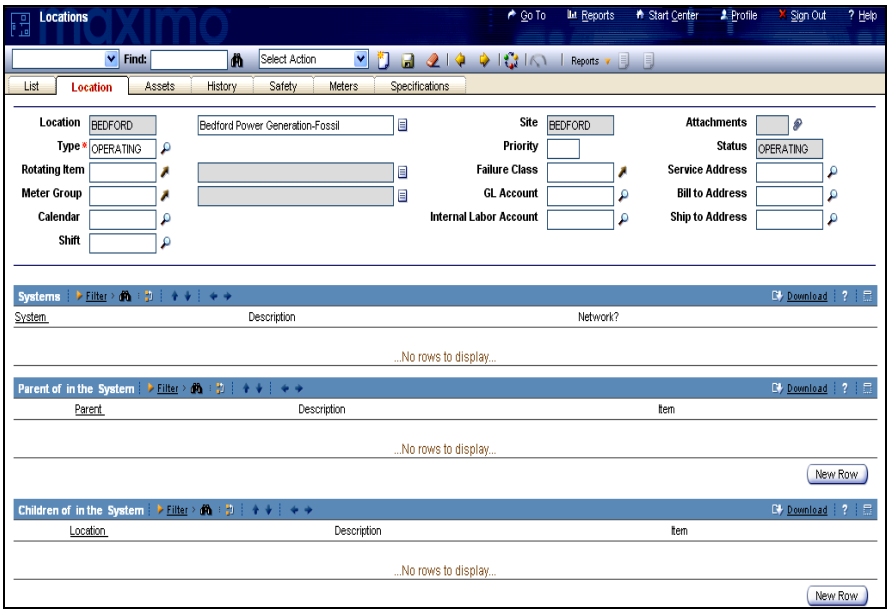
Step	Action
1	Open the **Locations** application.
2	Create a new location record by clicking the **New Location** icon:  Result: The **Location** tab displays, ready for you to enter a new location.
3	Enter the following information: **Field** — **Value** **Location** — Bedford **(Description)** — Bedford Power Generation-Fossil **Type** — Operating

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Location Hierarchies and Systems Setup continued

Exercise Scenario continued

Step	Action
4	**Save** the record. Result: You have created the location that will become the top level of the hierarchy. 

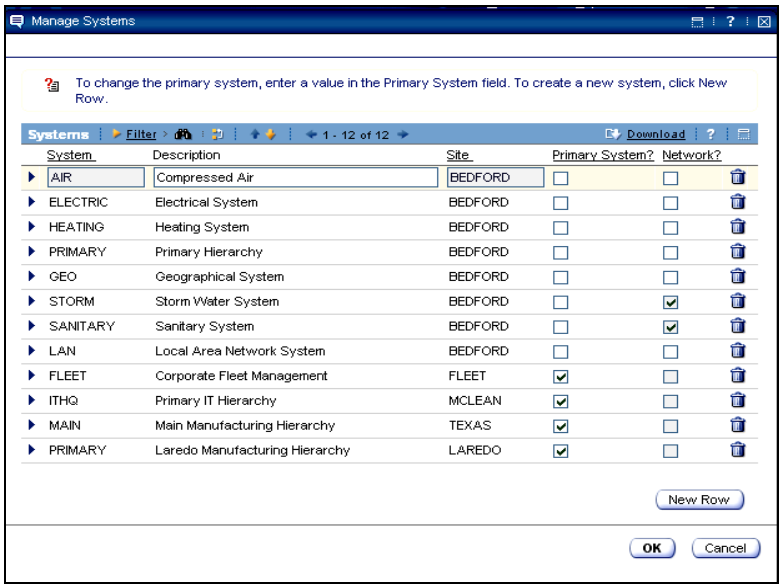
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Location Hierarchies and Systems Setup continued

Exercise Scenario continued

Step	Action
5	The next step in the process is to create the "Primary" System: GEO-2. From the **Select Action** menu, choose **Manage Systems**. Result: The Manage Systems page opens.

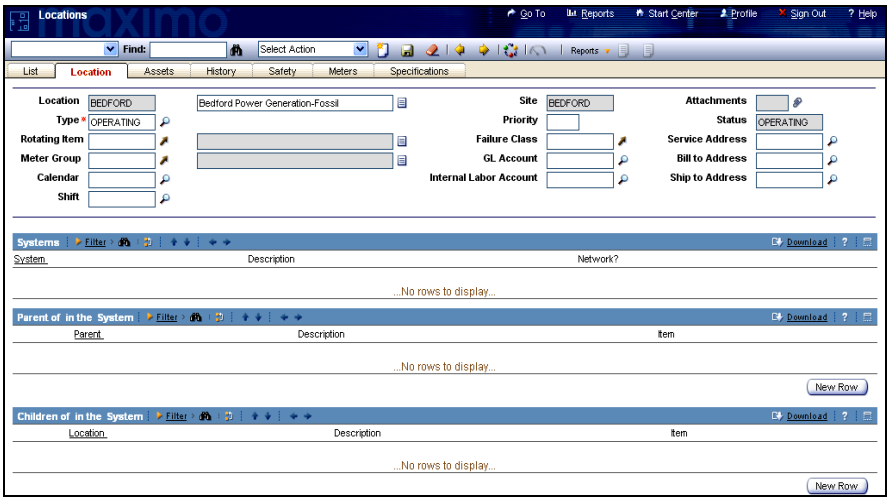


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Location Hierarchies and Systems Setup continued

Exercise Scenario continued

Step	Action
6	Click **New Row**. Result: A new row opens below. 
7	In the **System** field, enter GEO-2 and in the **description** field, enter Geographical layout for Bedford Power Generation. Then check the **Primary System?** check box.
8	Click **OK**. Result: The row closes and you are now back on the Locations tab page. 

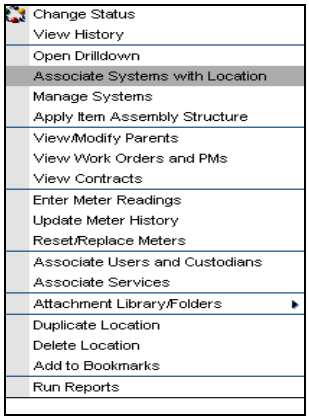
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Location Hierarchies and Systems Setup continued

Associate to Top-Level Location

So far we have created a top-level location (Bedford Power Generation) and the Primary system (GEO-2). Before we can start building our location hierarchy, we have to associate the system to the top-level location.

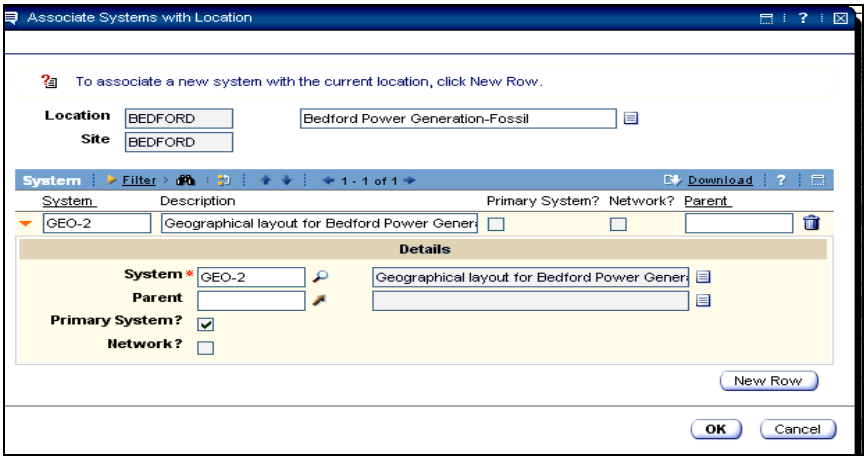
Step	Action
1	From the **Select Action** menu, choose **Associate Systems with Location**.  Result: The Associate Systems with Location page opens.

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Location Hierarchies and Systems Setup continued

Associate to Top-Level Location continued

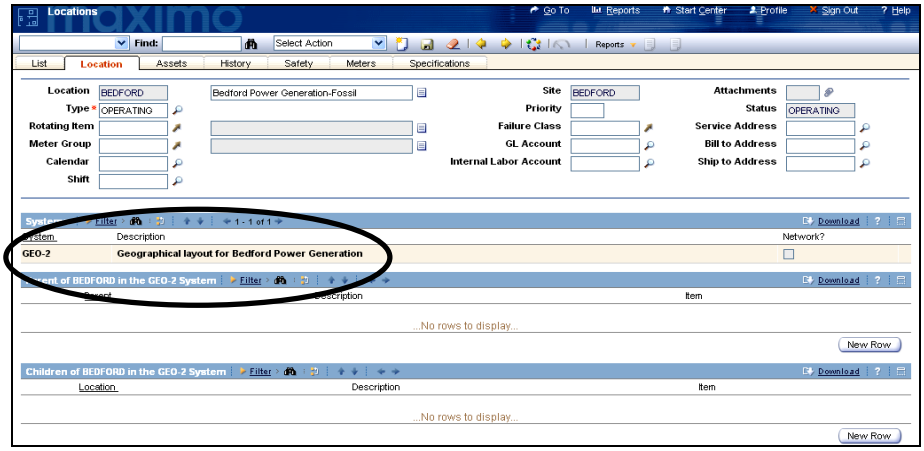
Step	Action
2	On the **Associate Systems with Locations** page, click **New Row** and enter the following information: **Field** **Value** **System** GEO-2 

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Location Hierarchies and Systems Setup continued

Associate to Top-Level Location continued

Step	Action
3	Click **OK**. Result: You are back on the Location tab page.  Note: GEO-2 is now recorded in the top level in the location hierarchy.

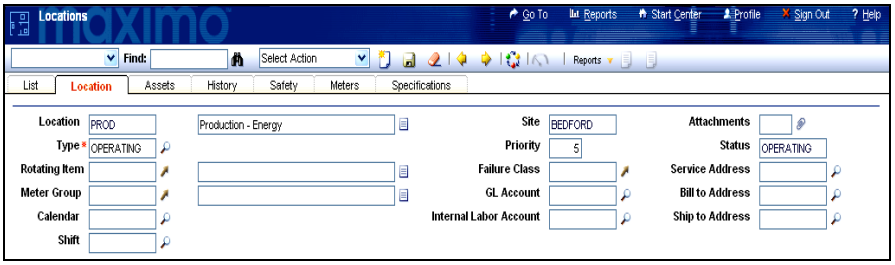
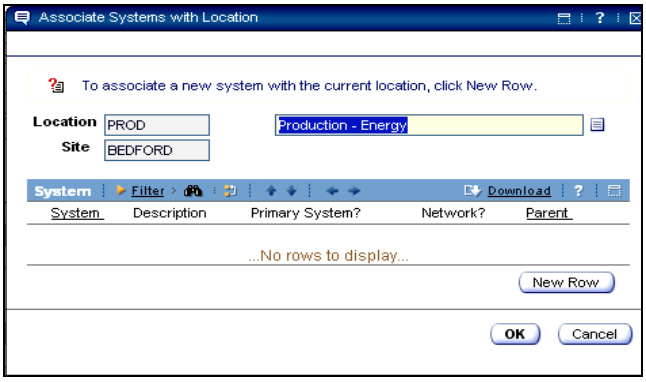
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Location Hierarchies and Systems Setup continued

Start Building Location Hierarchy

So far we have created a top-level location (BEDFORD) and the primary system (GEO-2).

At this point, we can start building the location hierarchy for the GEO-2 system in the remaining steps.

Step	Action
1	Add a new location record using the following information. Then save the record. **Field** — **Value** **Location** — PROD **(Description)** — Production - Energy **Type** — Operating **Priority** — 5 
2	Choose **Associate Systems with Location** from the **Select Action** menu. Result: The Associate System to Location dialog box opens. 

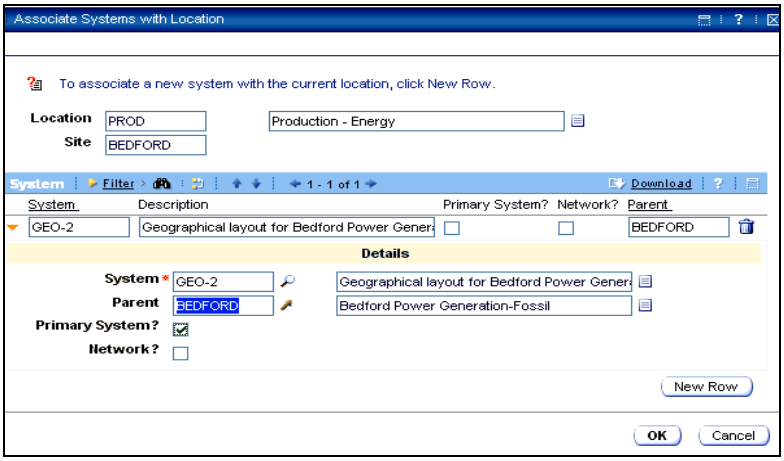
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Location Hierarchies and Systems Setup continued

Start Building Location Hierarchy continued

Step	Action
3	Click **New Row** and enter the following: **Field** **Value** **System** GEO-2 **Parent** Bedford Result: Your screen should look similar to the one shown below:

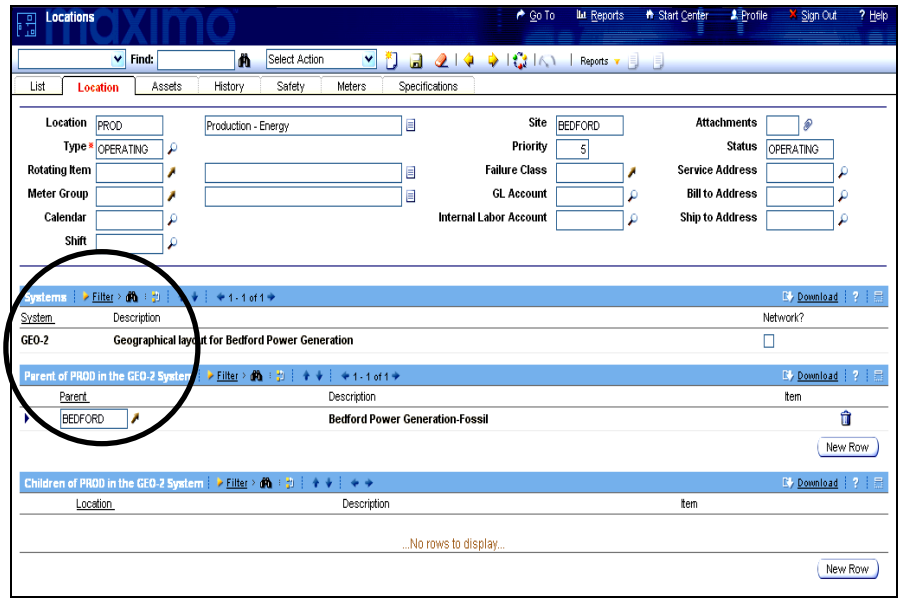


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Location Hierarchies and Systems Setup continued

Start Building Location Hierarchy continued

Step	Action
4	Click **OK**. Result: Location PROD now belongs to BEDFORD as the parent location, which belongs under the GEO-2 system. 
5	Create and save a new location using the following information. Note: Refer to step 1 for any required values not mentioned here. **Field** — **Value** **Location** — BOILER2 **(Description)** — Boiler Area **System** — GEO-2 **Parent** — PROD

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Location Hierarchies and Systems Setup continued

Start Building Location Hierarchy continued

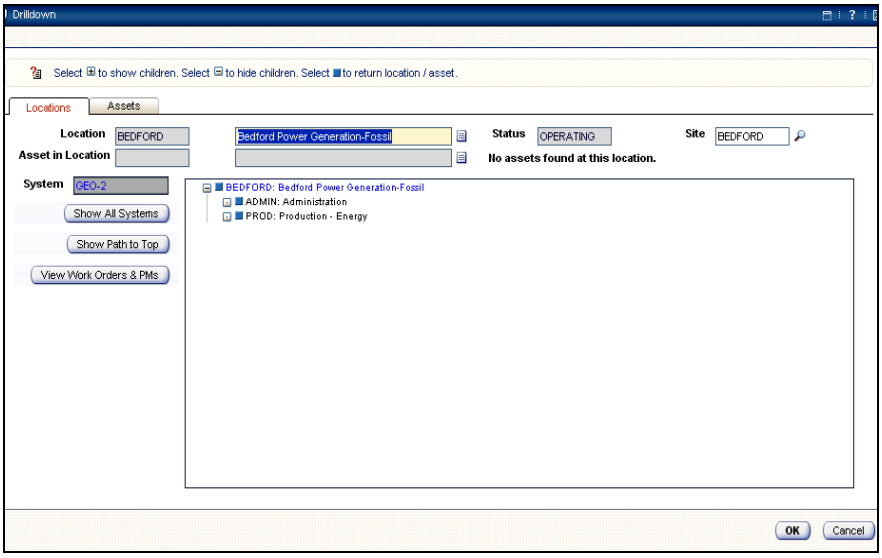
Step	Action
6	Create and save a new location using the following information. Note: Refer to step 1 for any required values not mentioned here. **Field** **Value** **Location** TURBINE2 **(Description)** Turbine Area **System** GEO-2 **Parent** PROD
7	Create and save another child location for **Bedford**, using the following information: **Field** **Value** **Location** Admin **(Description)** Administration **Type** Operating **Status** Operating **Priority** 1 **System** GEO-2 **Parent** Bedford

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Location Hierarchies and Systems Setup continued

Start Building Location Hierarchy continued

Step	Action
8	Choose **Open Drilldown** from the **Select Action** menu. Result: Your location hierarchy should look similar to the one below.  Notes: • To see both child locations, you might need to refresh the hierarchy by closing, then opening the BEDFORD parent on the list. • You also could use Open Drilldown from the detail button on the listed BEDFORD parent. Hint: Use the Show Path to Top button and the Plus (+) sign to view the entire hierarchy.

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Managing Locations

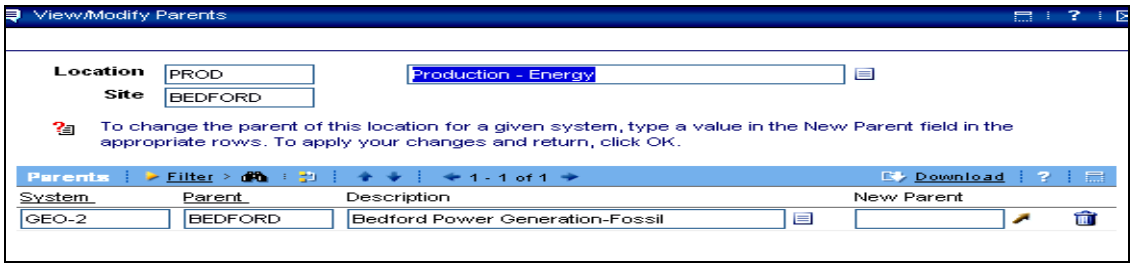
Introduction

In addition to using the **Select Action** menu to create locations, you can also this action menu to manage locations.

This section will discuss moving parent locations, as well as viewing work orders, PMs, and routes by location.

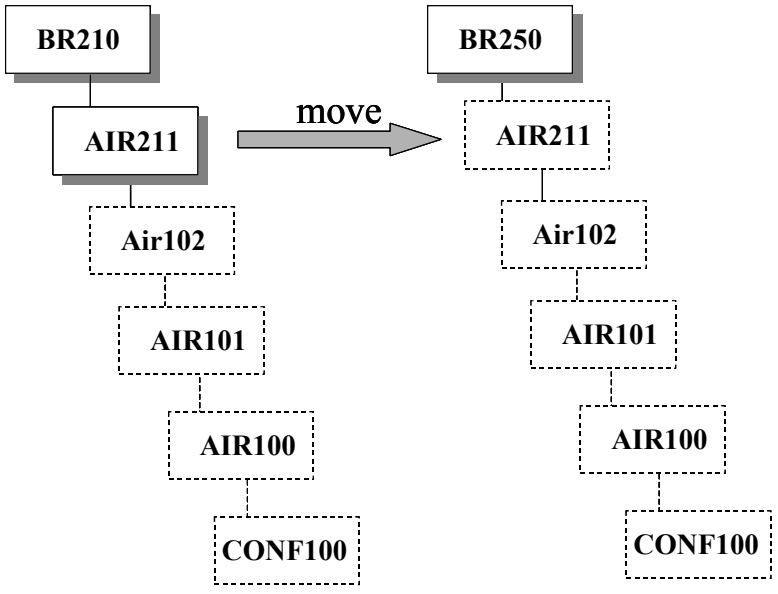
Moving Parent Locations

You can replace the current parent location with a new parent location using the **View/Modify Parents** action.



Example: Modifying a Parent

In this example, we will move the parent of location AIR211 from BR210 to BR250.



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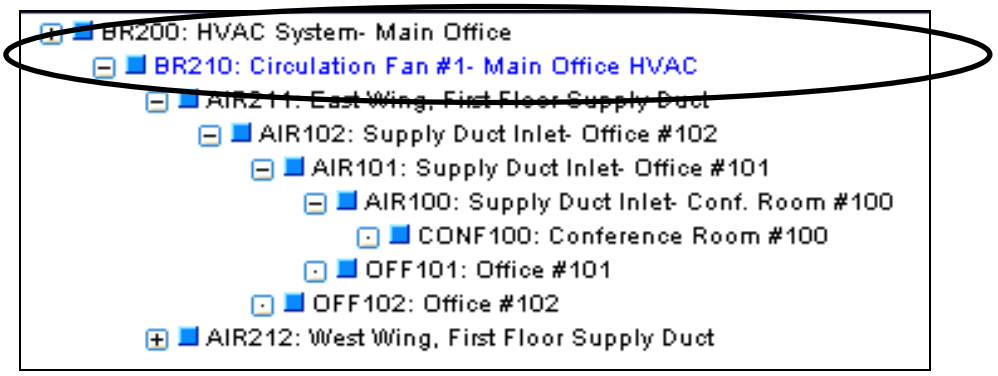
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Managing Locations continued

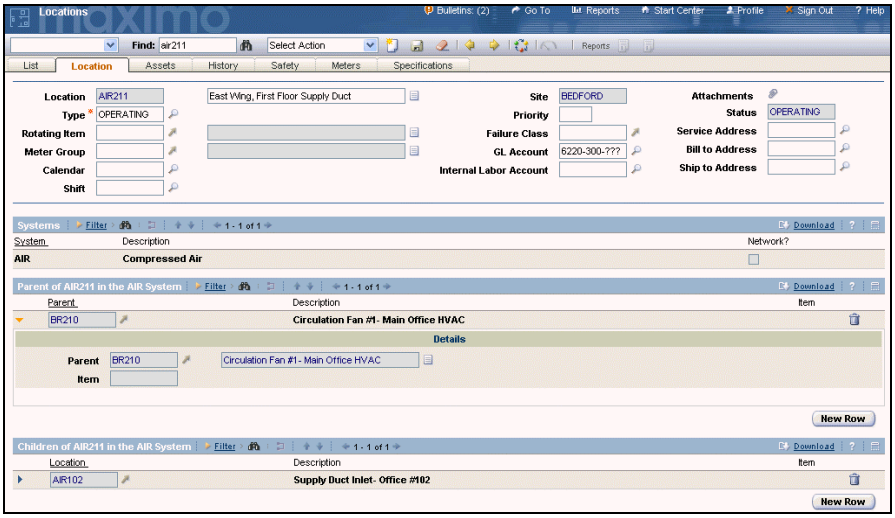
Example: Modifying a Parent

continued

The current drilldown for AIR211 is displayed below:



Step	Action
1	Access the **Location** tab for location record **AIR211**. Result: Your screen should look similar to the graphic below.

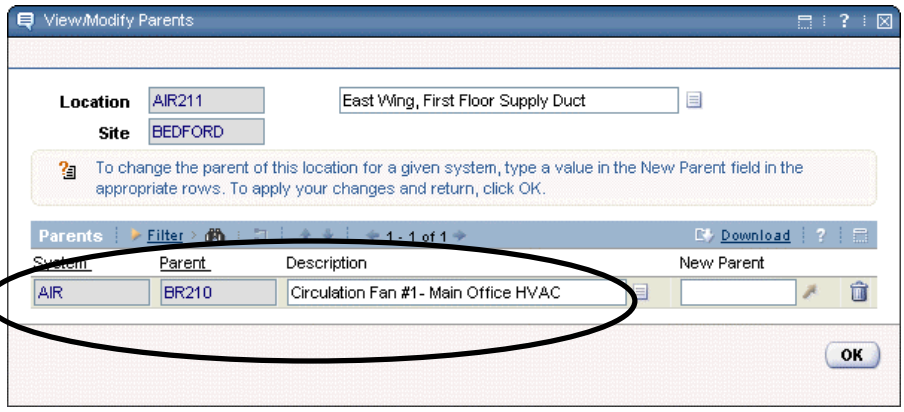


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Managing Locations continued

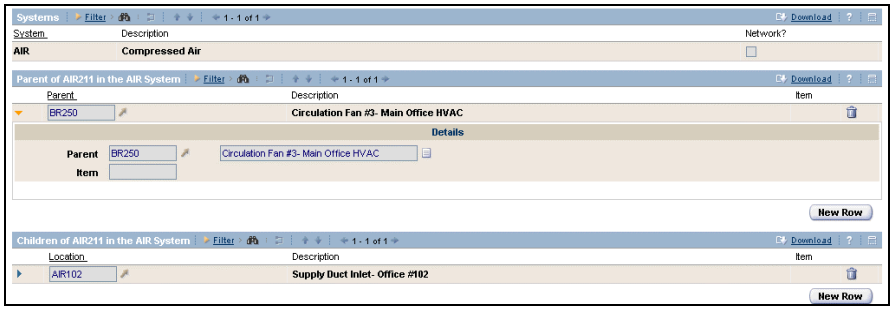
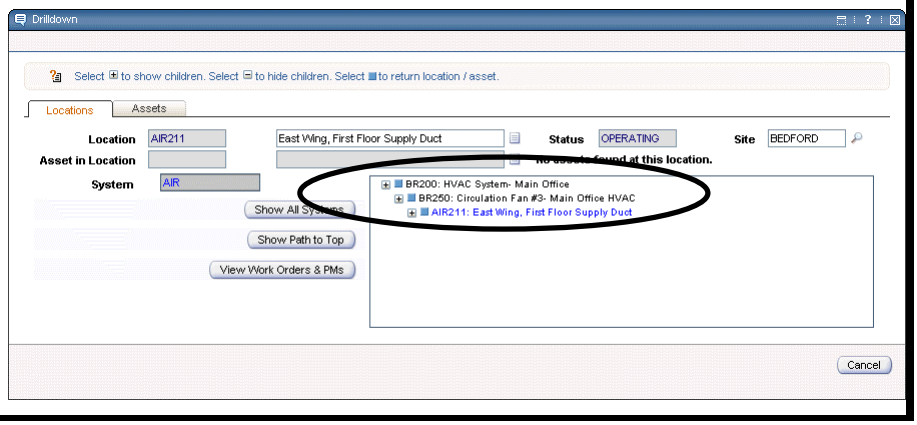
Example: Modifying a Parent continued

Step	Action
2	From the **Select Action** menu, select **View/Modify Parents**. The screen fields should contain the following data: **Field** **Value** **System** AIR **Parent** BR210 

continued on next page

Managing Locations continued

Example: Modifying a Parent continued

Step	Action
3	In the **New Parent** field, enter BR250 and then click **OK**. Result: The values on the lower section of the location record change to reflect the new parent information, similar to the graphic below.  Note: You also could have selected the New Parent from a value list.
4	Select **Open Drilldown** from the **Select Action** menu. The AIR211 location record now indicates the new parent. 

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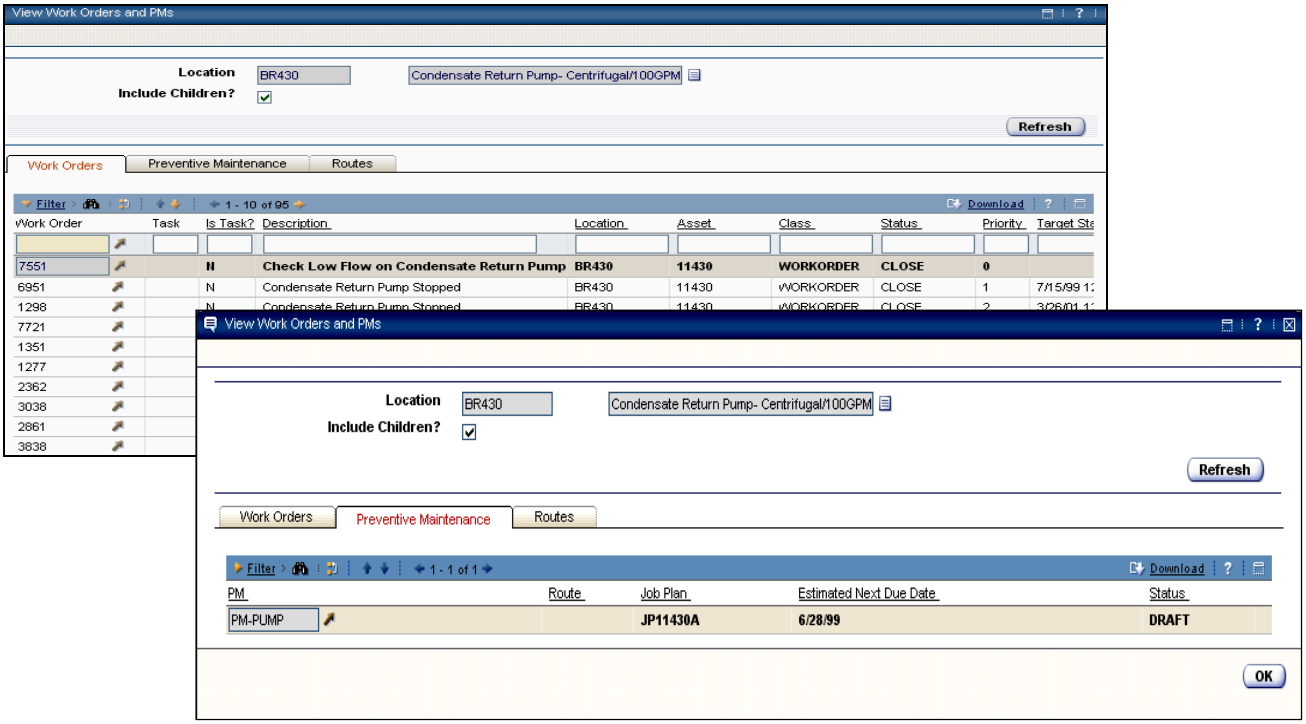
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Managing Locations continued

View Work Orders and PMs

The **View Work Orders and PMs** action displays a read-only view of all of the work orders, PMs, and routes that have been run for the selected record.

Try going to the **BR430** location record and selecting **View Work Orders and PMs** from the **Select Action** menu. You will see the results below.



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Chapter Summary

Location and System

Location and system hierarchies should be an integral piece of a site implementation; they are the backbone of the system. A well-thought-out hierarchical design makes it easier to track assets and costs as related to locations.

In addition, the time and thought you invest in planning the locations and systems creates a more strategic approach in navigating the Assets/Locations Drilldown menus.

Location

Locations are like addresses; for example, if you live at *5 Green Way Plaza*, you might start out in a tent, then a trailer, then a building. Even though the structure you occupy might change, the address remains 5 Green Way Plaza. If you apply the same logic to locations and assets, locations normally do not change; however, the assets residing there might change.

System Definition

In Maximo, a *system* is an identifier or reference consisting of locations associated with a particular focus or responsibility. In most cases, a system functions to identify location hierarchies or location networks.

- Location hierarchies have a parent-child branching relationship.
- Location networks can have multiple parents and have undefined branching relationships.

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Chapter Summary continued

Location Action Menu

The **Select Action** menu contains specific actions associated with the Locations application. Among the actions you can perform with this menu are:

- selecting a status of a location (decommissioned, not ready, and operating);
- viewing the location and system hierarchy (Open Drilldown);
- managing and associating systems with a location;
- changing or modifying location parents;
- viewing work orders, PMs, and routes;
- editing and updating meters associated in a location; and
- managing contracts, users, and services associated in a location.

For a detailed explanation of this menu, see the *Maximo User's Guide*.

Using the Locations/ Assets Open Drilldown Action

The **Open Drilldown** action allows you to view the complete hierarchy of locations and assets The Locations/Assets Drilldown is a standard lookup that lets you find a location or asset by navigating a graphical hierarchical tree. The Drilldown displays systems created in the Locations application and item assembly structure built in the Assets application. You can:

- Switch back and forth between locations and assets by selecting the appropriate tab on the Drilldown.
- Select a location, then switch views to see what assets are at that location.
- Drill down to an asset, then switch views to see its location and the system(s) that location belongs to.
- Show all the systems available for a particular site.

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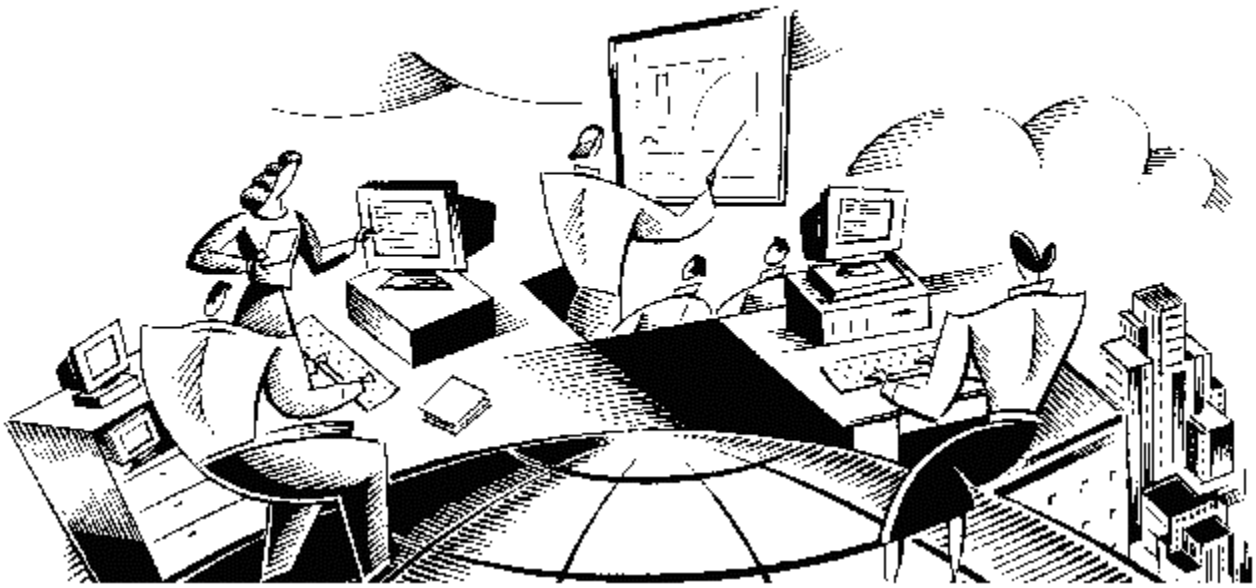
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MXES Immersion Training for EAM

Chapter 4: Entering Person Records and Registering Users



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In This Chapter This chapter contains the following topics:

Topic	See Page
Chapter Overview	4-1
Entering Person Records	4-6
The People Application	4-8
The Person Groups Application	4-12
The Crafts and Labor Applications	4-13
Creating Users and Assigning Privileges	4-23
Chapter Summary	4-43

Chapter Overview

Introduction

The next step in setting up Maximo is to add the person records and then register the users.

Learning Objectives

When you have completed this chapter, you should be able to:

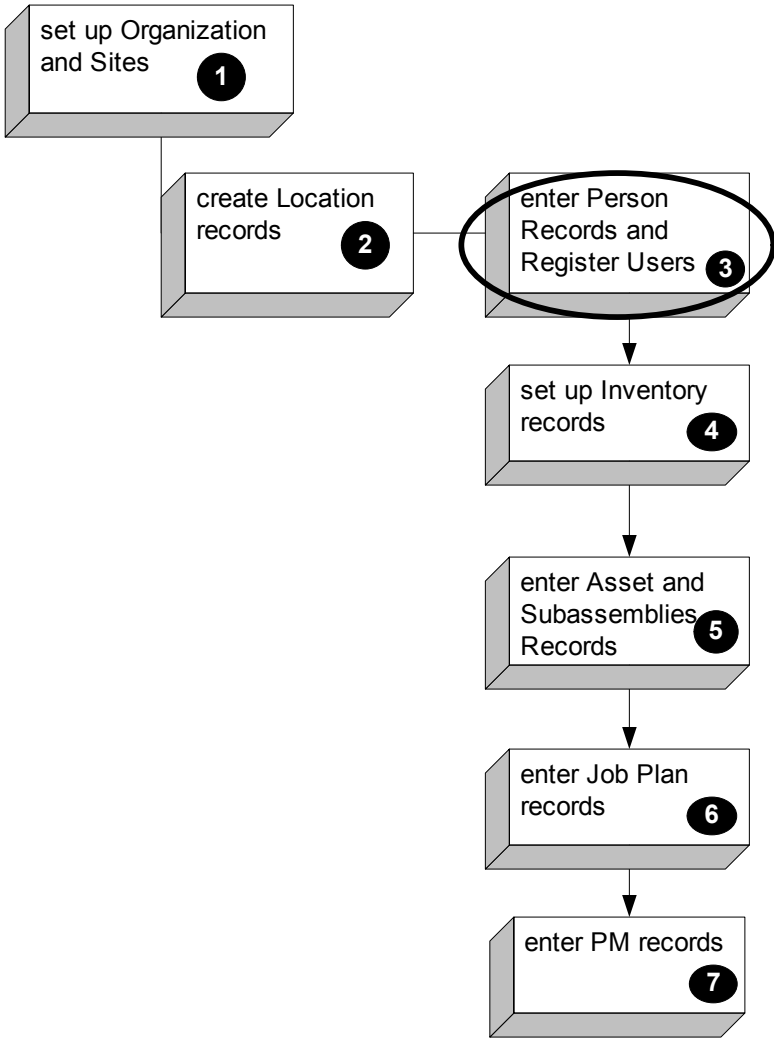
- discuss some key performance indicators (KPIs) for labor;
- insert people, labor, and craft records;
- describe Maximo security groups and users strategy;
- create security groups and users; and
- register users.

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Chapter Overview continued

We Are Here

You can enter person records using the **People**, **Labor**, and **Craft** applications, and you can register users with the **Security** application.



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Chapter Overview continued

Implementation Questions to Consider

- What are the working relationships between maintenance, operations, and production personnel?
- Are your job descriptions well defined?
- Do you have labor groups?
- Are your authorization processes documented for:
  - Work orders?
  - Purchase requests?
  - Storeroom access?
- What is the percentage of time spent for:
  - emergency work labor hours?
  - preventive work labor hours?
  - corrective work labor hours?
  - project work labor hours?
- Do your laborers complete and accurately fill out work order forms? Asset configuration forms?
- How are your labor records to be entered into the system?

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Chapter Overview continued

Key Performance Indicators (KPIs)

Some performance metrics for Craft and Labor are:

Metric Title	Metric Description
% Overtime of total hours worked	What percentage of all hours worked is overtime
Ratio of supervisors to craft persons	Number of supervisors divided by the number craft persons
Ratio of planners to craft persons	Number of planners divided by the number of craft persons
Ratio of hourly maintenance personnel to overhead personnel	Number of hourly maintenance personnel divided by the number of overhead personnel
% Labor Cost Captured on Work Orders	What percentage of labor cost is captured on all work orders
% Self Performed and Contract Maintenance Labor for: • *Total Asset Management Costs* • *Total Operational Labor Costs* • *Plant or Maintenance Engineering costs*	What is the percentage of internal and contract against different cost areas: Maintenance, Operational, Plant Engineering
Straight time and Overtime Labor costs per: • *Asset criticality classification* • *Specific Asset* • *Specific department or location* • *Work type (PdM, PM, CM, Standing Work Order, etc)*	What are the labor costs for straight time and overtime against critical assets, critical locations, and work types
Self Performed versus Contract Labor Cost per: • *Asset criticality classification* • *Specific Asset* • *Specific department or location* • *Work type (PdM, PM, CM, Standing Work Order, etc)*	What are the labor costs for self-performed versus Contract Labor against critical assets, critical locations, and work types

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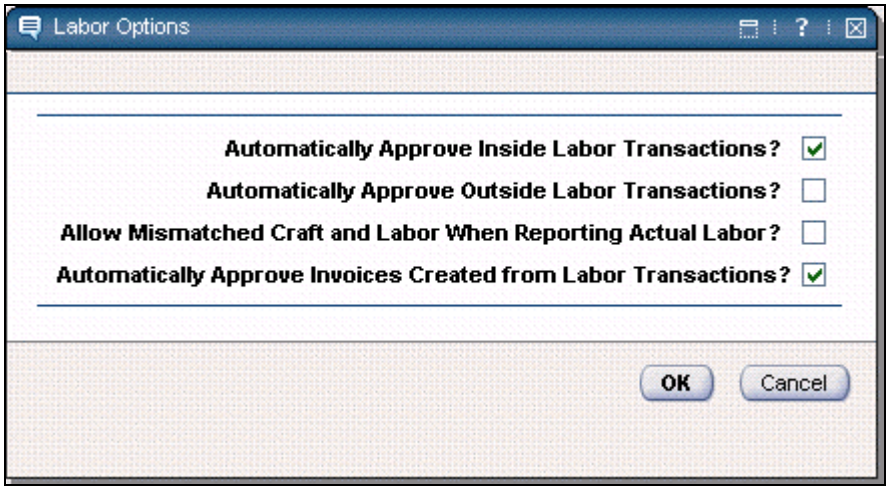
Chapter Overview continued

Organizations Application Options Revisited: Setting Labor Options

The following setup options for labor are available in the **Organizations** application.

On this tab you select labor options for all sites at the selected organization.

Then, *clear* the check boxes to determine whether Maximo automatically approves inside and/or outside labor.



Implementation Tips



- Identify user group profiles that fit the user groups in your organization.
- Create a spreadsheet that identifies your user groups and identify what application privileges those groups will have.
- Use the default signature security strategy provided in the Maximo database as a template to create your own set of authorization profiles.

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Entering Person Records

Introduction

Maximo helps you manage person records in your organization with the **People, Crafts, Labor, Users,** and **Security Groups** applications in the **Resources** and **Security** modules.

Definitions

The following terms are used in Maximo to manage person records:

- *People* – In Maximo, you use the People application to contain person records of all people associated with Maximo as users or labor or groups who might be involved in other ways, such as part of a work or owner group.
- *Labor* – Labor in Maximo is any employee or contractor specified on records and transactions in any of the work-related Maximo applications, such as work orders. Labor is identified by labor codes.
- *Person groups* – These consist of two or more persons who can be designated as a single entity on work orders as a work group or owner group, or on tickets as an owner group. The individuals in the group might or might not be users or labor.
- *Users* – A Maximo user is anyone who signs in to Maximo. Some people might only view information in Maximo, but they are still users. Users are identified by user names.

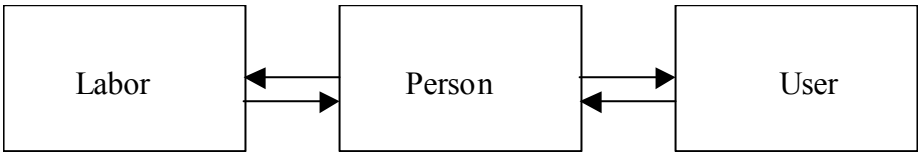
Labor and Users Are Persons

All labor and Maximo users must be associated with a person record.

Because a person can have more than one relationship with Maximo, that person could be a user and/or a labor.

Whether you create a user with the **Users** application or a labor record with the **Labor** application, Maximo will require you to have a person record associated with these records.

The graphic below presents this concept visually.



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Entering Person Records continued

People and Users at System Level

People and **user** records are at the *system level*. So, more than one labor can be associated with a person or user record, as long as each labor record is in a different organization.



Note: No more than one labor and/or user from each organization can be associated with a person record.

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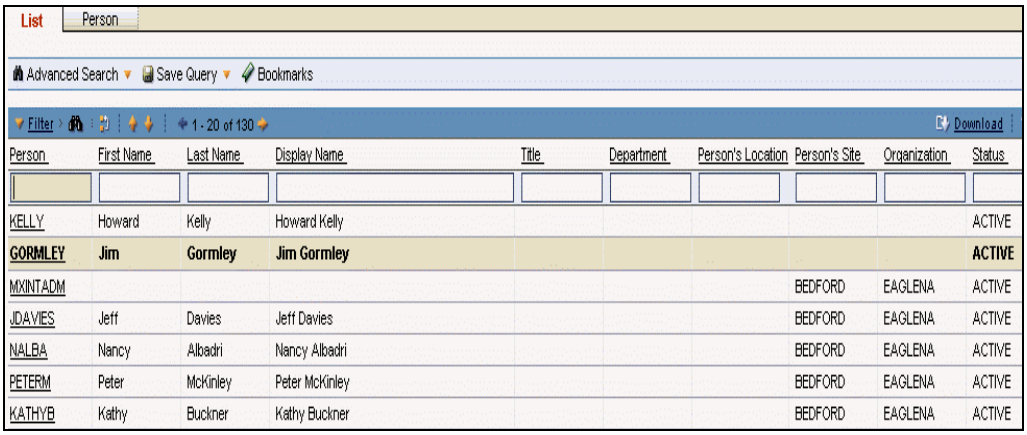
The People Application

Introduction

Person records are maintained using the **People** application in the **Resources** module.

Every person who has a relationship with Maximo is entered as a person record using the **People** application. These relationships include:

- Labor personnel
- Users of Maximo
- Primary owners of assets
- Custodians of assets
- Users of assets (as opposed to Maximo users)
- Vendor contacts



Person	First Name	Last Name	Display Name	Title	Department	Person's Location	Person's Site	Organization	Status
KELLY	Howard	Kelly	Howard Kelly						ACTIVE
GORMLEY	**Jim**	**Gormley**	**Jim Gormley**						**ACTIVE**
MXINTADM							BEDFORD	EAGLENA	ACTIVE
JDAVIES	Jeff	Davies	Jeff Davies				BEDFORD	EAGLENA	ACTIVE
NALBA	Nancy	Albadri	Nancy Albadri				BEDFORD	EAGLENA	ACTIVE
PETERM	Peter	McKinley	Peter McKinley				BEDFORD	EAGLENA	ACTIVE
KATHYB	Kathy	Buckner	Kathy Buckner				BEDFORD	EAGLENA	ACTIVE



A person might have one or more of these relationships with Maximo.

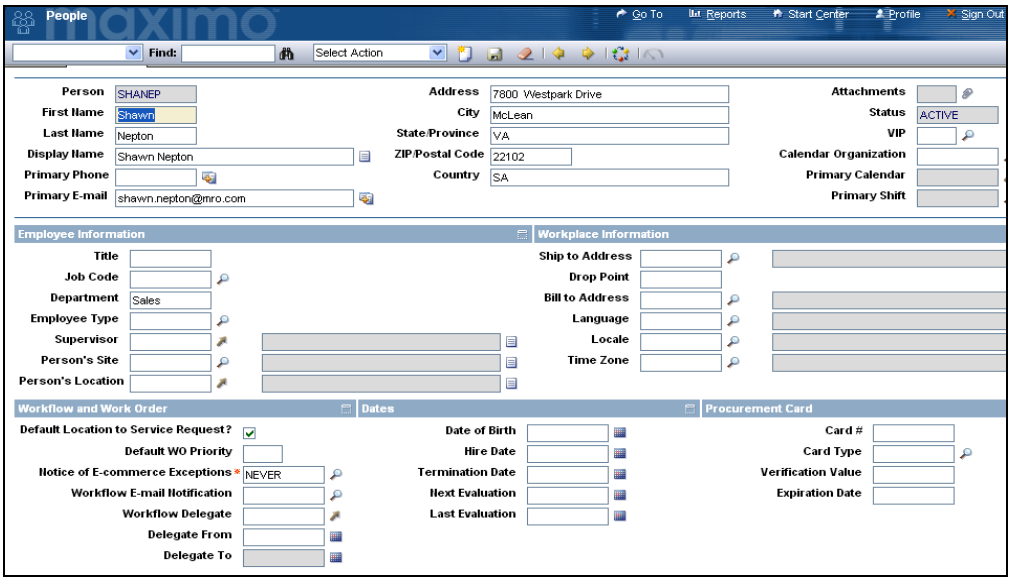
The bottom line is that they are people records first, no matter what their relationship with Maximo.

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The People Application continued

People Application Fields



The People application is fairly intuitive. However, please refer to the table below for some basic information.

Section/Field	Description
Status field	Person records are statusable. A status simplifies the process of deactivating the person and, thereby, deactivating any labor or user records associated with the person.
VIP field	This field allows you to enter a priority code for this person. The code comes in handy when providing service, because it allows Maximo to prioritize work in the queue by the individual who needs something done.
Workflow and Work Order section	This section of the Person tab helps to clarify some default information that is considered when this person is involved with a workflow process in Maximo.

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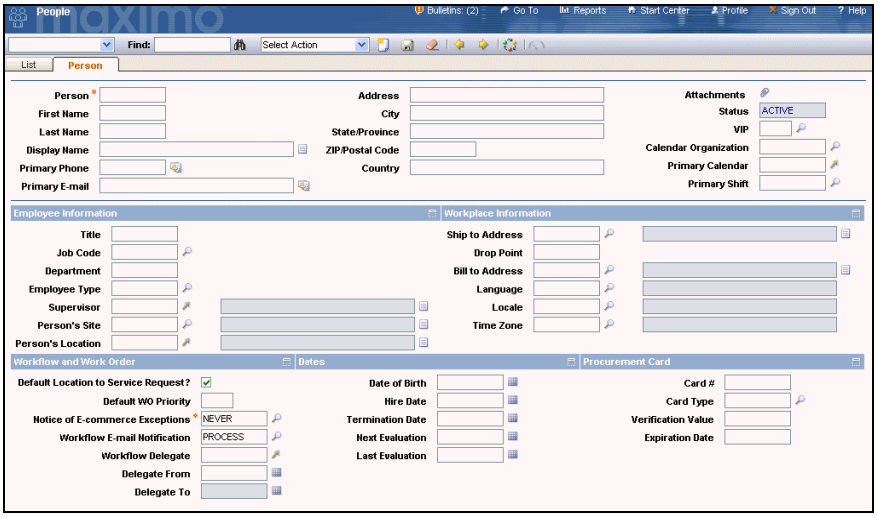
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The People Application continued

Scenario Exercise: Entering People Records



For our Bedford site, we are going to add a person using the **People** application.

Step	Action
1	In the **Resources** module, access the **People** application. Result: The People application opens to the List tab.
2	Click on the **New Person** icon . Result: The People application opens and displays a blank record, ready for editing. 

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The People Application continued

Scenario Exercise: Entering People Records continued

Step	Action
3	Enter the following information: **Field** **Value** **Person** JEFFERS **First Name** Samuel **Last Name** Jeffers **Display Name** [*Allow default to first name, last name*] Note: You can complete any other optional information, such as Address and so on.
4	Save the new person record.

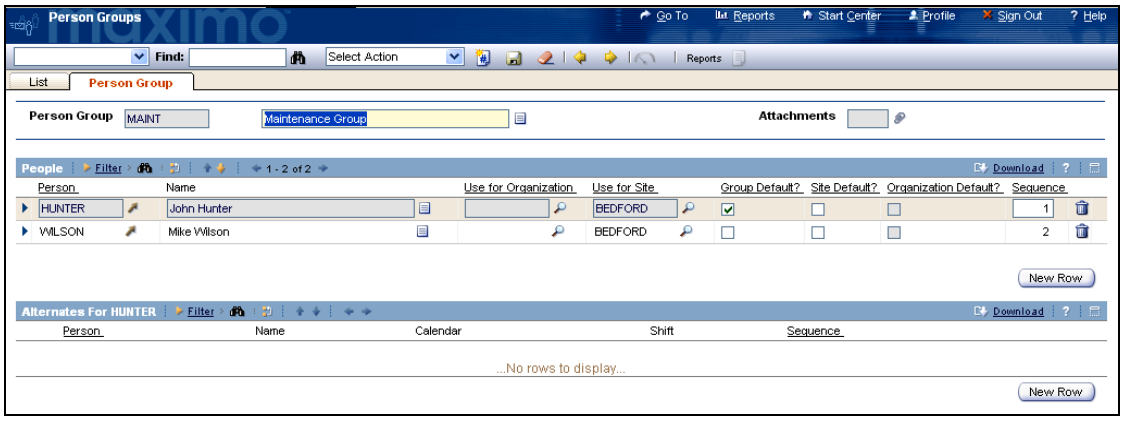
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The Person Groups Application

Introduction

You can use the **Person Groups** application to create, view, and modify person groups. A person group consists of people, who might or might not be workers. After you have created these groups, you can designate a person group as a work group or an owner group on a work order or as an owner group on a ticket.

A person group can also be the recipient of a document routed by the Workflow application. If a document such as a purchase order or a work order is routed to a person group, everyone in the group can receive the document unless Workflow is configured to send it only to someone in the group whose calendar indicates that they are available.



Using the Person Groups Application

You also use the Person Groups application to:

- Remove a person from a person group
- Assign a person group to a work order
- Define alternate people for Workflow
- Assign a person group to Workflow

Note: We will not be assigning the new person in the person group right now.

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The Crafts and Labor Applications

Introduction

The **Crafts** and **Labor** applications are useful not only for labor tracking and analysis, but also for recovering labor costs associated with assets or parts under warranty.

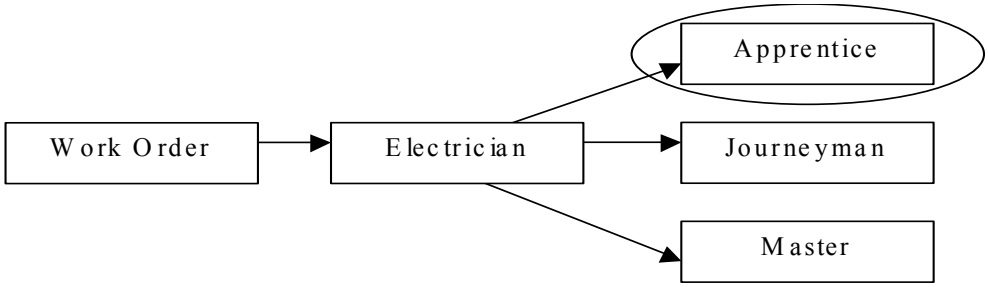
Craft Records

Crafts are used to identify the skill levels, standard rates, and premium pay codes for crafts for forecasting budget requirements. With crafts in place, you can create job plans and identify the skill type required for each task. This will help you in planning, scheduling, and assigning work.

Multiple Skill Levels for Crafts

Maximo allows a more granular approach to using crafts. You can define levels, and these levels can be applied to crafts.

Example: You need an electrician for a work order, but you don't need the top person—you just want a "newbie" to do some basic work. So, you look for an apprentice.



The benefits of this approach are as follows:

- This functionality allows work orders and other types of records to call for more specific skills.
- It allows Maximo to track the various costs of crafts at different levels.
- With an accurately designed implementation, there would be no need to adjust rates when recording actuals.
- The right craft could be requested for the job, and the appropriate pay rate would automatically be in the cost structure.
- With the ability to ask for specific levels of crafts, you can avoid having the master electrician show up to do a simple job, thus more accurately controlling costs.

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The Crafts and Labor Applications continued

Multiple Skill Levels for Crafts

continued

Note: Multiple skill levels can be specified for each craft. For example, to make a distinction between an *apprentice* and a *master electrician*, you do not need to create two separate craft records. You can create a single craft record of ELECTRICIANS and set up skill levels of APPRENTICE and MASTER electricians within the ELECT craft. Each skill level within the ELECT craft could have different standard rates.

The Crafts Application

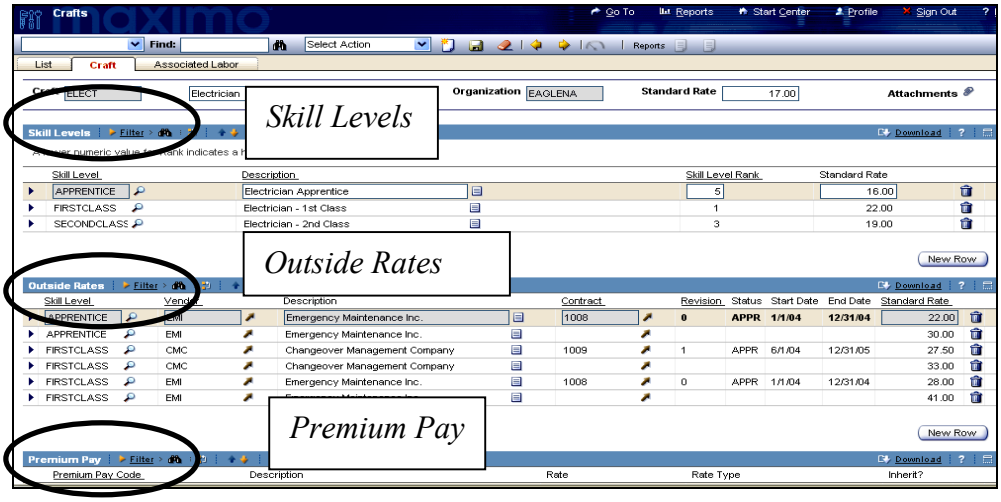
You use the Crafts application to create and work with craft records.

The Crafts application also enables you to associate labor records with crafts and skill levels.

The Crafts Tab and Fields

The **Craft** tab includes the following functionalities:

- Skill Levels
- Outside Rates
- Premium Pay



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The Crafts and Labor Applications continued

The Crafts Tab and Fields

continued

Craft Tab Sections	Description
Skill Levels	Defines the skill levels available for this craft, along with associated costs. Note: The **Skill Level Rank** field is especially important because it allows the Assignment Manager application to choose skill levels at the desired rank and higher when finding labor for work.
Outside Rates	Describes the outside vendors who might also provide labor for this craft. It shows the vendors, craft levels, and contract numbers, where applicable.
Premium Pay	Shows the premium pay categories available for this craft. Existing premium categories can be added by clicking **New Row**. New categories can be added by choosing **Manage Premium Pay Codes** from the Select Action menu, then adding the new code to the craft record.

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The Crafts and Labor Applications continued

Inheritance in Pay Codes

Inheritance will use values for a selected premium pay code, which will move through the system.

Clearing the **Inherit?** check box will apply the premium pay code rate to only that craft.

So, if **Inherit?** is not checked and the rate is changed, the rate applies only to the selected craft, not to all crafts using this premium pay code.

To change the inherited rate for all crafts that use this premium pay code, you need to make the change in the Manage Premium Pay Codes dialog box and keep **Inherit?** checked.

Labor Resources

Labor resources are used for preventive maintenance scheduling, assigning people to work orders, and labor reporting. With Labor entered you can track labor and perform labor analysis.

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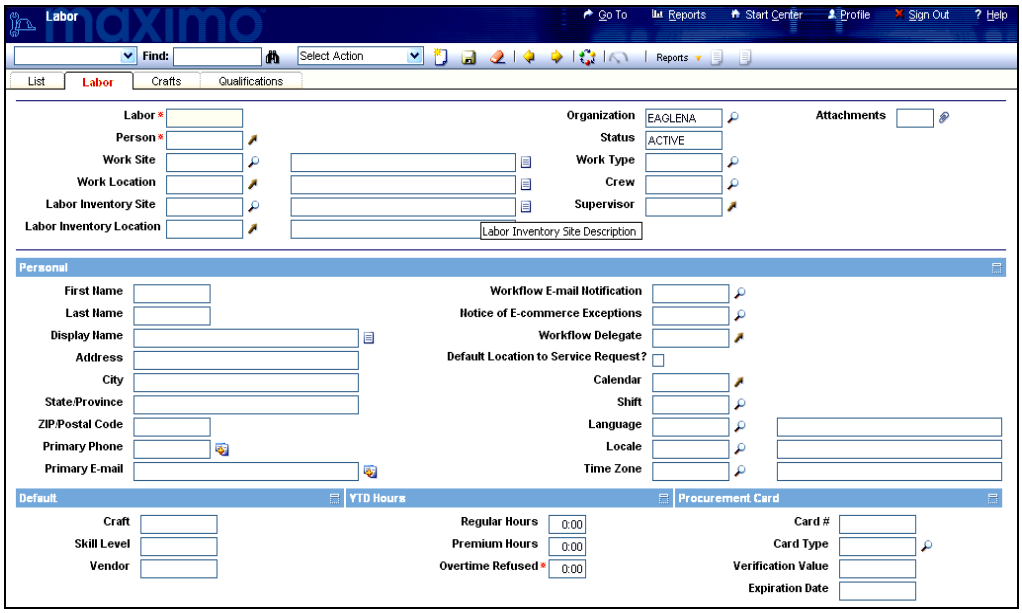
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The Crafts and Labor Applications continued

The Labor Application

You use the Labor application to create, modify, view, and delete labor (employees and contractors) records. You can provide personal as well as work-related information about a labor, such as the labor code's type of work, location of work, procurement card information, and overtime refused by the labor code.

After setting up Labor records, you have to register them in the **Security** application to assign privileges and restrictions on what applications they can access.



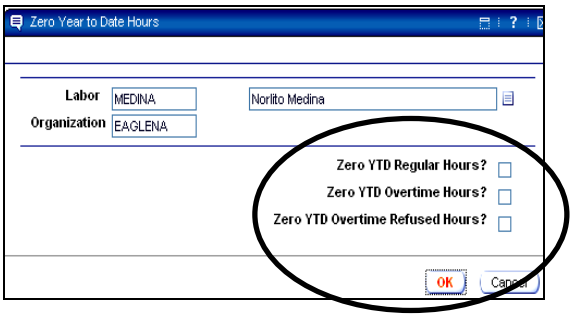
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The Crafts and Labor Applications continued

Labor and Craft Reset Actions

Not only do the **Labor** and **Craft** applications have actions that allow you to create, delete, duplicate, and print labor records; they also have the **Zero Year to Date Hours** action that is used to reset the Year-to-Date hours back to zero.



Scenario Exercise: Entering Craft Records



For our Bedford site, we are going to add a Maintenance Planner craft using the Craft application.

Step	Action
1	In the **Resources** module, go to the **Crafts** application. Result: The Crafts application opens.
2	Click on the **New Craft** icon on the toolbar.
3	Insert a new record with the following data: **Field** — **Value** **Craft** — Planner (**Description**) — Maintenance Planner **Skill Level** — FIRSTCLASS **Skill Level Rank** — 1 **Standard Rate** (for skill level) — 28.75 Note: Leave the Outside Rates and Premium Pay fields' default values.

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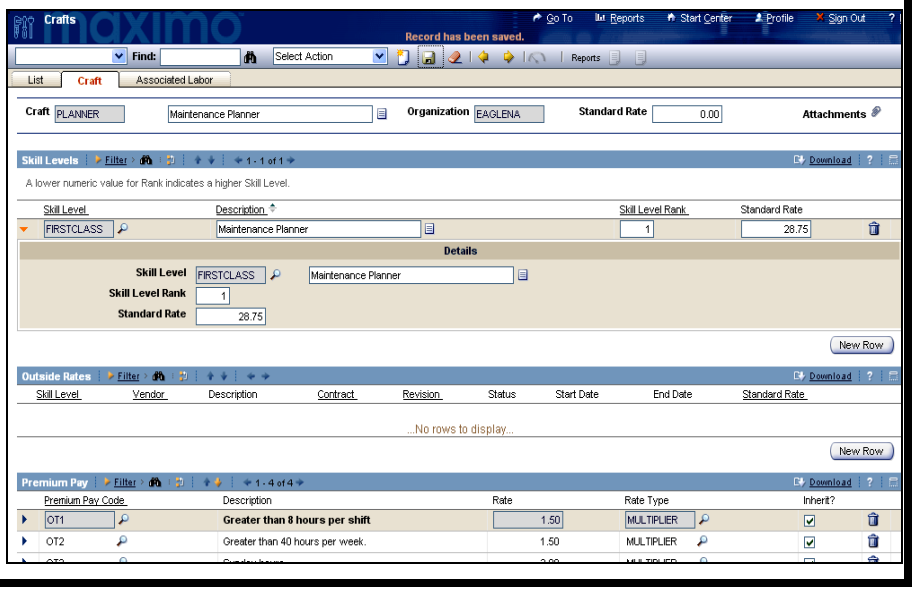
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The Crafts and Labor Applications continued

Scenario Exercise: Entering Craft Records

continued

Step	Action
4	Click **Save Craft** on the toolbar. Result: Your screen should look similar to the graphic below.

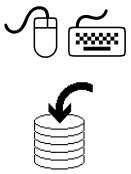


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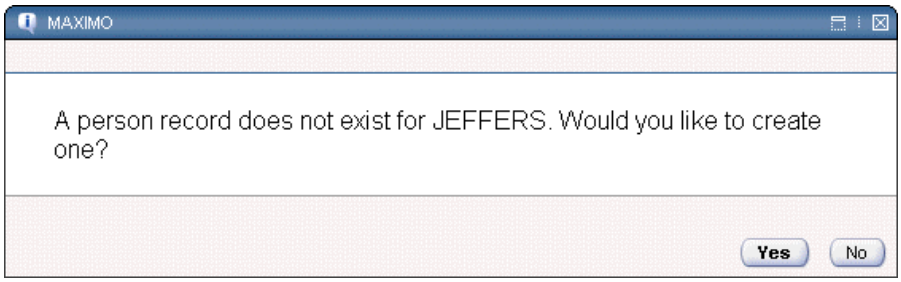
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The Crafts and Labor Applications continued

Scenario Exercise: Entering Labor Records



In the following exercise, you will see how to add a labor record and associate it with an existing craft record.

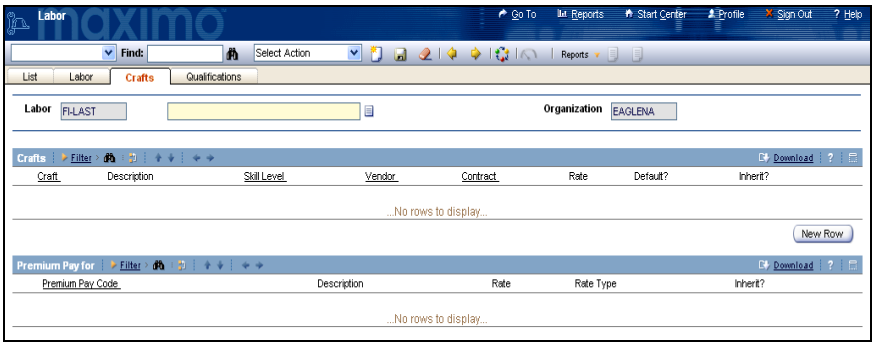
Step	Action
1	Access the **Labor** application from the **Resources** module. Result: The Labor application opens.
2	Insert a new Labor record by clicking on the **New Labor** toolbar button. 
3	Enter the following record on the **Labor** tab: **Field** — **Value** **Labor** — JEFFERS **(Description)** — Samuel Jeffers Result: The value in the Labor field is automatically entered in the Person field because the person record with the same name was previously created. Note: If you add a Labor record before creating a Person record, then Maximo will automatically want to create a Person record with the same name. You would receive a message similar to the one below. 

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The Crafts and Labor Applications continued

Scenario Exercise: Entering Labor Records continued

Step	Action
4	Enter the following information on the **Labor** tab, then save the record. **Field** — **Value** **Work Site** — BEDFORD **Work Type** — PM
5	Click the **Crafts** tab. Result: The Crafts tab opens. 
6	Click **New Row** and enter the following values: **Field** — **Value** **Craft** — PLANNER **Skill Level** — FIRSTCLASS **Inherit Rate from Craft?** — [*Checked*]

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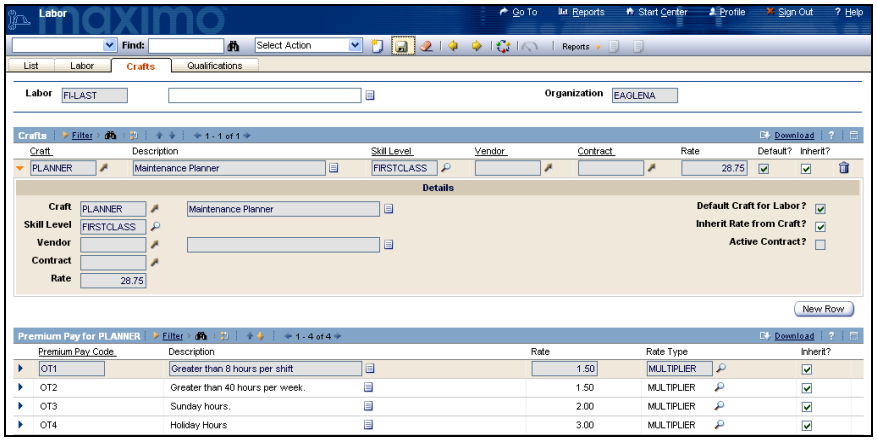
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The Crafts and Labor Applications continued

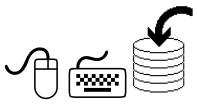
Scenario Exercise: Entering Labor Records

continued

Step	Action
7	**Save** the record. Result: The records in the Premium Pay for Planner table are automatically entered.



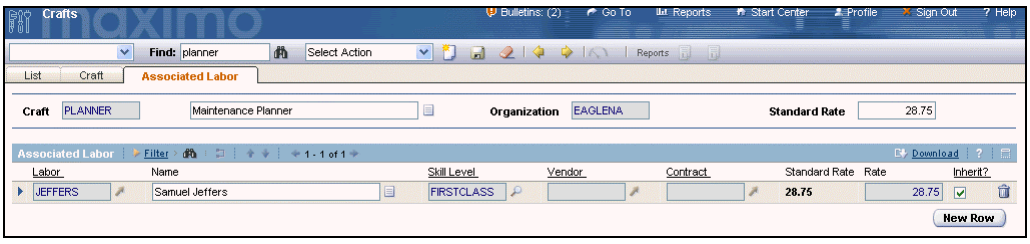
Scenario Exercise: Check the Labor Against the Craft Record



You can view which Labor is associated with various crafts by checking the Associated Labor tab of a selected craft record.

Access the **PLANNER** record in the **Crafts** application, then view its **Associated Labor** tab.

Result: The JEFFERS labor record is listed.



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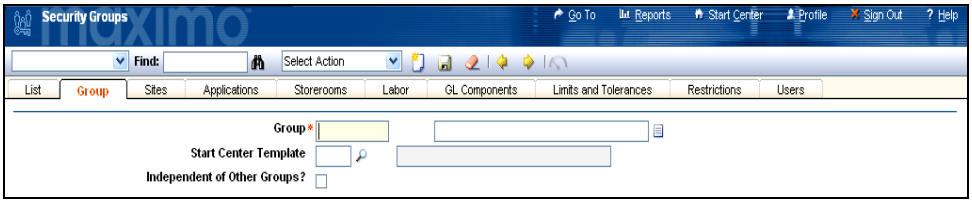
Creating Users and Assigning Privileges

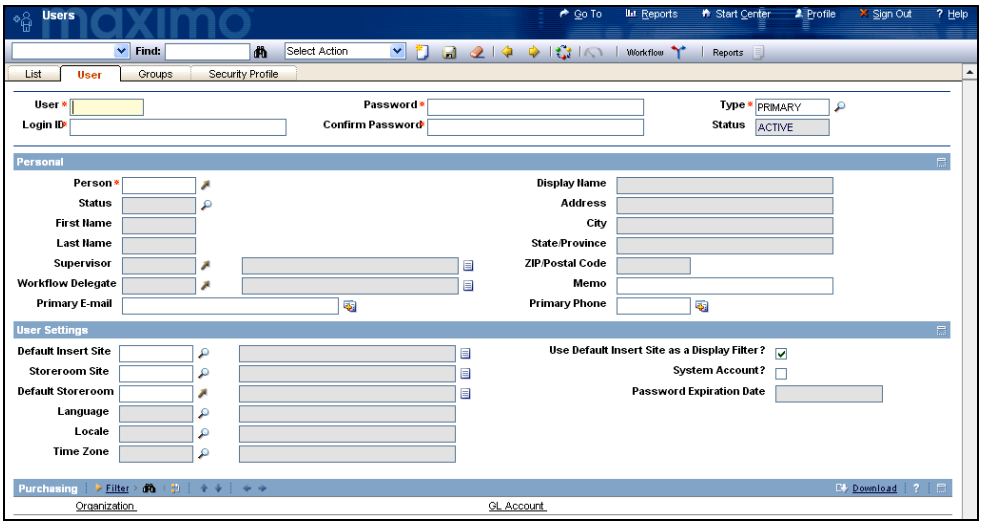
Introduction

People and Labor records can also be identified as Maximo users by registering them using the applications in the **Security** module.

The Security Module

The primary purpose of the **Security** module is to establish and maintain *user groups* and identify *users* within the system. You can identify which users have access and you can specify privileges to establish application and database securities.





Note: Security setup is described in detail in the *System Administrator's Guide*, but you should be aware of how security settings can affect your ability to use Maximo.

Implementation Questions to Consider

- How will new users be entered and registered in the system?
- What identification conventions will be used?
- What application privileges should user groups have?

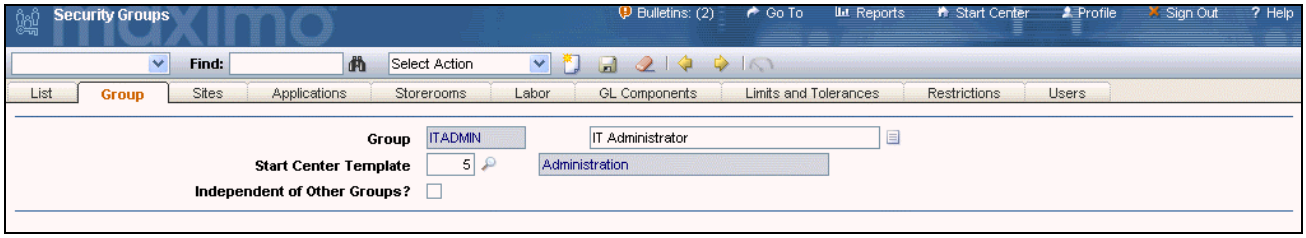
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Creating Users and Assigning Privileges continued

The Security Groups Application

The primary purpose of the Security Groups application is to establish rights and privileges within Maximo, then to identify users for the groups.



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Creating Users and Assigning Privileges continued

Groups

Users of Maximo are assigned to a group. When setting up a group, you define its access capabilities to applications and menus. Any user assigned to that group inherits those access capabilities for as long as that user is a member of the group or until the access capabilities are changed for that group.

Users

When creating a new Maximo user, you need to associate the following with the user in order to assign privileges:

- User Name (Sign-In Name)
- Password
- Security Group
- Default Insert Site (not mandatory, but *strongly* suggested for proper Maximo use)

Users and Security Groups

Some of the Maximo features of users and security groups are:

- All security access to Maximo is based on security groups.
- When setting up a security group, you define access capabilities to applications and their menus.
- A description can be seen after inserting a new group.
- One group's setting can be independent of other groups' settings.
- A user can be a member of multiple groups.
- Any user can have administrative rights within a group.
- Any Maximo user can be assigned as a system administrator.
- A system administrator can add or delete security group users at any time.
- Government FIPS 140-2 compliance.
- Sarbanes-Oxley issues compliance.

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Creating Users and Assigning Privileges continued

About Groups and Profiles

In Maximo, you set up security privileges using groups. You use the Security Groups application to create groups. Then you specify group privileges for applications and options, and specify several limits and restrictions for group members.

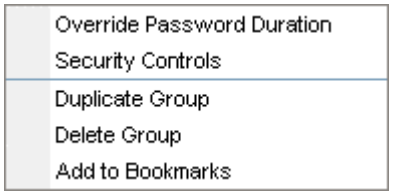
You grant users security rights by assigning them membership in one or multiple groups. You can assign users to groups from both the Security Groups and Users applications:

- In the Security Groups application, you assign users to groups.
- In the Users application, you assign groups to users.

The combination of groups to which a user belongs determines an individual user's security privileges. You can view a user's security privileges graphically on the Security Profile tab in the Users application.

The Security Groups Application Select Action

Additional group privileges are accessed using the Security Groups application Select Actions menu:



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Creating Users and Assigning Privileges continued

Independence vs. Dependence

Security groups can be *dependent* or *independent*. You determine this by checking or not checking the **Independent of Other Groups?** check box.

A description of the effects of this feature follows.

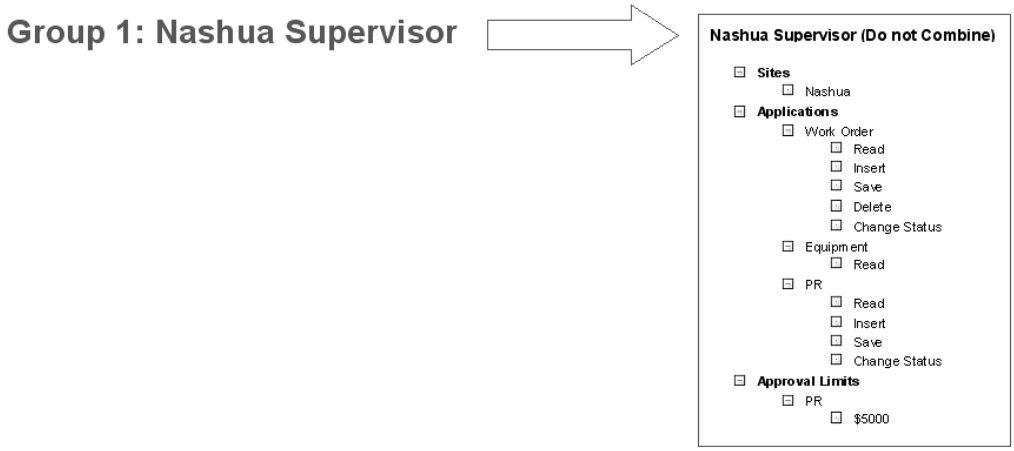
Profile Building Example 1: Two Independent Groups

We have mentioned that groups can be independent or dependent. If they are independent, then their rights are not cumulative. If they are dependent, then their rights are cumulative.

Let's take a look at a graphical example of adding a user to two *independent* groups.

In the following graphic, the *independent* (non-combinable) Nashua Supervisor group has access to some functions in the Nashua site.

For example: This group provides the ability to read, insert, save, delete, and change status on work order records in the Nashua site only.



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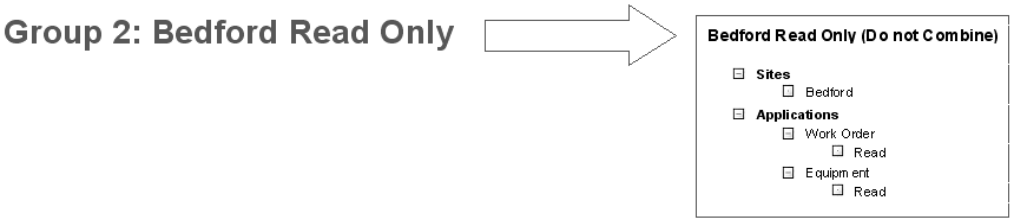
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Creating Users and Assigning Privileges continued

Profile Building Example 1: Two Independent Groups

continued

The following graphic shows that the *independent* (non-combinable) Bedford Read Only group has read-only access to two applications in the Bedford site.



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Creating Users and Assigning Privileges continued

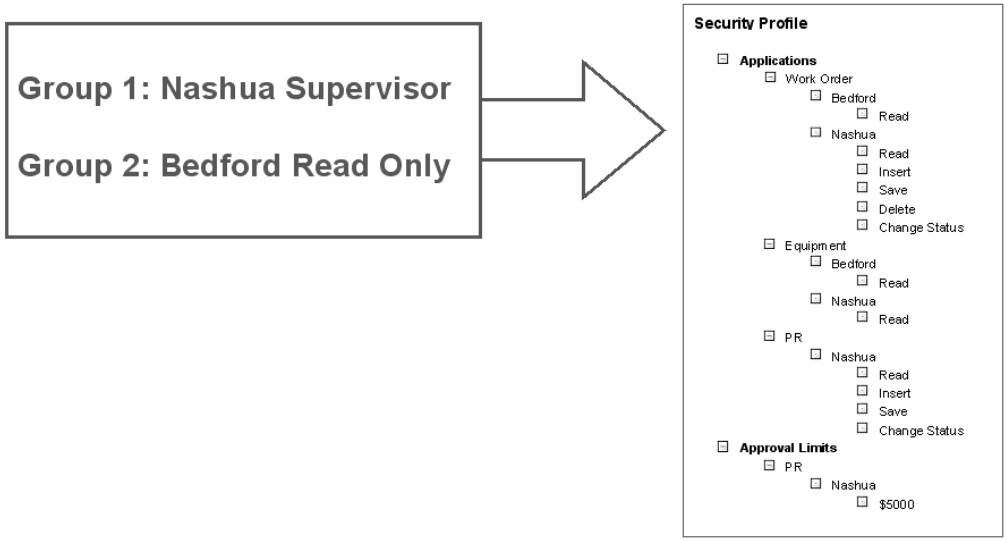
Profile Building Example 1: Two Independent Groups

continued

The following graphic shows the security profile of a user who has been associated with both the Nashua Supervisor and the Bedford Read Only groups.

There has been no addition of rights. For example, the user has the right to read and insert work orders for the Nashua site, but still can only read work orders from Bedford.

There was no *synergistic* gain in rights due to associating the user with both groups.



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Creating Users and Assigning Privileges continued

Profile Building Example 2: Three Dependent Groups

In this example we will associate a user with three *dependent* (combinable) groups and see the results.

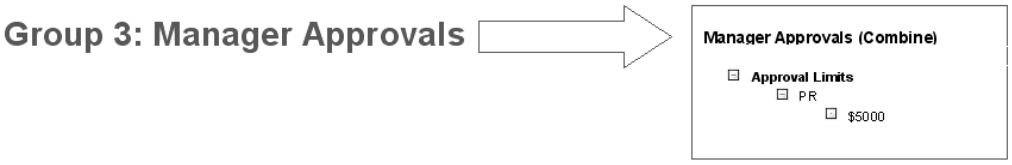
In the following graphic we see that the Northeast Sites group provides data access to both the Bedford and the Nashua sites. This group is *dependent*, therefore combinable with others.



In the next graphic we see that the *dependent* Manager Apps group provides varying levels of access to three different applications.



The next graphic shows that the *dependent* (combinable) Manager Approvals group provides approval limits of $5000 on purchase requests.



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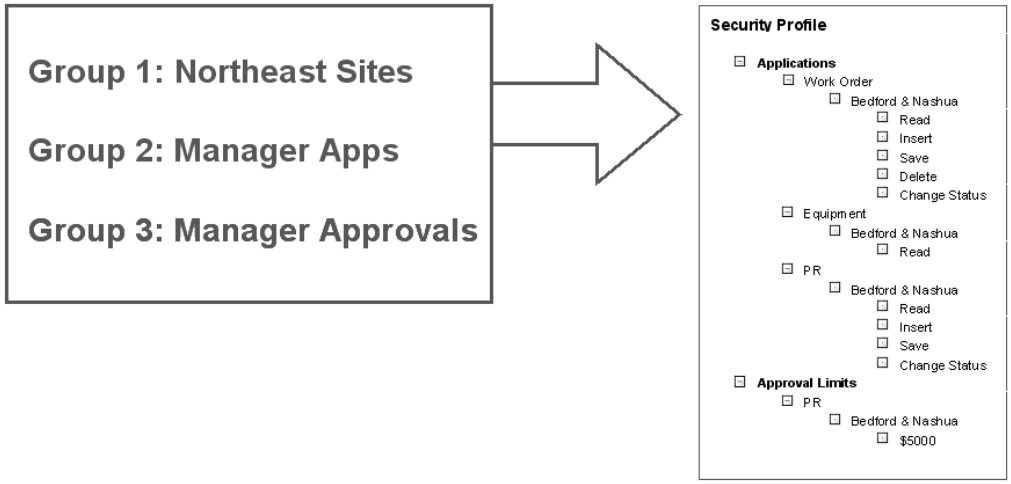
Creating Users and Assigning Privileges continued

Profile Building Example 2: Three Dependent Groups

continued

In the final graphic we see the collective rights as they look when given to a single user.

Because the user belongs to the combinable Northeast Sites group and the other two combinable groups, she now has the access rights from the second two groups on the two sites from the Northeast Sites group.



Profile Building: Summary

We could show you many kinds of combinations of independent and dependent groups given to a user.

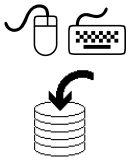
The main point that we'd like you to remember from this is that *the combination of groups is an important thing to consider when you set up security groups*.

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Creating Users and Assigning Privileges continued

Creating a Security Group



In this exercise you will create a new security group.

Step	Action
1	Access the **Security Groups** application from the **Security** module.
2	Insert a new Security Group record. Result: The Group tab opens ready for editing. 
3	Enter the following values: **Field** — **Value** **Group** — [*Your Last Name*] **Description** — [*Your Last Name*] Group **Start Center Template** — 7 **Independent of Other Groups?** — [*Checked*] Note: Normally, the Group and the Description fields should be descriptive of the group's role. We are using your last name here solely for the training environment.
4	**Save** your record, and write your new group here: _____ Note: Remember to periodically save your work, especially before switching to another tab.
5	Click to select the **Sites** tab. Result: The **Sites** tab opens, ready for editing.

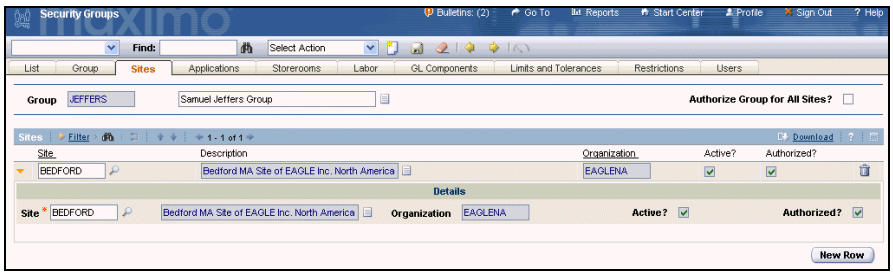
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Creating Users and Assigning Privileges continued

Creating a Security Group

continued

Step	Action
6	Click **New Row**, enter the following value, and then save your record: **Field** **Value** **Site** Bedford  Result: Your new security group should look similar to this one.
7	Click to select the **Applications** tab. Result: The Applications tab opens, ready for editing.
8	In the **Applications** section, click the **Read All** button, and then save your record. Result: All appropriate check boxes in the Read column are selected.

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Creating Users and Assigning Privileges continued

Creating a Security Group continued

Step	Action
9	Make sure that in the **Applications** section, the **Actions** application is selected. Then, in the **Options for [Application]** section, click to select the **Grant Access** check box for the following options: • **Save Current Query** • **View/Manage Queries** Note: You might need to filter the options list to more easily access these options.
10	For this new security group, we will not be adding any more information at this time. **Save** the record.

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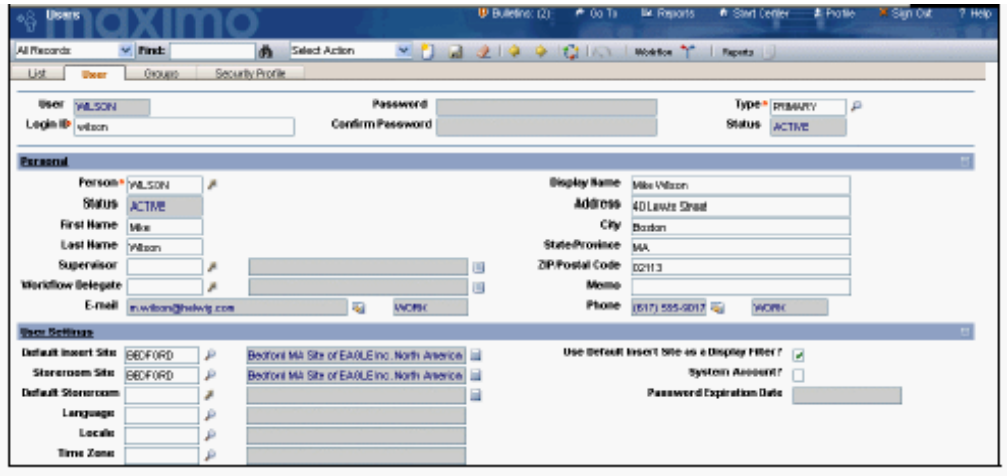
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Creating Users and Assigning Privileges continued

The Users Application

The Users application is in the Security module, and has four tabs:

- List
- User
- Groups
- Security Profile



We will look at these tabs as we go through the following exercises in creating a new user.

Maximo Users

The Users application allows system administrators to add and manage Maximo users. System administrators can manage access rights and passwords, and display a hierarchical view of each Maximo user's security profile.

When you create new Maximo users, they are automatically added to a default security group (DEFLTREG) with limited authorizations and privileges.

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Creating Users and Assigning Privileges continued

Managing Users

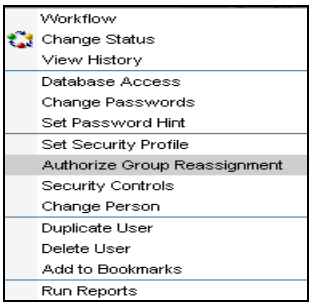
When creating a new Maximo user, you can create the people record for the new user at the same time by populating the fields in the **Personal** section of the **Users** application.

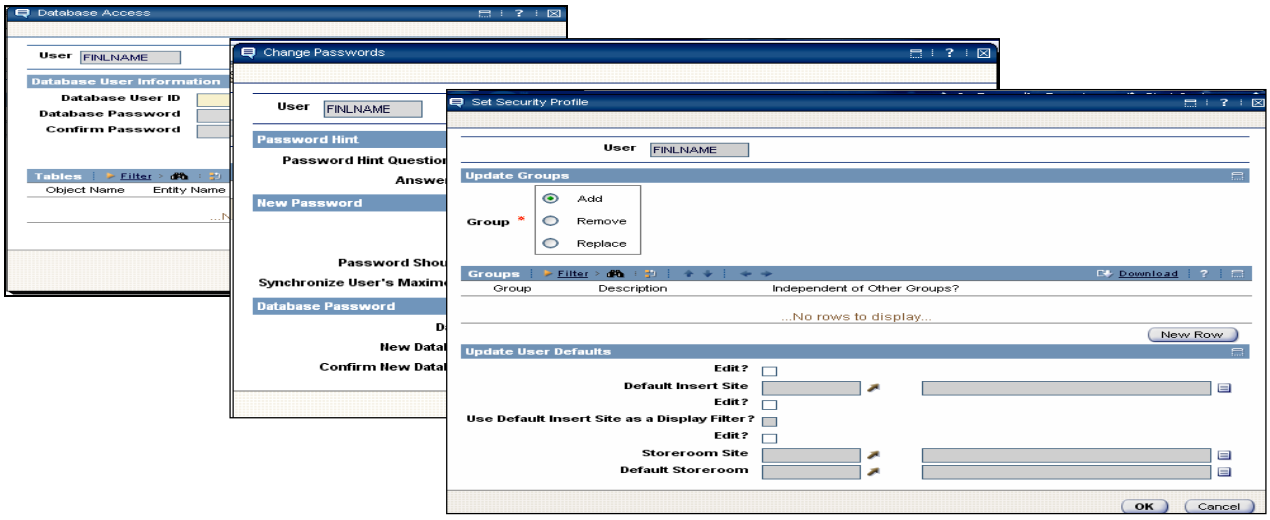
The **Login ID** for a new user, which defaults to the newly created **User ID**, is the login name the user will use when signing in to Maximo. A user's Login ID can be their employee number, their e-mail address, or some other identification according to your business practices.

When adding a new user, you can also specify the user's default site and storeroom.

The Users Application Select Action

You can access additional group privileges with the **Users** application **Select Action** menu:





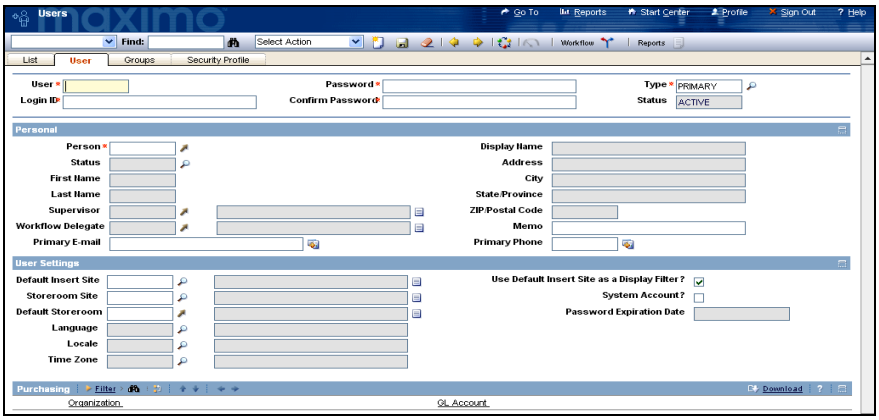
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Creating Users and Assigning Privileges continued

Exercise: Creating a New User

Use the following steps to create a new Maximo user.

Step	Action
1	Open the **Users** application. Result: The Users application opens to the List tab.
2	Click on the **New User** icon . Result: The User tab opens, ready for editing. 
3	In the **User** field, enter JEFFERS. Result: The existing person record with the same name is automatically associated with the record. Note: If there were no person record with the same name, then Maximo would ask if you wanted to create one.

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Creating Users and Assigning Privileges continued

Exercise: Creating a New User continued

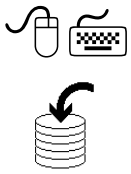
Step	Action
4	Enter the following information: **Field** — **Value** **Password** — jeffers (case sensitive) **Confirm Password** — jeffers (case sensitive) **Default Insert Site** — BEDFORD **Storeroom Site** — BEDFORD **Default Storeroom** — CENTRAL
5	**Save** the new user record.

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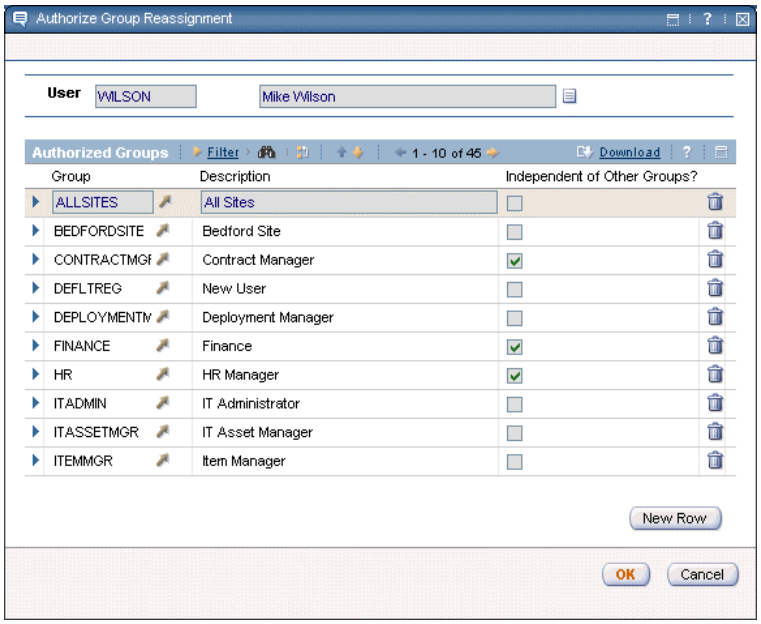
Creating Users and Assigning Privileges continued

Authorize Group Manager



After creating a new security group, you need to tell Maximo which users are authorized to make assignments and reassignments of users to the group. For our exercise, we will give the user WILSON this right.

Follow these steps to see how this is done:

Step	Action
1	Access the **Users** application from the **Security** module.
2	Find the **WILSON** user.
3	Choose **Authorize Group Reassignment** from the **Select Action** menu. Result: The Authorize Group Reassignment dialog box opens. 
4	Add a new row to this dialog box, then enter the name of your new security group into the **Group** field and click **OK**. Result: The Authorize Group Reassignment dialog box closes. WILSON is now authorized to make changes to the list of users assigned to your new group.

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Creating Users and Assigning Privileges continued

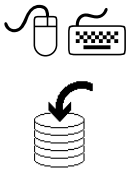
Providing Privileges to a User

Now that WILSON is authorized to maintain the user list on the JEFFERS group, the next step is to provide privileges to the new user by associating it with a security group.

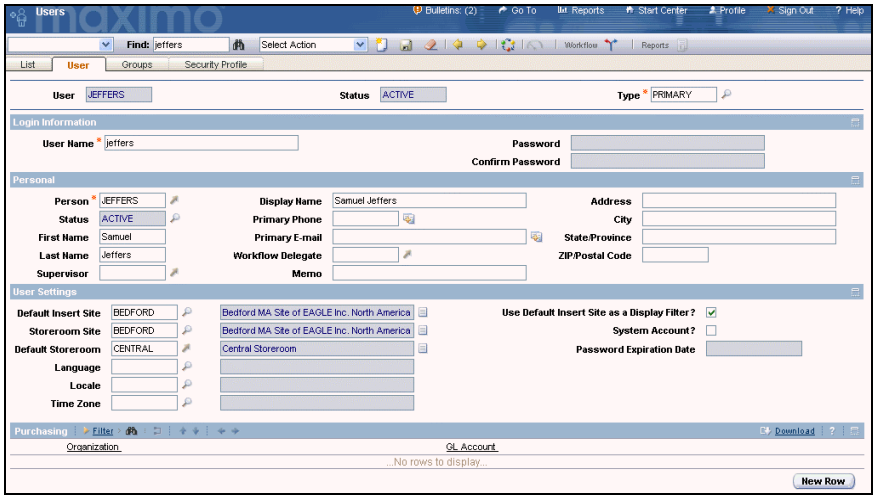
You have two ways to associate a user with a security group:

- Users can be added to a security group record on the Users tab.
- A group can be added to a user record on the Groups tab.

Exercise: Assigning a New User to a Group



For this exercise, we will add the security group to the user record.

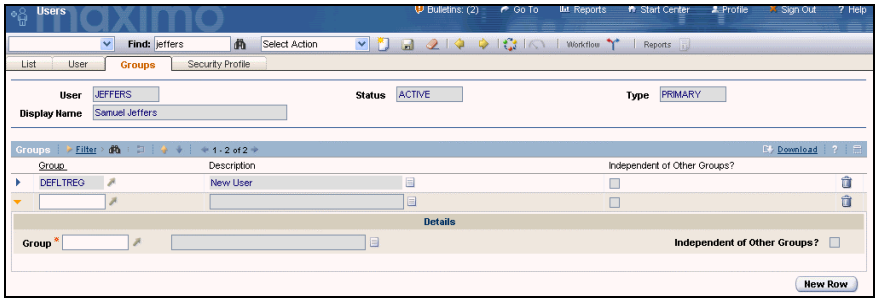
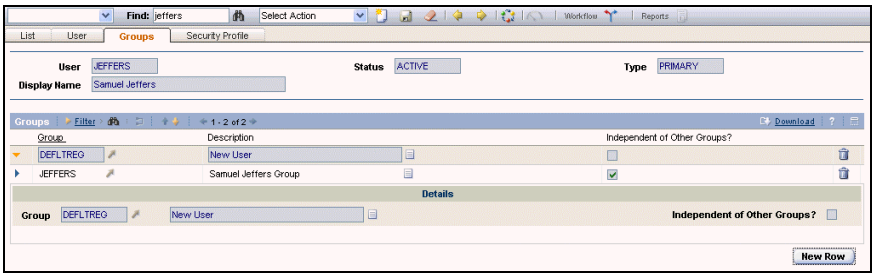
Step	Action
1	Go to the **Users** application in the **Security** module. Result: Maximo displays the Users List tab.
2	Search for the **JEFFERS** user record. Result: The user JEFFERS record opens. 

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Creating Users and Assigning Privileges continued

Exercise: Assigning a New User to a Group continued

Step	Action
3	Click the **Groups** tab and insert a new row.  Note: The DEFLTREG group has been added automatically.
4	In the **Group** field, enter the name of your new security group, then save the record. Result: The JEFFERS user now has the privileges provided by both the DEFLTREG group and your new group. 

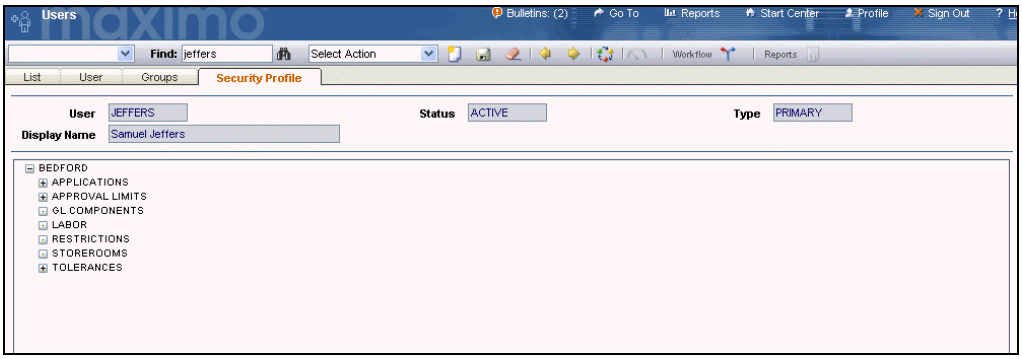
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Creating Users and Assigning Privileges continued

Security Profile Tab

The **Security Profile** tab in the **Users** application provides a visual representation of the privileges assigned to the user.



Optional: Access the **Security Profile** tab for the **JEFFERS** user and drill down to see the various privileges provided.

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Chapter Summary

Groups

Maximo users are assigned to a security group. When setting up a group, you define its access capabilities to applications and menus.

Any user assigned to that group inherits those access capabilities for as long as that user is a member of the group, or until the access capabilities are changed for that group.

Users

When creating a new Maximo user, associate the following with them:

- User Name (Sign-In Name)
- Password
- Security Group
- Default Insert Site (not mandatory, but *strongly* suggested for proper Maximo use)

Users and Security Groups

Some of the Maximo features of users and security groups are:

- All security access to Maximo is based on security groups.
- When setting up a security group, you define access capabilities to applications and their menus.
- A description can be seen after inserting a new group.
- One group's setting can be independent of other groups' settings.
- A user can be a member of multiple groups.
- Any user can have administrative rights within a group.
- Any Maximo user can be assigned as a system administrator.
- A system administrator can add or delete security group users at any time.
- Government FIPS 140-2 compliance.
- Sarbanes-Oxley issues compliance.

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Chapter Summary continued

Registering Users

Every user must be registered to at least one user group with the Security module.

Note: New users are automatically associated with the DEFLTREG user group.

You have two ways to associate a user with a security group:

- Users can be added to a security group record on the Users tab.
- A group can be added to a user record on the Groups tab.

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NOTES:

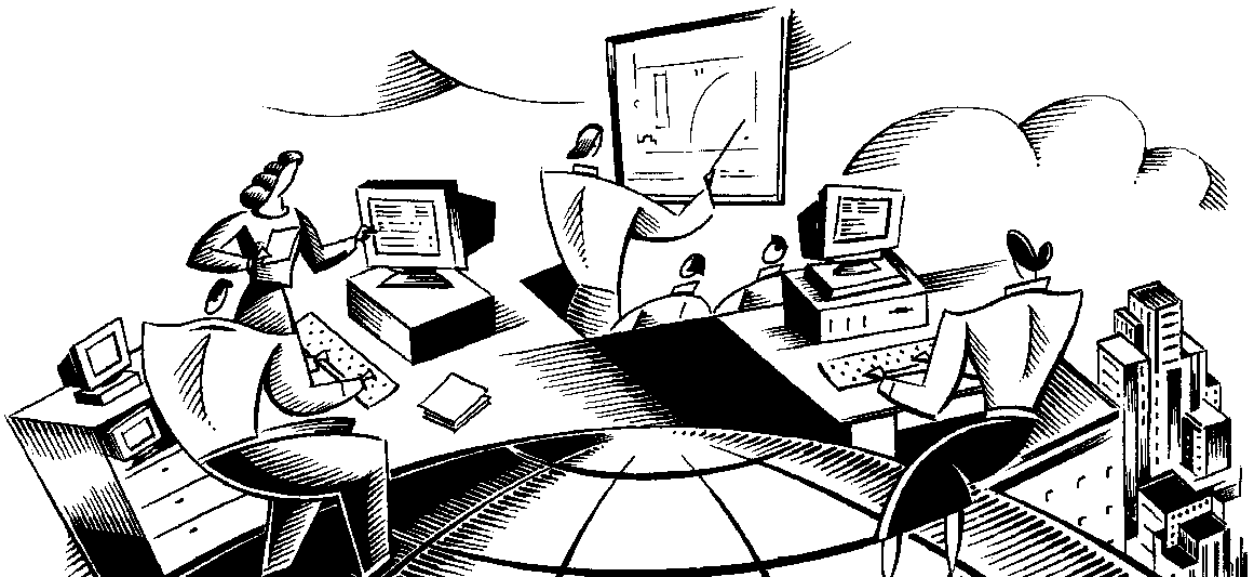
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MXES Immersion Training for EAM

Chapter 5: Setting Up Inventory Items



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In This Chapter This chapter contains the following topics:

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Using the Inventory Application	5-31
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Chapter Overview

Introduction

Tracking inventory use and stocking levels can help your organization reduce costs.

Inventory items entered in Maximo can be tracked as they are received in the storeroom and as they are issued.

Items can be automatically reordered, reducing "stock outs" for the storeroom. All inventory items are recorded for later usage detail.

This should lead to improved purchase planning, allowing organizations to see reductions in wasted inventory levels.

Learning Objectives

When you have completed this chapter, you should be able to:

- discuss key performance indicator (KPI) inventory management,
- enter parts and inventory records,
- add alternate vendors,
- set up rotating items,
- describe the item kits and condition codes functions of the inventory applications, and
- discuss the relationship between the Inventory and Assets applications.

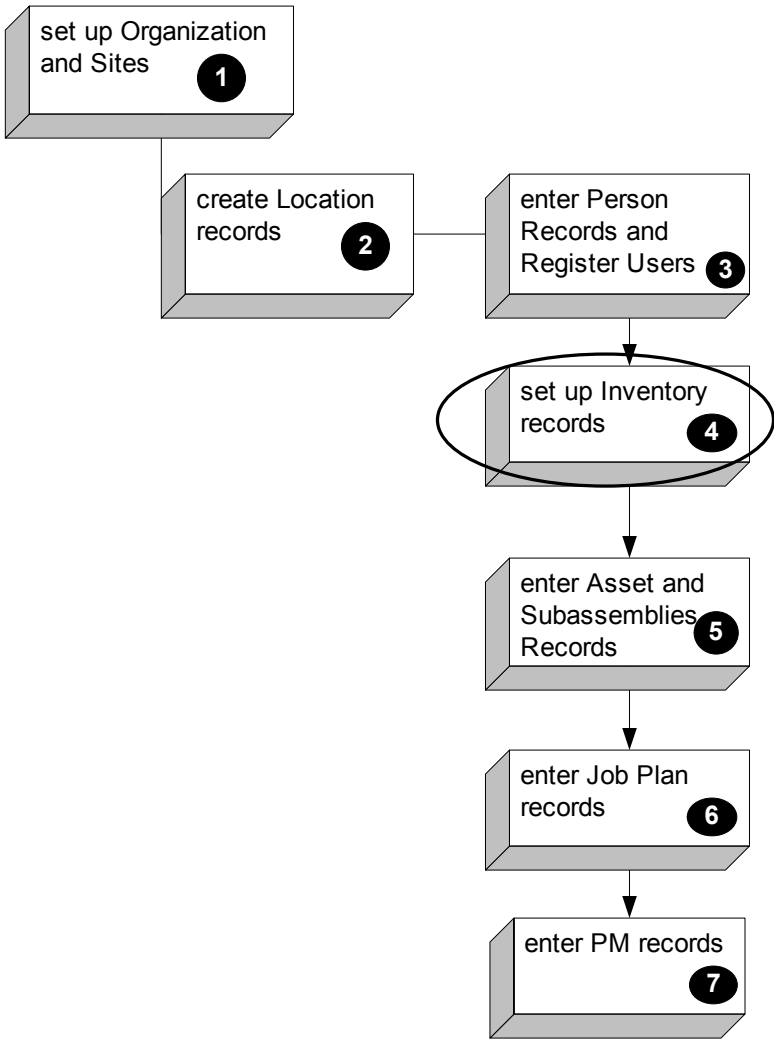
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Chapter Overview continued

We Are Here

You can set up parts and inventory items in your storerooms using the **Item Master** and **Inventory** applications.



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Chapter Overview continued

Key Definitions

A number of key terms used in this section are defined in the following table.

Key Term	Definition
Item	The basic non-serialized unit for things/parts that are kept in inventory.
Item record	A record for an inventory item that does not include the location.
Item/location record	A record for an item at a storeroom location.
Rotating item	An inventory item, with a generic item number and a current balance (which can be greater than one), multiple instances of which can be used in multiple locations.
Rotating assets	An individual instance of a rotating item, identified by an individual asset number.
Alternate items	Items/parts that can be used interchangeably with other inventory items.

Implementation Questions to Consider

- Are items for critical assets identified?
- Are your item descriptions standardized and normalized, that is, structured using the noun, modifier, attribute format?
- Do items have manufacturer and manufacturer part number identified?
- Are your reorder point (ROP) and reorder quantities current?
- Are original equipment manufacturer (OEM) items stocked by type of assets?
- Are MRO items stocked by commodity, that is, bearings; power transmission; electrical; pipes, valves, and fittings (PVF); fasteners; industrial supplies?
- Are in-house part numbers assigned to all stock-keeping units (SKUs)?
- Are bins coded?
- Do you have a satellite stockroom?
- Do you have a mobile stockroom?

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Chapter Overview continued

KPIs

Some Inventory KPIs to consider for your implementation are as follows:

Metric Title	Metric Description
% Inactive stock items	Percentage of all stock items that have had no activity in the past 12 months.
% Controlled maintenance spares	Percentage of all parts used by maintenance that are in controlled warehouses.
% Items filled on demand	Number of items issued on demand divided by all items issued.
% Total orders filled on demand	Number of orders issued on demand divided by all orders filled.
Total inventory value	Total dollar value of all inventory items in stock.
% Annual stores investment used	Percentage of the inventory value that is used annually.
Inventory turn ratio	The value of total orders for inventory items annually, divided by the total value of inventory.
% Non-critical spares as a % of total inventory value	Percentage of all inventory items that are considered non-critical to the operation.
% Critical spares as a % of total inventory value	Percentage of all inventory items that are considered critical to the operation.
% Storeroom inventory value to total maintenance costs	Inventory value divided by total maintenance costs.
Total inventory value as a % of sales	Inventory value divided by total sales generated annually.
Total value of obsolete parts	Total value of obsolete parts.

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Chapter Overview continued

Out-of-the-Box Maximo Reports

The following reports are available for the Inventory application.

Report	Description
Item Availability	Displays item availability across multiple sites by storerooms.
Receipt and Transfers Transactions	Details receipts and transfers transactions for selected items in a storeroom.
Issues and Returns Transactions	Details issues and returns transactions for selected items in a storeroom.
Adjustments Transactions	Details adjustment transactions for selected items in a storeroom.
Inventory Transactions List	Lists all transactions for a single item in a given time frame.

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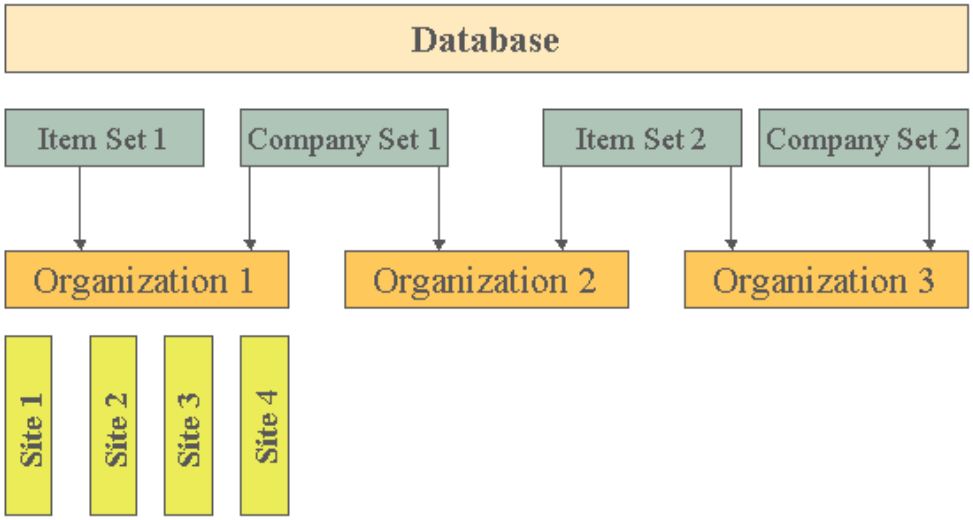
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Chapter Overview continued

Sets Application Revisited

If two or more organizations share a set of items or companies, they can use the same data in their internal transactions and can share this same data among all the organizations that use it.

The diagram below shows the interrelationships between database, sets, organizations, and sites.



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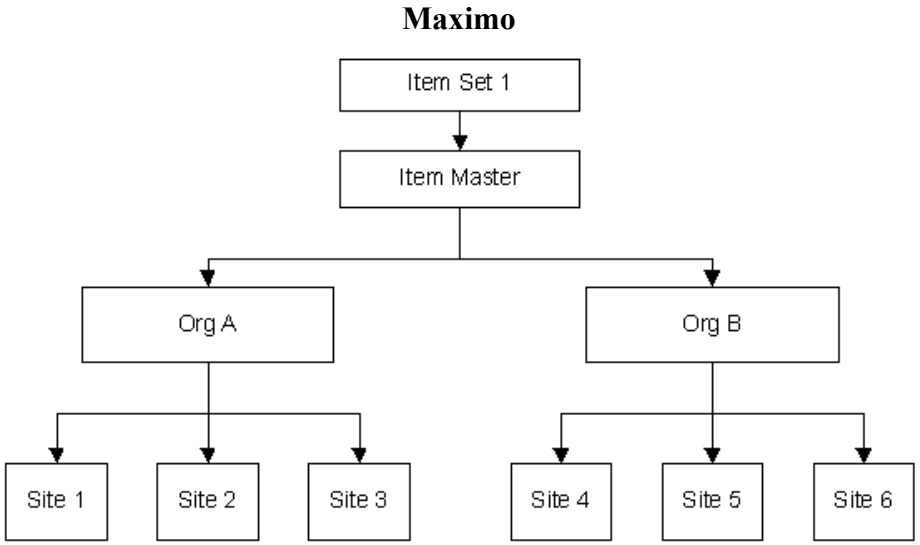
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Chapter Overview continued

Item Sets and Item Master

The graphic below shows how the Item Master works within a single item set.

Organizations that use the same item set also use the same item master. Therefore, they can share items across organizations and sites.



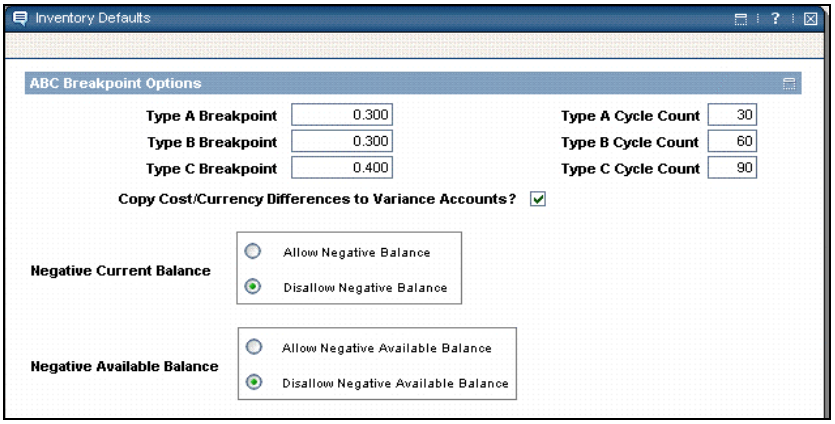
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Chapter Overview continued

Organizations Application Options Revisited

The following setup options for Inventory are available in the **Organizations** application:

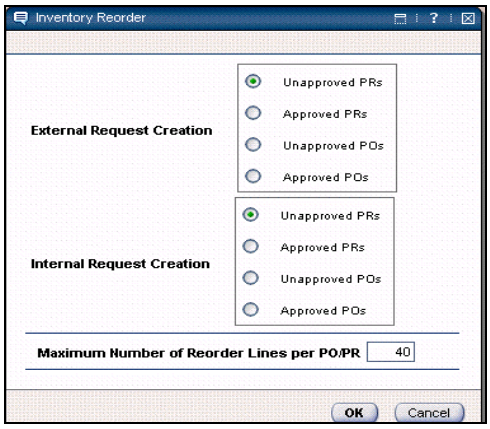
Option	Description
Inventory Defaults	Use the **Inventory Defaults** tab to set options for: • ABC Breakpoints • Negative Current Balance • Negative Available Balance 

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Chapter Overview continued

Organizations Application Options Revisited continued

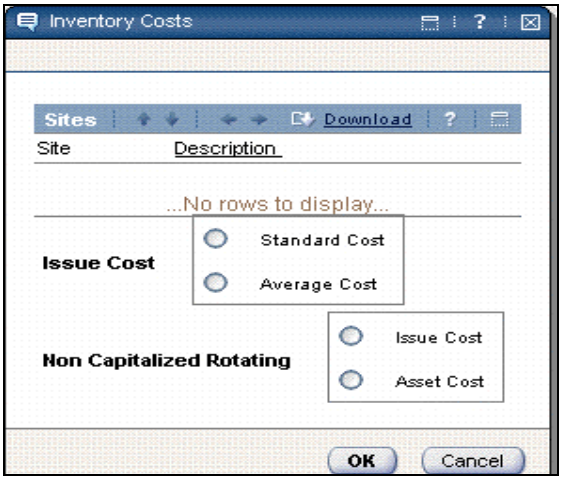
Option	Description
Reorder	Use this option to specify whether Maximo creates an approved or unapproved *purchase requisition* or *purchase order* when a reorder request is generated. You set the default separately for reorder requests directed at external vendors and internal supply rooms. 

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Chapter Overview continued

Organizations Application Options Revisited continued

Option	Description
Inventory Costs	With this option you can choose inventory cost options for the selected site. These settings will not affect other sites.  The sections of this screen are described in the table below.

Screen Section	Description
Issue Cost	*Issue cost* is the cost assigned to the item when it is used. By default, the issue cost is based on *average cost*. To base issue cost on standard cost, select the **Standard Cost** option.
Non Capitalized Rotating	By default, costs for non-capitalized rotating items and assets are based on the setting for issue cost. To base non-capitalized rotating costs on assets cost, select the **Assets Cost** option.

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Chapter Overview continued

Stocked, Non-Stocked, and Special Order Items

There are three categories of inventory items in Maximo: stocked, non-stocked, and special order items.

Category	Description
Stocked Items	Items that you always need to have on hand because they have a regular turnover rate and are frequently needed. Stocked items have reorder criteria specific to each storeroom location.
Non-stocked Items	Items you need only occasionally and do not want to maintain in inventory throughout the year. Non-stocked items are not automatically reordered. However, you do want to keep records for non-stocked items in the database because you are likely to order these items again at some point.
Special Order Items	Typically items that are ordered only once, often for unexpected needs or for a one-time work order. These items are not kept in stock, and you do not need a permanent record of them in your database.

Implementation Tip



Because it is not required to initiate work orders, Maximo's inventory applications and inventory setup can be implemented in stages.

Identify and enter your highest-level stocked items first, as well as the critical spares for your critical assets.

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Chapter Overview continued

Setting Up Inventory in Maximo



There are two parts to setting up inventory in Maximo:

1. Define your storeroom and define inventory items to be stocked there using the Storeroom and Items Master applications.
2. Enter specific item information relevant to the storeroom using the Inventory application.

Note: The following sections set up items using the Item Master and Inventory applications. Creating a storeroom will not be covered. Please refer to the *Maximo User's Guide* for more information.

Storeroom and Inventory Management

While creating and managing storerooms is not covered in this course, it is important to note that you can use the Security Groups application to grant a user access to specific storerooms for inventory processing functions.

Storeroom access pertains to functions that affect inventory items and balances, such as reordering items, issuing items, transferring items, making balance and cost adjustments, and adding items to a location.

Tip: Mobile Unit



While some users might choose to set up separate storerooms for mobile units, another approach is to set up the issuing storeroom's item bin as a mobile unit.

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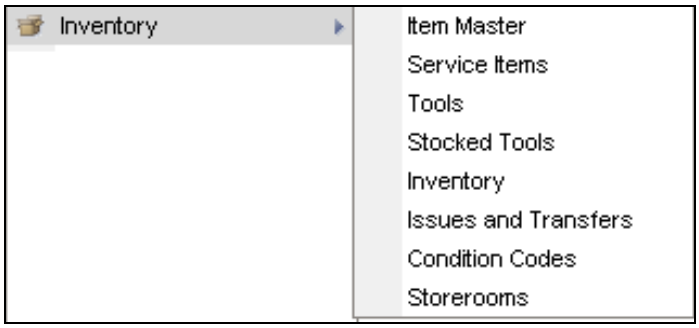
The Inventory Module

Introduction



You will be using the **Inventory** module applications for entering inventory records.

Note: Our goal is to track inventory items as they move along the organization and as processed in Maximo modules and applications. We will not be dealing with the whole inventory management system, which is discussed extensively in *Inventory Management Using MXES.*



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Condition Codes

Introduction

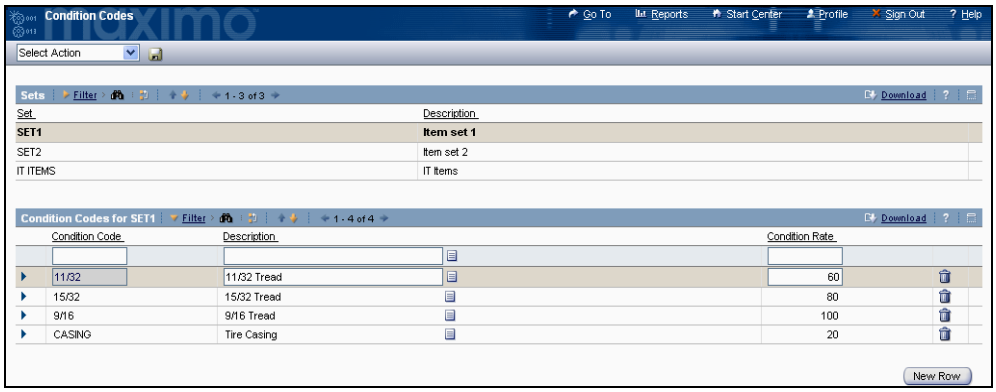
Maximo uses condition codes to enable you to represent a single item as existing in multiple conditions with corresponding condition values. For example:

- New
- Used
- Rebuilt

Condition codes are optional features of classifying inventory items as they are stocked in storerooms. In this course we will only be introducing the functions of the Condition Codes application. Consult your MRO instructor for more information.

The Condition Codes Application

The **Condition Codes** application in the **Inventory** module is a single-page Maximo application where you can create, view, and edit condition codes applied to inventory items stocked in your storerooms.



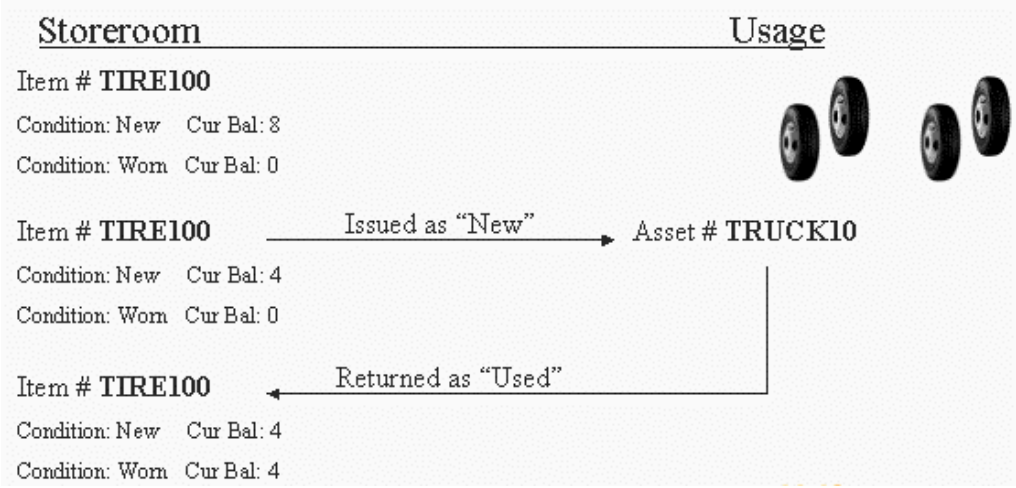
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Condition Codes continued

Graphical Example

Here's an example of how condition codes can be applied to your inventory records:

- A trucking company issues 4 *new* tires from inventory to a truck.
- After 75000 miles these tires are returned to the storeroom as *used* tires.



- The used tires might actually still have some value. Maybe they could be put on a vehicle with fewer safety restrictions, for example. So, they are given a condition code of *Used* but might still be kept in inventory.

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Item Kits

Introduction

Maximo enables you to create *item kits*, which are individual Maximo items that contain other Maximo items.

This functionality makes it simple to track the preassembly and availability of kits. In addition, Maximo can now "assemble" kits and let you know if there are enough items on hand to do so.

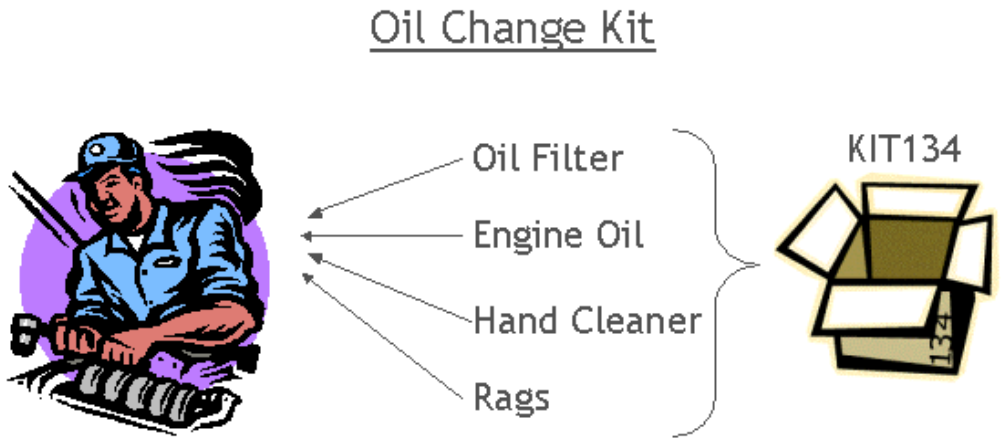
You no longer have to list all the needed items on a job or work plan. You can create kits with many of the generally needed components, then simply add the kit to the plan, knowing that all these items will be ready.

Note: Item kits are optional features. They will be discussed in detail in Chapter 14: "Setting Up Additional Maximo Applications."

Use Case

Let's say that you want to create a kit with the items needed to change the oil in a vehicle. This kit can even include cleanup items. The kit can be added to work or job plans as a single item.

The graphic below shows the items that might be in this kit.



The maintenance tech can pick up the pre-made kit, knowing that all the needed items will be there. When availability of kits gets low, Maximo can indicate that more need to be made, just as with other items in stock.

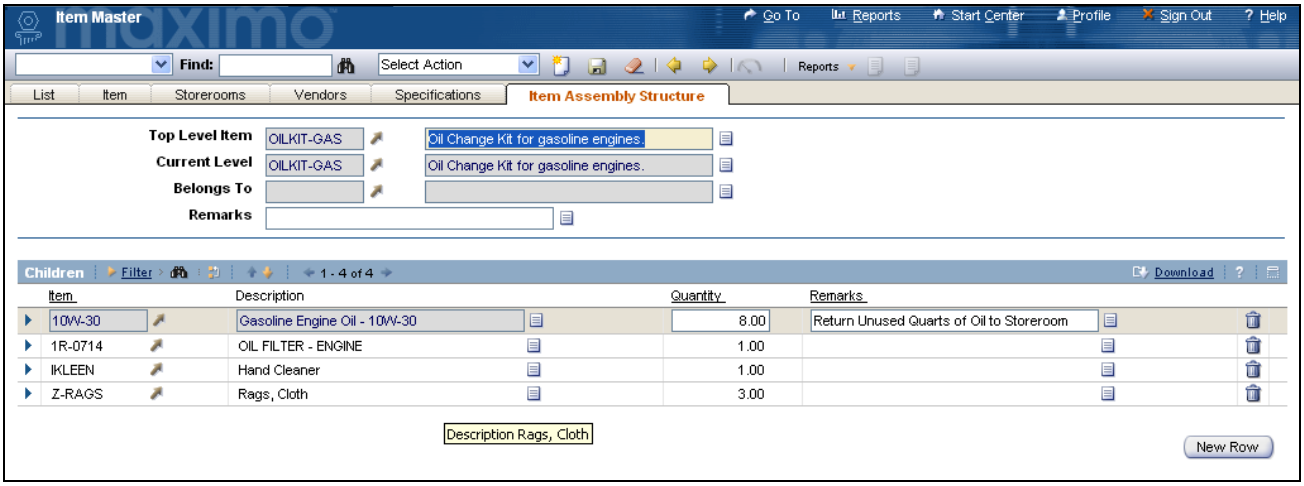
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Item Kits continued

Item Assembly Structure

The Item Assembly Structure (IAS) in the Item Master application allows you to view the items belonging to an item kit.



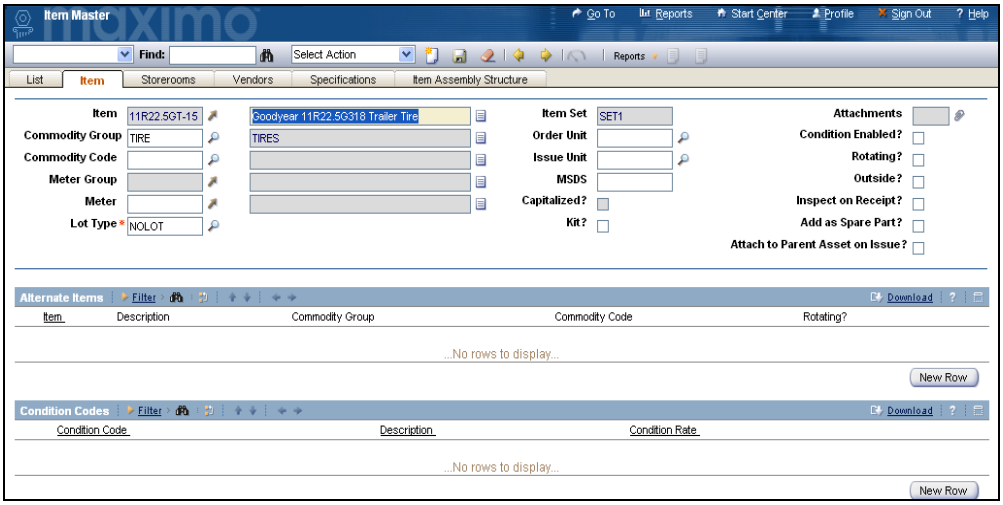
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Using the Item Master Application

The Item Master Application

You use the **Item Master** application to define items that will be stocked in your storerooms. You group these items in an item set, which can then be shared by the organizations using that item set.

When you create an item record, you define the main attributes of the item (such as commodity codes, order and issue units, and whether the item is lotted, rotating, or condition-enabled), along with any alternate items that you can use in its place and a list of the condition codes you want applied to the item.



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Using the Item Master Application continued

Functionality

When you create an item record, you can:

- define the stock type of the item;
- define whether an item has an expiration date (Lot or No Lot);
- associate Hazards and Material Safety Data Sheets (MSDS) with the item;
- define the item as a rotating asset;
- identify alternative items that can be used as substitutes for the item;
- create condition-enabled items to track the value of an item as its condition changes;
- create item kits, which are collections of items that you issue as a single unit;
- add the item to one or more storerooms; and
- define other information related to the item, such as vendors that carry the item, specifications for the item, and other parts needed to build the item (item assembly structure).

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Using the Item Master Application continued

Item Master Tabs

The Item Master application is comprised of six tabs.



Use this tab…	To…
List	Search the database using any combination of available fields.
Item	Enter, view, or modify items, and specify alternate items that your organizations use and that you stock in storerooms.
Storerooms	View a read-only list of information about storerooms that stock the item.
Vendors	Enter, view, or modify vendor specific information, such as lead time, last price, last order data, catalog, and order unit view, or manage a list of vendor companies that supply the item.
Specifications	Enter, view, or modify specification templates associated with the classification you choose.
Item Assembly Structure	Enter, view, or modify an IAS, which is a list of the individual parts and subassemblies that are required components of an item.

Tip: Add as Spare Part?



Designating an item to be added as a *spare part* allows Maximo to automatically update assets record spare parts lists when the item is issued to the assets or to a work order for the assets.



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Using the Item Master Application continued

Tip: Physical Counts

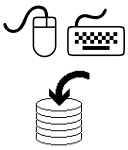


Doing a physical count at the time you are creating new item records starts off your tracking with an accurate, current balance.

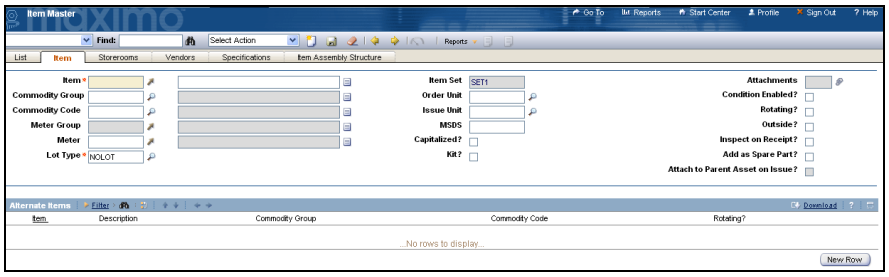
Exercise Scenario

In our exercise scenarios for this section we will set up and enter inventory items into Maximo for a Utilities and Manufacturing company. These items will be used on work orders that are generated in Unit 3: "Using What You've Got: Work Management."

Exercise: Inserting an Item Master Record



In this exercise we will enter item records into Maximo.

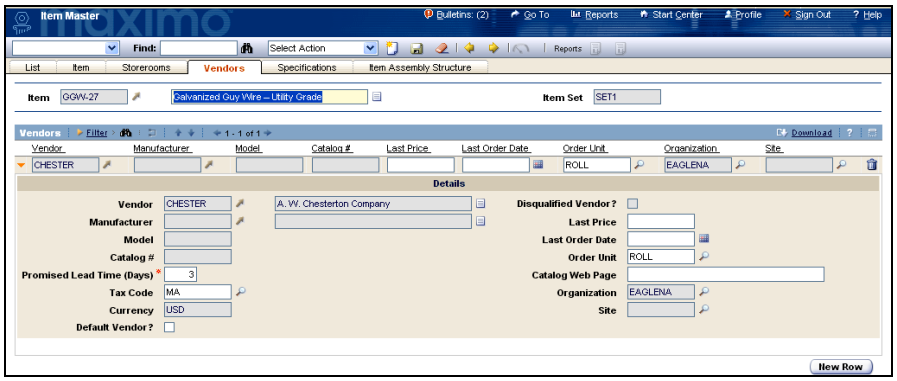
Step	Action
1	Open the **Item Master** application from the **Inventory** module. Result: The Item Master application opens to the List tab.
2	Click the **New Item** icon. Result: The Item tab opens, ready for you to enter your new item record.  Notice that Set 1 in the **Item Set** field and NOLOT in the **Lot Type** field are default settings.

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Using the Item Master Application continued

Exercise: Inserting an Item Master Record continued

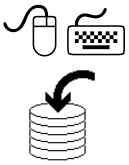
Step	Action
3	Enter the following data on the **Item** tab: **Field** — **Value** **Item** — GGW-27 **Description** — Galvanized Guy Wire – Utility Grade **Commodity Group** — ELEC **Order Unit** — Roll **Issue Unit** — Roll
4	Click on the **Save** icon.
5	Click on the **Vendors** tab and then click the **New Row** button.
6	Enter the following information: **Field** — **Value** **Vendor** — Chester
7	Click **Save**. Your screen should look similar to this:  Note: Leave this window open. The next exercise continues from this point.

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Using the Item Master Application continued

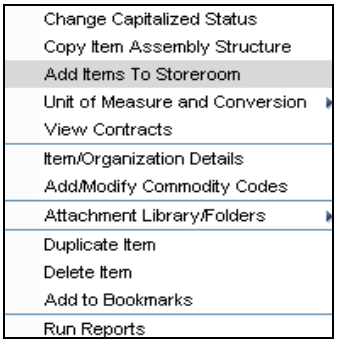
Utilities Scenario Exercise: Adding Items to a Storeroom



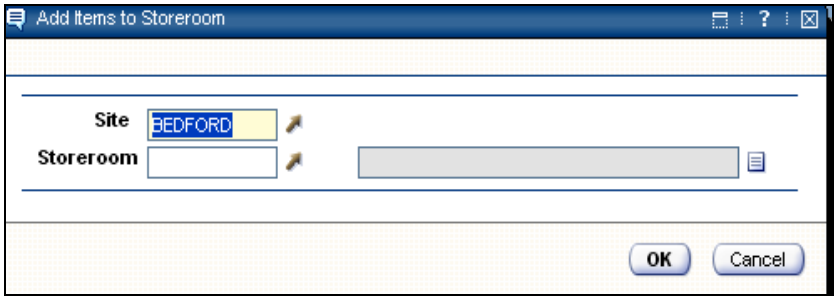
Remember that item masters are created at the organizational level. To use the information at the site level, we will add the item to a storeroom and set up a bin as a truck. We could set up a separate "mobile" storeroom for the truck, but have decided to set up a bin instead.

Typically, storeroom information is updated automatically during the purchasing and receiving processes and not as direct data entry.

Step	Action
1	Choose **Add Items to Storeroom** from the **Select Action** menu.



Result: The **Add Items to Storeroom** dialog box opens.

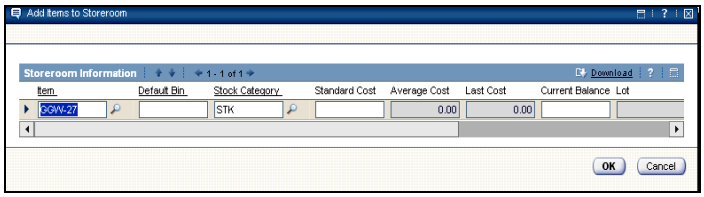
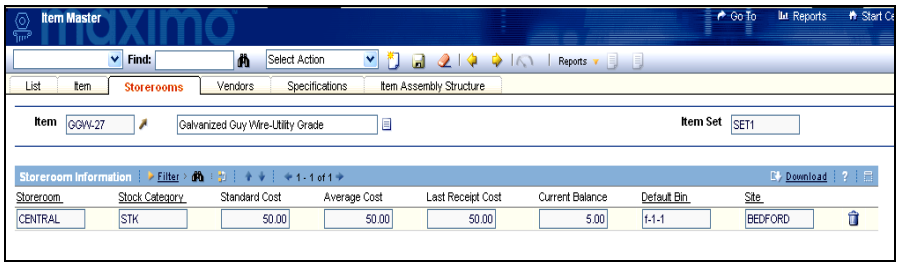


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Using the Item Master Application continued

Utilities Scenario Exercise: Entering Storerooms continued

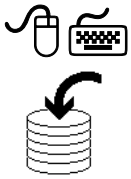
Step	Action
2	In the **Storeroom** field, use the **Select Value** button to select **CENTRAL**. Click **OK**. Result: The Add Items to Storeroom dialog box opens. 
3	Enter the following information. Hint: Use the Navigation bar to view full details. **Field** — **Value** **Default Bin** — F-1-1 **Standard Cost** — 50.00 **Current Balance** — 5 **Issue Unit** — Roll (can be viewed in the line details) Adding an item to a storeroom requires a record to be entered in the **Issue Unit** field.
4	Click **OK** and then **Save**. Result: The guy wire has been added to the Central Storeroom. 

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Using the Item Master Application continued

Utilities Scenario Exercise: Item Master Records



For the Utilities scenario exercises in the upcoming chapters, create and save the following items needed for entry into Maximo.

Field	Value
Item	BCLAMP
Description	Band Clamp
Order Unit	Box
Issue Unit	Each
Storeroom	Central
Default Bin	Truck-1
Standard Cost	1.00
Current Balance	5

Field	Value
Item	MBRACK
Description	Mounting Bracket - Tangent
Order Unit	Box
Issue Unit	Each
Storeroom	Central
Default Bin	b-1-2
Standard Cost	2.25
Current Balance	50

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Rotating Items (Equipment)

Introduction

Your company might use interchangeable units of assets that are moved into and out of service as needed. These pieces of assets are often called *rotating assets* or *rotating spares*.

You can also set up items as rotating assets that are not necessarily moved into and out of service, such as a vehicle. These serialized assets (*rotating assets*) are typically high value and/or critical to your overall operations.

Identifying and tracking them allows you to monitor item performance, track the life-cycle costs, audit life-cycle movement, and analyze the impact of locations on the items.

Definitions Revisited

A *rotating item* is an inventory item with a generic item number and a current balance (which can be greater than one). Multiple instances of rotating items can be used in multiple locations. For example, "450HPENG" is the generic item.

A unit of *rotating asset* is an individual instance of a rotating item, identified by an individual asset number.

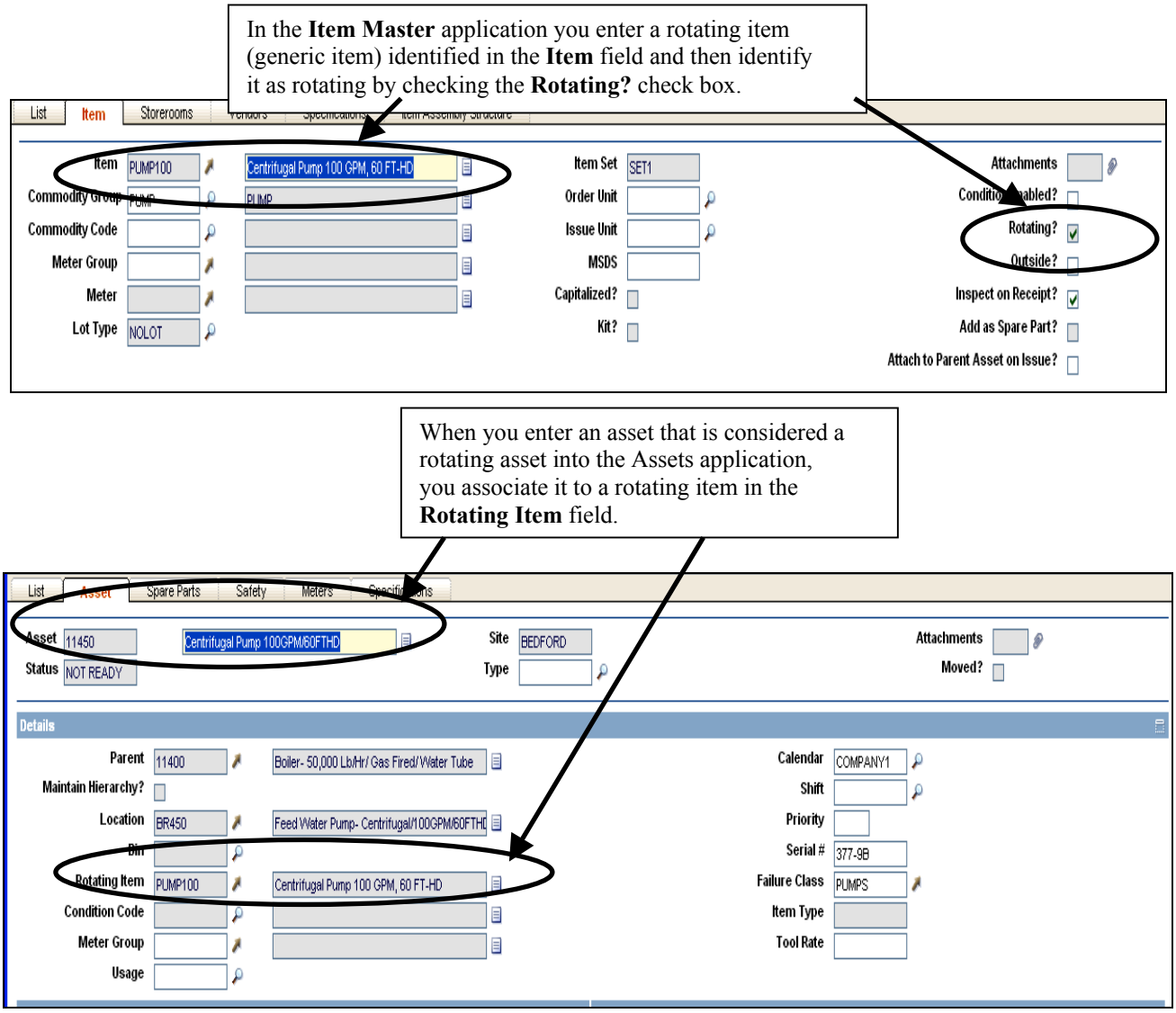
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Rotating Items (Equipment) continued

Relationship of Item Number and Assets Number

The rotating asset (*asset*) entered into the **Assets** application with a unique assets identifier is associated with a generic item number (*rotating item*) that was created in the **Item Master** application.



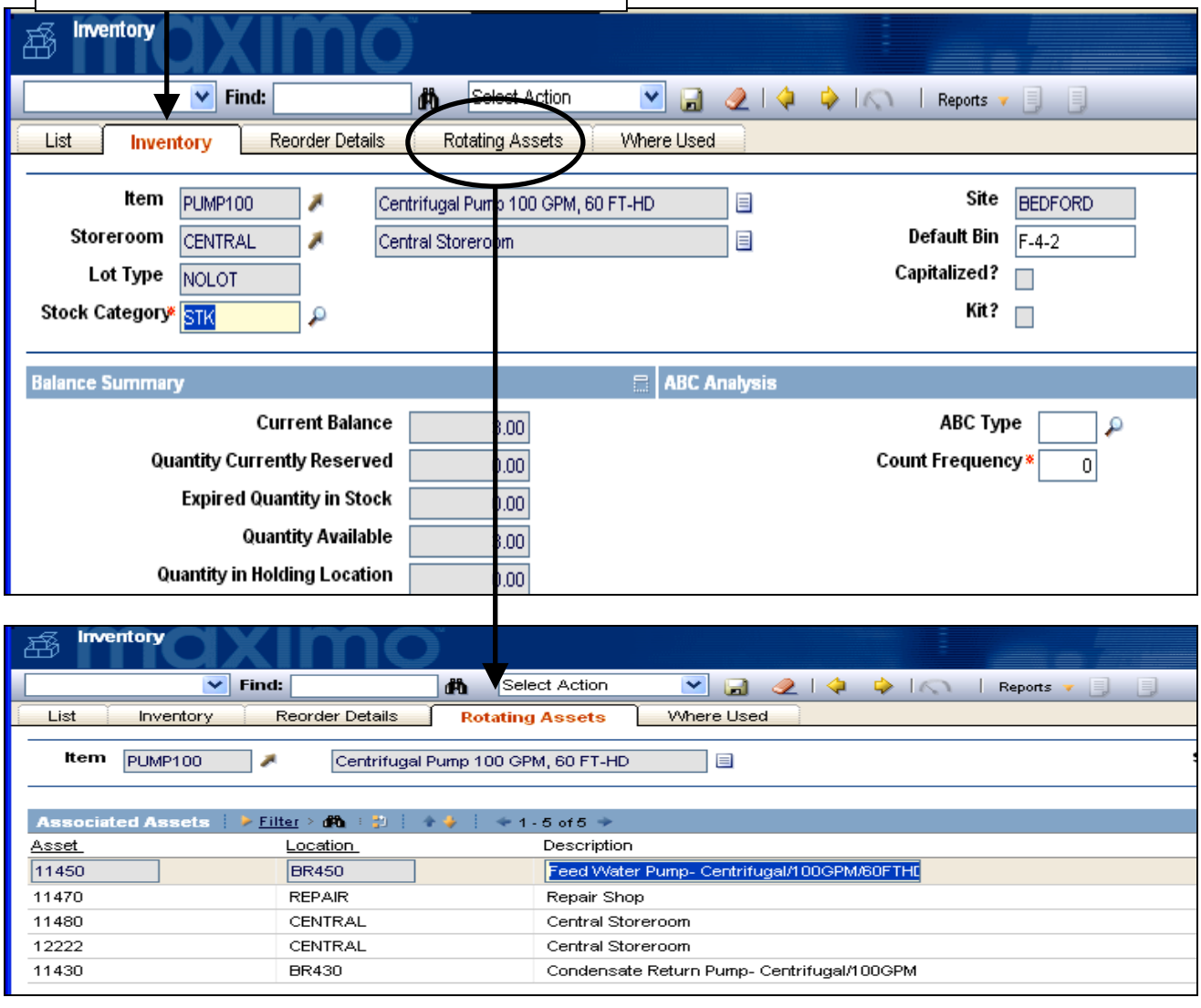
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Rotating Items (Equipment) continued

Relationship of Item Number and Assets Number

The rotating asset that was entered into the **Assets** application with a unique asset identifier is tracked in the **Inventory** application on the **Rotating** tab. In this example, the rotating item, PUMP100, has five units of rotating assets: 11430, 11450, 11470, 11480, and 12222.

In the **Inventory** application the rotating item is monitored on the **Inventory** tab and its rotating asset is tracked on the **Rotating Asset** tab.

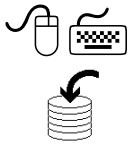


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Rotating Items (Equipment) continued

Utilities Scenario Exercise: Creating an Item Master for Rotating Assets



In our scenarios, we will create a few rotating items.

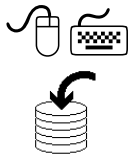
Step	Action
1	Open the **Item Master** application and click the **New Item** icon.
2	Enter the following data: **Field** — **Value** **Item** — PT455 **(Description)** — 45' Class 5 wooden pole **Commodity Group** — ELEC **Order Unit** — Each **Issue Unit** — Each **Rotating?** — ✓ [*checked*] **Vendor** — BWC (Babcock and Wilcox Company) **Storeroom** — Central
3	**Save** the record. Result: The data is saved.

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Rotating Items (Equipment) continued

Utility Scenario Exercise: Item Master Records

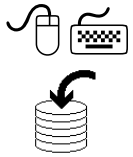


For exercises from the Utility Company scenario in the upcoming chapters, enter the following rotating item into Maximo:

Field	Value
Item	CARM
(Description)	Cross Arm – Heavy Tangent – Braceless – 4x6
Commodity Group	ELEC
Order Unit	Each
Issue Unit	Each
Rotating?	✓[*checked*]
Vendor	BWC (Babcock and Wilcox Company)
Storeroom	Central

Hint: Use the **Detail** button if necessary.

Manufacturing Scenario Exercise: Item Master Records



For exercises from the Manufacturing exercise scenario in the upcoming chapters, enter the following rotating item into Maximo:

Field	Value
Item	Mixer
(Description)	Precision Batch Mixer – wet/dry
Commodity Group	Motor
Order Unit	Each
Issue Unit	Each
Rotating	✓[*checked*]
Storeroom	Central

Hint: Use the **Detail** button if necessary.

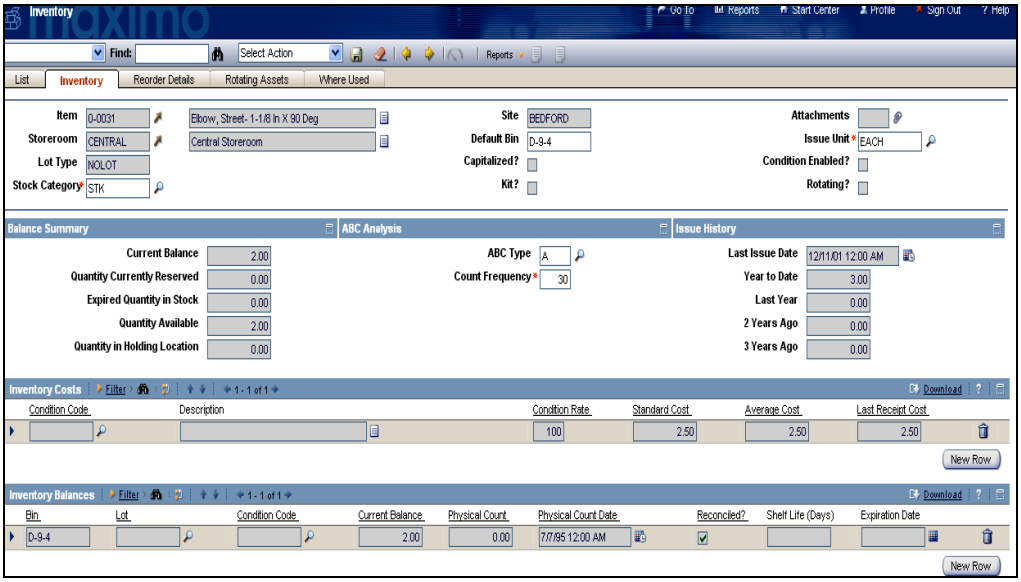
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Using the Inventory Application

Inventory Application

Use the **Inventory** application to enter, view, or modify item balances, costs, balances, bins, and lots, and to view master inventories and items at specific storeroom locations where items are stocked.

You can also keep track of items (stocked, non-stocked, and special order) by checking storeroom balances. When stock falls below a specified reorder point, the balances let you know when and what quantities to reorder.



Functionality

The Inventory application also allows you to:

- keep track of item vendors,
- keep track of the storeroom locations where an item can be found,
- track vendors that supply an item,
- view item balances down to the bin and lot level for each storeroom, and
- manage stock levels and reorder items.

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Using the Inventory Application continued

Inventory Tabs

The **Inventory** application is comprised of five tabs.



Use this tab…	To…
List	Search for inventory records.
Inventory	Enter, display, and update inventory information. Alternate or interchangeable items can also be entered or viewed.
Reorder Details	Enter or view reorder details, such as: • reorder point • lead time • issue units In addition, you can enter or view information about one or more vendors for an item, as well as information about multiple manufacturers or models for each vendor.
Rotating Assets	Identify and track rotating assets—interchangeable pieces of assets that can be identified with a single item number.
Where Used	List all units of assets on which an item is listed as a subassembly or spare part.

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Using the Inventory Application continued

Tips: Reordering



- Setting up and using reorder in Maximo reducse “stock outs” and also allows for improved purchase planning. Organizations can realize a 5% to 10% or higher reduction in inventory levels.
- Satellite stores reordering from the Primary - hub storeroom will allow you to consolidate purchasing.

Reordering Items

Depending on your business and how you keep inventory, you can use the Maximo reorder routine regularly to reorder inventory items. In Maximo, there are two actions that allow you to reorder items:

- Reorder Items
- Reorder for Direct Issue Items

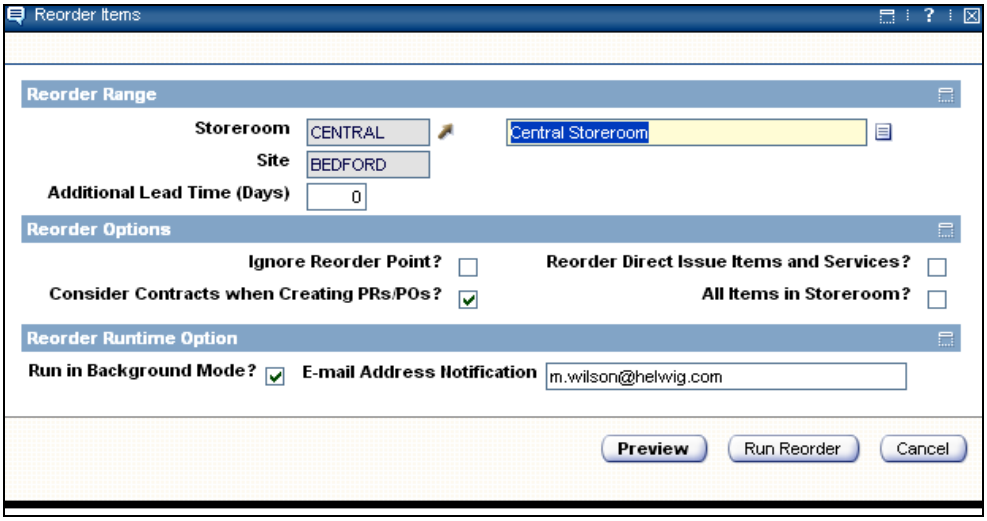
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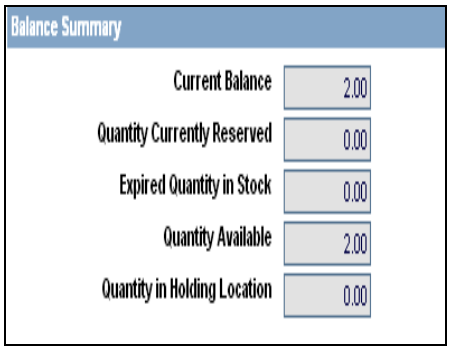
Using the Inventory Application continued

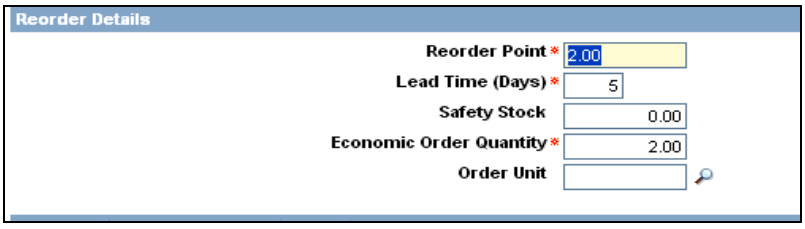
Action: Reorder Items

The **Reorder Items** action, shown here, allows you order items for *Storerooms* based on the **Reorder Point** field on the **Reorders** tab and the **Quantity Available** field on the **Inventory** tab.



When Quantity Available is less than or equal to Reorder Point, Maximo will reorder the item.





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Using the Inventory Application continued

Balance Summary Information

Although the reorder process uses the **Quantity Available** field to determine when to reorder parts, Maximo uses the other three fields in the **Balance Summary** frame to calculate the Quantity Available, as described below.

Field	Description
Current Balance	Quantity of the item currently in the storeroom.
Quantity Currently Reserved	Quantity required for currently approved work orders.
Expired Quantity in Stock	For lotted items, quantity past the expiration date.
Quantity Available	Current balance minus the reserved and expired quantities.

Other Reorder Variables

The Reorder Point for an item is ideally based on four reorder variables:

Variable	Description
Reorder Point	The point at which items should be reordered so that their number does not fall below the safety stock during the lead time.
Safety Stock	The minimum number of items you must have on hand at all times.
Economic Order Quantity	The number of items that should be reordered at one time, usually based on a vendor's price for a particular quantity ordered.
Lead Time (Days)	The amount of time between ordering and delivery.

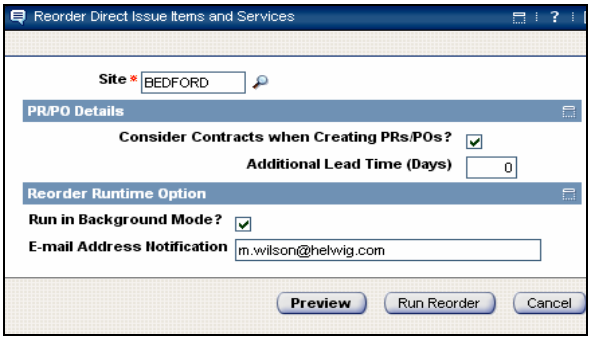
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Using the Inventory Application continued

Action: Reorder Direct Issue Items and Services

The **Reorder Direct Issue Items and Services** action allows you to order items that are listed on approved work orders that indicate items will be directly issued to the work location and not received into inventory.



Implementation Tip: Reorder



Incorporate reordering in stages. First, have WAPPR purchase requisitions created. Gradually move to having WAPPR purchase orders created, and finally transition into having APPR purchase orders created. Having Reordering create approved purchase orders will reduce the cost of purchase order processing.

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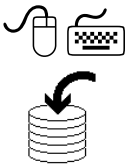
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Using the Inventory Application continued

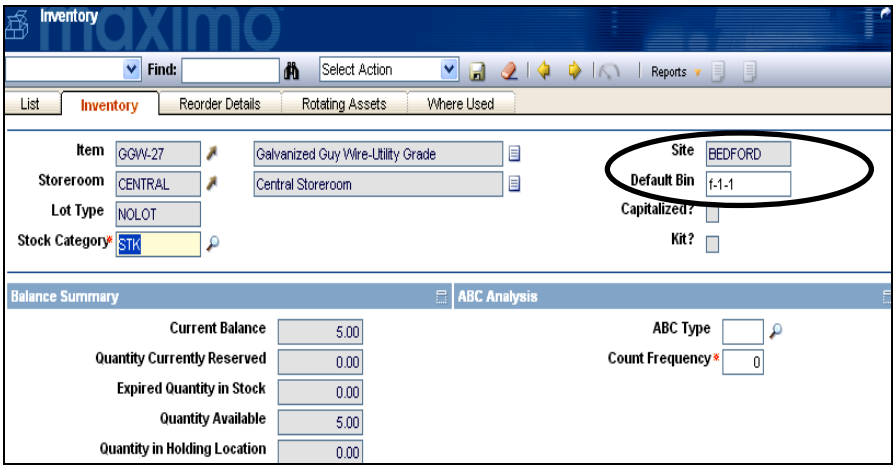
Exercise Scenario

In this section we will manage inventory items entered initially through the Item Master application. Specifically, we will be adding more storeroom bins and establishing reorder points for the items

Utility Exercise Scenario: Adding Storeroom Bins



Now that we have entered our items Band Clamp and Guy Wire into the Maximo database, we will add the Guy Wire to additional "mobile virtual" bins.

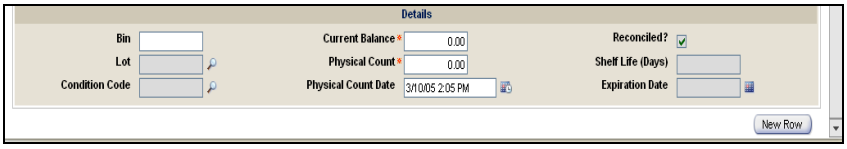
Step	Action
1	In the **Inventory** application, search for and select **GGW-27 (Galvanized Guy Wire - Utility Grade)**. Result: The Inventory tab displays the requested record.  Note: The default bin is F-1-1. This bin represents the wire that is currently stocked in the Central Storeroom. We will add two more bins to indicate that this wire is currently stocked on two trucks. In essence, these bins act as a "mobile virtual" bin.

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Using the Inventory Application continued

Utility Exercise Scenario: Adding Storeroom Bins continued

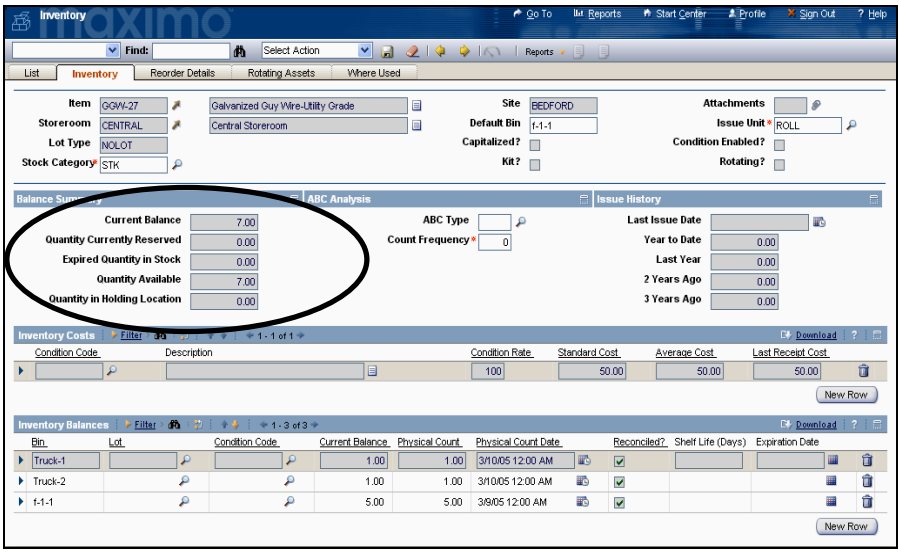
Step	Action
2	To add another bin, click **New Row** in the **Inventory Balances** section. Result: An editable row opens. 
3	Enter the following information: **Field** — **Value** **Bin** — Truck-1 **Current Balance** [in Bin] — 1
4	Click **New Row**. Enter the following information: **Field** — **Value** **Bin** — Truck-2 **Current Balance** [in Bin] — 1

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Using the Inventory Application continued

Utility Exercise Scenario: Adding Storeroom Bins continued

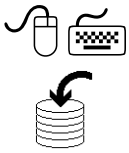
Step	Action
5	**Save** the record. Result: The Balance Summary table window should look like this:  Note that **Quantity Available** is shown as 7.00.

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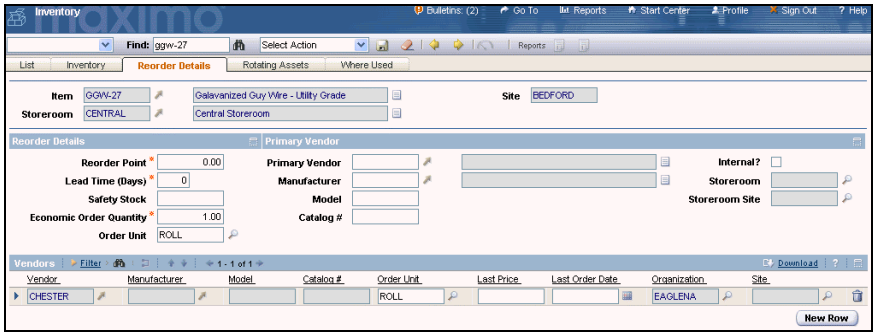
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Using the Inventory Application continued

Setting Up Reordering Points



At this point we will add reordering information for the Guy Wire.

Step	Action
1	Click on the **Reorder Details** tab for the GGW-27 Inventory record to display it. 
2	Enter the following data on the **Reorder Details** tab: **Field** — **Value** **Reorder Point** — 6 **Safety Stock** — 2 **Economic Order Qty** — 4 **Primary Vendor** — Chester
3	**Save** the record. Result: The reorder information for the item has been updated in the Maximo database.

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Using the Inventory Application continued

Setting Up Reordering Points



Access the BCLAMP record in the **Inventory** application and add the following reorder information to be accessed later in our reordering exercises:

Field	Value
Reorder Point	6
Safety Stock	2
Economic Order Qty	5
Primary Vendor	Chester

Note: Be sure to save the record after you enter the information.

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Chapter Summary

Item Master Application

The **Item Master** application is in the Maximo **Inventory** module. You use it to define items at the organizational level that will be stocked in your storerooms, which are at the site level.

When you create an item record, you can:

- define the stock type of the item;
- define whether an item has an expiration date (Lot or No Lot);
- associate Hazards and Material Safety Data Sheets (MSDS) with the item;
- define the item as rotating assets;
- identify alternative items that can be used as substitutes for the item;
- create condition-enabled items to track the value of an item as its condition changes;
- create item kits, which are collections of items that you issue as a single unit;
- add the item to one or more storerooms; and
- define other information related to the item, such as vendors that carry the item, specifications for the item, and other parts needed to build the item (item assembly structure).

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Chapter Summary continued

Inventory Application

The **Inventory** application is in the Maximo **Inventory** module. Use this application to enter, display, and update information on each inventory item. You can track inventory transactions and move items into or out of inventory or from one location to another.

You can track the following types of items:

- Stocked
- Non-stocked
- Special order items

The Inventory application also allows you to:

- keep track of item vendors,
- keep track of the storeroom locations where an item can be found,
- track vendors that supply an item,
- view item balances down to the bin and lot level for each storeroom, and
- manage stock levels and reorder items.

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Chapter Summary continued

The Condition Codes Application

The Condition Codes application is a single-page application in Maximo where you can create, view, and edit condition codes applied to inventory items stocked in your storerooms.

Item Kits

Maximo enables you to create *item kits*, which are individual Maximo items that contain other Maximo items.

This functionality makes it simple to track the preassembly and availability of kits. In addition, Maximo can now "assemble" kits and let you know if there are enough items on hand to do so.

You no longer have to list all the items needed on a job or work plan. You can create kits with many of the generally needed components, then simply add the kit to the plan, knowing that all these items will be ready.

Item kits are optional features and will be discussed in detail in Chapter 14: "Setting Up Additional Maximo Applications."

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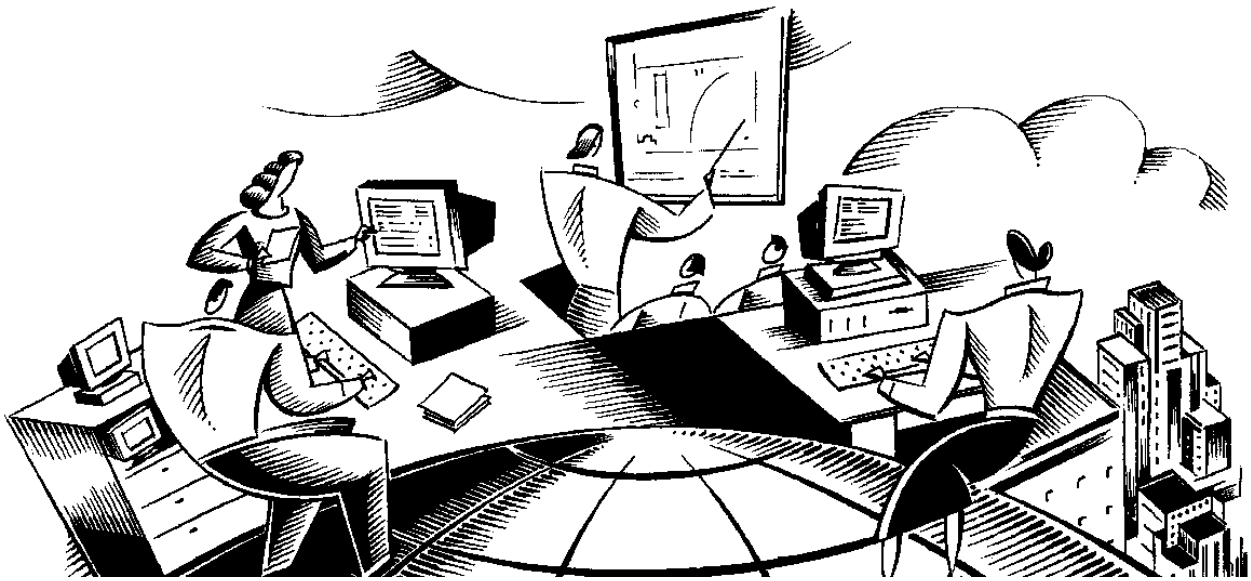
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MXES Immersion Training for EAM

Chapter 6: Entering Asset Records



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In This Chapter This chapter contains the following topics:

Topic	See Page
Chapter Overview	6-1
Setting Up Equipment	6-7
Setting Up Assets	6-9
Asset Meters	6-34
Associating Assets and People	6-41
Chapter Summary	6-45

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Chapter Overview

Introduction

Another benefit of using Maximo is the ability to track maintenance costs and maintenance schedules against your assets. Managing an asset cost through its lifecycle is the main purpose of Maximo and Strategic Asset Management (SAM).

Learning Objectives

When you have completed this chapter, you should be able to:

- discuss key performance indicators (KPIs) and implementation considerations as they relate to asset management;
- enter asset records and discuss the relationship between asset records and rotating item records;
- perform an asset hierarchy search; and
- associate users and custodians of assets.

Definitions

Here are some terms that are used in this chapter and throughout the course.

Term	Definition
Non-rotating Assets	Assets for which you want to keep a repair history, but that will not be stored in inventory.
Rotating items Rotating assets	Assets that are interchangeable, such as motors, pumps, fire extinguishers, or PC monitors. Rotating assets have both a unique asset number and an inventory item number. The item number lets you track assets as a group as they are moved into and out of inventory and other types of locations. Each piece will have the same item number and a different asset number. For example, a company might have five similar centrifugal pumps in that all five are the same make and model. Therefore, they all have the same item number. However, each pump is a unique unit of asset with its own history of use and repair. Therefore, each pump has its own unique asset number, which enables you to track maintenance and related costs.
Items	Generic identifications of assets or spare parts. IT establishes the attributes of the rotating asset (asset) associated with it.
Locations	Functional identifications where assets can reside.

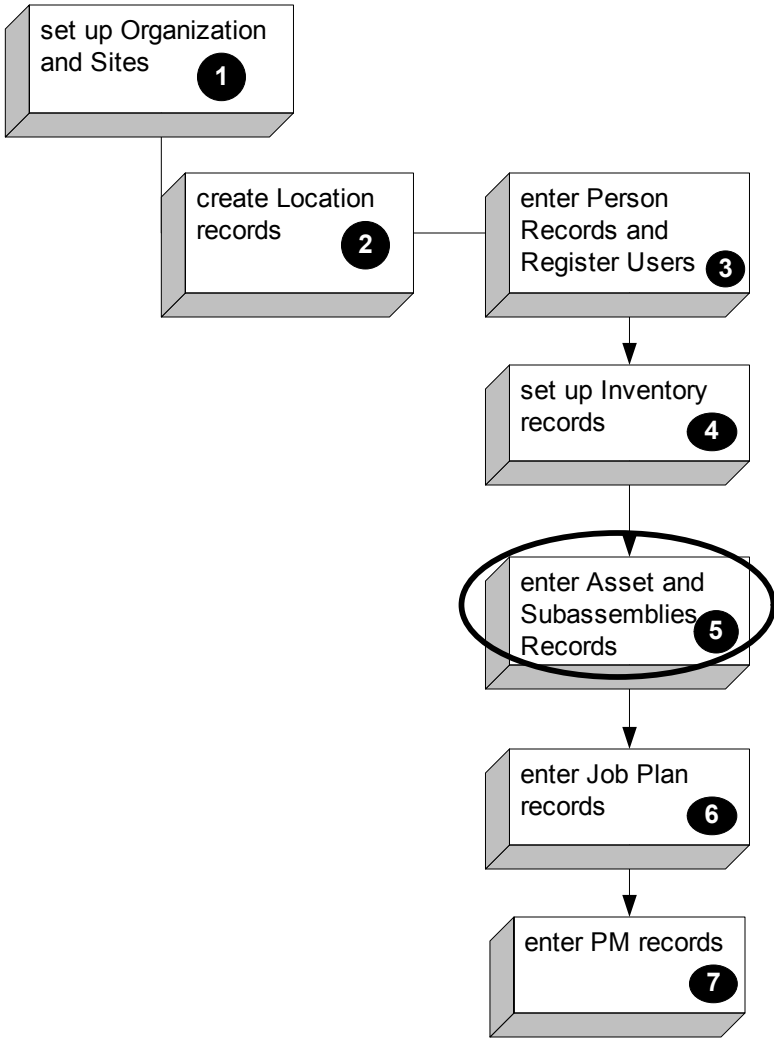
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Chapter Overview continued

We Are Here

You can enter asset and subassembly records using the **Assets** application.



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Chapter Overview continued

Implementation Questions to Consider

- How many assets are maintained at this site?
- Are you able to report on overall asset effectiveness (OEE)? Return on asset (ROA)?
- Do you know your assets' total cost of ownership (TCO)?
- How many units of assets are maintained in your organization?
- How and to what is the level of your asset hierarchy?
- Are critical assets and components identified at all levels of the asset hierarchy?
- Do you have an established bill of materials (BOMs) for all critical components?
- Are the BOMs up to date?
- Do you track assets' downtime? Is it divided into repair time and delay time?
- Are all costs considered in total asset cost?

  Labor _____
  Parts _____
  Consumables _____
  Energy _____
  Maintenance-related lost production _____

- Are there performance benchmarks for assets?
- Is there an asset downtime report?
- Is there an asset run-time report?
- Is there an asset history report?
- Are purchases of new assets and modifications to existing ones subject to maintenance approval?
- Are assets and spare parts standardization being considered when purchasing new assets?
- How and to what level are asset hierarchies broken down?
- Does your organization practice an asset numbering scheme/hierarchy intelligently?

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Chapter Overview continued

KPIs

Some performance metrics for assets are:

Metric Title	Metric Description
% Total downtime	Percentage of the total operating hours resulting in downtime for all causes.
% Maintenance downtime	Percentage of the total operating hours resulting in downtime for maintenance reasons.
% Planned/Scheduled downtime	Percentage of downtime that was planned or scheduled.
% Unscheduled downtime—mechanical	Percentage of unscheduled downtime that was for mechanical problems.
% Downtime caused by breakdowns	Percentage of downtime that was caused by breakdowns.
Direct costs of breakdown repairs	Direct costs for repairs of breakdowns.
% of breakdowns preventable	Percentage of breakdowns that were preventable.
% Asset uptime	Percentage of time the asset was up, ready to run.

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Chapter Overview continued

KPIs continued

Metric Title	Metric Description
% Time assets are utilized	Percentage of time that assets were utilized.
Asset availability	Asset run hours budgeted minus breakdown and overhaul hours divided by budgeted hours.
Mean Time Between Failure (MTBF)	A measure of the typical duration between any failures for a critical asset (breakdown).
Mean Time Between Repair (MTTR)	A measure of the average time it takes to correct failure on an asset.
% Root cause failure analysis performed	Percentage of asset failures that root cause failure analysis is performed per year.
Mean time between stops (MTBS)	Average time between stops for production.
% Repetitive asset failures	Percentage of asset failures that are repeat failures.
% Critical asset design studied	Percentage of critical asset design that has been studied for possible improvement in performance.

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Chapter Overview continued

Out-of-the-Box Maximo Reports

The following reports are available for the Assets application.

Report	Description
Details of an Asset's Failures	Summarizes the failures, by problem code, for an asset between the specified dates. Links are available to view these failures graphically. Problem codes are linked to the Drilldown into Asset's Failures report.
Drilldown into Asset's Failures	Displays problem causes and remedies for the selected problem code.
Asset Cost Rollup	Displays an update of an asset's year-to-date and total costs. The list includes the option to update the database with the new asset cost values.
Summary of Asset Failures by Location	Displays the total number of failures reported against the selected assets during the specified time period.
Asset Measurement History	Displays meter readings and results for specified action/warning limits. Also accounts for characteristic meter readings. Counts for over specified time frame. Depending on meter type, a line or scatter graph is displayed.

Implementation Tips



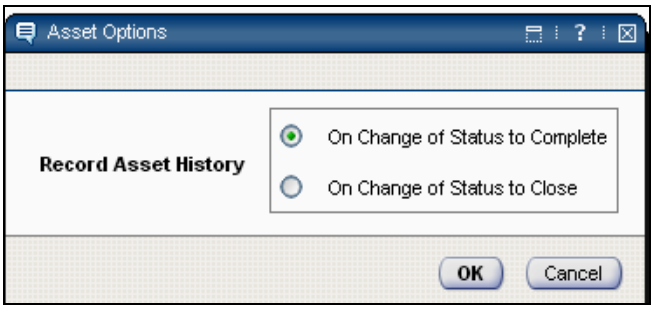
- Identify high-priority and critical assets to your operation and enter them first. Low-priority and non-critical assets can be phased in later.
- Creating and using asset hierarchies lets you track work and costs individually, as well as rolling up costs hierarchically.
- Autonumbering your assets makes managing assets records easier; let the system do the work for you.

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Setting Up Equipment

Organizations Application Options Revisited: Asset Options

The **Asset Options** action is available from the **Select Action** menu in the **Organizations** application.



On this screen, you set asset options for all sites in the selected organization.

Use this page to determine which assets status changes to record and set the default meter reading weight factor. If you want a static average that never changes, then you would use 0% weighting *(old average * 100%) + (new average * 100%) = old average.*

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Setting Up Equipment continued

Organization Setup Options Revisited: Setting Drilldown Options



If the Assets field and Location field on a record are both empty, this option determines whether the drilldown for the **Assets** field opens to the asset hierarchy or the Location hierarchy by default.

Note: This setting affects applications at all sites in the selected organization.

The following table describes the details for each option on the screen.

This option…	Does the following…
Top Level Starts at Top Level Location	Causes Maximo to display the **Location** tab on the drilldown by default when **Location** and **Assets** fields are empty. • This option can be useful for organizations with a large number of assets records that use a location hierarchy to organize these records. • The display would begin with the top-level location of the primary system, rather than displaying all assets in Maximo without a parent.
Top Level Starts at Top Level Asset	Causes Maximo to display the **Assets** tab on the drilldown to display by default when **Location** and **Assets** fields are empty. • This option can be useful if the asset records are organized into a hierarchy with a few top-level asset records. • If the organization has a large number of top-level assets records, selecting this option could cause slower performance when displaying the records.

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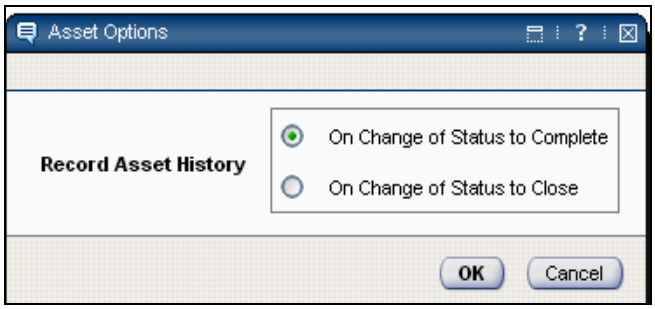
Setting Up Assets

Organizations Application Options Revisited: Assets Options

The following setup options for Assets are available in the Organizations application.

- Assets Options

On this screen, you set assets options for all sites in the selected organization.



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Setting Up Assets continued

Organization Setup Options Revisited: Setting Drilldown Options



If the assets field and location field on a record are both empty, this option determines whether the Drilldown for the **Assets** field opens to the asset hierarchy or the Location hierarchy by default.

The table below describes the details for each radio button on the screen.

Note: This setting affects applications at all sites in the selected organization.

This radio button…	Does the following…
Top Level Starts at Top Level Location	Causes Maximo to display the **Location** tab on the drilldown by default when **Location** and **Assets** fields are empty. • This option may be useful for organizations with a large number of assets records that use a location hierarchy to organize these records. • The display would begin with the top-level location of the primary system, rather than displaying all Assets in Maximo without a parent.
Top Level Starts at Top Level Assets	Causes Maximo to display the **Assets** tab on the drilldown to display by default when **Location** and **Assets** fields are empty. • This option may be useful if the asset records are organized into a hierarchy with a few top-level asset records. • If the organization has a large number of top-level assets records, selecting this option may cause slower performance when displaying the records.

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Setting Up Assets continued

Asset Records

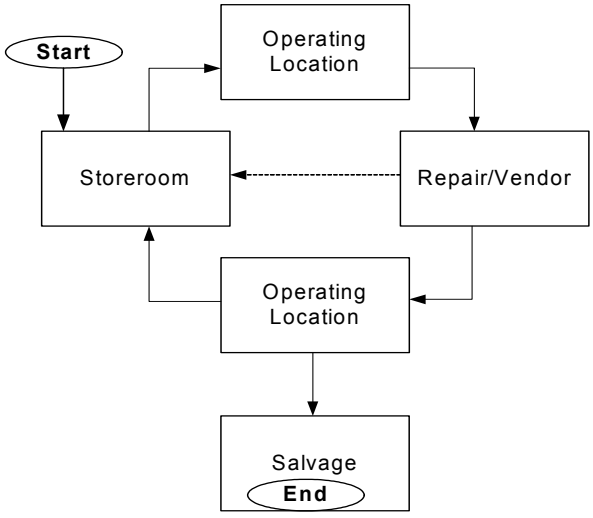
Entering asset records and associating them with their subassemblies and spare parts not only allows the performance of each subassembly and spare part to be monitored on an independent basis, but also allows for all of the ownership to be captured.

Life Cycle of Assets

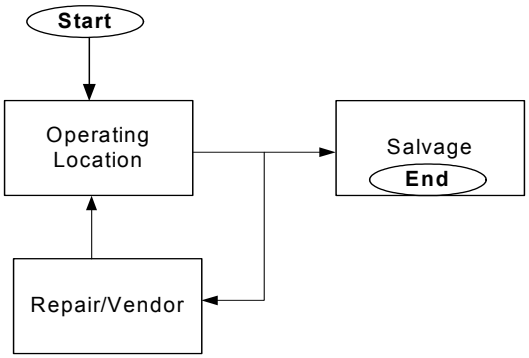
In Maximo, assets can be categorized into two groups: rotating or non-rotating.

- A rotating asset might start its lifecycle as a stocked item in a storeroom, then be issued and transferred. Rotating assets can be tracked in inventory.
- A non-rotating asset starts its lifecycle at a location. Non-rotating assets do not move into and out of storerooms and are not tracked in inventory.

Rotating Asset Life Cycle



Non-Rotating Asset Life Cycle



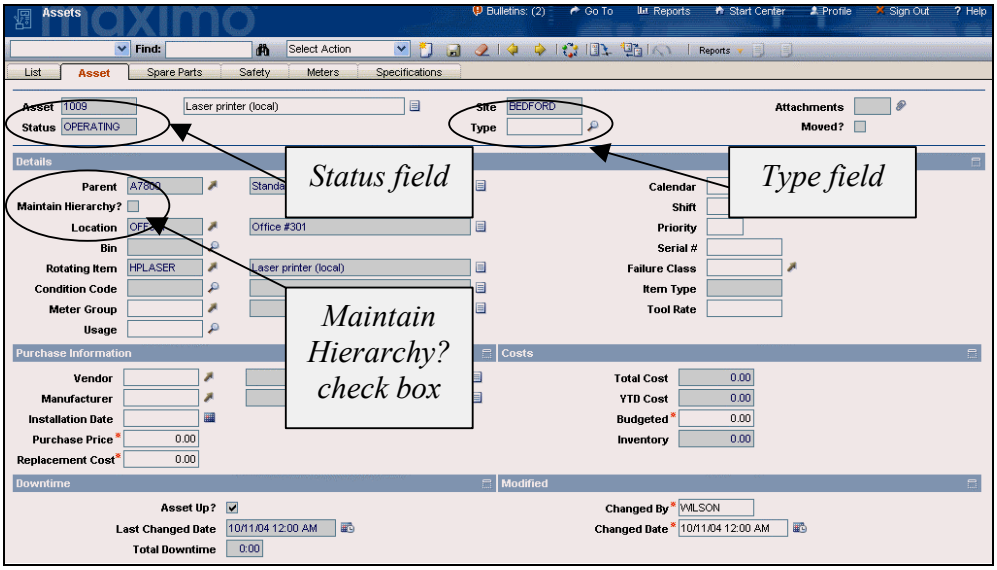
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Setting Up Assets continued

The Assets Application

The **Assets** application enables you to keep and update the records of all of your assets and operating locations. Use the Assets application to add new assets to the database and define relationships among these assets.



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Setting Up Assets continued

Assets Application Tabs

The **Assets** application is comprised of six tabs.



Use this tab…	To…
List	Search for assets.
Asset	View, modify, add, or delete the main record or a serialized part/component for assets, which includes the asset's parent, class, location, manufacturer, and vendor, as well as information on costs, asset up/down status, the calendar, and warranty dates.
Spare Parts	Create the asset hierarchy and view the subassemblies and parts for assets.
Safety	View, add, or delete safety records for assets.
Meters	View or add metering information for assets.
Specifications	Classify and apply the specification template that is associated with the classification you used.

Asset Type Field

If you are using Maximo to track a variety of assets, the Asset Type field allows you to categorize assets. Some examples include:

- **Production** – motors, pumps, winches, presses, and so forth.
- **Facilities** – plumbing, lighting, fire extinguishers, and so forth.
- **Fleet** – forklifts, trucks, buses, trains, aircraft, and so forth.
- **IT** – computers, routers, hubs, servers, and so forth.



Note: It is possible to create and use synonyms for these types. However, we will not be discussing this in this course.

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Setting Up Assets continued

Asset Status

The Status field is used to indicate when an asset is:

- **Not Ready** – Default status for new asset records. Asset records can be created before assets have been received, installed, configured, inspected, or otherwise approved for their intended use.
- **Decommissioned** – Asset has been retired from service and moved to scrap or salvage.
- **Operating** – Asset has been received, installed, configured, inspected, or otherwise approved for use or operation.



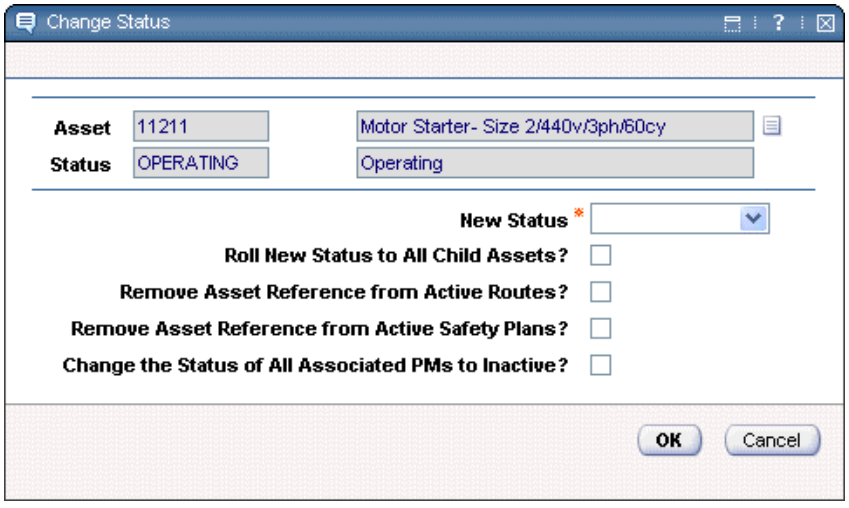
Additional points on asset status:

- Initial entry of an asset record into Maximo defaults to a Not Ready status.
- When an asset has a status of Decommissioned, it cannot be viewed from other applications, such as Work Order Tracking, but can be viewed with the Assets application.

Status Change Options

When the asset status is changed, there are check box options available to help in the management of the asset and its relationship with other applications and, if applicable, with its subassemblies (children).

The list on the next page describes the purpose of each option.



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Setting Up Assets continued

Status Change Options continued

Option	Purpose
Roll New Status to All Child Assets?	Select this check box to specify that all children of the asset whose status you are changing also will have their status changed to the same new status. This option can be selected for any status change.
Remove Asset Reference from Active Routes?	Select this check box to specify that the asset should no longer be referenced on active routes while the asset is in the new status. For example, if you set an asset's status to Decommissioned, you might want the asset removed from inspection routes. This option can be selected only when the status of an asset is Decommissioned.
Remove Asset Reference from Active Safety Plans?	Select this check box to specify that the asset should no longer be referenced on active safety plans while the asset is in the new status. This option can be selected only when the status of the asset is Decommissioned.
Change the Status of All Associated PMs to Inactive?	Select this check box to specify that any PMs associated with the asset should be set to Inactive while the asset is in the new status. This option can be selected only when the status of the asset is Decommissioned.

Every Asset Within a Site Must Have a Unique Identifier



If you might want to move an asset from one site to another, the asset's number must be unique to perform the move.

If there is already an asset with the same asset number at the site to which you want to move, Maximo will not allow the asset to be moved unless the asset identifier is renamed.

Maximo will prompt you to assign a new asset identifier to the asset you are moving.

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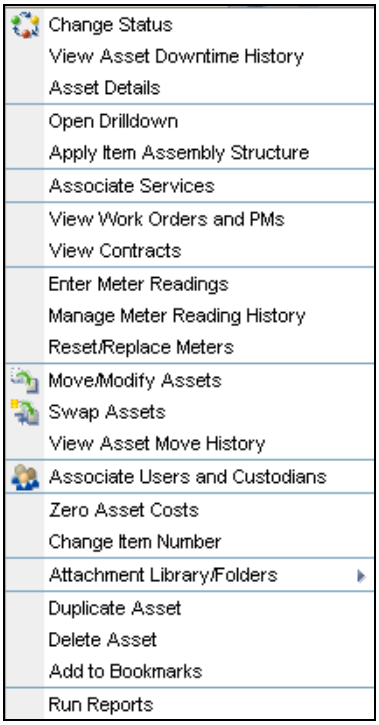
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Setting Up Assets continued

Select Action Menu

The **Select Action** menu contains specific actions associated with the **Assets** application. The actions you can perform with this menu include, but are not limited to:

- viewing the location and asset hierarchy (Open Drilldown),
- moving or associating an asset to a different rotating item number,
- attaching an items assemble structure,
- resetting meter readings, and
- viewing Work Orders and PMs for the asset.



Some of these actions will be explained in this chapter and used in exercises in this course, but for a detailed explanation of this menu, see the *Maximo User's Guide*.

Maintain Hierarchy? Check Box

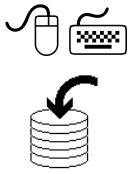
The **Maintain Hierarchy?** check box on the Asset tab is used to *bundle* assets to indicate within Maximo that parent and child assets should always be kept together.

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Setting Up Assets continued

Manufacturing Exercise Scenario: Inserting a Non-Rotating Asset Record



While a production line can be comprised of many asset assemblies and subassemblies, in this section we will "set up" our Manufacturer's batch wet/dry mixer, motor subassembly, and a few items off its parts list in Maximo using the Assets application.

Because this mixer is a critical asset in the production of a pharmaceutical product, we will give it the highest priority number (5) and capture all associated costs so that we can track and properly manage the asset over its lifecycle.

In this exercise, we will enter the assets and all of the related priority, cost, and warranty information on the Assets tab.

Step	Action
1	Open the **Assets** application.
2	Insert a new asset record.
3	Enter the following data on the **Assets** tab: **Field** **Value** **Asset** BMIX1 **(Description)** Precision Mixer - Batch - wet/dry Note: While for purposes of this course we will give the assets a number, we recommend that you allow the system to automatically number this field.
4	Use the **Detail** button to search for and enter the following information: **Field** **Value** **Type** Production **Location** Materials Processing Plant #1

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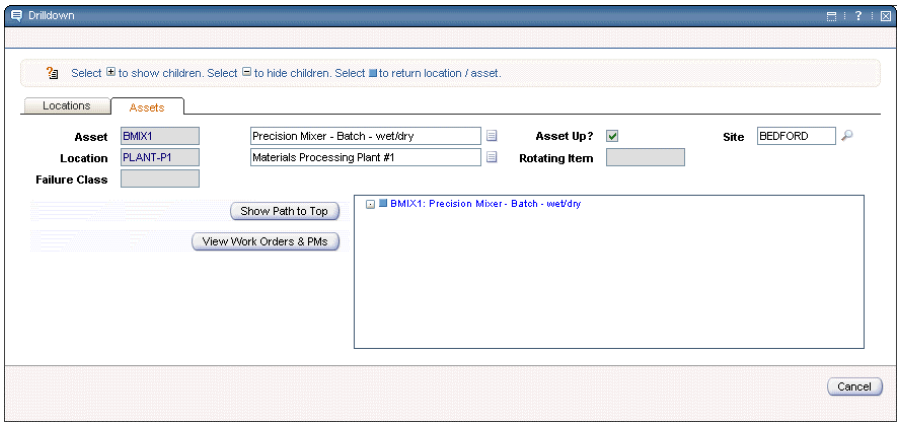
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Setting Up Assets continued

Manufacturing Exercise Scenario: Inserting a Non-Rotating Asset Record

continued

Step	Action
5	**Save** the record, then select **Open Drilldown** from the **Select Action** menu. Result: Your screen should look similar to the graphic below.

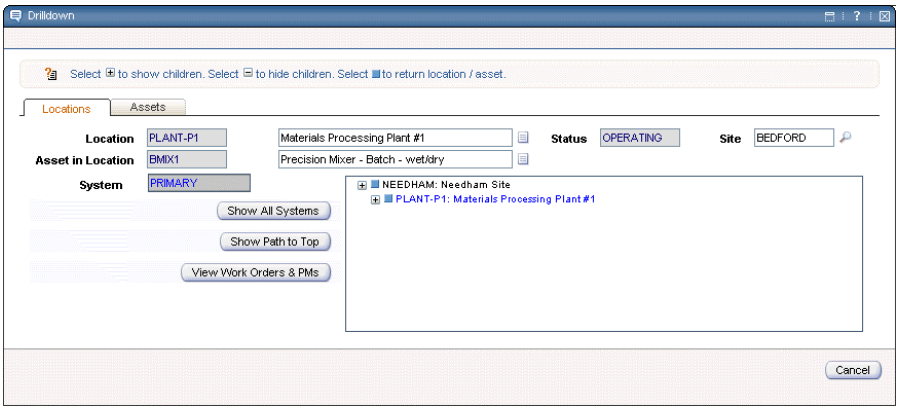


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Setting Up Assets continued

Manufacturing Exercise Scenario: Inserting a Non-Rotating Asset Record continued

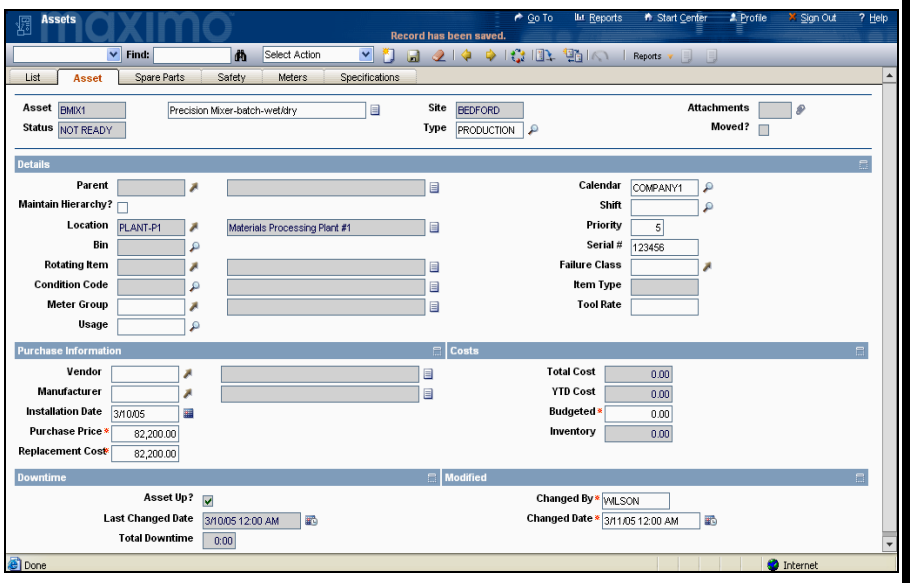
Step	Action
6	Click on the **Locations** tab to view it. Result: The Batch mixer is located at the Materials Processing Plant #1, which is located in the Needham site.  Note: Clicking **Show Path to Top** will display the Needham hierarchy, if not already displayed.
7	Click **Cancel** to return to the **Assets** application.

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Setting Up Assets continued

Manufacturing Exercise Scenario: Inserting a Non-Rotating Asset Record continued

Step	Action
8	Enter the following information in the asset record: **Field** — **Value** **Calendar** — Company1 **Priority** — 5 **Serial #** — 123456 **Installation Date** — [*Use today's date*] **Purchase Price** — 82,200 **Replacement Cost** — 82,200
9	**Save** the record. Result: Your screen should look similar to the one below. 

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Setting Up Assets continued

Asset Subassemblies

Because an asset item can be made up of several subassemblies/components—for example, an engine, a transmission, and a chassis for a truck—has its own preventive maintenance schedule, and possibly carries a separate warranty, a separate asset record must be entered into the database and identified as a *subassembly* for the particular parent asset.

Entering asset subassemblies allows for cost to be tracked for individual subassemblies, as well as rolled up to the top assembly level.

Building and Associating Asset Subassemblies

In Maximo there are several ways to build and associate asset assembly structures. For example:

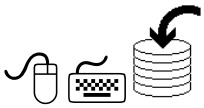
- Use the **Item Assembly Structure** application to build and apply assembly structures to an asset or to an item. You can also apply an IAS at the time of receiving an asset or an item.
- On the **Assets** application's **Spare Parts** tab, associate subassemblies to the selected unit of asset. (The subassembly must be recorded in the Assets database table to list it here.)

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Setting Up Assets continued

Manufacturer Scenario: Associating Subassembly Records



As a Batch Mixer assembly is composed of several subassemblies (cylinder, power and drive, mixer base, and so forth), we will associate the motor component of the power and drive subassembly, because a motor can be rotated out and replaced with another motor; a motor replacement would also carry a warranty separate from the batch mixer.

Step	Action
1	Rather than create and enter a new motor into Maximo, for this exercise we will duplicate an existing motor and then associate it to the *Mixer* assembly. Access the **Assets** application. On the **List** tab, in the **Assets** field, find asset record **23972**. Result: Motor 23972 is displayed on the Asset tab.
2	From the **Select Action** menu, choose **Duplicate Asset**. Result: A new asset record is displayed with default data populating certain fields.
3	Enter the following data. Hint: Use the Detail Menu icon to select values. **Field** / **Value** **Asset** 1234 **Type** Production **Parent** BMIX1 **Purchase Price** 500.00 **Replacement Cost** 500.00 **Priority** 5
4	**Save** the record. Result: Asset Record 1234 is associated as a subassembly to BMIX1 Mixer located at the material processing plant.

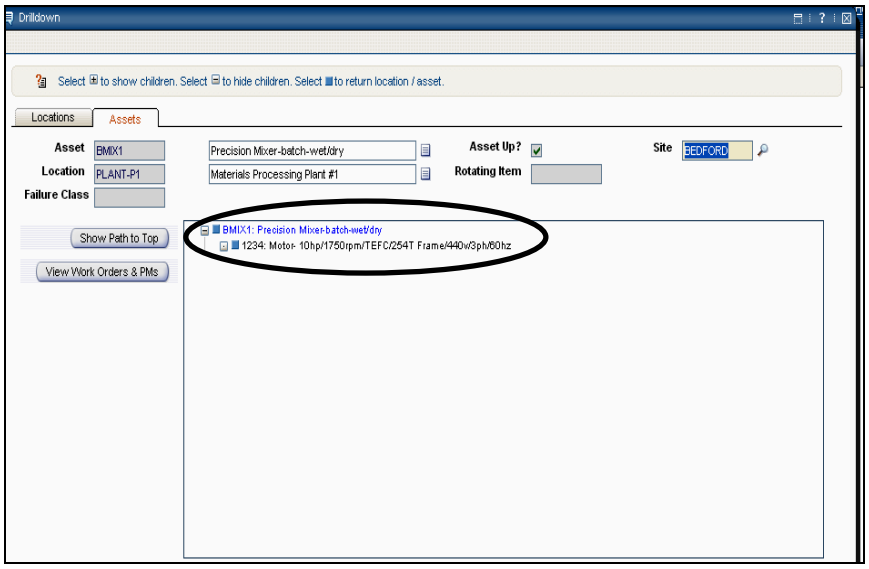
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Setting Up Assets continued

Manufacturer Scenario: Associating Subassembly Records

continued

Step	Action
5	To verify that this motor is associated with the Mixer and is located at the processing plant, from the **Select Action** menu, choose **Open Drilldown**. Result: The Drilldown opens. Note that Asset 1234 now belongs to BMIX1 as the parent asset.  Note: To refresh the hierarchy, you might have to close, then open the BMIX1 asset on the drilldown.
6	Click **Cancel** to close the Drilldown window. Result: Your screen is back at the Asset tab.

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Setting Up Assets continued

Spare Parts

In Maximo there are several ways to associate spare parts to an asset:

- Use the **Item Assembly Structure** application to build and apply spare parts to an asset or to an item. You can also apply an IAS at the time of receiving an asset or item.
- On the Assets application's **Spare Parts** tab, associate those items as spare parts to the selected piece of assets.
- In the **Item Master** application, select the **Add Spare Parts** option to indicate that the item will be added as a spare part for the assets when issued, if the item is not already a spare part.

Before you associate spare parts, you must record items in the Inventory database table.

After an asset has spare parts associated to it, you can use the **Select Spare Parts** button to display a short list of items associated with the asset. If applicable, you can also search and identify spare parts using the Illustrated Parts Catalog (IPC).

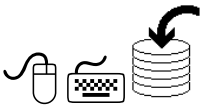


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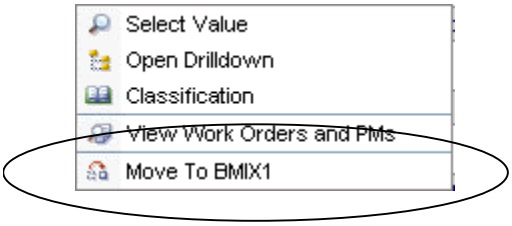
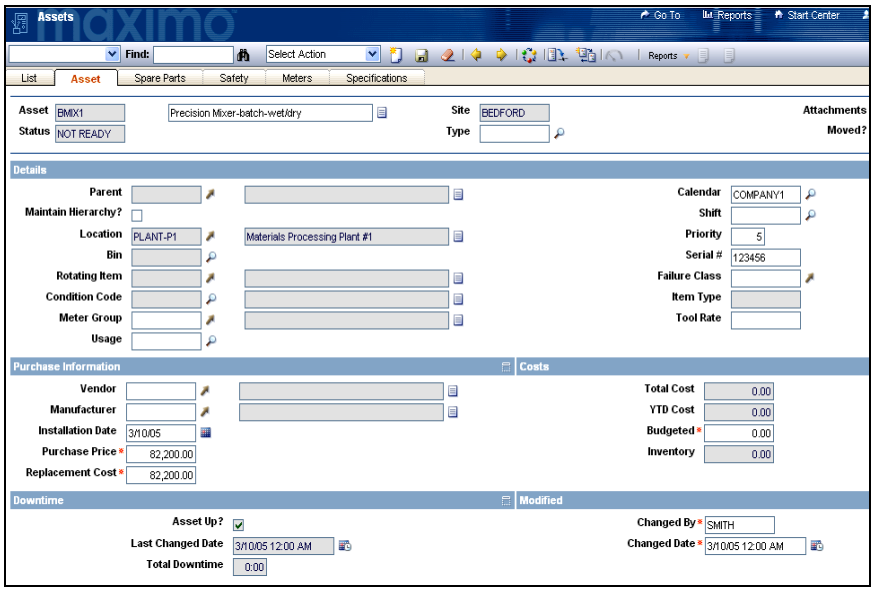
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Setting Up Assets continued

Manufacturer Scenario Exercise: Associating Spare Parts



In this exercise we will identify a few spare parts for the Batch Mixer.

Step	Action
1	From the **Parent** field of Asset 1234, click the **Detail** button and select **Move To BMIX1**.  Result: Maximo displays the Batch Mixer record. 

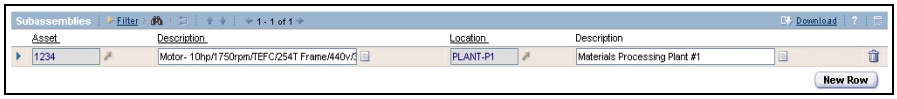
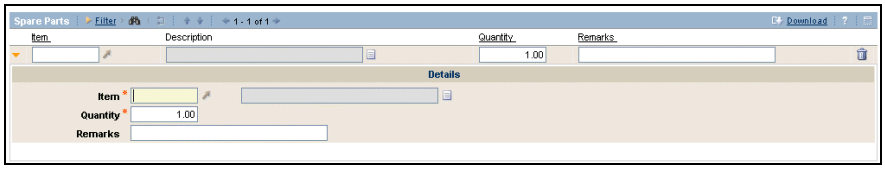
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Setting Up Assets continued

Manufacturer Scenario Exercise: Associating Spare Parts

continued

Step	Action
2	Click on the **Spare Parts** tab. Result: The Spare Parts tab displays the subassembly for the asset. 
3	To add a spare part to the unit of asset, click **New Row** in the **Spare Parts** table window. Result: An item row opens. 
4	Enter the following items and quantities (each in a new row): **Item** — **Quantity** XMP-3000 — 2 584-L0 — 16

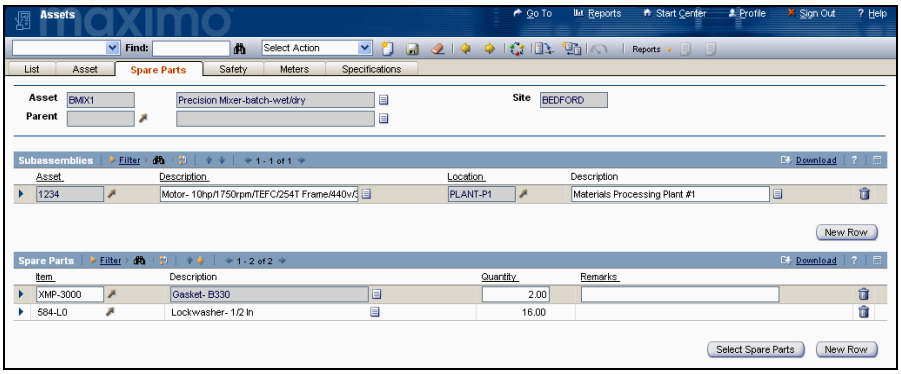
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Setting Up Assets continued

Manufacturer Scenario Exercise: Associating Spare Parts

continued

Step	Action
5	Click the **Save** icon. Result: The Spare Parts table window should look like the one below. 

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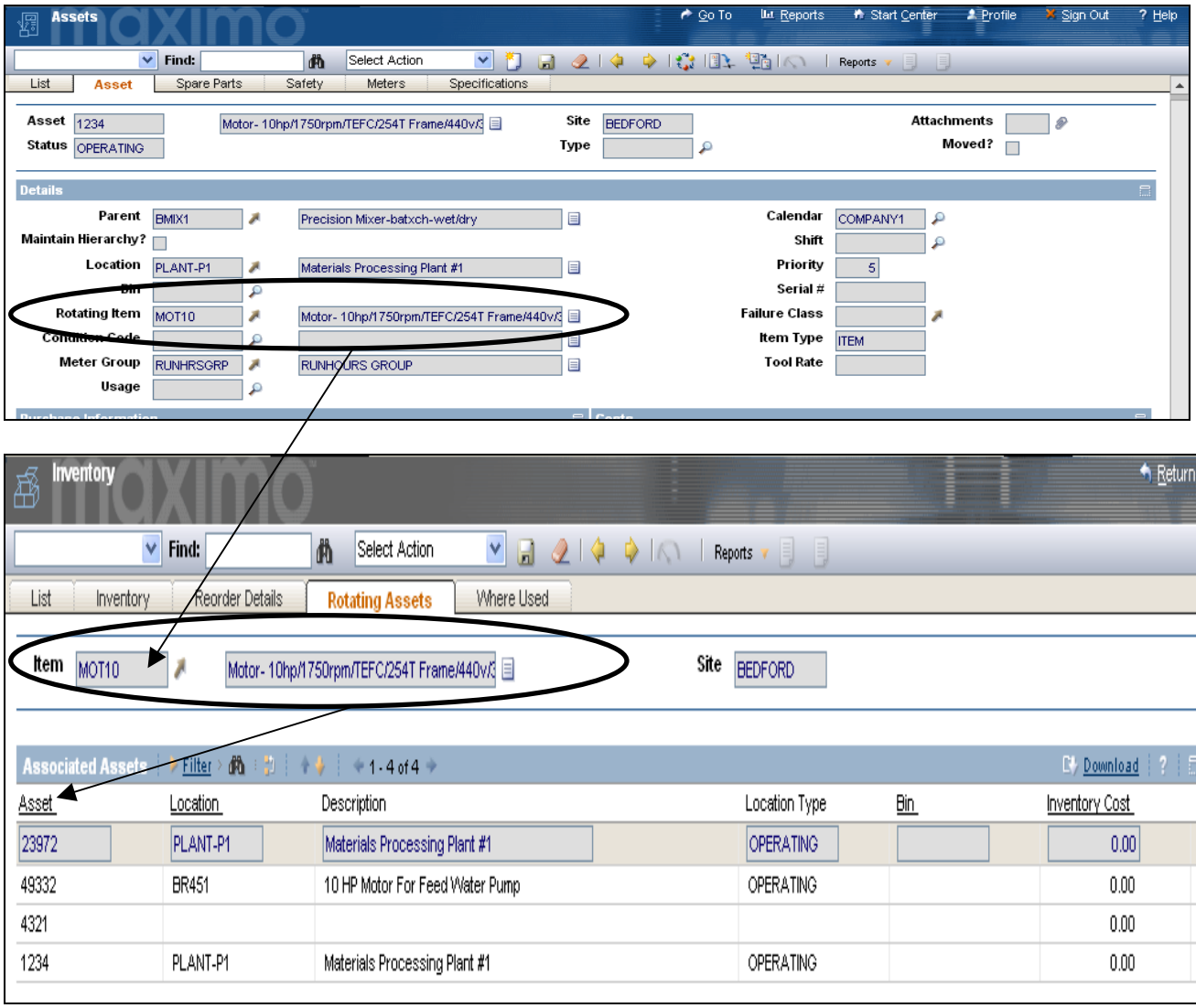
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Setting Up Assets continued

Rotating Assets

As discussed earlier, rotating assets are assets that are interchangeable and have both a unique asset number and a rotating item number.





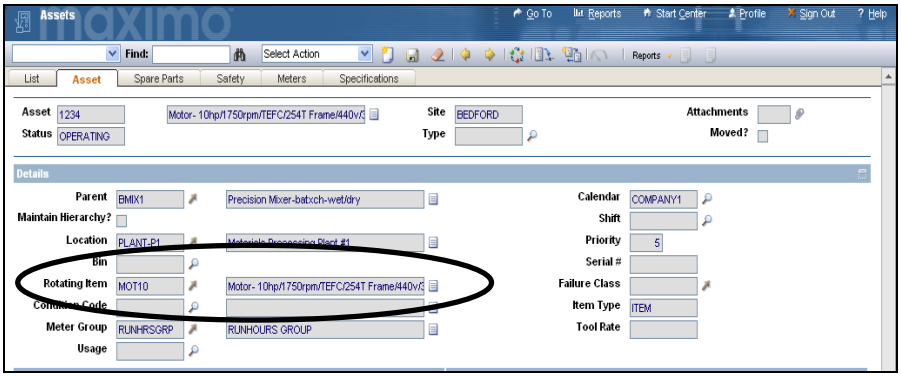
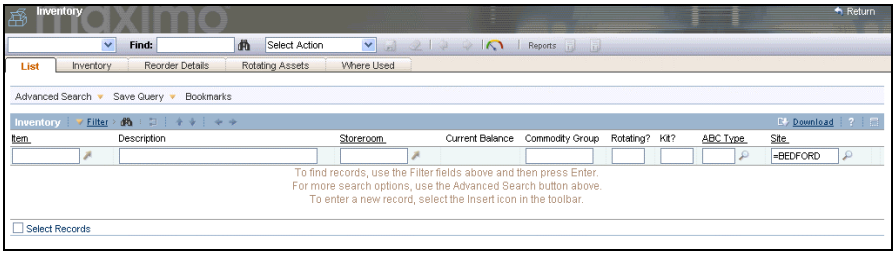
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Setting Up Assets continued

Reviewing a Rotating Asset Record

Remember that we duplicated Asset 23972 to create a subassembly for BMIX1: Asset 1234. Let's review the relationship between Asset 1234 and Asset 23972, which both belong to rotating item MOT10.

Step	Action
1	Access the **Asset** tab for asset record **1234**. Result: Maximo displays Asset 1234.  In the **Rotating Item** field, note that asset 1234 belongs to rotating item MOT10.
2	From the **Rotating Item** field, click the detail menu icon and select **Go To Inventory**. Result: The Inventory list tab is accessed with no listed items, similar to below. 

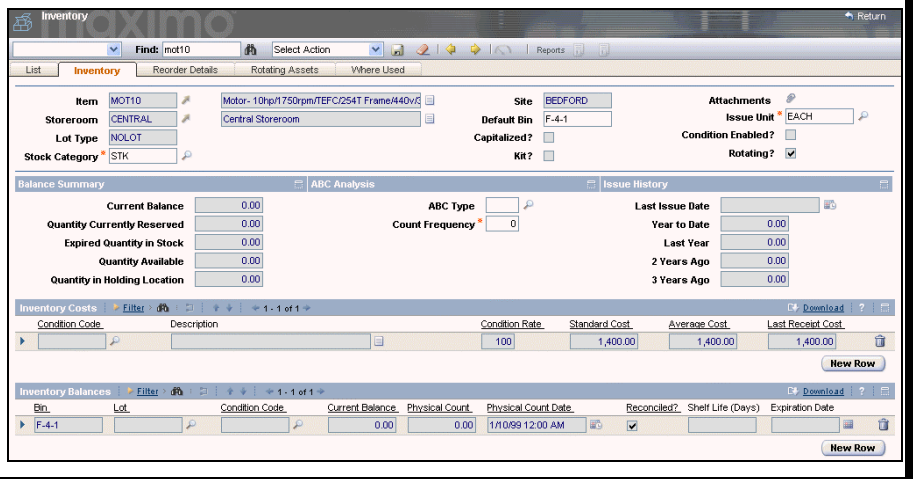
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Setting Up Assets continued

Reviewing a Rotating Asset Record

continued

Step	Action
3	Filter for the following Inventory record and display its Asset tab: **Field** — **Value** **Item** — MOT10 **Storeroom** — CENTRAL **Commodity Group** — MOTOR **Site** — BEDFORD Result: Your screen should look similar to the graphic below. 

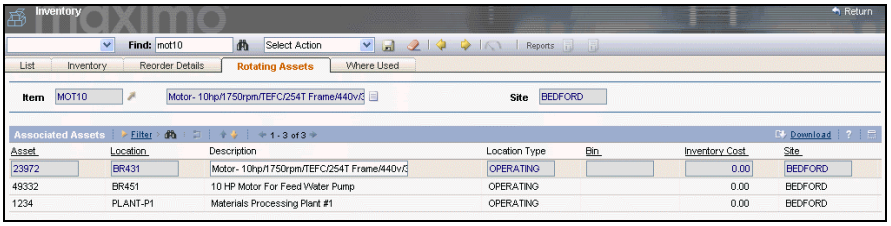
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Setting Up Assets continued

Reviewing a Rotating Asset Record

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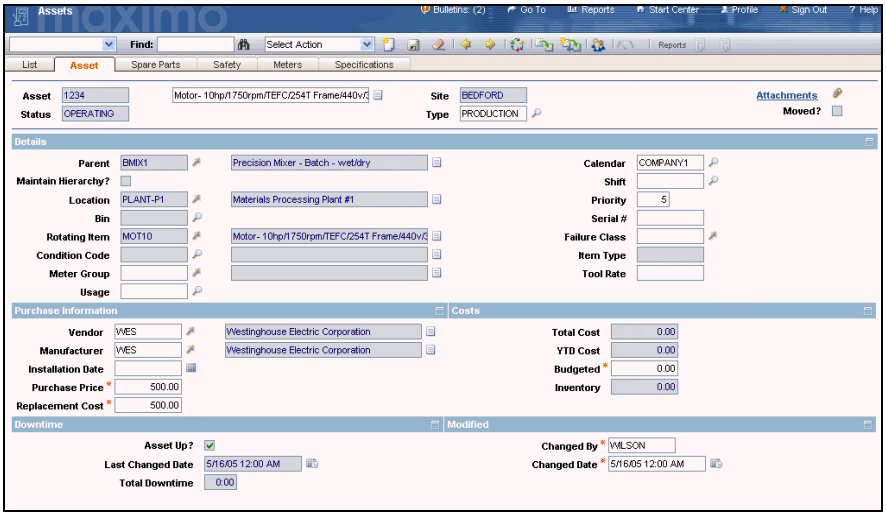
Step	Action
4	Click the **Rotating Assets** tab. Result: Maximo displays the assets for rotating item MOT10.  Notes: • In the **Associated Assets** section, note Assets 23972 and 1234 from the Asset field. Together with other Asset records, these assets have the same classifications and can be used interchangeably. • In Maximo, these assets can be tracked even if they are deployed in different sites or locations, constantly moving (in vehicles), or stocked in storerooms.

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Setting Up Assets continued

Reviewing a Rotating Asset Record continued

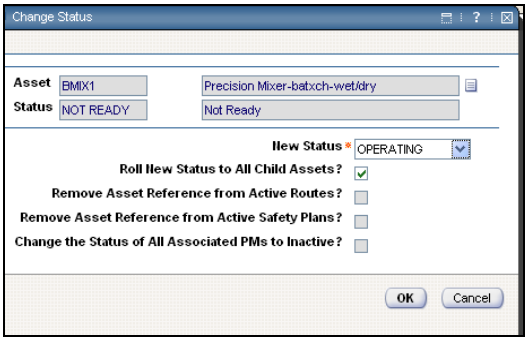
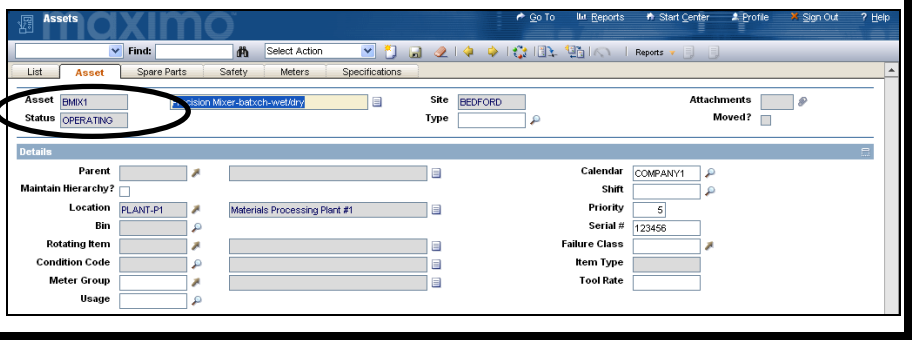
Step	Action
5	Click the **Return** link.  Result: You will return to where you started in the Asset application. 

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Setting Up Assets continued

Changing Asset Status

Before work orders can be associated with an asset, the status of the asset must be Operating.

Step	Action
1	Access the **BMIX1** record from the **Assets** application. Result: The BMIX1 record opens.
2	Click the **Change Status** icon to display the **Change Status** dialog box, then select **Operating** from the **New Status** field.
3	Check the **Roll New Status to All Child Assets?** check box. 
4	Click **OK**. Result: Asset BMIX1 is now in Operating status. 

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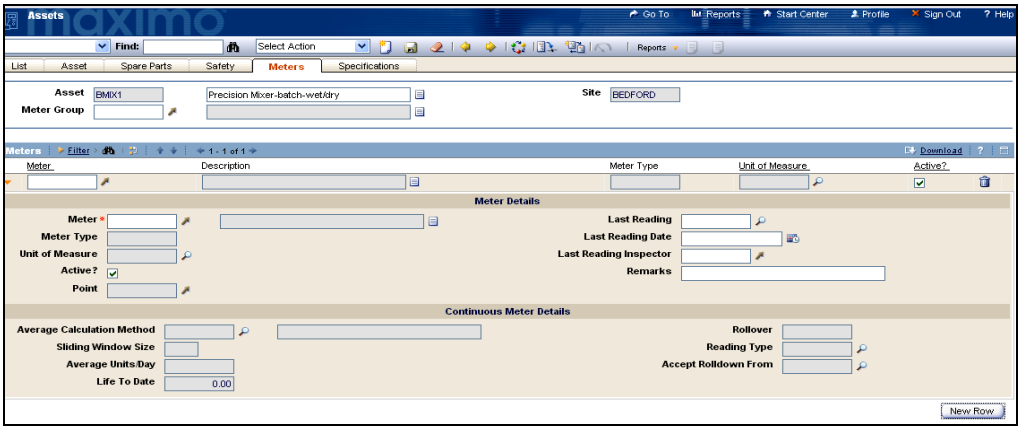
Asset Meters

Introduction

Maximo uses *asset meters* to generate PM work orders as follows:

- Using the **Condition Monitoring** application, where PMs are generated when the assets' acceptable upper and lower limit meter readings are reached.
- Using the **Preventive Maintenance** application, meter-based PM tab, where PM frequencies are based on defined meter units used since the last work order was completed or targeted to start.

The **Meters** tab lets you enter multiple meter readings per asset record.



Meters are available at the system level, so they can be applied to assets of all organizations.

Meter Types

Three types of meters can be created:

- *Continuous* meters are cumulative and tend to measure consumption or accumulation.

  Example: Miles, flight hours

- *Gauge* meters show a range of values.

  Example: Fuel level, temperature, pressure, noise level, oil level

- *Characteristic* meters are observational and have a list of possible values.

  Example: Oil color, flame color

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Asset Meters continued

Continuous Type Meter



If a **Continuous** meter is used, then you need to choose an **Average Calculation** method:

- **All** calculates the average of all the readings.
- **Sliding Days** calculates the average of the readings over a specific number of days.
- **Sliding Readings** calculates the average of a specific number of readings.
- **Static** sets the average and never recalculates it.

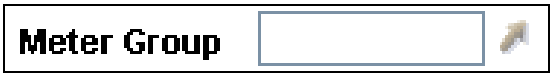
Accept Meter Rolldown

When you associate meters to an asset, the system will default to accept a meter reading from an asset. If you do not want the asset to accept meter readings, you can choose NONE.



Meter Groups

When an asset has a meter group associated with it, all the meters that belong to that group are listed on the asset's Meters tab.



Notes:

- If the asset is a rotating asset, and its rotating item has a meter group assigned to it, the meter group associated with the item is copied to the asset record and the Meter Group field is read-only.
- If a rotating asset's item does not have a meter group assigned to it, you can assign a meter group to the asset.
- You also can assign a meter group to a non-rotating asset.

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Asset Meters continued

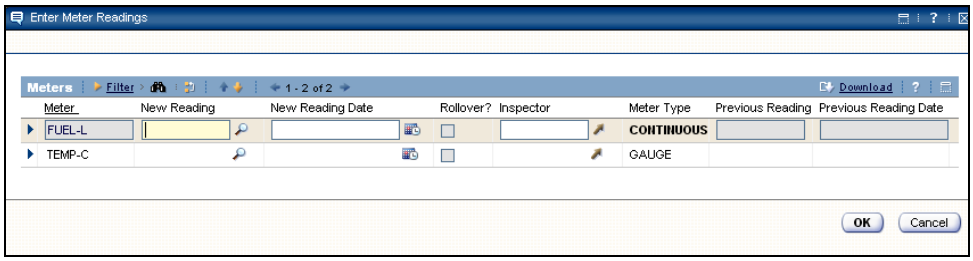
Reporting Meter Readings

If you have proper **Security** privilege, you can report meter readings using the **Enter New Reading** option on the select menu.

Maximo lets you report actual meter values for as many meters as there are on the current unit of asset.

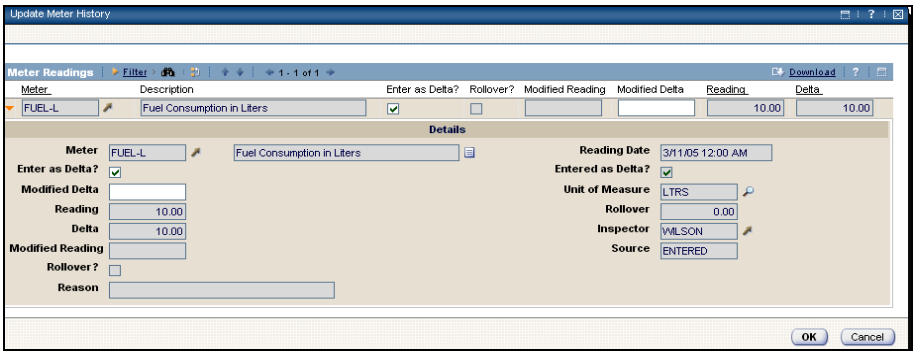
Enter only meter readings (which always increase), rather than gauge readings (which fluctuate).

Maximo expects a lower reading to owe to meter rollover or an adjustment.



Modifying Meter Readings

The **Manage Meter Reading History** option on the **Select Action** menu allows you to enter a reading with a lower value than the last reading.



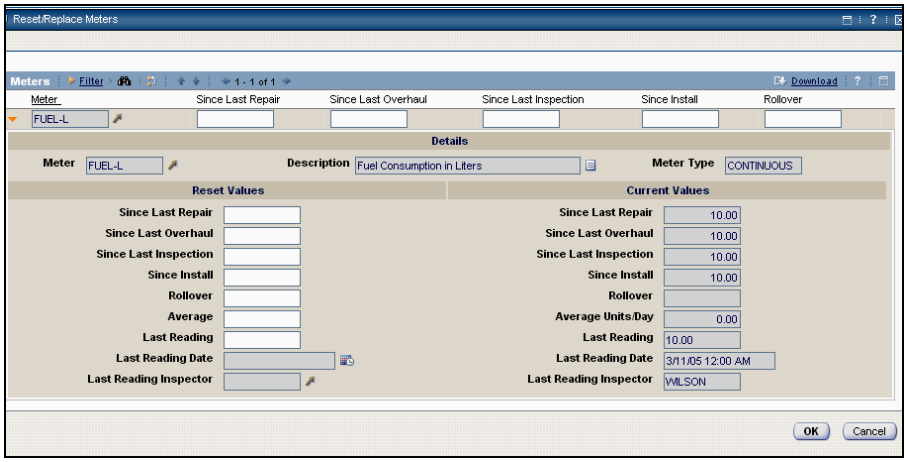
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Asset Meters continued

Resetting Meters

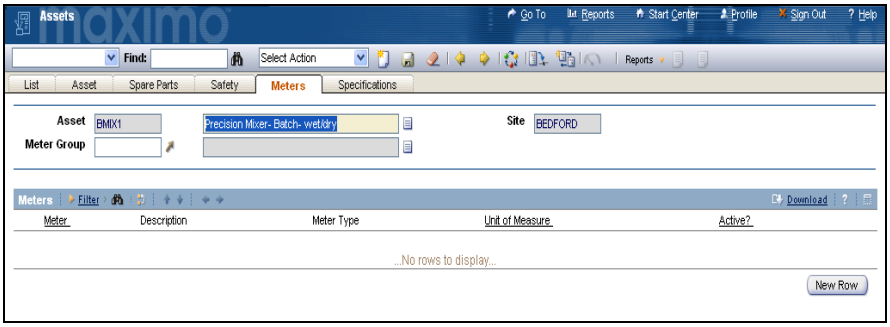
The **Reset/ Replace Meters** action let you reset the meters to zero.



Exercise: Assigning a Meter to an Asset



In this exercise we will assign a meter record for asset **BMIX1** using the **Meters** tab of the **Assets** application.

Step	Action
1	From asset record **BMIX1**, click on the **Meters** tab. Result: Maximo displays the Meters tab. 

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Asset Meters continued

Exercise: Assigning a Meter to an Asset

continued

Step	Action
2	Click **New Row** and enter the following values in the fields indicated. Hint: Use the detail menu icon if necessary

Field	Value
Meter	RUNHOURS
Unit of Measure	HOURS
Last Reading	18
Average Calculation Method	ALL
Reading Type	DELTA
Active?	[*Checked*]
Accept Rolldown From	ASSET

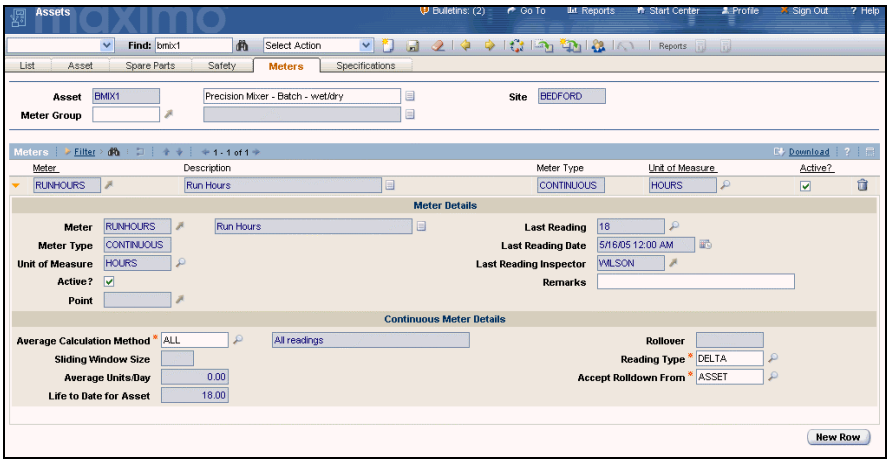
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Asset Meters continued

Exercise: Assigning a Meter to an Asset

continued

Step	Action
3	**Save** your record. Result: Your screen should be similar to the one shown below:  Note: A meter is now assigned to your asset, which allows you to assign a preventive maintenance schedule that depends on your meter readings.

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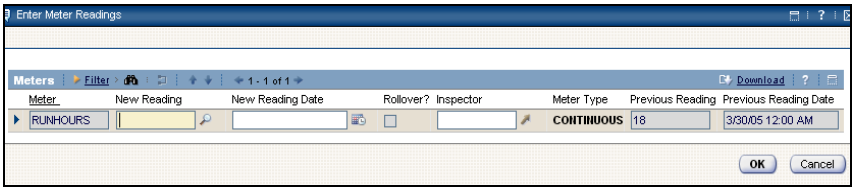
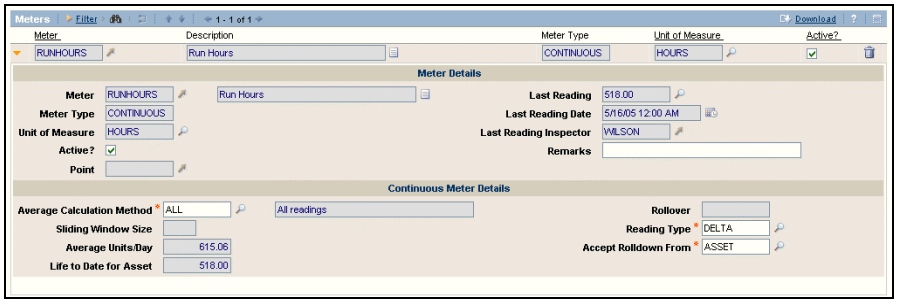
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Asset Meters continued

Exercise: Updating Meter Readings

Assume that, after several days, you are scheduled to manually record the meter readings for asset BMIX1.

Follow the steps below:

Step	Action
1	Access Asset **BMIX1** from the **Assets** application.
2	From the **Select Action** menu, select **Enter Meter Readings**. Result: Enter Meter Reading dialog box opens. 
3	Enter the following values for the new reading on the RUNHOURS meter: **Field** — **Value** **New Reading** — 500 **New Reading Date** — [*Today's date*]
4	Click **OK**. Result: You are back on the Meters tab.
5	View the details for the **RUNHOURS** meter. Result: Asset BMIX1 has a new Life To Date reading of 518 hours. 

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Associating Assets and People

Introduction

Maximo provides the ability to identify one or more people who are associated with an asset in some way.

This capability is essential to managing and tracking IT assets. But, it could easily provide some benefit to those using Maximo for traditional enterprise asset management, as well.

Asset Associations

There are three types of associations between people in Maximo and assets.

The table below describes these three types.

Asset Association	Description
Primary	This is the person who has ultimate responsibility for the asset. The first person associated with an asset must be the primary owner. If other people are associated with the asset, primary ownership can be moved to someone other than the first person.
Custodian	This person has the next level of responsibility for an asset. This person may work directly with the user of the asset, but does not directly access the asset.
User	The user is the person who has direct access to and usage of the asset. If someone were to search for a mobile asset, they would probably want to find out where the user was located.

Benefits of Associating Assets and People

Suppose your organization has enormous types of complex assets that require multi-level tracking, operating, maintaining and servicing. Maximo provides a systematic way to categorize the levels of asset associations.

For example, you can associate a critical asset to a *Primary* person to manage the asset's availability and warranty agreements, and a *Custodian* to perform corrective or preventive maintenance works to the asset to enable the *User* to operate the asset efficiently, thus maximizing your return on assets.



Notes:

- There can only one Primary, but there can be multiple Custodians and Users.
- One person can have all three relationships with the asset.

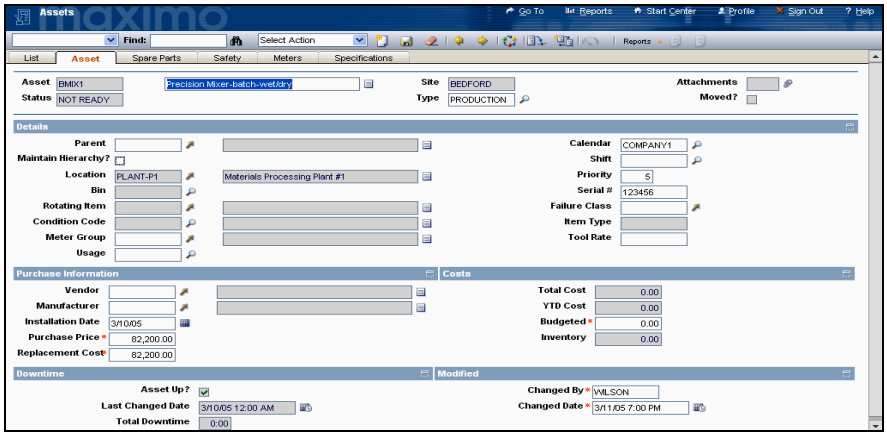
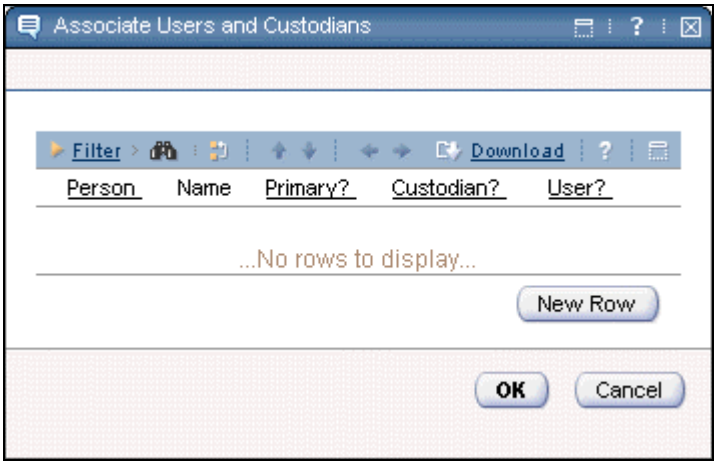
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Associating Assets and People continued

Creating Associations

The following exercise shows you how to create associations between people and assets.

Step	Action
1	In the **Assets** application, access the **Asset** tab for the **BMIX1** record. Result: Your screen should look similar to the graphic below. 
2	Choose **Associate Users and Custodians** from the **Select Action** menu. Result: The Associate Users and Custodians dialog box opens. 

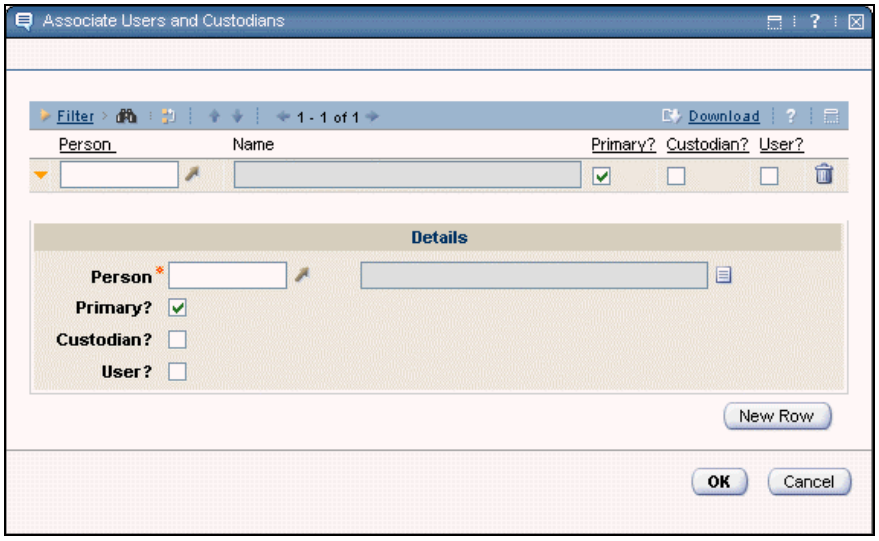
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Associating Assets and People continued

Creating Associations

continued

Step	Action
3	Click **New Row**. Result: Your screen should look similar to this:  Note: The first association must always be Primary. Because you are creating the first association with this asset, the **Primary** check box is selected by default.
4	Enter JEFFERS in the **Person** field and check the **Custodian** check box. Note: A Primary user must also have another role when associated with an asset.
5	Click **OK** and **Save**. Result: The Associate Users and Custodians dialog box closes and the associations are registered between JEFFERS and the asset in Maximo.

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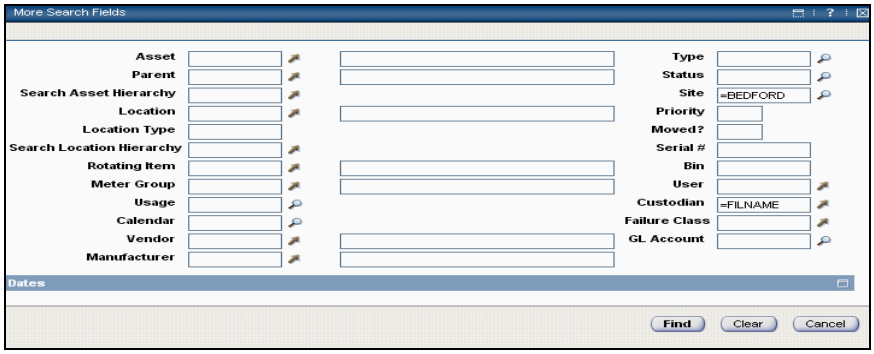
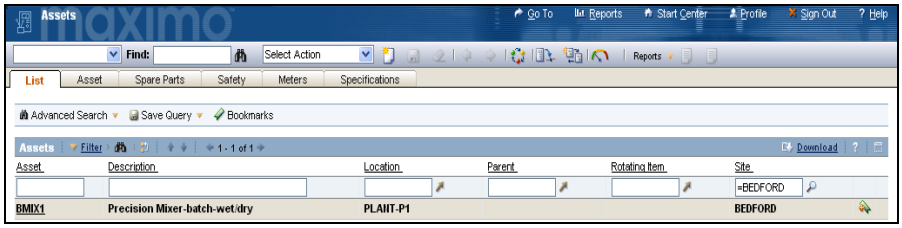
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Associating Assets and People continued

Search Using Associations

Now that we have created associations between a person and Maximo, the **Advanced Search** allows you to find assets associated with people.

Follow the steps below.

Step	Action
1	Access the **List** tab from the **Assets** application.
2	Ensure that all filter fields are cleared. Although this is not required, clearing the filter fields is a best practice to follow when doing searches.
3	Click the **Advanced Search** link to display the **More Search Fields** dialog box. 
4	In the **Custodian** field, enter JEFFERS.
5	Click the **Find** button. Result: Asset BMIX1 is retrieved on the List tab because JEFFERS is a custodian of this asset. 

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Chapter Summary

Managing Assets in Maximo

A big benefit of using Maximo is the ability to track maintenance costs and maintenance schedules against your assets. Managing your asset cost through its lifecycle is the main purpose of Maximo and Strategic Asset Management (SAM).

Asset Records

Entering asset records and associating its subassemblies and spare parts with it allows the performance of each subassembly and spare part to be monitored on an independent basis. It also allows for all of the ownership to be captured.

The Assets Application

The **Assets** application enables you to keep and update the records of all of your assets and operating locations. Use the Assets application to add new assets to the database and define relationships among assets.

Asset Subassemblies

In Maximo there are several ways to associate and build asset assembly structures, including the following methods:

- Use the **Item Assembly Structure** application to build and apply assembly structures to assets or to an item. You can also apply an IAS at the time of receiving an asset or item.
- On the **Assets** application's **Spare Parts** tab, associate subassemblies to the selected assets. (The subassembly must be recorded in the Assets database table to list it here.)

Rotating Assets

Rotating assets are interchangeable and have both a unique asset number and a rotating item number.

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Chapter Summary continued

Spare Parts

In Maximo there are several ways to associate spare parts to a unit of Assets, including the following methods:

- Use the **Item Assembly Structure** application to build and apply spare parts to a unit of assets or to an item. You can also apply an IAS at the time of receiving an assets or item.
- On the **Assets** application's **Spare Parts** tab, associate those items as spare parts to the selected unit of assets.
- On the **Item Master** application, check off the **Add Spare Parts** option to indicate that the item will be added as a spare part for the assets when issued, if the item is not already a spare part.

Before you associate spare parts, items must be recorded in the Inventory database table.

After an Asset unit has spare parts associated to it, you can use the Spare Parts button to display a short list of items associated with the assets. If applicable, you can also search and identify spare parts using the Illustrated Parts Catalog (IPC).

Asset Status

The Status field is used to indicate when an asset is:

- **Not Ready** – Default status for new asset records. Asset records can be created before assets have been received, installed, configured, inspected, or otherwise approved for their intended use.
- **Decommissioned** – Asset has been retired from service and moved to scrap or salvage.
- **Operating** – Asset has been received, installed, configured, inspected, or otherwise approved for use or operation.

Note: An asset should be in Operating status before a PM or work order is generated.

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Chapter Summary continued

Asset Meters	Maximo uses asset meters as one criterion to generate PM work orders. PM frequency is based on elapsed time in days or in meter units used since the last work order was completed or targeted to start. The Meters tab lets you enter multiple meter readings per asset record.
Associating Assets and People	Maximo enables you to identify one or more people who are associated with an asset in some way. This capability is essential to managing and tracking IT assets. But, it could easily provide some benefit to those using Maximo for traditional enterprise asset management as well.

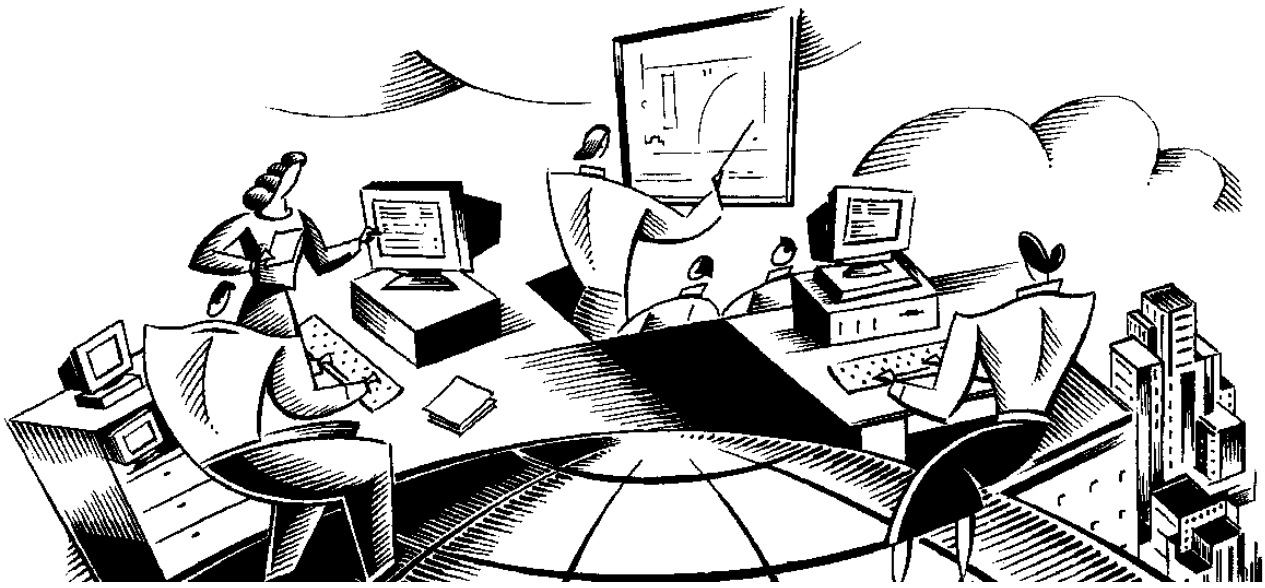
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MXES Immersion Training for EAM

Unit 3: Using What You've Got: Work Management



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In This Unit

This unit contains the following chapters:

Chapter	Subject
7	Entering Supporting Records for Work Management: Job Plans
8	Entering Supporting Records for Work Management: Preventive Maintenance
9	Proactive Work
10	Reactive Work

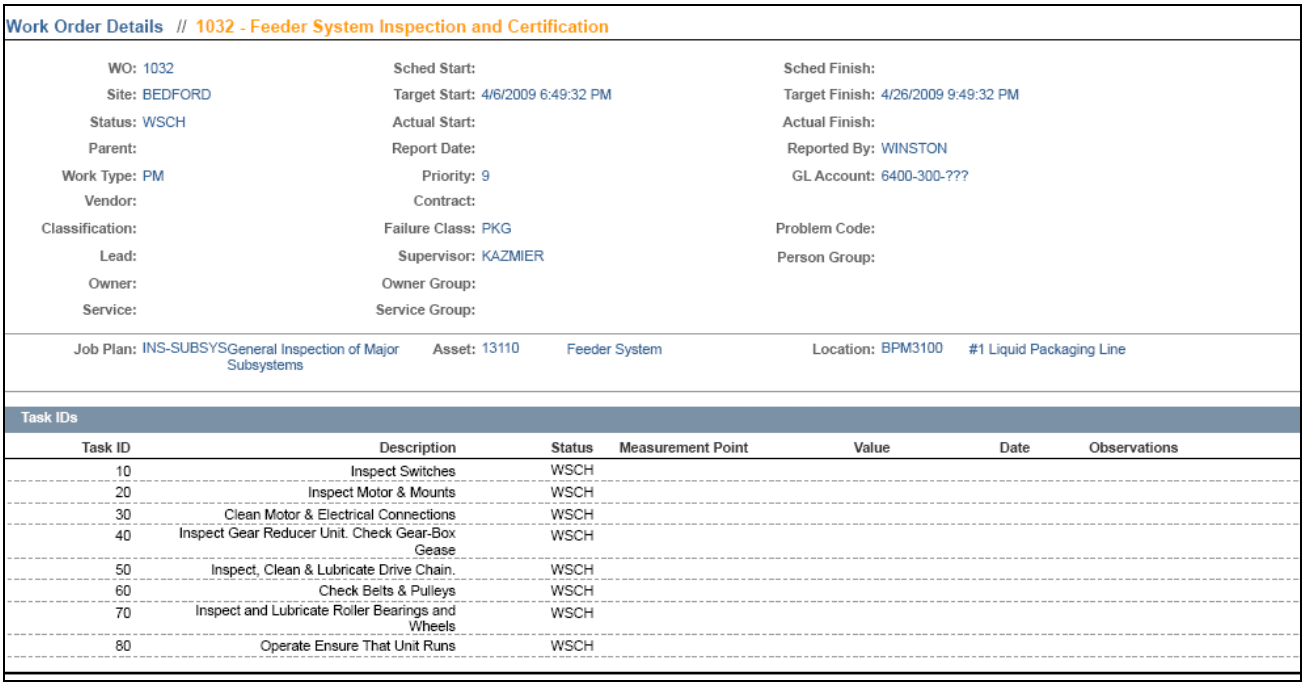
Unit Overview

Introduction

The **Work Orders** module is the core maintenance tool of Maximo. Work orders are used to carry out work on your assets and are created for many reasons, including:

- preventive maintenance,
- emergency maintenance and
- corrective maintenance.

In this unit, our focus will be on learning how to use Maximo for work management: specifically for work order generation and processing.



Work Order Details // 1032 - Feeder System Inspection and Certification

WO:	1032	Sched Start:		Sched Finish:	
Site:	BEDFORD	Target Start:	4/6/2009 6:49:32 PM	Target Finish:	4/26/2009 9:49:32 PM
Status:	WSCH	Actual Start:		Actual Finish:	
Parent:		Report Date:		Reported By:	WINSTON
Work Type:	PM	Priority:	9	GL Account:	6400-300-???
Vendor:		Contract:			
Classification:		Failure Class:	PKG	Problem Code:	
Lead:		Supervisor:	KAZMIER	Person Group:	
Owner:		Owner Group:			
Service:		Service Group:			

Job Plan: INS-SUBSYSGeneral Inspection of Major Subsystems Asset: 13110 Feeder System Location: BPM3100 #1 Liquid Packaging Line

Task IDs

Task ID	Description	Status	Measurement Point	Value	Date	Observations
10	Inspect Switches	WSCH				
20	Inspect Motor & Mounts	WSCH				
30	Clean Motor & Electrical Connections	WSCH				
40	Inspect Gear Reducer Unit. Check Gear-Box Gease	WSCH				
50	Inspect, Clean & Lubricate Drive Chain.	WSCH				
60	Check Belts & Pulleys	WSCH				
70	Inspect and Lubricate Roller Bearings and Wheels	WSCH				
80	Operate Ensure That Unit Runs	WSCH				

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Unit Overview continued

Learning Objectives

When you have completed this unit, you should be able to:

- enter Job plan records
- enter Preventive Maintenance (PM) records
- describe the difference between Proactive and Reactive maintenance
- describe how Maximo applications can work together to manage maintenance work
- describe the phases involved in the creation, initiation, and generation of a work order
- list the phases and steps in the Work Order life cycle

Setting Up Work Management Supporting Records

In Unit 2, Chapters 2 to 6, we created records to set up the Maximo database.

In Chapters 7 and 8 we will enter **Job Plans** and **Preventive Maintenance** (PM) records to support Work Order Management, which is the core application that we will be discussing in this unit.

Proactive vs. Reactive Work Classifications

For this unit, Classifications (not work type) of work are:

- *Proactive*: Work that heads off problems before they occur, or work that can be planned. Some defining characteristic are:
  - Work is done to prevent an asset, especially critical assets, from failing
  - Any PM job
  - Work orders initiated by condition (predictive) monitoring when the need is not otherwise readily apparent
  - Project work to upgrade an asset
  - Work that can be planned and scheduled
- *Reactive*: Work where a failure has occurred and an operations group is reacting to the situation. Some defining characteristics are:
  - Where an asset is actually broken down or fails to operate properly
  - Where the highest-level priority jobs are defined as urgent
  - Work that is not planned

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Unit Overview continued

Revisited: World Class Indicators

- **Maintenance Costs**
  - Total Costs/Total Manufacturing Costs <~10%
- **Planned Maintenance Costs**
  - Planned Maintenance/Total Maintenance >90%
- **Maintenance Overtime**
  - Maintenance Overtime/Total Maintenance <5%
- **Maintenance Rework**
  - Work Orders Reworked/Total Work Orders 0%
- **Training**
  - Maintenance Workers Receiving >40/hrs>90%
- **Safety**
  - Injuries per 200,000 Maintenance hours <2%

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Unit Overview continued

Implementation Questions to Consider

- How many weeks of work backlog do you have at present?
  Craft_____ # of men _____ Weeks _____
- How often do you track backlog trends to determine future labor needs?
- If work orders are discarded, who determines what is valid or invalid?
- Does all work require a valid work order?
- Do you use blanket or open work orders?
- How do you handle emergency work requests?
- Are these emergency jobs entered to WOs after the fact?
- Have you written WO procedures that everyone in maintenance and operations can understand?
- How do you prioritize work orders?
- Are work orders classified by the following types of work performed:
  - Emergency work orders
  - Corrective work orders
  - Blanket work orders
  - Project work orders
  - PM work orders
- Do you record work order delays?
- How is time reported against work orders?
- Are there work order actuals vs. estimated cost reports?
- Do you have a list of blanket work orders in use?
- Are Work Orders Scheduled reports used?
- Are Work Orders Completed reports used?
- Are Work Orders in Progress reports used?
- Are Emergency Work Order reports used?
- Are Order Backlog reports used?
- Does the management hold daily meetings with foremen to discuss day-to-day problems and schedules?
- Are Failure Hierarchies used on work orders?
- Are trends analyzed and reliability information sent to engineering for evaluation?

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Unit Overview continued

KPIs

Some Work Management performance metrics are:

Metric Title	Metric Description
% Maintenance labor $ captured on work orders	The percentage of completed work orders that have labor entered.
% Maintenance material $ captured on work orders	The percentage of completed work orders that have material entered.
% Maintenance contract $ captured on work orders	The percentage of completed work orders that have contract $ entered.
% Maintenance downtime captured on work orders	The percentage of work orders that have downtime information recorded on them. This is only maintenance related and not total asset downtime.
% Maintenance labor captured on standing work orders	The percentage of labor $ entered on standing work orders.
% Maintenance material captured on standing work orders	The percentage of maintenance material $ entered on standing work orders.
% Maintenance work orders planned	The percentage of all work orders that are planned.
% Maintenance hours scheduled	The percentage of all labor hours that are scheduled.
% Maintenance hours scheduled that were completed	The percentage of scheduled hours that were completed as scheduled.
Estimated hours/actual hours on planned work	The estimated hours for all work orders divided by the actual hours for the same.
% Work orders completed within 20% of estimated labor	What percentage of work orders were completed within plus or minus 20% of the labor estimate.
% Work orders completed within 20% of estimated material $	What percentage of work orders were completed within plus or minus 20% of the material estimate.
% Work orders waiting on parts	What percentage of work orders are waiting on parts.

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Unit Overview continued

KPIs continued

Metric Title	Metric Description
Outstanding work order backlog hours	What is the total remaining estimated hours for all work orders not yet completed or canceled.
Breakdown work orders during period	How many work orders were generated during the period for breakdowns.
% Emergency work labor hours	What percentage of all work orders were emergencies.
% Preventive work labor hours	What percentage of all work orders were PMs.
% Predictive work labor hours	What percentage of all work orders were predictive.
% Corrective work labor hours	What percentage of all work orders were corrective.
% Work orders overdue	What percentage of work orders were not completed by the due date.

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Unit Overview continued

Out-of-the-Box Maximo Reports and KPIs

The following list contains some of the key reports available for work order related applications (Work Order Tracking, Quick Reporting, Assignment Manager):

Report	Description
Work Order Material Shortage	Calculates the item availability expected at the time the work order starts using reservations and expected receipts. Determines if the item's expected balance will be sufficient for the planned materials for the current work order.
Work Order Pick	Lists items to be picked for selected work order.
Work Order Details	Lists details of the selected record(s).
Work Assignment	Lists work order assignments for Labor by Supervisor or by Locations.
Work Order List	Lists work order, description, and status for selected records. Links are available via work order number to the Work Order Details report for individual work orders.
Quick Reporting List	Lists work order, description, and status for selected records. Links are available via work order number to the Work Order Details report for individual work orders.
Open Work Order and PM	For a selected asset or location, lists all open work orders plus next due PM.
Quick Reporting Details	Contains planned and actual labor, materials, tools, and services information for a work order. Labor has to be approved to be included in actuals.
Work Order Assignments by Work Order	Displays Work Order Assignments for Labor grouped by work order.
Work Order Assignments by Craft	Displays Work Order Assignments for Labor grouped by craft.

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Unit Overview continued

Organizations Application Setup Options Revisited

The following setup options for Work Management are available in the **Organizations** application:

Configuring Work Order Options

To configure work order options, select **Work Order Options** from the **Select Action** menu in the toolbar.

The **Work Order Options** screen has the following options:

- Work Type
- Edit Rules
- Site Options
- Other Organization Options

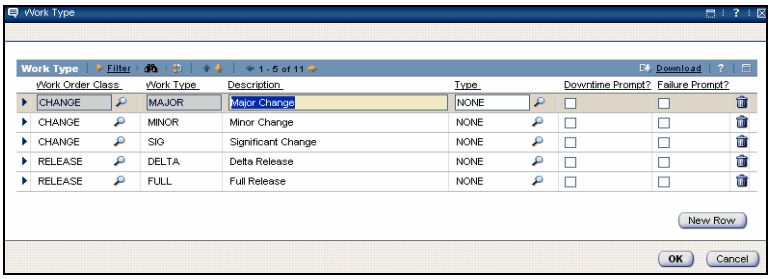
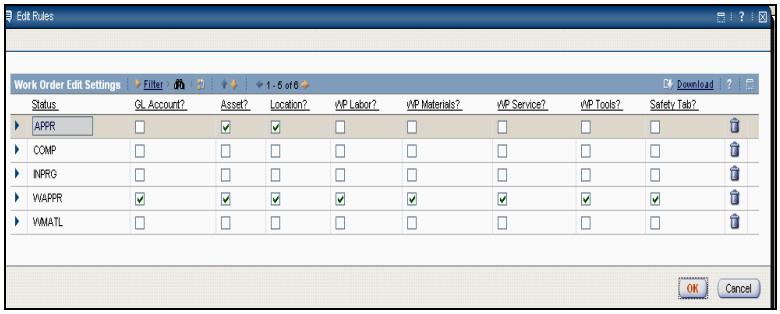
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Unit Overview continued

Configuring Work Order Options

The following table describes the functionalities for each option.

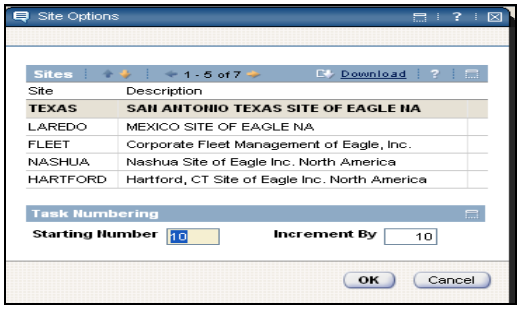
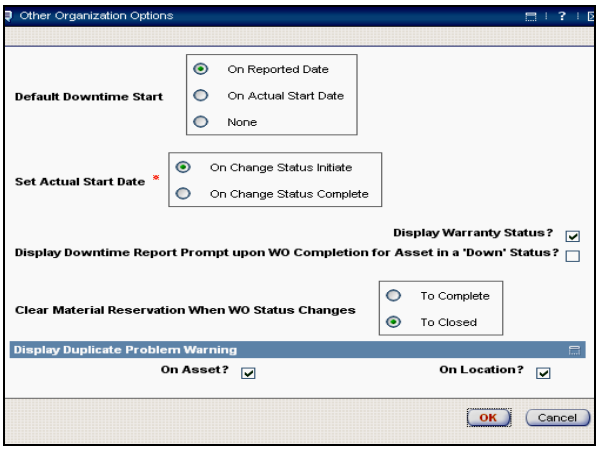
Options	Description
Work Type 	Use to add new work types or modify existing work types for the current organization. Work Type options determine how Maximo handles the different types of work orders during the Complete Transaction phase of work order processing.
Edit Rules 	You use the Edit Rules dialog box in the Organizations application to specify which work order properties can be edited for a given work order status. • GL Account • Asset • Location • WP Labor • WP Materials • Edit WP Service • WP Tools • Safety tab.

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Unit Overview continued

Configuring Work Order Options continued

Options	Description
Site Options 	Use the Site option to determine work order task ID numbering. You can use default increments or change them to meet the needs of the site. By default, tasks will increment by 10; however, you can change the increment value by entering the new value in the **Increment By** field.
Other Organization Options 	Use to configure other work order settings, such as: • Default Downtime Start • Display Problem Warning • Set Actual Start Date • Clear Material Reservation When WO Status Changes Turn each of these features on or off by clicking the radio buttons or selecting the check boxes.

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Unit Overview continued

Revisit Implementation Tip



Consider these six stages when working toward the best use of Maximo:

1. Identify work (by type and priority).
2. Plan the work.
3. Schedule the work.
4. Assign the work.
5. Execute the work.
6. Analyze the work (immediately and over time).

Keeping these stages in mind allows you to think through the work order lifecycle process and determine where and when certain practices have to be implemented or changed to use Maximo within your implementation parameters.

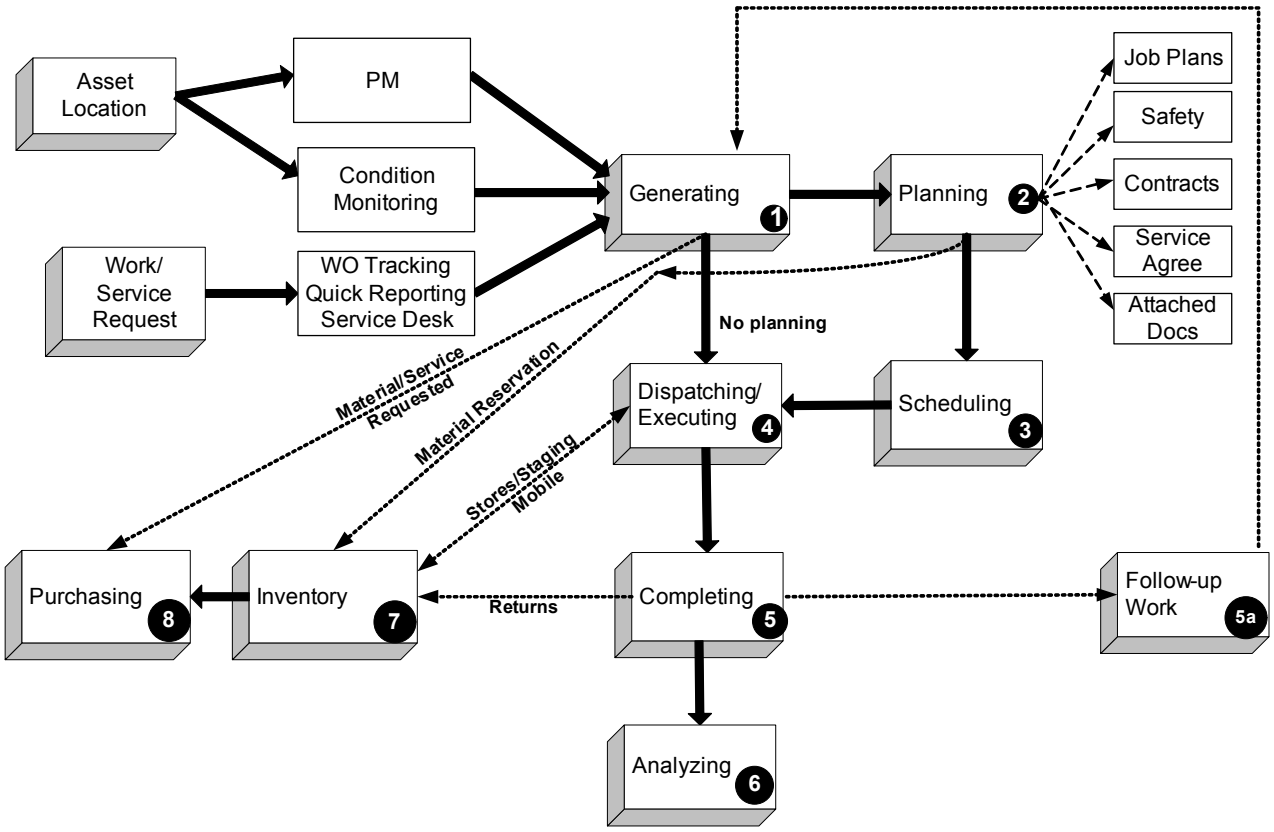
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Unit Overview continued

Applications Working Together

The following diagram shows the various stages how some of Maximo's applications and modules work together through the work order lifecycle.



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Unit Overview continued

Stage	Status	Description
1	WAPPR WSCH INPRG APPR	For assets or locations, you can create and generate work orders, sometimes with associated job plans, safety plans, and contracts in the following ways: • A PM becomes due and is automatically generated by the system cron task or using the PM application itself. • A condition measurement falls outside the limits and is automatically generated by the system cron task or using the CM application itself. • A problem is reported and can be manually (user) entered in the Work Order Tracking, Service Request, or Quick Reporting applications. • (6a) If necessary, a follow-up work order is generated from an originating work order.
2	APPR WSCH	Depending on the work order: job plans, related service contracts and safety information is associated or added to the work order. When a job plan or work plan is used with a work order, and the work order is approved, planned materials are put on inventory reserve inventory. Depending on the work situation, services and materials requisitioning is done by the maintenance organization or through inventory reorder.
3	APPR	Scheduling data drawn from the Scheduling Information table window on the Work Order Tracking application is utilized by a project scheduling application, such as Maximo Project Manager or Assignment Manager. Based on Priority, backlog is ranked, the highest priority work being done first, and work assignments are scheduled.
4	INPRG	After work and labor assignment are scheduled, work is dispatched to staff using the Assignment Manager application, work orders are then printed and then dispatched to the staff. Staff picks up materials from the storeroom, warehouse, or staging or (if an open storeroom), materials are drawn by the staff. If a storeroom issues materials, they can be issued using the issues and transfers application. The physical work begins.
5	COMP CLOSE	Physical work is finished for part of or the whole work order. Actual Material, Labor, Services, and Tool usage is entered against the work order using either the Quick Reporting or Work Order Tracking application. Unused materials are returned to inventory and actual work order costs are calculated. After a certain amount of time, the work order is closed, which represents that all the physical work and all the required electronic data for the work order is entered.
5a	WAPPR	If necessary, a follow-up work order is generated from an originating work order.
6		Use the data in the system to generate daily, weekly, and monthly reports and analysis summaries.
7		Manage your inventory and reconcile item balances using the Maximo Inventory module.
8		Manage the purchasing processes using the Maximo Purchasing module.

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Unit Overview continued

Work Order Status

Every work order has a status value that indicates its position in the work order processing cycle. Work orders can be created with different statuses, depending on which application is used to create or generate them.



The following table lists and describes each status:

Status	Means
WAPPR	Waiting for approval: Default status for records you create in Work Order Tracking, Changes, Releases, and Activities applications.
WMATL	Waiting for material: Indicates that you cannot initiate the work order because you do not have the needed material.
WSCH	Waiting to be scheduled: Default status for work orders you generate from Preventive Maintenance and Condition Monitoring records.
WPCOND	Waiting for Plant Conditions: Requires a particular plant condition in order to be worked on.
APPR	Approved: Status indicates the work plan has been approved and the work can begin. You can report actuals against approved work orders. Maximo reserves the work plan items in inventory and records cost and rate data.
INPRG	In progress: default for work orders created in Quick Reporting.
CAN	Canceled: Status indicates the work will not be performed. If the work order has already been initiated or actuals have already been reported, you cannot change its status to CAN. If the selected work order has been approved, Maximo removes item reservations from Inventory for the work order, and makes the work order a history record.
COMP	Complete: Physical work is finished.
CLOSE	Closed: All electronic data is entered. Status finalizes the work order. When you close a work order, Maximo removes inventory reservations for items that were not used on the work order, and makes the work order a history record.

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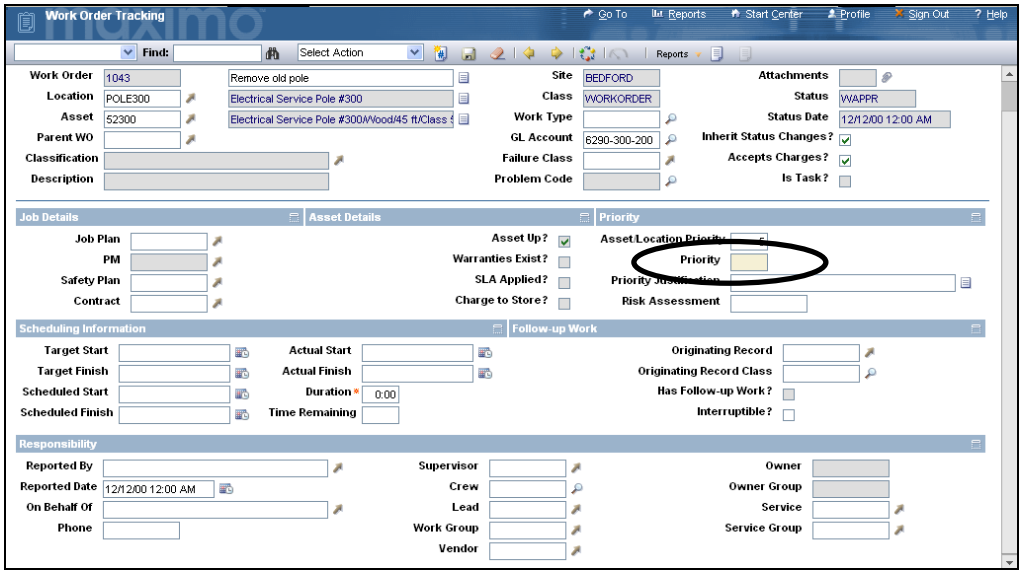
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Unit Overview continued

Priority

An integral part of work planning and scheduling is prioritizing your work. Using the **Priority** field allows you to rank work orders in order of importance so you know which ones to handle first, thus allowing you to effectively plan and schedule work.

In Maximo the default is 0. Values from 0-999 are valid, but it is recommended to limit the range of value to 0-9, where 0 is designated the lowest priority.



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Work Orders in Maximo

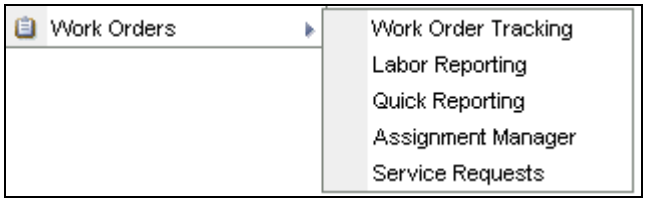
Introduction

Because this unit focuses on work orders, this section provides an overview of the following:

- The Work Orders module and applications
- Types of work orders
- Ways in which a work order is created
- How and what applications are used to process a work order through a work order lifecycle

The Work Orders Module

The **Work Orders** module is the core tool used for the majority of processing and managing work. Depending on how your maintenance program is operating, the Work Orders module provides several options for you to manage work in the system.



Purpose

The **Work Orders** module serves many purposes:

- It centralizes all information and options necessary for the planning and execution of work orders.
- It provides maintenance planners with a tool that gives efficient access to all information needed to plan and report on work orders.
- It provides a quick and efficient way to report work performed on work orders or request work that needs to be done.
- It collects data that allows analytical decision-making in a maintenance organization.

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Work Orders in Maximo continued

Work Situations

There are many different situations that generate work for a maintenance department, such as a broken light fixture or a boiler failure. How you set up and track work in Maximo depends on the source of work and your site processes. Generally, but not exclusively, there are four situations of work occurrences:

- Work that is requested, planned, scheduled, assigned, performed, and recorded.
- Work that is planned, scheduled, assigned, performed, and recorded.
- Repetitive work that is planned ahead of time to occur at scheduled intervals, assigned, performed, and recorded.
- Work that is performed and then recorded, with no formal request having been made.

Work Order Types

In Maximo, maintenance activities can be specified as different work types. Maintenance work types could be any of the following:

- *Corrective (CM)*: is repair work that can be planned and scheduled.
- *Emergency (EM)*: is unplanned, unscheduled breakdown maintenance. EM also means Reactive Maintenance.
- *Preventive (PM)*: is scheduled work (fully planned) that is based on either time or meter.
- *Capital Project (CP)*: is fully planned scheduled project work.
- *Event (EV)*: is an unscheduled event that stops work (production) but does not necessarily require a maintenance crew to fix.

In Maximo, the work order type is accounted for in the **Work Type** field.



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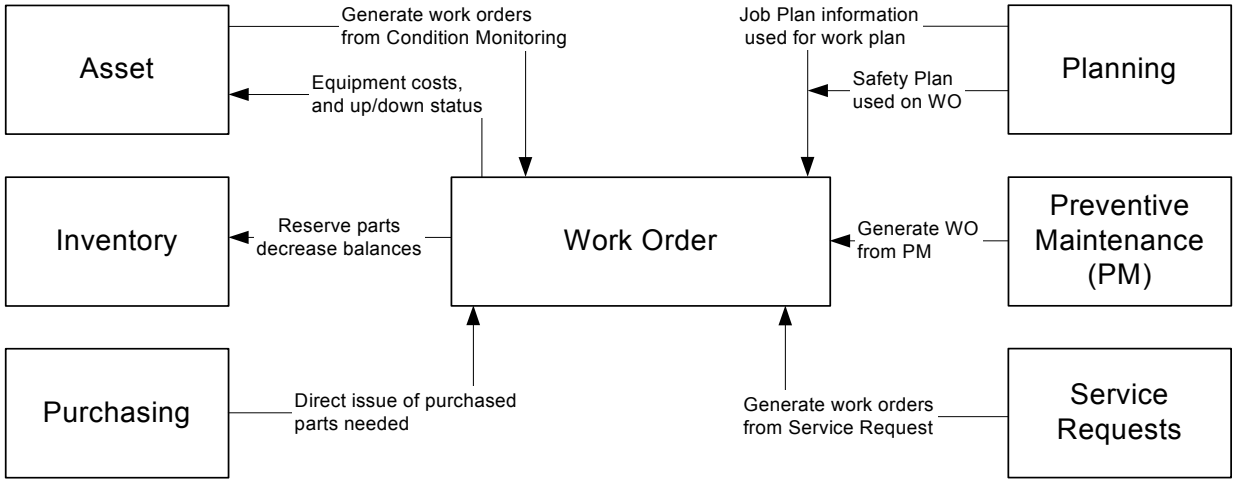
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Work Orders in Maximo continued

Module Relationship Diagram Overview

The following diagram illustrates a *high-level* overview of relationships between the Work Order module and other modules in Maximo.

Work Order Module Relationships



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Work Orders in Maximo continued

Work Order Applications:

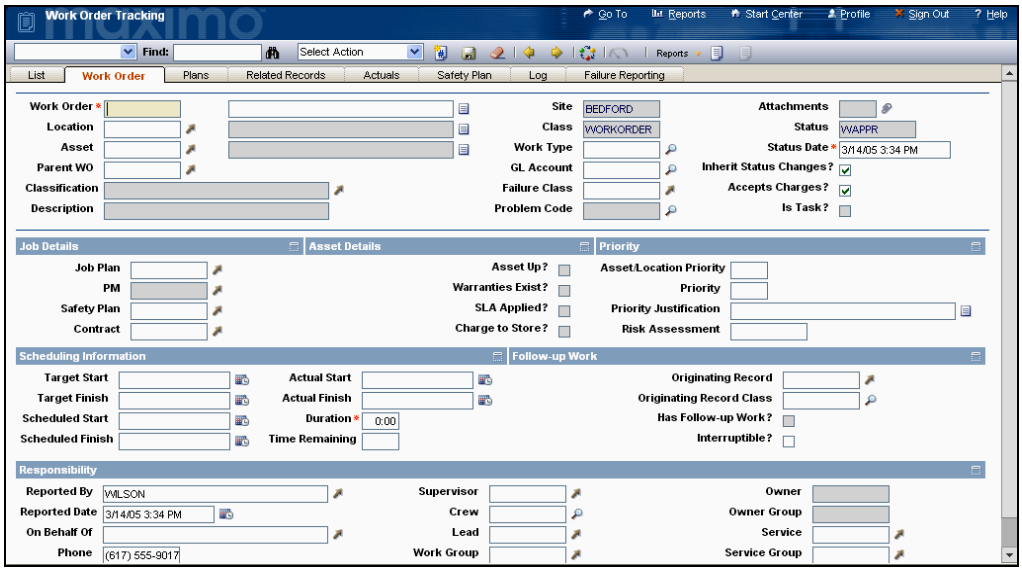
Several applications in Maximo can be used to create and manage work orders:

- Work Order Tracking
- Labor Reporting
- Quick Reporting
- Assignment Manager
- Service Requests

Work Order Tracking

While work orders can be entered into the system using the **Work Order Tracking** application, its primary function is to manage work orders through the lifecycle process. It is intended for maintenance supervisors, planners, and schedulers to plan, review, and approve work orders.

You can use the **Work Order Tracking** application to perform every function related to processing work orders. These tasks include creating, approving, and initiating work orders, checking their status history, and closing or reworking them when appropriate.



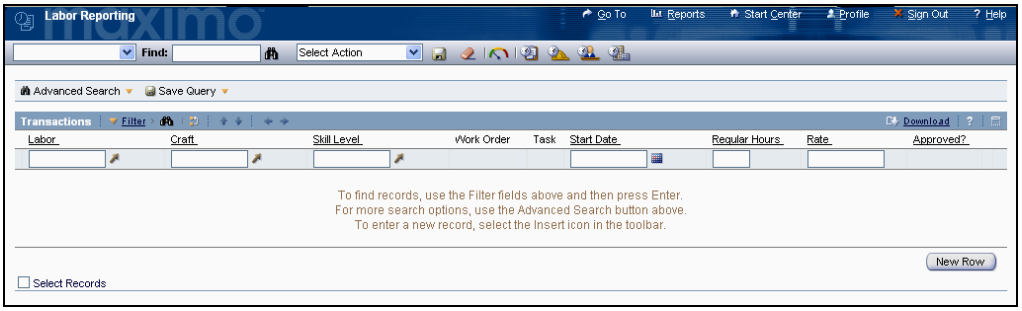
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Work Orders in Maximo continued

Labor Reporting

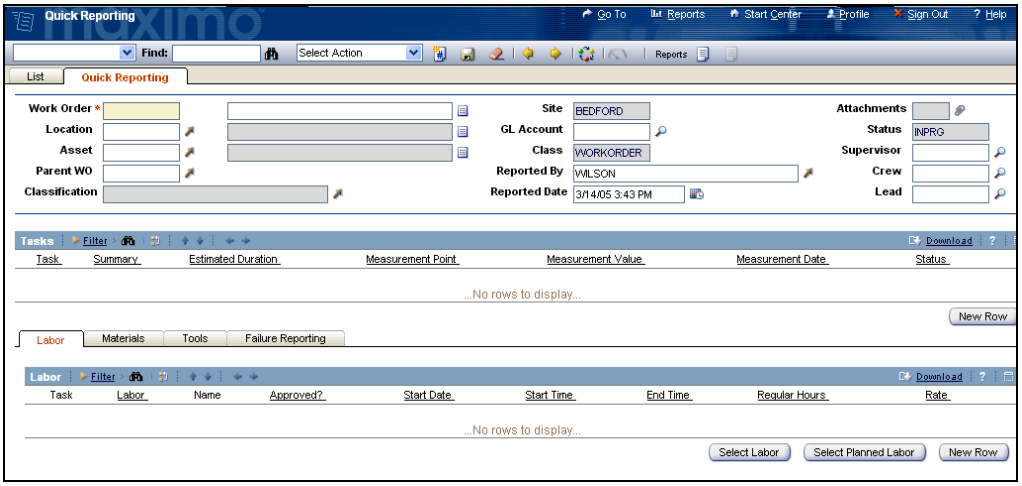
You use the **Labor Reporting** application to report the type and total number of hours of work performed by external contractors or internal employees. You can enter labor information by work order, labor ("timecard" reporting), ticket, or contract/vendor.



Quick Reporting

You can use the Maximo **Quick Reporting** application to create or report on open work orders or small jobs. You can enter actual labor and material usage information, or report events, such as asset failures or downtime, that do not involve maintenance department work.

Quick Reporting lets personnel report on open work orders, or small jobs that might not have had a preexisting work order. The **Quick Reporting** application contains a portion of the fields available in **Work Order Tracking**, simplifying the creation of work orders. You can quickly enter actual labor, materials, or tool usage, or report events, such as asset failures or downtime, in which no maintenance department work is involved.



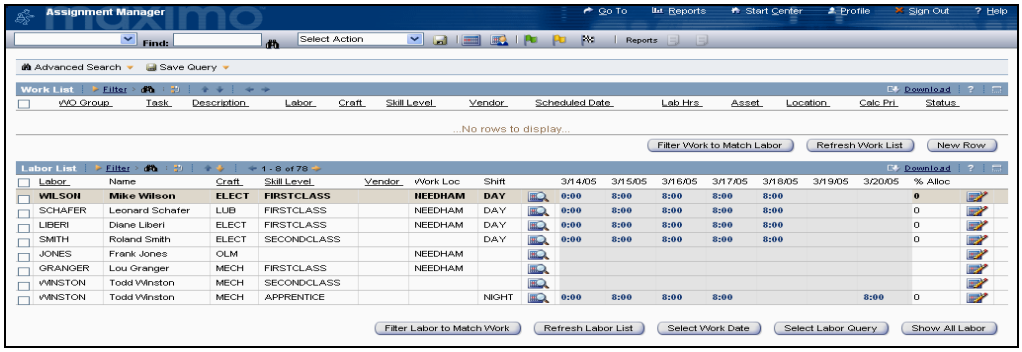
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Work Orders in Maximo continued

Assignment Manager

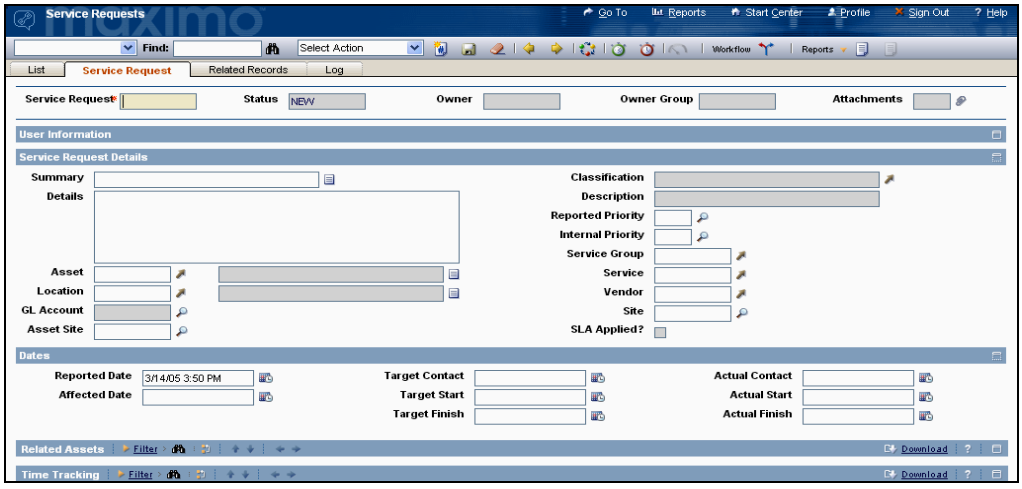
You use the **Assignment Manager** application to dispatch labor and schedule work in the same place. Using this application, you can view work order assignments and their craft, skill level, vendor, contract, and organization requirements; dispatch labor according to work priority; or view labor and schedule work according to labor availability.



Service Requests

The **Service Requests** application is a greatly simplified version of the Work Order Tracking application, and provides another way for you to request maintenance work. The application enables:

- Call Center functionality that allows for external requests of services or work to be made.
- Creating work orders from the service tickets initially generated when a request is entered into the system.



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Work Orders in Maximo continued

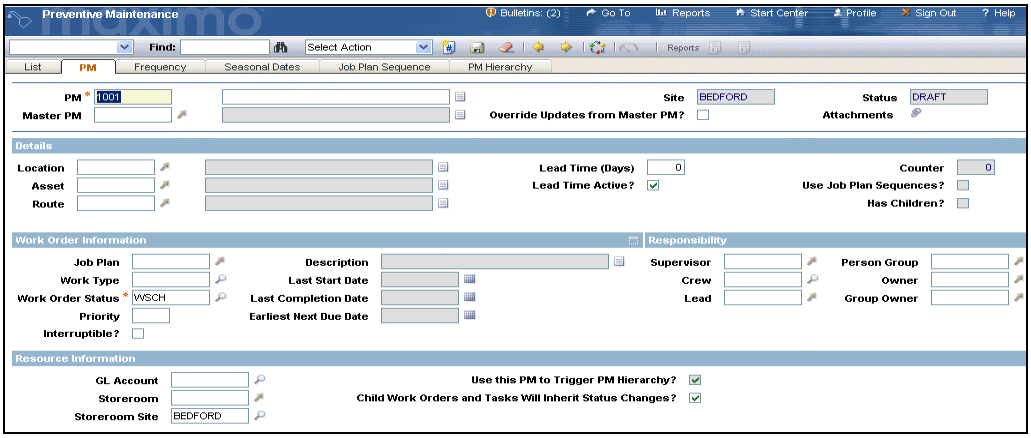
Other Work Order Applications

Aside from the Work Order module, other applications in Maximo that can be used to create and manage work orders are:

- Preventive Maintenance
- Condition Monitoring

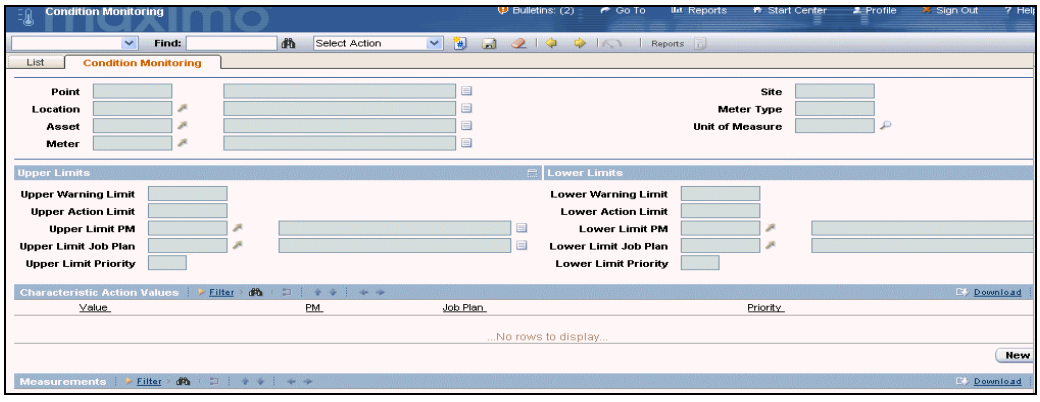
Preventive Maintenance Application

PM records are templates that contain job plan and scheduling information for your work assets. You copy this information to work orders you generate from the PM application.



Condition Monitoring

The Condition Monitoring application is used to set up measurement points and to generate work orders.



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The Work Order Process

Introduction

When routine work, service work, or repair work are required for assets, there are several ways in which a work order can be generated, and several phases and statuses that work orders can go through in a lifecycle process.

This section will look at the different work order generation methods and the work order lifecycle process.

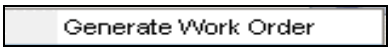
Work Order Generation

In Maximo, there are two methods to generate work orders:

- *Manually* - Personnel generate the work order, by:
  - using the Service Requests, Quick Reporting, and Work Order Tracking applications by manually inserting a work order record, by using the **Insert Record** icon on the Toolbar.



  - using the Preventive Maintenance or Condition Monitoring applications' **Generate Work Order** select action.



- *Automatically* - Work order generation is based on the frequency data in the Preventive Maintenance application or the action limit measurement points or characteristic value in the Condition Monitoring application being met. You can:
  - activate the Preventive Maintenance cron task (PMWoGenCronTask) in the **Cron Task Setup** application in the **Configuration** module.
  - indicate that the system create a work order at the moment a meter reading is taken and meets the frequency, by selecting the **Generating WO When Meter Frequency is Reached?** option in the **Preventive Maintenance** application.



  - activate the Condition Monitoring cron task (MeasurePointWoGenCronTask) in the **Cron Task Setup** application in the **Configuration** module.

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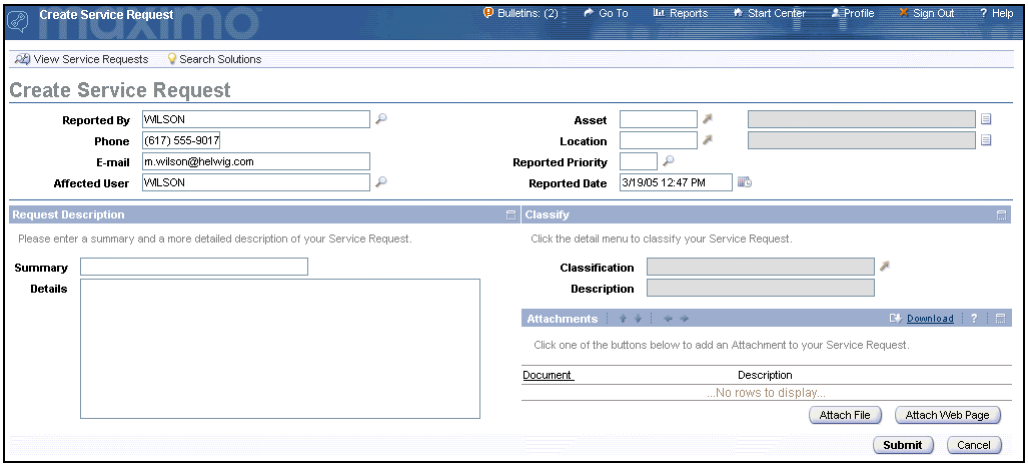
The Work Order Process continued

Tickets, Classes, and the Work Order Relationship

The **Create Service Request** application is a single-point quick entry application used to create a service ticket for reported problem and then route it to a service/help desk agent.

The record type that is created is an SR record in the SR table.

Using Workflow processes, SR records can be converted to other types of work-related records, including work orders. SR records can also be used by themselves as the basis for monitoring work.

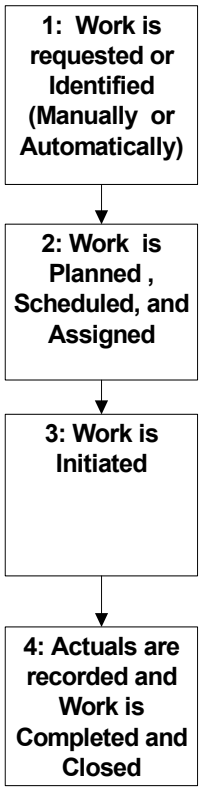


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The Work Order Process continued

Work Order Status Cycle

The work order lifecycle process occurs when a work order is automatically or manually generated. The following table illustrates and describes the stages and the relevant statuses that a work order can go through in its lifecycle.



Stage	Description	Status
1	A work order is either manually or automatically generated. If manually generated, it will have a Waiting for Approval (WAPPR) status. If automatically generated, depending on how it is set up, the work order can have a status other than WAPPR. For example, you can set up the PM application to generate PM type work orders to have a Waiting to be Scheduled (WSCH) status. If emergency work is entered into the Quick Reporting application, the status is In-Progress (INPRG)	WAPPR WSCH INPRG
2	The planner reviews the work order. If applicable, depending on the type of work, the following can be attached or added to the work order: a job (work) plan, safety plan, or service contract. Upon an Approval (APPR) or Waiting to be Scheduled (WSCH) status, the Work Order materials and tools are reserved in inventory. If materials are not available, the work order status will be Waiting for Materials (WMATL). The work order is then scheduled, assigned, printed, and distributed to the staff.	WMATL APPR WSCH
3	The supervisor or staff member initiates the work (INPRG). If necessary, the staff member goes to inventory and picks up needed parts and the physical work begins.	INPRG
4	The work actuals (labor, materials, and tools) are entered into the system using either the Quick Reporting or Work Order Tracking application. If necessary, a follow-up work order is generated. Depending upon your business process, someone reviews the work and completes the work order (COMP) using either the Quick Reporting, Work Order Tracking, or Assignment Manager application. If necessary, issued but unused items are returned to inventory, and/or a follow-up work order is entered into the system. After all system data is entered, work order is closed (CLOSE) and stored in history.	COMP CLOSE

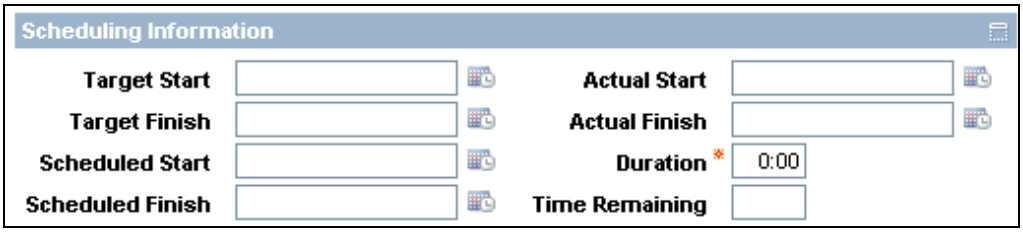
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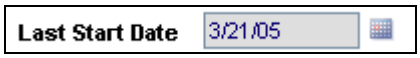
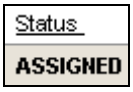
The Work Order Process continued

Status Changes Affecting Work Order Scheduling

When status changes on a work occur, dates and times are populated in the **Scheduling Information** fields.



The following table indicates what date fields correlate to the work order status.

Field	Description	Comments
Target Start	Assign dates for when the work order should be done.	Date is pulled from the Preventive Maintenance Application, **Last Start Date** field. 
Target Finish	Target Start incremented by the Duration hours.	Duration hours come from the Work Order application **Duration** field. Time is either manually entered or comes from the current Job Plan duration. 
Scheduled Start	Assign dates for when the work can get done.	Can be a manual input, or date comes from the Assignment Manager application, when labor is assigned (Status = ASSIGNED) to the work order with a scheduled work date. 
Scheduled Finish	Scheduled Start incremented by the Duration hours.	Duration hours come from the Work Order application **Duration** field. Time is either manually entered or comes from the current Job Plan duration. 

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The Work Order Process continued

Status Changes Affecting WO Scheduling continued

Field	Description	Comments
Actual Start	Post actual dates that the work was started.	Dates come from the work order In-Progress status (INPRG). When the first work assignment against a work order in Assignment Manager is started (i.e., Status = STARTED),  the work order status in the work order tracking application will change to INPRG. 
Actual Finish	Post actual dates that the work was completed or closed.	Dates come from the work order Complete (COMP) or Close (CLOSE) status. When the last work assignment against a work order in Assignment Manager is completed (i.e., Status = COMPLETE),  the work order status in the work order tracking application will change to COMP:  or CLOSE (depending on how Assignment Manager is set up). 

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The Work Order Process continued

Additional Fields Below are some additional fields and descriptions.

Fields	Description
	Specifies whether the work order's status will change when its parent work order's status changes. If the check box is selected (the default), the work order's status will change when the parent work order's status changes. If the check box is cleared, the work order's status will not change when the parent work order's status changes.
	Check box specifies whether the work order accepts charges. If the check box is selected (the default), the work order accepts charges. If the check box is cleared, the work order does not accept charges, and you cannot enter charges on the work order.
	Specifies whether the work order is a task. If the check box is selected, the work order is a task. If the check box is cleared, the work order is not a task. Task work orders are the tasks identified on the Plans tab.

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Managing Work Orders

Introduction

While work orders can be entered into the system using the Work Order Tracking application, its primary function is to manage work orders through the lifecycle process. It is intended for maintenance supervisors, planners, and schedulers to plan, review, and approve work orders. This section gives you an overview of the Work Order Tracking application functionality as it relates to: Planning, Scheduling, and Reporting.

Work Order Tabs

The Work Order application is comprised of eight tabs:



Use this tab…	To…
List	Search for work order records.
Work Order	Create, view, and modify work orders; view PM and scheduling information; see which job plan and safety plan are applied; view the originating work order for a follow-up work order; identify the failure hierarchy for the asset or location.
Plans	Enter, view, and modify job tasks and labor, material, services, and tool requirements for the work plan.
Related Records	View, add, and delete related work orders and tickets.
Actuals	Enter, view, or modify actual work order start and finish times; labor hours and costs; material quantities, locations, and costs; and tool quantities, hours, and costs.
Safety Plan	Enter, view, or modify safety information on the work order.
Log	View and create work log and communication entries about the current record.
Failure Reporting	Report asset and location failures to help identify breakdown patterns or trends.

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Managing Work Orders continued

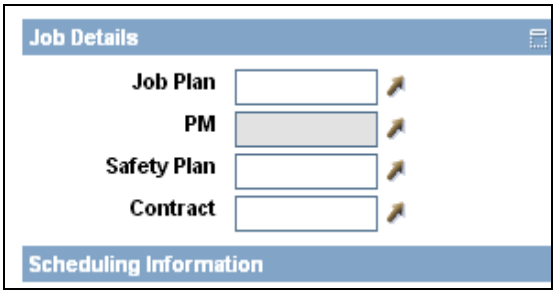
Planning Work

Three tabs can used for planning work:

- Work Order
- Plans
- Safety Plans

Work Order Tab

On the **Work Order** tab, you can identify job details in the **Job Details** section. You can also associate job plans, safety plans, contracts, or PMs in this field. If PMs or asset records were "set up," information from these records will carry over onto these fields.



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Managing Work Orders continued

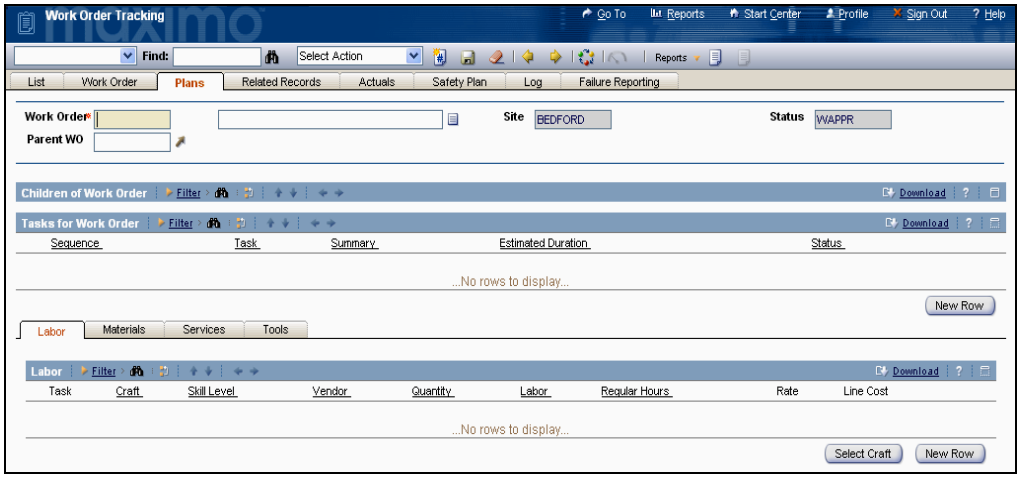
Plans Tab

The **Plans** tab is the main screen to build or modify work plan information. If PM or Job Plan records were "set up," information from these records will carry over into these table windows: Child Work Orders, Work Order Tasks, and Plan for the Work Order and Tasks window.

In the Children Work Order table, you can also associate children work orders to the work order. This table displays the following information about the child work order: Sequence Number, Work Order Number, Description, Location, Asset, and Status.

The Work Order Tasks window is where operational tasks are displayed. Information is carried over from a job plan or directly added onto this table window. This table window displays: Sequence, Task ID, Description, Duration, and Status information.

Both of these table windows have a **Change Status** button for each child work order or task, as well having a **Details** button. These functions allow children work orders and tasks to be planned and managed to a greater level of detail.



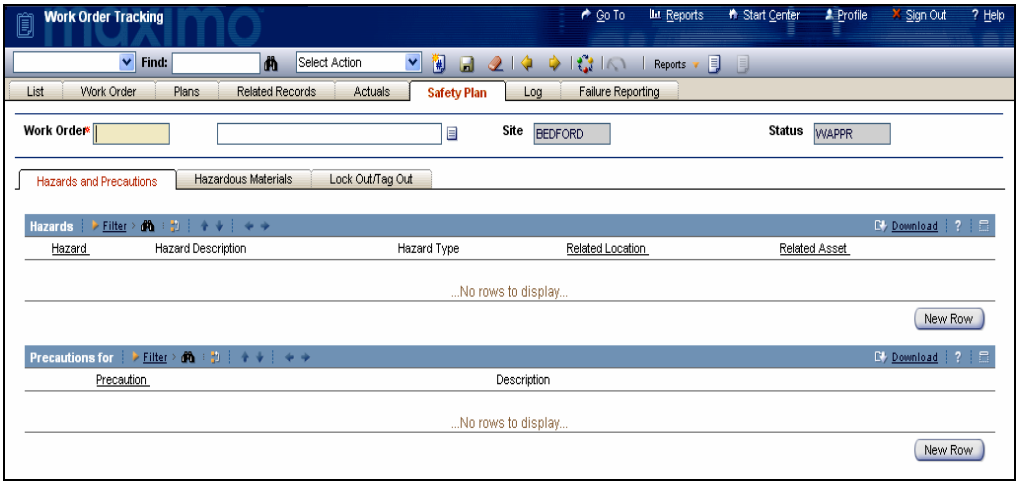
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Managing Work Orders continued

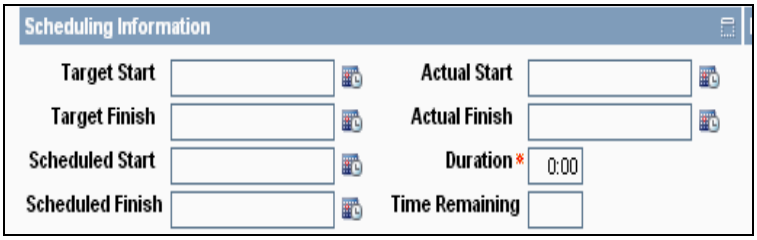
Safety Plan Tab

The **Safety Plan** tab is used to manage safety information for a work order. If Safety Plan records were "set up" and associated to a Job Plan, Asset, Item Master, Location, or a Work Order itself in the Job Plans Details window, this information will carry over onto these Subtabs: Hazards and Precautions, Hazardous Materials, and Lock Out/Tag Out.



Work Order Tab

On the **Work Order** tab, use the Scheduling Information table to view, enter, and modify scheduling criteria.



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Managing Work Orders continued

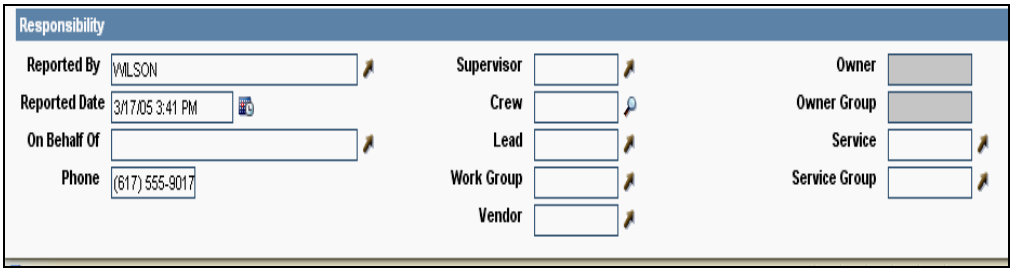
Reporting Work

Four tabs can be used for reporting work-related items:

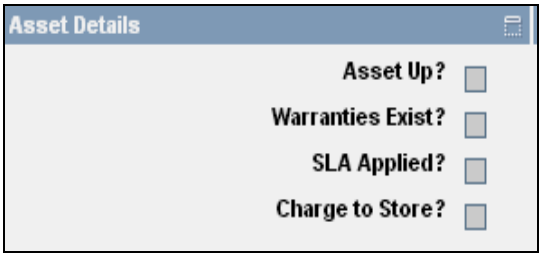
- **Work Order**
- **Actuals**
- **Log**
- **Failure Reporting**

Work Order Tab

On the **Work Order** tab, use the **Responsibility** section to enter person records related to work orders.



On the **Work Order** tab you can use **Asset Details** to determine whether an asset is operating, a warranty exists, or SLA applied.



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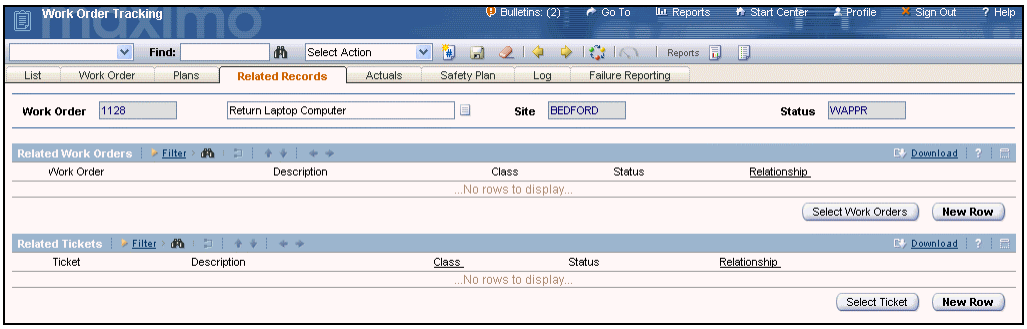
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Managing Work Orders continued

Related Records Tab

You use the **Related Records** tab to link the selected work order to other work orders and tickets, and to view work orders and tickets already related to the selected work order.

You also can delete the relationship between a work order and a related record if the relationship type is Related.



When you manually relate a work order or ticket to the current work order on the Related Records tab, the relationship type between the two records is Related.

When you create a work order or ticket using the Select Action menu from within a work order or ticket, the relationship type for the newly created record is Follow Up. The current record's relationship to the new record is Originator.

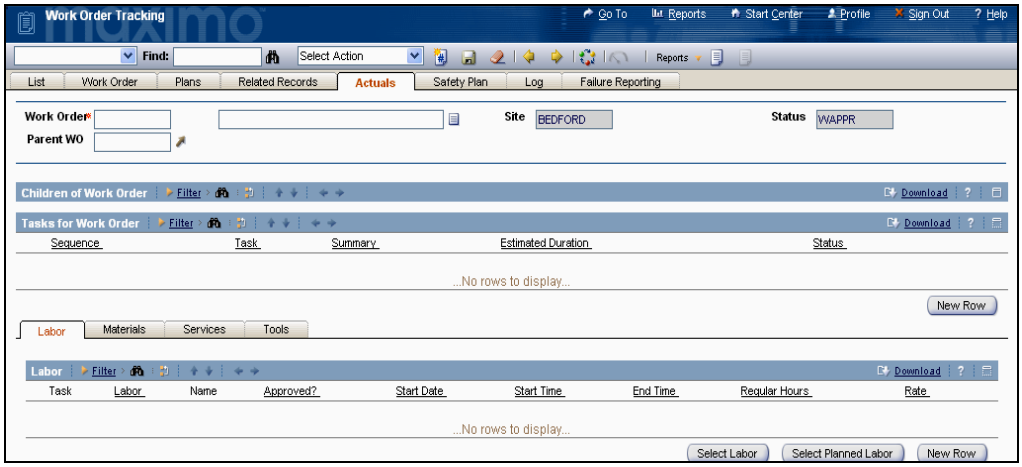
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Managing Work Orders continued

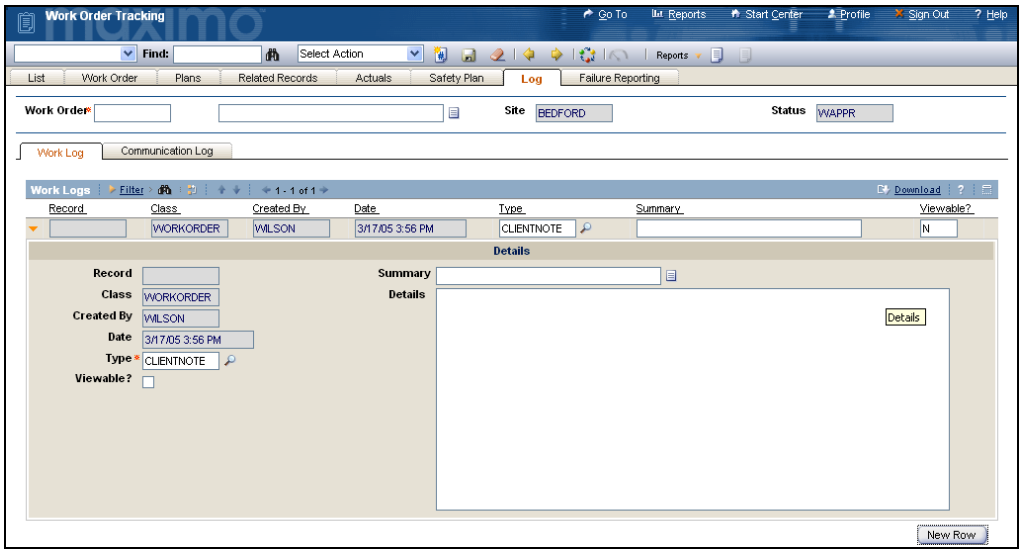
Actuals Tab

The **Actuals** tab allows you to manage child work orders and task status, as well as reporting the actual resources (Labor, Material, Services and Tools) used.



Log Tab

The **Log** tab allows you to enter work summary and details. Client notes and important messages can be entered here.



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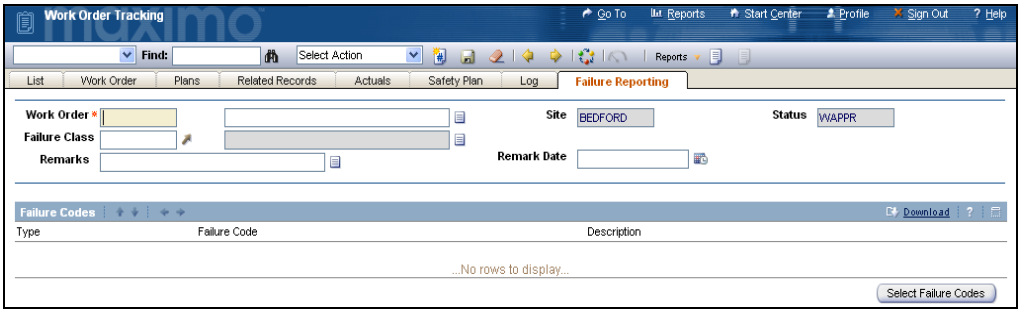
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Managing Work Orders continued

Failure Reporting

On the **Failure Code** tab, click the **Select Failure Codes** button to display a Failure Code Hierarchy based on the Asset Failure Class. Failure Reporting is comprised of four levels:

- Class
- Problem
- Cause
- Remedy



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Something to Think About

Revisit: Implementation Tip

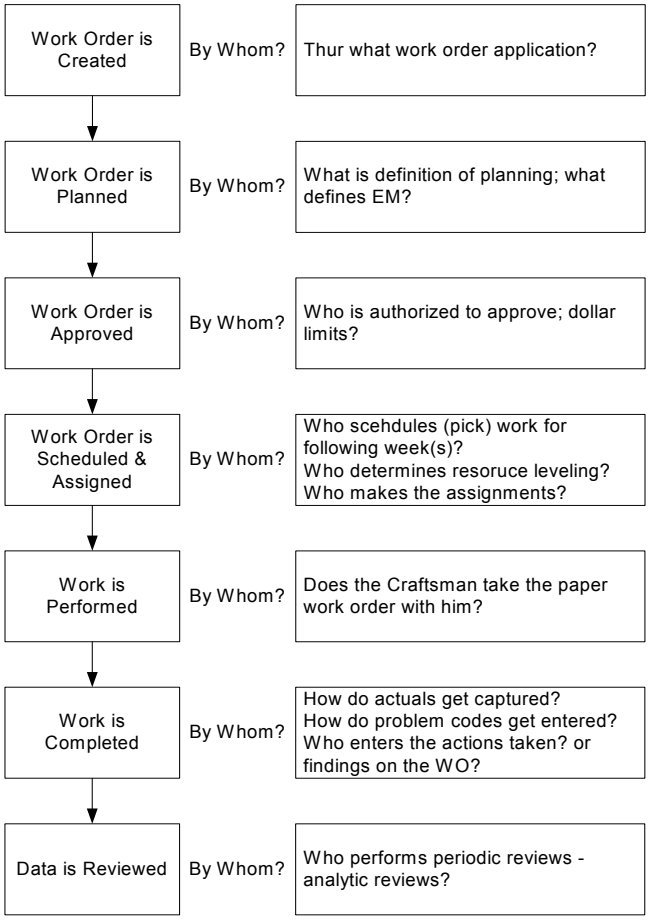


Keeping these stages in mind allows you to think through the work order lifecycle process and determine where and when certain practices have to be implemented or changed to use Maximo implementation.

1. Identify the work.
2. Plan the work.
3. Schedule the work.
4. Assign the work.
5. Execute the work.
6. Analyze the work.

Something to Think About

In determining your organization's maintenance processes and procedures, look at the diagram below and see if you can answer the questions.



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Something to Think About continued

Out-of-the-Box Work Order

The diagram below shows what the out-of-the-box Maximo work order looks like.

During your implementation, use this as a guide to determine what your organization should modify in order to meet its needs.

Work Order Details // 1032 - Feeder System Inspection and Certification

WO:	1032	Sched Start:		Sched Finish:	
Site:	BEDFORD	Target Start:	4/6/2009 6:49:32 PM	Target Finish:	4/26/2009 9:49:32 PM
Status:	WSCH	Actual Start:		Actual Finish:	
Parent:		Report Date:		Reported By:	WINSTON
Work Type:	PM	Priority:	9	GL Account:	6400-300-???
Vendor:		Contract:			
Classification:		Failure Class:	PKG	Problem Code:	
Lead:		Supervisor:	KAZMIER	Person Group:	
Owner:		Owner Group:			
Service:		Service Group:			

Job Plan: INS-SUBSYS General Inspection of Major Subsystems Asset: 13110 Feeder System Location: BPM3100 #1 Liquid Packaging Line

Task IDs

Task ID	Description	Status	Measurement Point	Value	Date	Observations
10	Inspect Switches	WSCH				
20	Inspect Motor & Mounts	WSCH				
30	Clean Motor & Electrical Connections	WSCH				
40	Inspect Gear Reducer Unit. Check Gear-Box Gease	WSCH				
50	Inspect, Clean & Lubricate Drive Chain.	WSCH				
60	Check Belts & Pulleys	WSCH				
70	Inspect and Lubricate Roller Bearings and Wheels	WSCH				
80	Operate Ensure That Unit Runs	WSCH				

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Something to Think About continued

Ask Yourself…

When thinking about your Maximo implementation, ask yourself:

- Who?
- What?
- When?
- Where?
- How?

Asking yourself these questions will help define your business processes and help determine the who's, the what's, the where's, the when's, and the how's of the solutions needed for your Maximo implementation. For example:

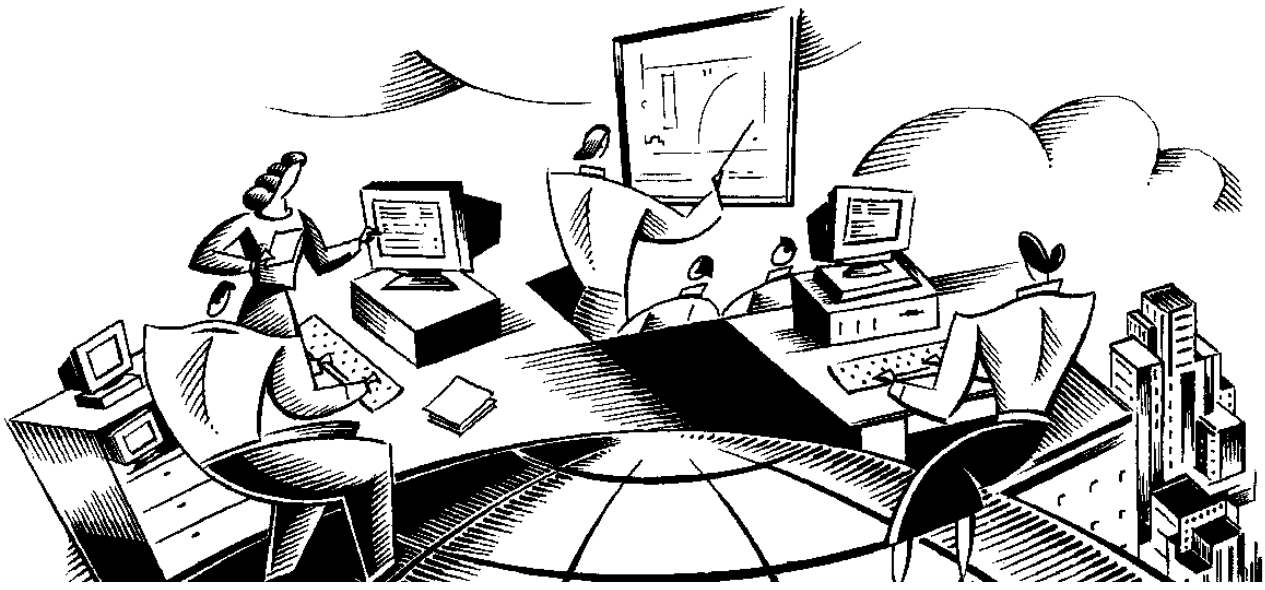
- Who initiates work orders?
- What are your work order types? Status?
- Where are your assets located?
- When does work need to be performed?
- How does work get planned and scheduled?

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MXES Immersion Training for EAM

Chapter 7: Entering Supporting Records for Work Management: Job Plans



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In This Chapter This chapter contains the following topics:

Topic	See Page
Chapter Overview	7-1
Building Job Plans	7-7
Adding Work Assets to a Job Plan	7-34
Chapter Summary	7-35

Chapter Overview

Introduction

A *job plan* is a detailed description of labor, materials, services, and tools to be performed on a work asset. It shows quantities, descriptions, and costs of the inventory items, labor, and tools you indicate that you will need for the job. Job plans can be used with any type of work order; they are most often used with preventive maintenance (PM) work orders, but they can also be used for unscheduled work such as emergency recovery, planned outages, annual overhauls, and winterization.

Learning Objectives

After completing this chapter, you should be able to:

- discuss key performance indicators (KPIs), implementation considerations related to job plan management, and
- create a job plan, including tasks, labor, materials, and tools.

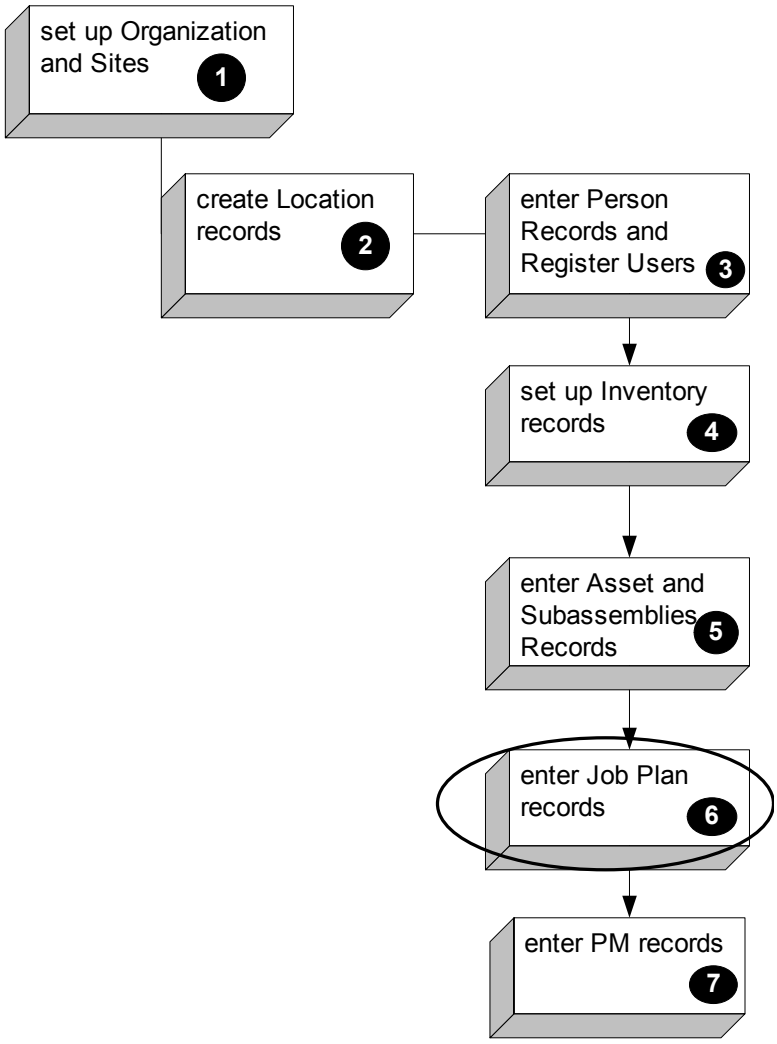
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Chapter Overview continued

We Are Here

In this section, we will enter job plan templates as supporting records in managing work orders.



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Chapter Overview continued

Implementation Questions to Consider

- Are routine job procedures identified for critical assets?
- Are current job procedures kept?
- Are job plans prioritized?
- Do work plans include the following:

Timing ___	Priority ___
Cost ___	Approval ___
Make or Buy ___	Labor ___
Materials ___	Fabrication ___
Tools ___	Assets ___
Rigging ___	Contractor Requirements ___
Safe Work Planning ___	Job Instructions ___
Job Control ___	Progress Reports ___
Work Orders ___	

- Are drawings and specifications provided for jobs that require them?
- Are all pertinent buildings, assets, and utility records up-to-date and available to maintenance?
- Are all schematics, P&IDs, and prints up-to-date and readily available?
- How well are normal requests planned?
  - Work procedures included?
  - Safety/L.O.T.O. procedures included?
  - Labor estimates included?
  - Materials included?
  - Tools included?
  - Contractors included?
  - Rental assets included?

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Chapter Overview continued

KPIs

Some job plan performance metrics are:

Metric Title	Metric Description
% of Planned Maintenance Work	Percentage of work orders that were planned.
Weekly Plan Attainment %	Measure of the successful completion of the maintenance plan on a weekly basis.
% Planned/Scheduled downtime	What percentage of asset downtime was planned or scheduled.
Unplanned %	The level of unplanned maintenance activities against available time.
% of Work Orders with Job plans	Percentage of work order that had job plans associated to it.
% of Work Orders with Work plans independent of Job Plans	Percentage of work orders with work orders independent of a job plan being associated to it.

Out-of-the-Box Maximo Reports

The following reports are available for the Job Plans application:

Report	Description
Job Plan List	Lists job plan number and descriptions for selected records.
Job Plan Details	Details job plan information, including tasks, labor, materials, and tools.

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Chapter Overview continued

Implementation Tip

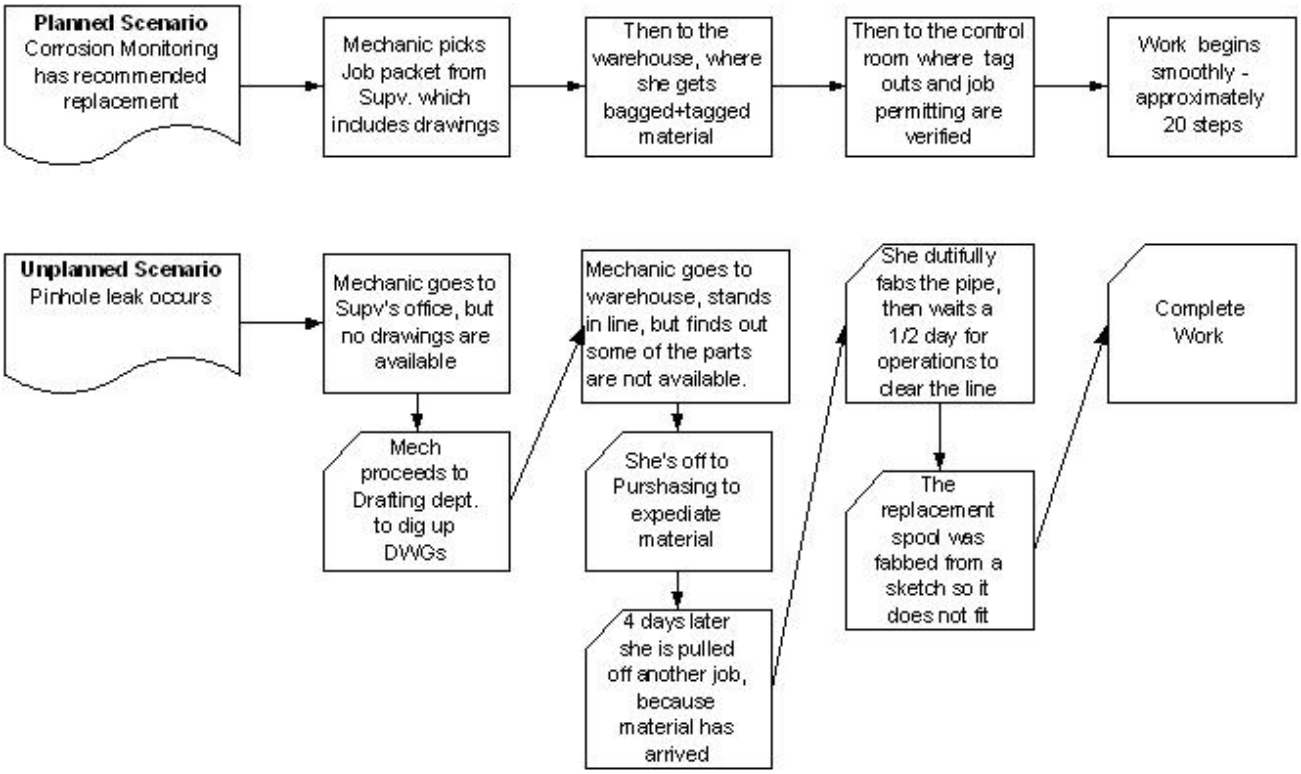
- Link job plans, where known, to work assets. This shortens the search list on the work order screen.
- Create and enter job plans for the most repeated preventive maintenance procedures used in your PM program first. Phase in repetitive job procedures for non-routine work later.
- Prioritize job plans by criticality of assets or locations.

Planned vs. Unplanned Work

Planned maintenance is more efficient than reactive maintenance.

It has been shown that a 25-person maintenance force operating with proactive planning and maintenance scheduling can deliver the equivalent amount of work of a maintenance crew of 40 persons working in a reactive organization.

Note how many extra steps the worker performs in the Unplanned Scenario:



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Chapter Overview continued

Poor Planning

Poor planning can cause:

- unnecessary steps or actions to be performed that delay job completion,
- dangerous conditions for the worker,
- inaccurate problem definition, and
- improper prioritization of work.

Value of a Job Planner

Proper planning of work is a key to successful use of Maximo, and a *Job Planner* plays a crucial role in achieving this.

A Job Planner is a person who should be aware of the many variables that come into play in the performance of the maintenance function.

The Job Planner might identify an asset failure on a work request as being all too common and decide to route this request to the Reliability Engineering group.

A Job Planner will also be aware of the safety aspects of this work.

A Job Planner will have substantial responsibility for the overall accuracy of the data as stored in the Backlog.

Doc Palmer



As Doc Palmer says, “One effective planner is as effective as seven technicians.”

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Building Job Plans

Job Plans

A job plan is the heart of a proactive maintenance program. It represents the accumulated knowledge of the manufacturer, skilled mechanic, and engineer. It indicates what to do, what to use, what to look for, how to do it, and when to do it.

In Maximo, job plans are used as templates for work orders that have been associated to a record in the Preventive Maintenance, Condition Monitoring, and Routes applications, or associated to a work order in a Waiting for Approval (WAPPR) status.

Purpose

Use job plans to:

- estimate the operations, materials, labor, and tools required for maintenance tasks before the work is requested; and
- establish a template for maintenance work that is repetitive (e.g., major overhaul, monthly preventive maintenance program work).

Work Plans

A work plan describes the labor, materials, tools, and tasks needed to complete a specific work order. The work order contains **tasks** for each operation in the work plan. When you generate a work order, Maximo copies an associated job plan to the work order as a work plan.

This allows you the flexibility to modify tasks in a work plan without modifying the original job plan; these changes do not affect the original job plan.

Setting Up Job Plans in Maximo

There are two parts to setting up job plans in Maximo. They are:

1. Defining work tasks.
2. Defining the required resources (labor, materials, services and tools).

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Building Job Plans continued

Note: The following rules apply to job plans:

- If there is no organization/site indicated, then the job plan is at the database level and can be used by all organizations.
- If a job plan has only an organization indicated, then the designated organization and any sites within the organization can use it.
- If job plan record has an organization and a site indicated, then only the designated site can use it.

Work Order Job Plan

Here is an example of a work (job) plan on a work order.

Work Order Details // 5010 - 12 Month Service on Shipping Dept #2 Conveyor

WO:	5010	Sched Start:		Sched Finish:	
Site:	BEDFORD	Target Start:	1/1/1999 5:51:00 PM	Target Finish:	1/1/1999 9:51:00 PM
Status:	WAPPR	Actual Start:		Actual Finish:	
Parent:		Report Date:	1/1/1999 8:04:00 AM	Reported By:	Tom Diller
Work Type:	PM	Priority:	5	GL Account:	6500-300-777
Vendor:		Contract:			
Classification:		Failure Class:		Problem Code:	
Lead:		Supervisor:	BOYD	Person Group:	
Owner:		Owner Group:			
Service:		Service Group:			

Job Plan: JP13140 Conveyor Belt 12 Month Service Asset: 12700 Conveyor System #2 Location: SHIPPING Shipping and Receiving Department

Task IDs

Task ID	Description	Status	Measurement Point	Value	Date	Observations
10	Inspect on/off and limit switches.	WAPPR				
20	Clean motor.	WAPPR				
30	Inspect gear reducer unit. Check gear box oil.	WAPPR				
40	Inspect, clean, and lubricate drive chain.	WAPPR				
50	Check conveyor belt & pulleys for proper tension.	WAPPR				
60	Inspect and lubricate roller bearings and wheels.	WAPPR				
70	Operate conveyor to ensure that unit runs quietly.	WAPPR				
80	Change oil in gear reducer. Examine drained oil.	WAPPR				
90	Record amperage and voltage with motor operating.	WAPPR				
100	Replace worn bearings, index plate and bolts.	WAPPR				

Planned Labor

Task ID	Craft	Skill Level	Labor	Vendor	Contract	Qty	Hours	Rate	Line Cost
	MECH	APPRENTICE				1	02:00	$0.00	$0.00
	MECH	FIRSTCLASS				1	02:00	$0.00	$0.00
	ELECT	FIRSTCLASS				1	02:00	$0.00	$0.00
							Total Planned Labor:		$0.00

Work Order Details // 5010 - 12 Month Service on Shipping Dept #2 Conveyor

Planned Materials

Task ID	Item	Description	Storeroom	Qty	Unit Cost	Line Cost
100	217219	Plate, Chrome Plated	CENTRAL	4	$0.00	$0.00
100	900810	Lubricator Assembly	CENTRAL	1	$0.00	$0.00
100	217215	Bearing, Pillow Block, Fafnir- 1 in ID	CENTRAL	4	$0.00	$0.00
100	217224	Cam, 1 In Dia Shaft	CENTRAL	2	$0.00	$0.00
100	4-2100	Washer, 1/2 In	CENTRAL	12	$0.00	$0.00
100	60-051	Pin, Split- E-43	CENTRAL	3	$0.00	$0.00
					Total Planned Materials:	$0.00

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Building Job Plans continued

The Planning Module

The Planning module consists of applications that let you create standard templates of tasks, labor, materials, tools, and safety information needed to complete a job. Using these templates eliminates the need to type in work- and safety-related information repeatedly.

The Planning module mainly consists of the following applications:

- **Job Plans**
- **Safety Plans**
- **Routes**

For the purposes of this chapter, we will focus on the **Job Plans** application: how to set up, create, and manage job plans, including tasks, labor, materials, services, and tools.

Note: For information on safety plans, see Appendix C.

The Planning Module

You can access the Planning module by clicking on the **Go To** menu on the Start Center.



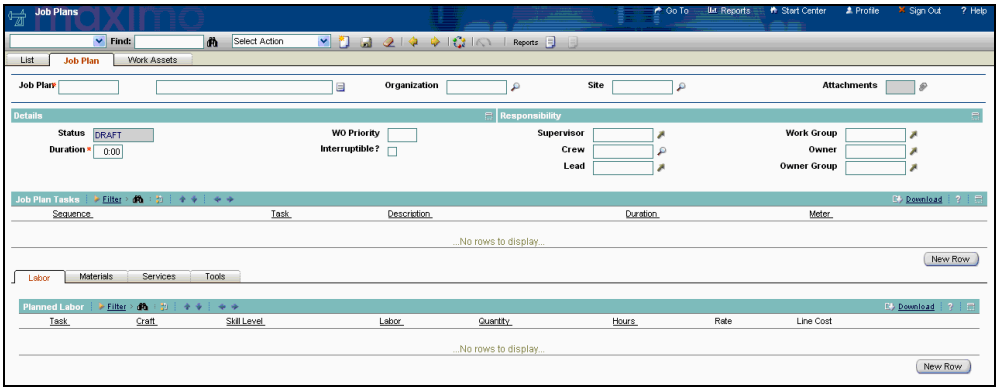
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Building Job Plans continued

Job Plans Application

The **Job Plans** application provides a place to build and store a "library" of recurring tasks and jobs. Use the Job Plans application to create, modify, or delete job plan records.



Job Plan Tabs

The Job Plans application is comprised of three tabs:



Use this tab…	To…
List	Search and display available job plan records in Maximo.
Job Plan	Enter, view, or modify a job plan record. This tab displays basic information about the job plan, and specifies job plan tasks, labor, materials, services, and tools.
Work Assets	Associate work assets and their corresponding safety plans with job plans.

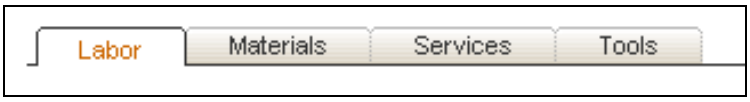
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Building Job Plans continued

Subtabs

The **Job Plan** tab is comprised of four subtabs. Each time you insert, delete, or modify quantities or hours in the subtab table window, the cost fields update automatically.



This subtab…	Contains…
Labor	The list of labor and crafts appropriate to do the job.
Materials	The item materials needed to do the job. Items are usually issued from storerooms.
Services	The service items associated with the job. The services can be rendered by an internal or external source.
Tools	The tools needed to finish the job.

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Building Job Plans continued

Job Plan Fields

In this section we will describe some of the key fields and field options available in the Job application.

Organization and Site Fields

Job plans are at the system, or database, level, but they contain optional **Organization** and **Site** fields that allow you to create job plans at the organization and site levels.



- Job plans can be created for the entire system (multisite job plan) by not specifying an organization or site.
- You can create job plans to be used only for a specific site or organization by indicating this information on the job plan.
- Job plan tasks and related resources (craft, materials, tools, services) can be made org/site specific.

  If on a multisite job plan, then resources/tasks that have specific orgs/sites will not be brought over when used by work orders from another org/site.
- If only an organization is specified, then resources/tasks that have sites specified will not be brought over when used on work orders from another site.
- When you associate a job plan with a work order, Maximo copies only the job plan information that matches the work order's org/site to the work plan.
- A job plan that does not have an organization or site specified for it can be used on any work order or PM record. If the job plan is org/site specific, then it can be used only on work orders or PMs that have the same site indicated.

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Building Job Plans continued

Job Plans, Organizations and Sites Iterations

Planners can use organizations and sites to build a single job plan that can be used in different ways.

For example, you can create a job plan to be used on work orders anywhere in your business, but specify that certain tasks on the plan are available only on work orders for a certain organization or site.

You can further specify labor, materials, services, and tools for certain tasks. For example, when Task 10 is used on a work order at Site A, it uses a certain craft. When Task 10 is used on a work order at Site B, it uses a similar, but different, craft.



Labor, materials, services, and tools can be added at the job plan and task level. If there is an organization or organization and site defined at the job plan level, tasks and task-level labor, materials, services, and tools inherit the defined organization or organization and site.

Building Job Plans

When initially set up, this job plan does not have an organization or site defined at the plan level. It does have an organization or an organization and site defined for certain tasks.



Some labor records on the job plan are associated with an organization or organization and site. The following two tables illustrate the job plan tasks and labor.

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Building Job Plans continued

Examples



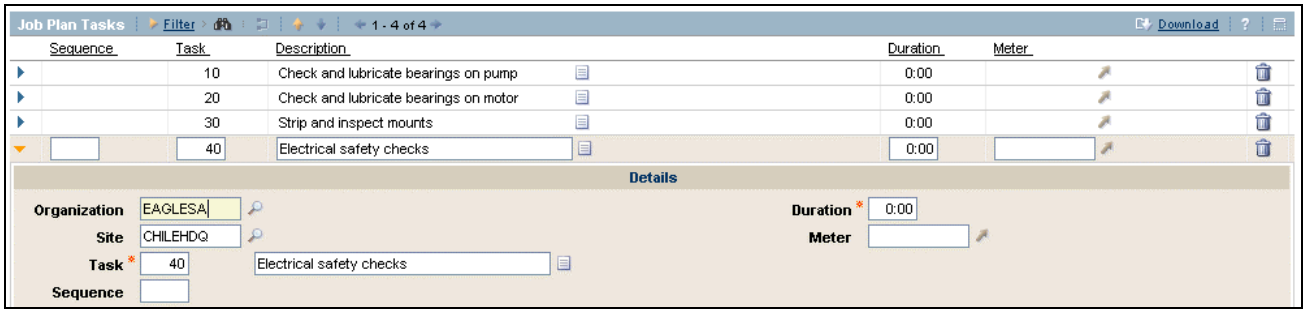
The following examples illustrate how Maximo applies a job plan and its components to work orders for various organizations and sites.

Note: The examples describe applying labor to work orders, but Maximo uses the same rules to apply materials, tools, and services to work orders. All work orders require an organization and site.

This is an abbreviated job plan and is for illustrative purposes only.

Job Plan Tasks:

Task Identifier	Task Description	Organization	Site
Task 10	Check and lubricate bearings on pump		
Task 20	Check and lubricate bearings on motor		
Task 30	Inspect mechanical seals and gland		
Task 40	Electrical safety checks	EAGLESA	CHILEHDQ



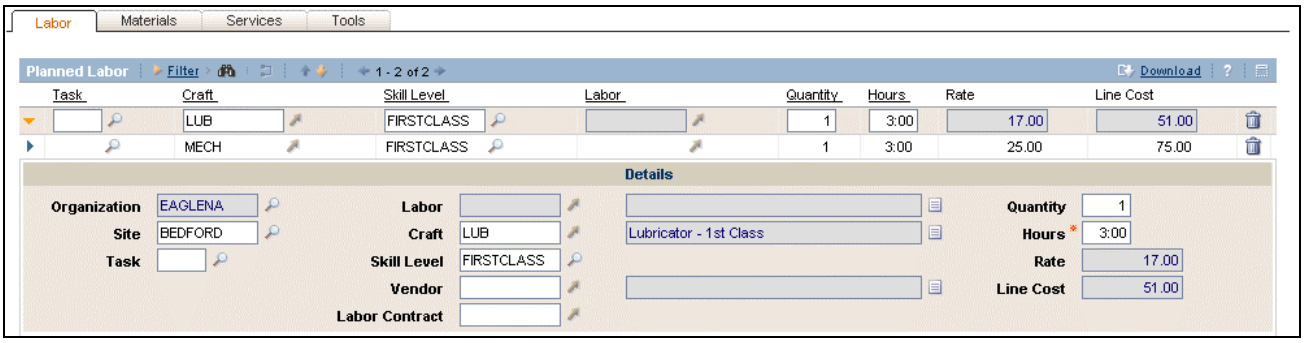
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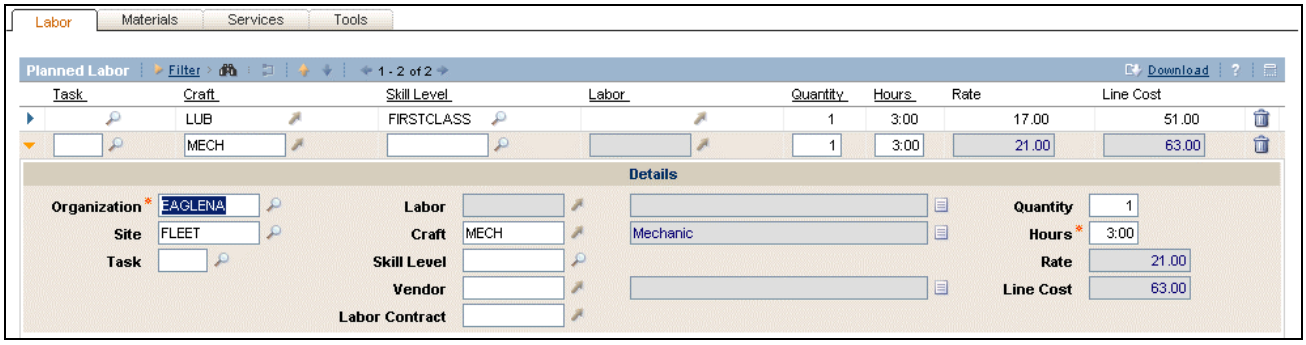
Building Job Plans continued

Examples continued

Labor:

Task Identifier	Craft	Organization	Site
None	LUB FIRST CLASS	EAGLENA	BEDFORD
None	MECHANIC	EAGLENA	FLEET





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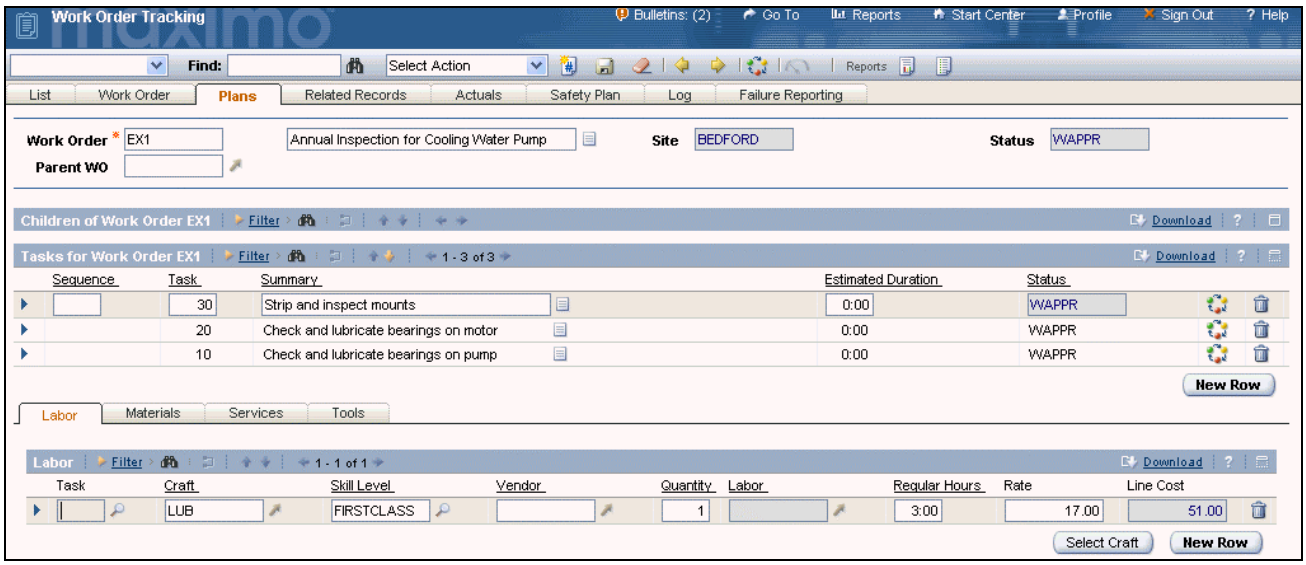
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Building Job Plans continued

Examples continued

Applying the Job Plan to Work Orders:

Example #1: When Work Order EX1 was created for the BEDFORD site and the job plan was associated to it, only those tasks and resources (labor) that were non-org/site specific (no org/site identified) and site specific (BEDFORD) were copied to the work order plan.

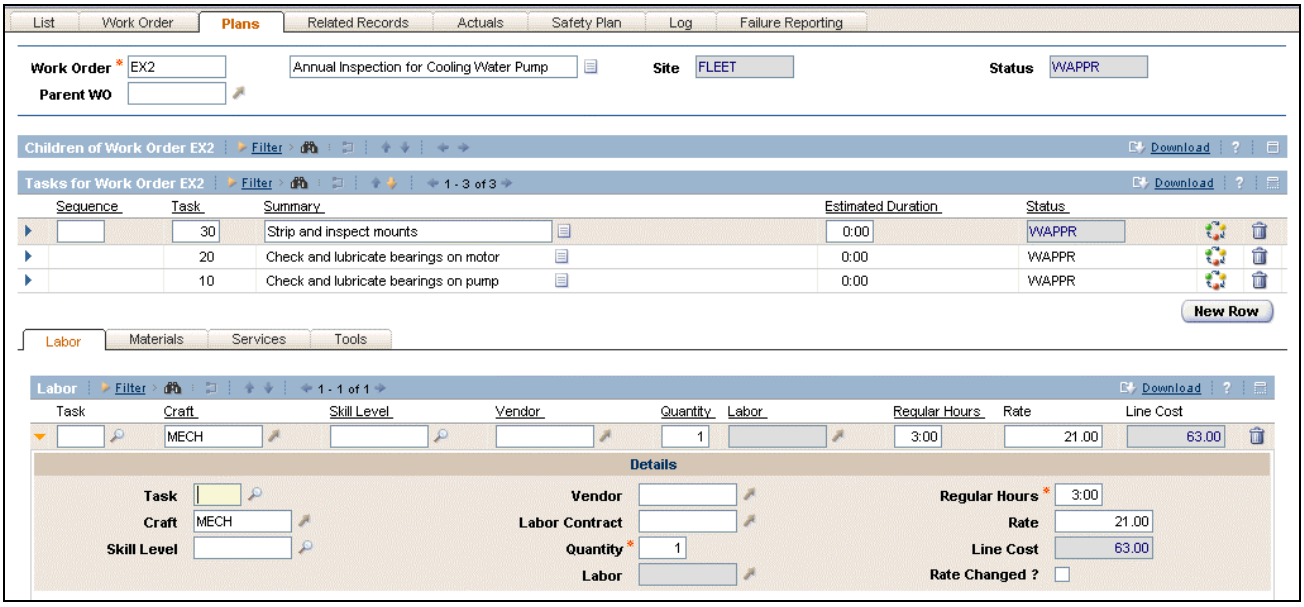


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Building Job Plans continued

Examples continued

Example #2: When Work Order EX2 was created for the FLEET site and the job plan was associated to it, only those tasks and resources (labor) that were non-org/site specific (no org/site identified) and site specific (FLEET) were copied to the work order plan.



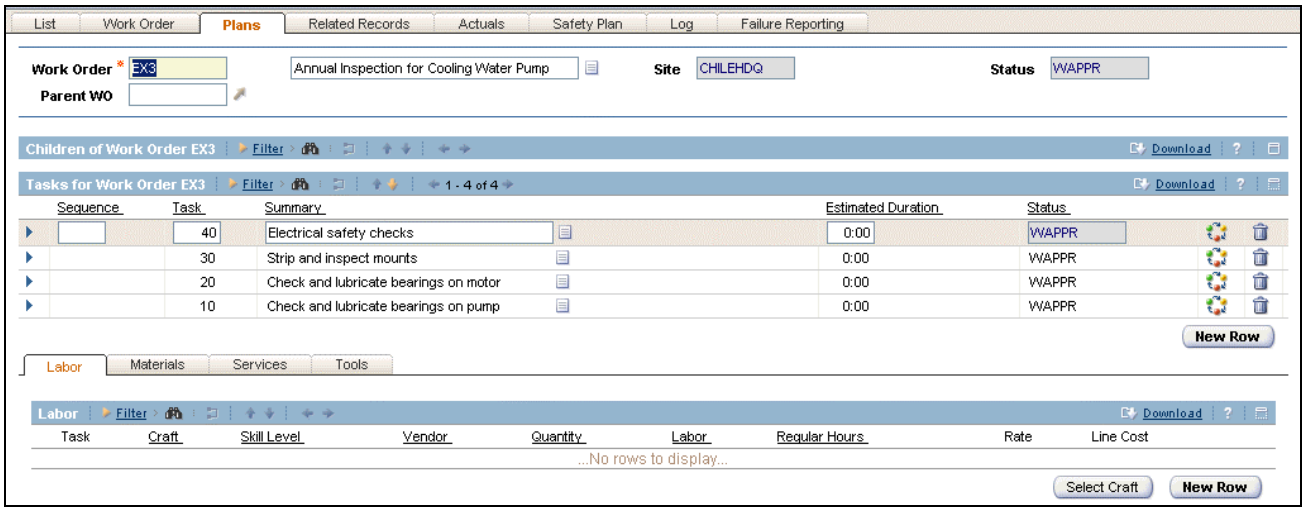
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Building Job Plans continued

Examples continued

Example #3: When Work Order EX3 was created for the CHILEHD site and the job plan was associated to it, only those tasks and resources (none) that were non-org/site specific (no org/site identified) and site specific (CHILEHD) were copied to the work order plan.



Meters and Tasks

You can enter a meter name on a job plan task. The meter name is a generic name for a measurement point number.

Maximo automatically inserts the measurement point number on a task on the Plans tab of a work order record if there is matching meter information for the asset and job plan record used on the work order.

When you use a job plan to build a work plan for an asset on a work order, Maximo searches the database for a three-way match between:

- the meter name on the asset,
- the meter name on the job plan task that is used to build the work plan task, and
- the measurement point number for that meter name.

If there is a match, Maximo adds the measurement point number to that work plan task.

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Building Job Plans continued

Job Plan Status

Job plans are now statusable.



The table below describes each status.

Status	Comments
Draft	• Job plan is being developed or reviewed. • This is the initial status of all newly inserted job plan records. • The draft cannot be seen or used by other applications until made active.
Active	• Only job plans of this status are available for use on work orders, PM records, and routes. • Once activated, job plans can only be deactivated, not set back to draft.
Inactive	• Cannot be used by other Maximo applications. • Job plan cannot be made inactive if it is used by other applications. • To inactivate a job plan, it must be taken off other records, or those associated records must be inactive or closed.

Inactive Status

A job plan status cannot be changed to Inactive if it is used on any one of the following records:

- Work Order (APPR or later status)
- PMs
- Routes
- Items

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Building Job Plans continued

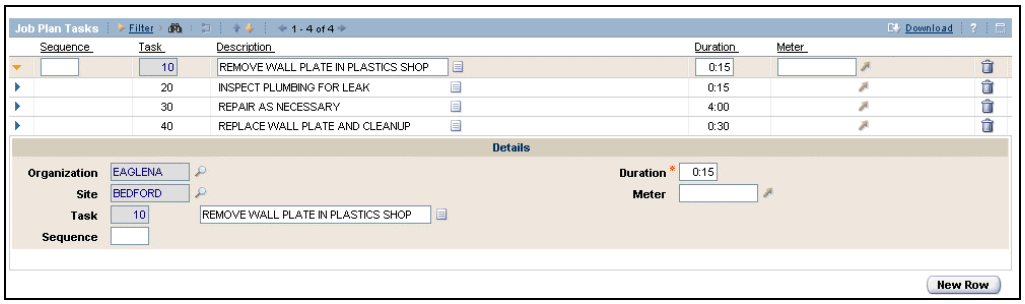
Interruptible?

Specifies whether the work order created from the work order that uses this job plan is allowed to be stopped and restarted during resource scheduling. If the check box is selected, the work order can be stopped and restarted. If the check box is cleared, the work order cannot be interrupted for resource scheduling.



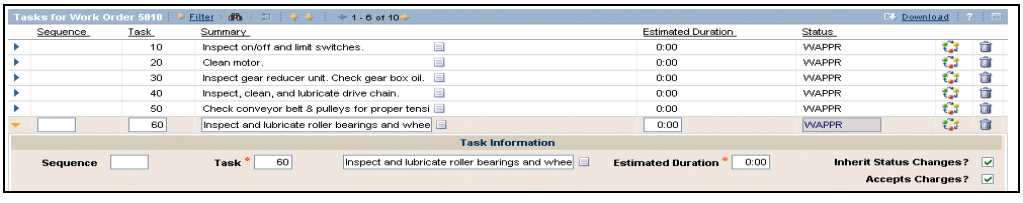
Job Plan Tasks

A job plan is broken down into one or more numbered steps or procedures called *tasks*. The Task Details table window on the **Job Plan** tab contains a list of numbered tasks, along with estimates for labor, materials, and tools for those tasks to have more functionality. Job plans need to be planned and scheduled individually. Using tasks can be very valuable when the job plan is lengthy and complicated, and lets you track costs more accurately.



Job Plan Tasks in Work Orders

When used on a work order work plan, tasks also can be planned and scheduled individually.



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Building Job Plans continued

Task Numbering



Job plan task numbers must be unique. The system sorts tasks in numerically ascending order. The task with the lowest number is the first step of your job plan. It is recommended that you let the system automatically number the tasks.

Note: Job plan task numberings can be set up in Site options in the Work Order options from the Organizations application.

Job Plan Sequencing

Sequencing represents the order for which a task must be performed.

In the **Preventive Maintenance** application, you can set up job plans to be sequenced. This will be discussed further in Chapter 8: "Entering Supporting Records for Work Management: Preventive Maintenance."

Limiting the Number of Job Tasks



Because there are many job tasks associated with asset maintenance, we will not cover all of them in this course. In most cases, this information will be entered in your company's database electronically.

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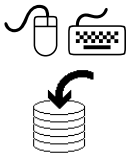
Building Job Plans continued

Manufacturing Scenario

In this scenario we will build a simple job plan: Bearing Lubrication for the Batch Mixer.

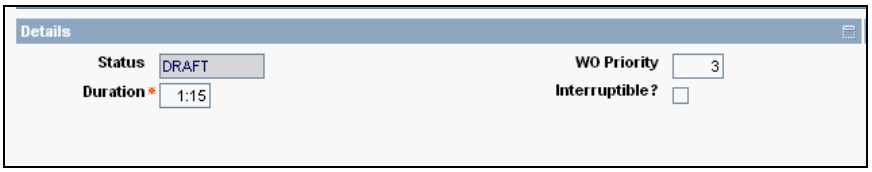
These simple job plans are designed to capture the concept.

Manufacturing Scenario Exercise: Job Plan Defaults



The first step is to create the job plan record and define certain defaults that will be applied to any work order using this job plan.

Hint: Remember, if you run out of space when entering field information, you can click the **Detail** button to bring up the long description box.

Step	Action
1	Access the **Job Plans** application from the **Planning** module, then insert a new record using the following information: **Field** — **Value** **Job Plan** — BLUBE **(Description)** — Bearing Lubrication **Organization** — EAGLENA
2	In the **Details** section, enter the following values in their respective fields: **Field** — **Value** **Duration** — 1:15 **WO Priority** — 3 
3	**Save** the record.

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Building Job Plans continued

Manufacturing Scenario Exercise: Defining the Tasks for the Job Plan



The next step is to define what actions should be taken for this job.

In Maximo, tasks can be defined in the job plan or on the work order plan itself.

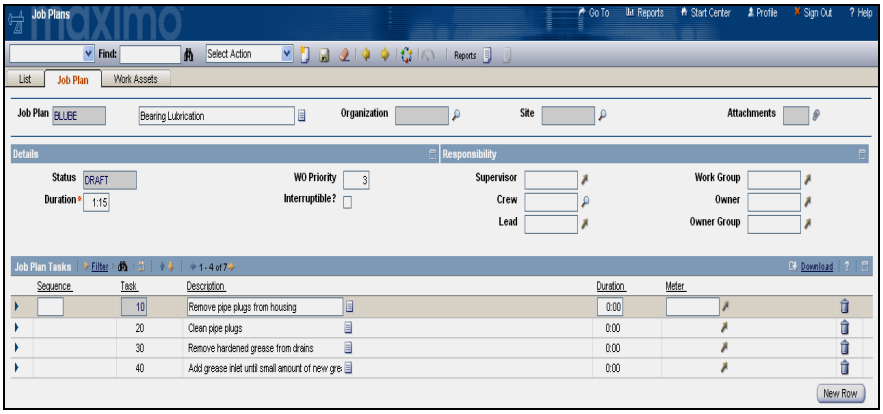
Step	Action
1	Click the **New Row** button in the **Job Plan Tasks** section.
2	In the table window, enter the following information: **Task ID** **Description** 10 Remove pipe plugs from housing
3	Click **New Row**.
4	Repeat the two previous steps, entering the following data. Hint: You might need to use the Long Description icon.  **Task ID** **Description** **Hours** 20 Clean pipe plugs 30 Remove hardened grease from drains 40 Add grease inlet until small amount of new grease is forced out of drain 50 Remove excess grease from plugs 60 Replace inlet plugs 70 Run motor ½ hr before replacing drain plug :30

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Building Job Plans continued

Manufacturing Scenario Exercise: Defining the Tasks for the Job Plan continued

Step	Action
5	**Save** the record. Result: Your screen should look similar to this. 

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Building Job Plans continued

Using Subtabs

By using the subtabs, you can assign the task to some, all, or none of the estimated labor, materials, services, and tools that are associated with a task.

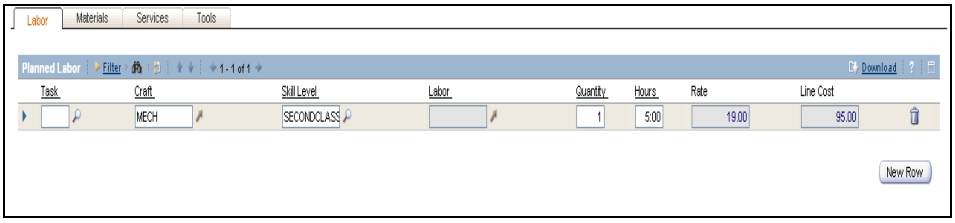
The **Labor**, **Materials**, and **Tools** fields do not need to be unique, or even populated, because a task on a job plan might call for more than one worker, tool, or unit of asset.

Labor Subtab

The **Labor** subtab contains job plan labor and crafts information. When you enter labor or craft information on the Labor subtab, the labor or craft record's description and rate are displayed from the Labor database table.

When you insert, delete, or modify quantities or hours on the Labor subtab, the following fields are updated automatically:

- Line cost
- Total labor hours
- Total labor cost



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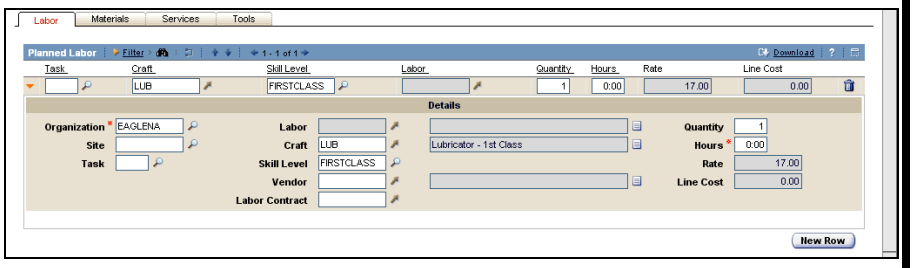
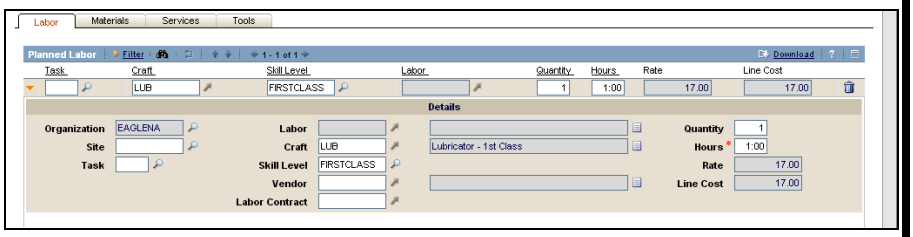
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Building Job Plans continued

Manufacturer Scenario Exercise: Adding Job Plan Labor



Follow the steps below to assign a craft to the job plan.

Step	Action
1	Click the **New Row** button on the **Labor** subtab.
2	In the **Craft** field, enter LUB and in the **Skill Level** field enter FIRSTCLASS. Result: A first-class lubricator is assigned to the job.  Let's assume that we didn't have the schedules of available labor yet, so we assigned a "generic" person suited for the job description (craft).
3	In the **Hours** field, enter 1:00.
4	**Save** the record. Result: Your Labor subtab should look similar to the one below. 

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Building Job Plans continued

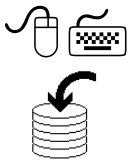
Materials Subtab

The Materials subtab of the **Job Plan** tab in the **Job Plans** application contains job plan materials information. When you enter an item number on the Materials subtab, the item's description, location, category, and unit cost are copied from the **Inventory** storeroom record.

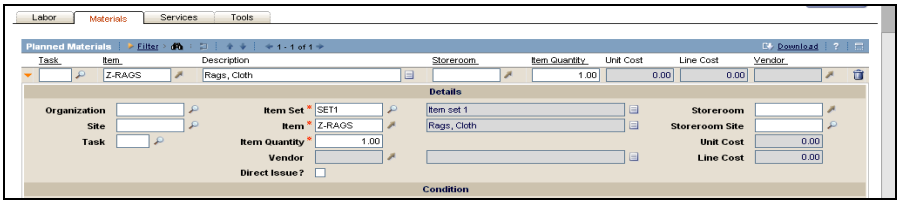
When you insert, delete, or modify a quantity on the Materials subtab, these fields are updated automatically:

- Line cost
- Estimated total material cost

Manufacturer Scenario Exercise: Adding Job Plan Materials



Follow the steps below to add the materials required on this job plan.

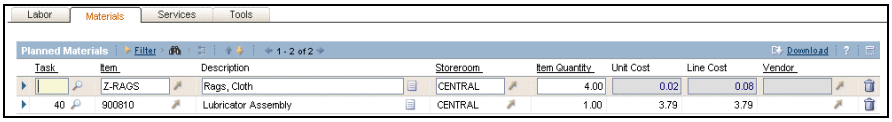
Step	Action
1	Click on the **Materials** subtab.
2	Click the **New Row** button of the **Materials** subtab.
3	Click the **Detail menu** icon beside the **Item** field, then find and select **Z-RAGS** in the **Select Value Dialog** box. Result: Z-RAG is selected in the Item field.  A number of the tasks in this job plan can be messy. Because we'll need the rags for the entire job, we will not assign this particular material to a specific task.

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Building Job Plans continued

Manufacturer Scenario Exercise: Adding Job Plan Materials continued

Step	Action
4	Four rags should be enough, so enter a **Quantity** of 4.
5	Indicate that the **Storeroom** is CENTRAL and the **Storeroom Site** is BEDFORD.
6	Insert a new Material row.
7	We will also need some grease. Enter the following values in their respective fields: **Field** — **Value** **Task** — 40 **Item** — 900810 **Storeroom/Site** — CENTRAL/BEDFORD **Quantity** — 1 Hint: Use the detail menu icon if necessary.
8	**Save** the record. Result: Your Materials subtab should look similar to the graphic below. 

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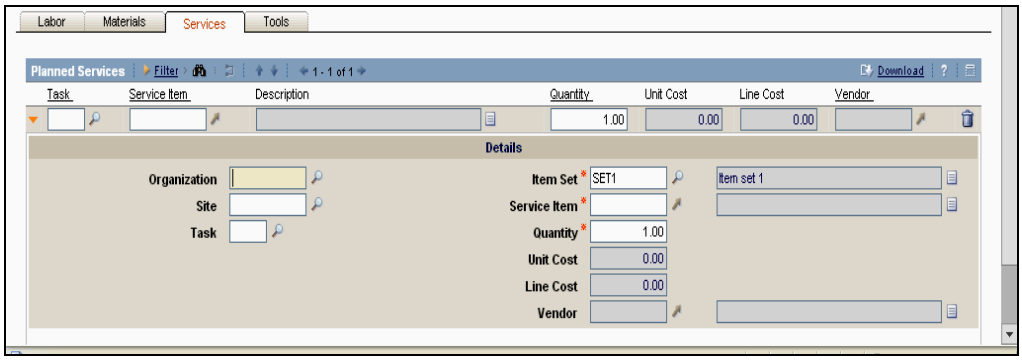
Building Job Plans continued

Services Subtab

The **Services** subtab contains the service item lists for the job plan. When you enter a service item, the tool's description and rate are displayed from the Tools database table. The services rendered may come from an internal or external source.

When you insert, delete, or modify records in the Services subtab, the following fields are updated automatically:

- **Unit Cost**
- **Line Cost**



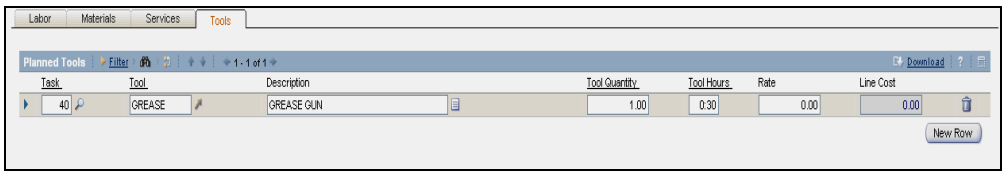
Note: We will not be entering a Service Item record in this exercise.

Tools Subtab

The **Tools** subtab contains a tool list for the job plan. When you enter a tool on the Tools subtab, the tool's description and rate are displayed from the Tools database table.

When you insert, delete, or modify quantities or hours on the Tools subtab, the following fields are updated automatically:

- Line cost
- Estimated total tool cost

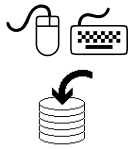


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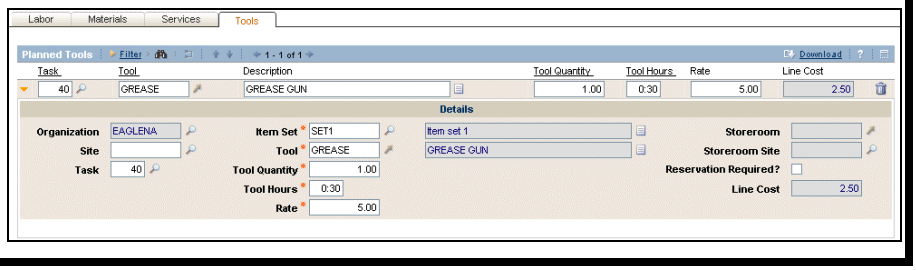
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Building Job Plans continued

Manufacturer Scenario Exercise: Adding Job Plan Tools



Follow the steps below to add a Grease Gun to the Tools subtab.

Step	Action
1	Display the **Tools** subtab of the **Job Plan** tab.
2	Click the **New Row** button of the **Tools** subtab and enter the following information: **Field** — **Value** **Task ID** — 40 **Tool** — Grease **Tool Quantity** — 1 **Tool Hours** — 0:30 **Rate** — 5.00
3	**Save** the record. Result: Your Tools subtab should look similar to the graphic below. 

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Building Job Plans continued

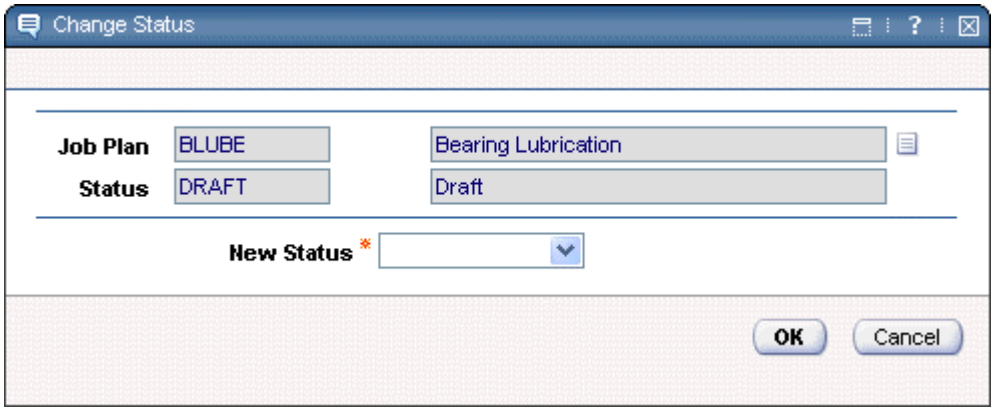
Viewing Job Plan Costs

Use **View Costs** from the **Select Action** menu to view the total labor hours and costs for a job plan.



Job Plans Status and Associations

A job plan status must be ACTIVE before it can be associated with PM or work order records.



In the next exercise, we will see how to change the status of a job plan.

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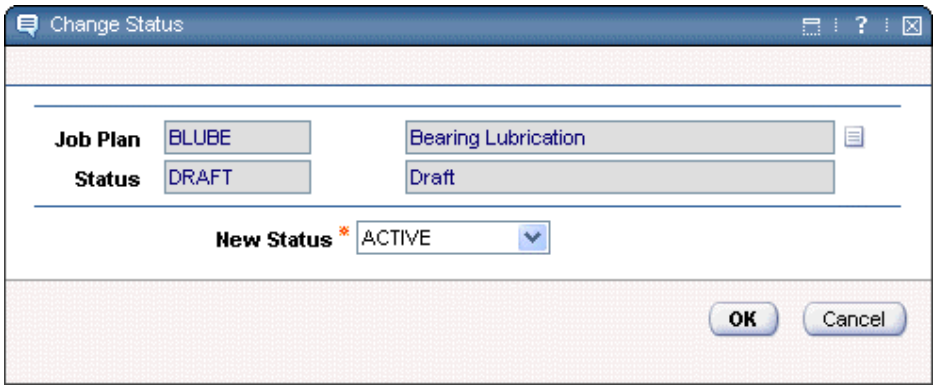
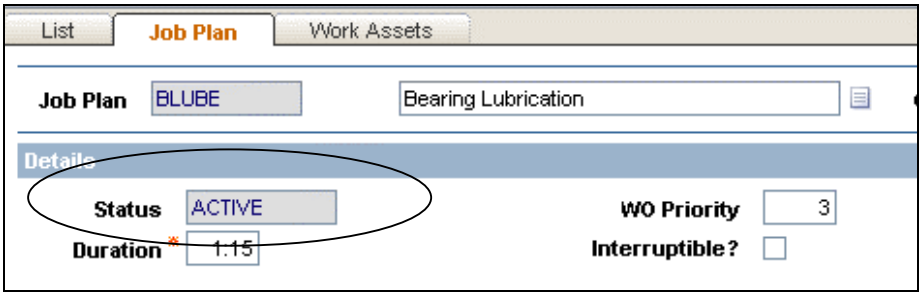
Building Job Plans continued

Exercise: Changing the Job Plans Status



In this exercise, we will activate the BLUBE job plan record.

In the next chapter, we will associate the job plan with another record.

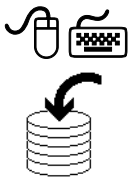
Step	Action
1	Access the **BLUBE** job plan record from the **Job Plans** application.
2	Click the **Change Status** icon and select **ACTIVE** from the detail menu.  Hint: You can also use Select Action to change status.
3	Click **OK**.  Result: The job plan status is now ACTIVE. The job plan can now be associated with other records.

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Building Job Plans continued

Utility Exercise Scenario: Building a Job Plan



In this unit we will generate a corrective maintenance work order for utility pole replacement. Because this is a common job for a utility company, we will create a job plan so that we can use it without having to build a work plan from scratch.

To keep things simple, tasks, labor, and materials will be kept to a minimum.

---

1. Create a new job plan that will be used by the **EAGLENA** organization.
2. Identify the job plan as POLEREP, with the following description:
   Utility Pole replacement – 45' class 5
3. The duration of the job plan will be 10 hours.

Job Plan Details:

Sequence	Task ID	Description	Duration
1	10	Dig Hole	1:00
2	20	Attach Cross Arm to pole	1:00
3	30	Set New Pole	2:00
4	40	Load Relief (wire transfer)	5:00
5	50	Remove Old Pole	1:00

Labor Requirements:

- ELECT (FIRSTCLASS) for 10 hours.
- ELECT (SECONDCLASS) for 10 hours.
- For **Task 40**, ELECT (APPRENTICE).

Material Requirements:

- From the CENTRAL storeroom and Storeroom Site BEDFORD, issue the following materials for **Task 20:**
  - Bracket – Utility Pole, Bracket, Galvanized Steel
  - CARM – Cross Arm - Heavy Tangent-braceless-4x6,
  - PT455 – 45' Class 5 Wood Pole

Note: Be sure to change the Status to **ACTIVE**.

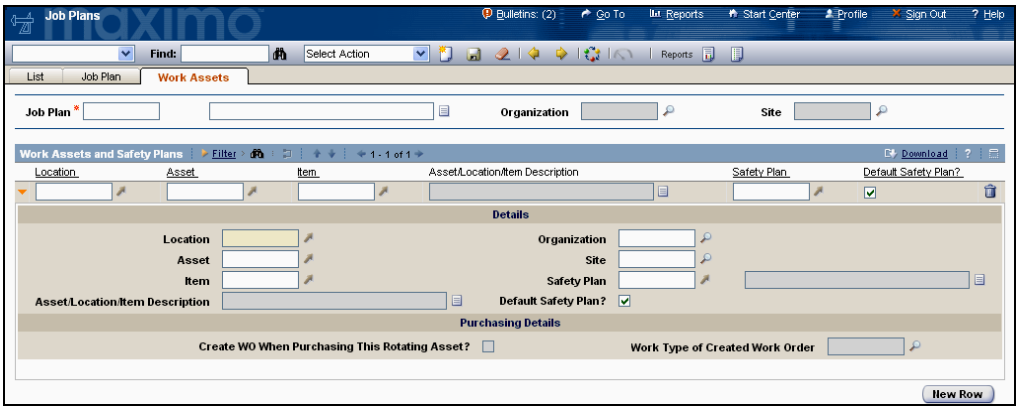
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Adding Work Assets to a Job Plan

Introduction

You can use the Work Assets tab to:

- Associate one or more work assets (assets, locations, and items) to a job plan.
- Associate safety plans with the work asset so that when generating a work order from the job plan, Maximo can copy the default safety plan or other associated plans to the work order.
- Specify that Maximo create a single work order when any quantity of that item is specified on an *approved* purchase order.



Note: If there is an organization or an organization and site at the job plan level, every work asset row you add inherits this information. You cannot modify the information on the row.

Chapter Summary

Job Plans

Job plans are used as templates for work orders that are generated from the **Preventive Maintenance** application in Maximo.

Job plans consist of the tasks, labor, materials, and tools required for a particular type of job. They can also be used on other types of work orders.

Job Plan Status

The job plan status should be changed to **ACTIVE** before you can associate it with a PM or Work Orders.

Building Job Plans

Use the **Job Plans** application to build job plan records in Maximo.

- Job plans are identified by their key field, **Job Plan**, on the **Job Plan** tab.
- You can use **Task Details** to build the tasks. Numbering tasks in increments of 10 allows you to insert additional tasks at a later time if and when the job plan needs to be updated.
- You can assign individual laborers or crafts to a job plan on the **Labor** subtab of the **Job Plan** tab. Each labor assignment can be a general assignment or for a specific task.
- You can use the **Materials** and **Tools** subtabs of the **Job Plan** tab to list the materials and tools required for the work. However, job plan materials are not reserved until a work order based on that job plan is approved.
- You can duplicate your original job plan to create an annual job plan or any other job plan that might use the same work assets and tasks.

Work Assets

The **Work Assets** tab is where locations, assets, and items are associated with the job plan. Safety plans for associated assets are also listed on this tab.

Adding a list of specific assets and locations to the job plan creates a "short list" of job plans to choose from when you create PMs and work orders later in this course.

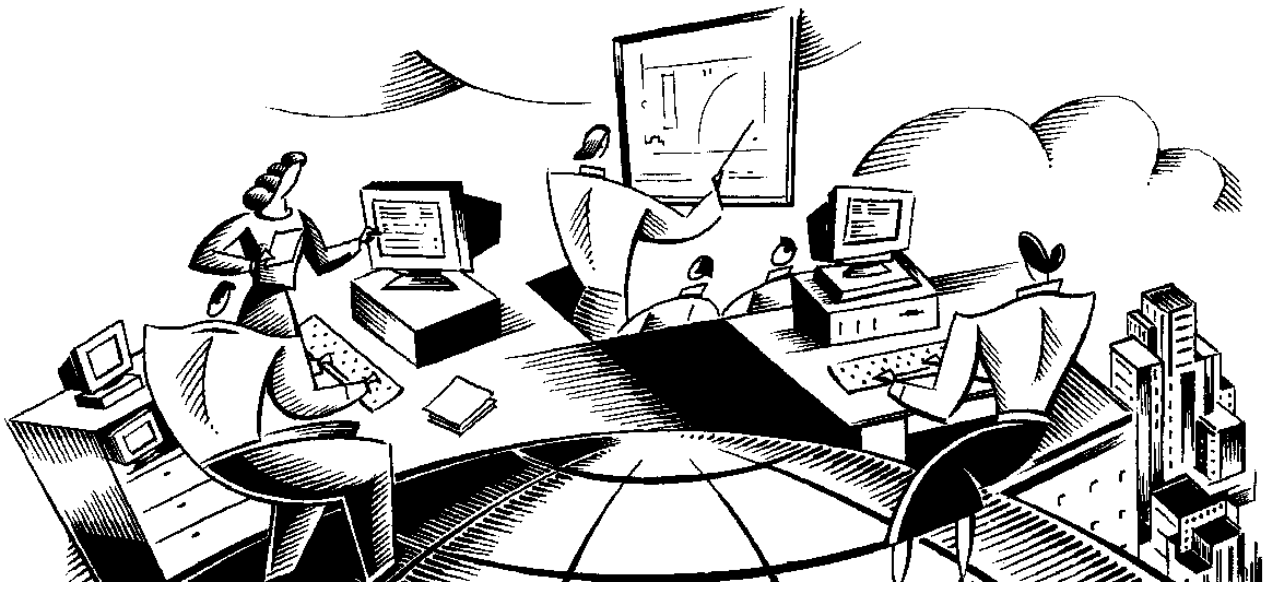
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NOTES:

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MXES Immersion Training for EAM

Chapter 8: Entering Supporting Records for Work Management: Preventive Maintenance



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In This Chapter This chapter contains the following topics:

Topic	See Page
Chapter Overview	8-1
The Preventive Maintenance Application	8-6
Creating Time- and Meter-Based PMs	8-14
Master PMs	8-26
Chapter Summary	8-35

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Chapter Overview

Introduction

A preventive maintenance (PM) program is virtually always a *critical* element in the successful management of a maintenance organization. An efficient PM program can reduce unplanned downtime, increase productivity, increase the lifecycle of an asset, and create a safer work environment.

Learning Objectives

After completing this chapter, you should be able to:

- discuss key performance indicators (KPIs) and implementation considerations related to PM programs,
- create PM records, and
- create a preventive maintenance schedule for an asset.

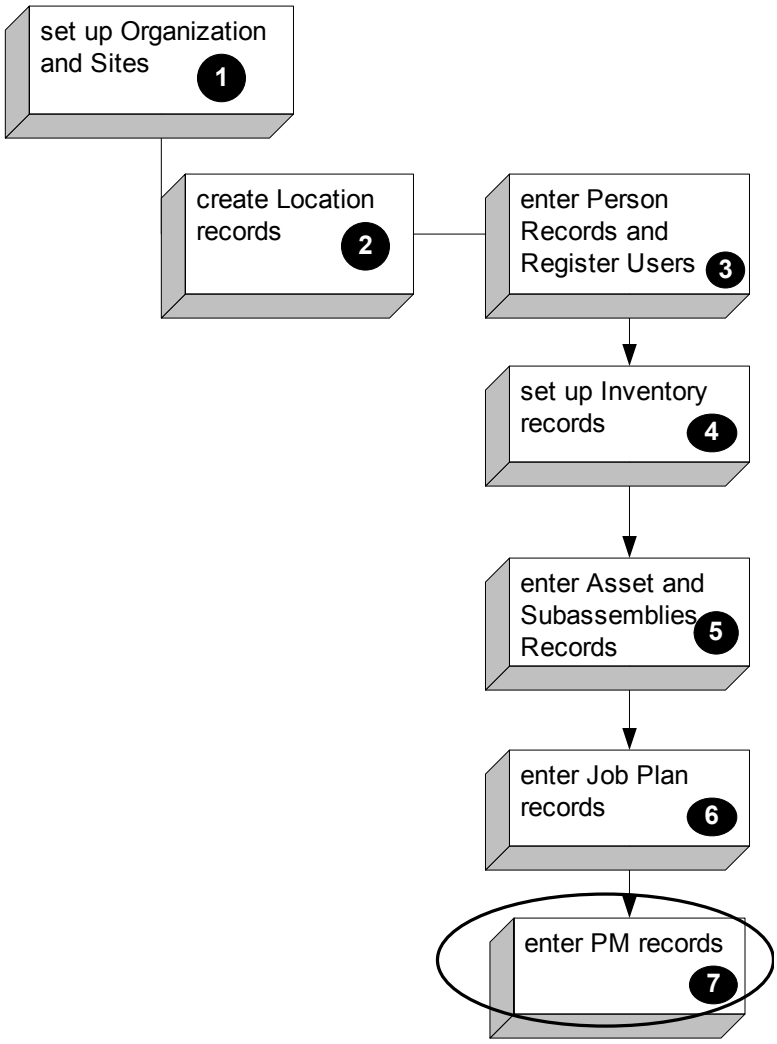
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Chapter Overview continued

We Are Here

In this section we will enter preventive maintenance as supporting records in creating work orders.



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Chapter Overview continued

Implementation Questions to Consider

- Are job plans set for PM inspections?
- Do PMs cover all critical asset and components?
- Who performs the PM inspections?
- Are training and certification criteria for PM inspectors detailed?
- Are PM inspections performed on time?
- Are there PM overdue reports?
- Are there PM schedule reports?
- Are there PM completion reports?
- What priority PMs are given?
- Are your PM checklists developed from:
  - Your own asset history records?
  - Manufacturer's recommendations?
- What percent of work is covered by PM inspections?
- Do PM programs continue to reduce maintenance-related lost production?
- How often are PM programs reviewed for frequency adjustment, task enhancement, and effectiveness?
- Are there individuals dedicated to the PM program?
- Do operators perform PM tasks?
- What are the PM effectiveness measures?
- Are there annual adjustments made to PM records?
- Do scheduled PMs for tools ensure availability and usability?
- Does the engineering department supporting the PM programs?

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Chapter Overview continued

KPIs

The following table describes some preventive maintenance performance metrics:

Metric Title	Metric Description
% PM inspections overdue	What percentage of PMs was not completed by the due date.
% PM inspections completed	What percentage of PMs was completed.
% PM inspections completed by due date	What percentage of PMs was completed by the due date.
% PM tasks audited annually	What percentage of PMs is audited annually.
% Corrective work orders generated from PM inspections	What percentage of all corrective work orders is generated from PM inspections annually.

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Chapter Overview continued

Organizations Application Options Revisited: Configuring Preventive Maintenance Application Options

The following setup options for PMs are available in the **Organizations** application.

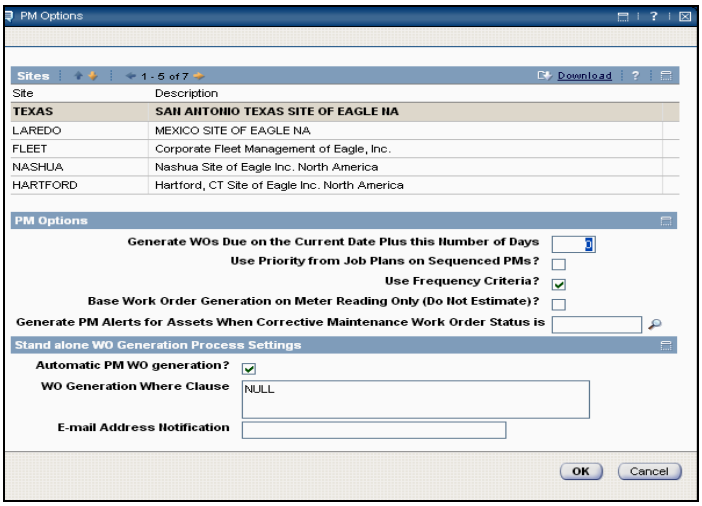
This screen is used to set preventive maintenance options for the selected site.

It is divided into three sections:

- The **Sites** section lets you toggle between site PM settings.
- The **PM Options** section is used to set frequency criteria.
- The **Standalone WO Generation Process Settings** section is used to set up customized PM criteria with SQL statements.



Note: Selecting the Auto PM WO Generation check box causes custom PM criteria to be considered automatically.



PM Option settings are configured at site level; therefore, each site can be configured to meet your business needs.

Preventive Maintenance Module

The **Preventive Maintenance** module contains two applications that we will be discussing in detail as we go on with the chapter:

- **Preventive Maintenance**
- **Master PM**

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The Preventive Maintenance Application

Introduction

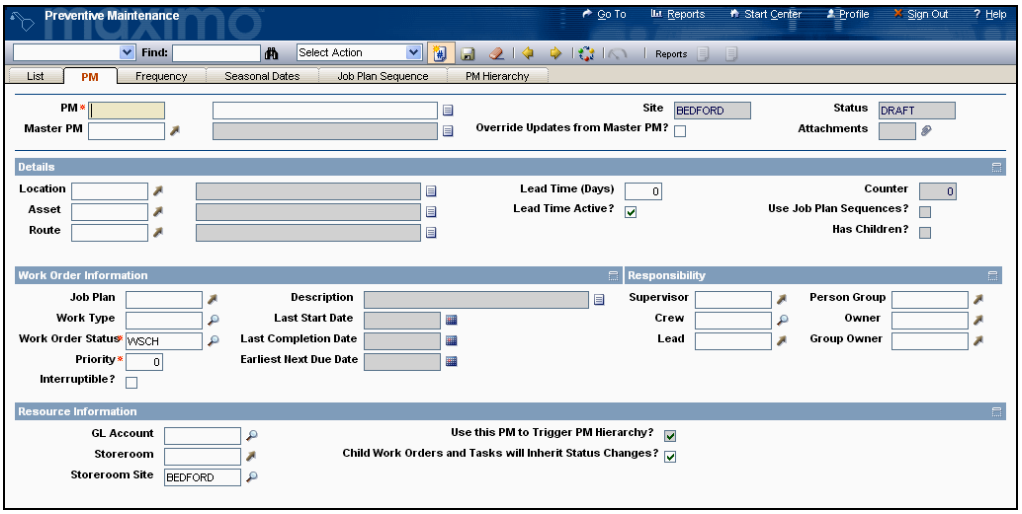
In Maximo, a PM record specifies work to be performed regularly, based on elapsed time or on meter readings that indicate service hours or mileage. PM records are templates that contain job plans, routes, and scheduling information. You can generate work orders from single PMs or from PMs that you group into a hierarchy. A PM hierarchy models your asset hierarchy as you generate sequenced work order hierarchies.

Work Assets and PMs

Work assets are asset and work locations where you create *work orders*. When a work order is generated from a PM in **Preventive Maintenance**, the associated job plan information on that PM is copied to the work order as a work plan, as well as any associated safety information on the job plan.

Preventive Maintenance Application

Use the **Preventive Maintenance** application to create, modify, or delete scheduled maintenance work records.



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The Preventive Maintenance Application continued

PM Tabs

The **Preventive Maintenance** application contains six tabs:



Use this tab…	To…
List	Search for PM records.
PM	Create and view PM records and associate them with assets, locations, or GL accounts.
Frequency	Schedule criteria for work order generation from PMs in which PMs can be scheduled on a time-based or a meter-based basis.
Seasonal Dates	Schedule PMs during specified times of the year, including active PM days, weeks, or months.
Job Plan Sequence	Assign a sequential list of PM job plans. This lets you schedule different levels of maintenance work at specified intervals.
PM Hierarchy	Generate an organized group of PM work orders for an asset or location hierarchy. This lets you organize work orders for inspections and large projects.

Important Fields on the PM tab

This table describes some of the important fields on the **PM** tab.

Field	Description
Lead Time Active?	This check box field indicates whether lead time can be applied to this PM.
Lead Time (days)	The number of days before the next due date on which Maximo generates work orders from this PM. Maximo adds lead time to the system date to determine if you can generate work orders from the PM.

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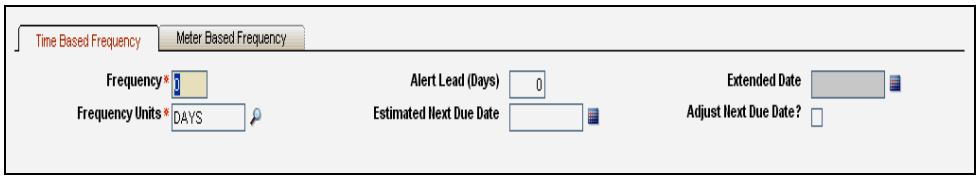
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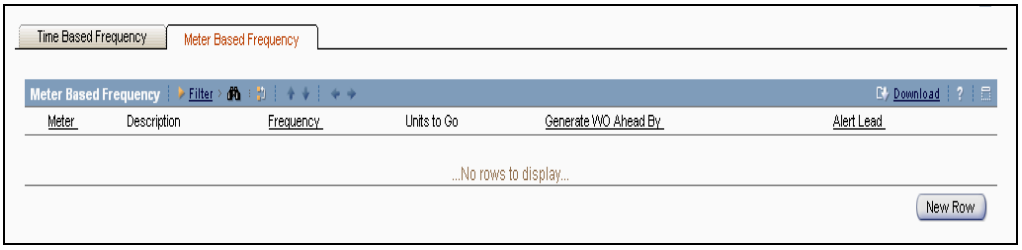
The Preventive Maintenance Application continued

Different Criteria to Generate Schedule Maintenance Work Orders

A PM's frequency schedule (set up on the **Frequency** tab) determines how often you generate work orders from the PM record. You can create a PM schedule to generate work orders based on the following criteria:

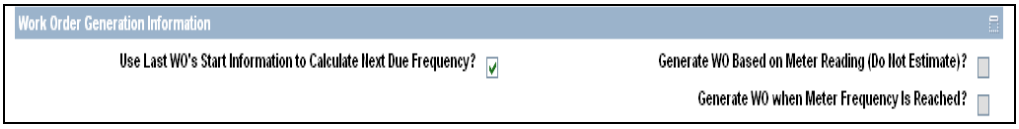
- Elapsed time since the target start date or completion date of previous work. PMs for this kind of work are called *time-based PMs*.
- Metered equipment usage since the target start date or completion date of previous work. PMs for this kind of work are called *meter-based PMs*.
- A combination of elapsed time and metered usage. For example, you can schedule a PM to trigger work every 6 months or every 300 hours, whichever comes first.





Frequency Tab: Work Order Generation Information

The Work Order Generation Information table contains fields that are used for the generation and scheduling of PM work orders.



The following table explains the functions of each check box field.

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The Preventive Maintenance Application continued

Frequency Tab: Work Order Generation Information continued

Check Box	Description
Use Last WO's Start Information to Calculate Next Due Frequency?	Select this check box if you want the due dates of generated work orders to be calculated from the target start date of the last work order. If you do not want to calculate the Next Due Date based on the target start of the last work order (for example, if you want the next work order to be generated based on when the last work order was actually completed instead), clear the check box.
Generate WO Based on Meter Reading (Do Not Estimate)?	Select this check box if you want work orders generated only when the defined meter reading has been reached. If you want Maximo to estimate the next work order due date based on the average metered usage, clear the check box.
Generate WO when Meter Frequency Is Reached?	Select this check box if you want Maximo to automatically generate work orders for this PM when the meter frequency has been reached and entered. This check box can be selected only if the **Generate WO Based on Meter Reading (Do Not Estimate)** check box has been selected.

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The Preventive Maintenance Application continued

Fixed vs. Floating PM Schedules

To schedule any master or associated PM, you must determine whether you want to do work on a fixed or floating schedule.

- On a **fixed** schedule, you plan work based on the target start date of the previous work. The target start increments by a frequency that you specify. When working with a fixed schedule, you can create multiple work orders in advance. On a floating schedule, you plan work based on the closure of the previous work. You cannot generate a new work order until the current one is completed.

  To create a fixed-schedule PM, select the **Use Last WO's Start Information to Calculate Next Due Frequency?** check box, located in the Work Order Generation Information section of the Frequency tab. On each associated PM, Maximo schedules the PM work based on the value in the **Last Start Date** field (on the PM tab of the Preventive Maintenance application).



- On a **floating** schedule, you plan work based on the closure of the previous work. You cannot generate a new work order until the current one is completed.

  To create a floating-scheduled PM, do not select the **Use Last WO's Start Information to Calculate Next Due Frequency?** check box, located in the Work Order Generation Information section of the Frequency tab. Maximo schedules the PM work based on the value in the **Last Completion Date** field (on the PM tab of the Preventive Maintenance application).



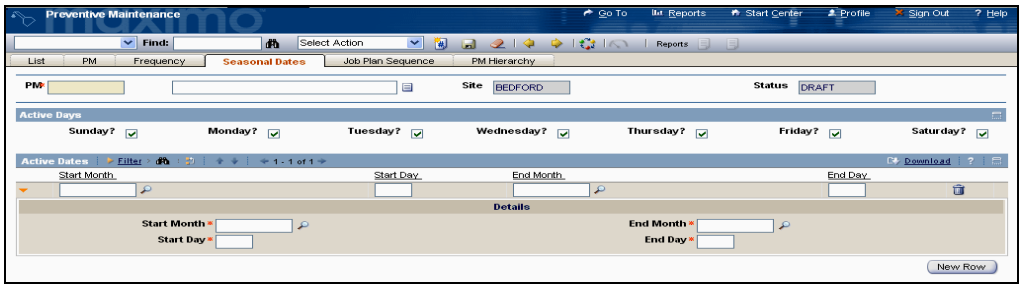
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The Preventive Maintenance Application continued

Seasonal Dates Tab

You can determine active PM days and dates using the **Seasonal Dates** tab.

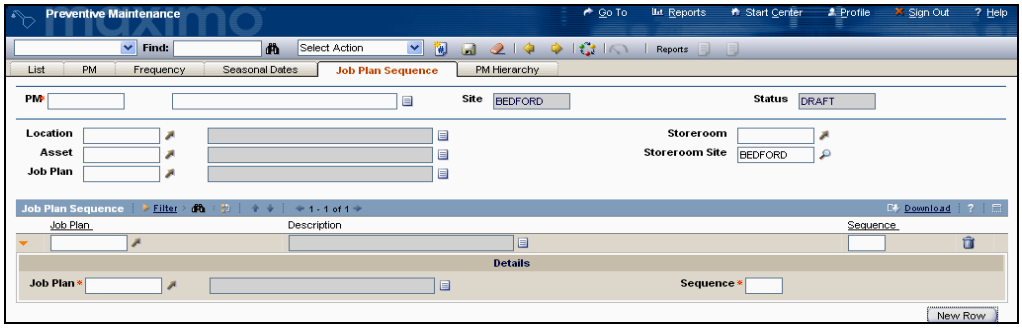


- The **Active Days** section allows you to select the days of the week on work orders can be generated.
- The **Active Dates** section allows numerous time periods (seasons) of various durations to be added.

For example, you want PMs for a particular asset to generate work orders only during the summer and winter months. You would define two active seasons for this PM, using the Seasonal Dates tab.

Job Plan Sequence Tab

Maximo allows you to create and use "sequenced" preventive maintenance records. This lets you schedule different levels of maintenance work at specified intervals. By assigning a sequence number to each job plan, you specify which job plan Maximo selects each time a work order is generated from that PM record.



Automatically, at every other generation of this PM, Maximo would attach the second job plan to the work order.

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The Preventive Maintenance Application continued

How Maximo Selects a Sequenced Job Plan

When you generate a work order from a PM, Maximo first increments the value in the Counter field by one, then selects the job plan. Maximo selects the job plan with the *highest* sequence number that divides evenly into the value in the Counter field. If no sequence number meets this criterion, Maximo uses the primary job plan (sequence number 1).

The value in the **Sequence** field means that this job plan would be used on every *n*th work order generated from the PM, where *n* is the sequence number.

Example

Using the example above, you would create a job plan sequence on the **Job Plan Sequence** tab as follows:

Job Plan	Job Plan Description	Seq	Meaning
INS-TURB	Inspect Turbine	1	This is the default or primary job plan It is used unless the sequence calls for a different plan. This job plan is used when the value in the **Counter** field is divisible only by 1.
INS-TURBCOMP	Inspect Turbine Component	4	This job plan is used when 4 is the highest number that divides evenly into the value of the **Counter** field.
INS-TURBFEED	Inspect Turbine and Feeder System	12	This job plan is used when 12 is the highest number that divides evenly into the value of the **Counter** field.

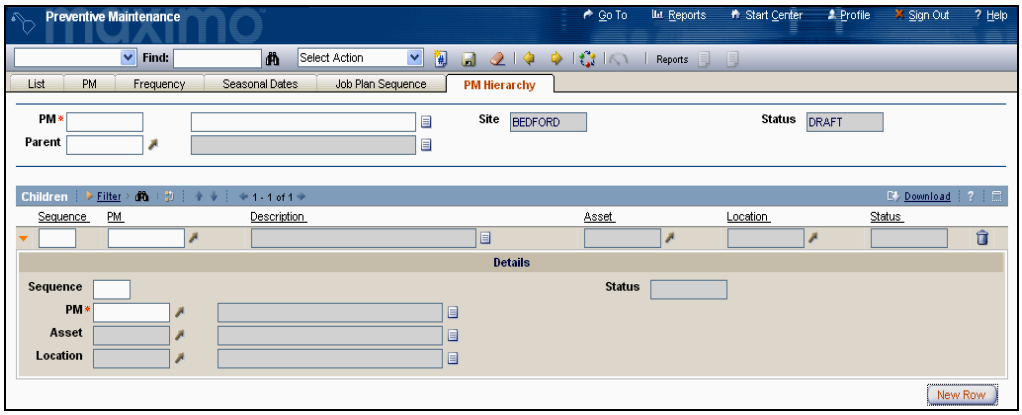
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The Preventive Maintenance Application continued

PM Hierarchy Tab

PM hierarchies are used to schedule a group of work orders for an asset or location hierarchy. This lets you organize work orders for inspections and large projects. If any PM in the hierarchy is due, it triggers generation of work orders for the entire hierarchy.



You can add a **sequence number** to each PM in a PM hierarchy. Maximo copies the sequence number to the work orders you generate from the PM, to indicate to workers the order in which they should perform the work.

PM Status

PMs have three statuses available:

- Draft – default status for new PMs created.
- Active – PMs can now be associated with work orders; you can still modify a PM that is in Active status.
- Inactive- PMs cannot generate work orders. Usually PMs of this status are discontinued either temporarily or permanently.

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Creating Time- and Meter-Based PMs

PM Generation

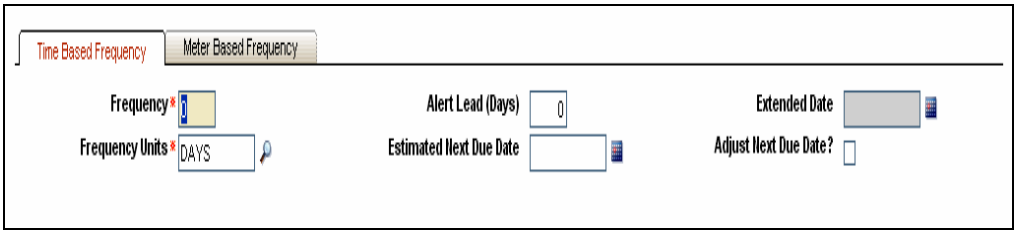
As we said earlier, PM work orders are triggered by one or more conditions:

- *Time-based PMs* are based on elapsed time since previous work. For example, every 6 months.
- *Meter-based PMs* are based on meter readings off an asset record. For example, every 7,000 miles.
- *Seasonal-based PMs* are based on seasonality defined by a period of time. For example, December 1 – February 1.
- *Combination-based PMs* are based on time and meter readings. For example, every 3,000 miles or 3 months.

Note: If a PM is both time-based and meter-based and a generated work order overlaps the setup of either method, both the meter and the time frequency are re-set to avoid unnecessary extra PMs.

Time-Based PMs

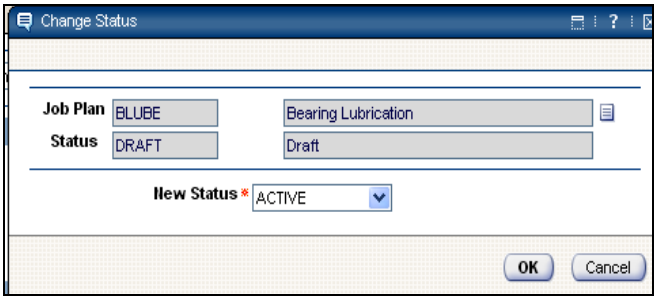
Time-based PMs are based on time elapsed since previous work.



Associating Job Plans to PMs

The job plan status should be ACTIVE before you can associate it with PM work.





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Creating Time- and Meter-Based PMs continued

Manufacturing Exercise Scenario: Setting Up a Time-Based PM



Using the job plan template that we created in Chapter 7, we will create a **time-based** PM for the Batch Mixer located at the Production line.

Step	Action
1	Open the **Preventive Maintenance** application from the **Preventive Maintenance** module.
2	Insert a new PM record.
3	Enter the following information on the **PM** tab: **Field** — **Value** **PM** — MIXER (**Description**) — Scheduled Maintenance for Batch Mixer **Asset** — BMIX1 **Job Plan** — BLUBE **Work Type** — PM **Work Order Status** — WAPPR **Priority** — 5 **GL Account** — 6000-200-000 **Storeroom** — CENTRAL **Storeroom Site** — BEDFORD

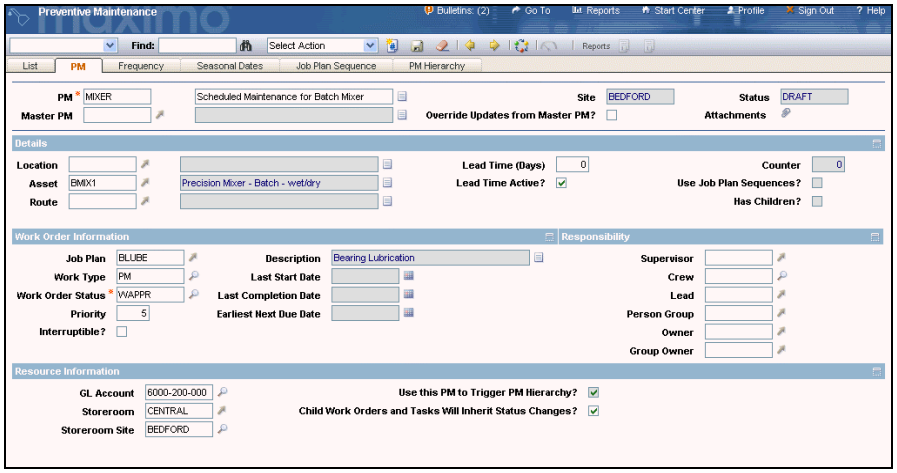
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Creating Time- and Meter-Based PMs continued

Manufacturing Exercise Scenario: Setting Up a Time-Based PM

continued

Step	Action
4	**Save** the record. Result: Your screen should look like the one below. 
5	Click on the **Frequency** tab.
6	On the **Time Based Frequency** subtab, enter the following information: **Field** — **Value** **Frequency** — 6 **Frequency Units** — MONTHS **Estimated Next Due Date** — [*Today*]

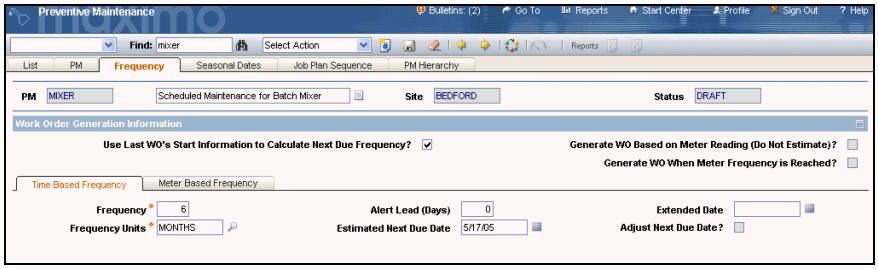
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Creating Time- and Meter-Based PMs continued

Manufacturing Exercise Scenario: Setting Up a Time-Based PM

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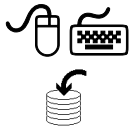
Step	Action
7	**Save** the record. Result: Your screen should look similar to the one below. 

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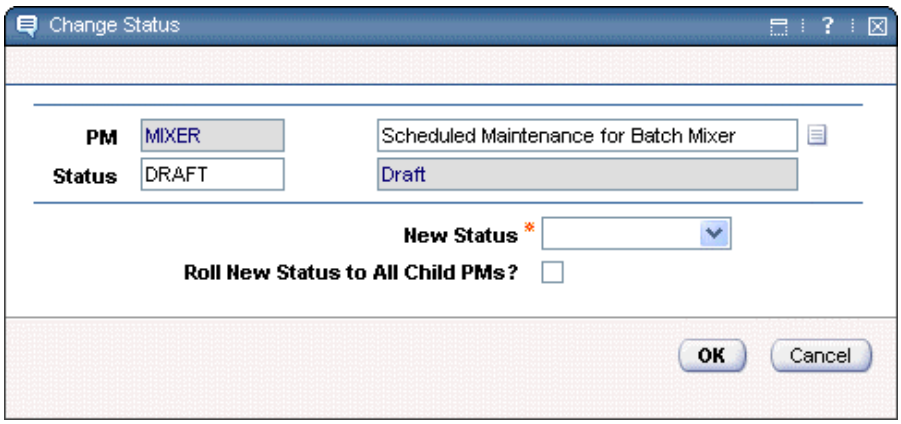
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Creating Time- and Meter-Based PMs continued

Manufacturing Exercise Scenario: Setting Up a Time-Based PM



Next, we will change the MIXER PM record to Active.

Step	Action
1	Click the **Change Status**  icon. Result: The Change Status dialog box opens. 
2	Select **ACTIVE** from the **New Status** drop-down list.
3	Check the **Roll New Status to All Child PMs?** check box, then click **OK**. Result: Your new PM record is now active.

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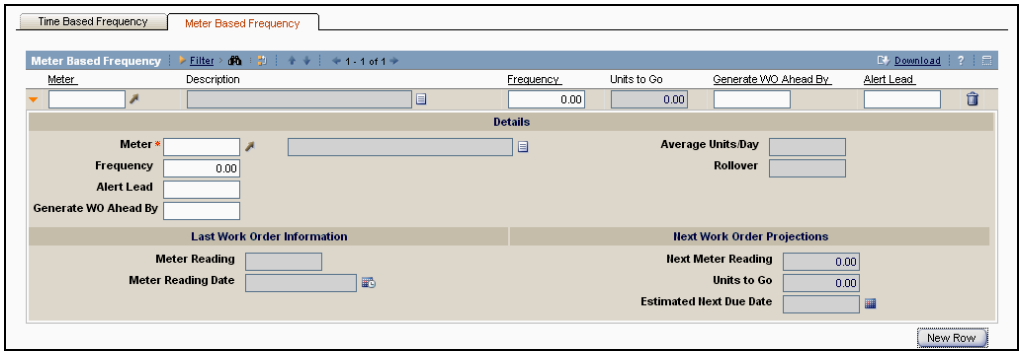
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Creating Time- and Meter-Based PMs continued

Meter-based PMs

A *meter-based PM* is based on meter readings of an asset record.

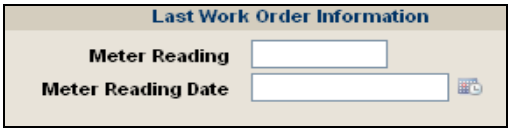
Note: You can attach several meters to an asset.



Important Meter-based PM Fields	
Field	**Description**
Meter	Meter units (hours, cycles, miles, etc.) copied from the asset record.
Frequency	Meter reading set before a PM is done on the asset.
Alert Lead	Number of lead time days to schedule PM.
Average Units/ Day	Calculated average asset performance per day measured in meter units.

Last Work Order Information Section

The **Last Work Order Information** section contains read-only meter reading information about the last PM work order generated.



This field…	Shows…
Meter Reading	The asset meter reading when the last PM work order was completed.
Meter Reading Date	The date of the asset meter reading when the last PM work order was generated.

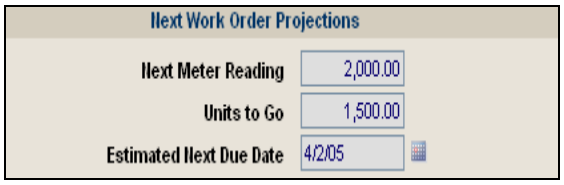
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Creating Time- and Meter-Based PMs continued

Next Work Order Projections Section

The **Next Work Orders Projections** section provides read-only meter-based information from the asset records you created in Chapter 6: "Entering Asset Records." Maximo automatically shows the defaults and calculates the values.



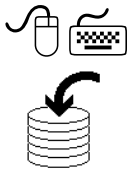
Field	Description
Next Meter Reading	Shows the calculated value before the next meter PM work order is generated.
Units to Go	The calculated value of the differences between the current Meter Reading and the Projected Reading at Next PM; Units to Go is recalculated when a meter is updated.
Estimated Next Due Date	Based on the Meter frequency and Average Units/Day, the estimated next scheduled date to generate the work order.

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Creating Time- and Meter-Based PMs continued

Exercise: Setting Up a Meter-based PM



In this exercise, instead of using a time-based PM, we will create a meter-based PM record for asset BMIX1.

Using the meter readings on the asset we created in Chapter 6 and job plans we created in Chapter 7, we will create a meter-based PM work plan for asset BMIX1.

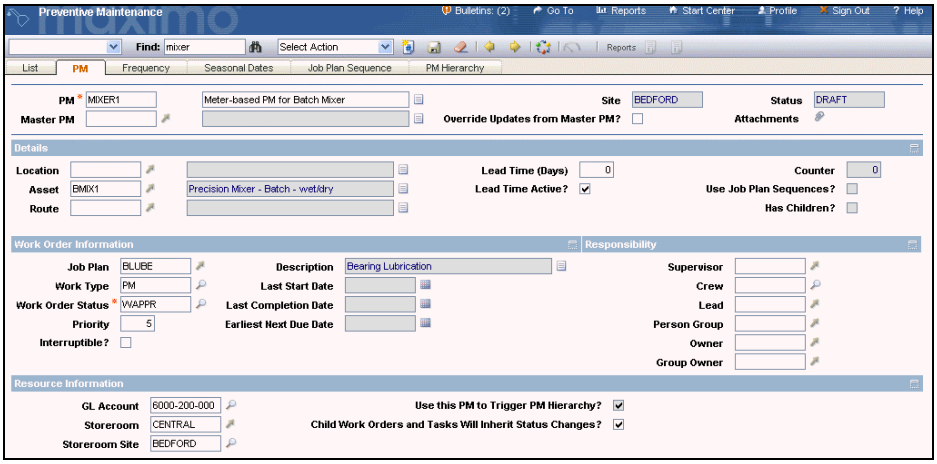
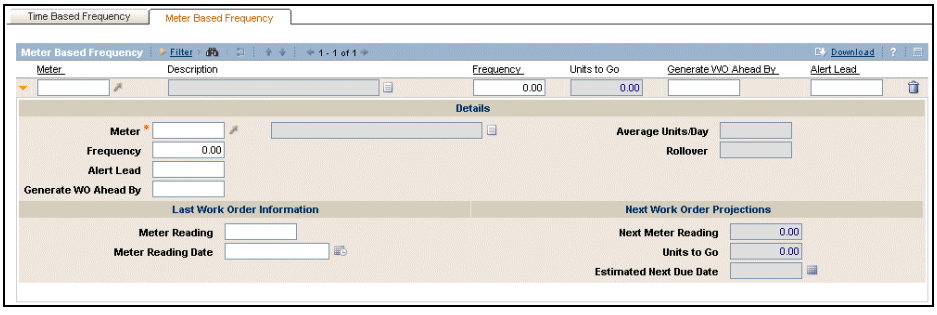
Step	Action
1	Open the **Preventive Maintenance** application from the **PM** module.
2	Insert a new PM record.
3	Enter the following information on the **PM** tab: **Field** — **Value** **PM** — MIXER1 (**Description**) — Meter-based PM for Batch Mixer **Asset** — BMIX1 **Job Plan** — BLUBE **Work Type** — PM **Work Order Status** — WAPPR **Priority** — 5 **GL Account** — 6000-200-000 **Storeroom** — CENTRAL **Storeroom Site** — BEDFORD

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Creating Time- and Meter-Based PMs continued

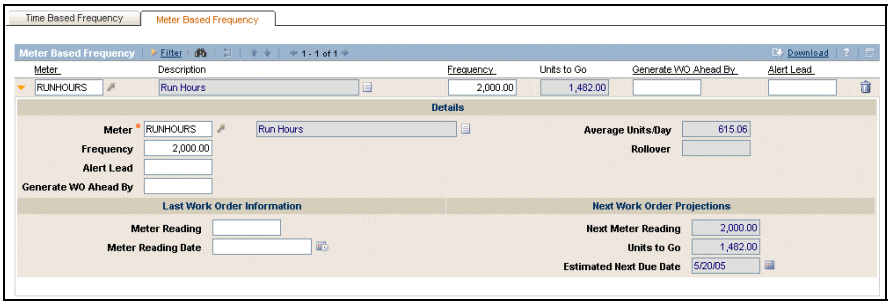
Exercise: Setting Up a Meter-based PM continued

Step	Action
4	**Save** the record. Result: Your screen should look similar to the one below. 
5	Access the **Meter Based Frequency** subtab on the **Frequency** tab, then click **New Row**. Result: A new line is added to the Meter Based Frequency subtab. 

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Creating Time- and Meter-Based PMs continued

Exercise: Setting Up a Meter-based PM continued

Step	Action
6	Select **RUNHOURS** from the **Meter** field detail menu list. Result: RUNHOURS is entered in the Meter field.
7	Enter the following data for the RUNHOUR meter, then save the record. **Field** **Value** **Frequency** 2000 Result: Your screen should look similar to the graphic below. 

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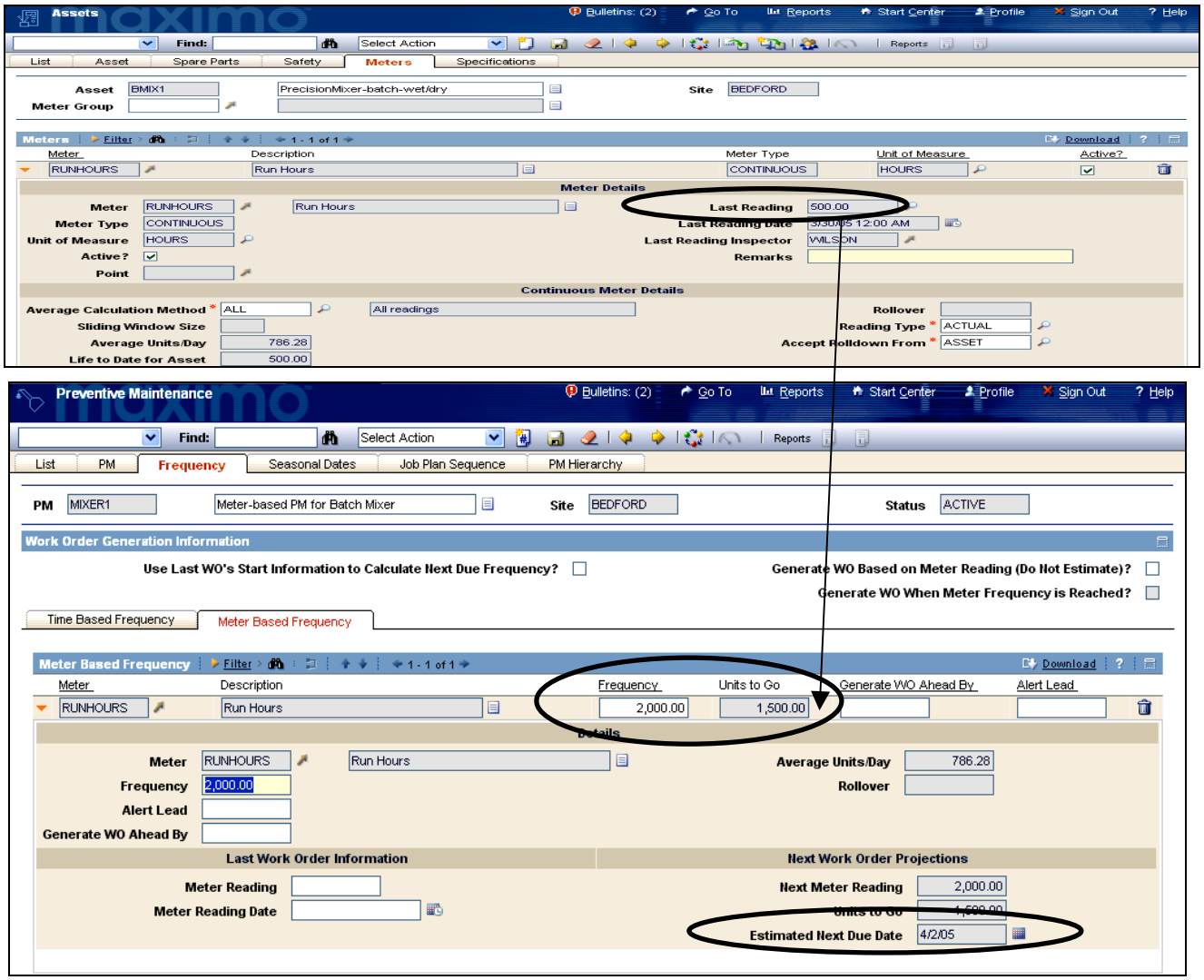
Creating Time- and Meter-Based PMs continued

Assets and PM Records Relationship

From Chapter 6: "Entering Asset Records," remember that your latest meter reading is 500 run-hours time. Suppose that BMIX Manufacturer's manual requires bearing lubrication every 2000 hours of runtime. Maximo enables you to track asset usage and automatically create a preventive maintenance schedule.

In the previous exercise, Maximo automatically computes the remaining run hours (1500) before the bearings should be lubricated.

Note also that Maximo allows you to calculate the asset's average performance units and estimated next PM due date.

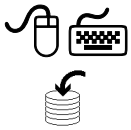


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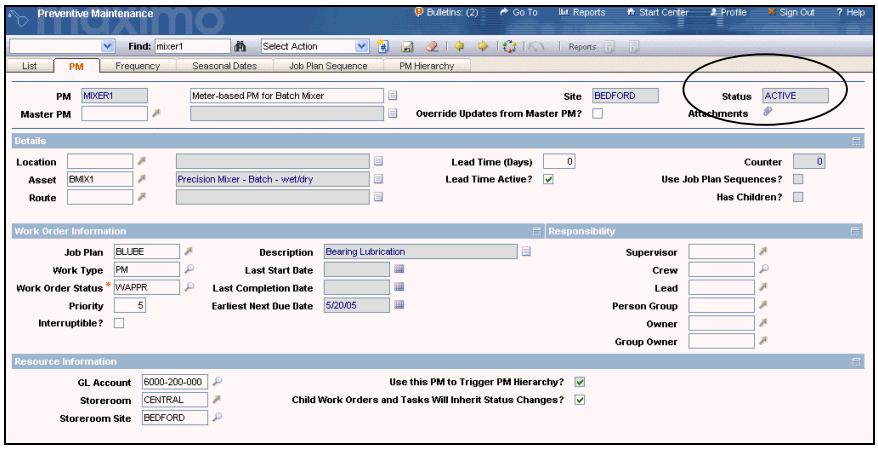
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Creating Time- and Meter-Based PMs continued

Assets and PM Records Relationship



Next, we will change the MIXER1 PM record status to Active.

Step	Action
1	Access the **MIXER1** PM record, then click the **Change Status** icon.  Result: The Change Status dialog box opens.
2	Select **ACTIVE** from the **New Status** drop-down list.
3	Check the **Roll New Status to All Child PMs?** check box.
4	Click **OK**. Result: The record is saved and MIXER1 is now Active. 

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Master PMs

Introduction

Master PM (preventive maintenance) records are PM templates containing scheduling information you copy to other PMs, identified as *associated PMs*. You cannot use master PMs to generate work orders, nor can you add them to PM hierarchies.

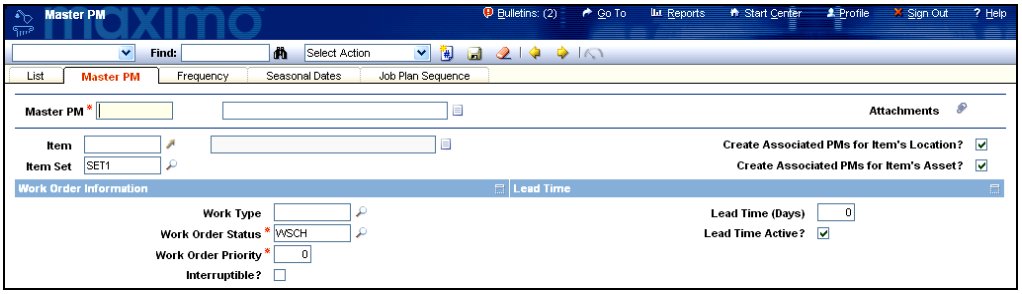
Benefits of Using Master PMs

Though master PMs cannot generate work orders, using the master PM enables you to create PM plans for rotating items.

Suppose there are numerous assets associated to a rotating item. You can use the master PM to associate a PM record to the rotating item without having to enter individual PM records to each asset.

Master PM Application

The **Master PM** application allows you to create associated PMs and set which criteria the master PM will define for the associated PMs.



Associated PMs

Associated PMs are PM records created in the master PM application where scheduling information can be inserted or updated by a master PM and be used in the organization and site levels.

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Master PMs continued

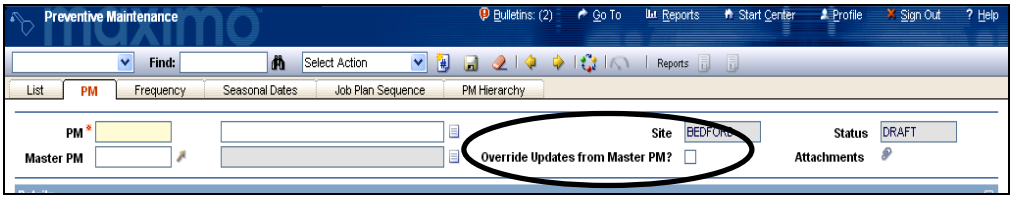
Considerations in Creating and Associating Master PMs



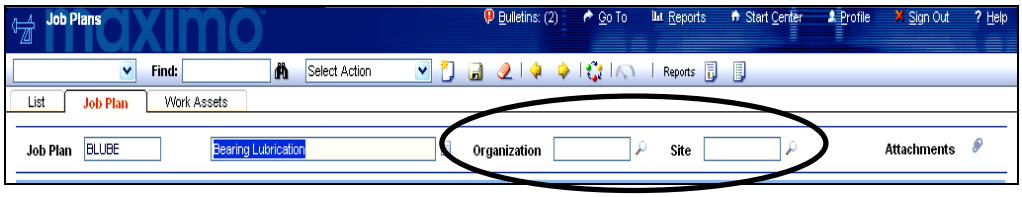
As mentioned earlier, master PM records are accessed in the organization level, meaning that you can use master PM records independent of organization and sites.

When creating and associating master PMs to a job plan or PM, consider the following points:

- If the PM is associated with a master PM, updates to the master PM record will overwrite changes you made to the PM's frequency. If you want to prevent updates by the master PM, check the **Override Updates from Master PM?** check box on the PM tab (in the Preventive Maintenance application).



- You can associate only a job plan that has no specific organization or site information defined.



- PM records belonging to a hierarchy cannot be associated to a master PM.
- Rotating items should belong to a meter group in order to associate PMs to a meter-based master PM.

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Master PMs continued

Master PM Tabs

The **Master PM** application contains five tabs:



Use this tab…	To…
List	Search for master PM records.
Master PM	Create and view master PM record templates enabling associated PMs to be shared across organizations and sites.
Frequency	Schedule criteria for work order generation from associated PMs in the PM.
Seasonal Dates	Schedule master PMs' active PM days, weeks, months, or seasons.
Job Plan Sequence	Assign a sequential list of master PM records, allowing you to schedule different levels of maintenance work at specified intervals.

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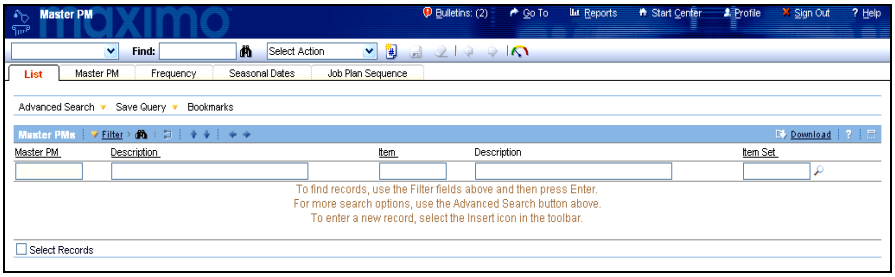
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Master PMs continued

Exercise: Creating a Time-Based Master PM



In this exercise, we will create a master PM for rotating item PUMP100 (Centrifugal Pump).

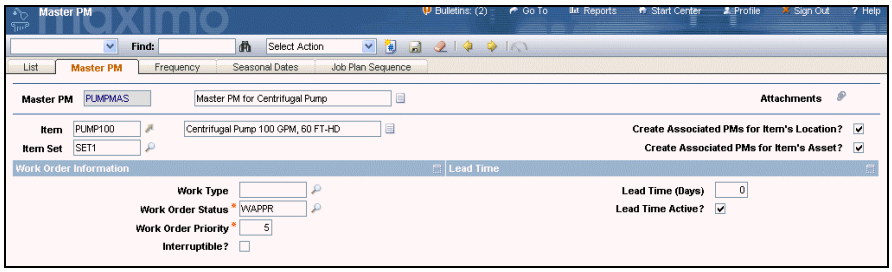
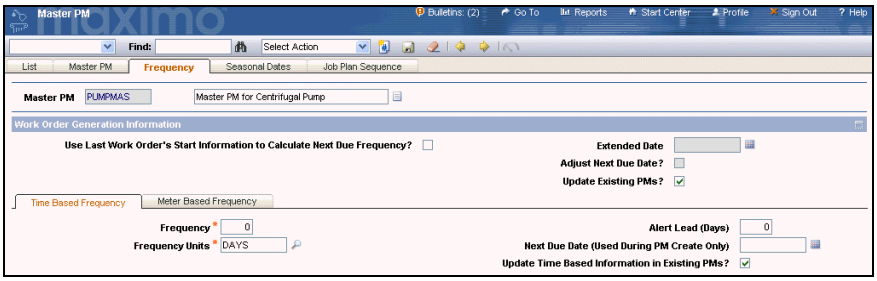
Step	Action
1	Access the **Master PM** application from the **Preventive Maintenance** module. Result: The Master PM application opens to the List tab. 
2	Insert a new master PM record, then enter the following information: **Field** — **Value** **Master PM** — PUMPMAS **(Description)** — Master PM for Centrifugal Pump **Item** — PUMP100 **Create Associated PMs for Item's Location** — [*Unchecked*] **Work Order Status** — WAPPR **Work Order Priority** — 5

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Master PMs continued

Exercise: Creating a Time-Based Master PM continued

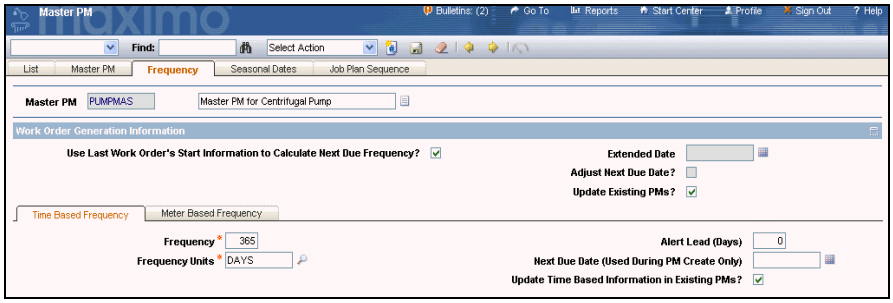
Step	Action
3	**Save** the record. Result: Your screen should be similar to the one shown below. 
4	Access the **Frequency** tab. Result: The Frequency tab opens to the Time Based Frequency subtab. 

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Master PMs continued

Exercise: Creating a Time-Based Master PM continued

Step	Action
5	Enter the following information on the Time Based Frequency subtab: **Field** / **Value** **Frequency** — 365 **Frequency Units** — DAYS **Use Last Work Order's Start Information to Calculate Next Due Frequency?** — [*Checked*] **Update Existing PMs?** — [*Checked*]
6	**Save** the record. Result: Your screen should be similar to the one shown below.  Note: Our next exercise will begin at this point.

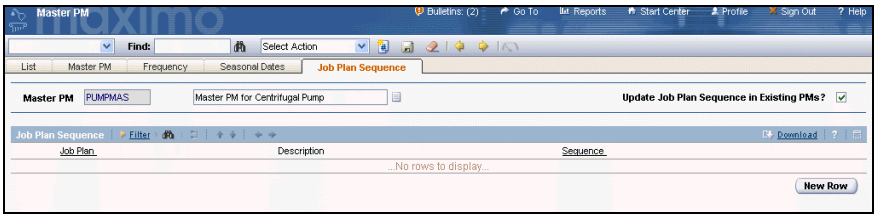
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Master PMs continued

Exercise: Associating a Job Plan to a Master PM

In this exercise we will associate an existing PM job plan template to rotating item PUMP100 (Centrifugal Pump).

Step	Action
1	From the **PUMPMAS** master PM record, access the **Job Plan Sequence** tab. Result: Maximo displays the Job Plan Sequence tab. 
2	Click **New Row** and enter the following information: **Field** — **Value** **Job Plan** — JPOUTPR **Sequence** — 1
3	**Save** the record. Result: The Job Plan JPOUTPR is now associated with the master PM record PUMPMAS. Note: Our next exercise will begin at this point.

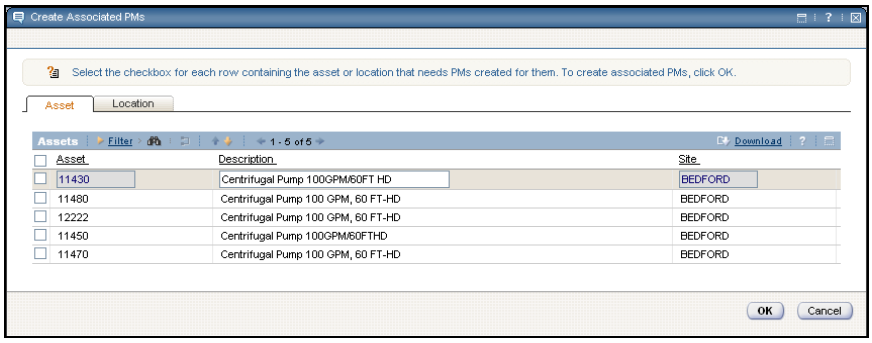
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Master PMs continued

Exercise: Creating Associated PMs



In this exercise we will associate the PUMPMAS master PM record to all the asset records belonging to rotating item PUMP100 (Centrifugal Pump).

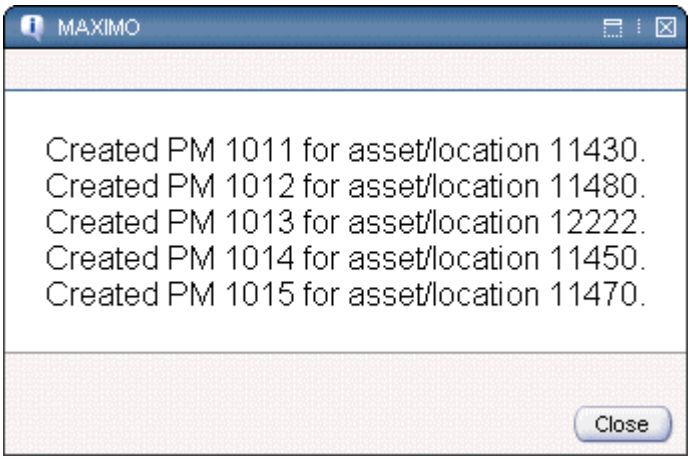
Step	Action
1	From the **Select Action** menu, choose **Create Associated PMs**. Result: The Create Associated PMs dialog box opens on the Asset tab. 

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Master PMs continued

Exercise: Creating Associated PMs continued

Step	Action
2	Select all the listed assets, then click **OK**. Result: PM record PUMPMAS creates associated PM records for all the listed assets. 
3	Click **Close** and save the record. Note: Using the Master PM application saves you time in creating individual PM records for assets belonging to a rotating item.

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Chapter Summary

PMs

PMs are the templates Maximo uses to generate PM work orders. You define them in the **Preventive Maintenance** application. PMs use job plans to specify what operations, materials, and tools will be needed on the PM work order.

Generating PM Work Orders

You can generate PM work orders based on a frequency criterion, or you can ignore the frequency criteria. Maximo has two types of frequency criteria: time based and meter based. In this chapter, we used a time-based PM to generate a work order.

PM Work Orders in Work Order Tracking

When a PM work order is generated in the Preventive Maintenance application, Maximo automatically gives it a number for the key. The work order can be viewed in the Work Order Tracking application. The information from the PM and associated job plan is displayed on the work order.

PM Status

PMs have three statuses available:

- Draft – Default status for new PMs created.
- Active – PMs can now be associated with work orders.
- Inactive- Indicates that PMs are not active.

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Chapter Summary continued

Considerations in Creating and Associating Master PMs



Master PM records are accessed in the organization and site levels.

When creating and associating master PMs to a job plan or PM, consider the following points:

- If the PM is associated with a master PM, updates to the master PM record will overwrite changes you made to the PM's frequency. If you want to prevent updates by the master PM, check the **Override Updates from Master PM?** check box on the PM tab (in the Preventive Maintenance application).
- You can associate only a job plan that has no specific organization or site information defined.
- PM records belonging to hierarchies are not allowed to be associated to a master PM.
- Rotating items should belong to a meter group in order to associate PMs to a meter-based master PM.

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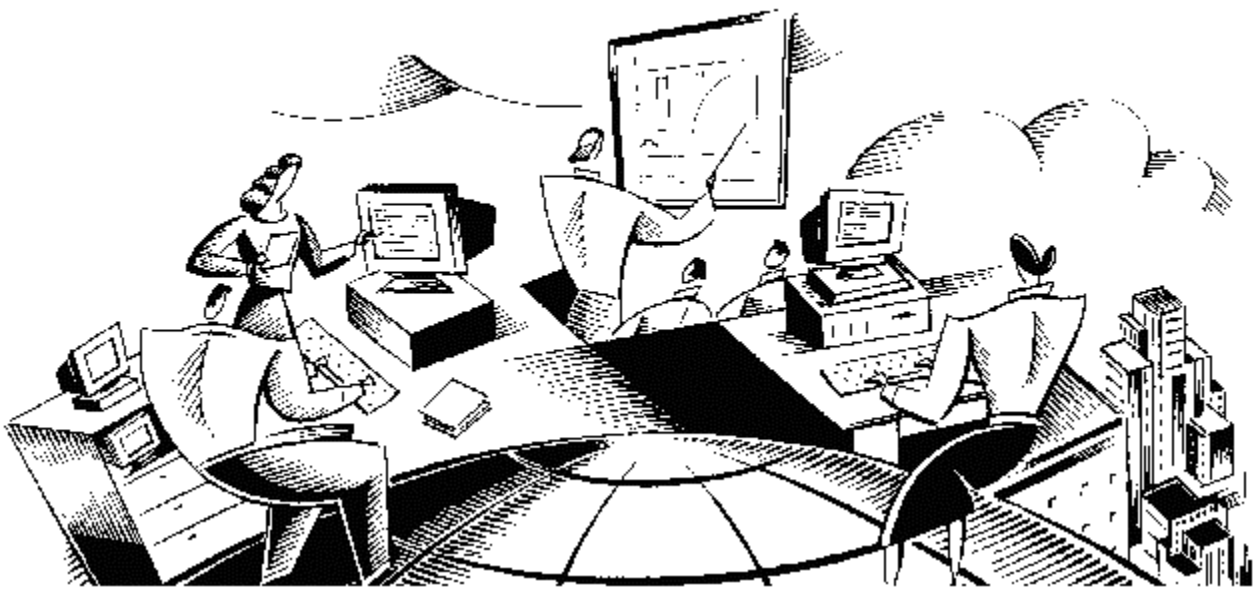
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MXES Immersion Training for EAM

Chapter 9: Proactive Work



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In This Chapter

This chapter contains the following topics:

Topic	See Page
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Generating a Time-Based Work Order	9-7
Planning Work	9-12
Scheduling Work	9-23
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Chapter Overview

Introduction

In this chapter we will focus on generating *proactive work orders*.

Proactive work is defined as a work classification that heads off problems before they occur. Some examples are:

- Work done to prevent an asset, especially critical assets, from failing
- Any PM job
- Work orders initiated by condition (predictive) monitoring when the need is not otherwise readily apparent
- Project works to upgrade an asset

Chapter Focus

In this chapter, based on frequency information that we entered using the PM application in Chapter 8: "Entering Supporting Records for Work Management: Preventive Maintenance," we will focus on PM work orders that are *manually* generated by a user in the system.

We will generate work orders based on the PM records frequency using the Preventive Maintenance application and will process them through the work order lifecycle using the Work Order Tracking application.

Note: There is a cron task—PmWogen Crontask—that can be configured to automate the creation of PM-based work orders.

Learning Objectives

When you have completed this chapter, you should be able to:

- generate a time-based PM work order,
- generate a meter-based PM work order, and
- process a work order through its lifecycle using the Work Order Tracking application.

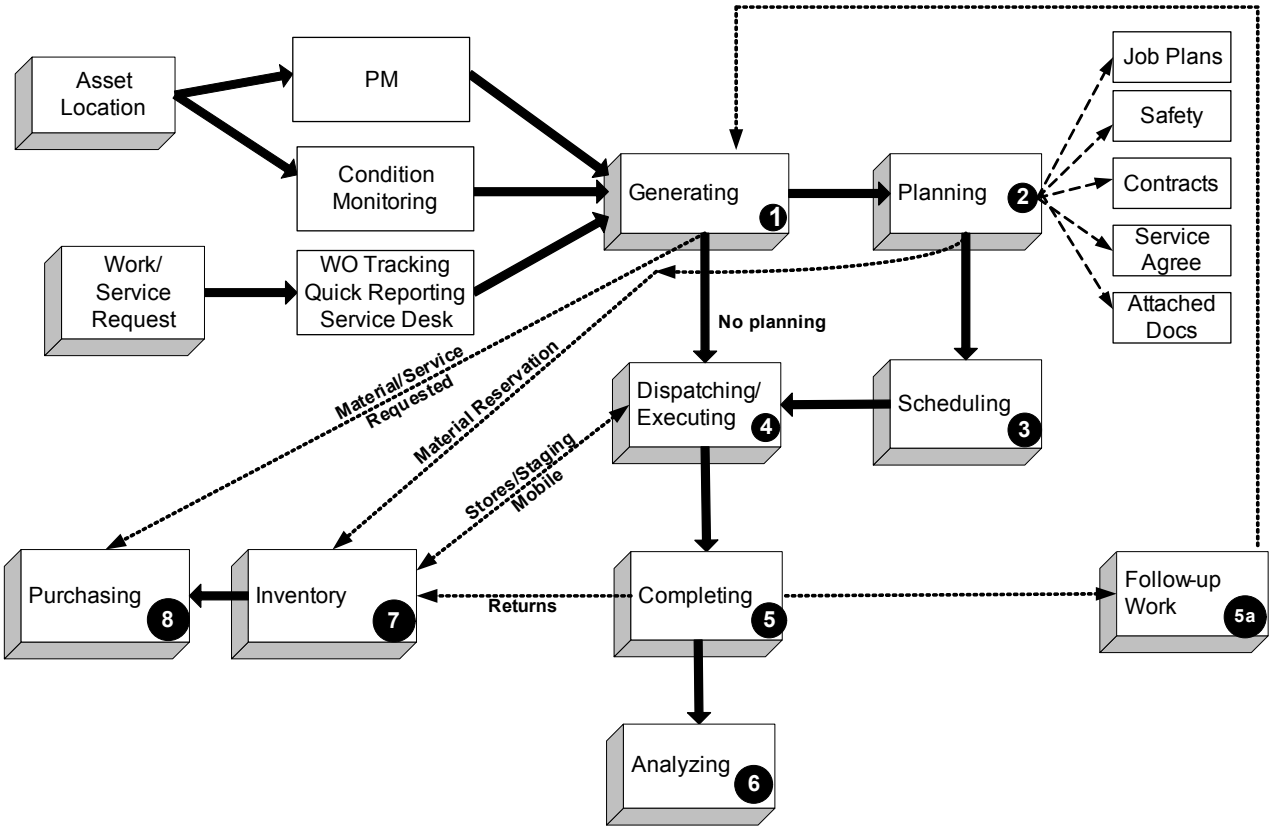
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Chapter Overview continued

Scenario Premise

The premise for this chapter will be to generate work orders from preventive maintenance records. Specifically, we will generate a time-based PM work order for the batch mixer and a meter-based PM work order for a conveyor system, and move through stages 1–7.



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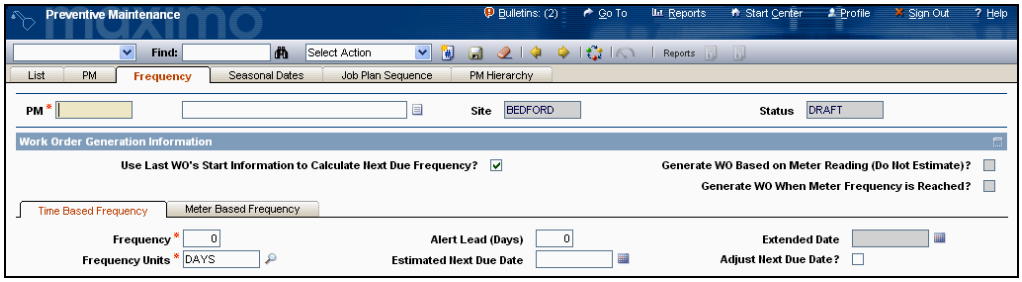
Revisiting the Preventive Maintenance Application

Revisiting the PM Application

Remember that you can use the **Preventive Maintenance** application to build, modify, and view PM records. PM records serve as templates for work orders and for other PMs. In this chapter, based on the frequency data we used to set up PMs, we will use the PM application to *generate* work orders.

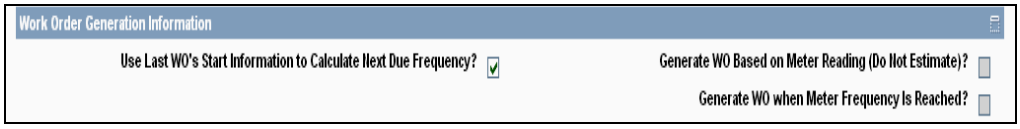
Revisiting the Frequency Tab

Use the **Frequency** tab to schedule frequency criteria for work order generation. Frequency criteria can include time-or meter-based scheduling information.



Work Order Generation Information Section

The **Work Order Generation Information** section contains fields that are used for the generation and scheduling of PM work orders.



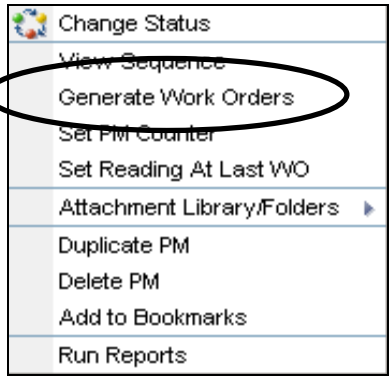
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Revisiting the Preventive Maintenance Application continued

Generate Work Orders Action

There several ways (manual and automatic) to have the system generate a work order. You can generate preventive maintenance (PM) work orders at any time using the **Generate Work Orders** action.





Note: For this course we will be generating work orders exercises using the Generate Work Orders action (manually) from the PM application.

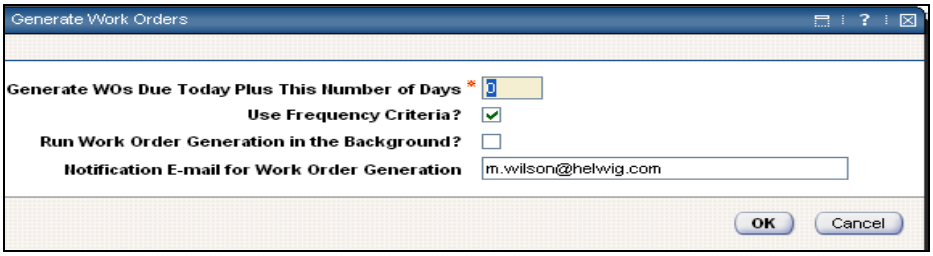
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Revisiting the Preventive Maintenance Application continued

Generate Work Order Dialog Box

If you use the **Generate Work Orders** action, a **Generate Work Orders** dialog box opens. Use this to specify which PM records can generate preventive maintenance work orders.



Option	Description
Generate WOs Due Today Plus This Number of Days	Allows you enter additional "slack" days in advance of their due dates.
Use Frequency Criteria?	Evaluates the frequency criteria for the selected set of records to determine which PMs are due to generate work orders.
Run Work Order Generation in the Background?	Allows you to suppress the display of the Generating Work Order Notification and Display Work Orders generated page.
Notification E-mail for Work Order Generation	Allows to you to enter the e-mail address of the person to be notified about the generated work orders.

Generating PM Work Orders Manually



When manually generating PM work orders using the Select Action menu, the Use Frequency Criteria check box should be *unchecked* in order to override the frequency criteria set to generate PMs for assets or locations.

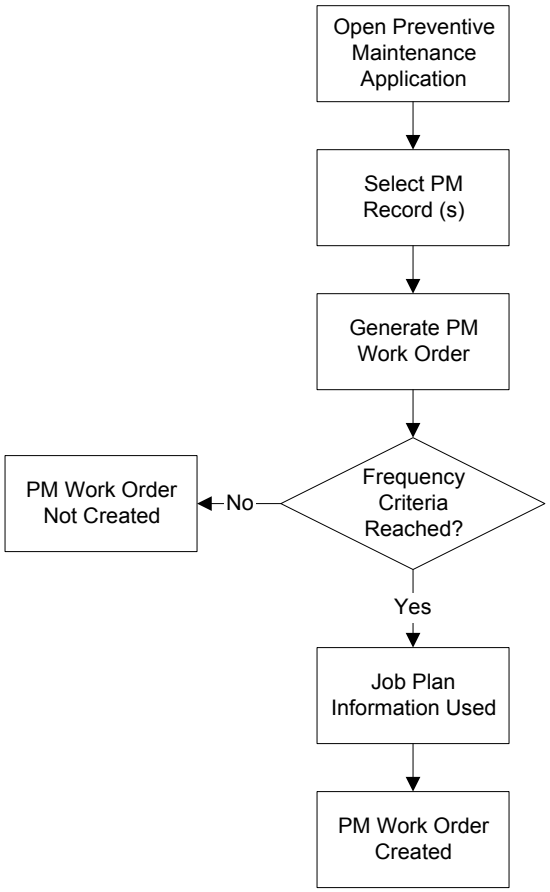
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Revisiting the Preventive Maintenance Application continued

PM Process

For this chapter we will generate PM work orders following this process diagram.

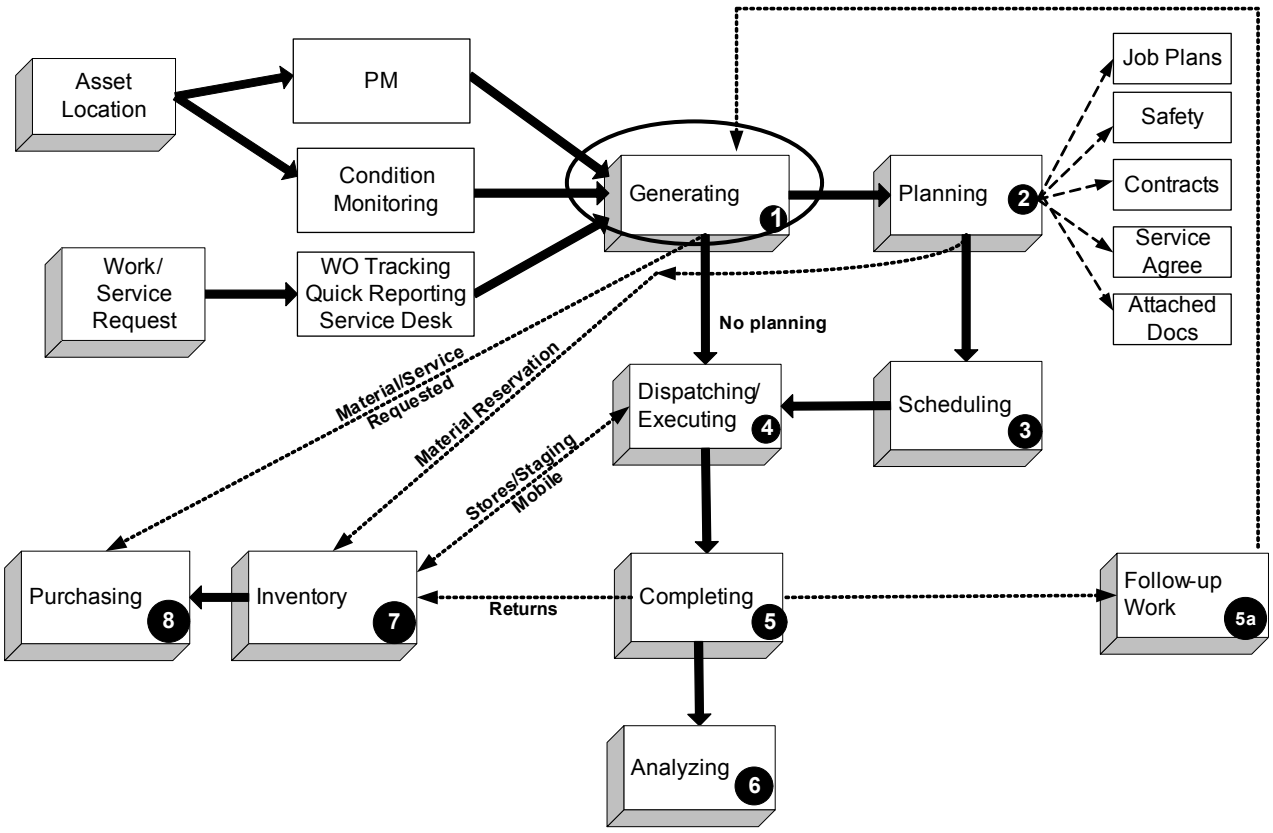


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Generating a Time-Based Work Order

We Are Here: WO Generated

For assets or locations, you can generate work orders and, if necessary, associate job and safety plans.



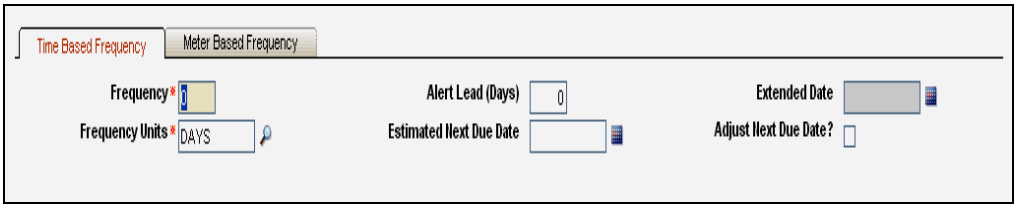
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Generating a Time-Based Work Order continued

Revisiting: PM Application and Time-Based Frequency

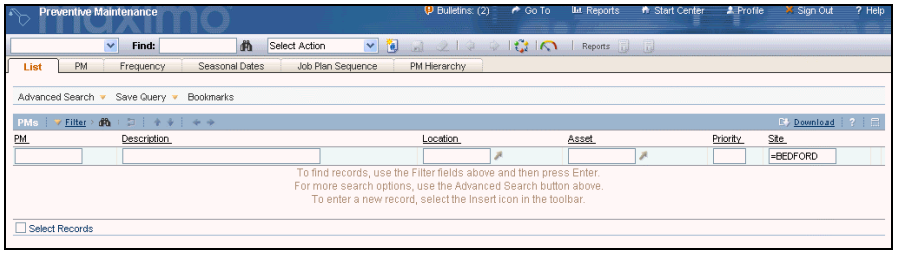
Time-based PM work orders are determined by the length of time indicated on the **Frequency** and the **Estimated Next Due Date** fields in the **Time-based PMs** table window.



Manufacturing Scenario Exercise: Generating a Time-Based PM Work Order

In the following exercise, we will generate a work order for the Batch Mixer PM record based on the time frequency.

Note: In the following exercise we will be using the Maximo automatic numbering system where your work order record results might vary.

Step	Action
1	Access the **Preventive Maintenance** application. Result: The Preventive Maintenance application opens to the List tab. 

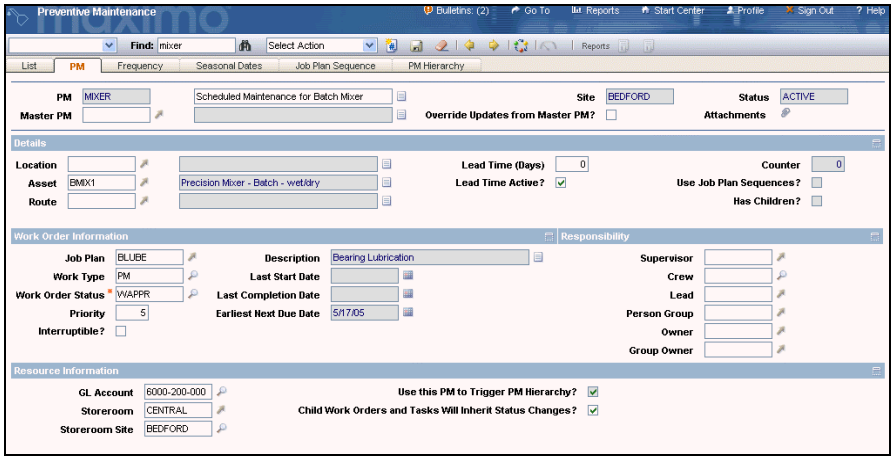
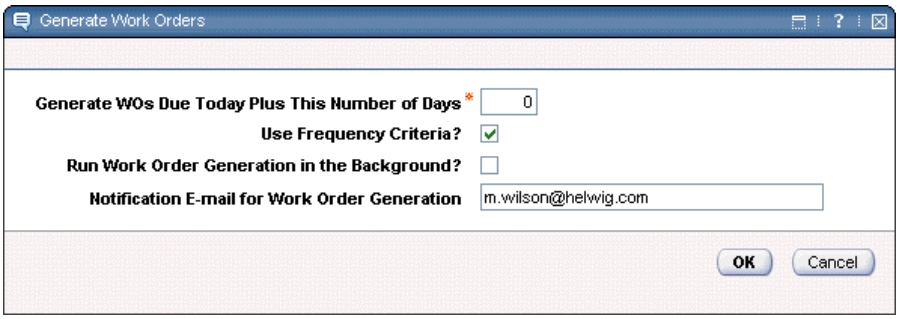
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Generating a Time-Based Work Order continued

Manufacturing Scenario Exercise: Generating a Time-Based PM Work Order

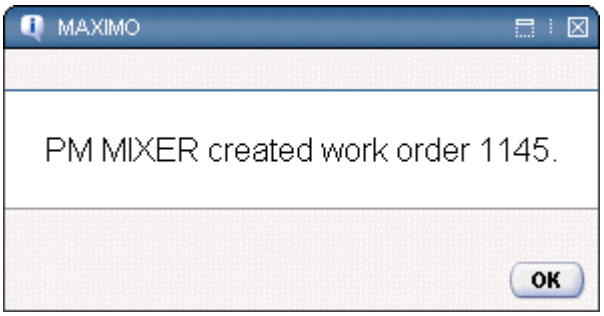
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Step	Action
2	Access the **MIXER** record. Result: Your PM tab screen should look similar to this: 
3	Choose **Generate Work Orders** from the **Select Action** menu. Result: The Generate Work Orders dialog box opens.  Note: PM status should be ACTIVE before you can generate PM work orders.

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Generating a Time-Based Work Order continued

Manufacturing Scenario Exercise: Generating a Time-Based PM Work Order continued

Step	Action
4	**Clear** the **Use Frequency Criteria** check box and click **OK**. Result: After a brief period of time, Maximo displays a message indicating which work orders were created by the PM.  Note: The work order number generated by your setup may vary. Record your work order number on the line below. Work Order: _____ Note: Because we are manually generating a time-based PM work order, leaving the **Use Frequency Criteria?** box checked will not generate a work order if the time-based criteria are not met.
5	Click **OK** to close the message window.

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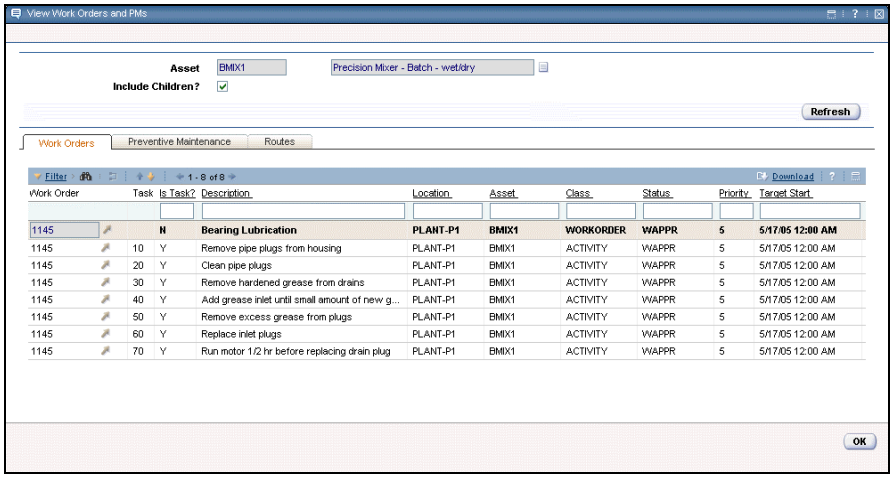
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Generating a Time-Based Work Order continued

Manufacturing Scenario Exercise: Generating a Time-Based PM Work Order

continued

Step	Action
6	Click the **Detail** button for the **Asset** field (on the PM tab) and select **View Work Orders and PMs** from the resulting list. Result: The View Work Orders and PMs dialog box displays the generated work order and its task work orders.
7	Click **OK** to close the View Work Orders and PMs dialog box.



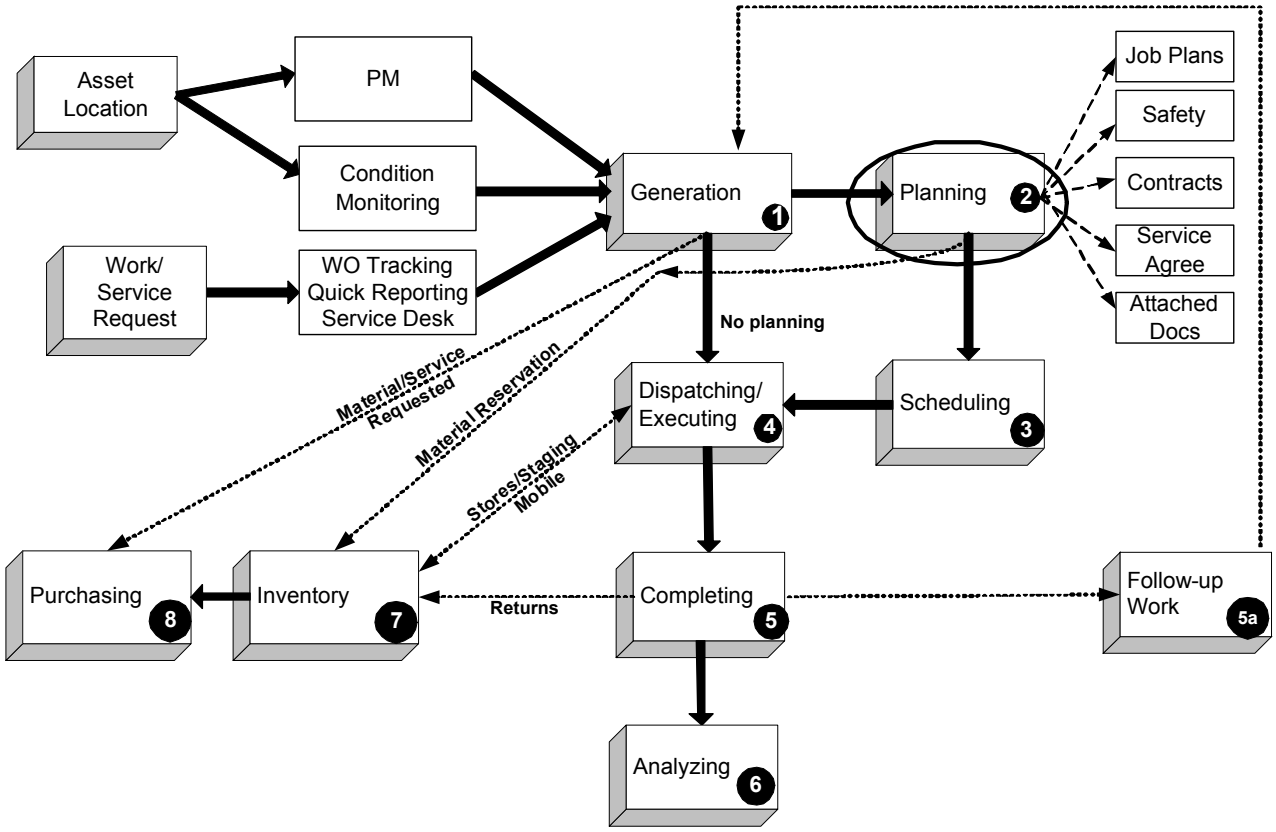
Work Order	Task	Is Task?	Description	Location	Asset	Class	Status	Priority	Target Start
1145		N	Bearing Lubrication	PLANT-P1	BMIX1	WORKORDER	WAPPR	5	5/17/05 12:00 AM
1145	10	Y	Remove pipe plugs from housing	PLANT-P1	BMIX1	ACTIVITY	WAPPR	5	5/17/05 12:00 AM
1145	20	Y	Clean pipe plugs	PLANT-P1	BMIX1	ACTIVITY	WAPPR	5	5/17/05 12:00 AM
1145	30	Y	Remove hardened grease from drains	PLANT-P1	BMIX1	ACTIVITY	WAPPR	5	5/17/05 12:00 AM
1145	40	Y	Add grease inlet until small amount of new g...	PLANT-P1	BMIX1	ACTIVITY	WAPPR	5	5/17/05 12:00 AM
1145	50	Y	Remove excess grease from plugs	PLANT-P1	BMIX1	ACTIVITY	WAPPR	5	5/17/05 12:00 AM
1145	60	Y	Replace inlet plugs	PLANT-P1	BMIX1	ACTIVITY	WAPPR	5	5/17/05 12:00 AM
1145	70	Y	Run motor 1/2 hr before replacing drain plug	PLANT-P1	BMIX1	ACTIVITY	WAPPR	5	5/17/05 12:00 AM

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Planning Work

We Are Here: Work Planned

Work plans, related service contracts, and safety information can be associated to a work order. When a job plan or work plan is used with a work order and the work order is then approved, the planned materials are put on inventory reserve.



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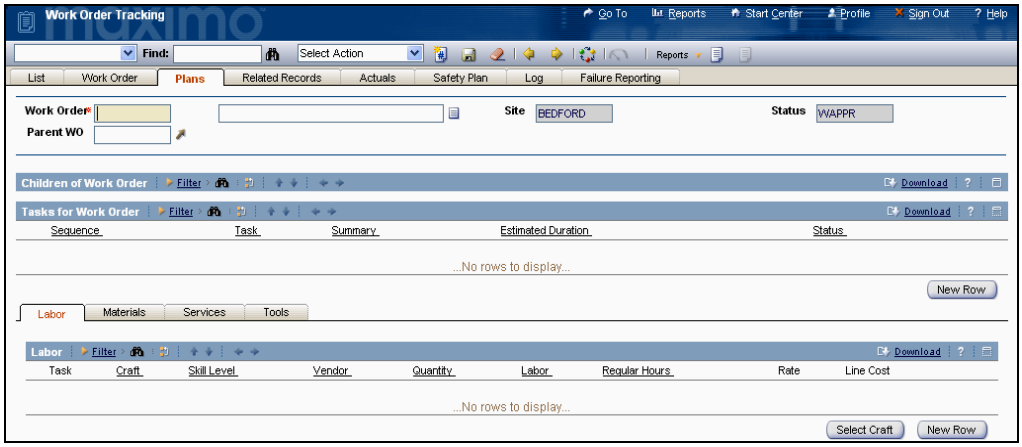
Planning Work continued

Revisiting Work Order Tracking Application: Plans Tab

As we know, a work plan describes the procedures, labor, materials, services, and tools for a work order. When in an approved status (APPR, WSCH), replacement parts (materials) are reserved in the Storeroom (Parts room).

In Maximo, there are three ways to create a work plan:

- Enter work plan data in the table windows of the **Plans** tab of a work order.
- Associate a previously defined job plan. Maximo adds a copy of the job plan, now called a work plan, to the **Plans** tab of the work order.
- Associate a job plan with the work order, then modify data to that work plan's requirements. Changes you make to the work plan do not affect the original job plan.



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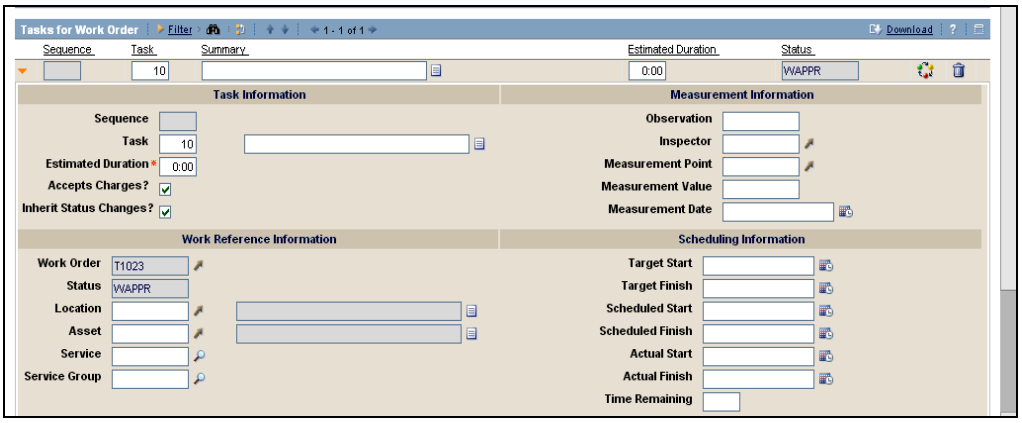
Planning Work continued

Building/ Modifying a Work Plan

While the work order is in the WAPPR status, you can build a work plan or make modifications to it.

- To add tasks, labor, services, materials, or tools, click the **New Row** button in the **Tasks for Work Order** section.





- To modify a row, click the row's **View Details** button to expand that row into the **Details** window, where you can make the changes.



- To delete a row, click the **Mark Row for Deletion** icon.



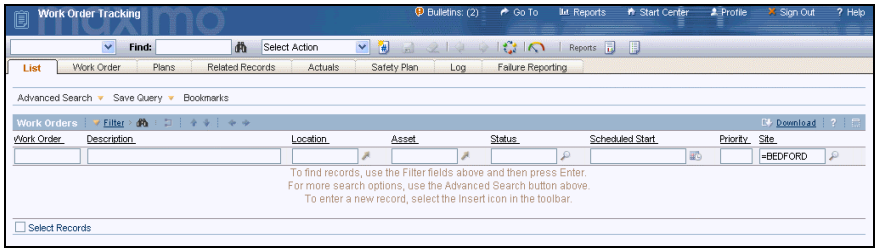
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Planning Work continued

Viewing the Work Plan Information

In the following exercise we will view the job plan information that was carried over to the work plan, as well as reservations made into the storeroom.

Note: Depending on the Maximo automatic numbering function, work order ID records might vary for each user.

Step	Action
1	From the **Work Orders** module, access the **Work Order Tracking** application. Result: The Work Order Tracking application opens at the List tab. 

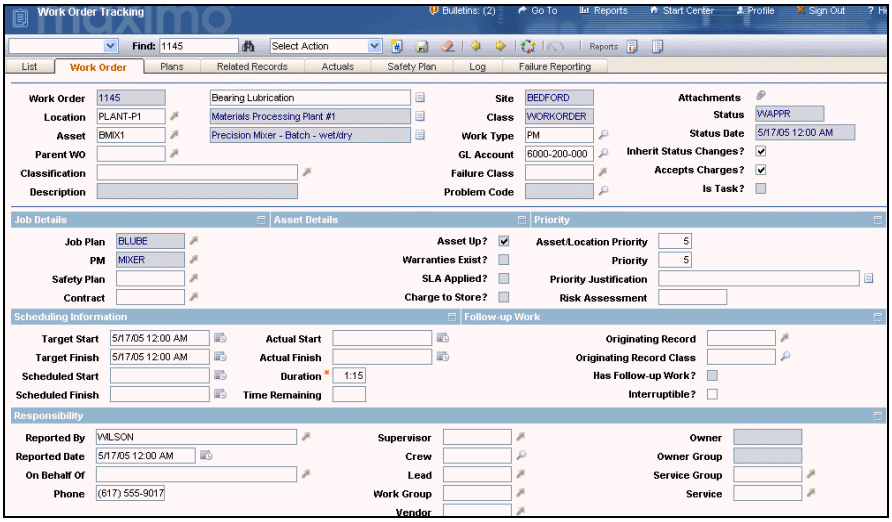
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Planning Work continued

Viewing the Work Plan Information

continued

Step	Action
2	Access the work order created in the previous exercise. Result: Your screen should look similar to the graphic below.  Note: Notice that information set up on the PM record has carried over and includes the priority information.

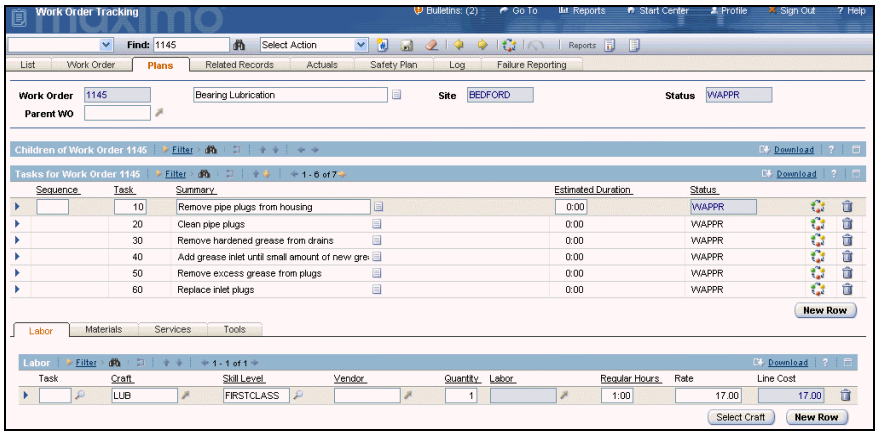
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Planning Work continued

Viewing the Work Plan Information

continued

Step	Action
3	Access the **Plans** tab. Result: Notice that job plan information set up on the PM record has carried over to the work order. These lines are editable.

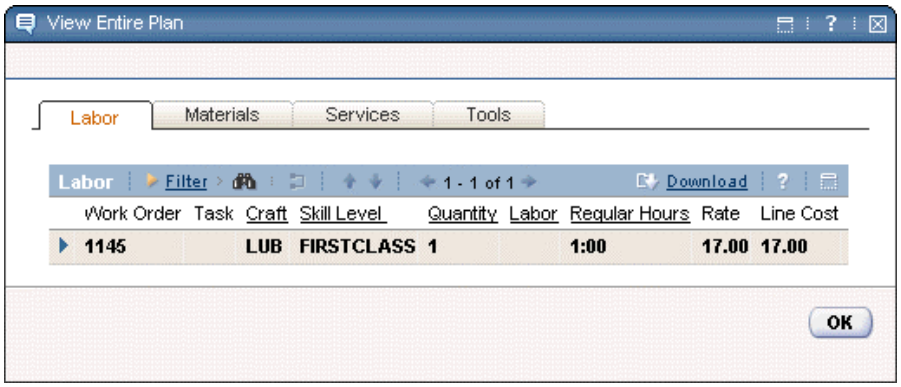


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Planning Work continued

Viewing the Work Plan Information continued

Step	Action
4	From the **Select Action** menu, choose **View >> Entire Plan**. Result: The View Entire Plan dialog box displays the subtabs for the plan on this work order.  Note: You can click on the tabs to view all work plan resource components (materials, services, tools).
5	Click **OK** to close the **View Entire Plan** dialog box.

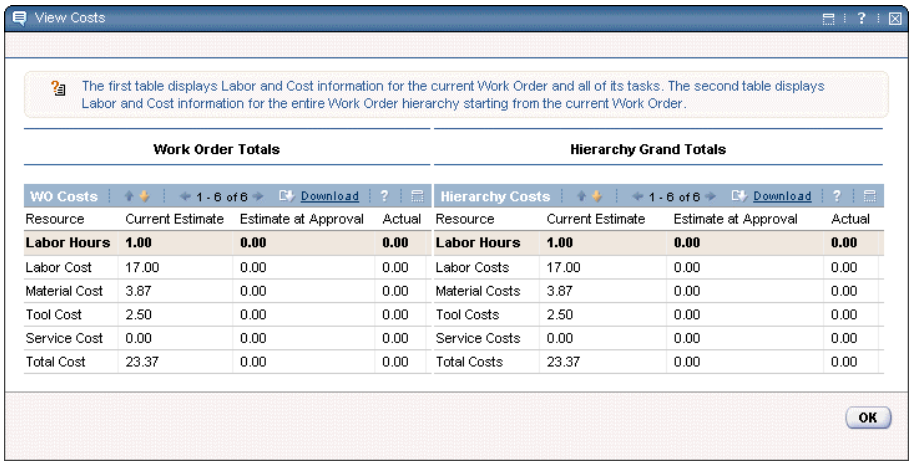
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Planning Work continued

Viewing the Work Plan Information

continued

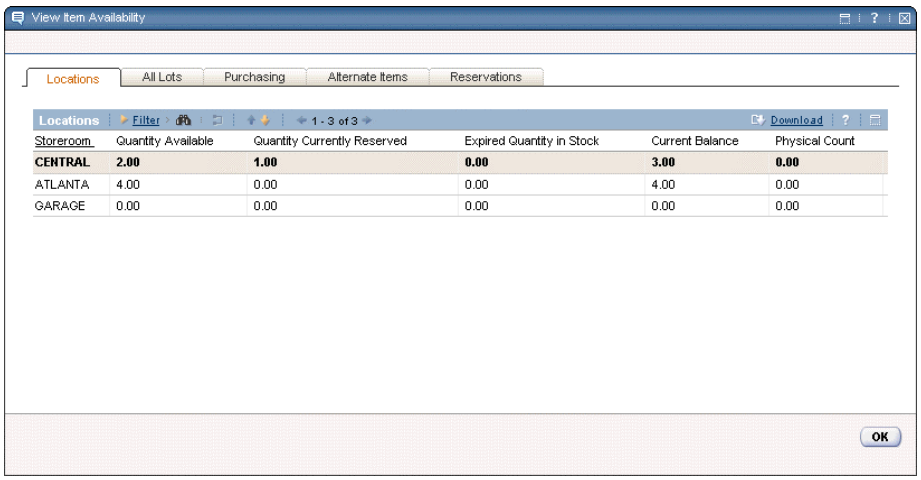
Step	Action
6	From the **Select Action** menu, choose **View >> Costs**. Result: The View Costs dialog box displays the estimated costs of the work order.  Note: A description of the elements of this dialog box is on page 9-21.
7	Click **OK** to close the **View Costs** dialog box.
8	Access the **Materials** subtab.

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Planning Work continued

Viewing the Work Plan Information continued

Step	Action
9	Click the **Detail Menu** button for item **900810**, then select **View Item Availability** from the resulting list. Result: The View Item Availability dialog box shows how much of the item is available and from which storerooms it is available. 
10	Click **OK** to close the **View Item Availability** dialog box. Note: The next exercise begins from this point.

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Planning Work continued

Details for View Costs Dialog Box

The View Costs dialog box has two sections:

- Work Order Totals
- Hierarchy Grand Totals

Work Order Totals Table

Current Estimate

The calculated values in the Current Estimate column show current totals from the Labor, Materials, Services, and Tools subtabs of the Plans tab.

Estimate at Approval

The calculated values in the Estimate at Approval columns are set to zero until the work order is approved. When the work order is approved, Maximo copies values for these fields from the Current Estimate column and they become read-only.

Actual

The calculated values in the Actual column show totals from the Labor (approved labor only), Materials, Services, and Tools subtabs of the Actuals tab. These fields are read-only.

Hierarchy Grand Totals Table

This table shows the **Current Estimate, Estimate at Approval,** and **Actual** hours and costs for a work order and all work orders below it in a hierarchy.

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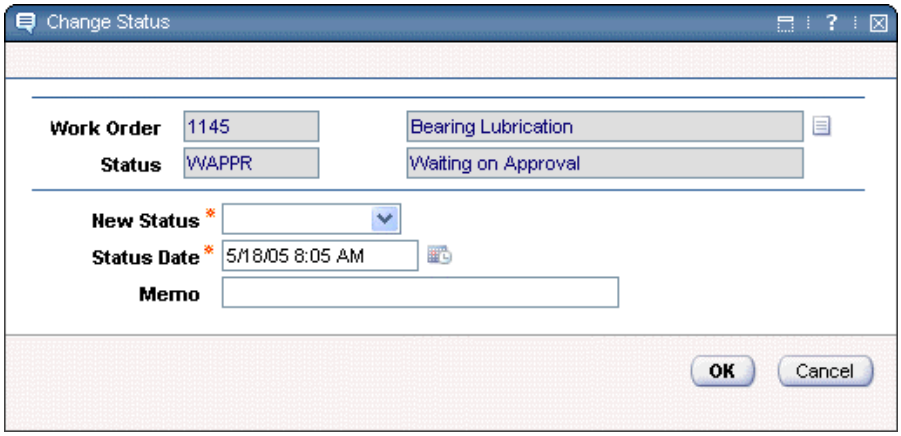
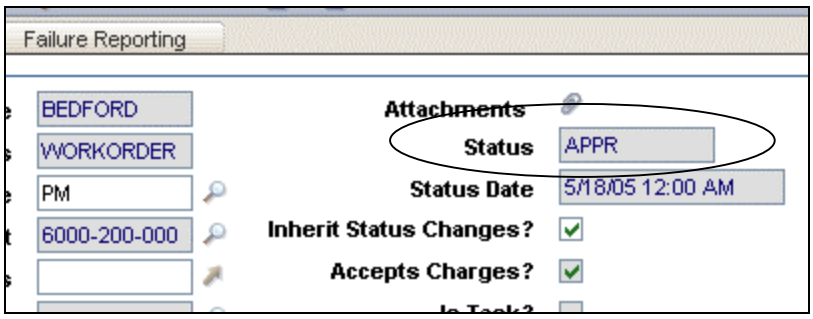
Planning Work continued

Approve the Work Order

For our example, we indicated on the PM that the work order should be created with a status of WAPPR.

To make the materials reservations and to enable actuals to be added later on, the work order needs to be approved (APPR).

Follow the steps below to approve the work order.

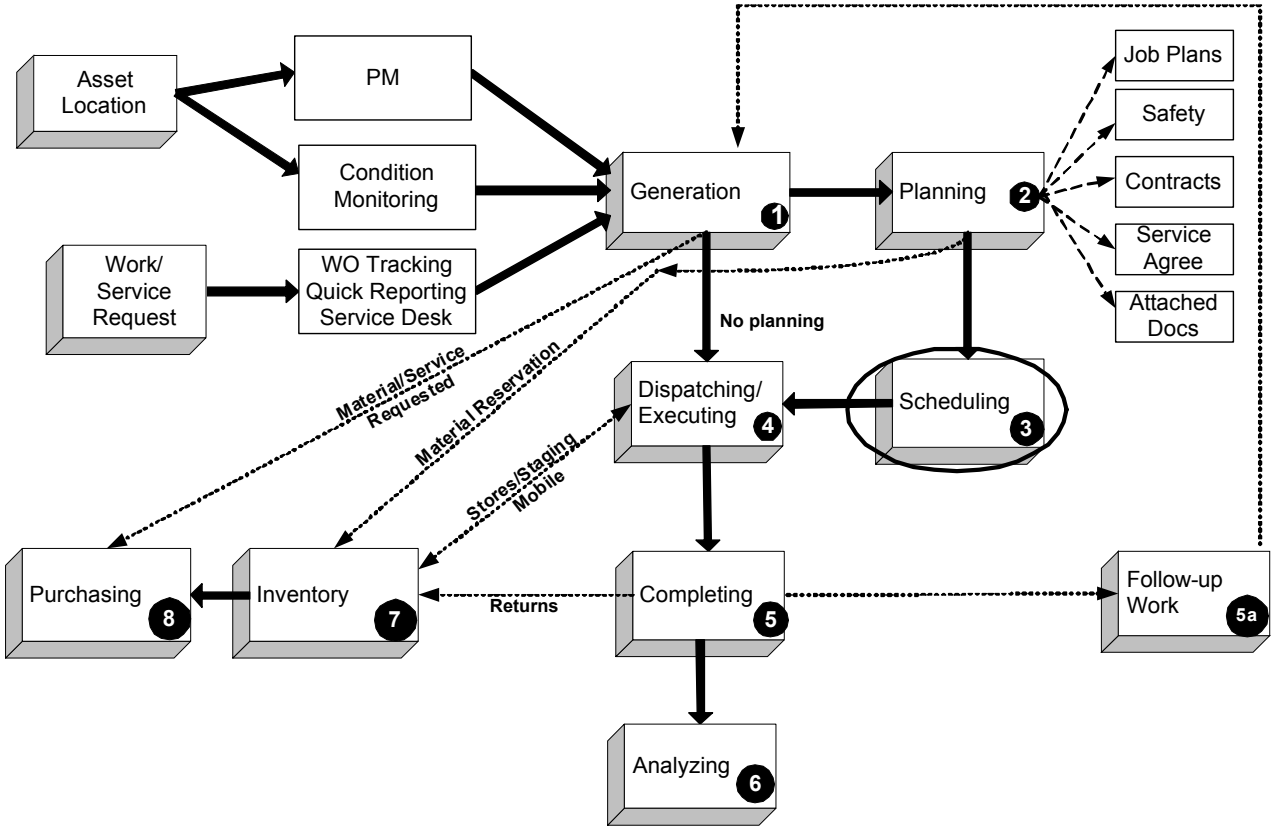
Step	Action
1	Ensure that you have accessed the work order from the previous exercise.
2	Click the **Change Status** icon. Result: The Change Status dialog box opens. 
3	Select **Approved** from the **New Status** drop-down list, then click **OK**. Result: Your work order is approved and ready for the next steps in the process. 

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Scheduling Work

We Are Here: Scheduling Work

Scheduling data drawn from the Scheduling Information table window in the Work Order Tracking application is used by a project scheduling application, such as the Assignment Manager application. Backlog is ranked based on priority, with the highest priority work being done first, and work is scheduled.



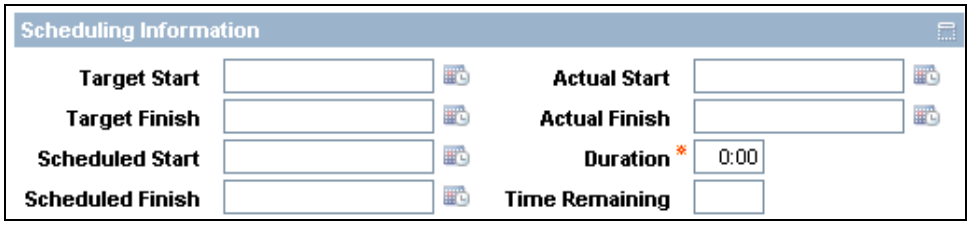
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Scheduling Work continued

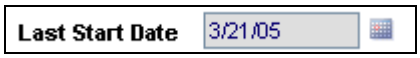
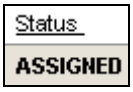
Revisiting the Work Order Tracking Tab

The **Scheduling Information** section on the **Work Order Tracking** application is used by a project scheduling application, such as Maximo Assignment Manager, to schedule work orders.



Field Definitions

The table below describes the fields in the Scheduling Information section.

Field	Description	Comments
Target Start	Assign dates for when the work order should be done.	Date is pulled from the Preventive Maintenance application, **Last Start Date** field. 
Target Finish	Target Start incremented by the Duration hours	Duration hours come from the Work Order application **Duration** field. Time is either manually entered or comes from the current job plan duration. 
Scheduled Start	Assign dates for when the work can get done.	Can be a manual input or a date from the Assignment Manager application, when labor is assigned (Status = ASSIGNED) to a work order with a scheduled work date. 
Scheduled Finish	Scheduled Start incremented by the Duration hours	Duration hours come from the Work Order application **Duration** field. Time is either manually entered or comes from the current job plan duration. 

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Scheduling Work continued

Field Definitions continued

Field	Description	Comments
Actual Start	Post actual dates on which the work was started	Dates come from the work order In-Progress status (INPRG). When the first work assignment against a work order in Assignment Manager is started (i.e., Status = STARTED),  the work order status in the work order tracking application will change to INPRG. 
Actual Finish	Post actual dates on which the work was completed or closed.	Dates come from the work order Complete (COMP) or Close (CLOSE) status. When the last work assignment against a work order in Assignment Manager is completed (i.e., Status = COMPLETE),  the work order status in the work order tracking application will change to COMP  or CLOSE (depends on how Assignment Manager is set up). 

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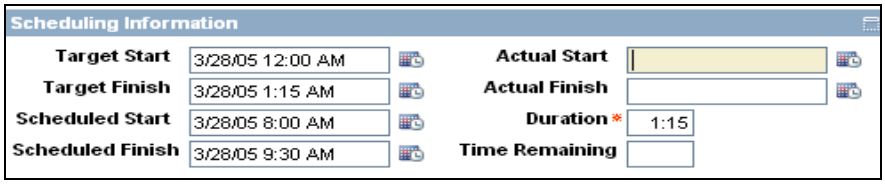
Scheduling Work continued

Scheduling the Work Order



In the following exercise we will use the **Work Order Tracking** application and schedule this job for today.

Note: Normally the work would be ranked and backlogged, and then scheduled for the following week.

Step	Action
1	On the **Work Order** tab, **Scheduling Information** section, **Scheduled Start** field, enter today's date with a time of 8:00 am. In the **Scheduled Finish** field, enter today's date with a time of 9:30 am.
2	**Save** the record. Result: The Scheduling Information table window should be similar to the one shown below.  Note: The next exercise begins at this point.

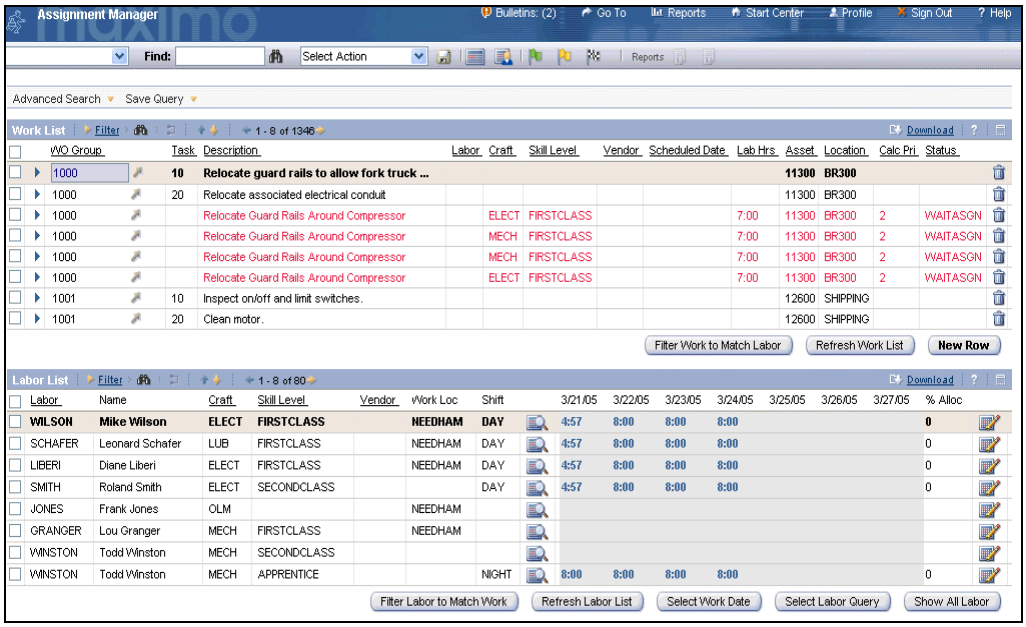
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The Assignment Manager Application

Revisiting the Assignment Manager Application

The **Assignment Manager** application allows you to assign labor requirements from work orders; plan future work; start, interrupt, and finish assignments; and modify a laborer's availability.

Use the Assignment Manager application for planning future work over a seven-day period, or to dispatch available labor to requirements for the current day's work. Workers can also use Assignment Manager to assign themselves to work.



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The Assignment Manager Application continued

Considerations: Orgs/Sites



Work orders and labor transactions are managed at the site level. However, when assigning labor to work orders, you should remember that labor records are at the organization level. If your company has laborers who work at more than one site, you can assign them work at any site within their organization.

Considerations: Calendars



In order to most effectively view and manage labor records in the Assignment Manager application, labor records should include a value in their **Calendar** and **Shift** fields.

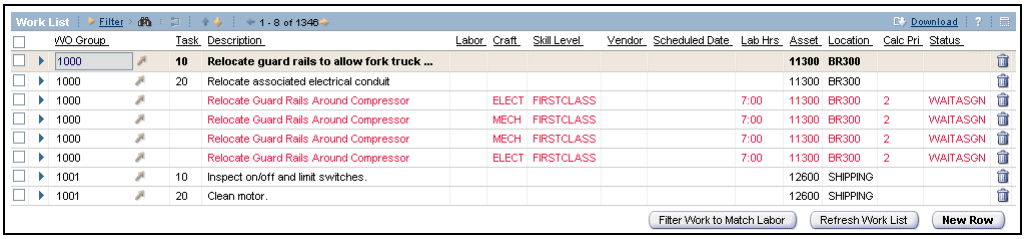
Assignment Manager Sections

The Assignment Manager has two sections:

- Work List section
- Labor List section

Work List Section

The **Work List** section displays the requirements that Maximo automatically creates from a work order's work plan, plus any "unplanned" work orders. You also can add new requirements to the work list on the Assignment Manager page via the **New Row** button.



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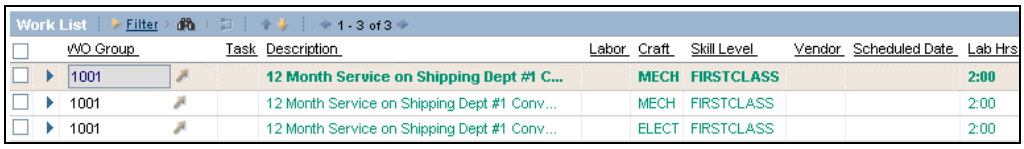
The Assignment Manager Application continued

Work Orders and a Work Group

Maximo generates the assignments that you see in the Assignment Manager application from information that has been entered into a work order. When a work plan is created for a work order, Maximo creates an assignment for *each* labor or craft requirement listed on the work plan.

For example, if two mechanics are required to do a task, two requirements are created. Similarly, if two different crafts are required for a task, Maximo creates a requirement for each craft.

The Work Group column represents the relationship of the individual assignment to the work order.



If a work order does not have a defined work plan, Maximo still creates a requirement, where no craft or labor is indicated. You can still assign the requirement to an appropriate laborer. When the requirement is not assigned, Maximo enters a default duration of one hour, which can then be modified as needed.

Work List Priority Colors

To facilitate dispatching, the work list is color coded to display work requirements by priority.



Note: By default, Maximo uses a range of five priorities when color coding work requirements. Your system administrator can tailor the color choices and priority ranges to fit your business needs.

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The Assignment Manager Application continued

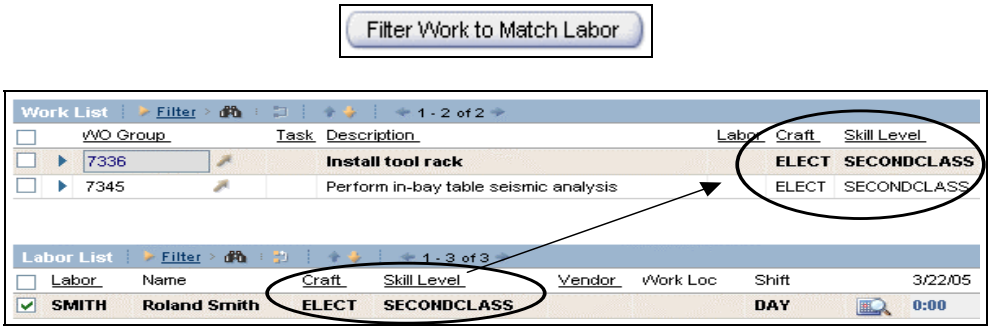
Assignment Statuses

The work assignments have six possible status actions.

Status	Description
Waiting for Assignment (WAITASGN)	Indicates that craft or labor was part of the work plan and is waiting for a labor assignment to be made.
Assigned (ASSIGNED)	Indicates that someone has assigned the work requirement to a laborer. If you delete the labor code for this assignment, the status reverts to WAITASGN.
Started (STARTED)	Indicates that the laborer has begun work on that assignment.
Interrupt (INTERRUPT)	Indicates that an assignment that a laborer had started but was interrupted before the work was completed.
Complete (COMPLETE)	Indicates that the laborer finished the work assignment.
Blank	An empty Status field. This type of requirement comes from an unplanned work order. After you assign the requirement to a laborer, Maximo creates a new assignment with an ASSIGNED status.

Filtering Work to Match Labor

When assigning labor to work, you can filter the work list to match the crafts, skill levels, vendors, contracts, and organizations on selected requirements to the crafts, skill levels, vendors, contracts, and organizations of the labor.



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The Assignment Manager Application continued

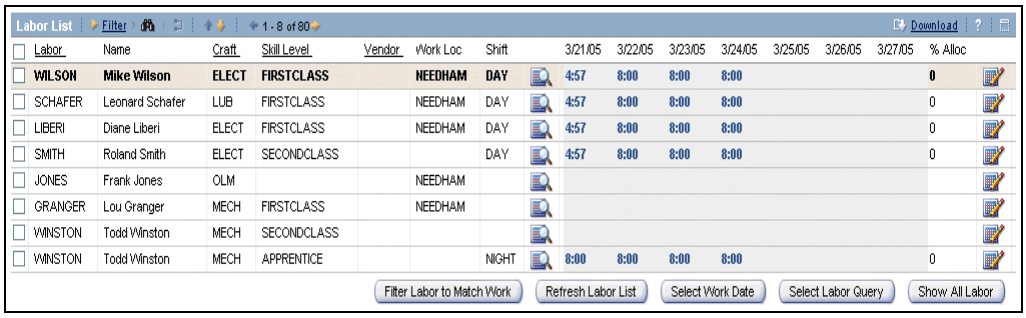
Refresh Work List

Use **Refresh Work List** to remove the filter options and redisplay the labor that matches the current query.



Labor List Section

The **Labor List** section displays either all labor in the database, or a filtered list of available labor codes, depending on whether someone selects a default labor query in the Labor application. To schedule labor codes, the labor record must have both a calendar and a shift specified on the labor record in the Labor application.



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The Assignment Manager Application continued

Colors in the Labor List Fields

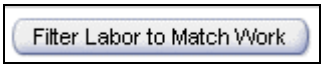
To facilitate assigning work to labor, the labor list is color coded using the following colors to indicate how a laborer's time has been scheduled:

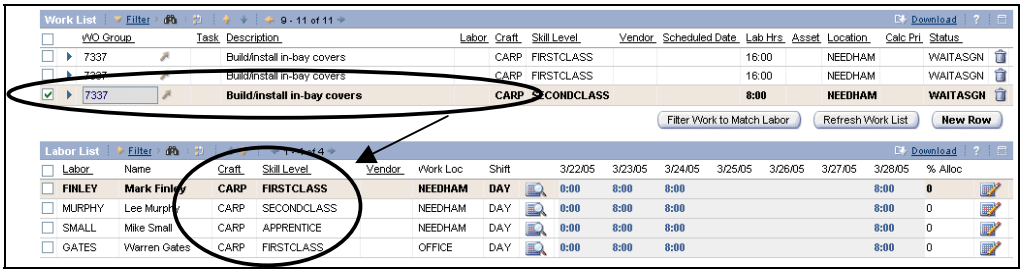
Color	Labor Hour Utilization
Red	Less than 50% utilized
Yellow	From 50-80% utilized
Green	More than 80% utilized

Note: Your system administrator can tailor the color choices to fit your business needs.

Filtering Labor to Match Work

When assigning labor to work orders, you can filter the Labor List table according to the crafts, skill levels, vendors, contracts, and organizations on selected work order requirements





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Scheduling Work Assignments

Assigning Work to Laborer

After you have selected one or more requirements from the Work List,



there are three ways to assign the work to a laborer:

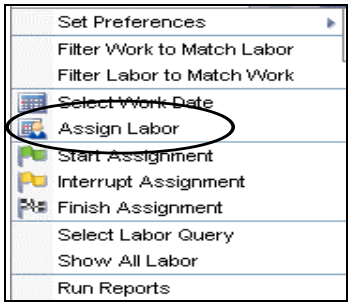
- Click on the date with available hours in the laborer's calendar in the Labor List.



- Click on the labor code, then click **Assign Labor** button in the toolbar.



- Click on the labor code, then select **Assign Labor** from the Select Action menu.



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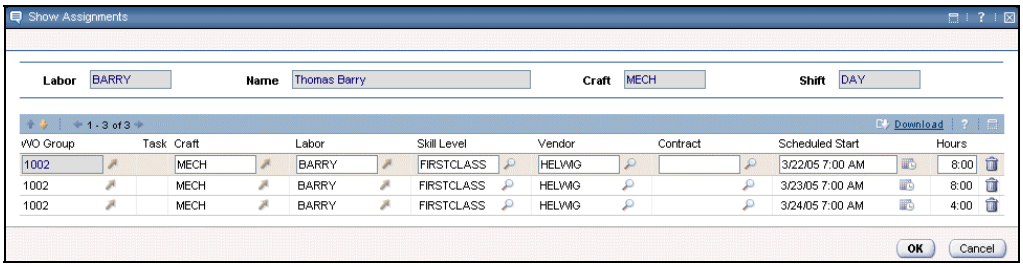
Scheduling Work Assignments continued

Viewing Worker Assignments

You can view work assigned to a laborer by clicking the **Show Assignments** button for the labor code.



The **Show Assignments** page displays work assigned to the laborer over the seven-day range currently displayed in the Labor List calendar grid.



From the **Show Assignments** page you can:

- reschedule an assignment by changing the Scheduled Date;
- reassign an assignment by changing the Labor Code;
- un-assign the assignment by clearing the Labor Code; or
- delete the assignment from the laborer using the **Mark for Delete** button.

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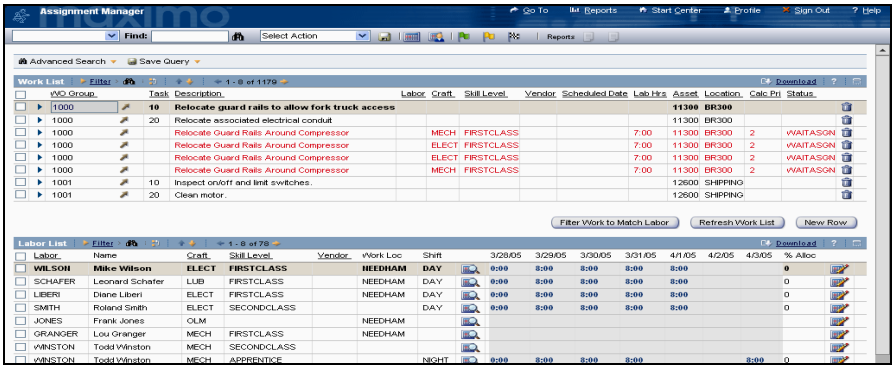
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Scheduling Work Assignments continued

Exercise Scenario: Scheduling Work Assignments

In the following exercise we will assign Leonard Schafer, a first-class lubricator, to lubricate the bearings for asset BMIX using the Assign Labor icon.

Step	Action
1	From the **Work Orders** module, select **Assignment Manager**. Result: The Assignment Manager page opens.



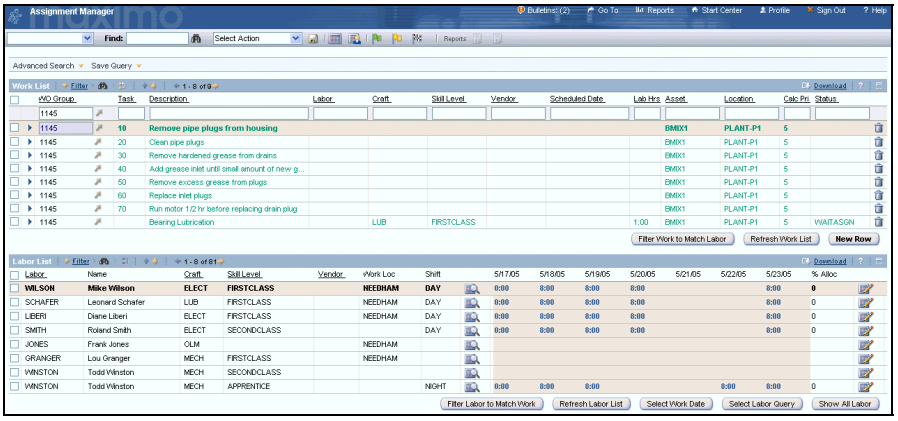
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Scheduling Work Assignments continued

Exercise Scenario: Scheduling Work Assignments

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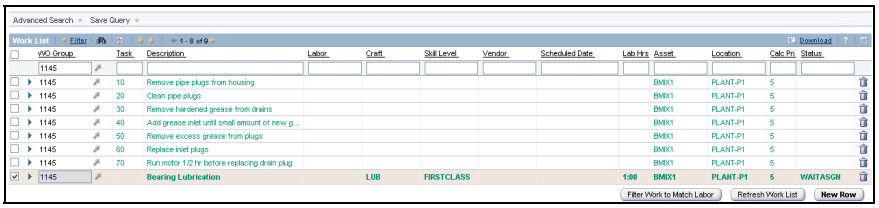
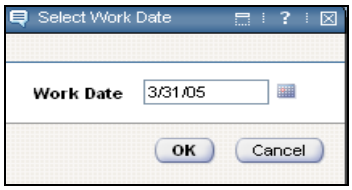
Step	Action
2	Using the **Open Filter** icon in the **Work List** section, **WO Group** table, search for and retrieve the work order record we have created in the previous exercises. Result: The work order record appears with its task work orders. 

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Scheduling Work Assignments continued

Exercise Scenario: Scheduling Work Assignments

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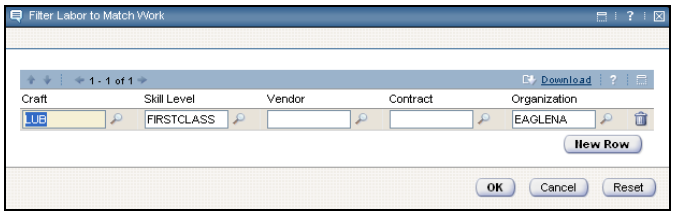
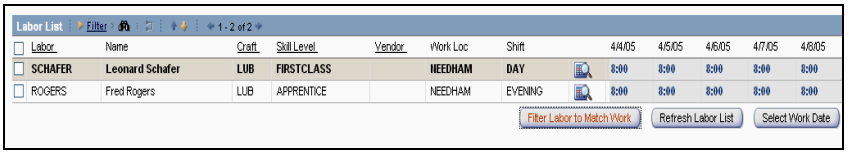
Step	Action
3	Select the check box for the **Bearing Lubrication** record. Result: The Bearing Lubrication select record check box is checked. 
4	From the Toolbar, click the **Select Work Date** button.  Result: The Select Work Date window opens. 
5	Enter a date for the following Monday and then click **OK**. Result: The calendar grid starts with the date you selected. 

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Scheduling Work Assignments continued

Exercise Scenario: Scheduling Work Assignments continued

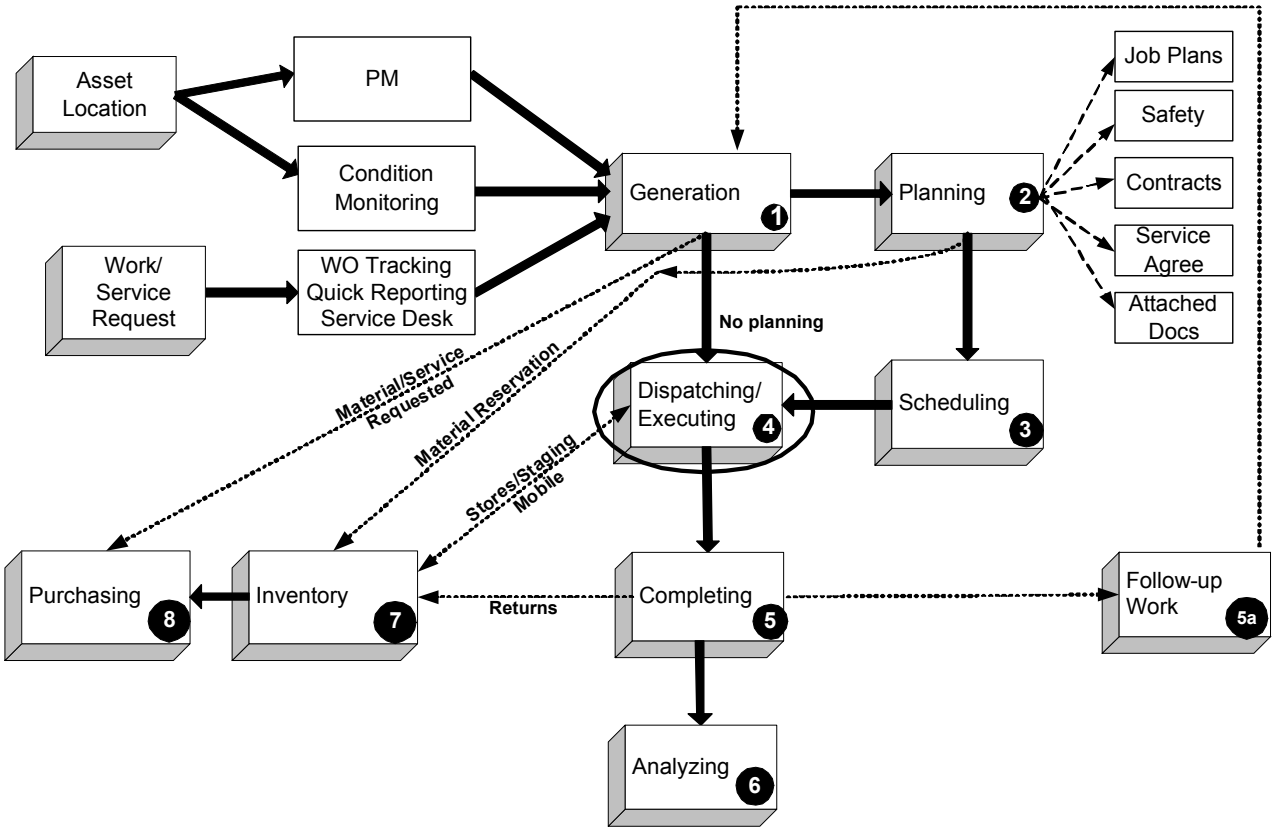
Step	Action
6	In the **Labor List**, click the **Filter Labor to Match Work** button.  Result: The Filter Labor to Match Work window opens. 
7	Click **OK**. Result: Your Labor List should look like this: 
8	Select **SCHAFER** by checking the **Select Record** check box on that line.
9	Click on the **Assign Labor** icon.  Result: Leonard Schafer is assigned to the work.
10	**Save** the assignment. Result: The assignment is saved in Maximo.

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Executing Work

We Are Here: Material Issued/Drawn

Staff picks up materials from the storeroom, warehouse, or staging; or, if it is an open storeroom, materials are drawn by the staff. If materials are issued by a storeroom, materials can be issued using the Issues and Transfers application. Physical work then begins.



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Executing Work continued

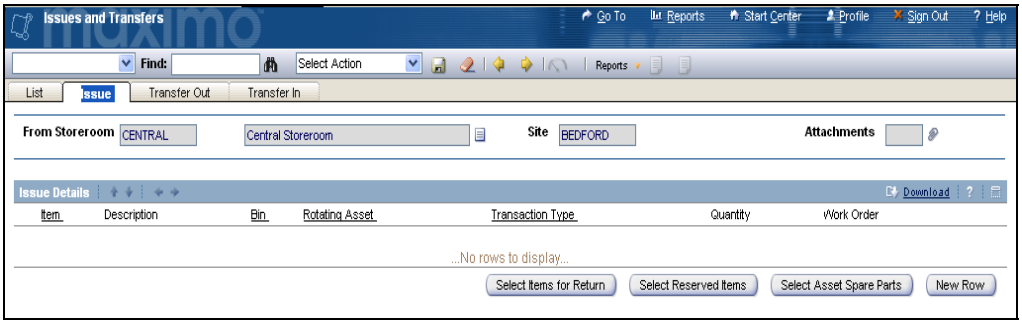
Introducing the Issues/Transfers Application from the Inventory Module

Use the **Issues and Transfers** application from the **Inventory** module to issue or transfer stock items from existing locations.

You can issue items directly to a work order, location, or asset, or against a general ledger (GL) account code.

When items are issued to a work order, the items are moved from the storeroom to the work order.

You can also transfer items from one storeroom location to another or from one site to another; Maximo adjusts balances accordingly.



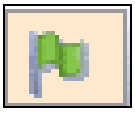
Dispatching and Executing

In Maximo, there are two ways to indicate that the physical work has begun with an INPRG status. You can:

- Manually change the status in the Work Order Tracking or Quick Reporting application by clicking the **Change Status** button.



- Start a work assignment in the Assignment Manager application by clicking the **Start Assignment** button.



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Executing Work continued

Dispatch Function Overview

After a requirement has been assigned to a laborer, you can use Assignment Manager's application dispatch functions to indicate when work on the assignment has started, been interrupted, or has been finished.

The procedures for dispatching work are similar to those for planning future work, but the work is assigned to the current shift (by default, the first date in the calendar grid) rather than to future shifts.

Dispatch	Description
Start Assignment 	Use the Start Assignment action to indicate that work has been started on an assignment. By default, Maximo will begin recording labor actuals for an assignment after its status has been changed to STARTED.
Interrupt Assignment 	Use the Interrupt Assignment action when an assignment with a status of STARTED needs to be stopped for any reason. When you interrupt an assignment, Maximo logs a labor transaction for the completed portion of the work, then modifies the assignment, assigning a status of INTERPT to the remaining work hours.
Finish Assignment 	Use the Finish Assignment action to indicate that work on an assignment has been completed. Maximo stops recording labor actuals after an assignment's status is changed to COMPLETE. Assignment statuses are linked to the work order that contains the work requirement. When the *last* assignment for a work order has been completed, Maximo changes the status of the work order to COMP or CLOSE.

Notes



Assignment Manager starts the labor time clock for an assignment as soon as you click the **Start Assignment** button. You can start an assignment only if it has a status of Assigned.

If a work order currently has a status of INPRG, you can still start the assignment and record the labor of the labor transaction. While the status of the assignment will change to Start, there will be no effect on the work order Actual Start time.

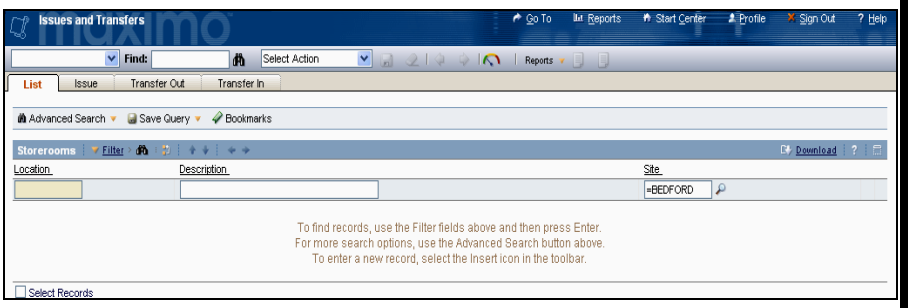
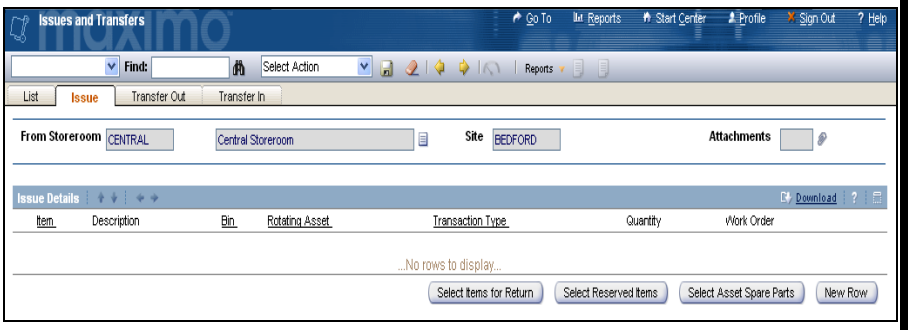
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Executing Work continued

Exercise Scenario: Issuing Items

In this exercise we will issue items from the CENTRAL storeroom to the Bearing Lubrication work order.

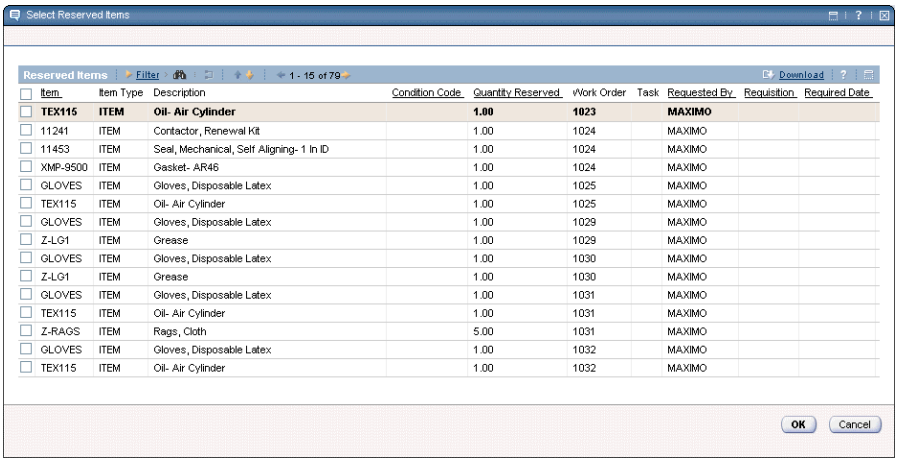
Step	Action
1	Access the **Issues and Transfers** application from the **Inventory** module. Result: The Issues and Transfers application opens to the List tab. 
2	Search for and retrieve the **Central** storeroom in the **BEDFORD** site. Result: Maximo displays the Central storeroom information for the designated site.  Note: Because storerooms can have the same name in multiple sites, it is important to query for the appropriate site as well.

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Executing Work continued

Exercise Scenario: Issuing Items

continued

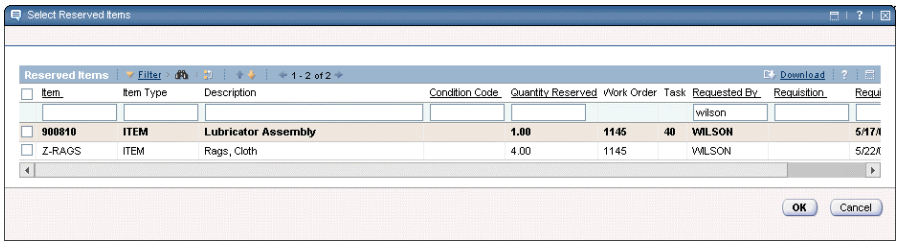
Step	Action
3	Click **Select Reserved Items**.  Result: The Select Reserved Items dialog box opens.  Note: On the Actuals tab of individual work order records, you will also find a Select Reserved Items button. From this location, you can directly access the reserved items for that specific work order and select them as actuals.

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Executing Work continued

Exercise Scenario: Issuing Items continued

Step	Action
4	To refine our search list to only those items for the Batch Mixer PM work order, filter on **wilson** (or whichever user you are using for this course) in the **Requested By** field. Result: Your screen should look similar to the one below. Your work order number might be different. 
5	Check the **Lubricator Assembly** and **Rags** items, then click **OK**. Result: You are brought back to the Issues tab.
6	**Save** the record. Result: The items are now issued to the work order for which they were planned.

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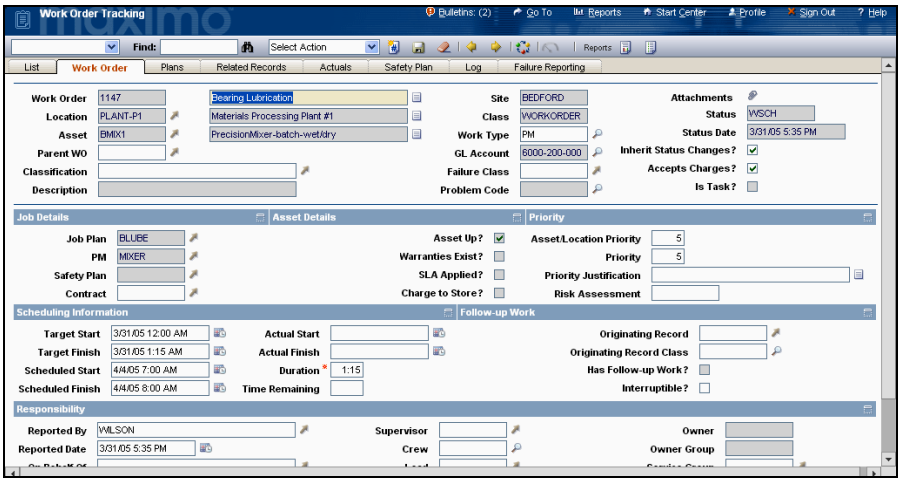
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Executing Work continued

Exercise Scenario: Changing Status



After the craftsperson has been issued the materials, he or she opens up Maximo and changes the status of the work order to In Progress (INPRG) to indicate that the physical work has begun. In the following exercise, we will change the status of the work order to INPRG.

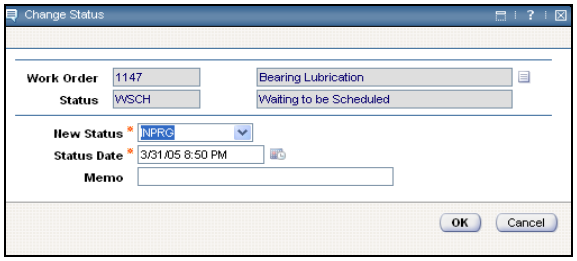
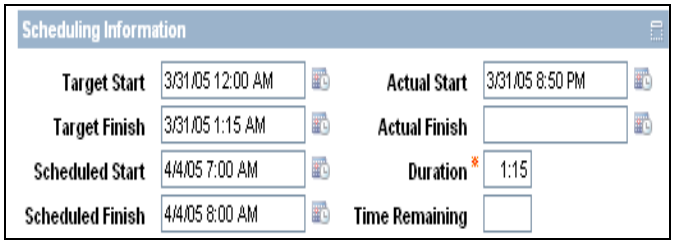
Step	Action
1	Go to the **Work Order Tracking** application and retrieve the **Batch Mixer** work order. Result: Your screen should look similar to the one below. 

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Executing Work continued

Exercise Scenario: Changing Status continued

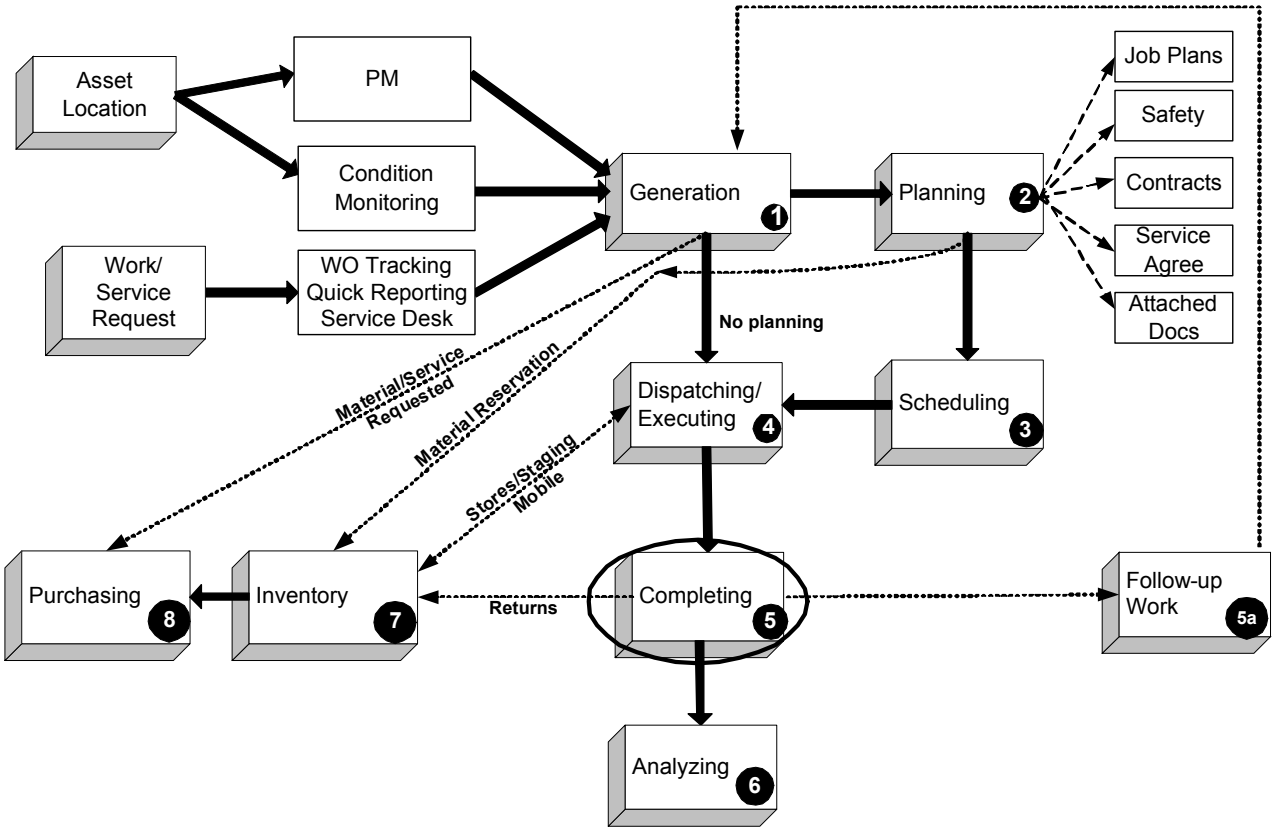
Step	Action
2	Change the status to In Progress (INPRG) by clicking the **Change Status** icon.  Result: The Change Status page opens. 
3	Select **In Progress** and then click **OK**. Result: The status has changed to INPRG. Notice that Actual Start Time reflects the current time. This will differ from the schedule date because of the constraints with time.  Note: The next exercise begins at this point.

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Completing Work

We Are Here: Actuals Reported

After the work is finished for a task or for the entire work order itself, actual material, labor, and tool usage is entered against the work order using the **Quick Reporting** or **Work Order Tracking** application. Unused materials are returned to inventory and actual work order costs are calculated.



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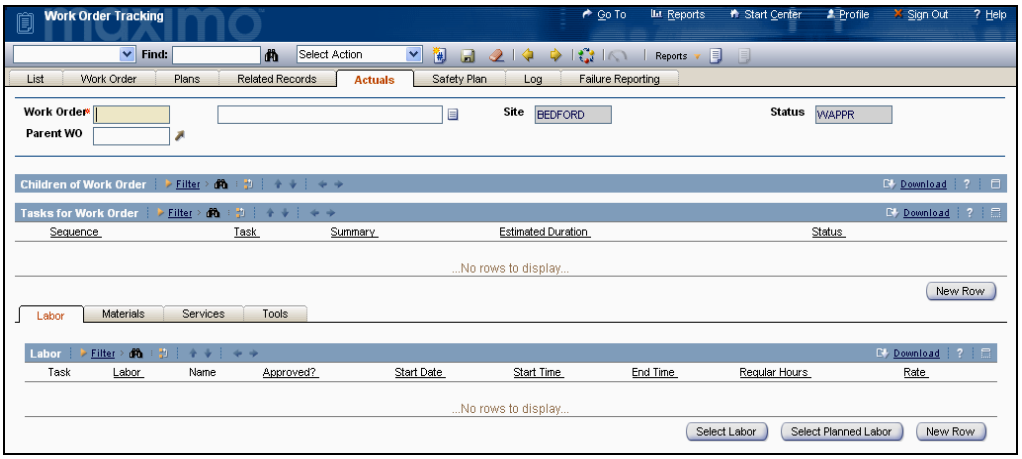
Completing Work continued

Revisiting the Actuals Tab

Use the **Actuals** tab in Work Order Tracking to enter, view, and modify the actual job tasks, labor, materials, and tools used on the work order.

If there is a work plan, Maximo copies data from the Tasks table window of the Plans tab to the Tasks table window of the Actuals tab.

If materials were issued from the storeroom to the work order, this information will be carried over onto the materials subtab.



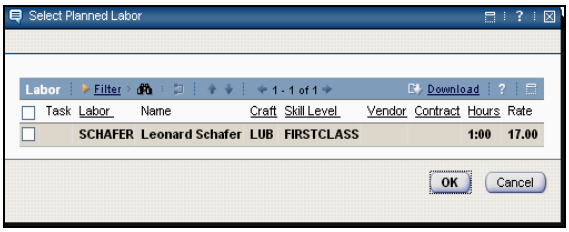
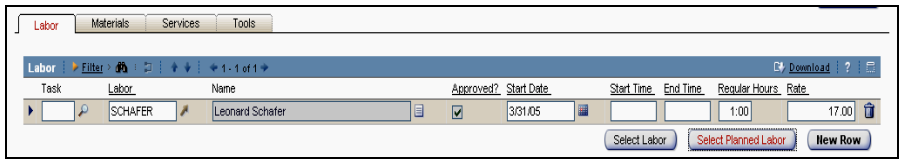
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Completing Work continued

Exercise Scenario: Recording Actuals



In our exercise scenario, the laborer Leonard Schafer will record his actuals on the work order.

Step	Action
1	Our laborer, Leonard Schafer, will record his actual labor and materials used. Click on the **Actuals** tab and then click the **Select Planned Labor** button.  Result: The Select Planned Labor page opens. 
2	Select **Schafer** by checking the record check box, and then click **OK**. Result: Schafer's start and finish time is defaulted into the labor row. This is calculated adding the 1-hour duration planned for the work plus the current time.  For this course we will accept the default times. However, in most cases our laborer would adjust the **Start Time** and **Finish Time** accordingly.

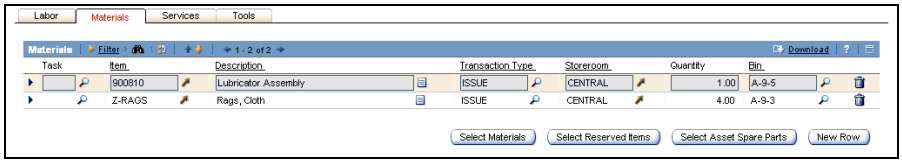
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Completing Work continued

Exercise Scenario: Recording Actuals

continued

Step	Action
3	**Save** the record.
4	To record the actual materials used, click on the **Materials** subtab. Result: Notice that the materials issued by the storeroom are defaulted into the Items fields.  Because the items were issued by a storeroom, any unused items would be returned to the storeroom and a **Return Items** action (in the **Issues and Transfers** application) would be performed. This action would update the Items row on the Materials subtab. In this exercise, however, we will not make returns. Note: The next exercise continues from this point.

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Completing Work continued

COMPLETE and CLOSE

There are two statuses for a work order in Maximo in which the work has been finished and the results reported: COMPLETE and CLOSE. The COMPLETE status and the CLOSE status both indicate that a work order is finished, but they do not mean the same thing. Here are the differences between the two statuses:

COMPLETE	CLOSED
The *physical* work is done; the work is finished at the job site.	The *electronic* work is done; the work is finished *in Maximo.*
A completed work order can still be edited. A person with appropriate authorization *can* make changes to the work order.	A closed work order cannot be edited, except through the **Edit History** option on the **Select Actions** menu; the work order is held in history.

Exercise Scenario: Completing and Closing the Work Order



In our scenario, all the physical work is completed. In this exercise we will change the status to Complete and then close the work order.

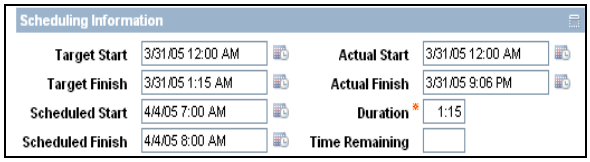
Step	Action
1 	Click the **Change Status** icon. Note: Because of time conflicts with the pace of the course and time restraints for this course only, the **Date Changed** field will be less than the **Actual Labor Finish Time**. The reason is because the system date stamp cannot be set to the future. However, to schedule work and capture labor duration, for this course we accepted the system projected date and time.

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Completing Work continued

Exercise Scenario: Completing and Closing the Work Order continued

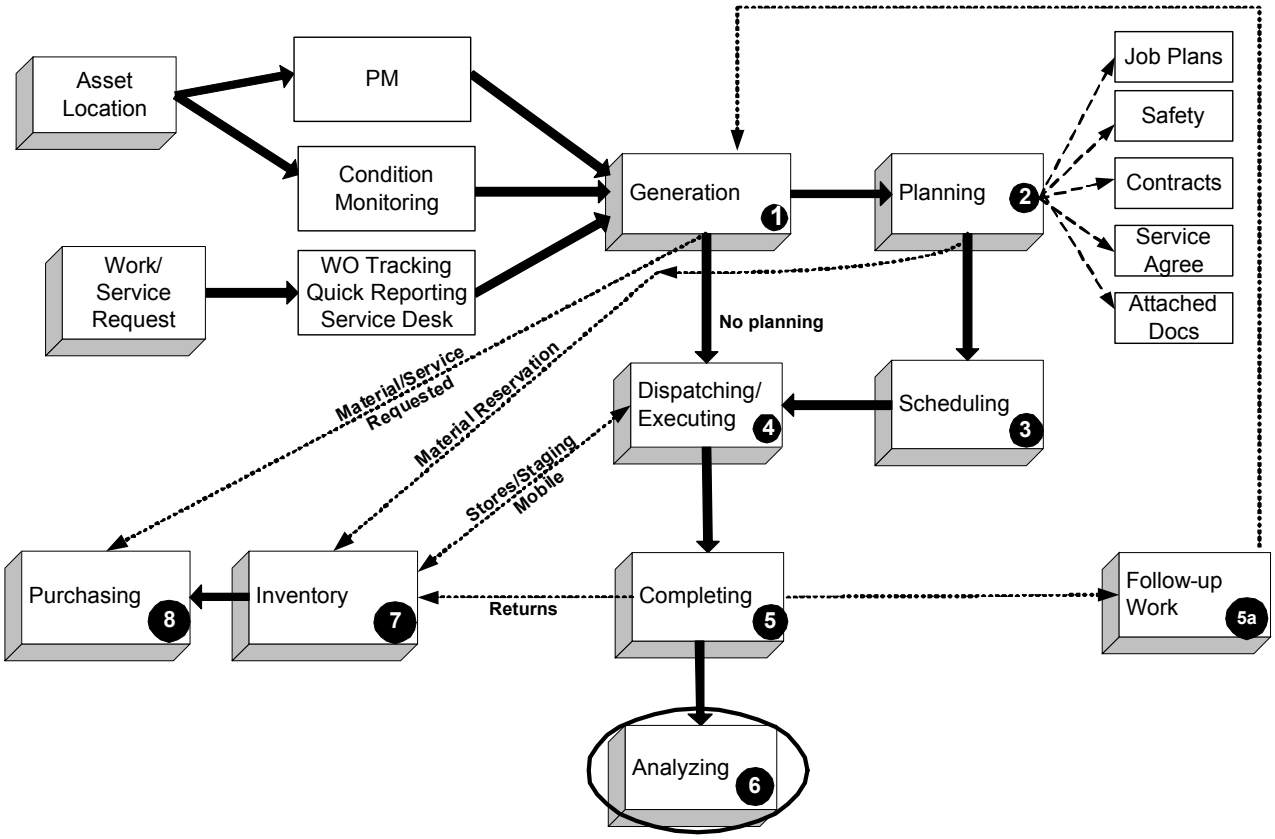
Step	Action
2	Change the status to **Completed**, then view the **Work Order** tab. Result: The Work Order tab opens. The status is changed and the Actual Finish Time is recorded. 
3	On the **Work Order** tab, in the **Asset** field, click the **Detail** button and select **View Work Orders and PMs**. What is the **Earliest Next Due Date** for the Time Based MIXER PM? _____
4	The last step is to close the work order. Change the status to **CLOSE**. Result: The work order is closed to history.

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Analyzing Work

We Are Here: Analyzing Work

Use the data in the system to generate daily, weekly, and monthly reports and analysis summaries.



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Analyzing Work continued

Introducing the Reporting Module

Establishing, monitoring, and recording key performance indicators (KPIs) enables you to objectively analyze the status of your organization.

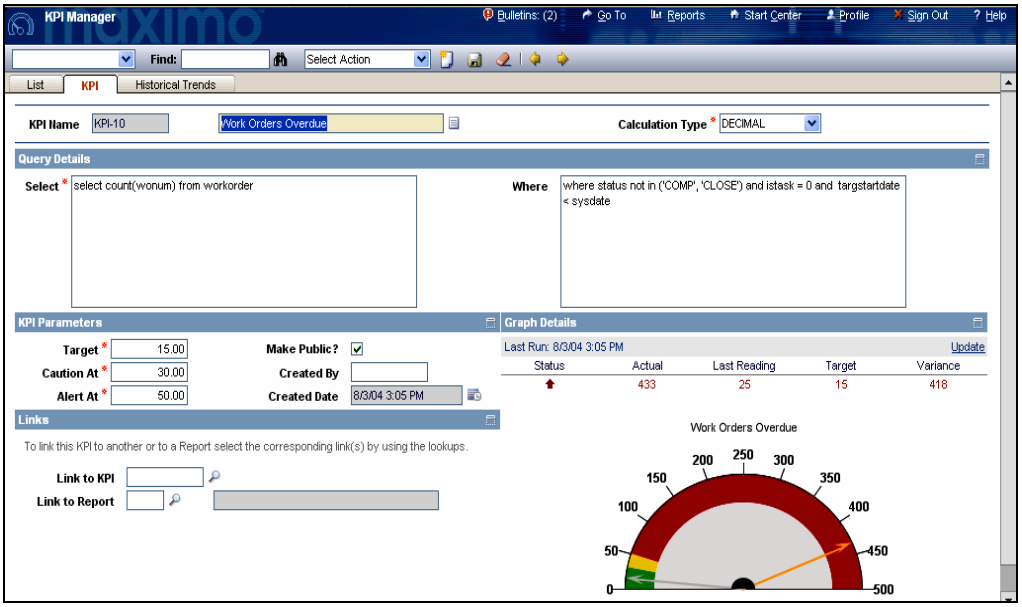
Maximo enables you to manage KPIs systematically with the **Reporting** module and applications.

Revisiting: KPI Manager Application

The **KPI Manager** application can be viewed in two ways:

- from the Reporting module, or
- from the Maximo Start Center.

Maximo allows you to set up *KPI dashboards* that let you monitor key performance indicators against performance goals.



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Analyzing Work continued

Tabs

The KPI Manager application has three tabs.



Tab	Description
List	Search for available KPIs.
KPI	Allows you add, view, and modify KPI reports.
Historical Trends	Compares KPI trends and defined characteristics.

KPI Tab Section

The sections and descriptions on the KPI tab are as follows.

Section	Description
Query Details	Provides SQL view of how KPIs are presented.
KPI Parameters	Limits the characteristics of KPI presentation.
Graph Details	Shows graphical representation of KPI statistics.
Links	Allows links to other KPIs or reports for comparison and analysis.

Historical Trends Subtabs

The subtabs and descriptions on the Historical Trends tab are as follows.

Subtab	Description
Trend	Allows you to select the dates to display KPI trends graphically (line graph). The chart can display in days, weeks, months, or years. You can also select other KPIs to compare to the selected KPI.
Historical Values	Lists individual KPI data points for a user-defined timeframe.

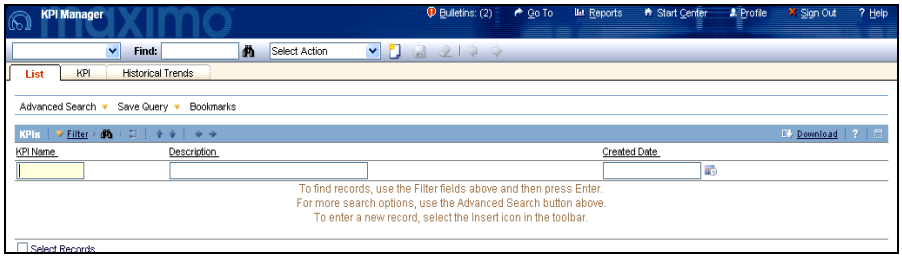
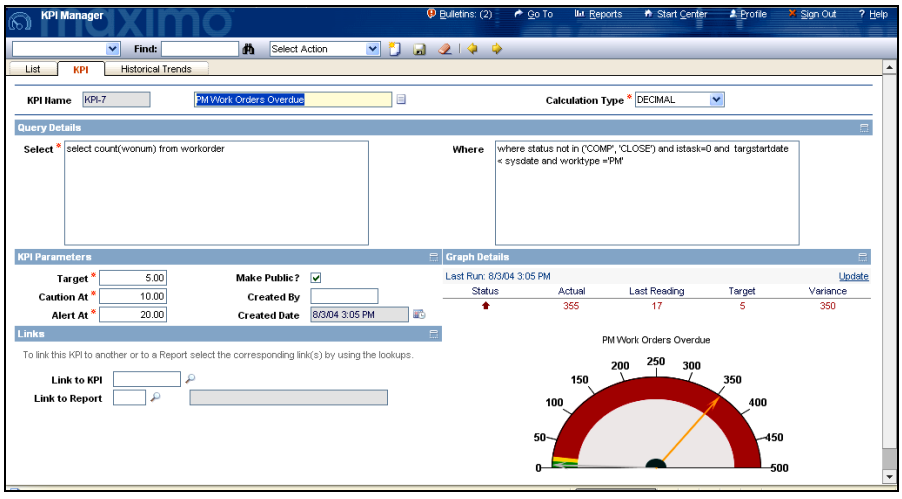
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Analyzing Work continued

Exercise Scenario: Running a KPI

In this exercise we will run a KPI showing PM Work Orders Overdue.

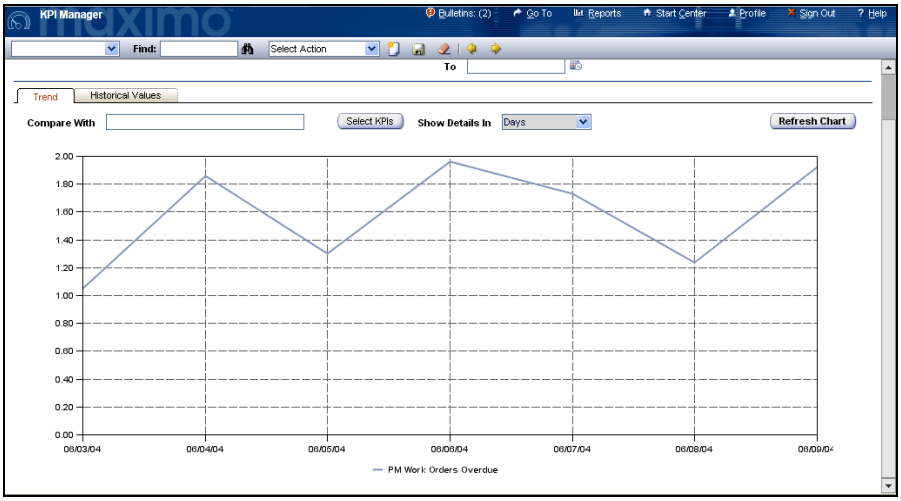
Step	Action
1	From the **Reporting** module, go to the **KPI Manager** application. Result: The KPI Manager application opens to the List tab. 
2	Select **KPI-7 (PM Work Orders Overdue)**. Result: The KPI-7 record is displayed on the KPI tab. 

continued on next page

Analyzing Work continued

Exercise Scenario: Running a KPI

continued

Step	Action
3	View the details. Click the **Historical Trends** tab. Result: The Historical Trends tab opens in the Trend subtab. Hint: You can scroll down using the navigation bar to view full details of the graph.  Hint: You might need to click the Refresh Chart button to view the chart. The graph above shows the relationship trends of Overdue PM Work Orders from 06/03/04 to 06/09/04, You can select the date ranges using the From and To fields.

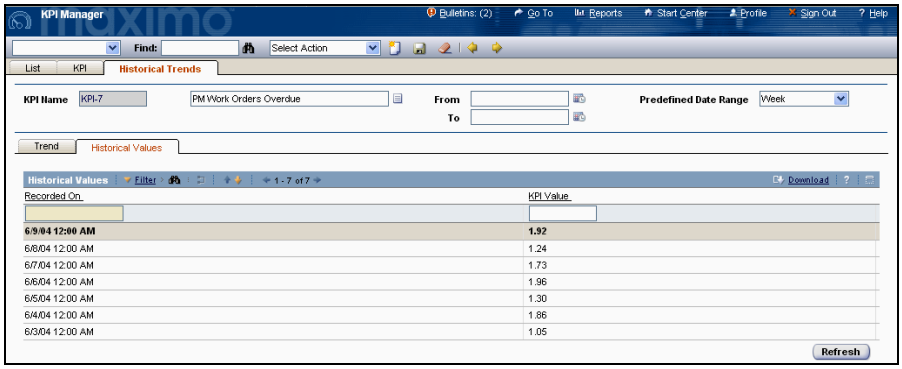
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Analyzing Work continued

Exercise Scenario: Running a KPI

continued

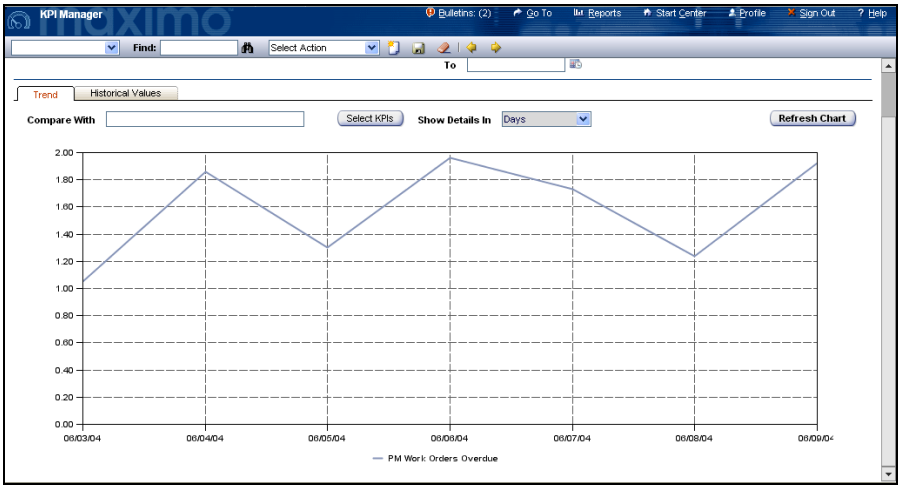
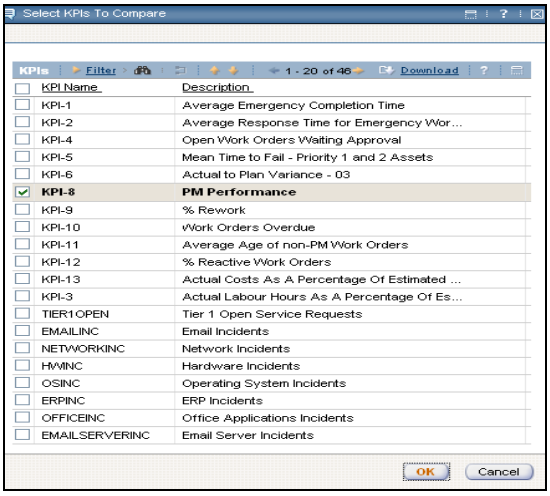
Step	Action
4	Click the **Historical Values** tab. Result: The Historical Values tab opens.  The table shows the recorded KPI values from the dates selected. Our next exercise will begin at this point.

continued on next page

Analyzing Work continued

Comparing KPI Values

In this exercise we will compare Overdue PM Work Orders versus PM Performance KPIs.

Step	Action
1	Click the **Trend** subtab. Result: Your screen is back to the Trend subtab. 
2	Click the **Select KPIs** button, and check the **KPI-8 PM Performance** Select Record check box. 

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Analyzing Work continued

Comparing KPI Values continued

Step	Action
3	Click **OK**. Result: Your screen is back to the **Trend** subtab.
4	Click the **Refresh Chart** button. Result: KPI-7 and KPI-8's graph is presented. Hint: Scroll down to view complete graph details.  The graph shows the relationship between Overdue PM Work Orders vs. PM Performance from 06/03/04 to 06/09/04. Note: Using this process, you can select a number of KPIs to compare them.

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Generating Meter-Based PM Work Orders

Introduction

In this section we will generate a meter-based PM already set up in the system.

Revisiting Meter-Based PMs

Meter-based PM generation is based on the new meter reading entered on the Asset application's meter tab in the **New Reading** field and the frequency information set up in the PM application's **Frequency** tab.

Generating a Meter-Based PM



Go to the PM application and retrieve the PM record **PM-CONV1 (Conveyor Overhaul- Pkg. Dept.)**.

1. Enter GL account 6000-300-200.
2. Indicate that the work order status should be **WAPPR**.
3. **Save** the record.
4. To check for asset meters, click the detail menu on the **Asset** field and select **Go To Asset**.
5. In the **Assets** application, **Asset 12600** record, click the **Meters** subtab. To create an asset meter, click **New Row**.
6. Enter the following information:

Field	Value
Meter	RUNHOURS
Last Reading	1000
Average Calculation Method	SLIDING-READINGS
Sliding Window Size	1
Reading Type	DELTA

7. Change the Asset 12600 status to **Operating**.
8. **Save** the record and click the **Return With Value** icon.
9. From the **Preventive Maintenance** application, **PM-CONV** record, click the **Frequency** tab.
10. Click the **Meter Based Frequency** subtab.

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Generating Meter-Based PM Work Orders continued

Generating a Meter-Based PM continued

11. Click **New Row** and enter the following information:

Field	Value
Meter	RUNHOURS
Frequency	2000
Generate WO Based on Meter Reading (Do Not Estimate)? check box	[*Checked*]

12. **Save** the record.
13. Click the **PM** tab and then click the detail menu on the **Job Plan** field and select **Go To Job Plans**.
14. Check whether **Job Plan 1314A** status is Active; if it is not, change it accordingly and save the record.
15. Click the **Return** icon.
16. Change the PM-CONV status to **Active**.
17. Generate a work order using the **Select Action** menu. (Clear the **Use Frequency Criteria** check box from the **Generate Work Order** dialog box.)

Record the PM work order number: _____.

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Generating Meter-Based PM Work Orders continued

Planning

Go to the Work Order Tracking application.

What is the estimated cost for this work order? _____.

Scheduling

Schedule the Actual Start Date using today's date and **schedul**e the Finish Date using tomorrow's date. Then **approve** the work order.

Assigning

Using the **Assignment Manager** application (use the Next Page icon if necessary):



1. **Check** the select record check box under CRAFT table ELECT and **assign** Allan Ball (use the **Filter Labor to Match Work** button) to this work order. **Save** the record.
2. **Check** the select record check box under CRAFT table MECH and **assign** Ted Klien to this work order. **Save** the record.

Executing

1. **Issue** *all* the items to the work order from the Central Storeroom using the **Issues and Transfers** application (remember to **Save** the record to process the issue transaction).
2. Change the status to **In Progress**.
3. Record *all* Planned Actual Labor used (accept defaults).

Completing

1. **Complete** the *work* order.
2. View the actual costs. Why are the actual costs higher than the planned costs?

_____

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Chapter Summary

PMs	PMs are the templates Maximo uses to generate PM work orders. They are defined in the Preventive Maintenance application. PMs use job plans to specify what operations, materials, and tools will be needed on the PM work order.
Generating PM Work Orders	You can generate PM work orders based on frequency criteria, or you can ignore the frequency criteria.

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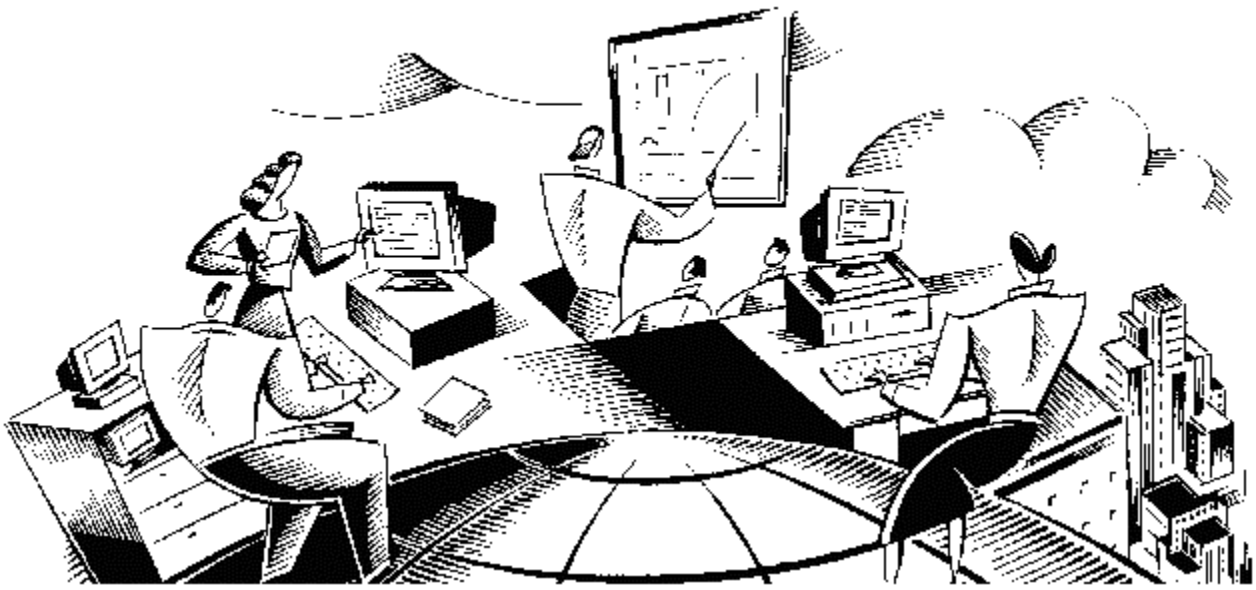
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MXES Immersion Training for EAM

Chapter 10: Reactive Work



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In This Chapter

This chapter contains the following topics:

Topic	See Page
Chapter Overview	10-1
The Quick Reporting Application	10-3
Work Dispatched	10-8
Work Executed	10-9
Completing and Closing the Work Order	10-12
Analyzing	10-14
Entering a Service Request	10-17
Chapter Summary	10-24

Chapter Overview

Introduction

This chapter focuses on generating *reactive work orders*. In this course, *reactive work* is defined as work where a failure has occurred and an operations group is reacting to the situation.

Examples include:

- when an asset is actually broken down or fails to operate properly, or
- when the highest-level priority jobs are defined as urgent.

Chapter Focus

In this chapter we will focus on generating an *emergency work order* and processing it through the work order lifecycle using the **Quick Reporting** application.

Learning Objectives

When you have completed this chapter, you should be able to:

- create a work order using the **Quick Reporting** application,
- record labor and materials actuals in the **Quick Reporting** application,
- generate a follow-up work order, and
- create a work order using the **Work Requests** application.

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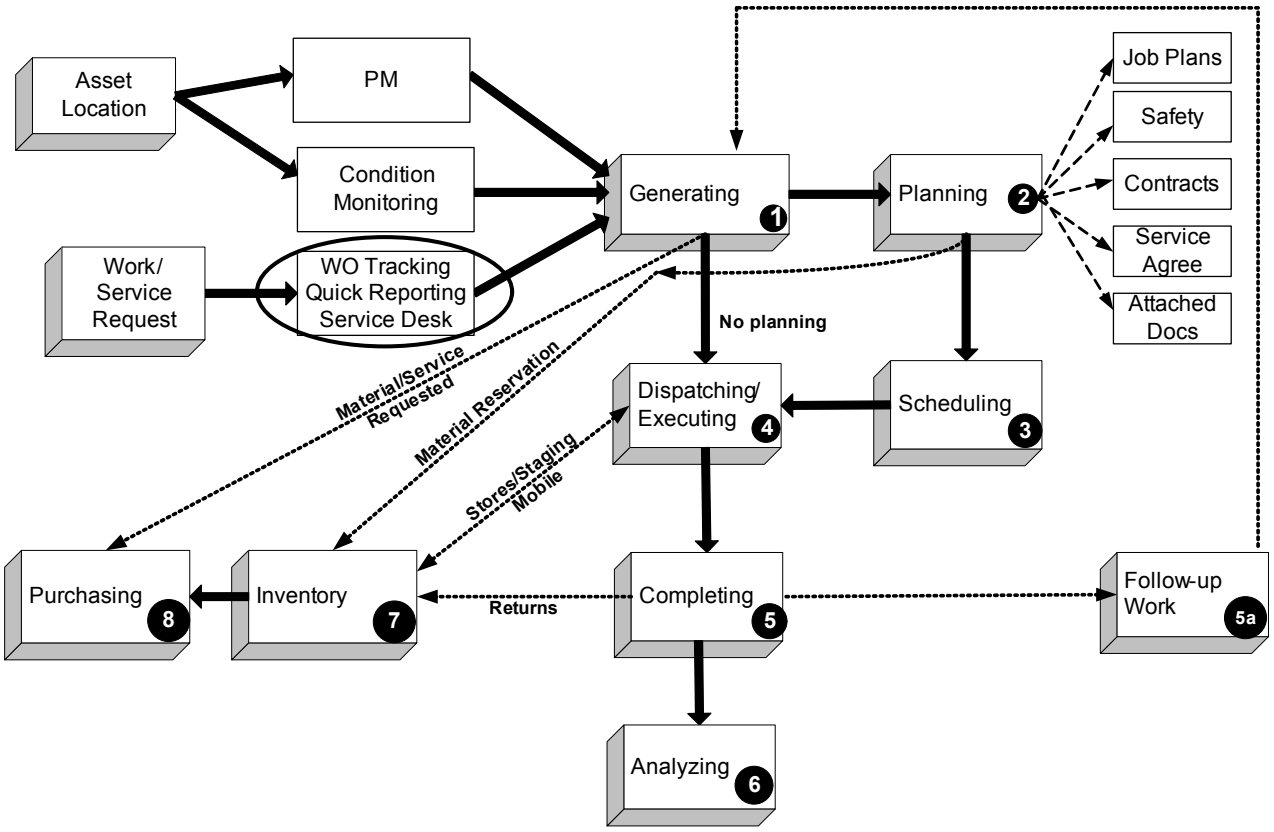
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Chapter Overview continued

Scenario Premises

The first scenario for our utility company is that a late-night call has come into the emergency dispatch center regarding an accident involving a vehicle and utility pole (no one was hurt). We will generate an emergency-type work order reporting the accident using the **Quick Reporting** application and then generate a follow-up work order for corrective maintenance for pole replacement. The second scenario will be to generate a work request using the **Work Requests** application.

Note: These exercises are meant to illustrate concepts and application usage; they do not cover all steps and actuals used in real-life scenarios.



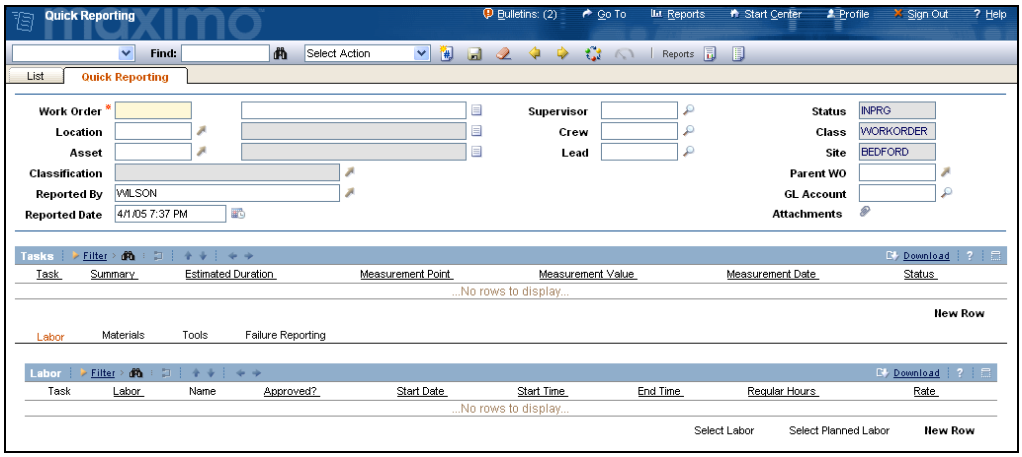
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The Quick Reporting Application

Quick Reporting Application

The **Quick Reporting** application provides another way to process a work order. Use Quick Reporting to create work orders for emergencies, for jobs that have happened after the fact, or to report actuals and failure on any open work orders. A work order entered through the Quick Reporting application will have an INPRG (in progress) status.

When reporting on an open work order, you can copy information from an existing work plan to enter actual labor and material usage.



Tabs

The Quick Reporting application has two tabs.



Use this tab…	To…
List	Search the database for a specific record or group of records that meet your criteria.
Quick Reporting	Insert and modify information about locations, assets, tasks, labor and material usage, tool information, and failure reporting.

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The Quick Reporting Application continued

Subtabs

The **Quick Reporting** tab contains four subtabs:



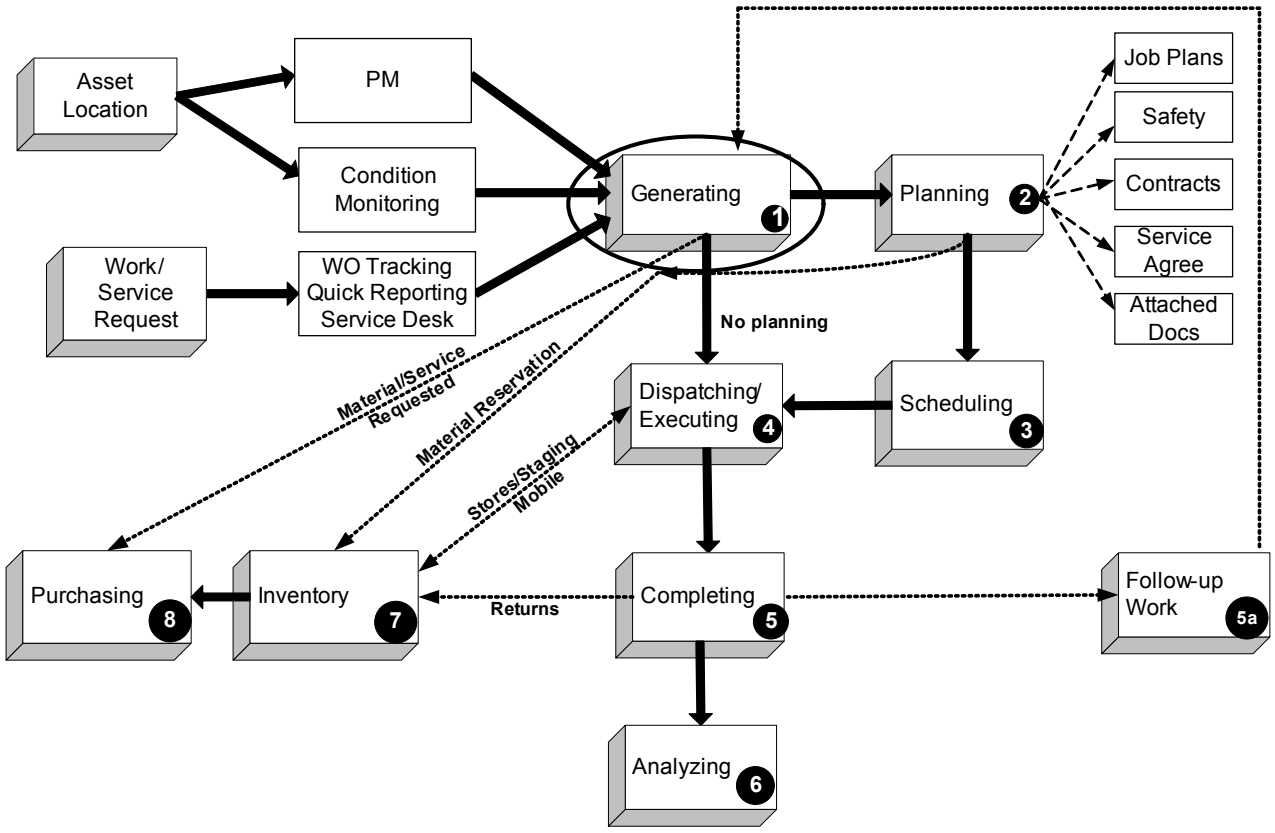
Use this tab…	To…
Labor	Report labor hours against a work order.
Materials	Report materials used on a work order.
Tools	Report tool usage on a work order.
Failure Reporting	Record and view asset and location problems, causes, and remedies.

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Generating an Emergency Work Order Record

Introduction

The Emergency Dispatch Center receives a call that an accident has occurred. The operator enters the emergency work into the **Quick Reporting** application.



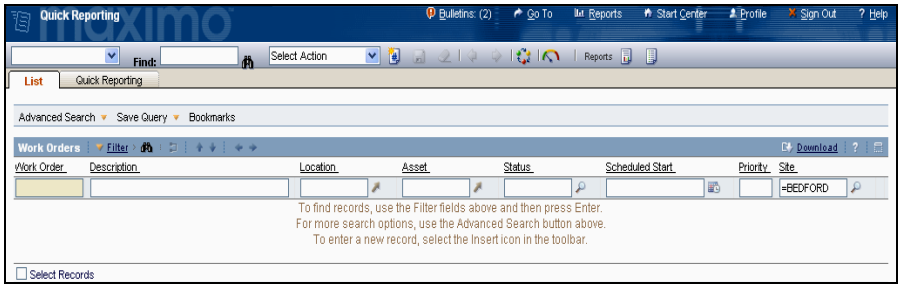
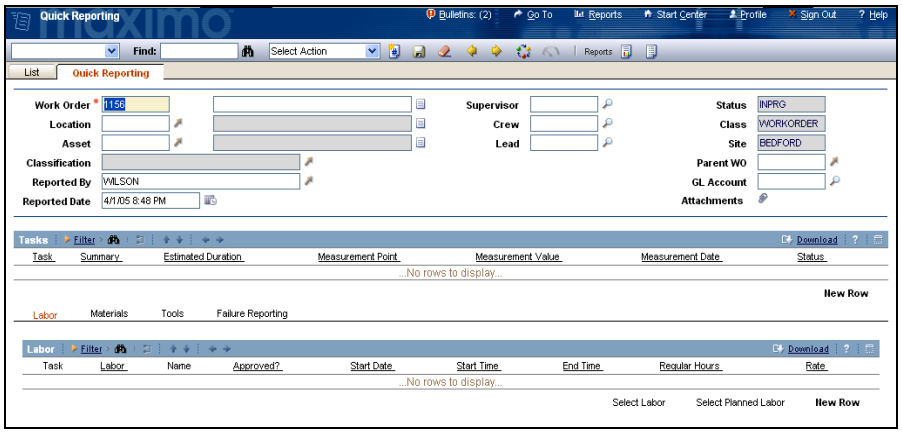
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Generating an Emergency Work Order Record continued

Inserting a Work Order Record

Follow the steps below to enter an emergency work order (EM) into the system using the **Quick Reporting** application.

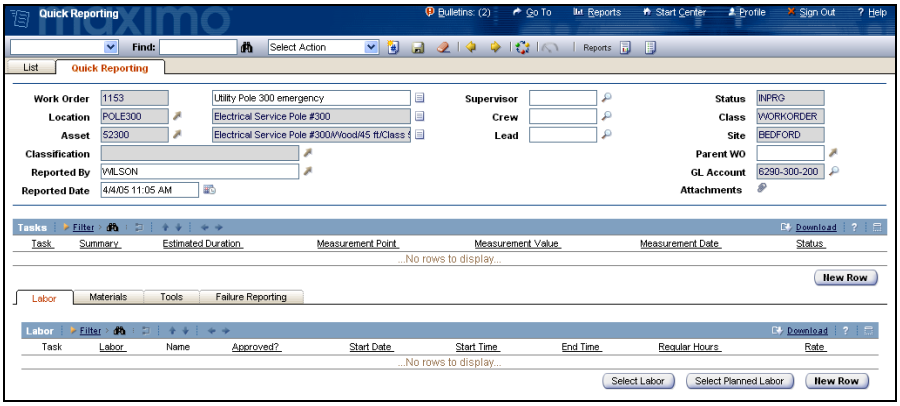
Step	Action
1	Go to the **Quick Reporting** application in the **Work Orders** module. Result: The application opens to the List tab. 
2	Insert a new record. Result: A new work order is displayed and its status is INPRG. 

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Generating an Emergency Work Order Record continued

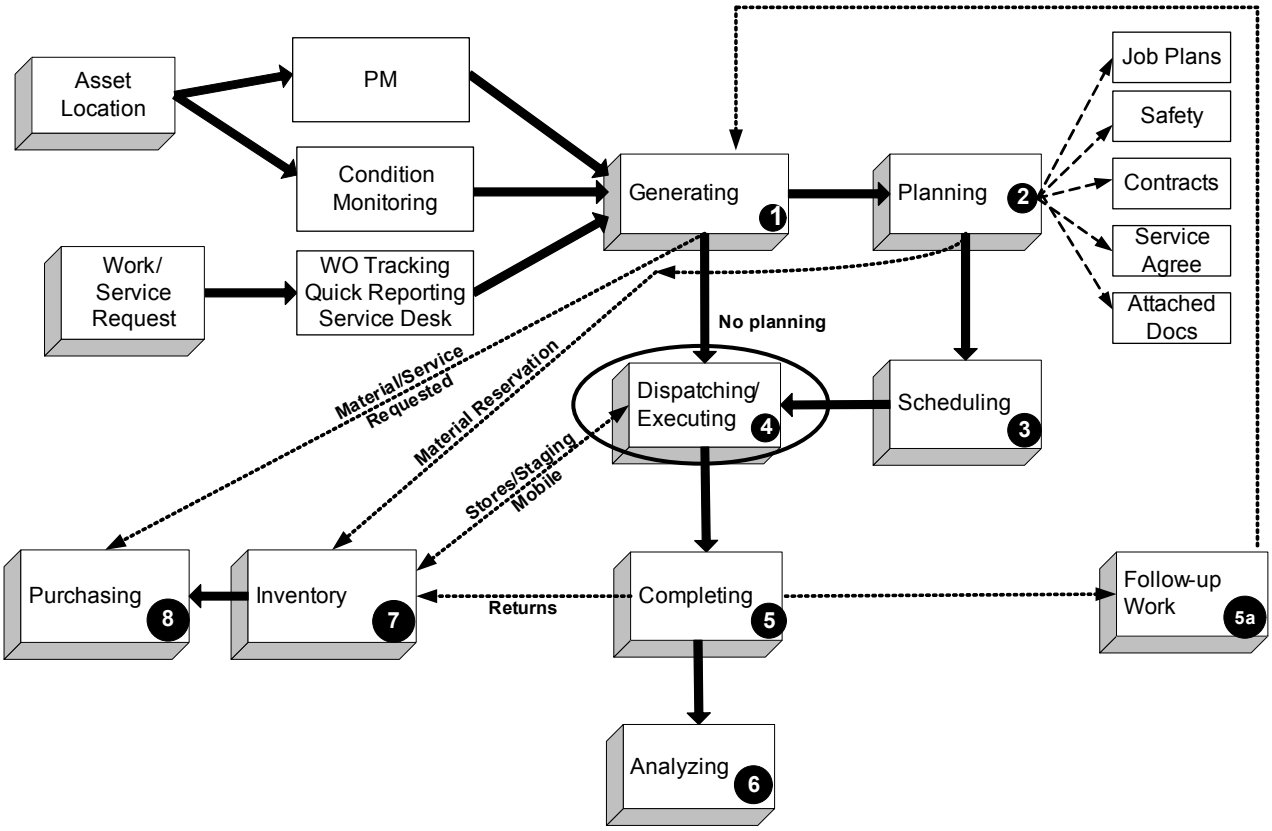
Inserting a Work Order Record continued

Step	Action
3	In the **Description** field, enter Utility Pole 300 emergency. In the **Location** field, select **POLE300**. Result: Notice the Asset and GL Account fields are populated with default information.
4	**Save** the record. Record your work order number here: _____ Result: Your work order number might vary but your screen should be similar to the one below. 

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Work Dispatched

Work Dispatched At our utility company, the emergency dispatch center notifies the night crew of the accident and gives the location and the work order number.



What is other approach could have been taken to enter the work and assign people to this job?

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Work Executed

Work Is Executed

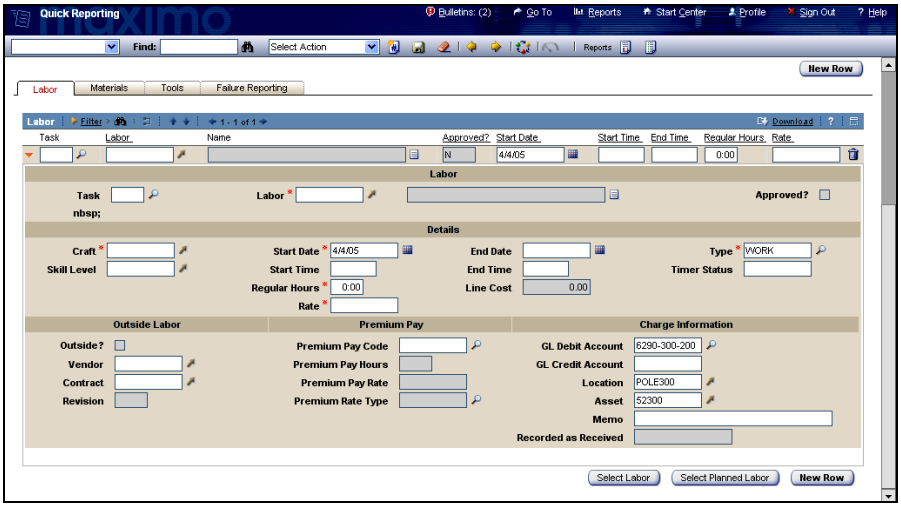
The crew arrives on the scene and performs a visual inspection. The pole is cracked and needs to be replaced; however, a band clamp will provide a temporarily safe condition until this can be done.

Materials needed and used are stocked on the truck. (Remember our exercise in Unit 2, Chapter 5: "Setting Up Inventory Items" exercise.)

The crew leader records the actual time and materials and the work order number on a blank work order pad that is kept in the truck.

Exercise: Work Is Executed

In this exercise the line crew returns to the depot and the work order actuals are entered into Maximo using the Quick Reporting application.

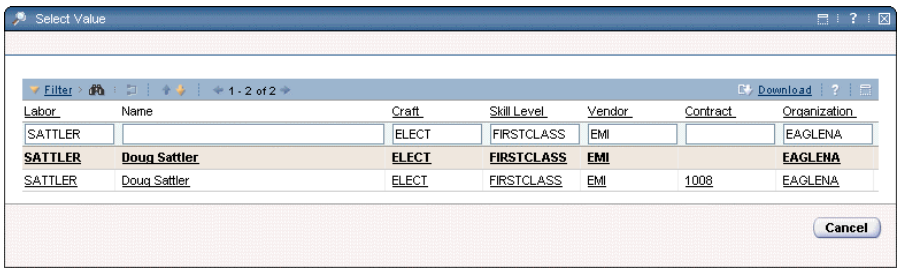
Step	Action
1	If it is not already displayed, search for and retrieve the Utility **Pole300** emergency work order.
2	On the **Labor** subtab, click **New Row**. Result: The Labor subtab expands. Hint: Use the Navigation bar to view full details. 

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Work Executed continued

Exercise: Work Is Executed continued

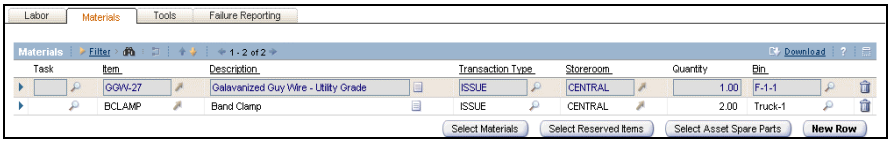
Step	Action
3	Enter the following data: **Field** **Value** **Labor** SATTLER **End Date** [*Today*] **Start Time** 2:00 am **Finish Time** 4:00 am Note: We are keeping the labor and material data entry to a minimum.
4	Click the **Detail Menu** button on the **Craft** field, then choose **Select Value** from the resulting list. Result: A Select Value dialog box opens, as shown below, containing two possible selections for Sattler.  Note: The Contract values for the Sattler records show that he is listed as a contractual worker as well as a non-contractual worker.
5	Click the **non-contractual** Labor line to select it. Result: The Craft and Skill Level fields are populated on the record, based on your selection.
6	**Save** the record. Result: The Labor fields on the record become read-only.

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Work Executed continued

Exercise: Work Is Executed continued

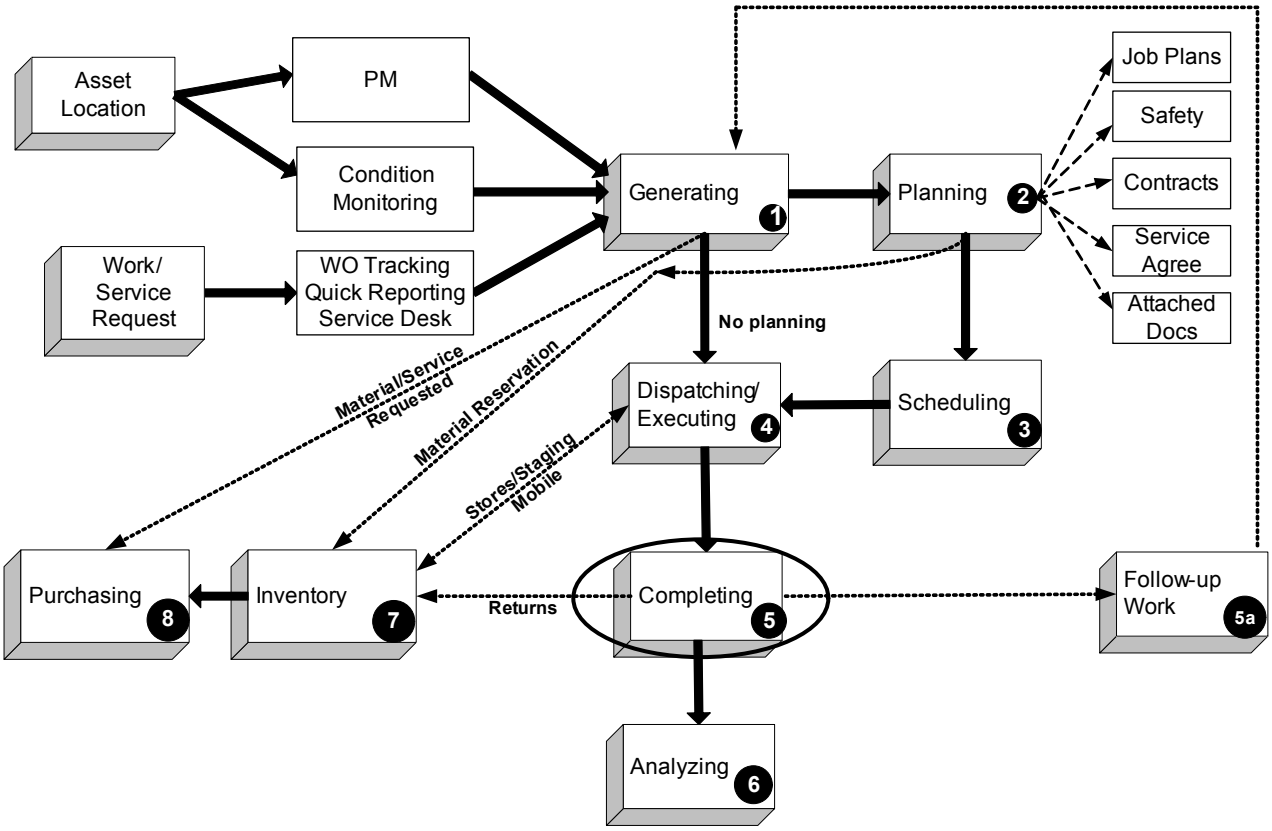
Step	Action
7	On the **Materials** subtab, click **New Row** and enter the following items. Hint: Use the detail menu icon. **Field** / **Value** **Item** BCLAMP **Transaction Type** ISSUE **Storeroom** CENTRAL **Bin** Truck-1 **Quantity** 2 **Field** / **Value** **Item** GGW-27 **Transaction Type** ISSUE **Storeroom** CENTRAL **Bin** F-1-1 **Quantity** 1 Note: The default bin F-1-1 is retrieved.
8	**Save** the record. Result: Your Materials subtab should look similar to the graphic below.  Note: Do not sign out; our next exercise will begin at this point.

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Completing and Closing the Work Order

Completing the Work Order

Actuals for the labor and time have been entered. The lineman completes the work order and generates a follow-up work order for the pole replacement.



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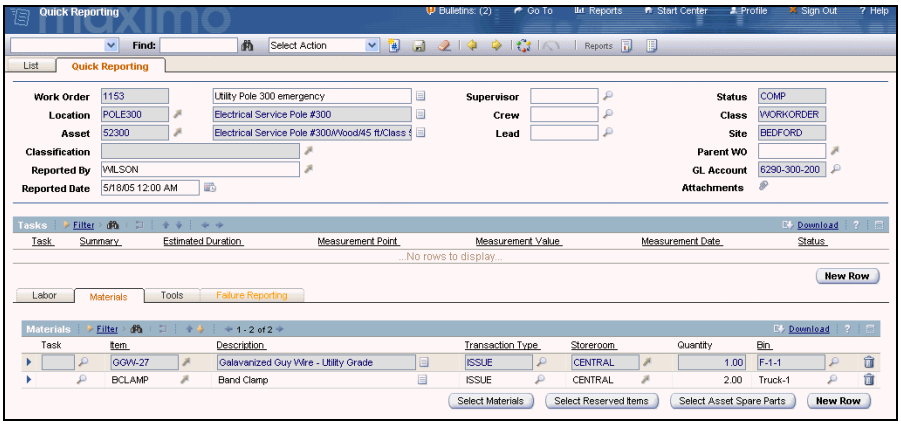
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Completing and Closing the Work Order continued

Changing the Work Order Status



For this exercise we will complete the work order.

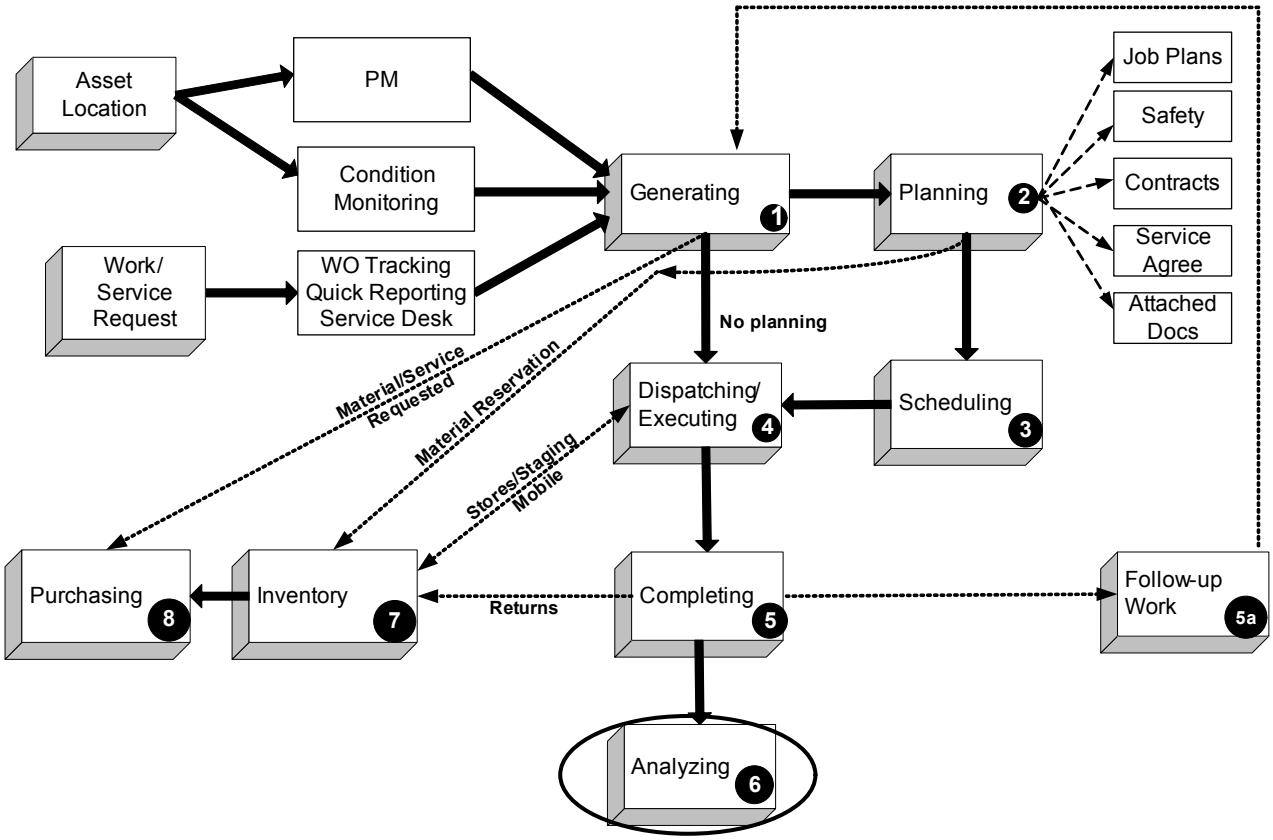
Step	Action
1	In the **Quick Reports** application, change the work order status from the previous exercise to **Completed** (COMP).
2	The work order status is now changed to COMP. 

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Analyzing

Reporting and Analysis

Emergency work order analysis should be done on a regular basis to identify trends for equipment and location breakdowns.



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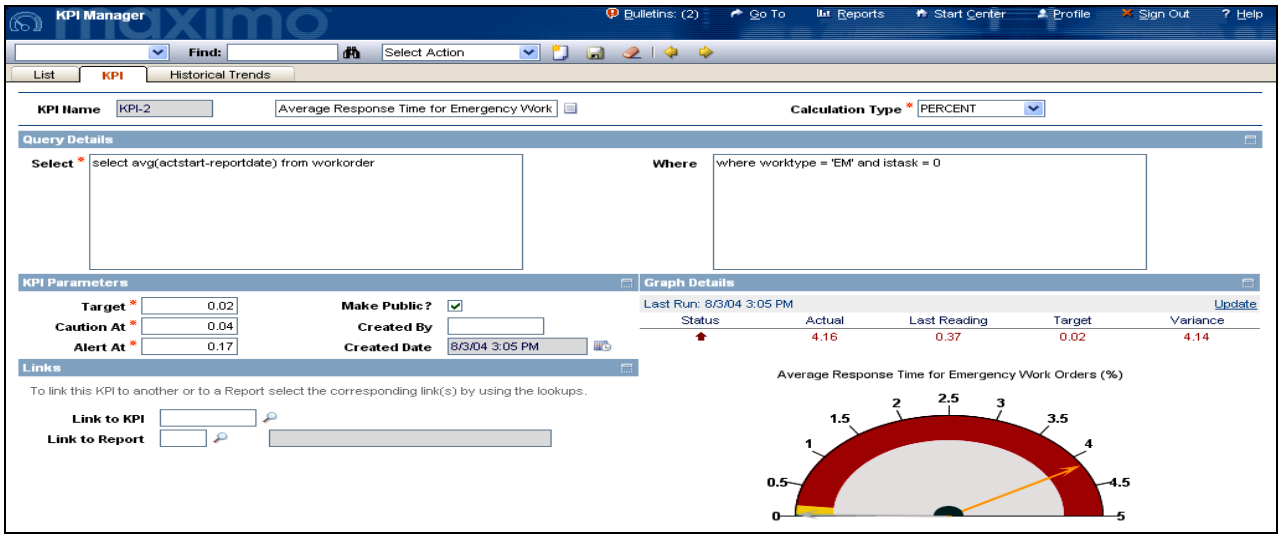
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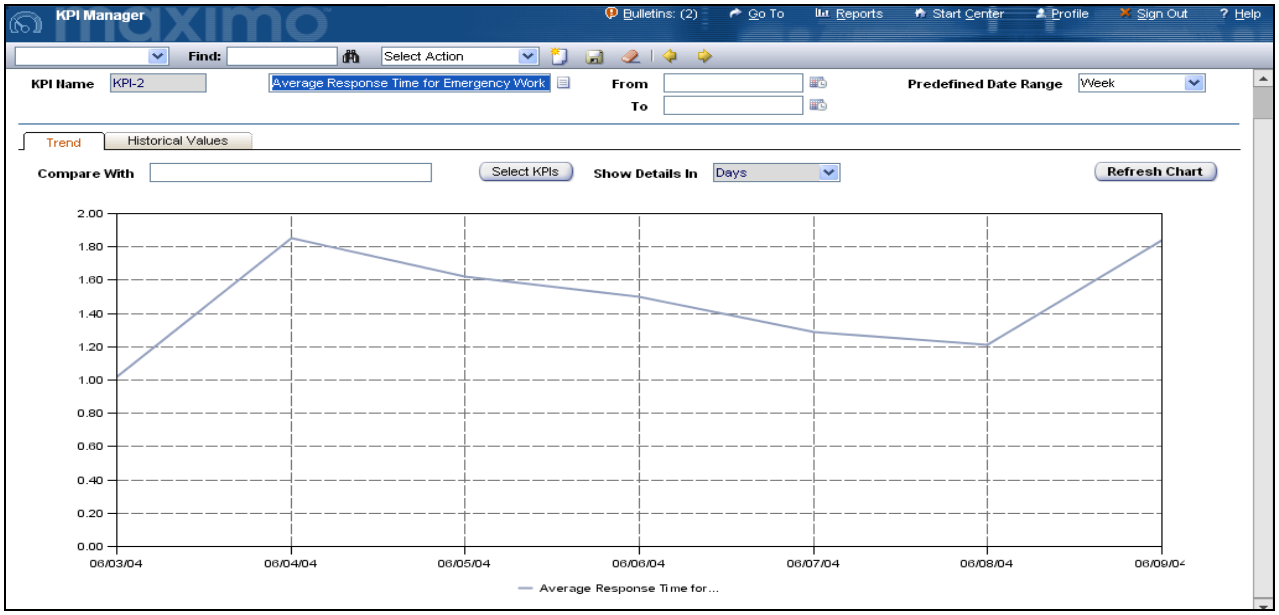
Analyzing continued

Maximo Reports and KPIs

Maximo provides several KPIs specific to reactive maintenance.

Response Time to EM Work Orders KPI: This KPI displays Average Response Time for Emergency Work on EAGLENA organization and BEDFORD site from 06/03/04 to 06/09/04.



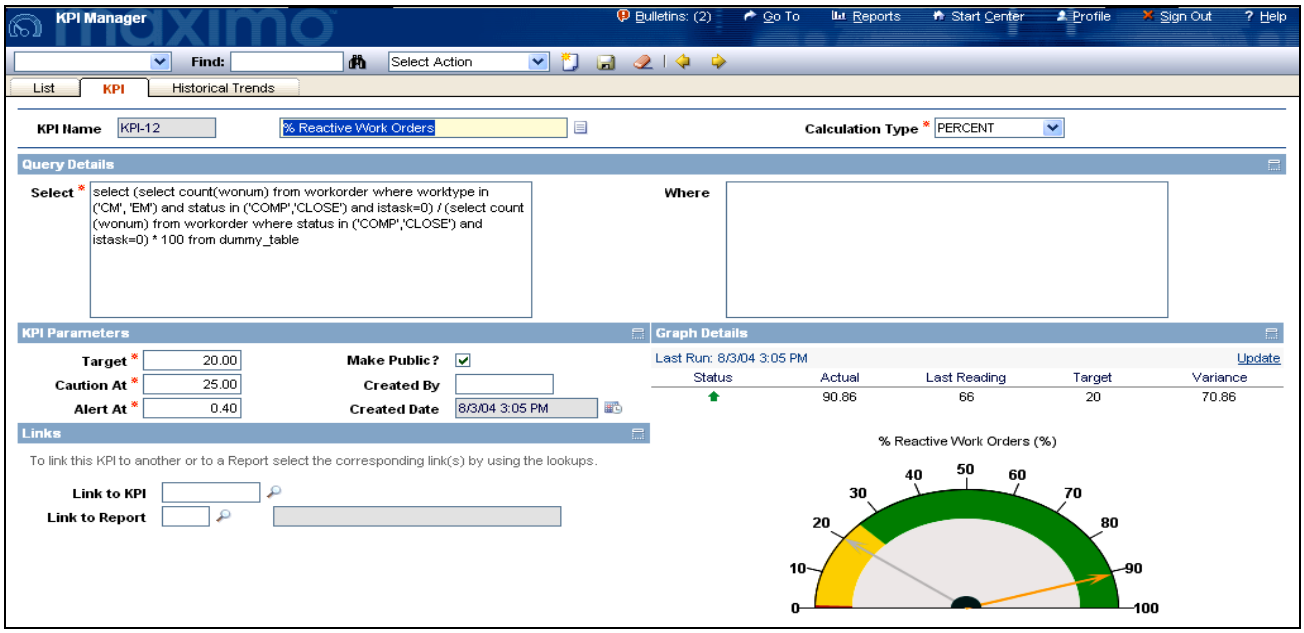


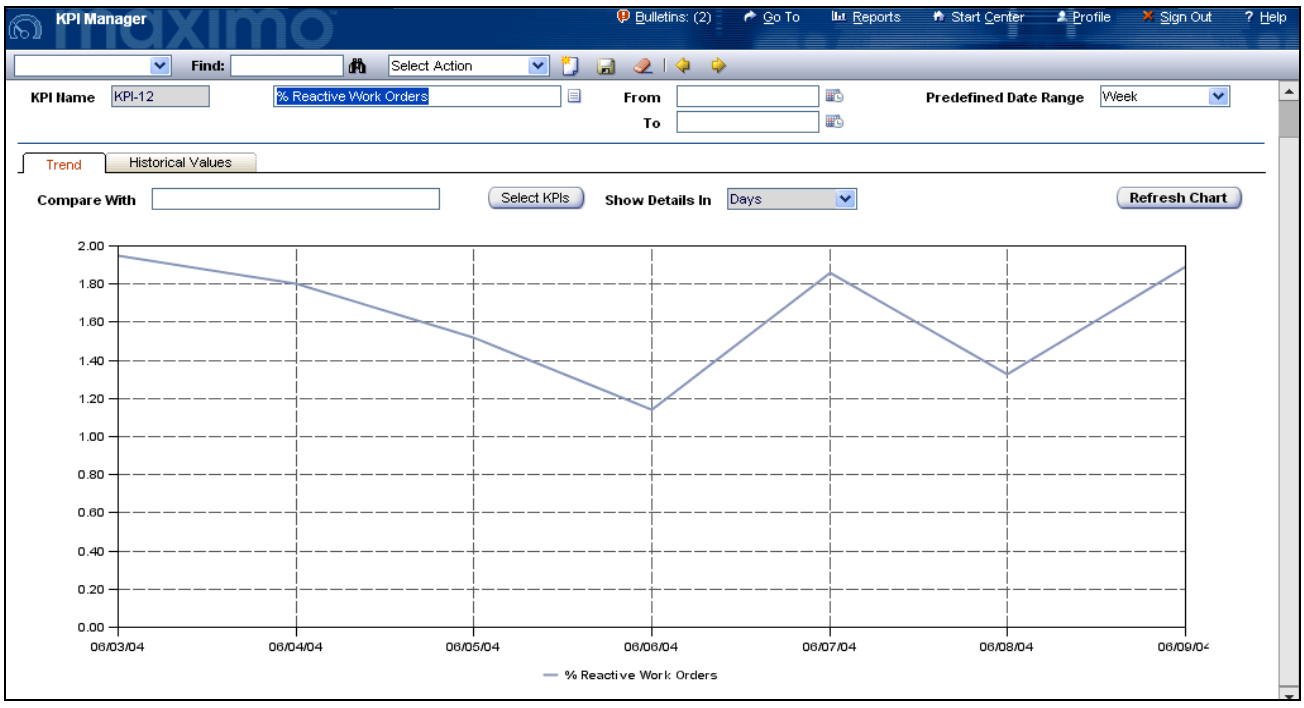
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Analyzing continued

Reactive Work Order KPIs: This KPI displays the % of Reactive Work Orders on EAGLENA organization and BEDFORD site from 06/03/04 to 06/09/04.



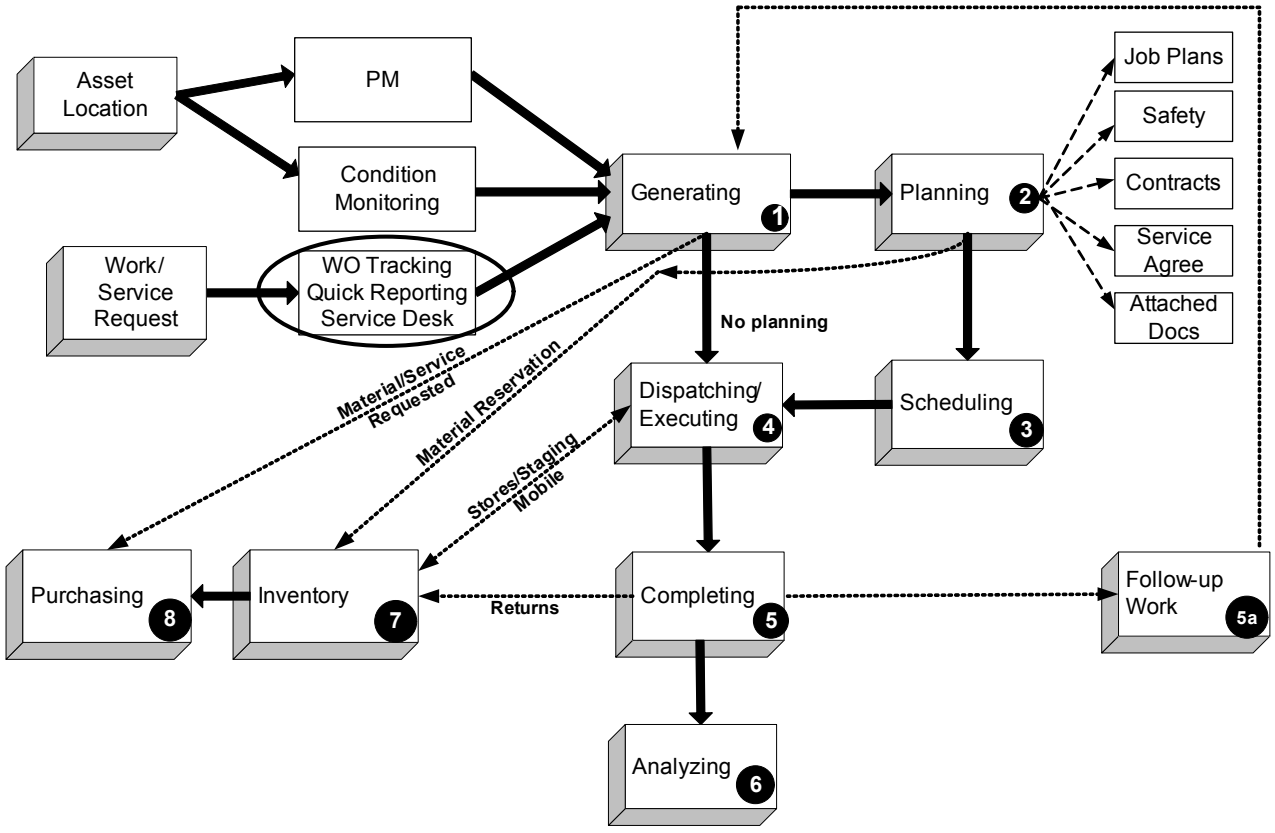


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Entering a Service Request

Introduction

In this section, our scenario will be a call center operator entering a service call into Maximo using the **Service Requests** application.



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Entering a Service Request continued

Service Requests Application

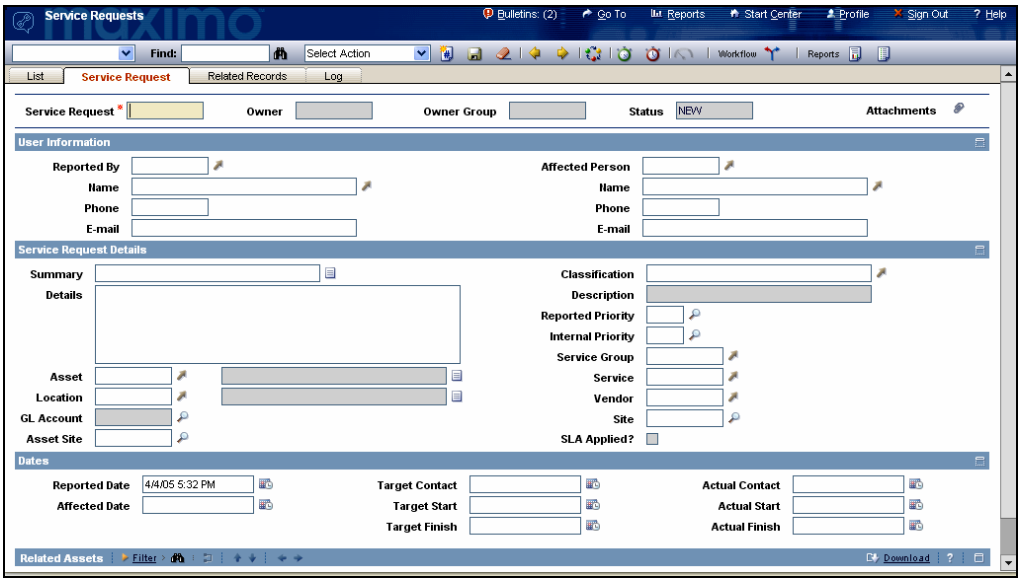
Maximo provides both flexibility and ease in managing your organization's service requirements. One best practice is to create a service desk center to handle all service requests regardless of the nature and source of the needed service.

There are two scenarios where service requests are created:

- From a service desk agent
- From a customer

Along with the **Service Desk** and **Self Service** modules, the **Service Requests** application is used to resolve an issue, obtain new service, obtain information, or change a current service.

Information entered in the Service Requests application are used to generate work orders, which can then be accessed from the Work Order Tracking, Quick Reporting, and Labor Reporting applications.



For the purposes of this course, we will focus our discussion on the **Service Requests** application in the **Work Orders** module.

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Entering a Service Request continued

Service Requests Application Tabs

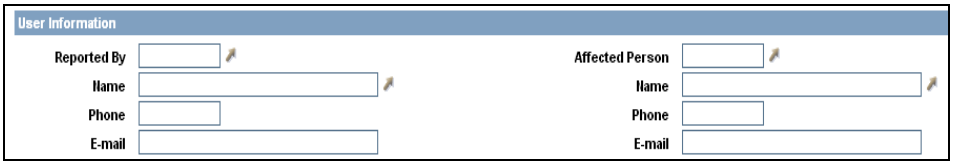
There are four tabs available in the Service Requests application:



Use this tab…	To…
List	Search for service requests.
Service Request	Create, modify, view, and delete service request records.
Related Records	Create, view, or navigate relationships among service requests, incidents, problems, and other records.
Log	Document work done or needing to be done for the reported issue, and list all communications created from this record.

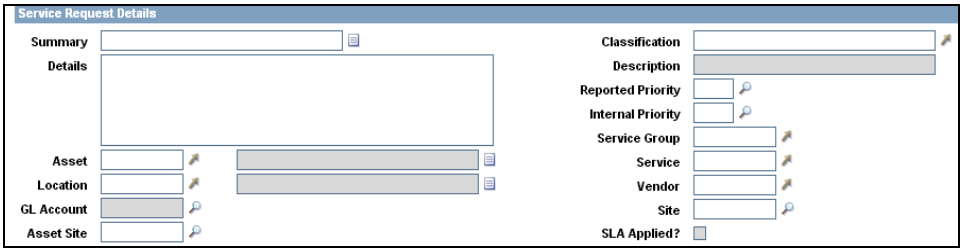
User Information Section

The **User Information** section contains default information entered in the **People** application.



Service Request Details Section

The **Service Request Details** section provides a picture summary of the service request requirements.



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Entering a Service Request continued

Utility Scenario: Entering a Service Request





The utility company's customer call center receives a call that a tree branch has fallen and is resting on the power lines near 560 West Oak.

The customer service representative *(the user that you created in Chapter 4)* will enter the service call into Maximo using the Service Requests application.

This work is considered *reactive* because it requires immediate attention.

Notes:

- Service requests are recorded in the SR table. They can be managed in the system as SR records, if you want. However, they can also be converted to other types of work-related records (including work orders) using Workflow processes. These converted record types can then be managed.
- This exercise demonstrates using the Work Requests application to enter a work request into the system; therefore, we will not be processing it through an entire lifecycle.

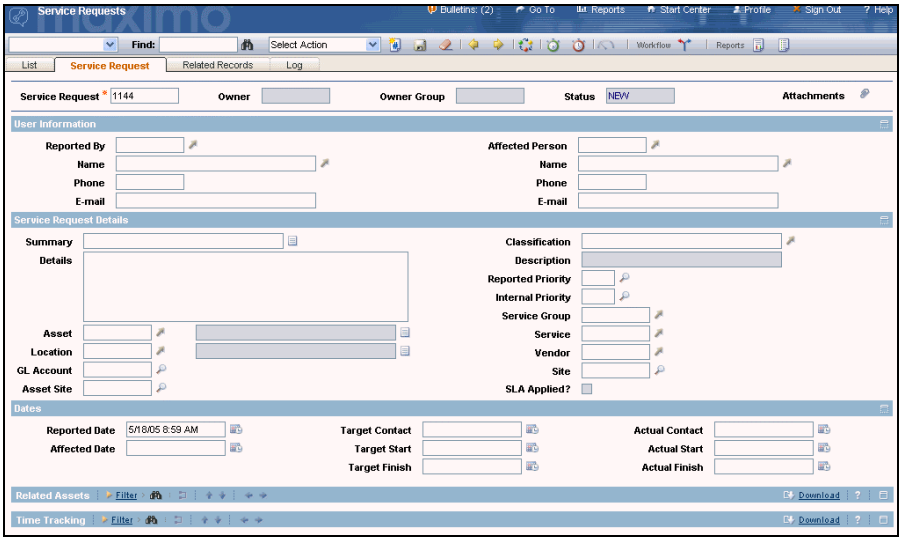
Step	Action
1	From the **Work Orders** module, go to the **Service Requests** application. Result: The Service Requests page opens on the List tab.

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Entering a Service Request continued

Utility Scenario: Entering a Service Request continued

Step	Action
2	Insert a new record. Result: Your screen should look similar to the graphic below. 
3	In the **Reported By** field, select **JEFFERS**. Note: You created this person record in Chapter 4.
4	In the **Service Request Details** section, enter the following information. **Field** — **Value** **Summary** — Tree branch on power lines **Details** — A tree branch has fallen and is resting on the power lines near 560 West Oak.
5	Click the **detail menu** icon on the **Location** field, then choose **Select Value** from the resulting list. Result: The Select Value dialog box opens.

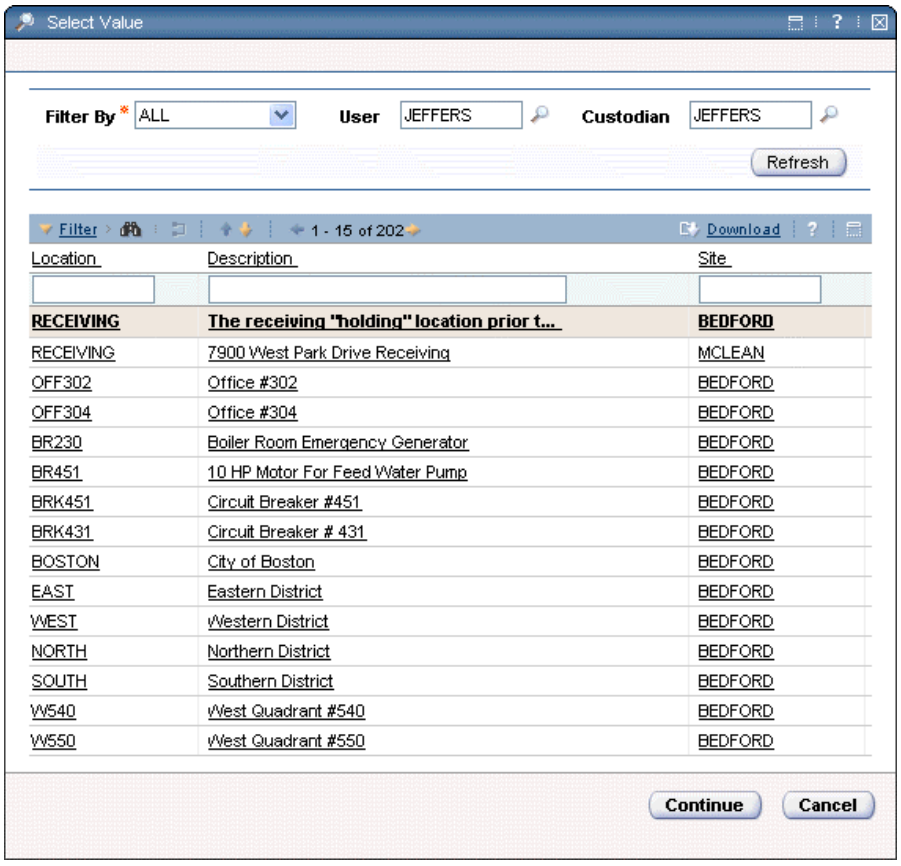
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Entering a Service Request continued

Utility Scenario: Entering a Service Request continued

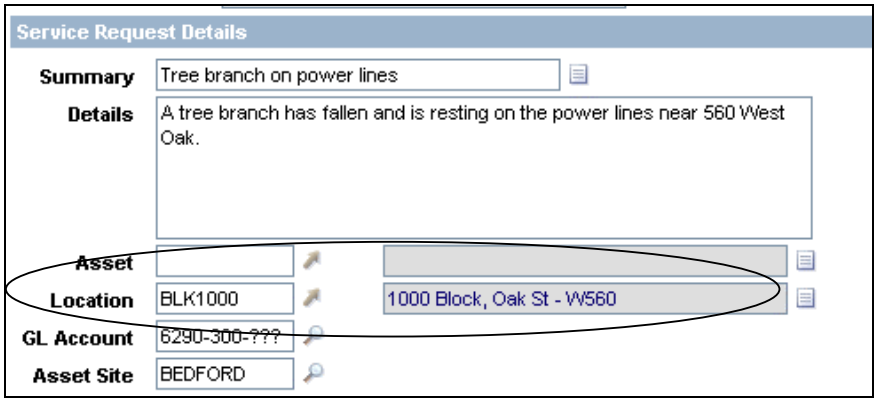
Step	Action
6	In the **Filter By** field of the **Select Value** dialog box, select **ALL**, then click **Refresh**. Result: All the Location record values are displayed.



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Entering a Service Request continued

Utility Scenario: Entering a Service Request continued

Step	Action
7	Choose **BLK1000** from the Location table list. Result: BLK1000 record is retrieved in the Service Request Details section.  Note: You might need to filter the list to more easily find the record.
8	**Save** the record.

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Chapter Summary

Quick Reporting Application

The **Quick Reporting** application provides another way to process a work order. Use Quick Reporting to create work orders for emergencies, for jobs that have happened after the fact, or to report actuals and failure on any open work orders.

A work order entered through the Quick Reporting application will have an INPRG (in progress) status.

When reporting on an open work order, you can copy information from an existing work plan to enter actual labor and material usage.

Service Requests Application

Information entered in the Service Requests application is used to generate SR records. These records can be converted into other work-related records (including work orders) using Workflow processes.

When converted to work orders, the request can then be accessed from the Work Order Tracking, Quick Reporting, and Labor Reporting applications.

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NOTES:

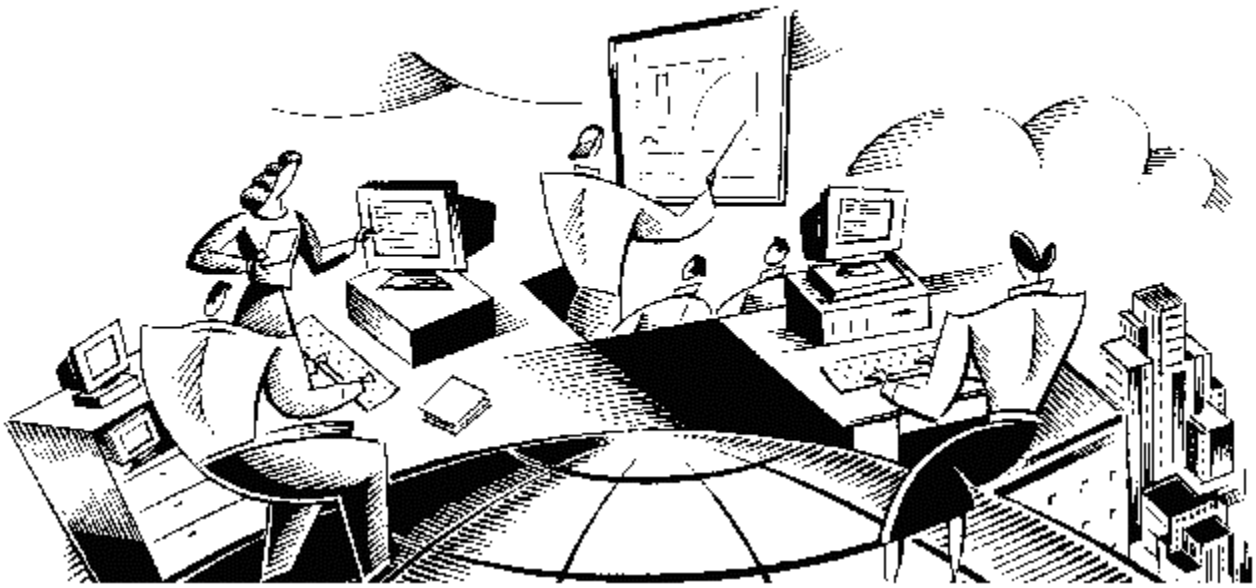
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NOTES:

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MXES Immersion Training for EAM

Unit 4: Using What You've Got: Material Management



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In This Unit

This unit contains the following chapters:

Chapter	Subject
11	Entering Supporting Records for Materials Management: Companies
12	Requisitioning
13	Reordering

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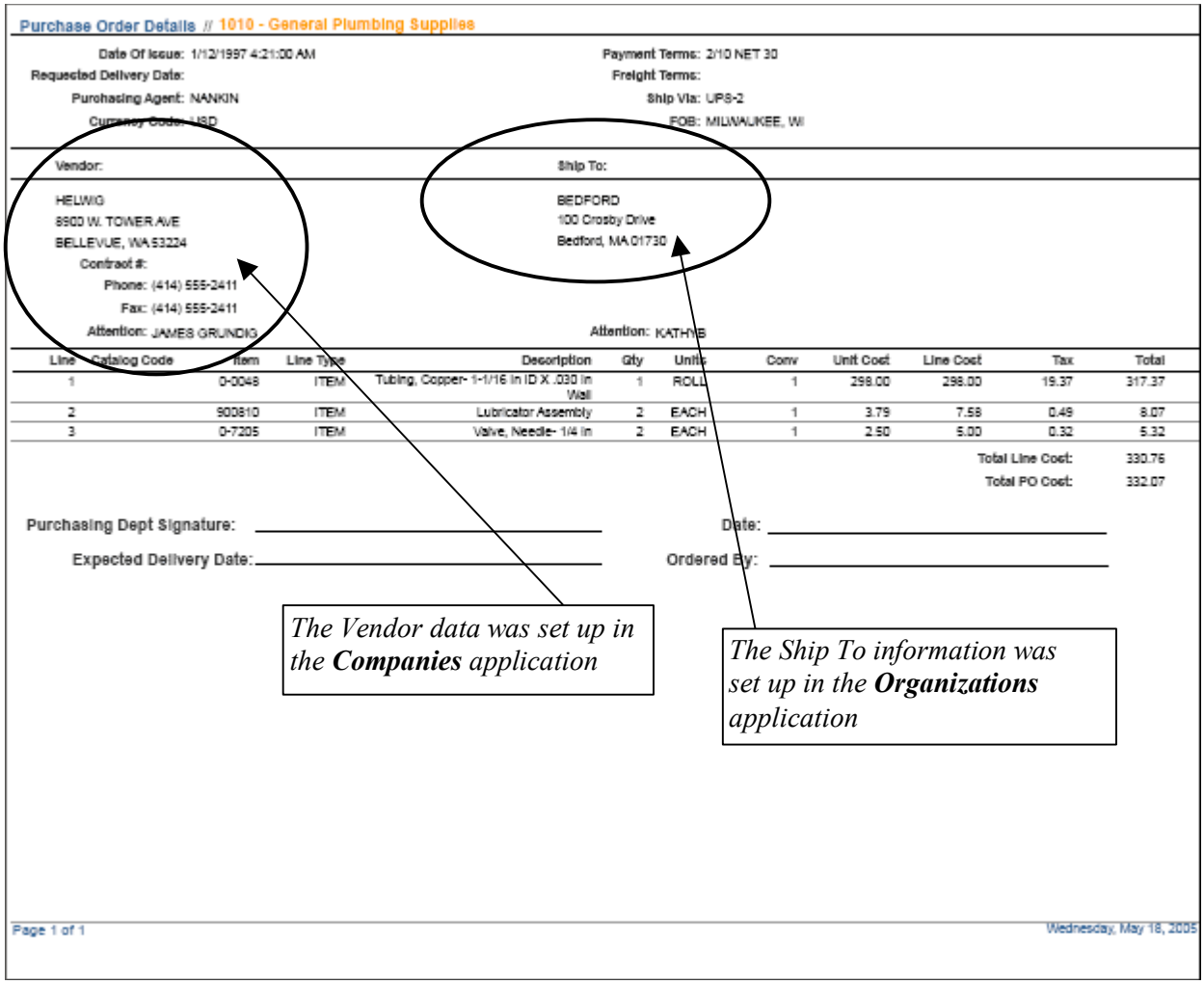
Unit Overview

Introduction

Throughout this course we have learned how to use Maximo applications for work management. In this unit, our focus will be on learning how to use Maximo for fulfillment requests for suppliers.

The materials management function is a key component to an organization's process running smoothly while keeping costs down and quality up.

The **Purchasing** module in Maximo has applications that revolve around the processes of material and service procurement. These applications are designed to work together with the inventory applications in the material management function.



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Unit Overview continued

Materials Management Functions

Materials Management is made up of many functions[1]:

- stores, or "work station storage and supporting or indirect materials";
- inventory control, or "how many" parts, pieces, components, raw materials, and finished goods;
- production flow, or "when," including shop floor-control scheduling along with the materials handling, storage, and movement necessary to reach work stations;
- subcontracting;
- purchasing-procurement, or "buying" pieces, pounds, gallons, tons of raw material, and MRO supplies;
- transportation, or "incoming and finished goods, freight movement"; and
- salvage, or "disposing of surplus and scrap."

G.J. Zenz, "Materials Management and Purchasing," Journal of Purchasing and Materials Management, vol. 17, no. 1, spring 1981, p. 18.

Unit Focus

Because this unit focuses on purchasing, this section provides an overview of the following topics:

- Entering company and company master records
- Contract types
- Types of purchase orders
- Ways in which a work order is created
- How and with what applications a purchase order is processed through a lifecycle

Learning Objectives

When you have completed this unit, you should be able to:

- reorder items from a storeroom,
- create a purchase requisition,
- approve a purchase requisition,
- create a purchase order to obtain parts and service,
- record items as having been received into the storeroom, and
- reconcile invoices.

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Unit Overview continued

Definitions

We will use the following terms in this unit:

- *Purchase requisition* (*PR)*: A request issued internally to a purchasing department to order materials or services from a vendor.
- *Purchase order* (*PO)*: An order request for materials or services from a vendor.
- *Line items*: Individual items, materials, or services on a purchase requisition.
- *Receipt:* A type of transaction in Maximo that indicates that a vendor has delivered materials or performed a service.
- *Invoice*: A bill from a vendor for delivered materials or services.

Implementation Questions to Consider

- What criteria do you use to select vendors?
- What criteria do you use to measure vendor performance?
- Do you track vendor performance?
- Are you currently involved in an e-commerce initiative for the purchase of MRO and OEM items?
- How does your company communicate purchase orders to vendors (e.g., mail, fax)?
- Are purchasing cards (Pcards) used? If so, do you track line item details for Pcard transactions?
- Is electronic routing used to approve purchase orders?
- What are the dollar approval limits for purchasing personnel?

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Unit Overview continued

Implementation Questions to Consider

continued

- When are stores inventory expensed (e.g., at time of purchase/receipt, or time of issue)?
- How many hours are spent each day in buying stock and non-stock parts?
- Are POs/invoices segregated by commodity?
- What is the estimated burden rate for purchasing personnel?
- Do you have national or preferred pricing contracts with your suppliers?
- Do all plants take advantage of these pricing contracts, or does each plant operate independently?
- How many purchase orders are written per year?
- Are purchase requisitions done manually?
- Are purchase requisitions approved manually?
- What is the average transaction cost ($) for processing a PO?

KPIs

The following table describes performance metrics that relate to purchasing.

Metric Title	Metric Description
Time from PR initiation to approved status	Requested date subtracted from approved date.
Time from PR approval to order	Approved date subtracted from ordered date.
# Purchase requisitions by required date	Average number of purchase requisitions per day.
% Maintenance materials charged to credit cards	What percentage of all maintenance materials are purchased on credit cards.
% Single line item Pos	What percentage of all POs are POs with single line items.
% Rush Pos	What percentage of all POs are rush.
Value orders/month	Average total value of all purchase orders per month.
Late deliveries	How many late deliveries there are per year.
% Returns/rejections	What percentage of deliveries are rejected.

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Unit Overview continued

Out-of-the-Box Maximo Reports and KPIs

The following reports are available for purchasing-related applications (Purchase Orders, Purchase Requisitions, Requests for Quotation, Materials Requisition, Invoices):

Report	Description
Purchase Requisition List	Lists PR number, description, and status for selected records.
Purchase Requisition Details	Lists the details of the selected records.
Request for Quotation List	Lists RFQ number, description, and status for selected records.
Request for Quotation Details	Lists details of the selected records.
Purchase Order List	Lists PO number, description, vendor, required date, vendor delivery date, and status for selected records. Links are available via PO number to the PO Details report and via status to the PO Status report.
Purchase Order Status Details	Lists PO status history, and material and service receipts for the PO.
Purchase Order Details	Lists the details of the selected records.
Receipts List	Lists PO number, description, PO status, and receipt status for selected records. Links are available via the PO number to the PO Details report.
Receipt Inspections	Details all items due to be inspected, along with their applicable PO information.
Invoice List	Lists invoice and description for selected records.
Invoice Details	Lists details of the selected records.

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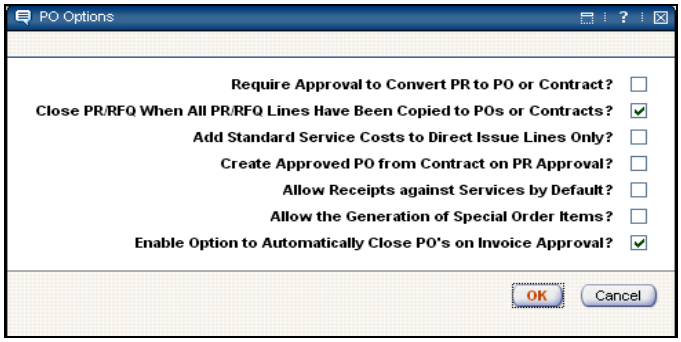
Unit Overview continued

Organizations Application Setup Options Revisited

To recap: The following setup options for purchasing are available in the Organizations application.

Purchase Order Options

To set purchase order options, use the **Select Action** menu to select **PO Options** to display the **PO Options** screen.



The table below describes each of these options and their function.

Option	Function
Require Approval to Convert PR to PO?	Check this box to require users to get approval before converting purchase requisitions into purchase orders.
Close PR/ RFQ When All PR/RFQ Lines Have Been Copied to POs or Contracts?	Check this box to automatically change the PR or RFQ status to CLOSED when all PR/RFQ lines have been copied to POs.
Add Standard Service Costs to Direct Issue Lines Only?	Check this box to add the standard service costs only to direct issue lines. If the check box is cleared (default), Maximo adds the costs to all issue lines.
Create Approved PO from Contract on PR Approval?	Check this box to automatically create an approved PO from a contract when the PR is approved. If the check box is cleared, the PO must be created manually.

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Unit Overview continued

Purchase Order Options

continued

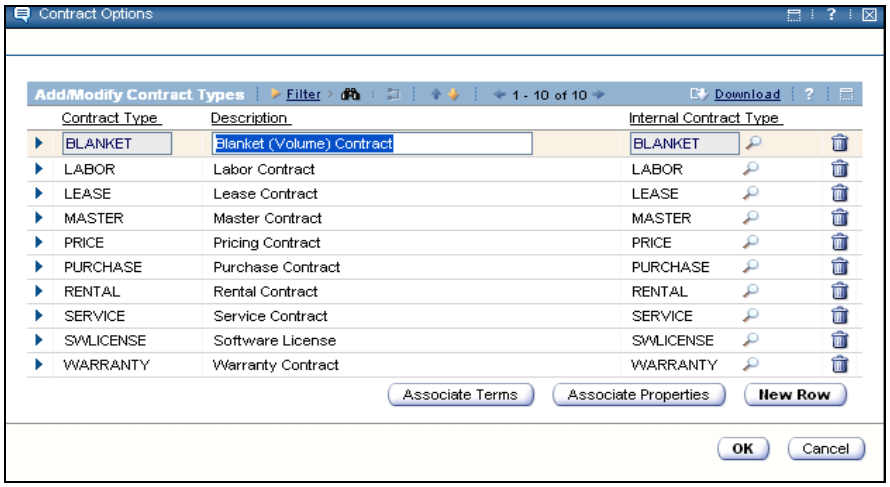
Option	Function
Allow Receipts Against Services by Default?	Check this box to automatically allow receipts for services rendered.
Allow the Generation of Special Order Items?	Check this box to allow special order inventory items to be generated when a user orders items from vendors that are not currently in the inventory system.
Enable Option to Automatically Close POs on Invoice Approval?	Check this check box to automatically close the PO when the invoice status changes to approved.

Organizations Application Setup Options Revisited

To recap: The following setup options for contract management are available in the Organizations application.

Contract Options

To configure contract options, select **Contract Options** from the **Select Action** menu to display the **Contract Options** dialog box.



The **Contract Options** dialog box is used to associate Terms and Conditions with Contract Types.

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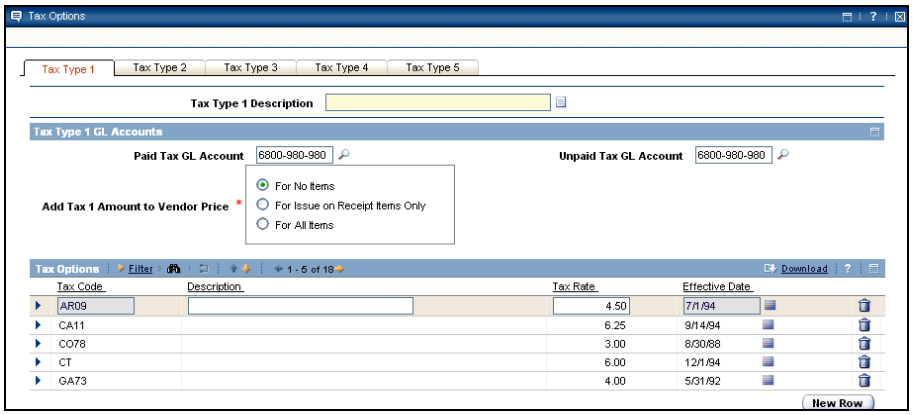
Unit Overview continued

Organizations Application Setup Options Revisited

To recap: The following setup options for taxes are available in the Organizations application.

Tax Options

To configure tax options, select **Tax Options** from the **Select Action** drop-down menu to display the **Tax Options** dialog box.



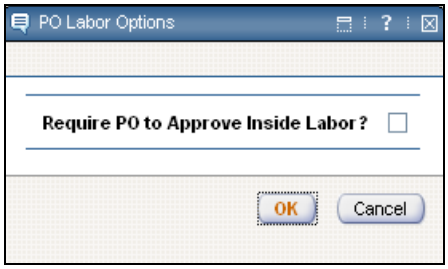
Use the Tax Options dialog box to specify default tax GL accounts and to define tax codes for Maximo to use when calculating the amount of tax due on a PR, RFQ, PO, or invoice.

Organizations Application Setup Options Revisited

To recap: The following setup options for PO labor are available in the Organizations application.

PO Labor Options

To configure PO labor options, select **PO Labor Options** from the **Select Action** menu to display the **PO Labor Options** dialog box.



Use this dialog box to set defaults for outside and inside labor.

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The Purchasing Module

Introduction

Purchasing items and services to replenish, maintain, and improve your assets is very crucial in Strategic Asset Management. Maximo enables you to track every stage of the procurement process from requisitioning to invoice reconciliation.

The Maximo **Purchasing** module contains several applications to implement material management processes:

- Purchase Requisitions (PRs)
- Purchase Orders (POs)
- Receiving
- Invoices
- Request for Quotations (RFQs)
- Companies
- Company Master
- Terms and Conditions

For the purposes of this course, we will use these applications for the following material management processes:

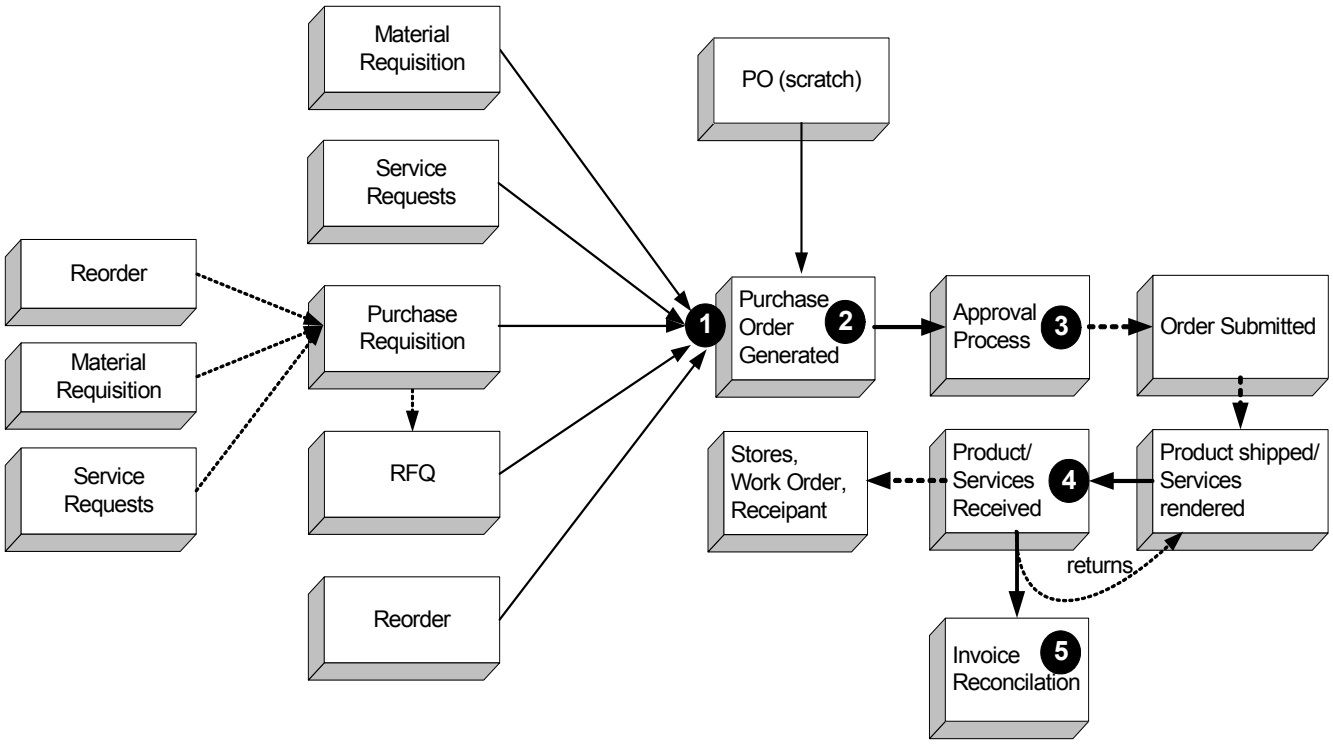
- Requisitioning
- Reordering

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The Purchasing Lifecycle

Purchasing Lifecycle

For the purpose of this course, our focal point scenario will start from generating purchase orders and then track the step-by-step procedures as the processes pass through several Maximo applications until the procurement process is completed.



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The Purchasing Lifecycle continued

Stage	Description
1	A PR is created in one of the following ways: • Requisitioning for materials and parts using the **Desktop Requisitions** or **Purchase Requisition** applications, or creating a PR using the **Reordering** and **Desktop Requisitions** applications • Requisitioning for services using the **Service Requests** or **Purchase Requisition** applications • Reordering for a storeroom replenishment or work orders using only the **Reordering** action in the **Inventory** application • Awarding an RFQ using the **Request for Quotations** application • Reordering for a storeroom replenishment or work orders only using the **Reordering** action in the **Inventory** application
2	A purchase order (PO) is created from Requisitions, Reordering function, Request for Quotations, or "from scratch."
3	Depending on whether set up electronically or manually, approve the PO and then submit the order to the vendor via fax, e-commerce, or phone.
4	Services are rendered and materials are received using the **Receiving** application. If applicable, inspection is performed and, if necessary, returns are made. Ordered items are moved to storerooms, work locations, recipients, etc.
5	Vendor invoices are reconciled using the **Invoices** application.

Purchasing Applications

Several applications in Maximo can be used to create and manage the purchasing process:

- Purchase Orders
- Purchase Requisitions
- Desktop Requisitions
- Service Requests
- Request for Quotations
- Receiving
- Invoices

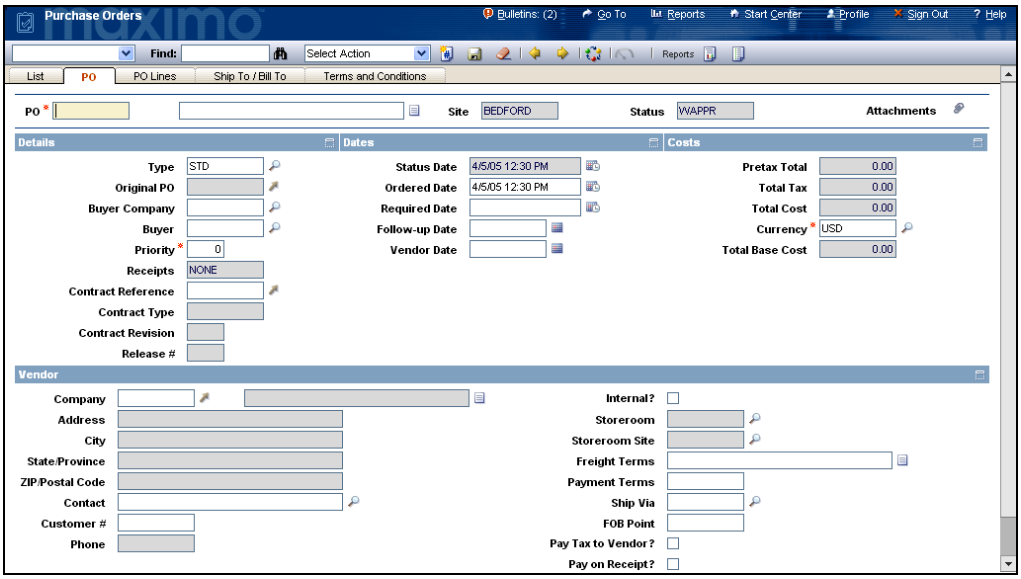
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The Purchasing Lifecycle continued

Purchase Orders

A *purchase order* (PO) is an authorized order from a purchasing agent or department to an internal supplier or external vendor. You can use the **Purchase Orders** application to create purchase orders—either from purchase requisitions (PRs), desktop requisitions (MR), requests for quotation (RFQs), or from scratch—using the PO itself. You also can create blanket purchase orders, releases, pricing agreements, and change orders.



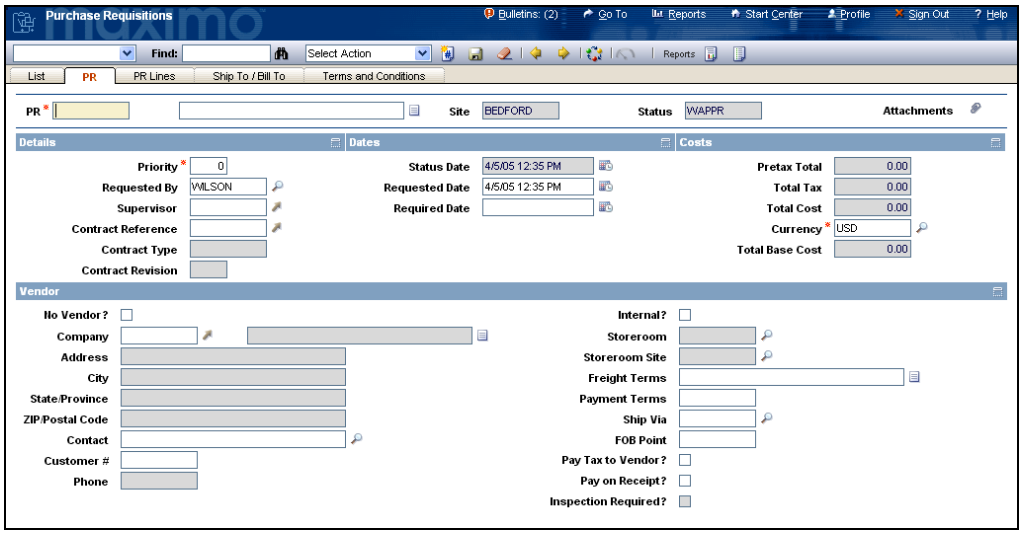
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The Purchasing Lifecycle continued

Purchase Requisitions

A *purchase requisition* (PR) is a written request issued internally to a purchasing department to order items or services. You can use the **Purchase Requisitions** application to create purchase requisitions for items, supplies, and services, or to create a purchase order (PO) from a purchase requisition.



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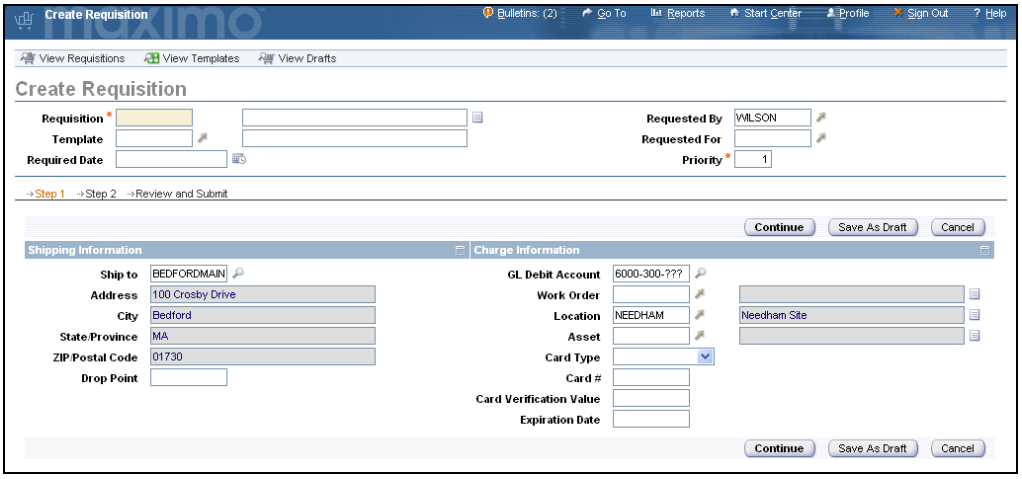
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The Purchasing Lifecycle continued

Desktop Requisitions

You can use the **Desktop Requisitions** applications to handle your material requisitioning needs quickly and easily. You can use Desktop Requisitions to perform the following tasks:

- Search for and order material items you need
- Create template requisitions
- View your open, draft, and template requisitions
- Check the status of an order
- Complete the order process by receiving items



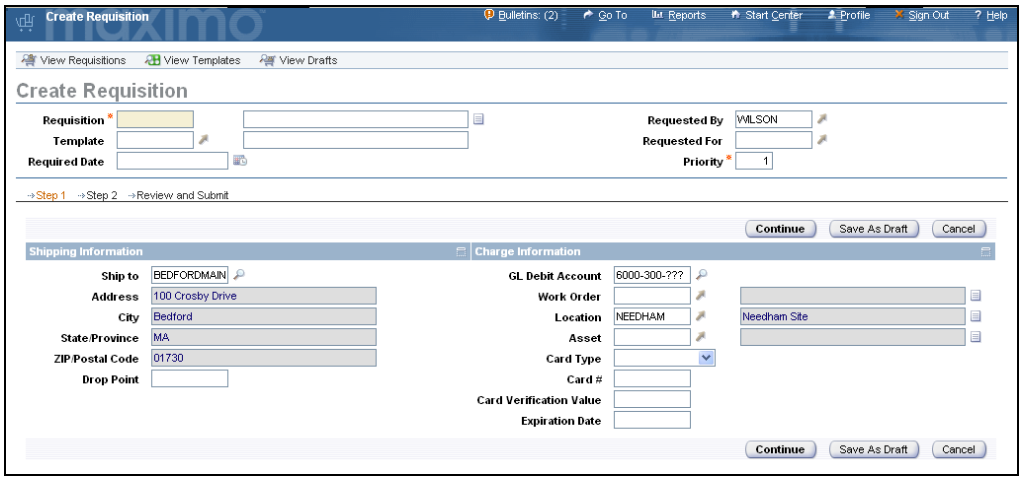
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The Purchasing Lifecycle continued

Service Requests

You use the **Service Requests** application to request a repair or change to your service items.



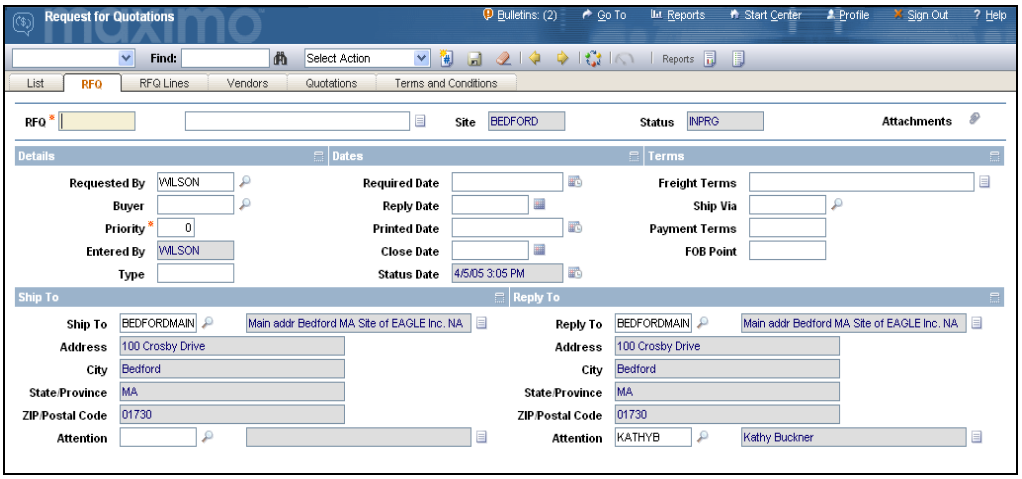
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The Purchasing Lifecycle continued

Request for Quotations

A *request for quotation* (RFQ) is a request that is sent out to one or more potential vendors. In the request, you can ask for specific costs and conditions for the delivery of an item or service. Using RFQs lets you manage quotations in order to make the best purchasing decision. The **Request for Quotations** application lets you create requests and store quotations to assess which vendor best fits your needs.

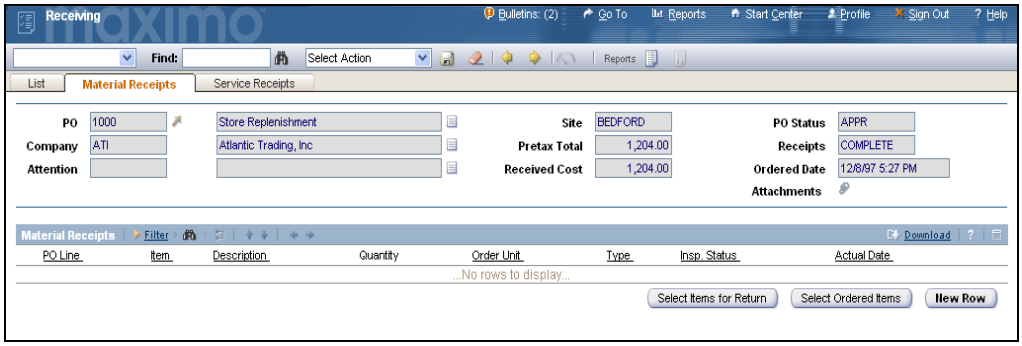


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The Purchasing Lifecycle continued

Receiving

Use the **Receiving** application to receive materials and services from purchase orders. You can search for and receive existing PO line items from the Select Ordered Items and the Select Ordered Services pages, accessible from the Material Receipts and Service Receipts tabs, or manually enter received items on the Receipts tabs.



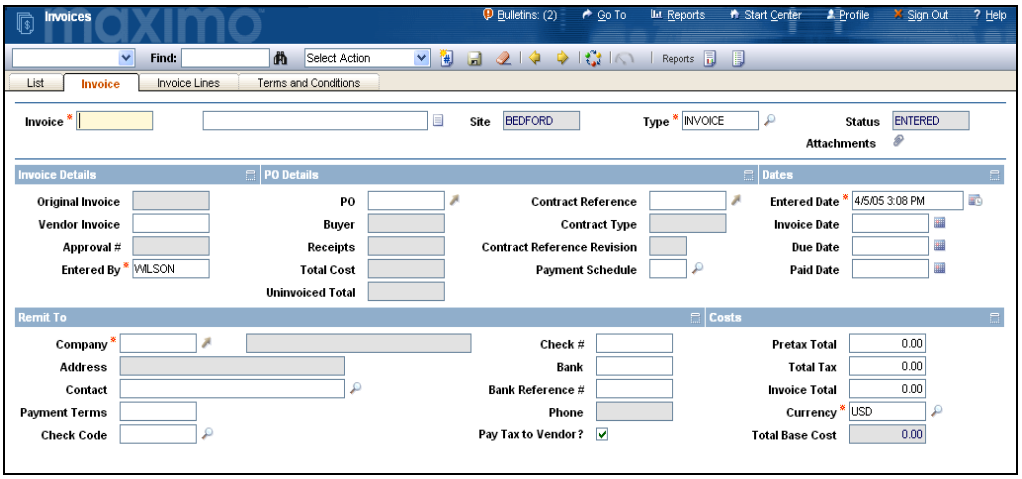
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The Purchasing Lifecycle continued

Invoices

An *invoice* is a bill from a vendor for delivered products or services. The **Invoices** application lets you record invoices as well as debit and credit notes from vendors, and match invoice details against purchase orders (POs) and receipts. It also lets you create invoices for which there are no receipts.



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Purchase Requisitions in Maximo

Introduction

In this section we will provide an overview of the purchase requisition concepts used in Maximo.

Types of PRs

Maximo allows you to create two types of PRs:

- **Internal PRs** requesting the transfer of materials from another company storeroom
- **External PRs** requesting the purchase of the necessary materials from an outside vendor

PR Status

A PR can have four possible statuses:

- **Waiting for Approval (WAPPR)** is the status that a purchase requisition is assigned when it is created. Some default fields are read-only.
- **Approved (APPR)** status is available only if your business rules require approvals. The default Maximo configuration does not require approvals for PRs and PR line items that you transfer to POs.
- **Closed (CLOSE)** status indicates that all the PR's line items have been assigned to one or more purchase orders. All fields are read-only, and the record can no longer be modified.

  If you try to close a PR and a line item has not yet been assigned, Maximo displays a message. Your system administrator can set Maximo to automatically close PRs after you transfer all the line items to POs, RFQs, or contracts.
- **Canceled (CAN)** status is available if the current PR status is Approved (APPR) and if none of its line items have been assigned to a purchase order. All fields are read-only, and a record can no longer be modified.

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Purchase Orders in Maximo

Introduction

In this section we will provide an overview of the PO concepts used in Maximo.

Types of POs

There are three types of purchase orders:

- **PART**: Parts or item order
- **SERV**: Services
- **STD**: Standard (the default)

Purchase Order Status

Every purchase order has a status value that indicates its position in the purchase order processing cycle.

The following table lists and describes each status:

Status	Description
WAPPR	**Waiting for approval** is the status that a PO is assigned when it is created. Some default fields are read-only.
INPRG	**In Progress** status indicates that a PO still needs to be modified before it can be approved.
APPR	**Approved** status is available only if the current PO status is WAPPR or INPRG. All fields are read-only. To approve a PO, you must have a monetary approval limit equal to or greater than the total cost of the PO. After a PO has been approved, you cannot edit any of its fields.
CAN	**Canceled** status is available if the current PO status is APPR. You cannot cancel an approved PO if one or more PO lines items have been received, the supplier has sent notification of delivery items via ASN transaction, or the supplier has rejected the PO cancellation.
CLOSE	**Closed** status indicates that all the PO's line items have been received. After a PO is closed, it is stored as a history record and cannot be modified.

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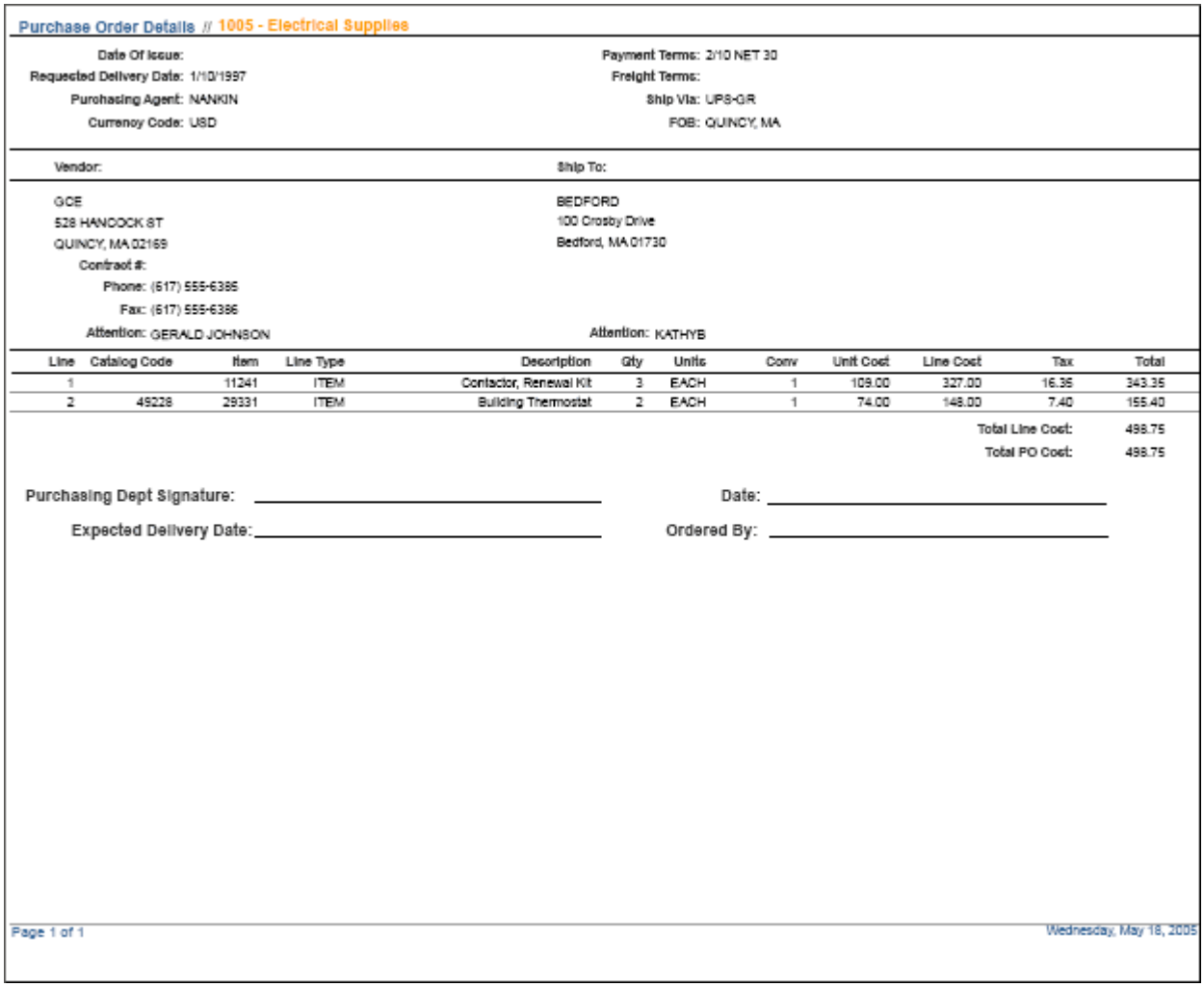
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Purchase Orders in Maximo continued

Something to Think About: Out-of-the-Box Purchase Order

The graphic below shows what the out-of-the-box Maximo purchase order looks like.

During your implementation, use this as a guide to determine what your organization should modify to meet its needs.



Purchase Order Details // 1005 - Electrical Supplies

Date Of Issue:
Requested Delivery Date: 1/10/1997
Purchasing Agent: NANKIN
Currency Code: USD

Payment Terms: 2/10 NET 30
Freight Terms:
Ship Via: UPS-GR
FOB: QUINCY, MA

Vendor:
GCE
528 HANCOCK ST
QUINCY, MA 02169
Contract #:
Phone: (617) 555-6386
Fax: (617) 555-6386
Attention: GERALD JOHNSON

Ship To:
BEDFORD
100 Crosby Drive
Bedford, MA 01730
Attention: KATHYB

Line	Catalog Code	Item	Line Type	Description	Qty	Units	Conv	Unit Cost	Line Cost	Tax	Total
1		11241	ITEM	Contactor, Renewal Kit	3	EACH	1	109.00	327.00	16.35	343.35
2	45228	29331	ITEM	Building Thermostat	2	EACH	1	74.00	148.00	7.40	155.40

Total Line Cost: 498.75
Total PO Cost: 498.75

Purchasing Dept Signature: _____ Date: _____

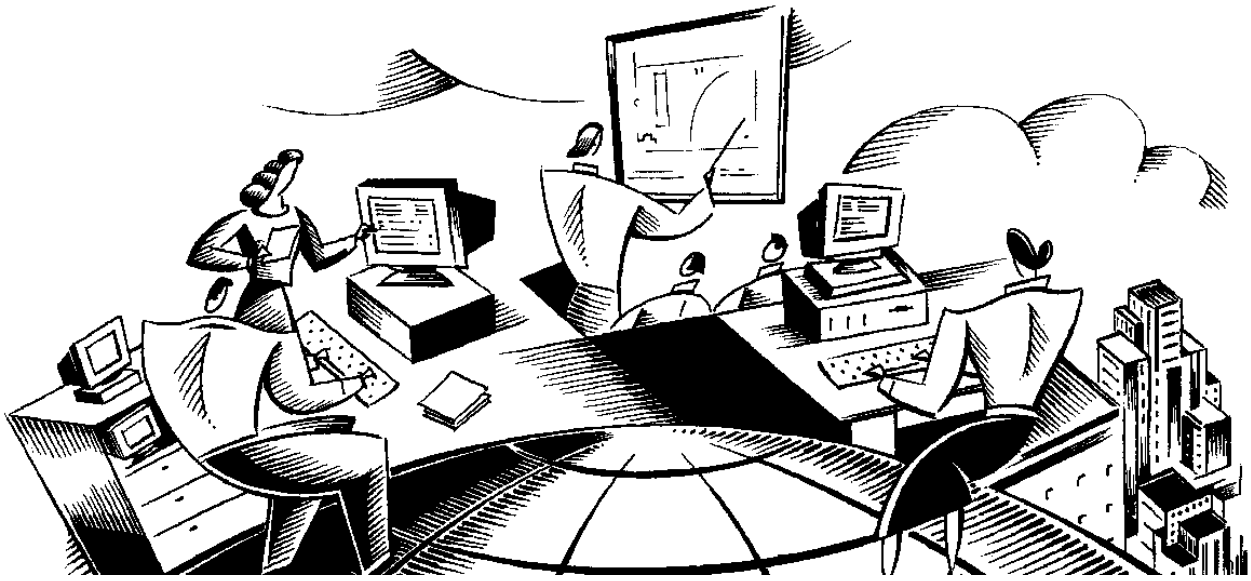
Expected Delivery Date: _____ Ordered By: _____

Page 1 of 1 Wednesday, May 18, 2005

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MXES Immersion Training for EAM

Chapter 11: Entering Supporting Records for Materials Management: Companies



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In This Chapter This chapter contains the following topics:

Topic	See Page
Chapter Overview	11-1
The Company Master Application	11-5
The Companies Application	11-14
Chapter Summary	11-21

Chapter Overview

Introduction

This chapter focuses on the process of inserting records to support the procurement process. This chapter includes examples for you to follow so that information is ready when you need it for creating and building other records.

Learning Objectives

When you have completed this chapter, you should be able to:

- discuss key performance indicators (KPIs) as they relate to vendor companies, and
- insert company and company master records.

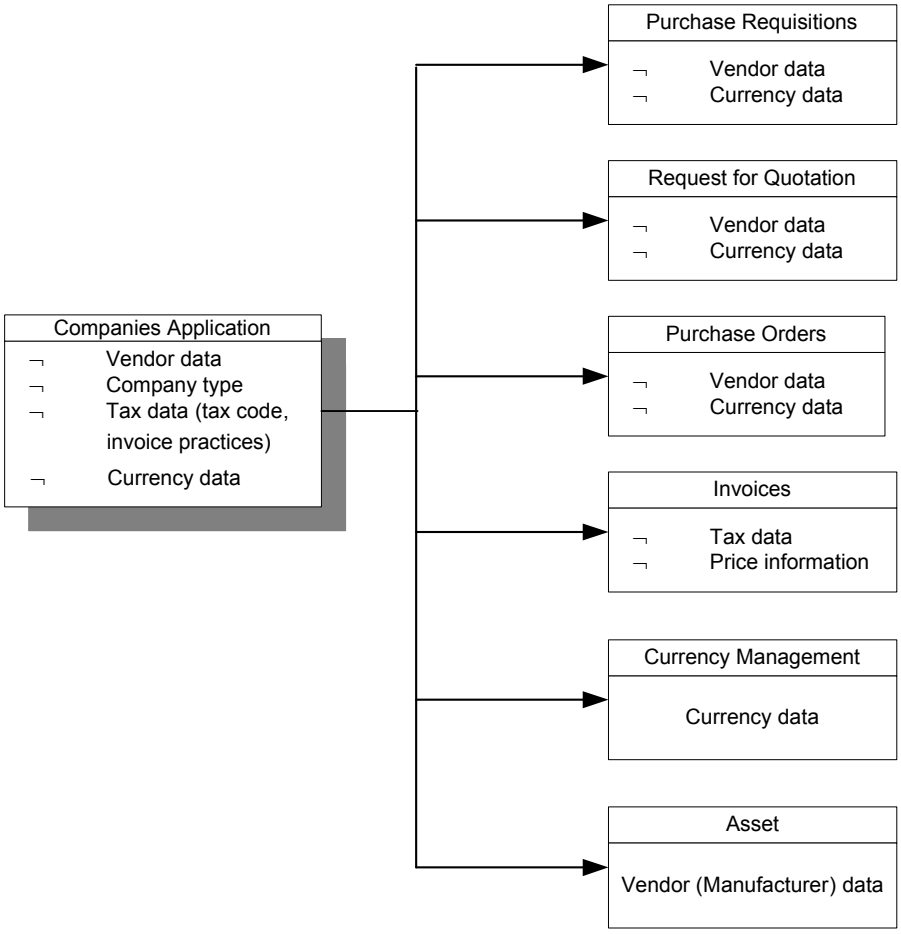
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Chapter Overview continued

Companies Application Data

The chart below illustrates some examples of where company data is used by other Maximo applications.



Implementation Questions to Consider

- Do I have an accurate and updated list of vendors? Alternative vendors?
- Is vendor analysis performed on a regular basis?
- What criteria are used to select vendors?
- What criteria are used to measure vendor performance?
- How are purchase orders communicated to vendors (e.g., mail, fax, e-commerce)?

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Chapter Overview continued

KPIs

Some vendor KPIs are as follows:

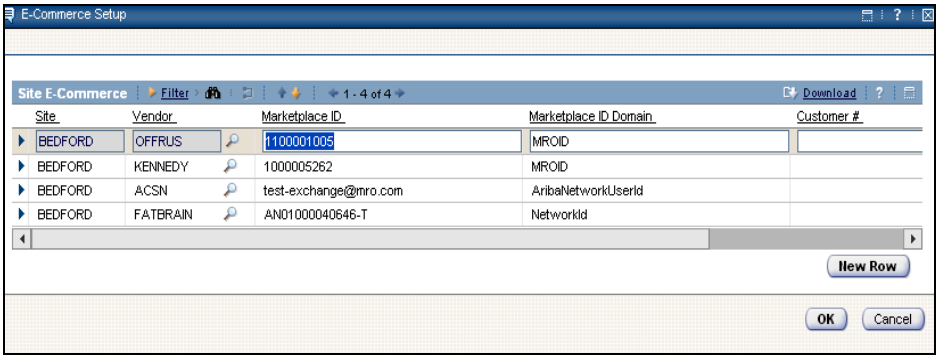
Metric Title	Metric Description
% of deliveries to the right location	What percentage of deliveries were to the right location.
% of line items where equals or approved substitutes were delivered.	What percentage of line items delivered were exactly what was ordered versus approved substitutes.
% of deliveries with required documentation	What percentage of deliveries came with the required documentation.
% of product returns owing to material handling- or quality-related issues	What percentage of product returns are due to the handling of material or are related to manufacturer quality.

Organizations Application Setup Options Revisited

The following organization setup options are available for vendors set up in the Companies application.

E-Commerce Option

You use the E-Commerce Setup dialog box to specify e-commerce parameters for sites and vendors. You can insert multiple rows per site to accommodate multiple vendors and/or domains. This allows you to punch out directly to vendor catalogs and to place orders electronically.



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Chapter Overview continued

Implementation Tip



Categorizing your companies into types will expand your reporting and analysis capabilities. You can create company types specific to your business using **Application Setup**.

Out-of-the-box Maximo comes with three company types:

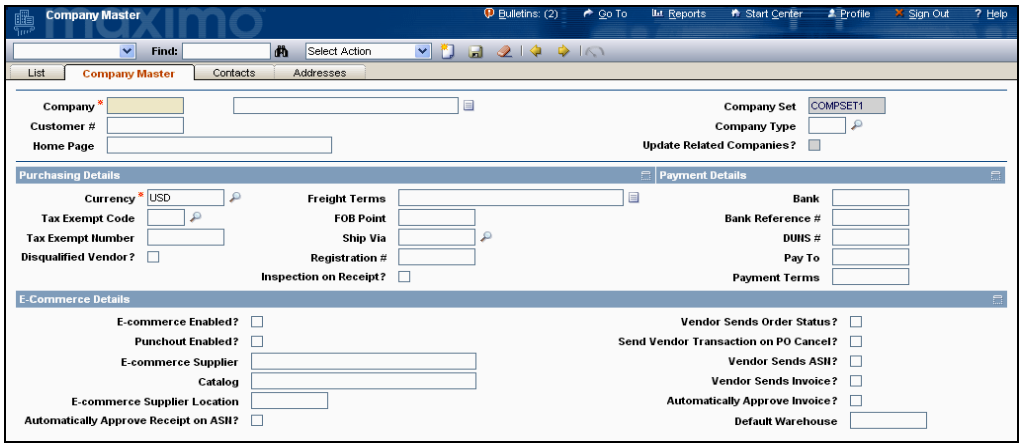
- **Courier** – transit company
- **Manufacturer** – manufacturer of items or assets
- **Vendor** – vendor of items or assets

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The Company Master Application

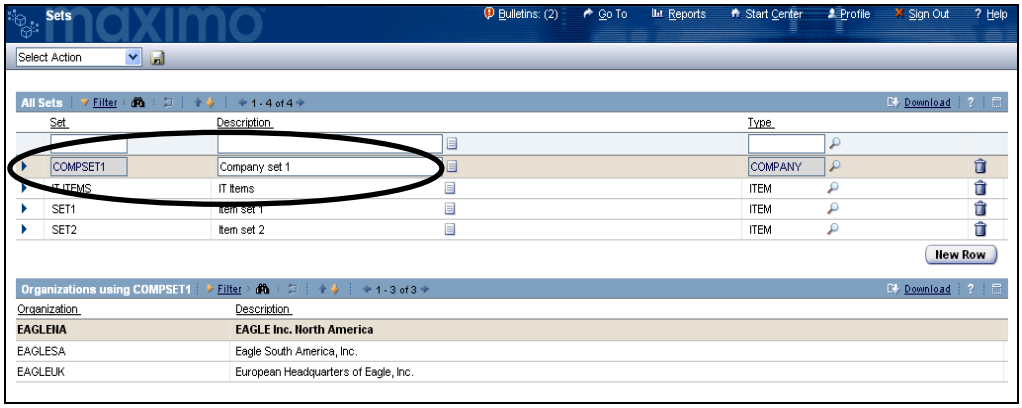
Introduction

You use the **Company Master** application to associate company records for organizations that belong to a particular company set. Company master records contain the necessary vendor-related information that serves as templates for company records created in the Companies application.



Revisiting the Sets Application

All **Company Master** records in Maximo belong to a *company set*. Company sets enable you to share vendor-related information among multiple organizations. Each organization must be associated to at least one company set.



Notice that EAGLENA, EAGLESA and EAGLEUK use COMPSET1, these organizations can now have access to company records associated in the Company Master application.

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The Company Master Application continued

Company Master Considerations



When entering records in the Company Master application, consider the following points:

- *Company master* records are created at the system (database) level and must be associated in a company set.
- A c*ompany* record, which contains vendor-related information, should first be associated to a company master record before it can be accessed in the *organization level.*
- *Organizations* that share the same company sets can share vendor-related transactions with each other.

Benefits

You can use the Company Master application to create identical company records for different organizations in a single procedure.

Furthermore, you can associate and share vendor-related information across other organizations belonging to the same company set.

Company Master Tabs

The Company Master application has four tabs:



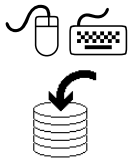
Use this tab…	To…
List	Search for company master records.
Company Master	View, modify, add, or delete company master records.
Contacts	View, modify, edit, or delete company contacts.
Addresses	View, modify, or delete the mailing information for a company.

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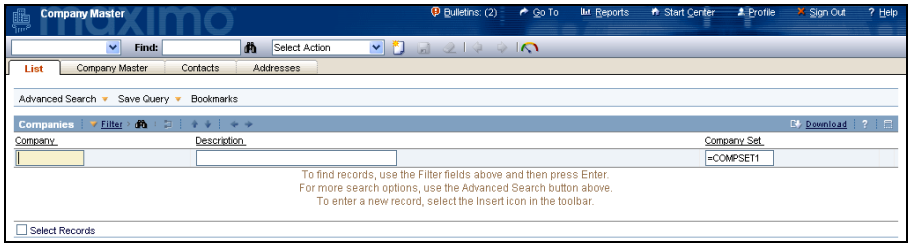
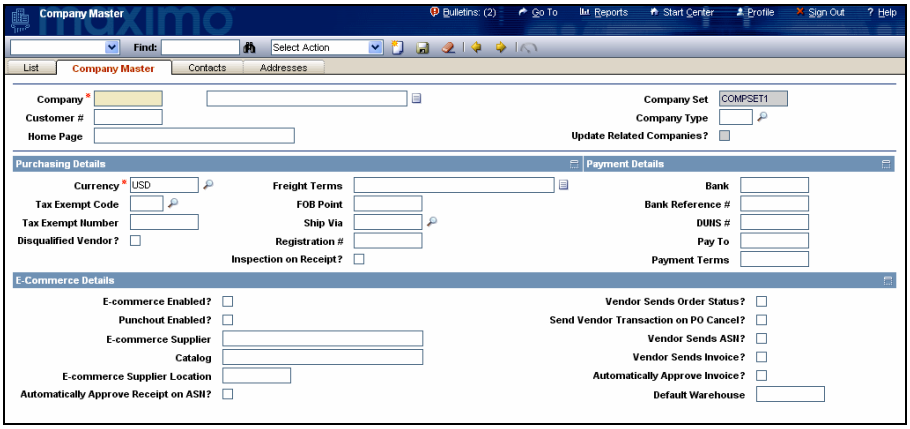
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The Company Master Application continued

Exercise: Creating a Company Master Record



In this exercise we will create a company master record belonging to COMPSET1 and create a company record for EAGLENA and EAGLEUK organizations using the **Company Master** template.

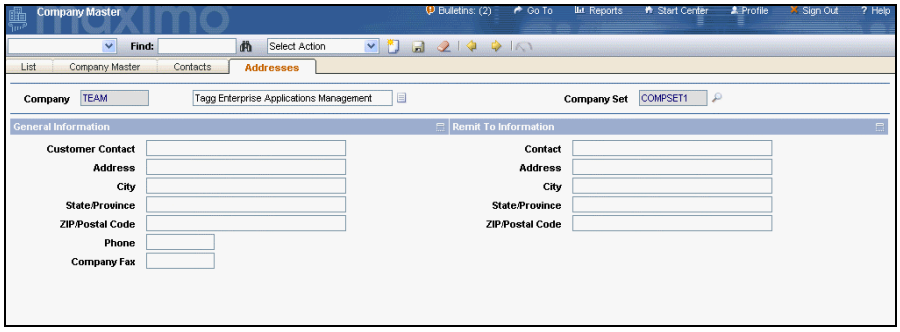
Step	Action
1	From the **Purchasing** module, select the **Company Master** application. Result: The Company Master application opens on the List tab. 
2	Click the **New Company Master** icon. Result: Maximo displays the Company Master tab. 

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The Company Master Application continued

Exercise: Creating a Company Master Record continued

Step	Action
3	Enter the following data: **Field** — **Value** **Company** — TEAM **(Description)** — Tagg Enterprise Applications Management **Company Type** — V **Currency** — USD **Ship Via** — UPS-GR Hint: Use the Select Value icon if necessary.
4	**Save** the record, then access the **Addresses** tab. Result: Maximo displays the Addresses tab. 

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The Company Master Application continued

Exercise: Creating a Company Master Record continued

Step	Action
5	Enter the following data in the **General Information** section: **Field** — **Value** **Customer Contact** [*Your Name*] **Address** 105 Rockwell St. **City** Boston **State/Province** MA **Zip/Mail Code** 37658 **Phone** 606-555-1212 **Company Fax** 606-555-1213
6	Enter the following data in the **Remit To Information** section: **Field** — **Value** **Contact** [*Your Name*] **Address** 105 Rockwell St. **City** Boston **State/Province** MA **Zip/Mail Code** 37658
7	**Save** the record. Result: The new company master record is included in the Maximo database. Notes: • The contact that you added to the Addresses tab is automatically added to the Contacts tab. • Our next exercise will begin at this point.

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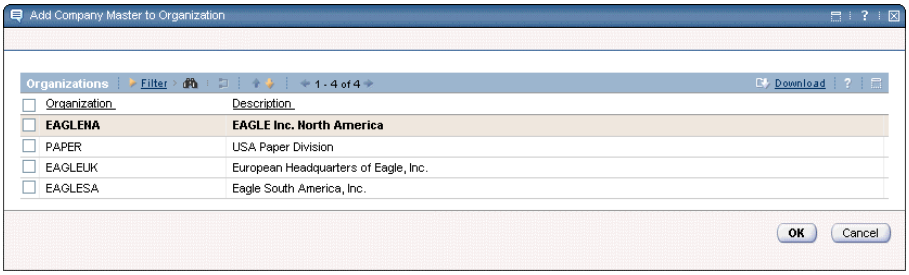
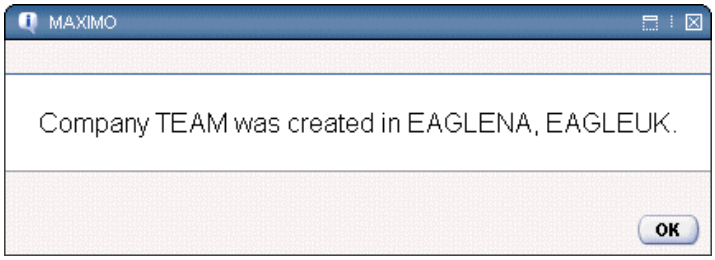
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The Company Master Application continued

Exercise: Adding a Company Master Record to an Organization



In this exercise we will use the **Company Master** application to associate company records to the EAGLENA and EAGLEUK organizations.

Step	Action
1	From the **Select Action** menu, choose **Add Company Master to Organization**. Result: The Add Company Master to Organization dialog box opens. 
2	Select the check boxes for the **EAGLENA** and **EAGLEUK** organizations, then click **OK**. Result: Maximo displays a confirmation dialog box. 
3	Click **OK** to close the dialog box. Result: The TEAM company record is added to the EAGLEUK and EAGLENA organizations.

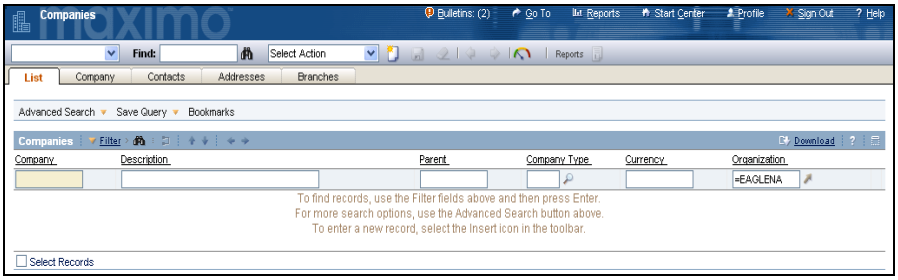
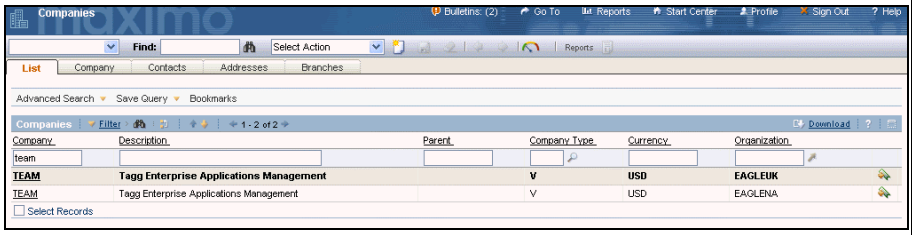
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The Company Master Application continued

Exercise: Viewing the Company Record

In this exercise we will view the company record (TEAM) we created in the EAGLENA and EAGLEUK organizations, respectively.

Step	Action
1	From the **Purchasing** module, select the **Companies** application. Result: The Companies application List tab opens on the default organization (EAGLENA). 
2	On the **List** tab, filter for the **TEAM** company records for *both* the **EAGLENA** and **EAGLEUK** organizations. Result: Your screen should look similar to the graphic below.  Note: You will need to clear the Organization field to get both organizations on the list.

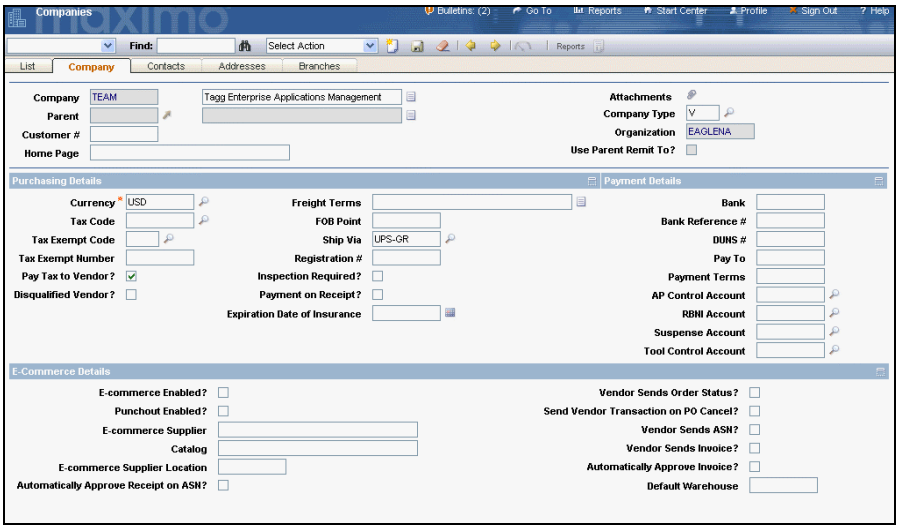
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The Company Master Application continued

Exercise: Viewing the Company Record

continued

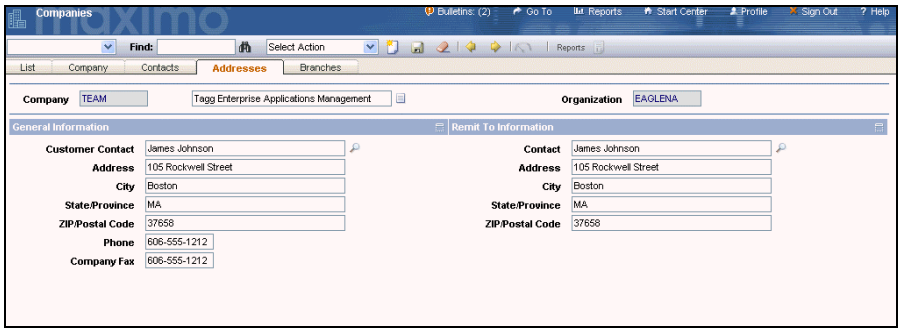
Step	Action
3	Access the **TEAM** record for the **EAGLENA** organization. Result: The record opens on the Company tab.  Note: The information from the company master is duplicated on the Company tab.

continued on next page

The Company Master Application continued

Exercise: Viewing the Company Record

continued

Step	Action
4	Click the **Addresses** tab to display it. Result: Your screen should look similar to the graphic below.  Note: The information from the company master is duplicated in the Addresses tab.
5	Optional: Find the TEAM record for the EAGLEUK organization and repeat the previous steps to view its tabs.

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The Companies Application

Introduction

Companies can be referenced via purchase requisitions, purchase orders, asset and inventory records, and service contracts.

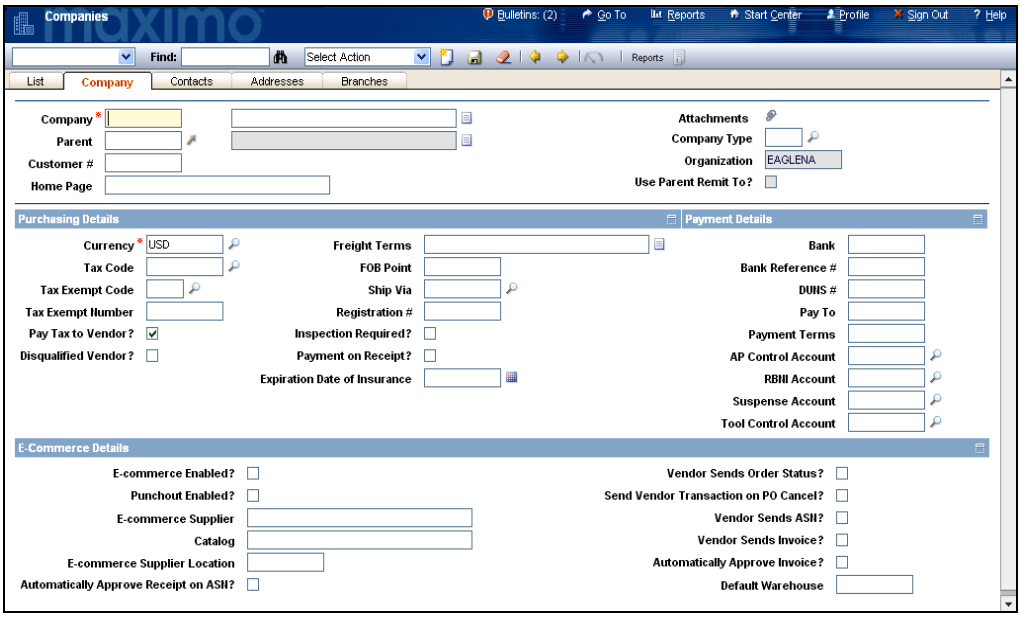
Entering companies into the database provides the basis for conducting vendor analysis, listing alternative vendors and manufacturers, and tracking assets at outside locations, such as repair locations.

Companies Application

Use the **Companies** application to set up companies that you do business with.

You can also enter your own company's storeroom locations here so that these locations become "vendors" for internal purchase orders (i.e., transfers from one storeroom location to another).

Vendors can have parent companies or multiple vendor locations for a single company.



Vendors

Inventory and purchasing personnel can work together with the Maximo vendor analysis functionality to identify reliable vendors, assign primary vendors for each item, and determine whether to disqualify unreliable vendors.

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The Companies Application continued

Companies Application Tabs

The **Companies** application has five tabs.



Use this tab…	To…
List	Search for company records.
Company	View, modify, add, or delete the main records for a company.
Contacts	View, modify, or delete the contacts in a company.
Addresses	View, modify, or delete the mailing information for a company.
Branches	View or modify the company and company branch (parent-child) relationships.

Company Tab Fields

The **Company** tab includes basic company information as well as purchasing, tax, and currency data. This information is important to the purchasing and inventory process. The following table lists and describes some of these fields.

Field Name	Description
Company	Identifies the code and name.
Parent	Identifies of the parent company.
Use Parent Remit To	Yes/No field indicating if the parent's Remit To information should be used. The default value is N. If you change this field value to Y, the payment information from the parent record displays on invoices created against the child company.
Customer #	The number used by an outside company to identify your own company.
Company Type	The list provides three default types: C (courier), M (manufacturer), and V (vendor).

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The Companies Application continued

Company Tab Fields continued

Field Name	Description
DUNS #	Data Universal Numbering System number, used to uniquely identify a company and its location.
Currency	The currency that the company uses.
Tax Exempt Code	Indicates if the company is exempt from paying taxes (e.g., 1=exempt, 2=not exempt, 3=exempt resale, etc.).
FOB Points	Free on board point is the point at which responsibility and liability are transferred. The FOB point is usually the destination or the shipping point.
Freight Terms	A description of what is being shipped; any riders to the shipping agreement should be included here. For example, you might specify "Fresh fruit. Perishable. Keep refrigerated. Must meet delivery dates."
Disqualified Vendor?	Yes/No field indicating whether the company is disqualified from being used on new PRs, POs, RFQs, Invoices, or any other application that references vendors. The default is No; the checkbox is cleared.
RBNI Account	The account for receipts that have not been invoiced.
Suspense Account	The credit account used when the invoice is approved.
AP Control Account	The credit account used when the invoice is paid.

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The Companies Application continued

Company Branches

Your company might purchase products or services through a national vendor with local offices. You might have locations in different cities, each of which purchases from the local office of the vendor.

Maximo allows you to create branch records for a vendor company and track purchasing either at the branch level or with the vendor as a whole.

For example, each plant location might purchase office supplies at the local office of a national chain, and do their shipping with the local office of an international shipping company.

By entering company branches in Maximo, you can track purchases for each plant location via its branch record, as well as the total purchases for all plant locations via the parent vendor record.

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The Companies Application continued

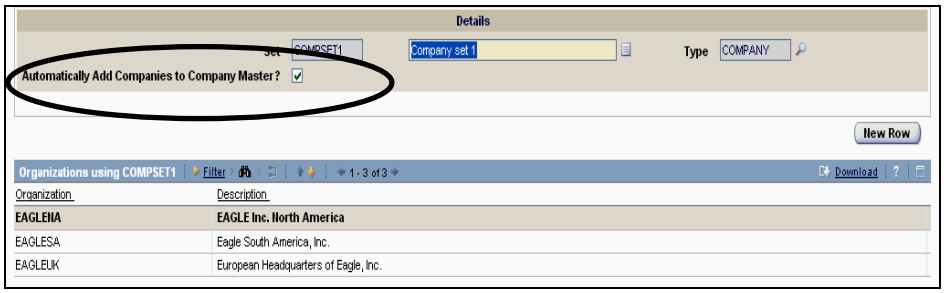
Creating Company Records

In Maximo, company records can be created in two ways:

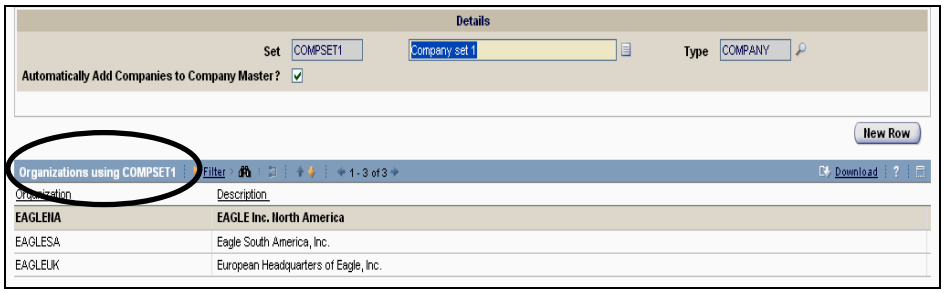
- Using the Company Master application
- Using the Companies application

Note: When you create company records using the **Companies** application, consider the following in the **Sets** application:

- The **Automatically Add Companies to the Company Master?** check box should be checked.



- The organization(s) in which the company record will be created should be associated in the same company set.

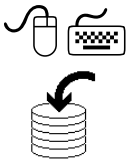


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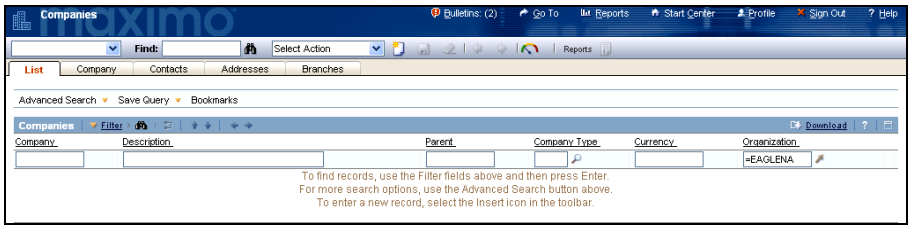
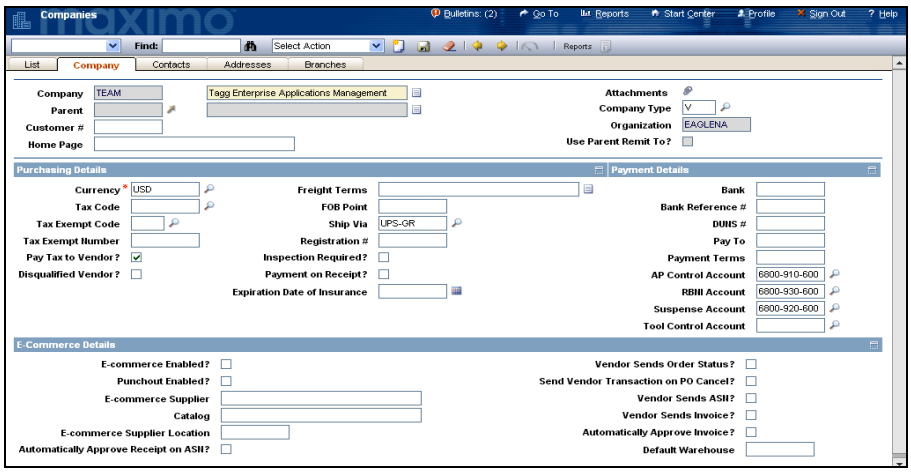
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The Companies Application continued

Scenario Exercise: Entering Company Records



In this exercise we will enter more data from the company record we created for the EAGLENA organization.

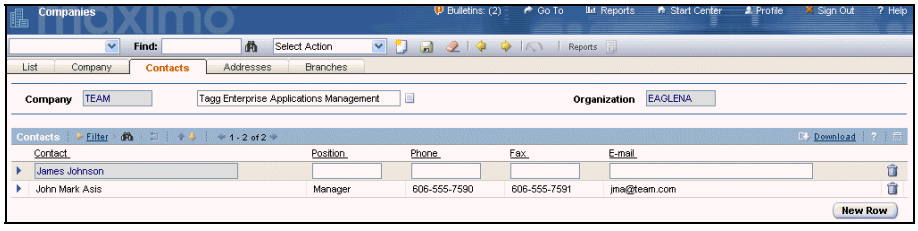
Step	Action
1	From the **Purchasing** module, select the **Companies** application. Result: The Companies application opens to the List tab. 
2	Access the **TEAM** company record for the **EAGLENA** organization. Result: The TEAM record is displayed on the Company tab. 

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The Companies Application continued

Scenario Exercise: Entering Company Records continued

Step	Action
3	Enter the following data on the **Company** tab: **Field** **Value** **Tax code** MA Hint: Use the Select Value icon if necessary.
4	**Save** the record and click the **Contacts** tab. Result: Maximo displays the Contacts tab.
5	Click **New Row** and enter the following information: **Field** **Value** **Contact** John Mark Asis **Position** Manager **Email** jma@team.com **Procurement Card #** 123456 **P-Card Exp Date** [*One year from today's date*] **Phone** 606-555-7590 **Fax** 606-555-7591 **Pager Phone** 606-555-7599 **Home Phone** 606-555-2856
6	**Save** the record. Result: Your screen should look similar to the one shown below.  Note: You can add several contacts on the Contacts tab.

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Chapter Summary

The Company Master Application

You use the **Company Master** application to associate company records for organizations that belong to a particular company set.

Company master records contain the necessary vendor-related information that serve as templates for company records created in the Companies application.

The Companies Application

The **Companies** application holds information about the companies with which you do business.

The Inventory, Purchasing, and Assets modules use this information.

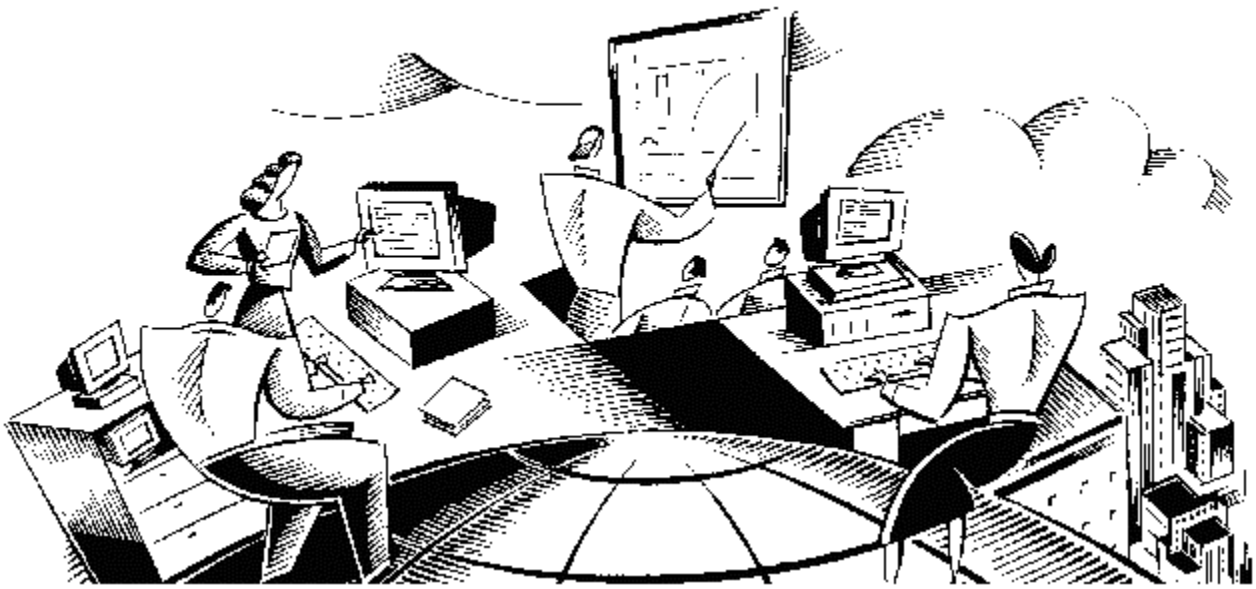
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MXES Immersion Training for EAM

Chapter 12: Requisitioning



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In This Chapter This chapter contains the following topics:

Topic	See Page
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Creating a Purchase Requisition	12-3
Creating and Approving a Purchase Order	12-17
Receiving Materials and Services	12-27
Invoice Reconciliation	12-34
Creating a Materials Requisition	12-46
Chapter Summary	12-57

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Chapter Overview

Introduction

Requesting material and service items to replenish supplies and acquire materials for new work orders is essential in maintaining your day-to-day operations.

Maximo enables you to track the requisitioning process as it moves through several processes and Maximo applications.

Learning Objectives

When you have completed this chapter, you should be able to:

- create a requisition using the Purchase Requisitions and Desktop Requisitions applications to obtain items and parts;
- create a purchase order (PO) from a purchase requisition (PR) and a materials requisition (MR);
- approve a PO;
- receive items and services; and
- reconcile vendor invoices.

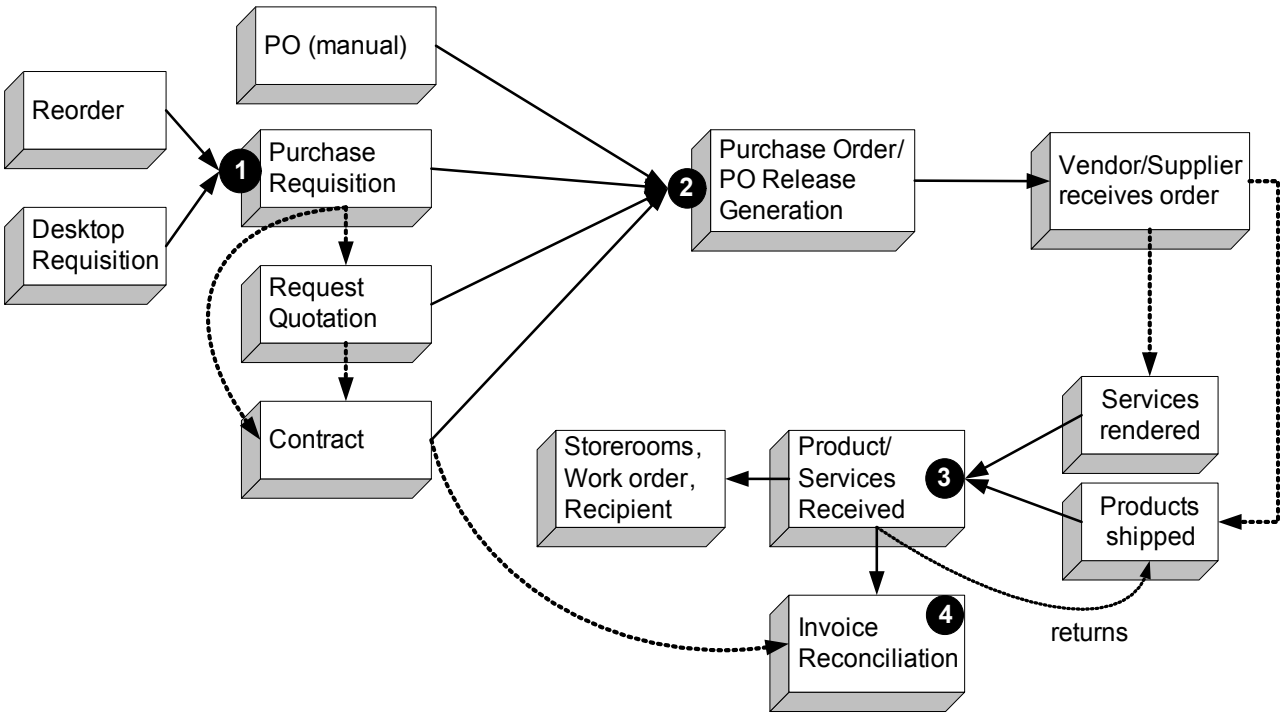
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Chapter Overview continued

Chapter Scenario Premise

The scenario premise for this chapter will be to use the **Purchase Requisitions** and **Desktop Requisitions** applications to generate requisitions for material and service items and then process them through the procurement lifecycle.



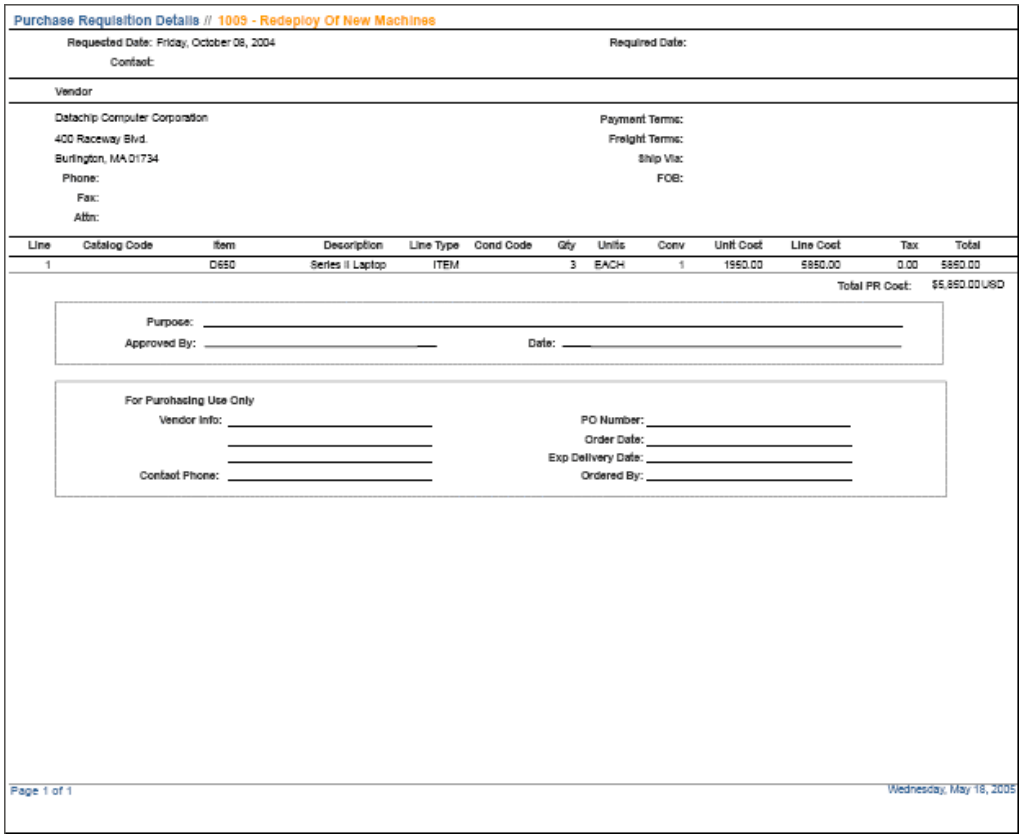
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Creating a Purchase Requisition

Introduction

A *PR* is a written request issued internally to a purchasing department to order items or services.

Use the **Purchase Requisitions** application to create PRs for items, supplies, and services.



Purchase Requisition Details // 1009 - Redeploy Of New Machines

Requested Date: Friday, October 08, 2004
Contact:
Required Date:

Vendor

Datachip Computer Corporation
400 Raceway Blvd.
Burlington, MA 01734
Phone:
Fax:
Attn:

Payment Terms:
Freight Terms:
Ship Via:
FOB:

Line	Catalog Code	Item	Description	Line Type	Cond Code	Qty	Units	Conv	Unit Cost	Line Cost	Tax	Total
1		D650	Series II Laptop	ITEM		3	EACH	1	1950.00	5850.00	0.00	5850.00

Total PR Cost: $5,850.00 USD

Purpose: _____
Approved By: _____ Date: _____

For Purchasing Use Only
Vendor Info: _____
_____
_____
Contact Phone: _____

PO Number: _____
Order Date: _____
Exp Delivery Date: _____
Ordered By: _____

Page 1 of 1 Wednesday, May 18, 2005

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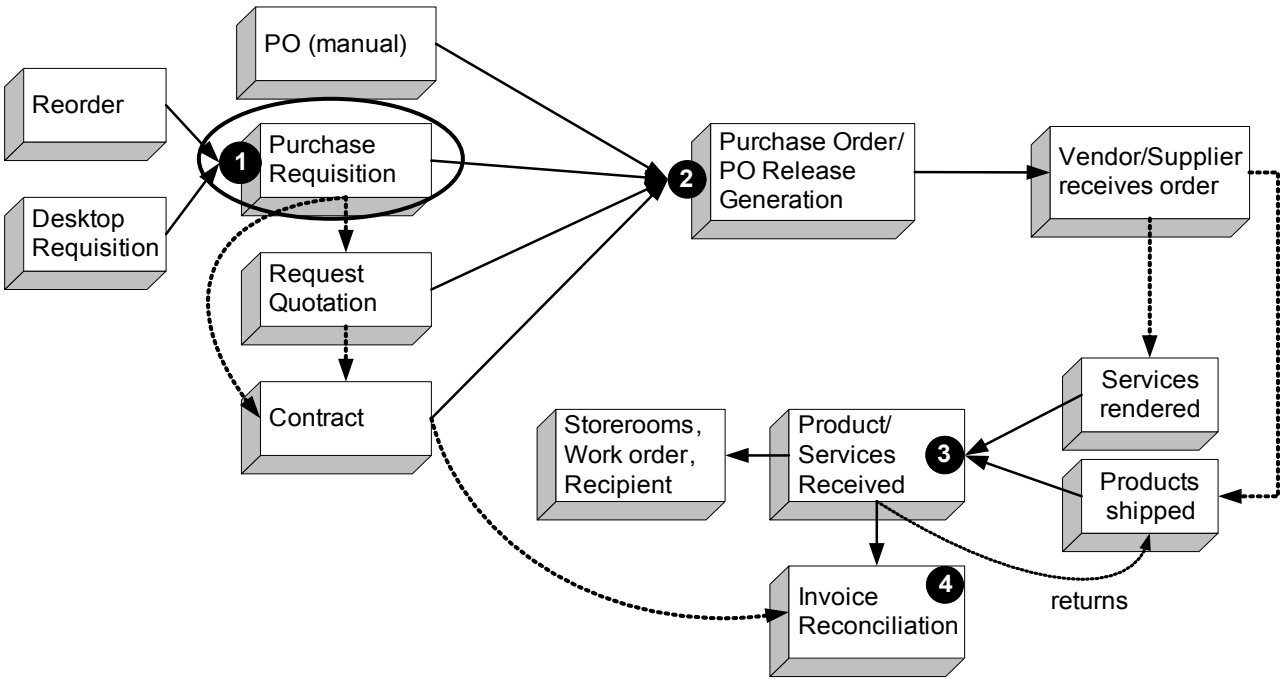
Creating a Purchase Requisition continued

We Are Here: PR Creation

A PR is created in one of the following ways:

- *Requisitioning* for materials and services using the **Desktop Requisitions** or **Purchase Requisitions** applications *or* creating a PR using the **Reordering** and **Desktop Requisitions** applications
- *Reordering* for a storeroom replenishment or work orders using only the **Reordering** action in the **Inventory** application

The scenario for this chapter will be to use the **Purchase Requisitions** application to generate a purchase request for *material items* and then process it through the procurement lifecycle.

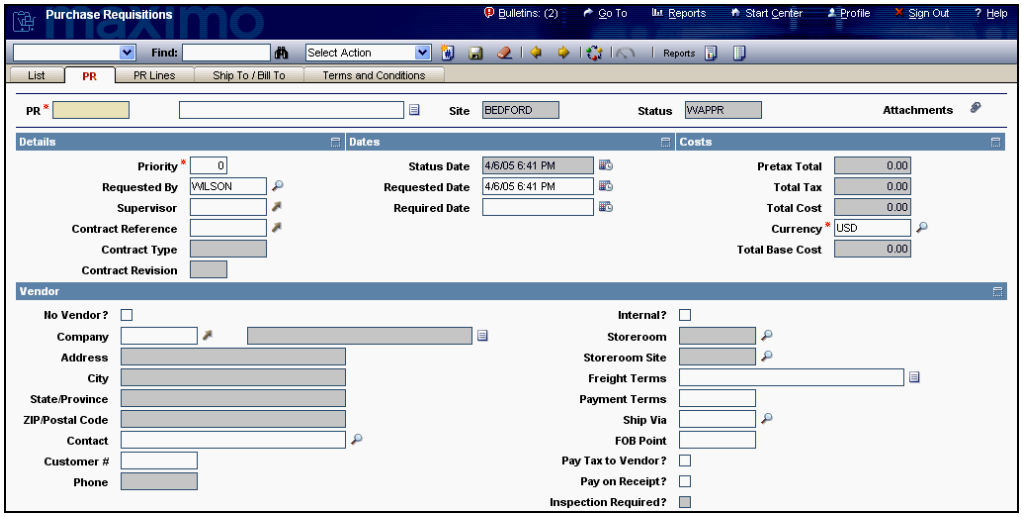


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Creating a Purchase Requisition continued

Revisiting: Purchase Requisitions Application

A PR is a written request issued internally to a purchasing department to order items or services. You can use the Purchase Requisitions application to create PRs for items, supplies, and services, or to create a PO from a PR.



PR Tabs

The Purchase Requisitions application is comprised of five tabs.



Use this tab…	To…
List	Search for PR records.
PR	Create, view, and modify purchase requisitions.
PR Lines	Store line items for a PR. Each line item has information such as item number, quantity, unit cost, required date, or category for the item.
Ship To/ Bill To	View, enter, and modify shipping and billing addresses associated with the purchase requisition.
Terms and Conditions	Associate new or existing information such as liability concerns, shipping and handling details, or delivery time expectations with PRs.

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Creating a Purchase Requisition continued

PR Tab Fields Listed below are important fields on the PR tab:

Field	Description
PR	Displays the auto-generated PR number for the record being viewed.
Status	Displays the current status of the PR.
Priority	Used to determine the order in which Maximo turns PRs into purchase orders (POs).
Supervisor	The person responsible for approving the work; for example, this could be the person who will oversee the services provided by a contractor.
Requested By	The user requesting a purchase.
Company	Suggested vendor for purchasing to use on the PO for the requested line items.
Internal?	• Yes (checked) indicates an internal vendor. • No (cleared) indicates an external vendor.
Pay Tax to Vendor?	• Yes (checked), the default, means that the vendor has authorization to collect taxes and that you should pay any tax amount to the vendor. • No (cleared) means that there is no tax, or that you are responsible for paying tax directly to the government.
Pay on Receipt?	Yes (checked) indicates that you have a payment on receipt agreement with the company.
Status Date	Date of the last status change.
Required Date	The date that you need the materials (optional).
Requested Date	Date of request. Defaults to the system date at the time of the PR record insertion.
Modified Date	Date of the last PR modification. Defaults to the system date when Maximo saves the PR record.

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Creating a Purchase Requisition continued

PR Lines Tab

After the initial PR records are entered, the next step is to specify the individual items or services that you need. You will be using the **PR Lines** tab for this task

A PR line can be for any of the following:

- ITEM – items from inventory
- MATERIAL – items not from inventory
- TOOL – items belonging to TOOLS commodity group
- SERVICE – services not associated in service items
- STANDARD SERVICE – services associated in service items

Note: In the PR Lines tab, you must populate a **Quantity**, **Unit Cost**, **Storeroom**, **Work Order**, **Location**, **Asset**, or **GL Debit Account** field prior to PO approval if your organization requires GL account validation for transactions.



After the purchase requisition has been approved, you can assign its line items to one or more purchase orders. A purchase requisition can be closed when all of its line items have been assigned to a purchase order.

Types of PRs

In Maximo there are two types of PRs:

- **Internal PRs** requesting the transfer of materials from another company storeroom.
- **External PRs** requesting the purchase of the necessary materials from an outside vendor. You can specify the vendor, if known.



Note: In this chapter we will be creating an external PR.

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Creating a Purchase Requisition continued

PR Lines Type Required Fields

When you enter records on the PR Lines tab, note that the following fields *must* be populated.

Line Type	Required Field
Item or Tool	• Item
Material	• Description • Quantity • Unit Cost
Service	• Description • Quantity and Unit Cost, or Line Cost
Standard Service	• Item • Quantity and Unit Cost, or Line Cost

Purchase Requisition Status

Every PR has a status value that indicates its position in the PO processing cycle.

The following table lists and describes each status:

Status	Description
WAPPR	Waiting for Approval is the assigned Status for new PR record is created.
APPR	Approved is available only if your business rules require approvals. The default Maximo configuration does not require approvals for PRs and PR line items that you transfer to POs
CLOSE	Close indicates that all the PR's line items have been assigned to one or more POs. All fields are read-only, and the record can no longer be modified.
CAN	Canceled status is available if the current PR status is Approved (APPR) and none of its line items have been assigned to a purchase order. All fields are read-only, and a record can no longer be modified.

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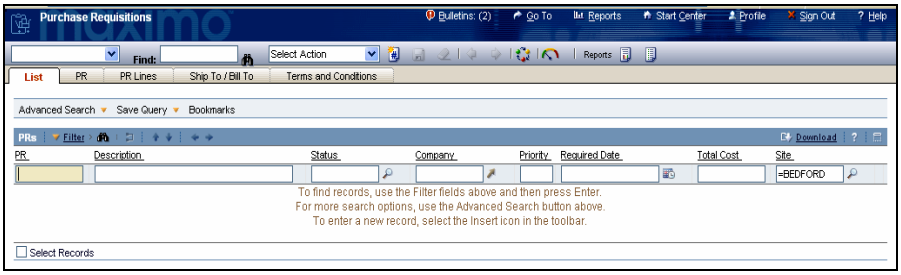
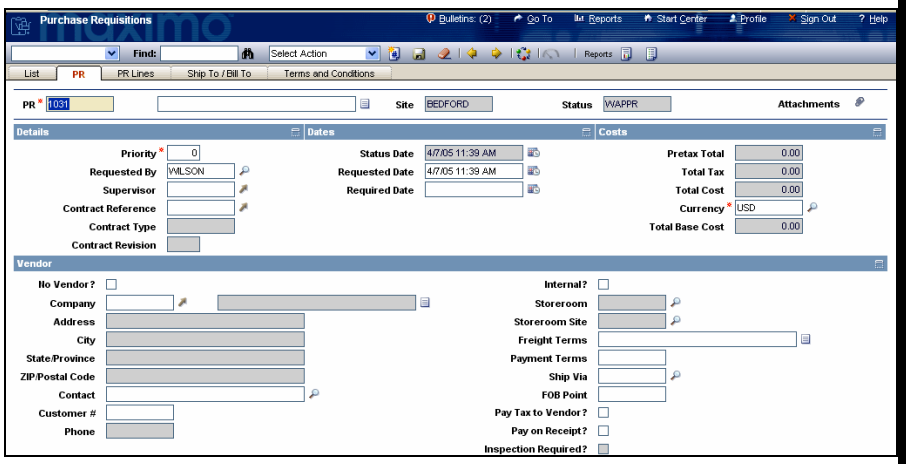
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Creating a Purchase Requisition continued

Creating a Purchase Requisition

In this exercise we will create a PR for Materials, which are items that are not stocked in a storeroom. Specifically, we will request to purchase software and installation services for our company.

Follow the steps to create a PR using the Purchase Requisitions application.

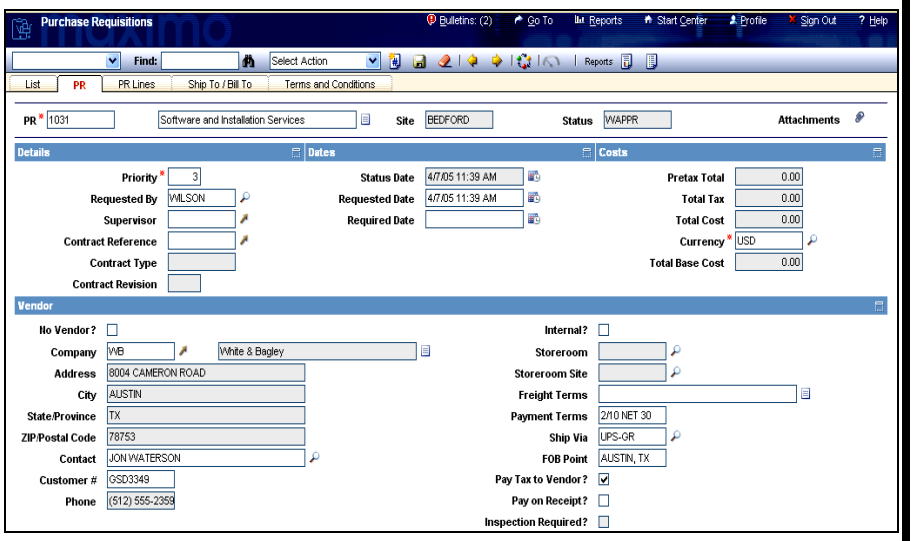
Step	Action
1	Go to the **Purchase Requisitions** application (found in the Purchasing module). Result: Maximo displays the Purchase Requisitions application List tab. 
2	Click the **New Purchase Requisition** icon.  Result: The PR record is generated with an automatically assigned number.  Record your PR number: _____ Note: Your PR number might differ from the one shown above.

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Creating a Purchase Requisition continued

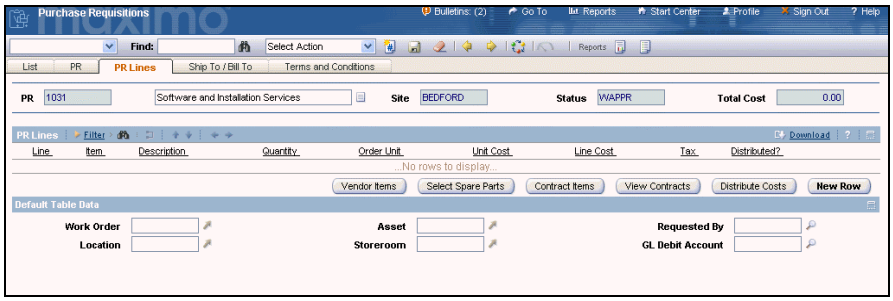
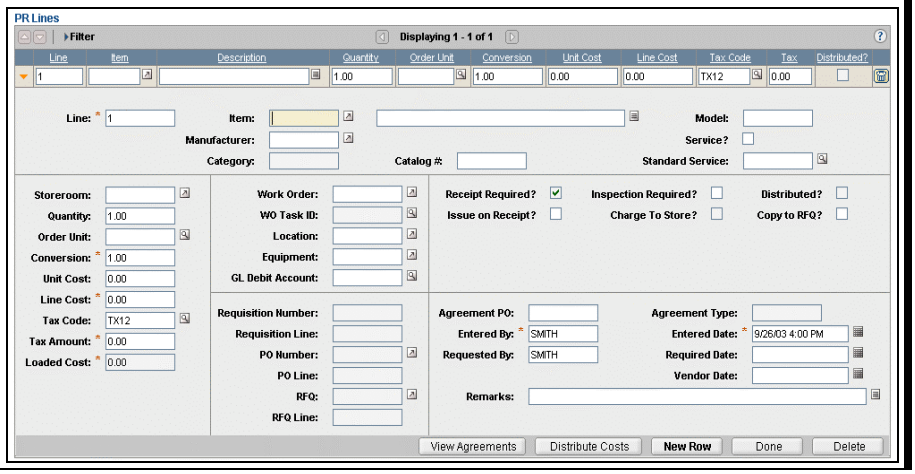
Creating a Purchase Requisition continued

Step	Action
3	On the PR screen, enter the following information: Hint: Use the detail menu icon if necessary. **Field** — **Data** **(Description)** — Software and Installation Services **Priority** — 3 **Company** — WB Result: Your screen should look similar to the one below:  Note: The Company default information populates the PR record after adding the company.

continued on next page

Creating a Purchase Requisition continued

Creating a Purchase Requisition continued

Step	Action
4	**Save** the record, then display the **PR Lines** tab. Result: Your screen should look similar to the graphic below. 
5	Click **New Row**. Result: A blank PR line is added. 

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Creating a Purchase Requisition continued

Creating a Purchase Requisition continued

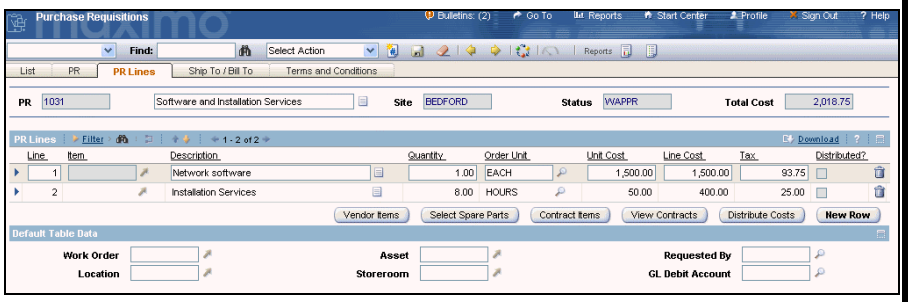
Step	Action
6	For line 1, enter the following information. Hint: Use the Navigation Bar to view all details. **Field** — **Value** **Line Type** — Material **(Item Description)** — Network software **Quantity** — 1 **Order Unit** — EACH **Conversion Factor** — 1 **Unit Cost** — 1500.00 **GL Debit Account** — 6100-400-000
7	Add a second new PR line, then enter the following information. Hint: Use the Navigation Bar to view all details. **Field** — **Value** **Line Type** — Service **(Item Description)** — Installation Services **Quantity** — 8 **Order Unit** — HOURS **Conversion Factor** — 1 **Unit Cost** — 50.00 **GL Debit Account** — 6100-400-000

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Creating a Purchase Requisition continued

Creating a Purchase Requisition continued

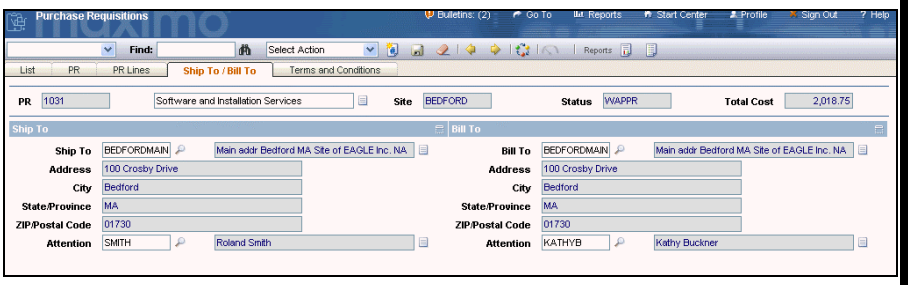
Step	Action
8	**Save** the record. Result: After closing the PR Lines details, your PR Lines tab should look similar to the example below. 
9	Access the **Ship To/Bill To** tab, then enter the following information: **Field** — **Value** **Ship To** — [*Keep default data*] **Ship to Attention** — Smith **Bill To** — [*Keep default data*] **Bill to Attention** — KATHYB

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Creating a Purchase Requisition continued

Creating a Purchase Requisition continued

Step	Action
10	**Save** the record. Result: Your screen should be similar to the one shown below.  Note: Now the PR is now saved in Maximo and ready for the next steps in the process.

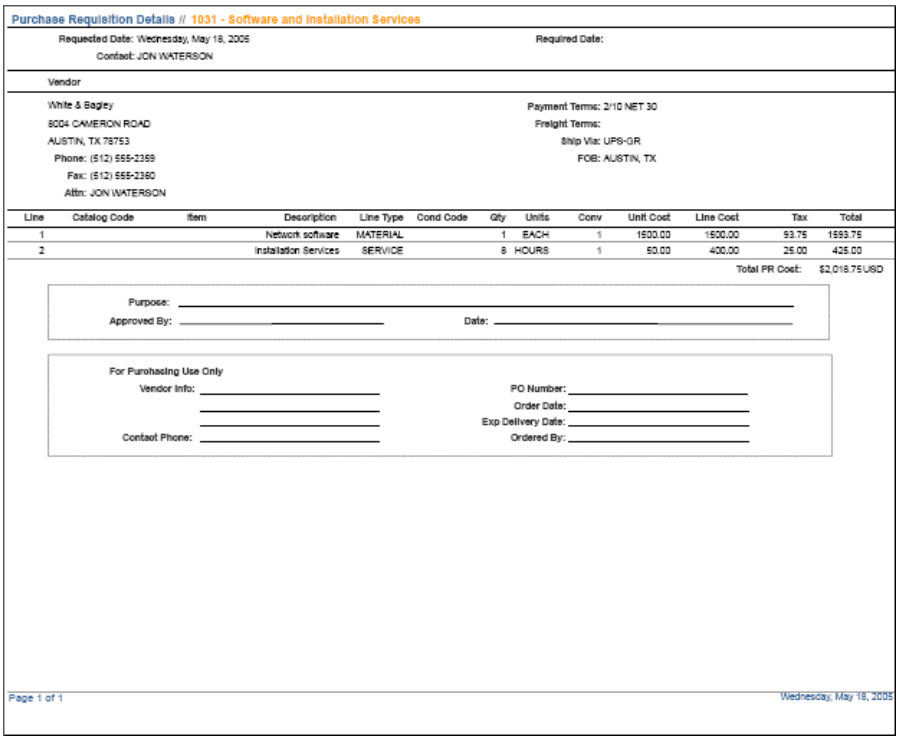
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Creating a Purchase Requisition continued

Viewing the Information in a Report

At this point, the PR would be printed or electronically sent for approval.

Follow the steps below to view the PR Details Report for the new PR record.

Step	Action
1	Ensure that you have accessed the PR record from the previous exercise.
2	Click on the **Purchase Requisition Details** report icon.  Result: Maximo displays the report in a separate browser window.  Purchase Requisition Details // 1031 - Software and Installation Services Requested Date: Wednesday, May 18, 2005 Contact: JON WATERSON Required Date: Vendor White & Bagley 8004 CAMERON ROAD AUSTIN, TX 78753 Phone: (512) 555-2359 Fax: (512) 555-2360 Attn: JON WATERSON Payment Terms: 2/10 NET 30 Freight Terms: Ship Via: UPS-GR FOB: AUSTIN, TX Line / Catalog Code / Item / Description / Line Type / Cond Code / Qty / Units / Conv / Unit Cost / Line Cost / Tax / Total 1 / Network software / MATERIAL / 1 / EACH / 1 / 1500.00 / 1500.00 / 93.75 / 1593.75 2 / Installation Services / SERVICE / 8 / HOURS / 1 / 50.00 / 400.00 / 25.00 / 425.00 Total PR Cost: $2,018.75 USD Purpose: Approved By: Date: For Purchasing Use Only Vendor Info: Contact Phone: PO Number: Order Date: Exp Delivery Date: Ordered By: Page 1 of 1 Wednesday, May 18, 2005 Note: From this browser window, you could print the report, save it locally, or e-mail it to someone else.

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Creating a Purchase Requisition continued

Viewing the Information in a Report

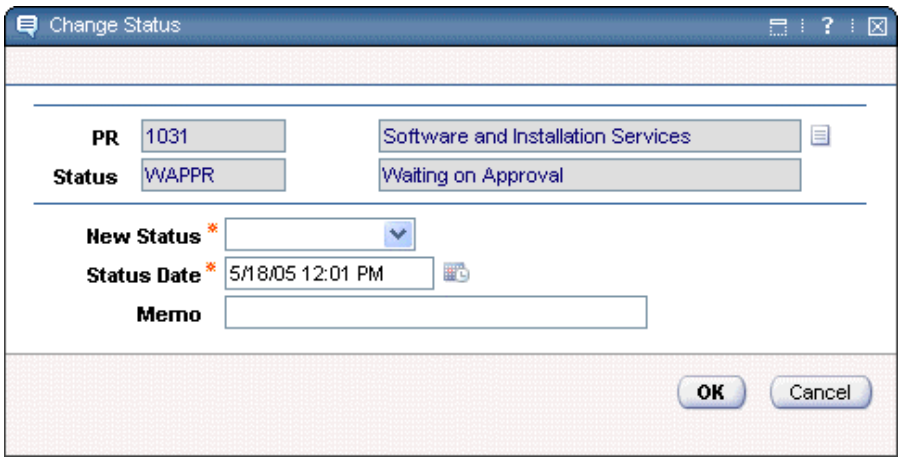
continued

Step	Action
3	After viewing the report, click **Close Report** in the upper right section of the report window. Result: The report closes and you're ready to start the next step of the process.

Approve the PR

The last step is to approve the PR record.

Follow the steps below.

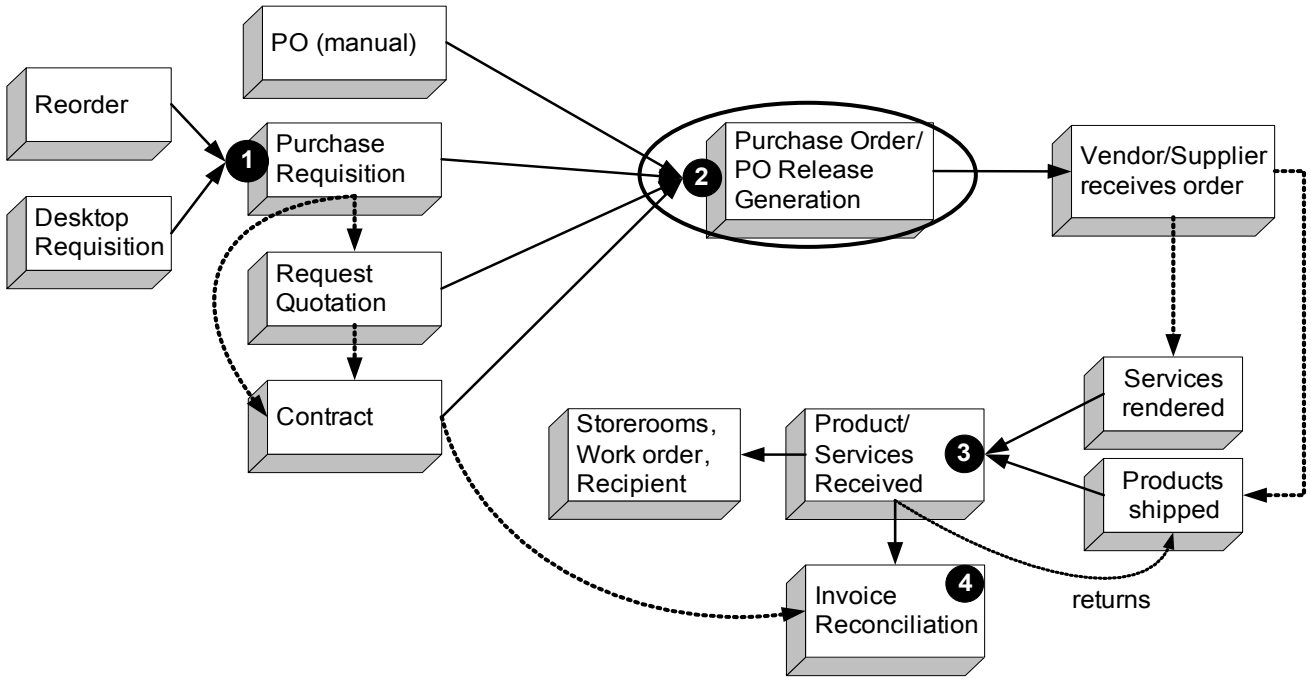
Step	Action
1	Ensure that you have accessed the PR record from the previous exercise.
2	Click the **Change Status** icon. Result: The **Change Status** dialog box opens. 
3	Change the status to **Approved**, then click **OK**. Result: The PR now has an APPR status. Note: All the fields are now read-only (gray).

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Creating and Approving a Purchase Order

We Are Here: PO Creation and Approval

A PO is created from Requisitions, Reordering Function, Request for Quotations, Purchase Contracts, or from scratch, and then goes through an approval process.



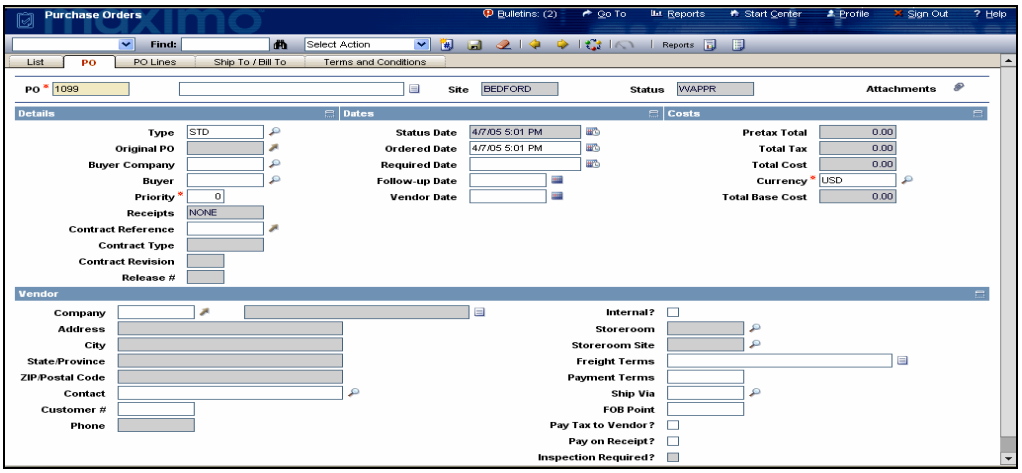
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Creating and Approving a Purchase Order continued

Revisiting Purchase Orders

A PO is an authorized order from a purchasing agent or department to an internal supplier or external vendor. You can use the **Purchase Orders** application to create purchase orders from PRs; material requisitions (MRs); requests for quotations (RFQs); or from scratch, using the PO itself.



PO Tabs

The Purchase Orders application is comprised of five tabs:



Use This Tab…	To...
List	Search for PO records.
PO	Create, view, and modify POs, either from PRs or from scratch.
PO Lines	Enter line items on the PO. It also contains summary information from the Material Receipts and Service Receipts tabs.
Ship To/Bill To	Specify shipping information that will be used as a default on each PO line, and billing information for the entire order.
Terms and Conditions	View terms associated with the PO from the contract, PR, RFQ, or as a default.

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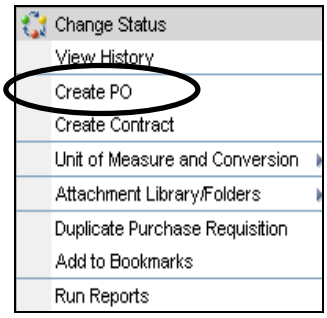
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Creating and Approving a Purchase Order continued

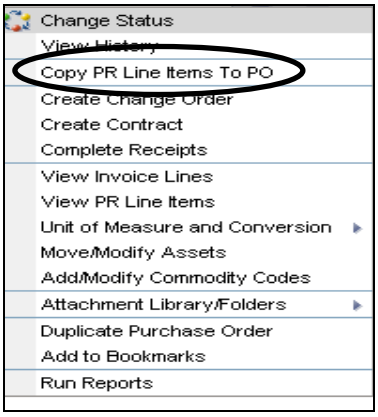
Methods to Create POs

You can use a number of different methods to create a purchase order. You can create a purchase order in the following ways:

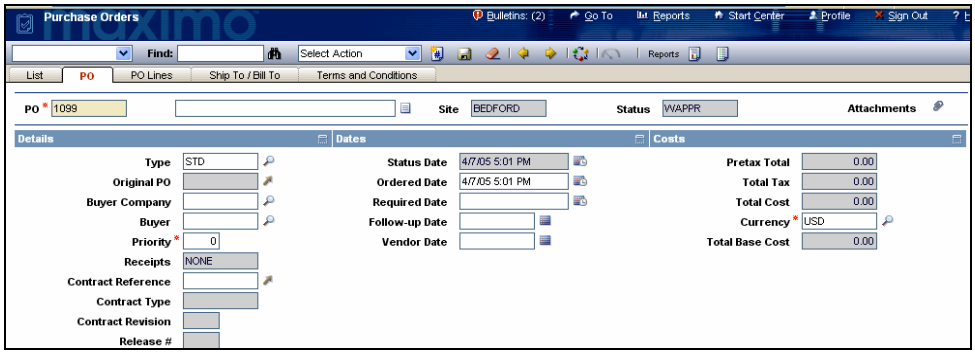
- From the **Purchase Requisitions** application—Select Action: **Create PO**



- From the **Purchase Orders** application, PO Lines tab—Select Action: **Copy PR Line Items to PO**



- From the Purchase Orders application (scratch)



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Creating and Approving a Purchase Order continued

Methods to Create POs

continued

- From the **Request for Quotations** (RFQ) application
- From the **Inventory** application using the Reorder function
- From the **Desktop Requisitions** module
- From the **Purchase Contracts** application by creating a release

The Purchase Orders application also allows you to generate an internal PO against another storeroom.



You can think of a storeroom-to-storeroom purchase as a "transfer order" or an "internal PO" because Maximo uses the Purchase Orders and Issues and Transfers applications to track these types of item movements.

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Creating and Approving a Purchase Order continued

Purchase Order Status

Every PO has a status value that indicates its position in the purchase order processing cycle.

The following table lists and describes each status:

Status	Description
WAPPR	Waiting for Approval is the status that a PO is assigned when it is created. Some default fields are read-only.
INPRG	In Progress status indicates that a PO still needs to be modified before it can be approved.
APPR	Approved status is available only if the current PO status is WAPPR or INPRG. All fields are read-only. To approve a PO, you must have a monetary approval limit equal to or greater than the total cost of the PO. After a PO has been approved, you cannot edit any of its fields.
CAN	Canceled status is available if the current PO status is APPR. You cannot cancel an approved PO if one or more PO line items have been received.
CLOSE	Closed status indicates that all the PO line items have been received. After a PO is closed, it is stored as a history record and cannot be modified.

Note



When you create a PO, Maximo gives the PO a status of Waiting for Approval (WAPPR). Only a user with an approval limit equal to or greater than the purchase order amount can approve a purchase order.

Editing POs



You can edit a PO when the status of a PO is WAPPR. For example, you can change vendors, change PO tab information, add or delete PO lines, and change quantities.

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Creating and Approving a Purchase Order continued

Approving POs

To approve a PO, you must have a monetary approval limit equal to or greater than the total cost of the PO. In the Security Groups application, your system administrator sets monetary limits for each user.

Also, your system administrator can specify that PRs be approved before any of their items can be assigned to POs.

This is done in the Organizations application. After a PO has been approved, you cannot edit any of its fields.

Canceling POs

You cannot cancel an approved PO if any of the following conditions exist:

- One or more PO line items have been received.
- The supplier has sent notification of delivery of items via an Advanced Shipment Notice (ASN) transaction.
- The supplier has rejected the PO cancellation.



Note: You might choose to notify the supplier before you cancel a PO because the Cancel PO transaction will automatically be sent to the supplier upon cancellation of a PO.

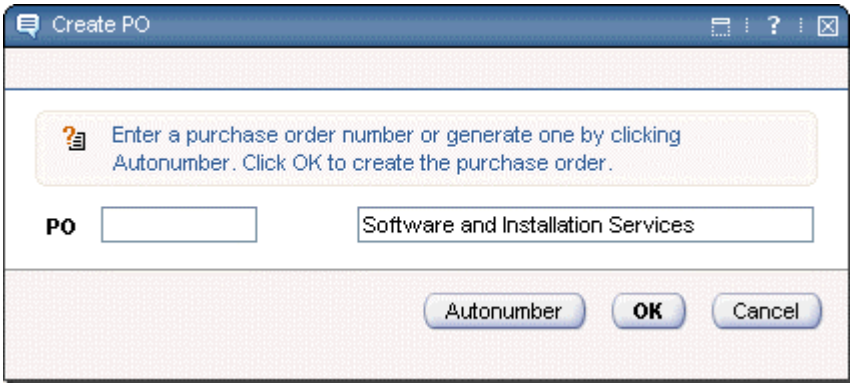
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Creating and Approving a Purchase Order continued

Exercise: Creating a PO Using the PR Application

In this exercise we will use the **Purchase Requisitions** application to create a PO from our approved software and installation services PR.

Step	Action
1	In the **Purchase Requisitions** application, choose **Create PO** from the **Select Action** menu. Result: The Create PO dialog box opens. 
2	Click **Autonumber**. Result: A PO number is generated automatically in the PO field. Record your PO number: _____
3	Click **OK**. Result: The PR is set to a status of CLOSE and the new PO record is created.

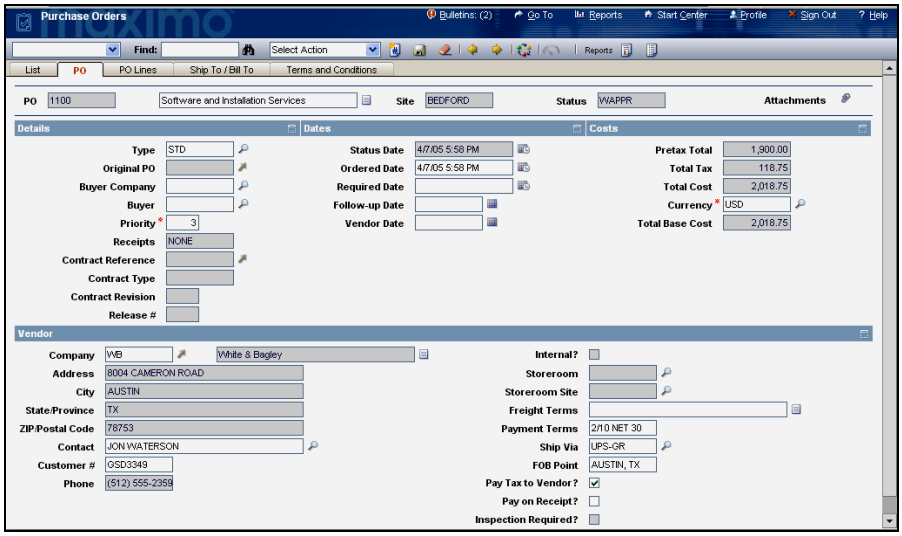
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Creating and Approving a Purchase Order continued

Exercise: Creating a PO Using the PR Application

continued

Step	Action
4	Go to the **Purchase Orders** application and retrieve the PO created in the previous step. Result: Your PO status should be WAPPR. 

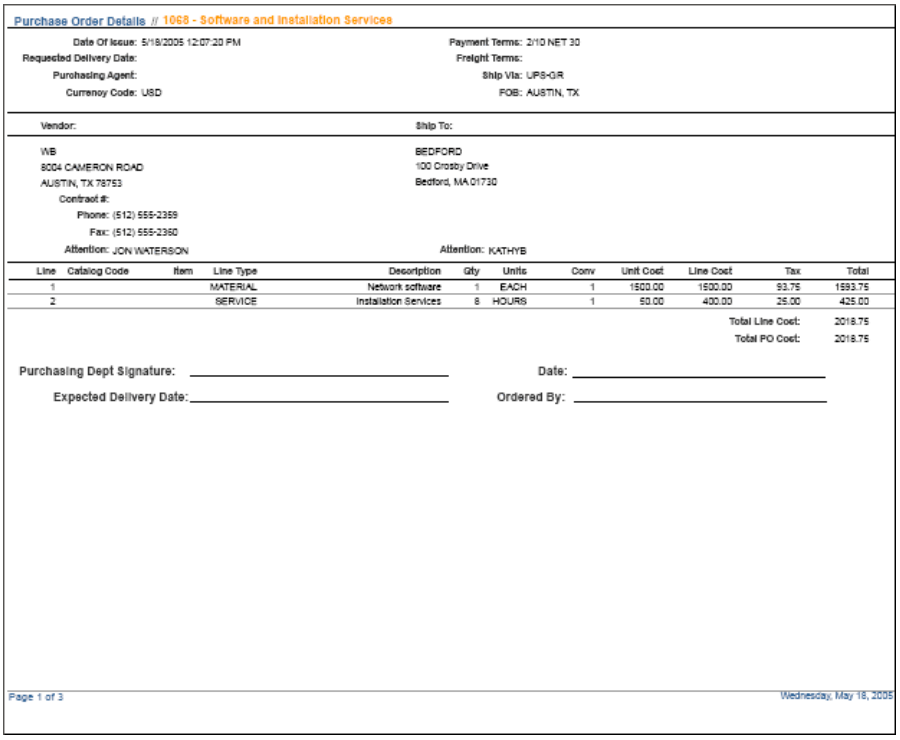
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Creating and Approving a Purchase Order continued

Exercise: Creating a PO Using the PR Application

continued

Step	Action
5	At this point, the PO would be printed or electronically sent for approval. Click the **Purchase Order Details** report icon. Result: The Purchase Order Details Report is displayed in a separate browser window.  Note: From this window you could print the report, e-mail it to someone else, and so forth.
6	When you are finished viewing the report, click **Close Report**. Result: The report window closes.

Purchase Order Details // 1068 - Software and Installation Services

Date Of Issue: 5/18/2005 12:07:20 PM
Requested Delivery Date:
Purchasing Agent:
Currency Code: USD
Payment Terms: 2/10 NET 30
Freight Terms:
Ship Via: UPS-GR
FOB: AUSTIN, TX

Vendor:
WB
8004 CAMERON ROAD
AUSTIN, TX 78753
Contract #:
Phone: (512) 555-2359
Fax: (512) 555-2360
Attention: JON WATERSON

Ship To:
BEDFORD
100 Crosby Drive
Bedford, MA 01730
Attention: KATHYB

Line	Catalog Code	Item	Line Type	Description	Qty	Units	Conv	Unit Cost	Line Cost	Tax	Total
1			MATERIAL	Network software	1	EACH	1	1500.00	1500.00	93.75	1593.75
2			SERVICE	Installation Services	8	HOURS	1	50.00	400.00	25.00	425.00

Total Line Cost: 2018.75
Total PO Cost: 2018.75

Purchasing Dept Signature: _____ Date: _____
Expected Delivery Date: _____ Ordered By: _____

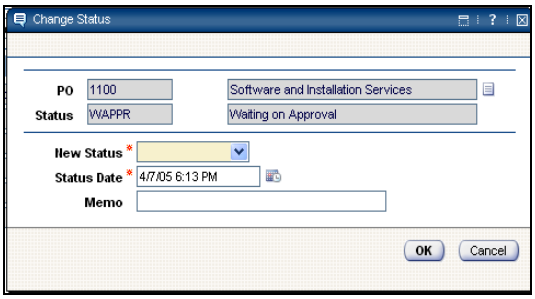
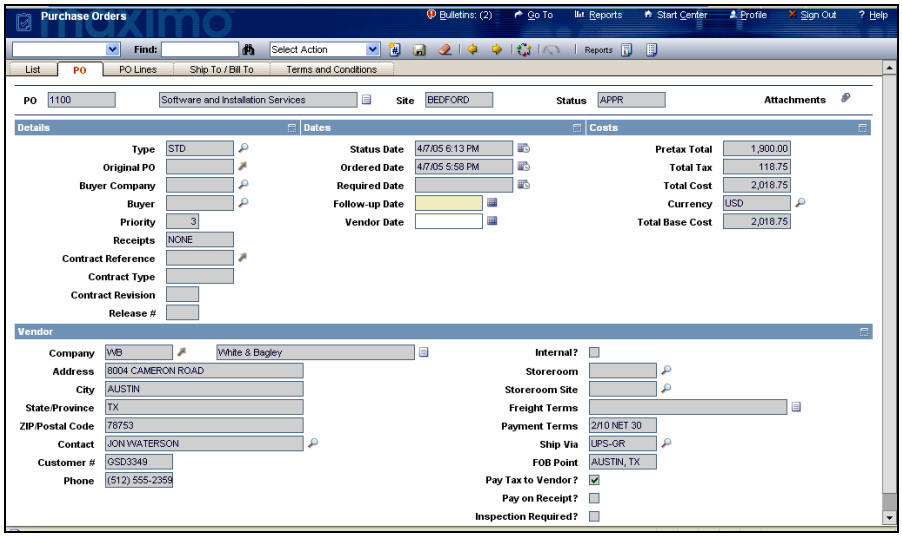
Page 1 of 3 Wednesday, May 18, 2005

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Creating and Approving a Purchase Order continued

Exercise: Creating a PO Using the PR Application continued

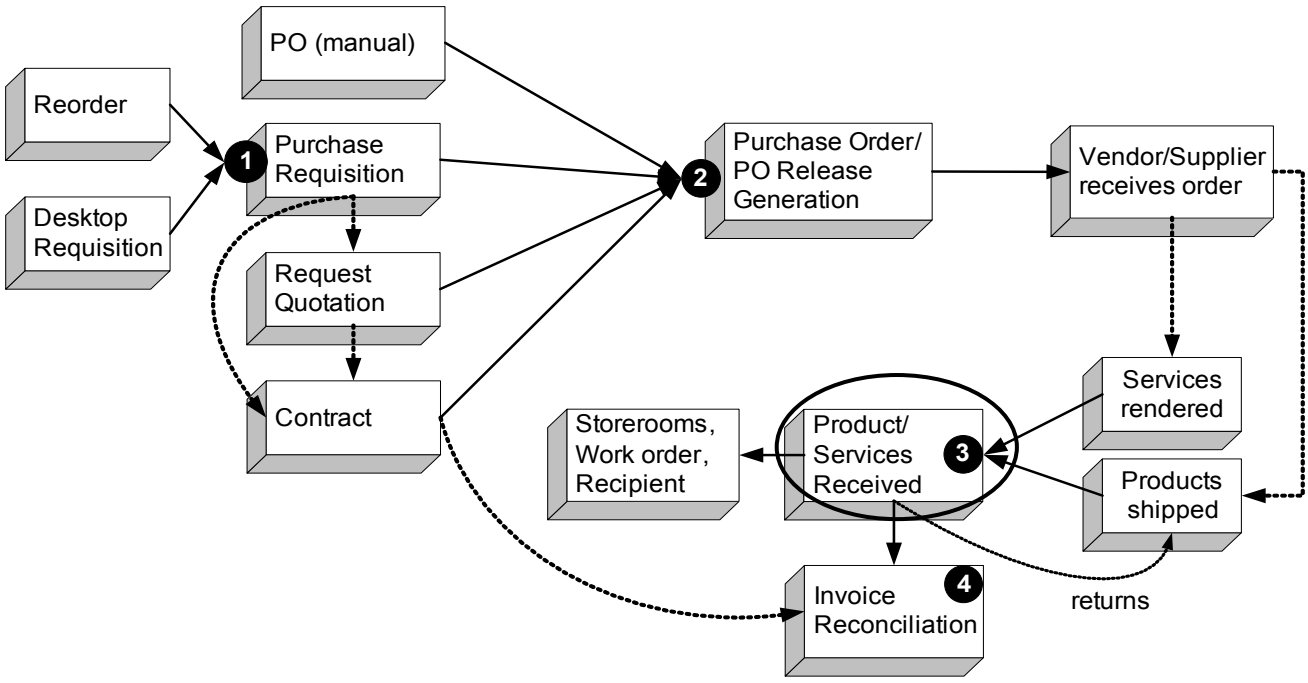
Step	Action
7	Click the **Change Status** icon. Result: The Change Status dialog box opens. 
8	Change the status to **Approved**. Result: The PO has an APPR status.
9	Click **OK**. Result: The status is changed and the record is saved. Your screen should look similar to the one shown below. 

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Receiving Materials and Services

We Are Here: Product Received and/or Services Rendered

Services are rendered and materials are received using the **Receiving** application. If applicable, inspections are performed and, if necessary, returns are made. Ordered items are moved to storerooms, work locations, recipients, and so forth.



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Receiving Materials and Services continued

Definition: Receipt

A *receipt* is a type of transaction in Maximo that indicates that a vendor has delivered materials or performed a service. A receipt transaction affects more than one application in Maximo.

For example, a standard receipt of material for a storeroom affects the PO that called for the order of the material in the Purchase Orders application, and the item balances in the Inventory Control application.

Two Types of Receipts in Maximo

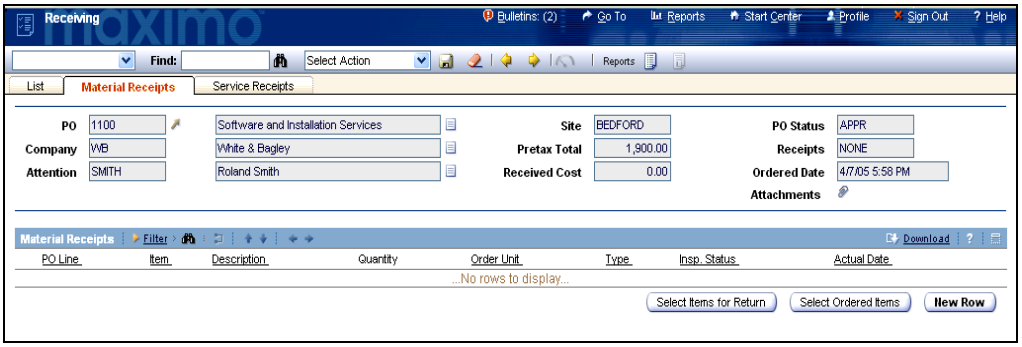
In Maximo there are two kinds of receipts:

- *Material receipts* refer to data associated with items used for work done on site by your company's employees; for example, quantities and lot numbers. When inventory items are received against a PO, the quantities in inventory are updated, and an inventory transaction is generated.
- *Service receipts* refer to data associated with any service provided by a vendor or contractor, such as asset repairs. The service can be performed on site or off site. You specify service purchases in terms of a quantity and a unit cost, or as a single lump-sum amount.

Revisiting: The Receiving Application

Use the **Receiving** application to receive materials and services from purchase orders.

You can search for and receive existing PO line items from the Select Ordered Items and the Select Ordered Services pages, accessible from the Material Receipts and Service Receipts tabs, or you can manually enter received items on the Receipts tabs.



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Receiving Materials and Services continued

Receiving Tabs

The **Receiving** application is comprised of three tabs.



Use this tab…	To
List	Search for receipt records.
Material Receipts	Record receipt of any materials, including stocked items, special order items, and material for direct issue to a work order.
Service Receipts	Record receipt of any services ordered on a PO.

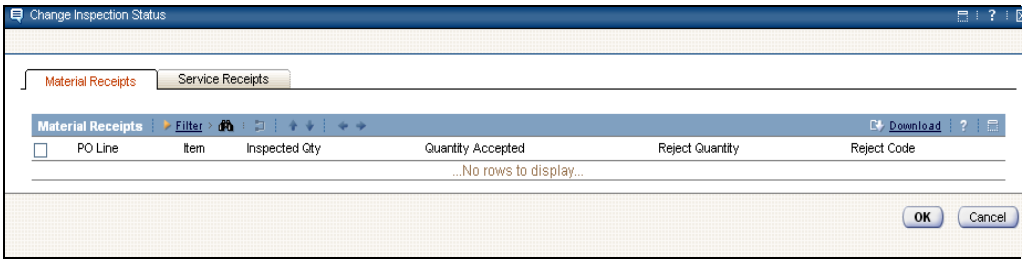
Receiving Materials or Service Items

Before a material or service item is **Received**, the PO status should be **APPROVED.**

Inspecting Received Items

There are instances when received material or service items need to be inspected to ensure that the terms and conditions agreed upon in the purchase orders are met.

Maximo allows you to record and change an item's inspection status in the **Receiving** application, **Select Action** menu via the **Change Inspection Status** dialog box.



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Receiving Materials and Services continued

Inspection Statuses

When an inspection is required upon receipt of an item or service, the following statuses describe where the line item is in the inspection process.

- **Waiting for Inspection (WINSP)** status indicates that the line item is in the process of being received, but has not yet been entered into inventory. The line item is currently in a holding location, where it will stay until an inspection is completed. When an inspection has been completed, the line item will go to either WASSET or COMP status, depending on whether or not it is a rotating item.
- **Waiting for Serialization (WASSET)** status indicates that the line item is a rotating item that is awaiting serialization (waiting to have an asset number assigned to it). If the line item requires inspection, the inspection has already taken place if its status is WASSET. The item is still in the holding location, and has not yet been sent to its appropriate storeroom or direct issue location. After the item has been serialized via the Receive Rotating Items dialog box, its status will be COMP.
- **Complete (COMP)** status indicates that the line item has been received and, if necessary, inspected and/or serialized. When Maximo changes the status of the line item to COMP, it also creates a transfer transaction, which transfers the item to its appropriate storeroom or direct issue location. If the line item is not rotating and does not require inspection, the status goes directly to COMP upon receipt.

Completion of Receipts

For a PO to be complete, all of the PO lines must be complete.

The **PO Lines** tab in the Purchase Orders application has a **Receipts** field, which indicates whether the materials or services for the PO line have been received.

The value in the **Receipts** field of the Purchase Orders application correlates to the **Receipt Status** field in the Receiving application.

- Before any receipts have been made, these fields indicate NONE.
- When some items have not been received, the fields indicate PARTIAL.
- When some items have not been received but the purchase order receipts are manually complete, the fields indicate COMPLETE.

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Receiving Materials and Services continued

Inspecting Items and Receipt Completion

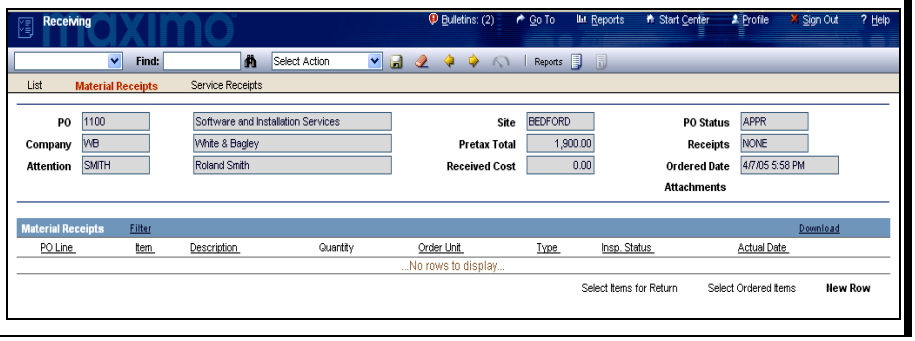


After a material or a service receipt status is Complete, the inspection status automatically changes to COMPLETE and cannot be changed.

Receiving Materials



In this exercise you will indicate that you have received all of the materials ordered on the PO from the previous exercises.

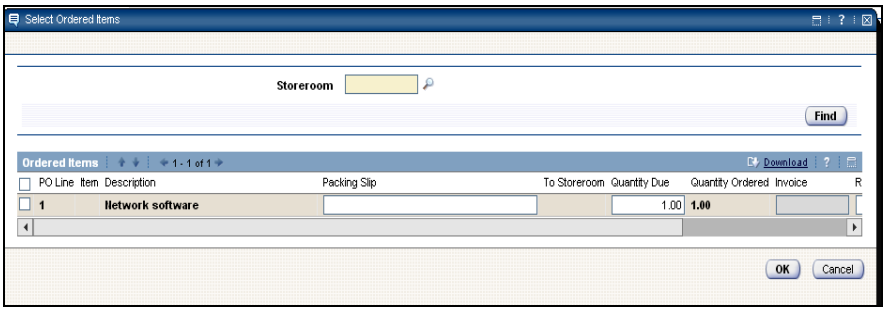
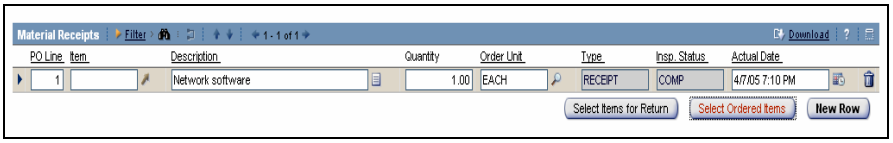
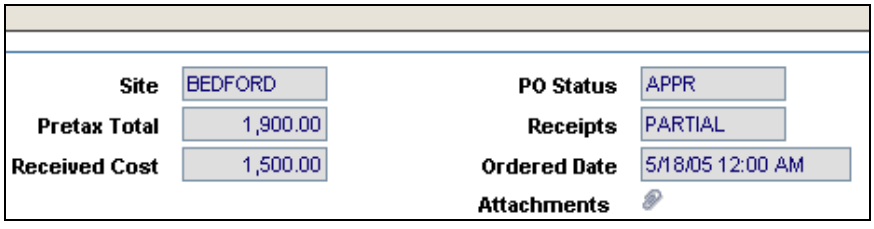
Step	Action
1	Access the **Receiving** application from the **Purchasing** module.
2	Retrieve the purchase order created in the previous exercise. Note: The purchase order is displayed on the Material Receipts tab and the Receipts status field displays the value NONE. 

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Receiving Materials and Services continued

Receiving Materials continued

Step	Action
3	To copy the list of PO line items that we ordered, click the **Select Ordered Items** button. Result: The Select Ordered Items dialog box opens. 
4	Check the **Network Software** line 1 check box, then click **OK**. Result: Maximo copies all of the ordered items to the Materials Receipts PO Line row.  Note: The Inspection Status is now COMP.
5	**Save** the record. Result: The Receipts field indicates that the receipt is PARTIAL. 

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Receiving Materials and Services continued

Service Receipts



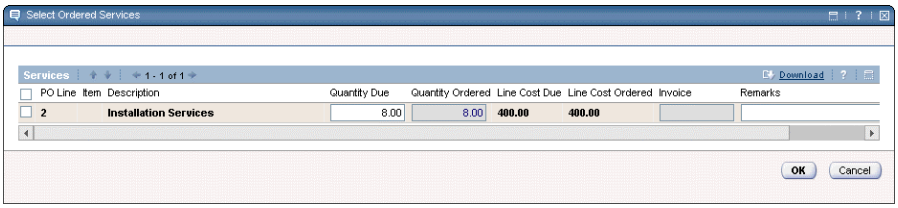
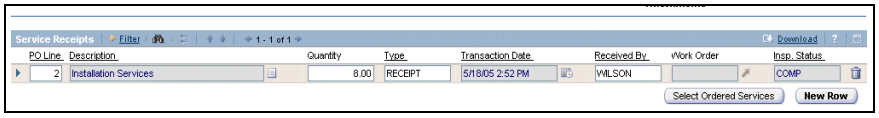
The terms you use on the service PO must be the same on the corresponding receipt transaction, which you record on the Service Receipts tab.

Receiving a Service



Assume that the software has been installed and, after inspection, you find that all the PCs are running properly.

The next step is to receive and approve the service rendered by the software technician.

Step	Action
1	Access the **Service Receipts** tab, then click the **Select Ordered Services** button. Result: The Select Ordered Services dialog box opens. 
2	Check the **Installation Services** line item, then click **OK**. Result: Maximo copies the selected service to the Service Receipts tab. 
3	**Save** the receipt record. Result: The Receipts field for both the material and service is now COMPLETE. 

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Invoice Reconciliation

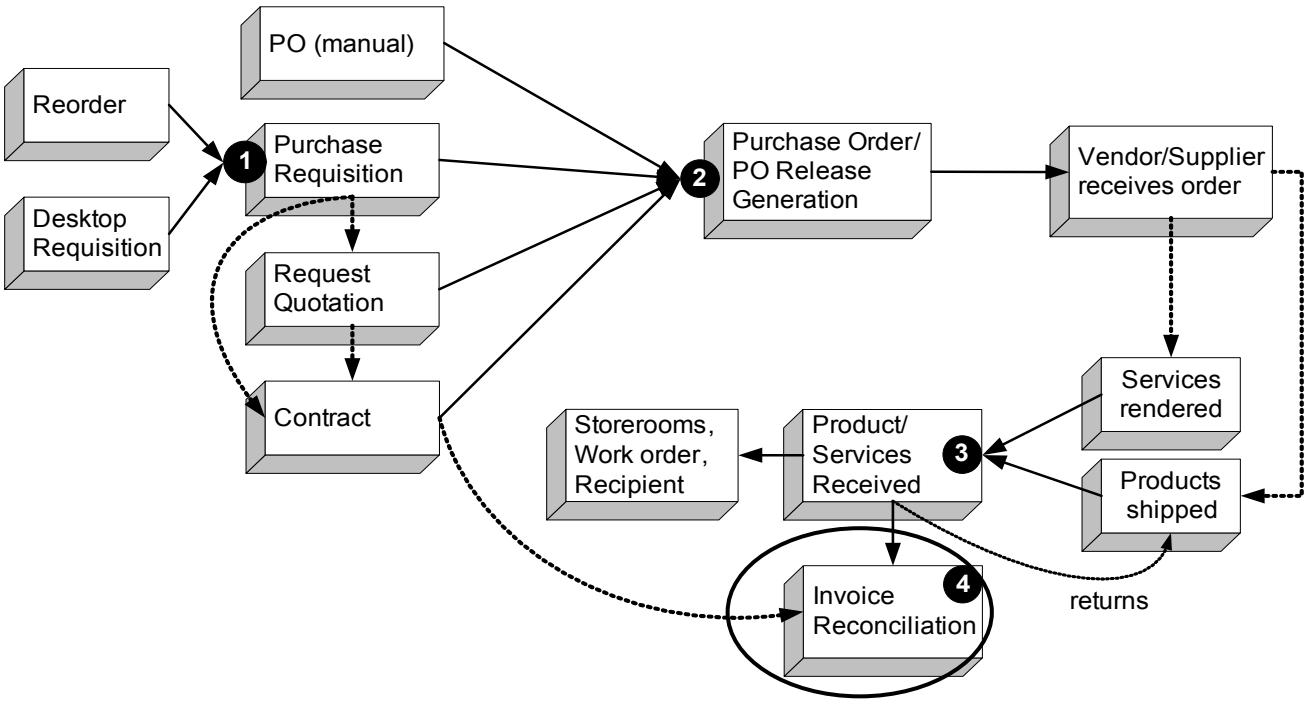
We Are Here: Invoice Reconciliation

As a result of purchasing materials and services, your company receives invoices from vendors.

Maximo allows you to enter vendor invoice information, match that information against the PO and receipt of materials and services, and then approve the invoice so it can be passed on to your accounts payable system.

This section focuses on using Maximo to process invoices for materials and services that have been received.

As a purchasing employee, you will receive invoices from vendors for items and services that you have received



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Invoice Reconciliation continued

Key Terms

We will use the following key terms in this section:

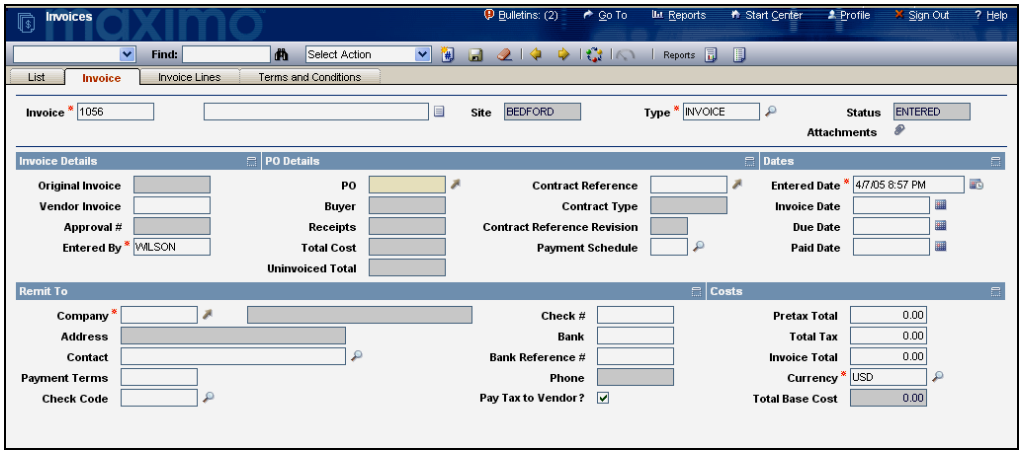
- *Invoice*: A bill from a vendor for delivered materials or services.
- *3–1 match*: A match of a line item on a purchase order, a receipt, and an invoice; used when the **Receipts Required** field on the PO is "Y."

Revisiting the Invoices Application

An *invoice* is a bill from a vendor for delivered products or services.

The **Invoices** application lets you record invoices, as well as debit and credit notes from vendors, and match invoice details against POs and receipts.

It also lets you create invoices for which there are no receipts.



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Invoice Reconciliation continued

Invoices Tabs

The **Invoices** application is comprised of four tabs.



Use this tab…	To…
List	Search for invoice records.
Invoice	Enter general "header" information about the invoice. This includes an optional description of the invoice, status, and the PO number and/or vendor (the remit-to company).
Invoice Lines	Enter or view the line items for materials and services you have been invoiced for. You can enter the line items manually, or use the Copy PO Lines button.
Terms and Conditions	Associate new or existing terms with a purchase order.

Three Types of Invoices

The invoice you create in Maximo might represent one of these invoice types:

Invoice Type	Description
Single PO	An invoice related to a single purchase order—you enter information such as the invoice number, corresponding PO number, any receipts recorded for the PO, and information specific to the invoice.
Multi POs	An invoice related to many purchase orders—you enter general invoice data on the Invoice tab, then list the related POs on the Invoice Lines tab.
No PO	An invoice without a related purchase order—typically, such an invoice represents a bill for which there is no purchase requisition or purchase order. Invoice-specific information is entered into the application.

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Invoice Reconciliation continued

Invoice Status The following table describes the different statuses that an invoice can have.

Status	Description
Entered (ENTERED)	The default status when you create an invoice. A newly entered invoice has some fields filled in by default; some of these are read-only. An invoice with the status of Entered can be edited.
Scheduled (SCHED)	Indicates that the invoice is part of a payment schedule, set up for a specific contract. Invoices with this status can be created only from the Contracts applications. An invoice with a status of Scheduled can be changed to any status except Entered.
Waiting for Approval (WAPPR)	The status is available only if the current invoice status is Entered or Hold. Use this status to indicate that invoice information has been entered and the invoice is now ready for review and approval by the appropriate level of staff. An invoice waiting for approval can be edited.
Approved (APPR)	The status is available only if the current invoice status is Entered, Waiting for Approval, or Hold. If you change the status directly to Paid without first approving the invoice, Maximo automatically validates the invoice for approval criteria. An approved invoice is stored as a history record; for invoices in history, you can change only the Check Code, Check Number, and Paid fields.
Hold (HOLD)	The status is available only if the current invoice status is Entered or Waiting for Approval (WAPPR). You can change the invoice to Hold status if the invoice should not be approved or paid yet.

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Invoice Reconciliation continued

Invoice Status continued

Status	Description
Paid (PAID)	The status is available only if the current invoice status is Entered, Waiting for Approval, Approved, or Hold. If you change the status directly to Paid without first approving the invoice, Maximo automatically approves the invoice. A paid invoice is stored as a history record and cannot be modified.
Cancel (CANCEL)	The status is available only on the Change Status dialog box if the current invoice status is Entered, Waiting for Approval, or Hold. You cannot cancel an approved invoice. A canceled invoice is stored as a history record and cannot be modified.

3-1 Match

A *3-1 match* is a match of a line item on a purchase order, a receipt, and an invoice; it is used when the **Receipt Required?** field on the PO line item is checked.



Basic Process for Invoice Reconciliation

The basic invoice process consists of four steps. Step 1 starts the process, but *your work in Maximo consists of steps 2, 3, and 4*.

1. Receive the invoice from the vendor.
2. Create/enter vendor invoice information into Maximo.
3. Match the vendor invoice to the POs so that it can be approved and routed to accounts payable.
4. Approve the invoice and route it to accounts payable.

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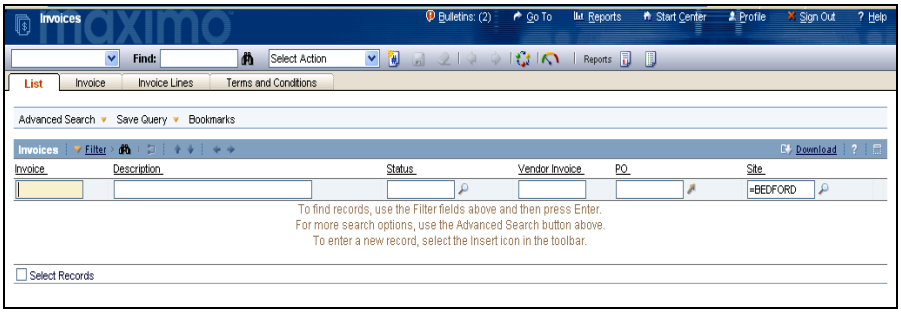
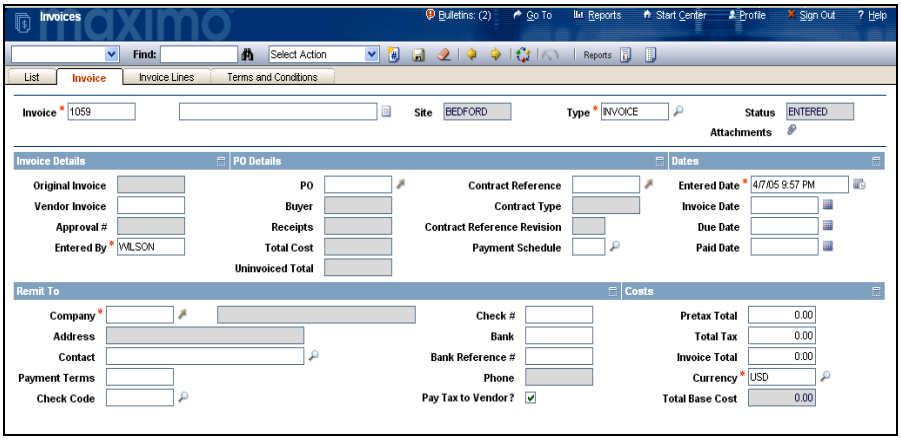
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Invoice Reconciliation continued

Step 2: Creating the Invoice



In this exercise you will reconcile the vendor's invoice using the **Invoices** tab.

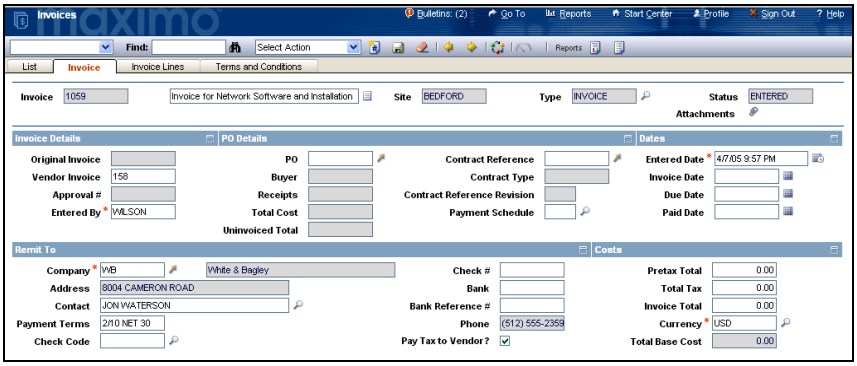
Step	Action
1	Go to the **Invoices** application from the **Purchasing** module. Result: The Invoices application opens and displays the List tab. 
2	Click the **New Invoice** icon. Result: Maximo displays the Invoice tab with an automatically generated number. 

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Invoice Reconciliation continued

Step 2: Creating the Invoice continued

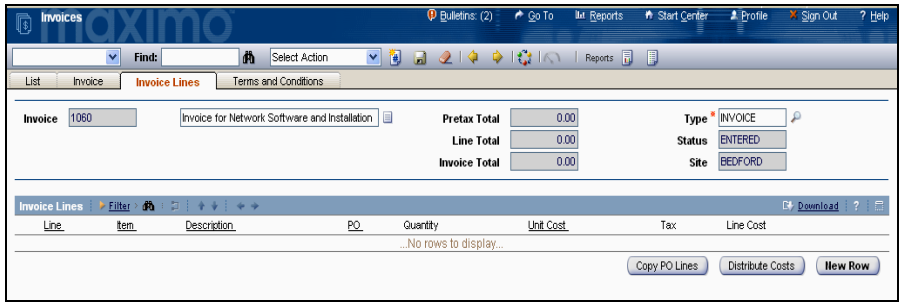
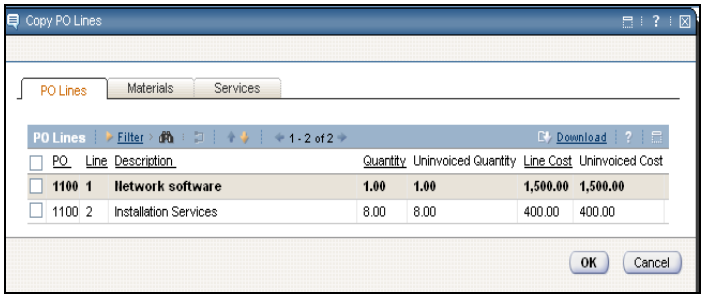
Step	Action
3	Enter the following information: **Field** — **Value** **(Description)** — Invoice for Network Software and Installation **Vendor Invoice** — 158 **PO** — [*Find the PO you created from the previous exercises*] **Company** — WB Record your invoice number here: _____.
4	**Save** the record. Result: Your screen should be similar to the one shown below.  Note: The Company data is entered automatically when you enter the PO number.

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Invoice Reconciliation continued

Step 3: Entering Invoice Line Items—Performing a 3-1 Match

In this exercise you will use the **Copy PO Lines to Invoice** dialog box to perform a 3–1 match on the invoice.

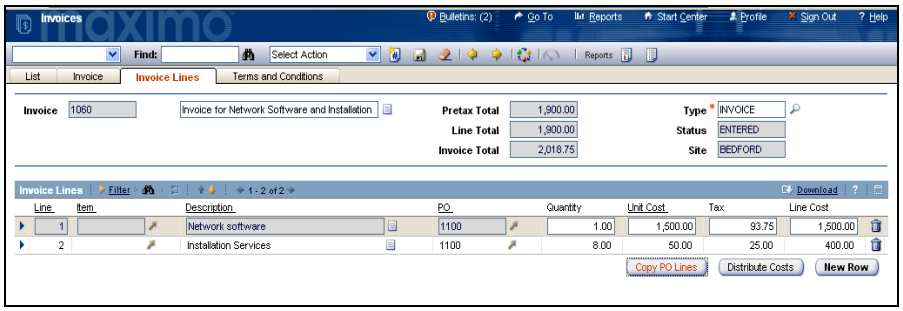
Step	Action
1	Click on the **Invoice Lines** tab. Result: The Invoice Lines tab opens. 
2	Click the **Copy PO lines** button. Result: The Copy PO Lines dialog box opens. 

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Invoice Reconciliation continued

Step 3: Entering Invoice Line Items—Performing a 3-1 Match continued

Step	Action
3	Check all the **PO lines** boxes and then click **OK** to copy the matching lines from the PO to the **Invoice Lines** tab. Result: The Invoice Lines tab should look like this: 
4	**Save** the record. Our next exercise will begin at this point.

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Invoice Reconciliation continued

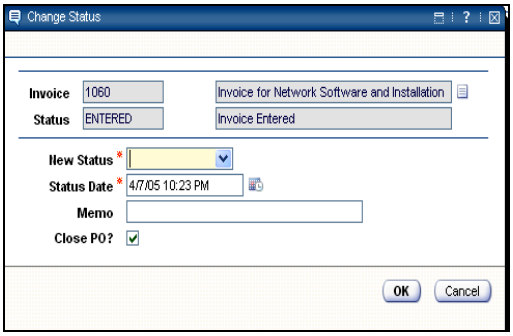
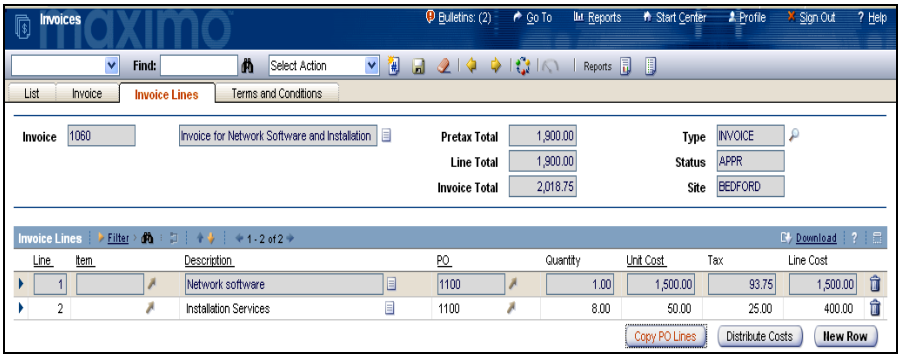
Step 4: Approving the Invoice



In this exercise you will assume that the invoice has gone to the appropriate person, who has given the invoice approval for payment.

Approving an invoice is like approving a PR or PO. You will approve the invoice in this exercise.

You will also check that the PO is closed and the invoice is entered for each PO line item.

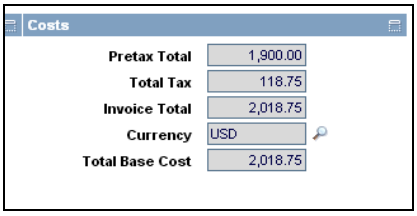
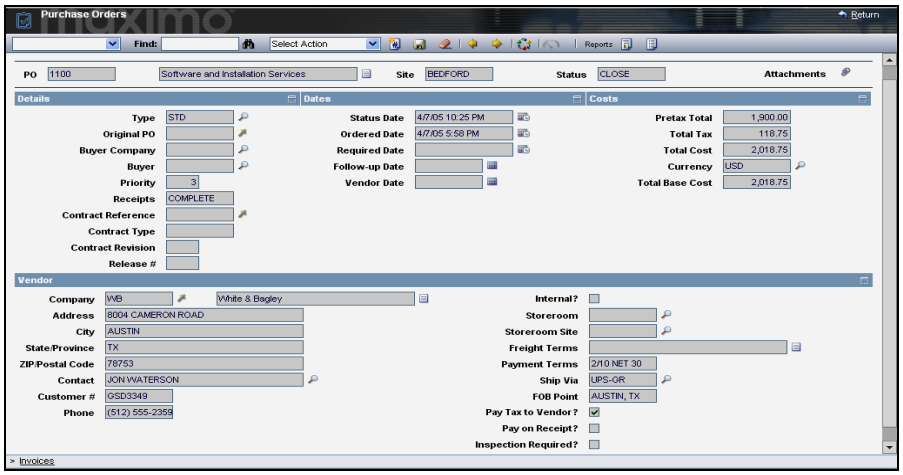
Step	Action
1	Click the **Change Status** icon. Result: The Change Status dialog box opens. 
2	Select **Approved** from the **New Status** field drop-down list, then click **OK**. Result: The invoice status is now APPR. 

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Invoice Reconciliation continued

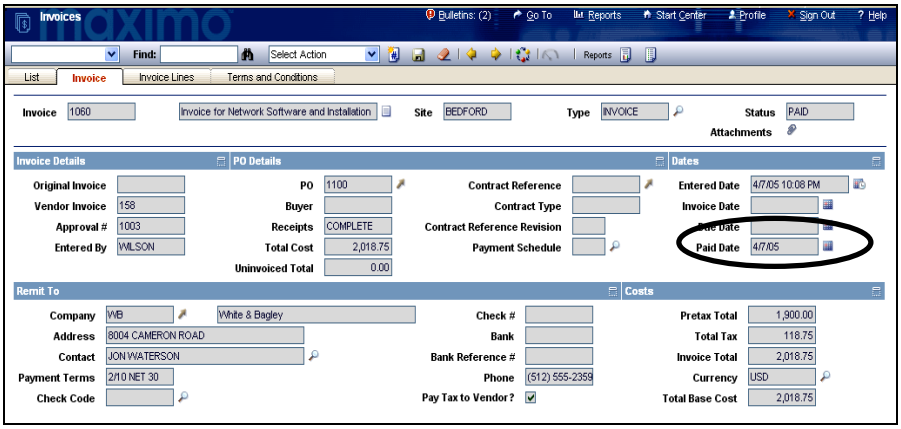
Step 4: Approving the Invoice continued

Step	Action
3	Click the **Invoice** tab. Result: In the Costs section, notice that Maximo automatically calculates the values for the Pretax Total, Total Tax, and Invoice Total fields.  Note: Remember that we entered the Conversion Factor value of "1.00" in the PO record. For multi-currency transactions the conversion factor varies, and if PRs are approved, Maximo will automatically calculate and convert the Total Base Cost value. You will have different values.
4	In the **PO Details** section, click the detail menu button for the PO field, then choose **Go To Purchase Orders** from the resulting list. Result: The screen opens to the Purchase Orders application.  Note: The PO status is now CLOSE.

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Invoice Reconciliation continued

Step 4: Approving the Invoice continued

Step	Action
5	Click the **Return** icon  in the upper right corner of the screen. Result: You are returned to the Invoices application.
6	Click the **Change Status** icon and change the status to **PAID**. Result: The transaction date populates the Paid field and the Paid Date field is populated. 

Creating a Materials Requisition

Introduction

A *materials requisition* (MR) is a request issued internally to a purchasing department to order items or services from an external source, or is a request issued internally to another storeroom for parts.

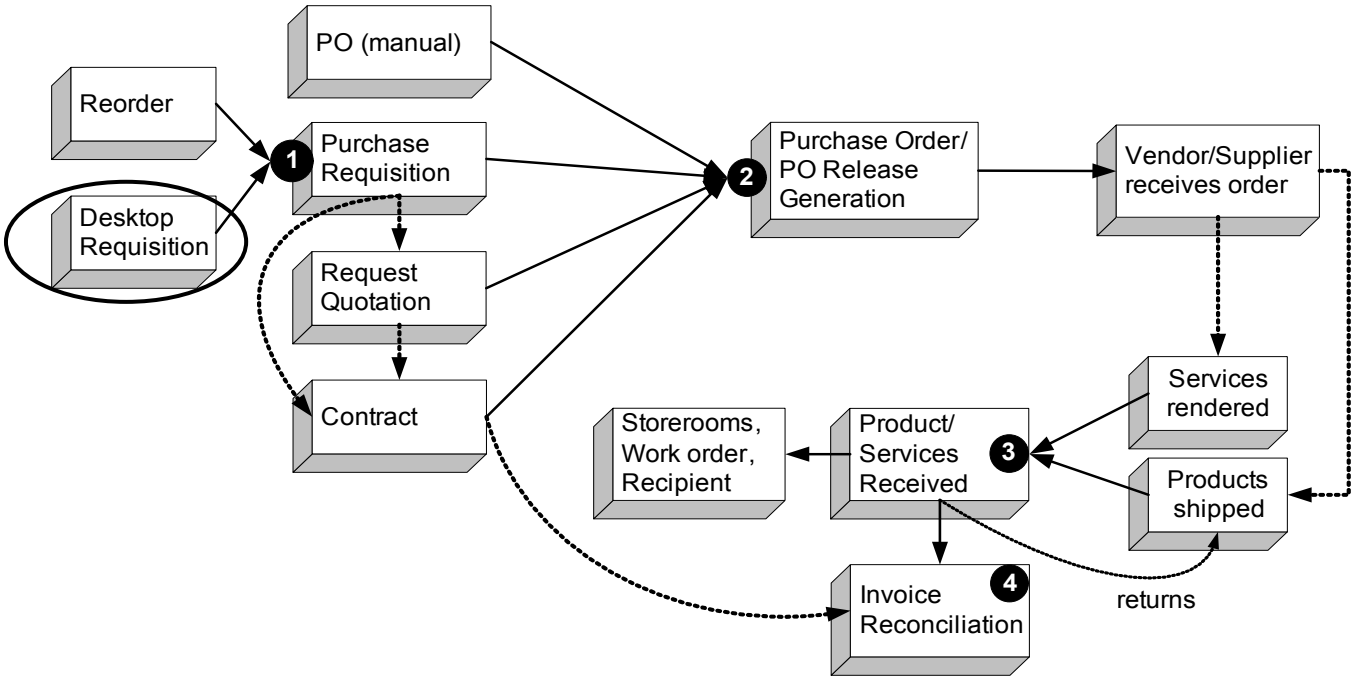
Use the **Desktop Requisitions** module to create requisitions for items, parts, and supplies from internal or external sources.

We Are Here: MR Creation

You can create an MR by using the **Desktop Requisitions** module.

The scenario premise for this chapter will be to use the Desktop Requisitions module to generate an MR for materials.

This scenario will just familiarize you with Desktop Requisitions; you will not process the request through the entire procurement lifecycle.



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Creating a Materials Requisition continued

Desktop Requisitions Module

Desktop Requisitions is a sub-module of the **Self Service** module. It is intended to be used by both experienced and novice users.

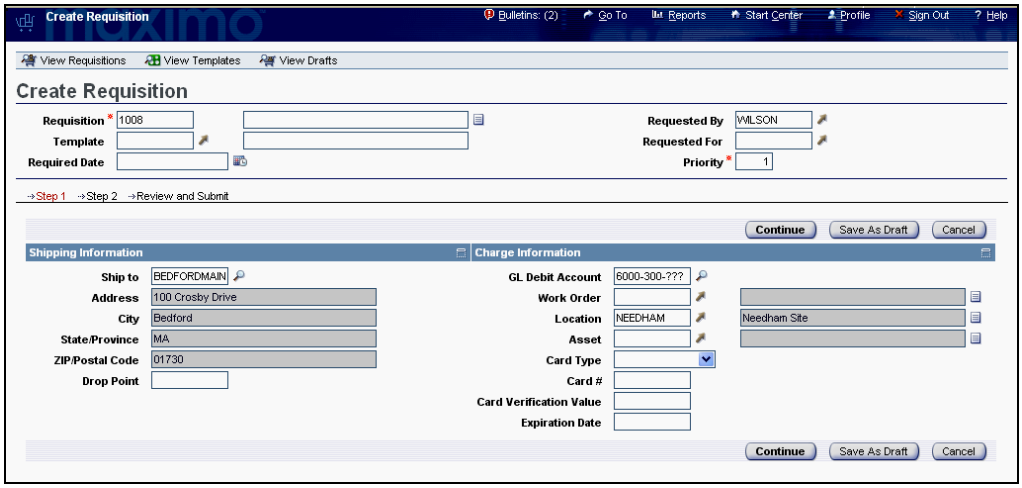
The module is designed to create requisitions in an extremely simple environment through the use of a wizard, which is a series of steps and accompanying pages that the application brings you through.

The Desktop Requisitions module enables you to search for and request materials from internal storerooms, suppliers' online catalogs, and electronic commerce sites and marketplaces.

Desktop Requisitions Applications

The Desktop Requisitions module is composed of four applications:

- The **Create Requisition** application enables you to create and submit a desktop requisition. The requisition contains information on Requisition Description, Shipping Information, Charge Information, and Requisition Line Items.



You can complete a desktop requisition using the three-step process, or you can save a requisition as a draft and finish it later. You can also save a requisition as a template, and use it later for creating additional requisitions with similar information.

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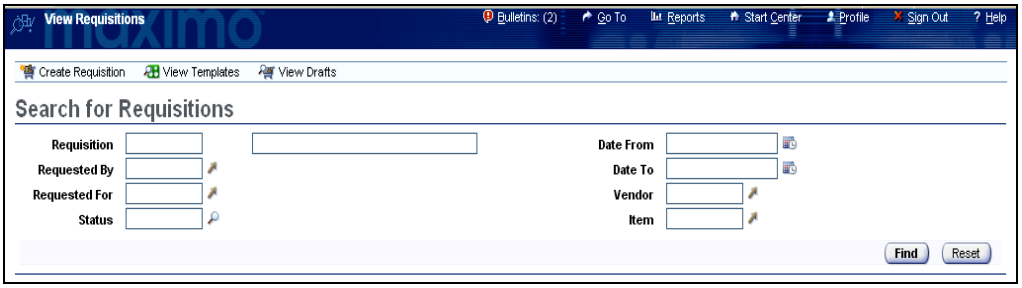
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Creating a Materials Requisition continued

Desktop Requisitions Applications

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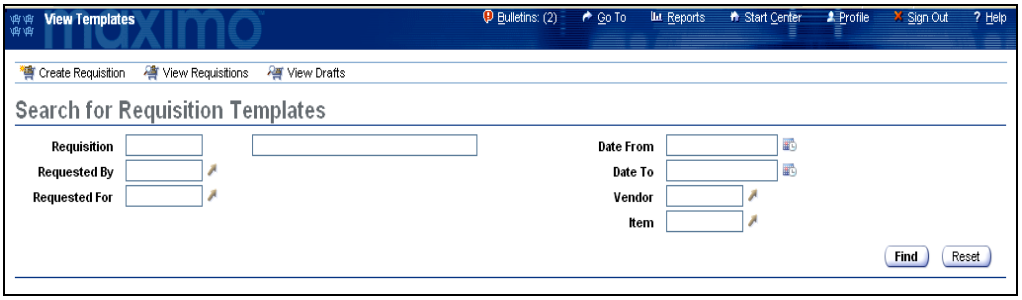
- The **View Requisitions** application enables you to search for, view, and change the status of your existing requisitions.



- The **View Templates** application enables you to view specific information about requisition templates, including shipping addresses, charge information, and line item details. You can then edit the template requisitions if you want, and create new requisitions from the templates.

  A *template requisition* is a requisition that you save to use repeatedly in the future. It can contain your standard shipping and charge information plus line item information.

  You create requisition templates in the **View Requisitions** and **View Drafts** applications.



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Creating a Materials Requisition continued

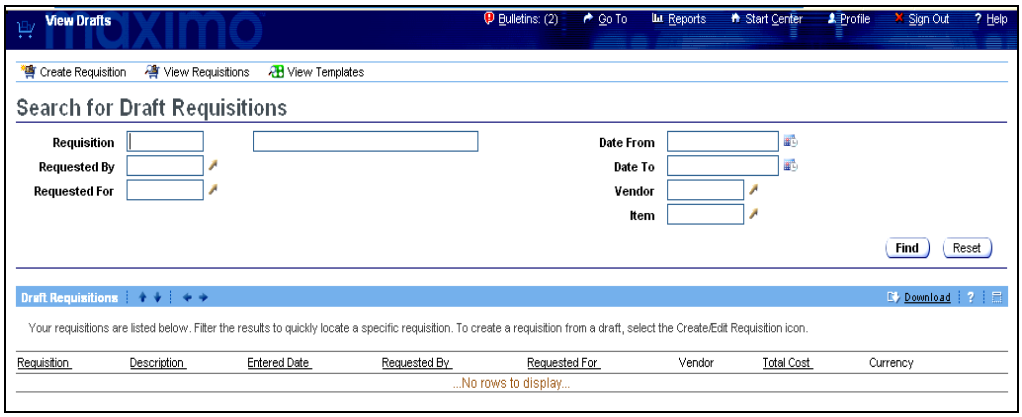
Desktop Requisitions Applications

continued

- The **View Drafts** application enables you to view your draft requisitions and edit them if you want.

  When you choose to edit a draft, Maximo redirects you to the **Create Requisition** application, where you can make the necessary changes and then submit the requisition or save it again as a draft.

  You can also create a template requisition in the **View Drafts** application. A *template requisition* is a requisition that you save to use repeatedly in the future. It can contain your standard shipping and charge information, plus line item information.



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Creating a Materials Requisition continued

Requisition Status

Like the PR applications, **Desktop Requisitions** uses the same status value to indicate its position in the order processing cycle.

The following table lists and describes each status:

Status	Description
DRAFT	Draft is the status when a requisition is created.
WAPPR	Waiting for Approval is the status when the request is currently reviewed.
APPR	Approved status is available only if your business rules require approvals. The default Maximo configuration does not require approvals for PRs and PR line items that you transfer to POs.
CLOSE	Closed indicates that all the PR's line items have been assigned to one or more purchase orders. All fields are read-only, and the record can no longer be modified.
CAN	Canceled status is available if the current PR status is Approved (APPR) and if none of its line items have been assigned to a purchase order. All fields are read-only, and a record can no longer be modified.

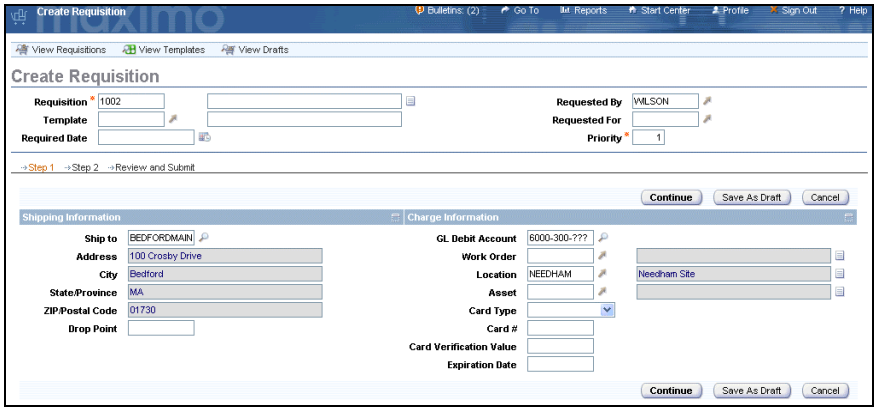
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Creating a Materials Requisition continued

Creating a Requisition

The wizard-driven process of creating a requisition in **Desktop Requisitions** is straightforward and simple. Using the following steps, you will create a requisition for some office supplies for a department within an organization.

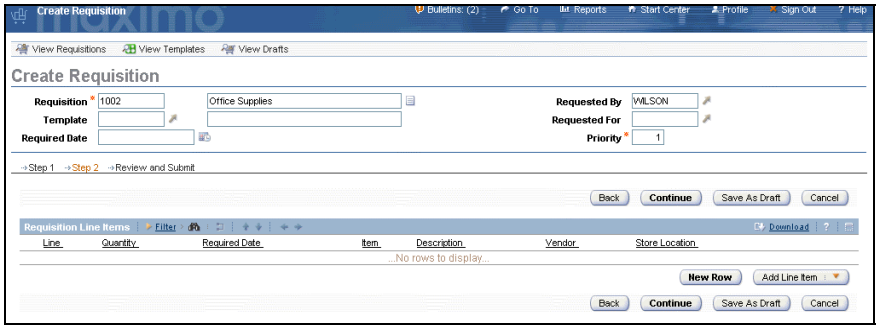
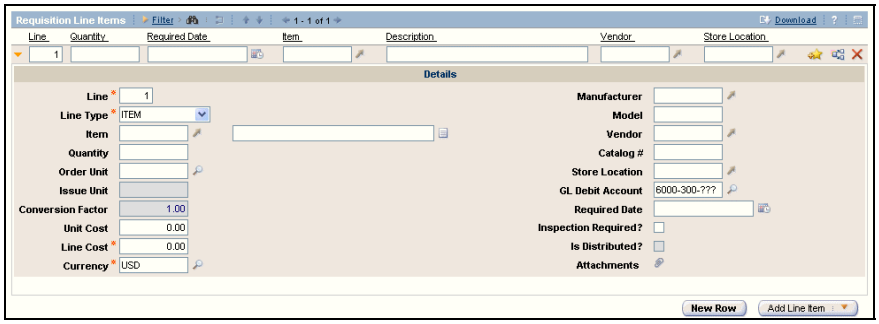
Step	Action
1	Access the **Create Requisitions** application: **Self Service >> Desktop Requisitions >> Create Requisition** Result: The Create Requisition tab displays with an autonumbered requisition, as shown below. (Requisition numbers may vary.)  Note: "Step 1" is highlighted on the screen to indicate where you are in the process. Each step is highlighted when you are on it. Write your requisition number here: _____.

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Creating a Materials Requisition continued

Creating a Requisition continued

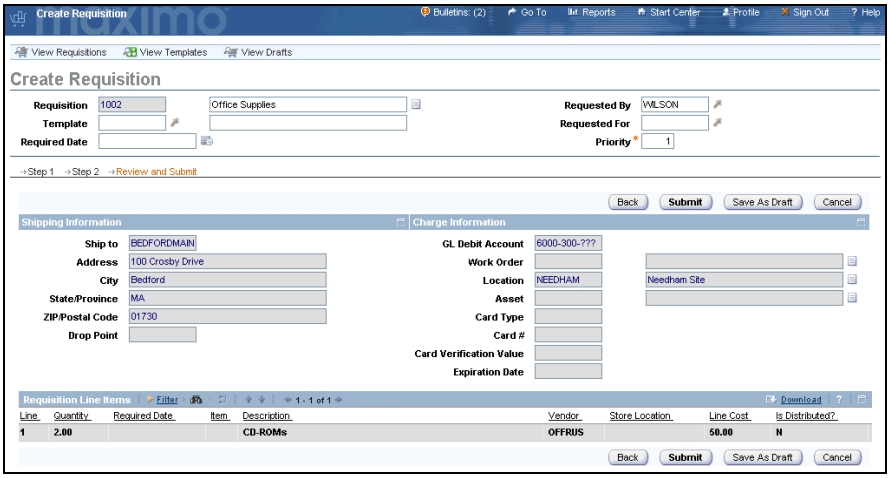
Step	Action
2	Enter Office Supplies in the **description** field, then click **Continue**. Result: You are taken to step 2 of the process, which is to add lines for the request. 
3	Click the **New Row** button. Result: A new line is added, ready for input. 

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Creating a Materials Requisition continued

Creating a Requisition continued

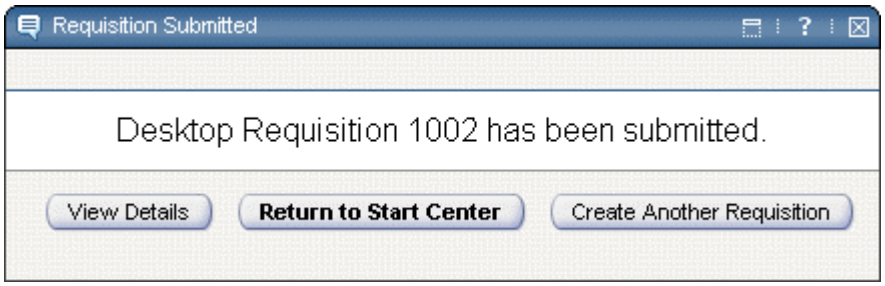
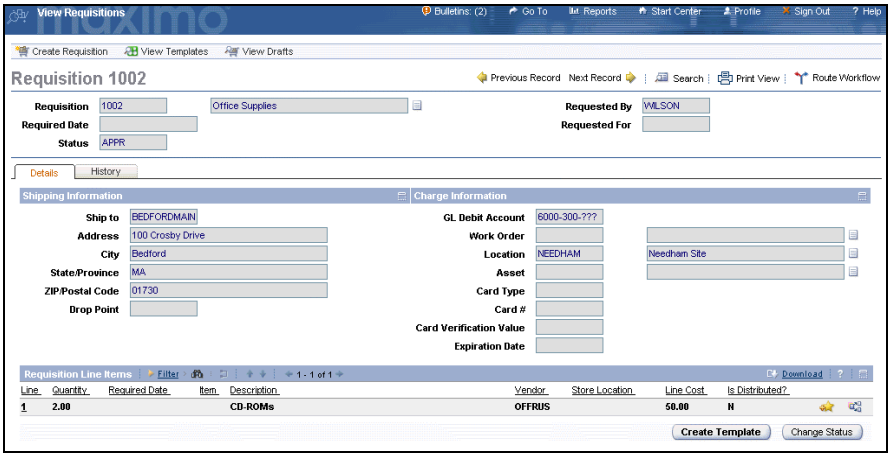
Step	Action
4	Enter the following information: **Field** — **Value** **Line Type:** Material **(Description)** CD-ROMs **Quantity:** 2 **Order Unit:** BOX **Unit Cost:** 25.00 **Vendor:** OFFRUS **GL Debit Account:** [*Use the default value*]
5	Click **Continue**. Result: You are taken to Step 3 – Review and Submit. 

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Creating a Materials Requisition continued

Creating a Requisition continued

Step	Action
6	After reviewing the details, click **Submit**. Result: The requisition is submitted and automatically approved. Maximo displays the Requisition Submitted dialog box.  Note: The number of your desktop requisition may vary from this example.
7	Click **View Details**. Result: The View Requisitions application displays the details for the requisition that you just created.  Note: The next exercise will start at this point, so keep the View Requisition application open to this record.

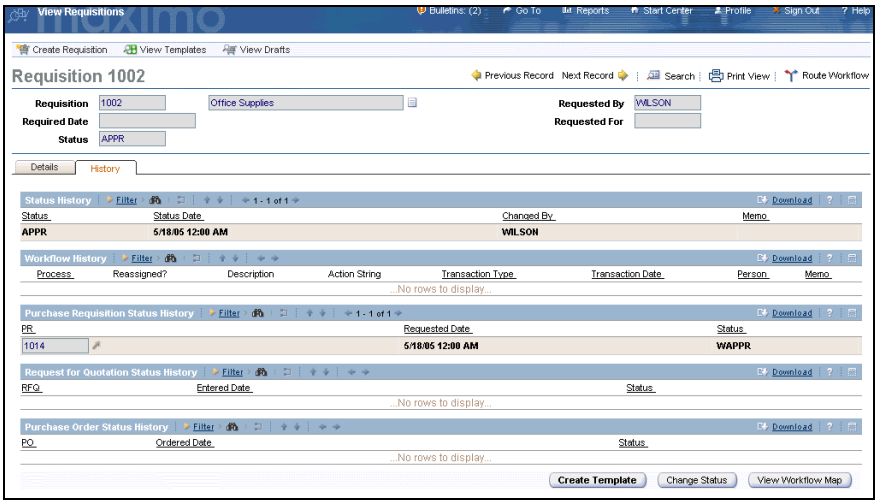
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Creating a Materials Requisition continued

Determine the PR Number

Upon request approval and when a vendor is indicated during the requisition process, Maximo generates a PR that corresponds to the information in the requisition.

We will now determine which PR number has been assigned to the requisition.

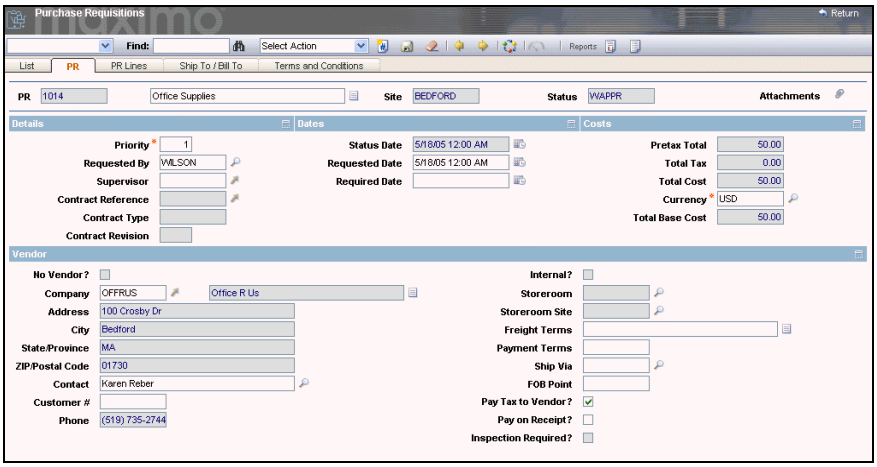
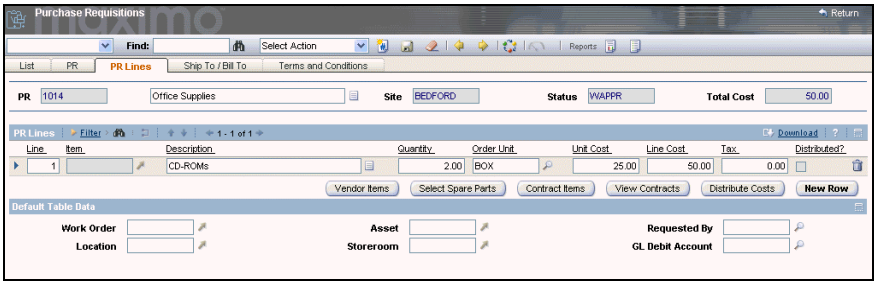
Step	Action
1	Click the **History** subtab while viewing the request from the previous exercise. Result: The requisition history is retrieved.  **Note**: The Status History and Purchase Requisition Status History sections are populated.

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Creating a Materials Requisition continued

Determine the PR Number continued

Step	Action
2	Click the **Detail Menu** button on the **PR** field, then select **Go To Purchase Requisitions**. Result: Maximo displays the PR record details created from the previous exercise.  Write the PR number here: _____. Note: The PR status is WAPPR and vendor information is shown.
3	Click the **PR Lines** tab. Result: The line item from your request is copied. 
4	Return to the **View Requisitions** application.

Chapter Summary

Purchasing Module Functionality

Maximo comes with purchasing functionality. You use the Purchasing module and its applications for creating, processing, and printing PRs, RFQs, and POs.

PR Creation

A PR is created in one of the following ways:

- Requisitioning for materials and services using the **Desktop Requisitions** or **Purchase Requisitions** applications
  or
- Creating a PR using the **Reordering** and **Desktop Requisitions** applications
- Awarding an RFQ using the **Request for Quotations** application
- Reordering for a storeroom replenishment or work orders only using the **Reordering** action in the **Inventory** application

Purchase Requisitions Application

A PR is a written request issued internally to a purchasing department to order items or services. You can use the **Purchase Requisitions** application to create PRs for items, supplies, and services, or to create a PO from a PR.

Desktop Requisitions

Desktop Requisitions is a self-service application, designed to be used by both experienced and novice users.

The application is designed to create requisitions in an extremely simple environment through the use of a wizard, which is a series of steps and accompanying pages that the application brings you through.

Revisiting Purchase Orders

A PO is an authorized order from a purchasing agent or department to an internal supplier or external vendor.

You can use the **Purchase Orders** application to create POs from PRs, from MRs, from RFQs, or from scratch, using the PO itself.

continued on next page

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Chapter Summary continued

Methods to Create POs

You can use a number of different methods to create a purchase order:

- From the Purchase Requisitions application—Select Action: **Create PO**
- From the Purchase Orders application, PO Lines tab—Select Action: **Copy PR Line Items to PO**
- From the Purchase Orders application (scratch)
- From the Request for Quotations (RFQ) application
- From the Inventory application using the Reorder function
- From the Desktop Requisitions module
- From the Purchase Contracts application by creating a release

Two Types of Receipts in Maximo

In Maximo there are two kinds of receipts:

- *Material receipts* refer to data associated with items used for work done on site by your company's employees; for example, quantities and lot numbers. When inventory items are received against a purchase order, the quantities in inventory are updated and an inventory transaction is generated.
- *Service receipts* refer to data associated with any service provided by a vendor or contractor, such as asset repairs. The service can be performed on site or off site. You specify service purchases in terms of a quantity and a unit cost, or as a single lump-sum amount.

Revisiting: The Receiving Application

Use the **Receiving** application to receive materials and services from purchase orders.

You can search for and receive existing PO line items from the Select Ordered Items and the Select Ordered Services pages, accessible from the Material Receipts and Service Receipts tabs, or manually enter received items on the Receipts tabs.

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Chapter Summary continued

Basic Invoice Process

The basic invoice process consists of three steps. Step 1 starts the process, but your work consists of Steps 2 and 3.

1. Receive the invoice from the vendor.
2. Enter vendor information into Maximo.
3. Match the vendor invoice to the POs so that you can approve it and route it to accounts payable.
4. Approve the PO.

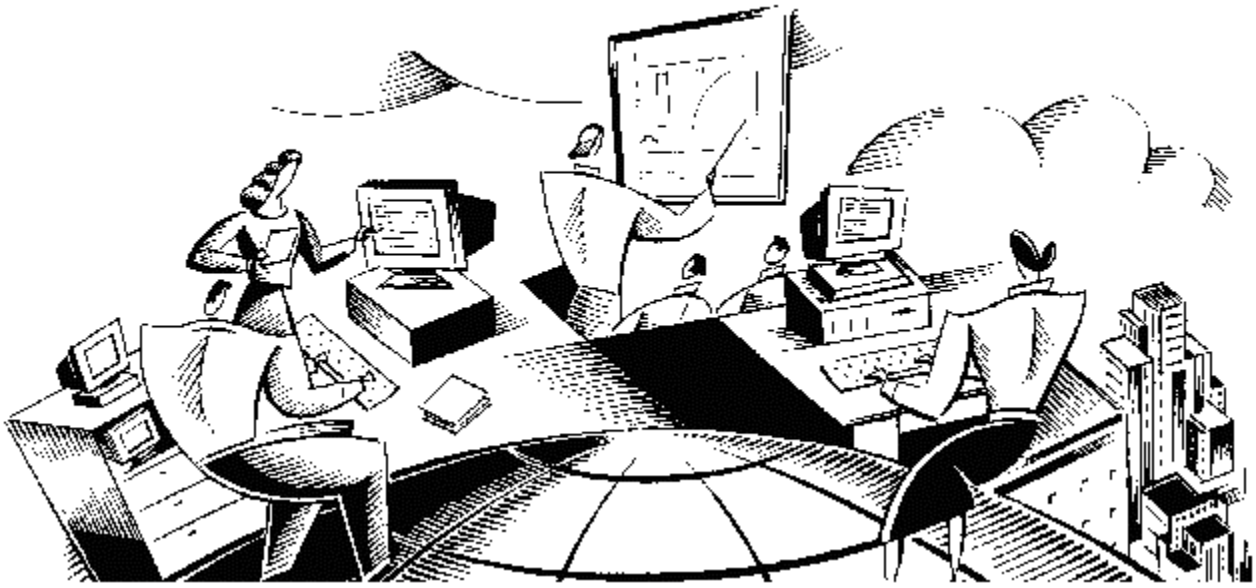
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Chapter 13: Reordering



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In This Chapter

This chapter contains the following topics:

Topic	See Page
Chapter Overview	13-1
Reordering in Maximo	13-3
Chapter Summary	13-17

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Chapter Overview

Introduction

Reordering items "internally" is a common practice for organizations to acquire the materials needed to finish the work orders.

Maximo enables you to strategically track the reordering process as it passes by the Inventory and Purchasing modules and applications to ensure that these items are available, part requirements and specifications are met, and inventory resources are kept at minimum levels.

Learning Objectives

When you have completed this chapter, you should be able to:

- describe how inventory reorder fits into the purchasing process;
- run the Reorder option from the **Inventory Control** application; and
- describe the conditions for which inventory items get reordered.

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Chapter Overview continued

Chapter Scenario Premise

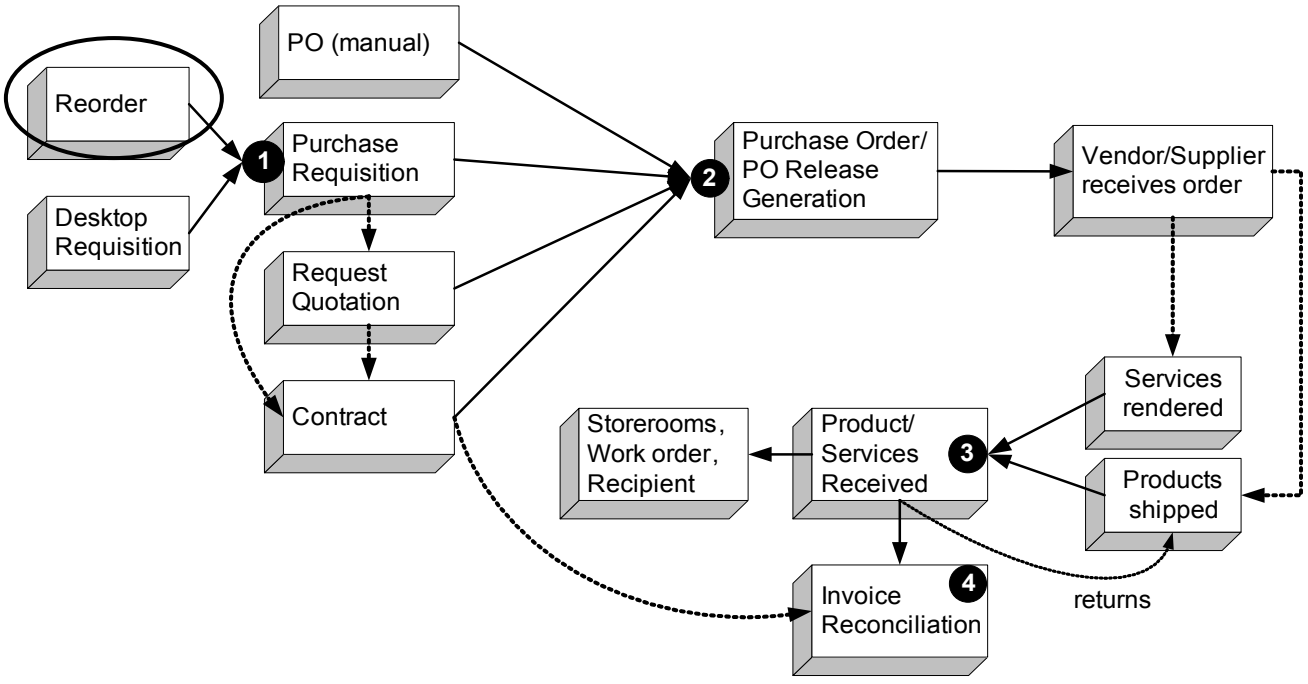
A purchase requisition (PR) is created in one of the following ways:

- Desktop Requisitions module, for material and service item requests
- Purchase Requisitions application
- Inventory application, to reorder items from storerooms

A purchase order (PO) is created in one of the following ways:

- Purchase Requisitions approved
- Inventory Reordering option is set to create approved POs
- RFQs awarded
- Purchase Contracts application, create release PO select action, when the **Create release?** check box is checked
- From scratch (PO applications)

The scenario premise for this chapter will be running the reordering action for storeroom replenishment using the **Reordering** action in the **Inventory** application.



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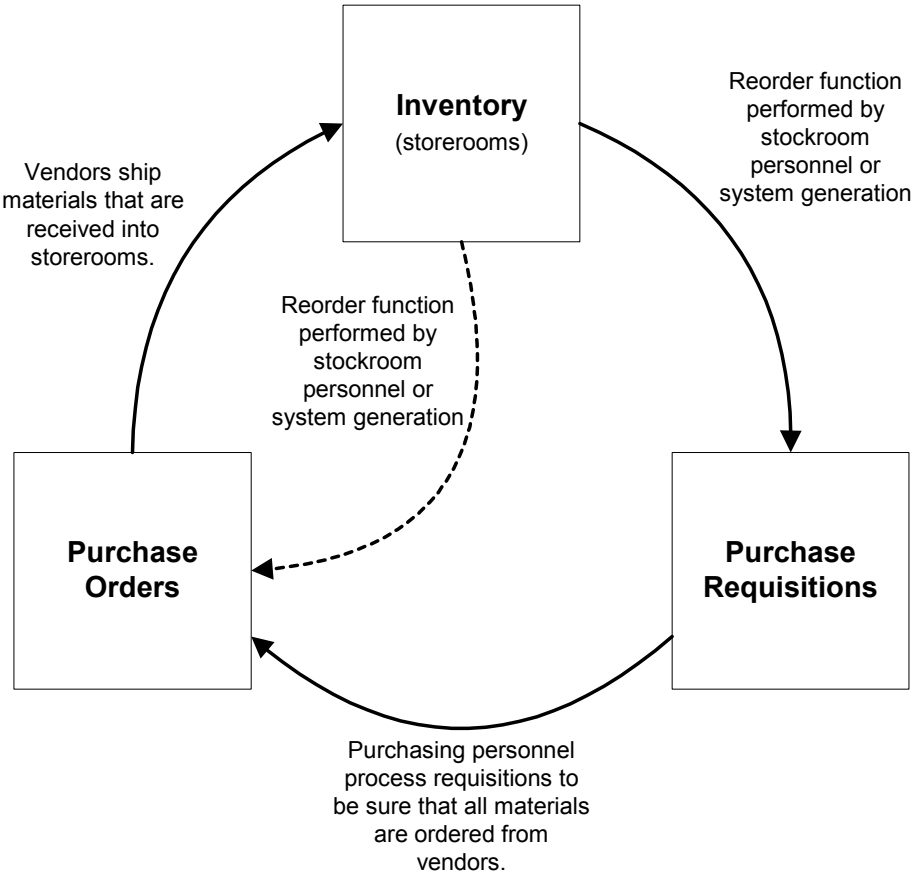
Reordering in Maximo

Introduction

As inventory balances decrease in the storerooms, we need to replenish these balances. The Maximo **Purchasing** and **Inventory** modules enable you to track requests for and purchases of materials, and to maintain storeroom inventories.

Reordering: The Inventory-Purchasing Connection

The diagram below illustrates the cyclical process that occurs to maintain storeroom balances by purchasing materials from vendors.



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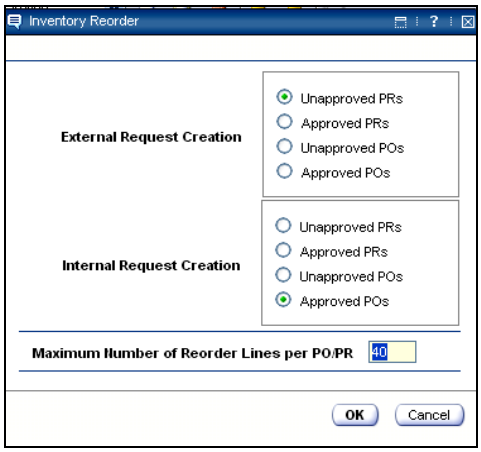
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Reordering in Maximo continued

Organizations Application Inventory Reorder Options Revisited

In the **Organizations** application, **Select Action** menu, use the **Inventory Reorder** option to specify whether Maximo creates an approved or unapproved PR or PO when a reorder request is generated.

You set the default separately for reorder requests directed at external vendors and internal supply rooms.



Tip: Reorder



- Setting up and using reorder in Maximo will reduce "stockouts" and also allow for improved purchase planning. Organizations can realize a 5 to 10 percent or better reduction in inventory levels.
- Satellite stores reordering from the Primary - hub storeroom will allow you to consolidate purchasing through the hub storeroom.

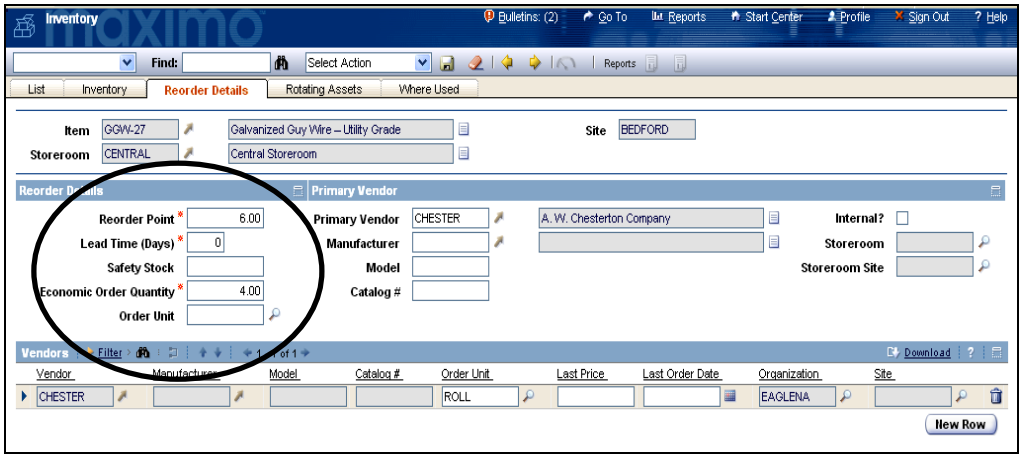
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Reordering in Maximo continued

Revisiting the Inventory Application

In addition to using the **Inventory** application to enter, view, or modify item balances, costs, balances, bins, and lots, and to view storeroom locations where the item is stocked, when stock falls below a specified reorder point, the balances let you know when and what quantities to reorder by setting up item reorder details on the **Reorder Details** tab.



Reorder Cron Task



From the **Inventory** application you can manually execute the Reorder function.

In addition, you can automate the function by configuring the ReorderCronTask record in the **Cron Task Setup** application.

For more information about configuring the reorder cron task, refer to the *System Administrator's Guide*.

Note: For this chapter, we will manually execute the reorder action using the Reorder action.

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Reordering in Maximo continued

Reordering Items

In Maximo, there are two actions that allow you to reorder items:

- Reorder Items
- Reorder for Direct Issue Items and Services

Reordering Stocked Items

Many companies use a just-in-time system to reduce their inventory levels and associated carrying costs. When using a just-in-time system for maintenance, you base your purchasing and stock levels on upcoming work, rather than on past usage. Because parts and equipment can become obsolete and your company's process can change, looking back might not be as useful as looking forward when considering your inventory needs.

Maximo accommodates just-in-time inventory systems by allowing you to set reorder quantities. Using the **Preventive Maintenance** application to plan upcoming maintenance and inspection work can also help to determine what items will be needed in the future.

Stocked items can be automatically reordered, based on the Maximo reorder logic, which uses the following formula:

(current balance + quantity on current purchase requisitions and purchase orders) – (quantity reserved on work orders and internal purchase orders + quantity expired) <= ROP

Current PRs and POs are any PRs and POs with a status of waiting for approval (WAPPR), approved (APPR), or in progress (INPRG). Maximo checks to see how many units of this item are listed on current PRs and POs, adds this number to the current balance, then subtracts any items on approved work orders, internal POs, and any expired items. If the resulting number does not exceed the reorder point (ROP), Maximo reorders.

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Reordering in Maximo continued

Determining the Reorder Point

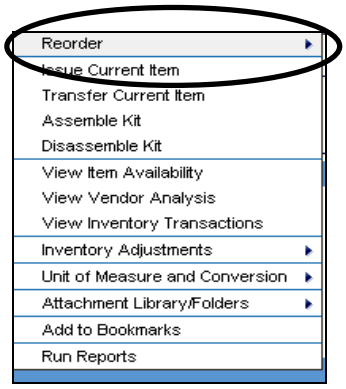
The *Reorder Point* (ROP) is the point at which items should be reordered so that their number does not fall below the number designated as safety stock during the lead time for the order. Ideally, the calculation of the ROP is based on the following variables:

- **Safety Stock** is the minimum number of the item that you must have on hand at all times.
- **Lead Time** is the amount of time it takes between placing an order and delivery of the items.
- **Economic Order Quantity** is the number of an item that should be reordered at one time, usually based on the vendor's price for a particular quantity ordered. For example, buying a case of an item might cost less per item than buying the item individually.

You can use the Inventory Reorder Point report to help you calculate a new ROP.

Reordering Select Action

On the **Select Action** menu there are two actions specific to the reordering function:



- **Reorder Items**: Use to reorder stocked items, direct issue items, or both.
- **Reorder Direct Issue Items/ Services**: Use to reorder direct issue items or services.

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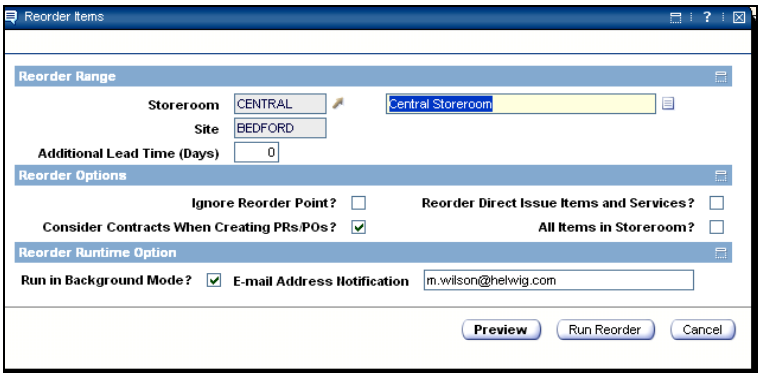
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Reordering in Maximo continued

Reorder Items Dialog Page

When you choose the **Reorder Items** action, a **Reorder Items** dialog box will open. Use dialog box to reorder stocked items, direct issue items, or both.

You can reorder a single item, a list of selected items from the same storeroom, or all of the items in a storeroom.



- **Ignore Reorder Point?** – The item is ordered even if the available balance is above the reorder quantity.
- **Reorder Direct Issue Items and Services?** – Include direct issue items or services on approved work orders in reordering calculations.
- **Consider Contracts When Creating PRs/POs?** – Release POs are created from existing blanket purchase orders. Prices and details from the pricing agreements are included when PRs and POs are created.
- **All Items in Storeroom?** – Overrides any item selections and makes the Storeroom field editable.
- **Run in background mode?** – Runs the reorder process in background mode and sends notification via e-mail when complete.
- **E-mail Address Notification** – The e-mail address of the person who receives the reorder notice.

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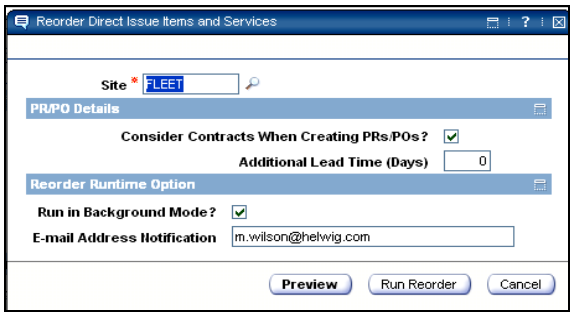
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Reordering in Maximo continued

Reorder Direct Issue Items/ Services Action

When you choose the **Reorder Direct Issue Items** action from the **Select Action** menu, a **Reorder Direct Issue** dialog page will open.

Use this action to reorder material items or services listed on approved work orders and issued *without being received into inventory.*



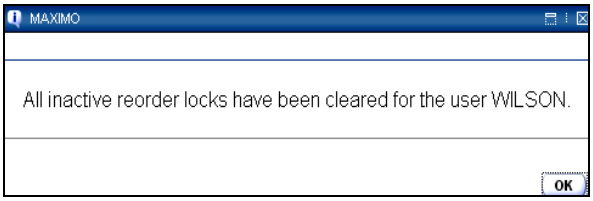
Clear Reorder Lock Action



When a user runs the reorder process (even if in preview mode), Maximo places a lock on the process against the storeroom being reordered. This prevents other users from running reorder against the same storeroom at the same time.

Occasionally, users running the reorder process in preview mode might inadvertently lock the reorder process and prevent themselves and others from running reorder against a certain storeroom.

If there is a reorder lock against your user name, you can use the **Clear Reorder Locks** action on the **Select Action** menu to remove it.



Reordering Items

In Maximo you can reorder for a:

- Single item or service
- Storeroom
- Select list of items for a particular storeroom

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Reordering in Maximo continued

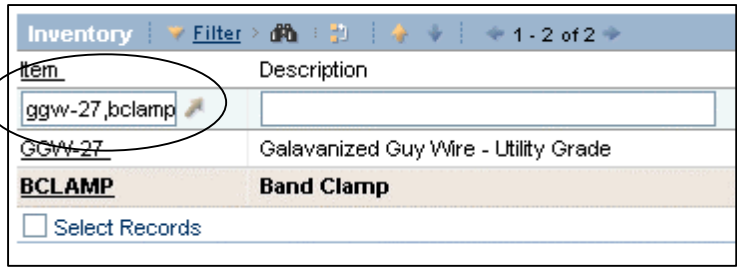
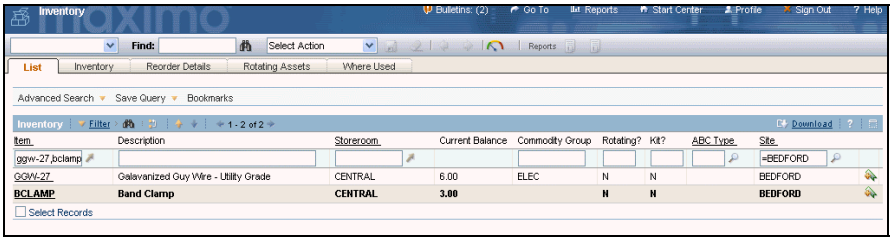
Utility Exercise Scenario: Reordering a Selected List of Items



In this exercise we will reorder items based on a selected list of items found in the utility company's Central Storeroom and identified by the bin **truck-1**.

At this point, we will ignore the reorder point to show the reordering process for these selected items.

Follow these steps to reorder based on a list of items.

Step	Action
1	Go to the **Inventory** application and, from the **List** tab, search for the Galvanized Guy Wire (**GGW-27**) and Band Clamp (**BCLAMP**) items. Hint: You can use comma-separated values in the Item field on the List tab to find both items with one filter.  Result: Items GGW-27 and BCLAMP are listed. 

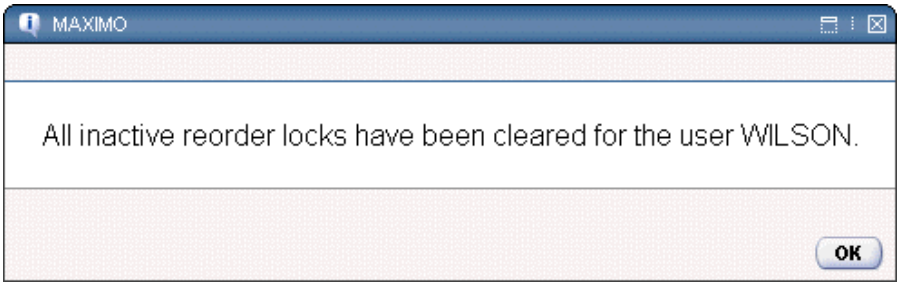
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Reordering in Maximo continued

Utility Exercise Scenario: Reordering a Selected List of Items

continued

Step	Action
2	From the **Select Action** menu, choose **Reorder** >> **Clear Reorder Locks**. Result: Maximo displays a dialog box indicating that locks have been cleared.  Note: This action enables you to place reorders on the items reserved from prior orders.
3	Click **OK** to close the dialog box.

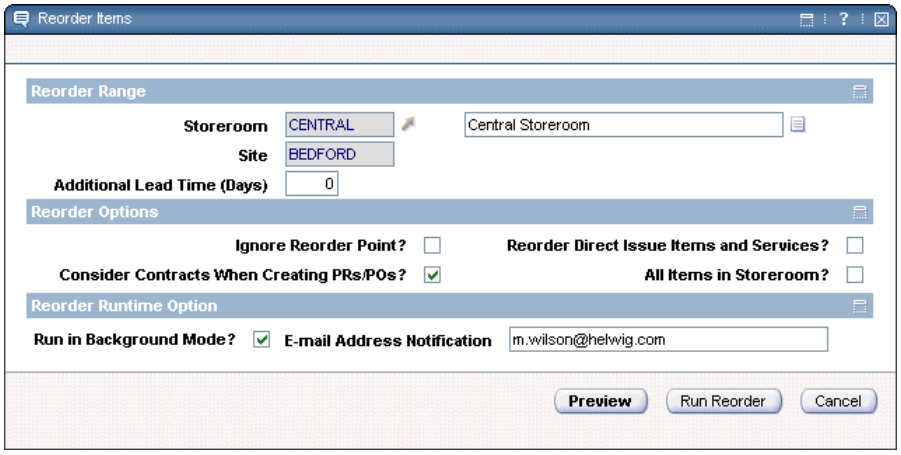
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Reordering in Maximo continued

Utility Exercise Scenario: Reordering a Selected List of Items

continued

Step	Action
4	From the **Select Action** menu, choose **Reorder** >> **Reorder Items**. Result: The Reorder Items dialog box opens. 
5	In the **Reorder Items** dialog box, set the following check boxes: **Field** — **Setting** **Ignore Reorder Point?** — [*Clear*] **Run in Background Mode?** — [*Clear*]

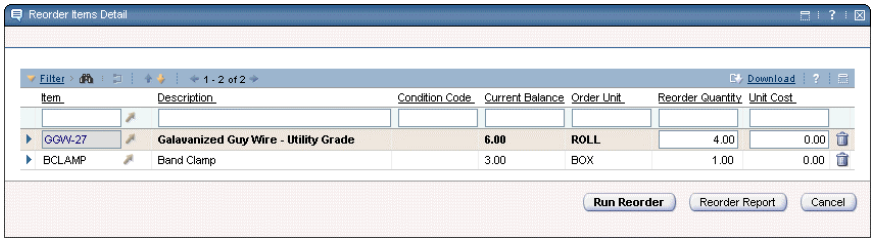
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Reordering in Maximo continued

Utility Exercise Scenario: Reordering a Selected List of Items

continued

Step	Action
6	Before we run the reorder, let's view our items. To do so, click **Preview**.  Result: The **Reorder Items Detail** dialog box displays all items slated to be reordered from the search list. 

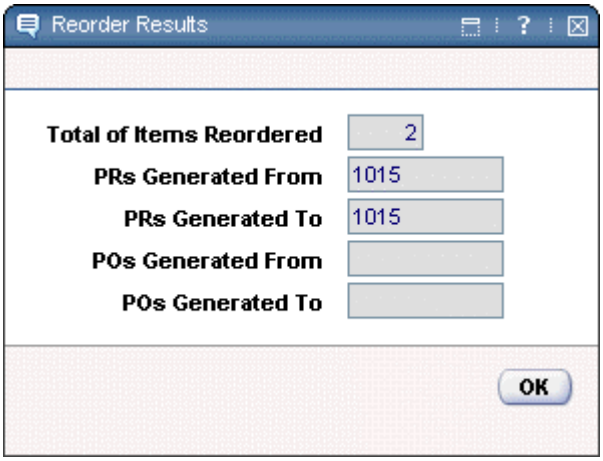
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Reordering in Maximo continued

Utility Exercise Scenario: Reordering a Selected List of Items

continued

Step	Action
7	From the **Reorder Items Detail** dialog box, click **Run Reorder**.  Result: The Reorder Results dialog box opens.  Record your PR number here:_____
8	Click **OK** to close the dialog box.

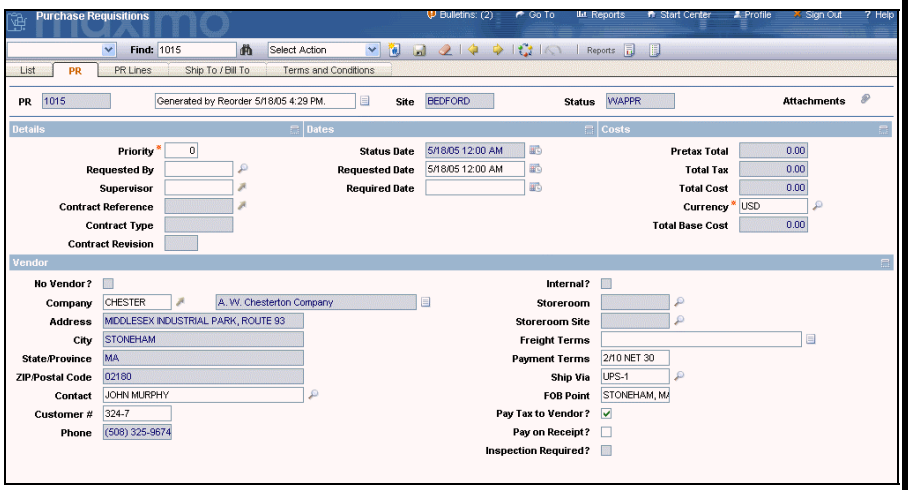
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Reordering in Maximo continued

Utility Exercise Scenario: Reordering a Selected List of Items – Viewing the PRs

Follow the steps below to open the Purchase Requisitions application and look at the PR we created using the Reorder function in the previous exercise.

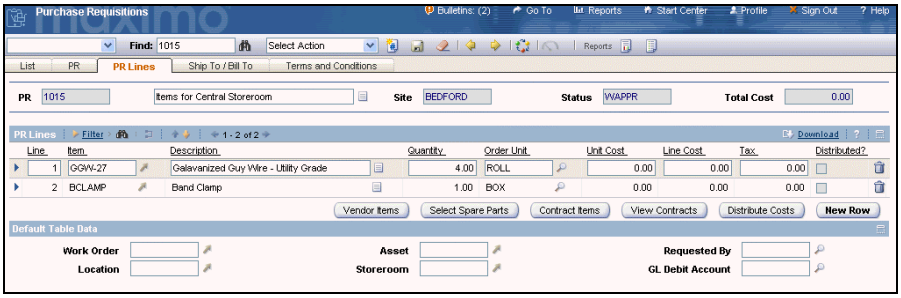
Step	Action
1	Go to the **Purchase Requisitions** application. Result: The Purchase Requisition application opens at the List tab.
2	Enter and retrieve the PR number generated in the previous exercise. Result: The PR record is retrieved. 
3	In the **Description** field, replace the automatically generated description with Items for Central Storeroom.
4	**Save** the record.

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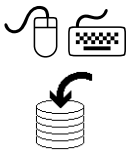
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Reordering in Maximo continued

Viewing the PRs continued

Step	Action
5	Click on the **PR Lines** tab to view it. Result: Maximo displays the PR lines for the ordered items. 

Utility Exercise Scenario: Processing the PR



For our Utility scenario we will be using these items later on in this course. Process the PR, following the instructions below:

1. Approve the PR.
2. Create and approve the PO for both items (use Autonumber).
3. Receive all the materials.

Write your PO number here: _____

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Chapter Summary

Revisiting the Inventory Application

In addition to using the **Inventory** application to enter, view, or modify item balances, costs, balances, bins and lots, and to view storeroom locations where the item is stocked, when stock falls below a specified reorder point, the balances let you know when and what quantities to reorder by setting up item reorder details on the **Reorder Details** tab.

Reordering Items

In Maximo there are two actions that allow you to reorder items:

- Reorder Items
- Reorder for Direct Issue Items/ Services

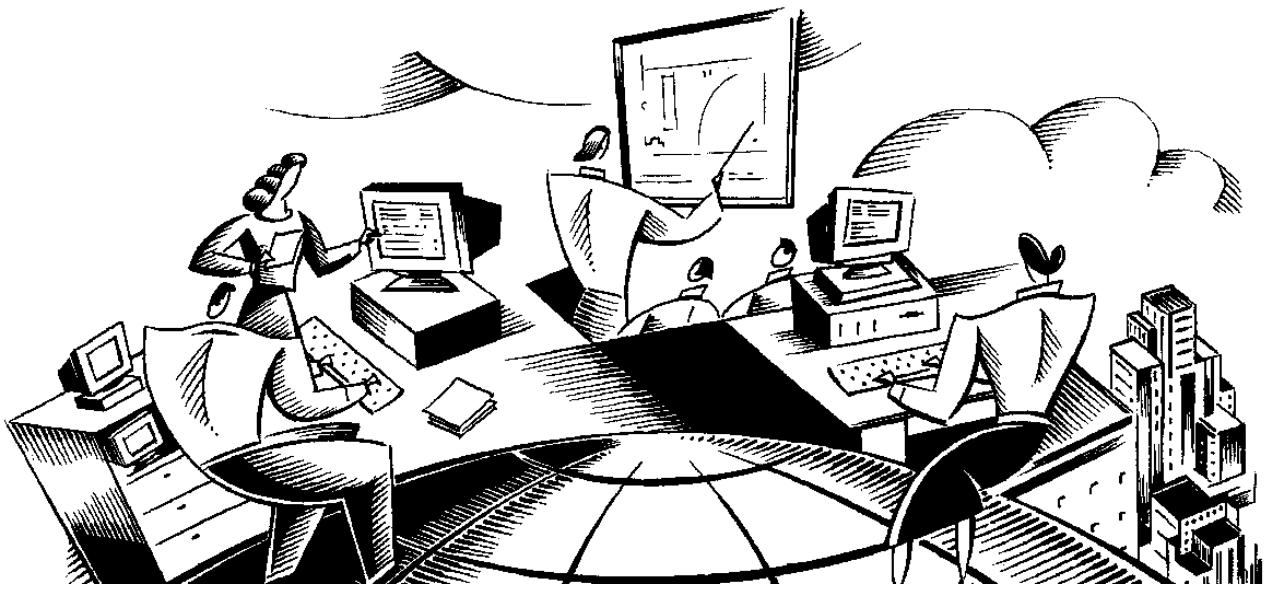
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Unit 5: Maximo Working for You



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In This Unit

This unit contains the following chapters:

Chapter	Subject
14	Setting Up Additional Maximo Applications
15	Automating the Approval Process
16	Asset Management
17	Putting It All Together

Unit Overview

Introduction

In this unit we will look at additional Maximo applications designed to augment your work management and materials management requirements.

The features and functions of these applications are results of cumulative best maintenance practices, the most significant factor in implementing Strategic Asset Management.

Learning Objectives

When you have completed this unit, you should be able to:

- create a classification hierarchy;
- use the Classification application to structure an item list;
- classify failures;
- identify failure hierarchies in Maximo;
- build a failure hierarchy;
- apply a warranty contract to assets acquired or services rendered;
- assemble an item kit;
- describe the purpose of workflow;
- enable and validate a workflow process;
- start a workflow process;
- view a workflow process's history;
- view an in-process assignment;
- complete a workflow assignment; and
- review previous exercises and illustrate how you can use Maximo to strategically manage your assets.

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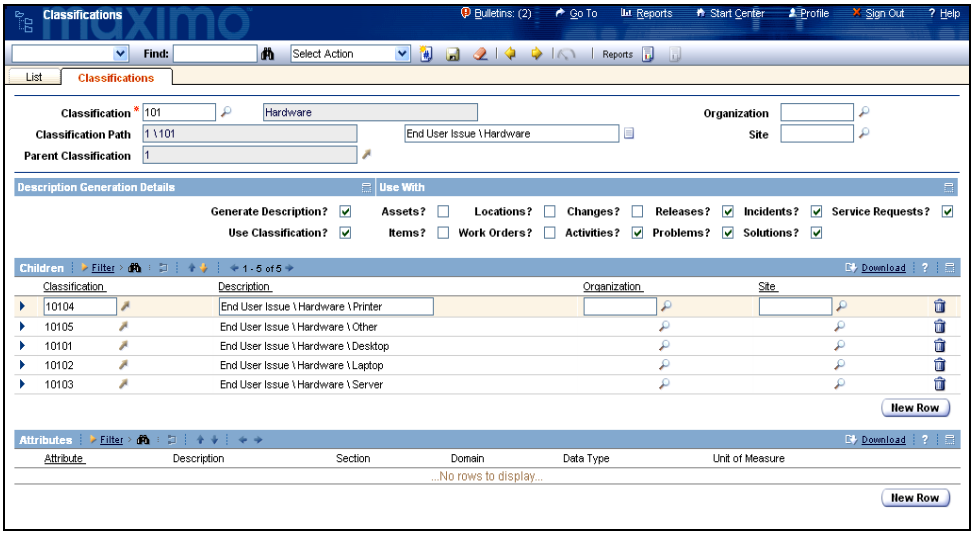
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Unit Overview continued

Use of Classifications

Classifications provide you with a means to logically store information, and can be used on locations, assets, items, work orders, tickets, and solutions. You can classify and then search for things that have been classified.

At the top level, you can have just one classification or you can have multiple classifications.



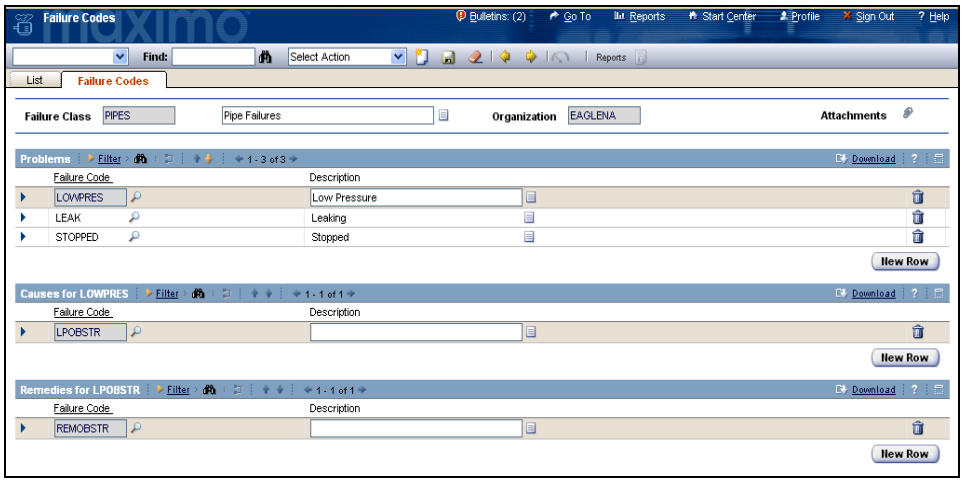
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Unit Overview continued

Entering Failure Class on Asset Records

After the failure class has been set up in the system that is being used by asset records, and when the work order is created and the asset number is selected, then the failure code file automatically populates on the work order screen.



Assigning a problem code to all new corrective maintenance (CM) and emergency maintenance (EM) work can provide failure history and failure hierarchy records.

Using problem codes also extends Maximo usage in that Maximo will alert you to duplicate work orders.

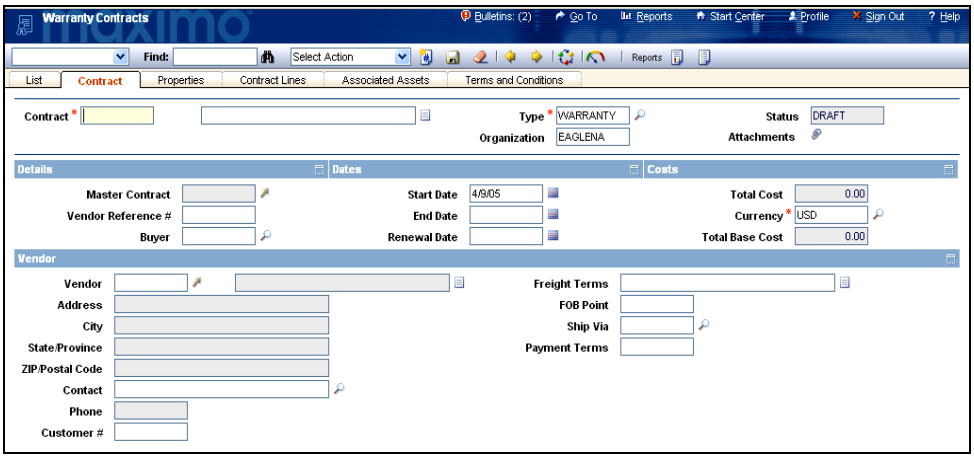
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Unit Overview continued

Using Warranty Contracts

You use a warranty or service contract to maintain one or more assets with an outside service provider for a fixed fee, or regularly scheduled payment over a time period; or to track warranty information for multiple assets or locations by time or meter.



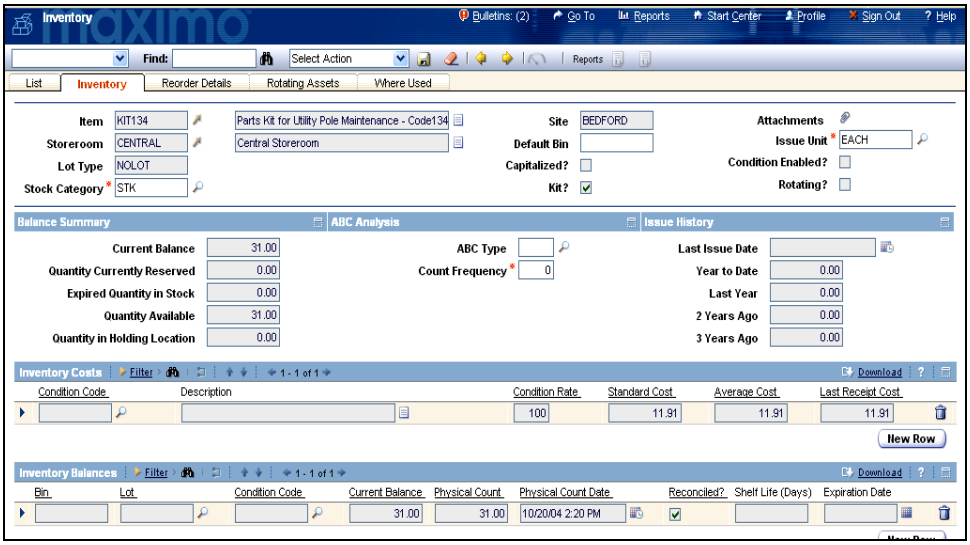
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Unit Overview continued

Creating Item Kits

A *kit* is a collection of items that can be issued out as a single unit. Using kits allows you to put all the items needed for a job plan or maintenance task into one container and issue them as a single unit.

The item kit record is a unique item set, just as an item record is unique.



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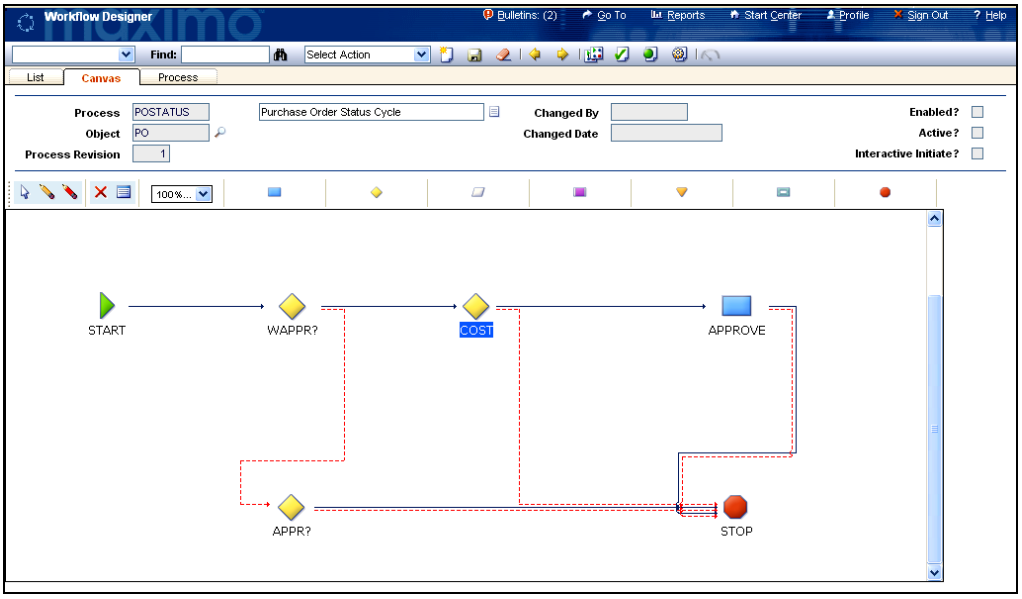
Unit Overview continued

Automating the Approval Process

You can use Workflow to create a set of paths as simple or as complex as your business process demands.

Each type of process should be able to handle all of the routing necessary for that kind of record.

Automating your approval processes will decrease record processing costs and allow you to track the approval history.



Asset Management

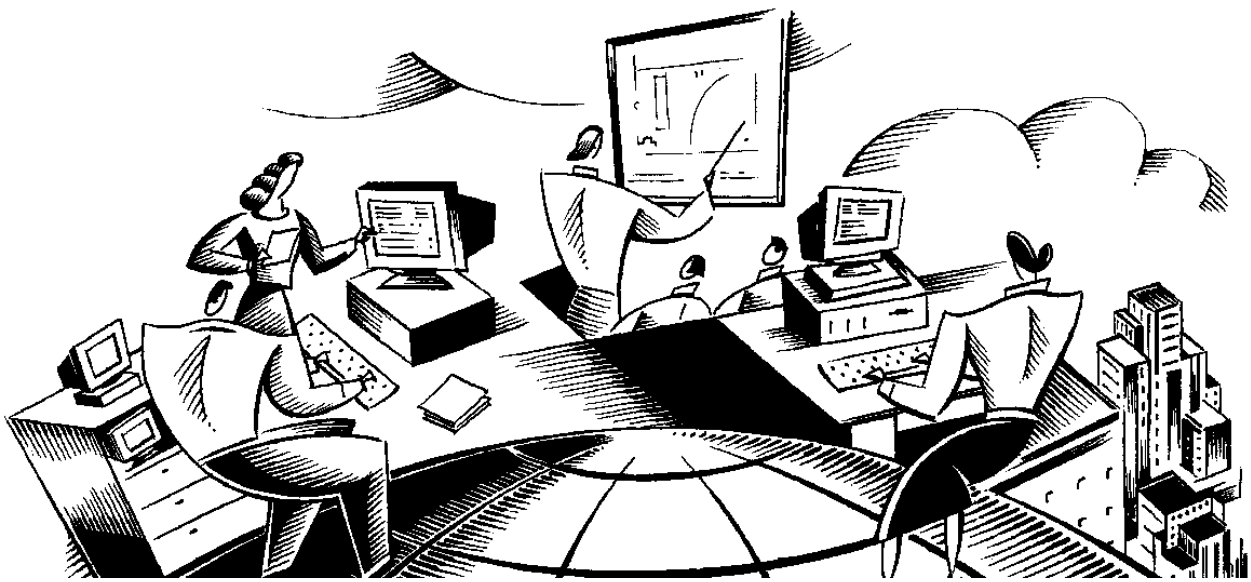
We will use the previous exercises as premises and extend the scenarios to illustrate how Maximo can be used to strategically manage your assets from:

- Purchasing (Acquiring)
- Setting Up Asset Records
- Managing and Processing Work Orders for the Asset

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Chapter 14: Setting Up Additional Maximo Applications



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In This Chapter

This chapter contains the following topics:

Topic	See Page
Chapter Overview	14-1
The Classifications Application	14-2
Failure Codes	14-18
Setting Up a Failure Hierarchy	14-22
Warranty Contracts	14-42
Item Kits	14-52
Chapter Summary	14-64

Chapter Overview

Introduction

In this chapter we will look at four applications that can be used to expand your Maximo usage:

- Classifications
- Failure Codes
- Warranty Contracts
- Item Kits

Learning Objectives

When you have completed this chapter, you should be able to:

- create a classification hierarchy;
- use the Classifications application to structure an item list;
- classify failures;
- identify failure hierarchies in Maximo;
- build a failure hierarchy;
- apply a warranty contract to assets acquired or services rendered; and
- assemble an item kit.

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The Classifications Application

Introduction

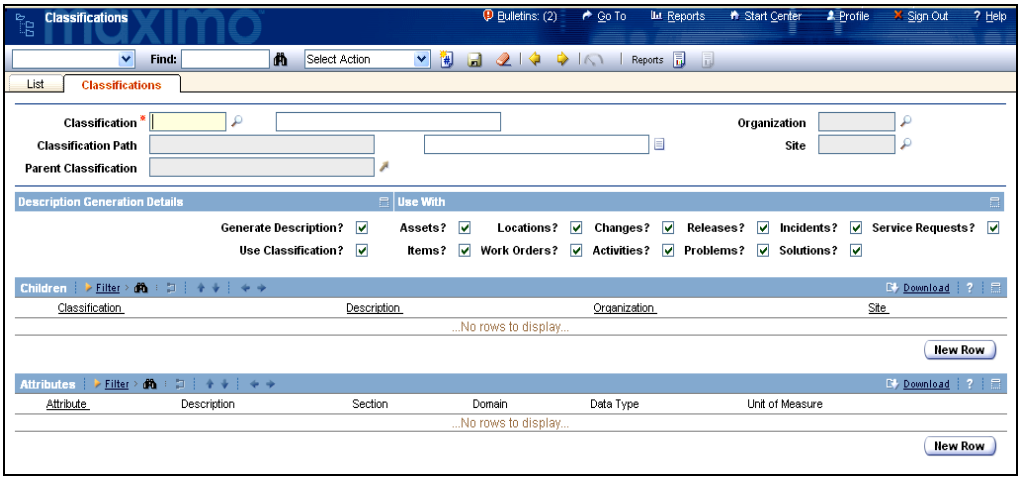
You use the **Classifications** application to establish an overall classification hierarchy. Once created, classifications can aid you in retrieving historical data from other applications within Maximo.

Classifications provide you with a means to logically store information, and can be used on locations, assets, items, work orders, tickets, and solutions. You can classify and then search for things that have been classified.

Classification structures are similar to directory structures in both construction and the way they are displayed. You also build a classification structure the same way; that is, from the top down in parent-child relationships.

First you create a parent (a classification), then you add the children (each is also a classification) that belong to the parent. Each child can then become a parent and have its own children. This can go on indefinitely.

The structure from the top-level parent to the child you are working with is called the *classification path*.



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The Classifications Application continued

Definitions

The following definitions apply when setting up a classification hierarchy.

Term	Definition
Classification Level	The hierarchical position of a classification.
Parent Classification	The highest classification level (Level 1). It is a general category used to represent categories that share certain attributes.
Child Classification	The second highest classification level (Level 2). It is used to create subsets of items that fit into the same classification but can be divided into smaller groups based on their attributes.

Classifications tabs

The Classifications application has two tabs:



Use this tab…	To…
List	Search for classifications records.
Classifications	Create a new classifications branch, and add, modify and assign attributes and domains to a classification record.

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The Classifications Application continued

Working with Attributes and Domains

An ***attribute*** is a means of grouping characteristics of a classification. An attribute's name can be either alphanumeric or numeric. You can use attributes only with assets, locations, or items.

For example, for a classification of pump, you might have an attribute of HORSEPOWER. For a classification path of COMPUTER\PROBLEM you might have an attribute of MEMORY SIZE.

A ***domain*** is a means to standardize a list of values for attributes. For example, for an attribute of COLOR, you might have domains of yellow, red, green, and blue. For an attribute of HORSEPOWER, you might have domains of 1.0, 1.5, 2.0, 10, 20, 100.

When you have an attribute, it can be further defined by the use of domains, but it is not required to have a domain.

Better Business Practice



Classifying locations, assets, items, work orders, tickets, or solutions down to the domain level provides granularity in providing specific information most useful to less experienced personnel.

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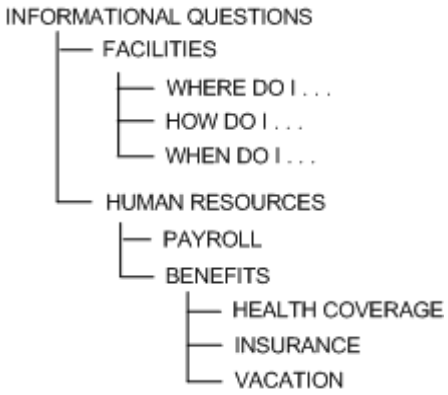
The Classifications Application continued

Classification Examples

These examples might help you understand classifications:

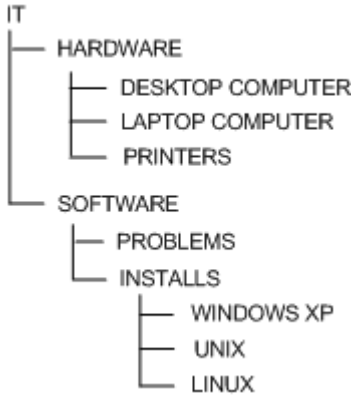
- A user calls the service desk to obtain information on the facilities. The service desk uses classifications to categorize the ticket as an informational request. The classification path would be: INFORMATIONAL QUESTIONS \ FACILITIES \ WHERE DO I . . .

  Ten minutes later the service desk takes a second call, concerning health coverage. The same classification structure can be used to categorize both incidents.



- A user contacts the service desk, requesting a Windows XP installation. A Service Requisition and Change Ticket is created, and the ticket has a classification path of: IT \ SOFTWARE \ INSTALLS \ WINDOWS XP.

  Ten minutes later the service desk takes a printer-related call. The same classification structure used to categorize the earlier change is used to classify the printer incident ticket.



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The Classifications Application continued

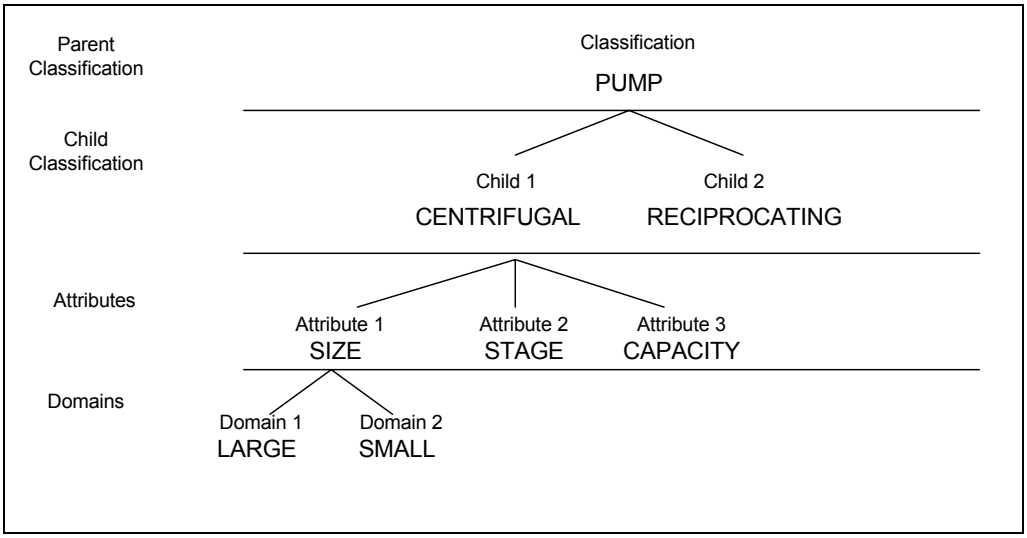
Classification Examples

continued

- Another use of classifications could be to show the relationship of assets. For example, your work order requires a small, centrifugal pump.

  Maximo will show two PUMP types: Centrifugal and Reciprocating. Both types are categorized into Size, Stage, and Capacity, while sizes can be Large and Small. The classification path for this is as follows:

  PUMP \CENTRIFUGAL \SIZE \SMALL



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The Classifications Application continued

Measure of Units and Conversions

A unit of measure describes the increment in which you order, issue, or transfer an item or tool, or order a service.

Examples of units of measure include EACH, CASE, IN (inches), and ROLL. A conversion factor is a numeric value that is applied to relate one unit of measure to another (a ratio). Before adding items to storerooms, you must define all types of units of measure first, and then define the conversion ratios for those units.

When you add an item to a storeroom, you must supply a value for the issue unit using the units of measure that you have predefined. Conversion from one unit of measure to another takes place only when you receive or transfer an item into a storeroom.

For this reason, Maximo is always converting to the unit at which a storeroom receives and stores the items, which is the same as the storeroom's issue unit.

If the order and issue units do not match when you receive the item into a storeroom or when you transfer it between storerooms, Maximo looks for a conversion ratio to determine the stocking balance for the storeroom. For example, you order light bulbs in bulk.

Your unit of measure is a case, with a quantity received of 36. However, when you issue the item, you issue it one at a time. In this case, you can define a measure unit of CASE and another measure unit of EACH.

You define a conversion ratio from CASE to EACH with a factor of 36. When you receive an order of bulbs into a storeroom, Maximo converts the received order unit of one CASE into the storeroom's issue unit of 36 EACH.

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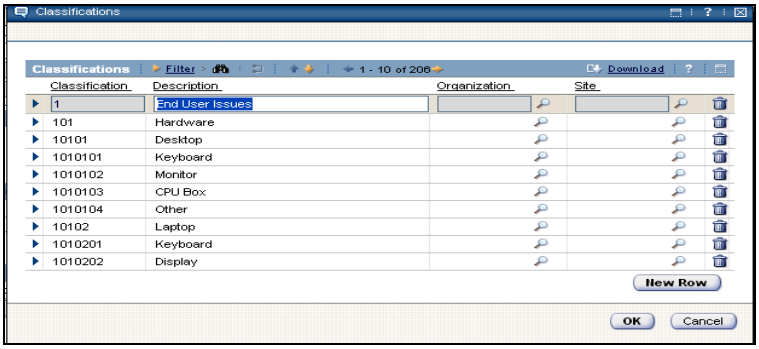
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The Classifications Application continued

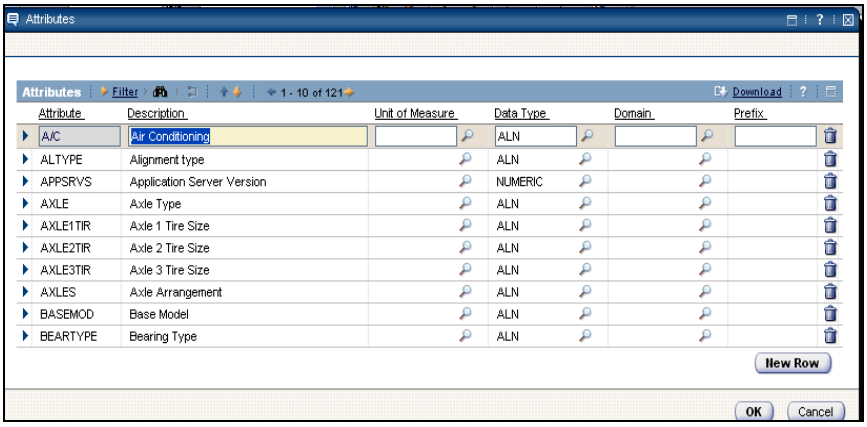
Adding/ Modifying Properties

The Select Action menu enables you to add or modify:

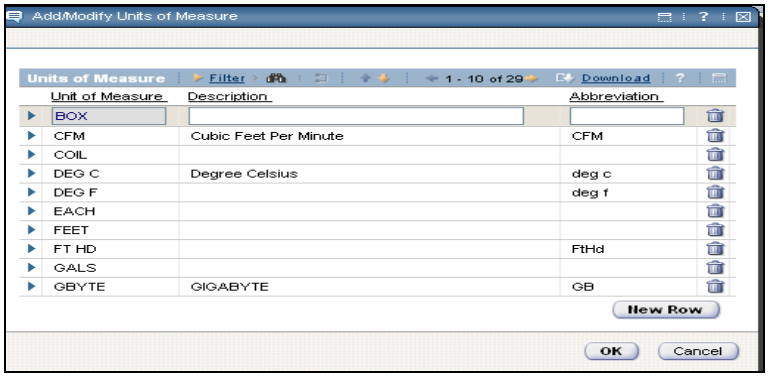
- Classifications



- Attributes



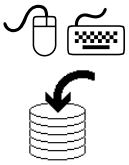
- Units of Measure



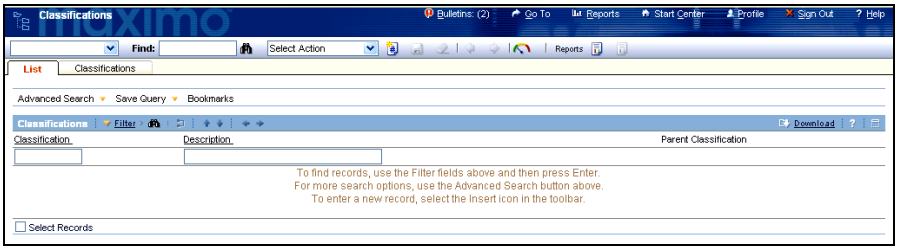
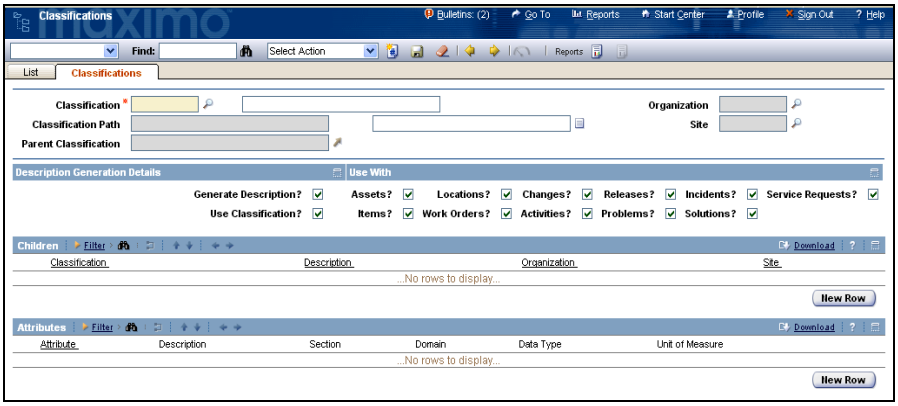
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The Classifications Application continued

Utility Scenario Exercise: Creating a Classification



For our Utility scenario, we will create a parent classification and attributes for utility poles.

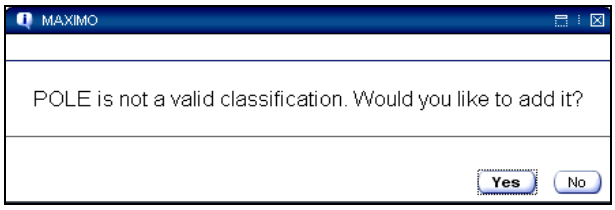
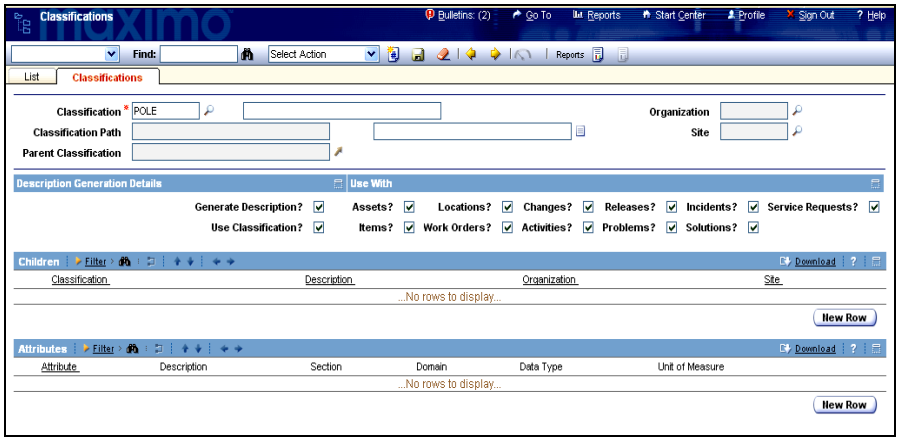
Step	Action
1	From the **Administration** module, go to the **Classifications** application. Result: The Classifications application opens on the List tab. 
2	Click the **New Classifications** icon. Result: The screen opens on the Classifications tab  .

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The Classifications Application continued

Utility Scenario Exercise: Creating a Classification continued

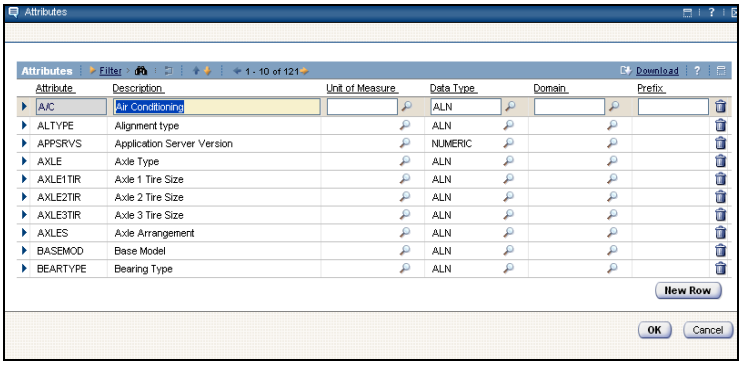
Step	Action
3	In the **Classification** field, enter POLE, then tab out. Result: A Maximo dialog box opens. 
4	Click **Yes**. Result: The screen is back to the Classifications tab. 

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The Classifications Application continued

Utility Scenario Exercise: Creating a Classification continued

Step	Action
5	In the **description** field, enter Poles. **Save** the record.
6	Next, we will be adding new attributes for Poles. From the **Select Action** menu, select **Add/ Modify Properties**, then **Attributes**. Result: The Attributes dialog box opens. 
7	Click the **New Row** button and enter the following data. Hint: Use the detail menu if necessary. **Field** — **Value** **Attribute** — HEIGHT **Description** — Height **Measure Units** — Feet **Data Type** — NUMERIC

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The Classifications Application continued

Utility Scenario Exercise: Creating a Classification continued

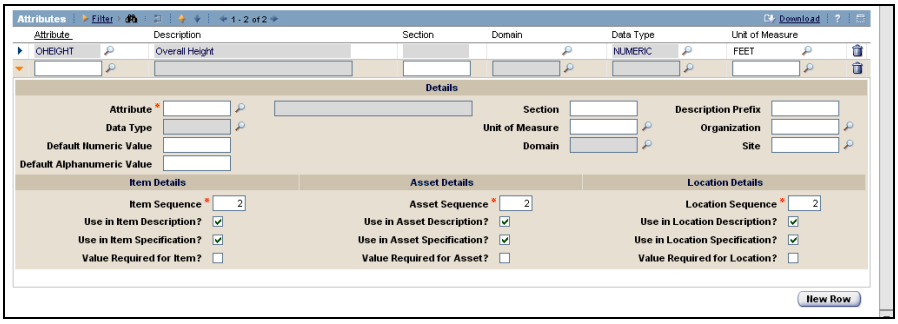
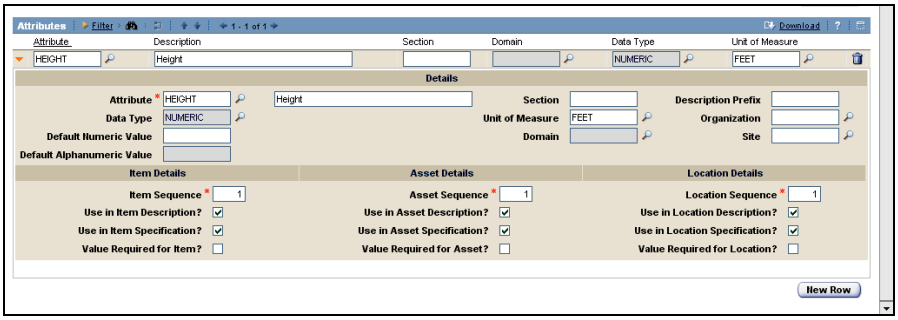
Step	Action
8	Click the **New Row** button each time you enter the following new attribute records. Hint: Use the detail menu if necessary. **Field** / **Value** **Attribute** WEIGHT **Description** Weight **Measure Units** LBS **Data Type** NUMERIC **Field** / **Value** **Attribute** STRENGTH **Description** Breaking Strength **Measure Units** LBS **Data Type** NUMERIC **Field** / **Value** **Attribute** CLASS **Description** Pole Class **Data Type** NUMERIC **Field** / **Value** **Attribute** MATCOMP **Description** Pole Material Composition **Data Type** ALN

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The Classifications Application continued

Utility Scenario Exercise: Creating a Classification continued

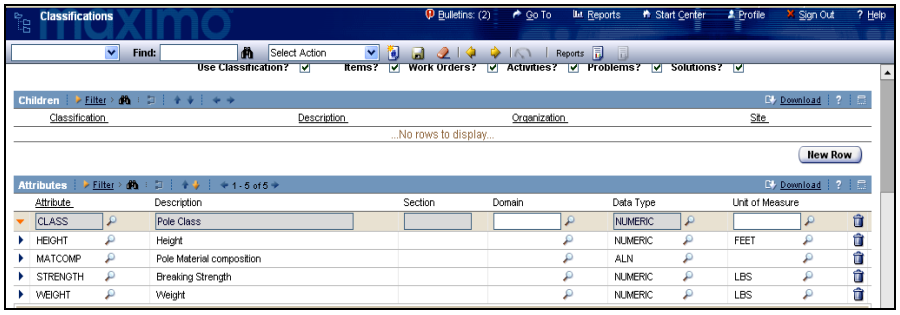
Step	Action
9	When all the attributes are entered, click **OK**. Result: The screen is back to the Classifications tab.
10	Next, we will associate the Attributes to the Poles. In the **Attributes** section, click **New Row**. Result: The Attributes table window expands. Hint: Use the navigation bar to see full details. 
11	From the **Attribute** field, select **HEIGHT** from the detail menu. Result: The Height attribute is entered in the attribute field.  Note that some default records are also retrieved.

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The Classifications Application continued

Utility Scenario Exercise: Creating a Classification continued

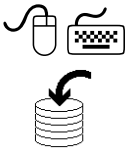
Step	Action
12	Click **New Row**, then search for and retrieve the attribute records we created in step 8. Click **New Row** for every new attribute record you enter. **Attribute** — **Description** **WEIGHT** — Weight **STRENGTH** — Breaking Strength **CLASS** — Pole Class **MATCOMP** — Pole Material Composition
13	**Save** the record. Result: Attributes have been added to Poles. 

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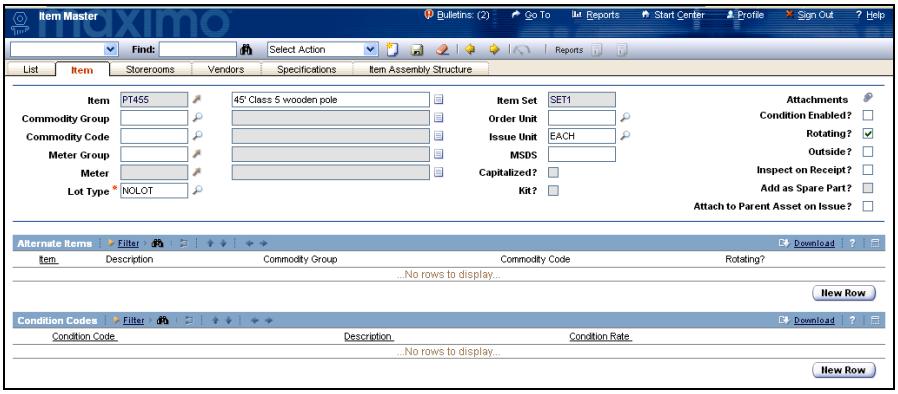
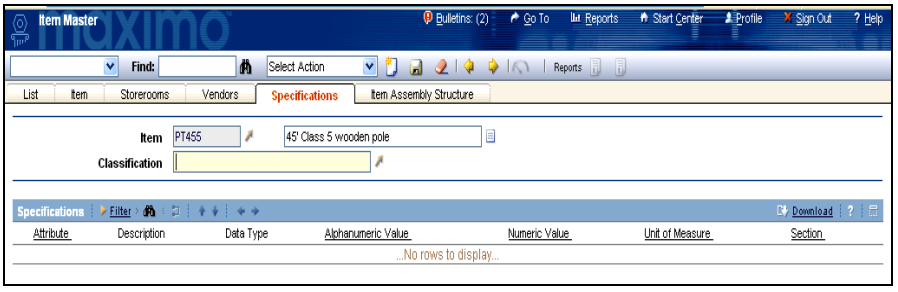
The Classifications Application continued

Utility Scenario Exercise: Applying Classifications to Item Master Records



Now that we have created a classification for utility poles, you can apply it to an item master record for a pole.

After the exercise, you will see that the item will contain the classification and attributes you created in the previous exercise.

Step	Action
1	From the **Inventory** module, **Item Master** application, search for and retrieve item **PT455**. Result: Item record PT455 opens on the Item tab. 
2	Click the **Specifications** tab. Result: The Specifications tab opens. 

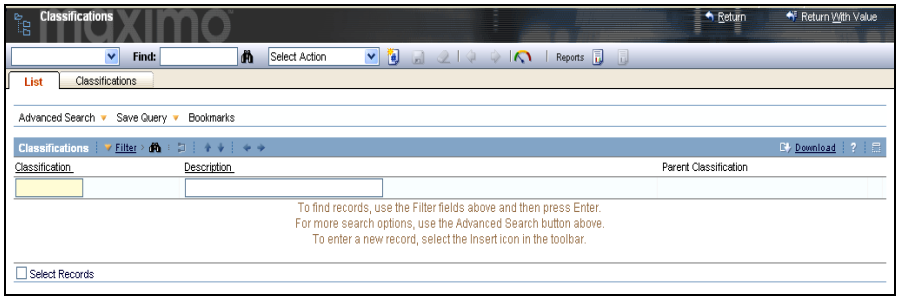
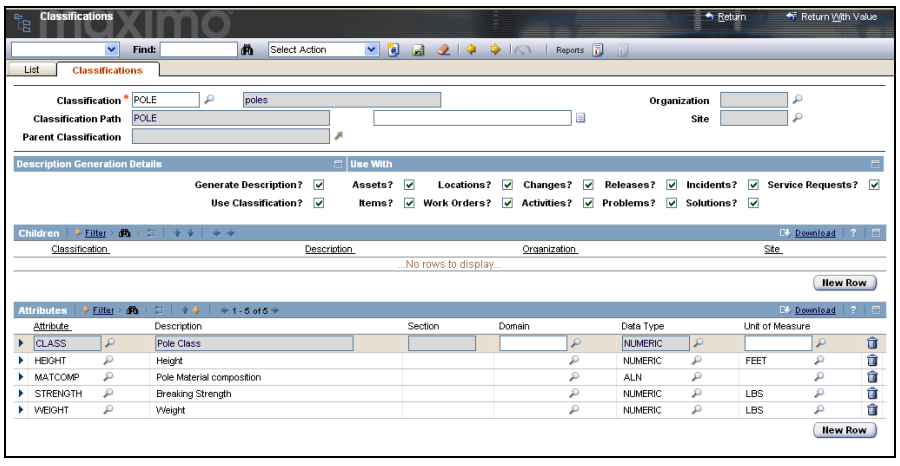
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The Classifications Application continued

Utility Scenario Exercise: Applying Classifications to Item Master Records

continued

Step	Action
3	In the **Classification** field, click the detail menu icon and select **Go To Classifications**. Result: The Classifications application opens on the List tab.  Note: In this step, you could also have clicked Classify and used a drilldown to classify the Item Master record.
4	Find the **Pole** record. Result: The Pole classification record is retrieved. 

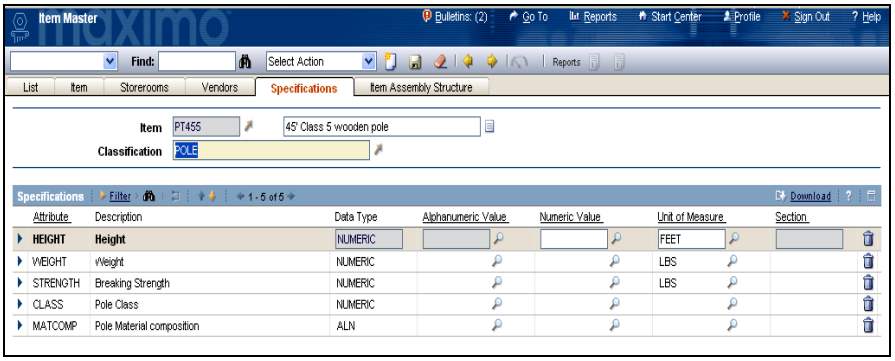
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The Classifications Application continued

Utility Scenario Exercise: Applying Classifications to Item Master Records

continued

Step	Action
5	Click the **Return with Value** menu icon. Result: Pole Classification is retrieved in the item PT455 record. 
6	**Save** the item master record. Note: Classification values for Pole Height, Weight, Breaking Strength, Pole Class, and Pole Material Composition can now be added to item PT455.

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Failure Codes

Introduction

Use of failure analysis requires setting up a failure hierarchy beforehand to capture activities performed on assets. This provides the following benefits:

- It structures failure data so that you can analyze asset failures and determine where the most money is being spent for repairs.
- It identifies all levels of asset problems, causes, and remedies so that you can drill down the hierarchy to pinpoint what's wrong, what caused it, and how to fix it.
- It can be directly associated to safety measures specifically when asset or location failures have produced hazardous results. Thus, appropriate precautions could be observed.

In this section we will create a failure class, then build a branch of a failure hierarchy.

Definitions

- A *failure hierarchy* is a structured list of legitimate asset failures. Consisting of multiple levels in a parent-child relationship structure, a failure hierarchy shows the relationships between identified problems, causes, and remedies between asset failures.
- *Failure codes* are groups of data linked to form a failure hierarchy. Each failure hierarchy is built from the top level down.
- A *failure class* is the name of a particular failure hierarchy in Maximo, which allows you to track the types of failures that occur. A failure class is the highest level in a failure hierarchy and can be assigned to locations or equipment.

Better Business Practice



Maximo can be used to support the Failure Mode Effects and Cause Analysis (FMECA) process through a *failure hierarchy* in the Failure Codes application.

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Failure Codes continued

Good Failure Analysis

Proper failure analysis (and good codes) allows maintenance to:

- Indicate problem areas (what asset/parts/tasks to focus on - or a need for deeper analysis)
- Provide justification (for refurbishment, kaizen, and so forth
- Show improvement or good result (increasing or decreasing trends)
- Adjust or create PM plans (base plans on what is actually happening)
- Influence next model activity (feedback for better design or "Front Loading")
- Influence sourcing and specification decisions (is one type of part better than another)
- Show need for training (too many repeated problems, insufficient root cause analysis, and so forth)

What It Is Not

Failure codes are not intended to fully describe a specific incident and do not take the place of the work order description, detailed comments, and so forth, although they do supplement these items. They should reflect the best understanding of the primary root cause of the failure at the time the work is done.

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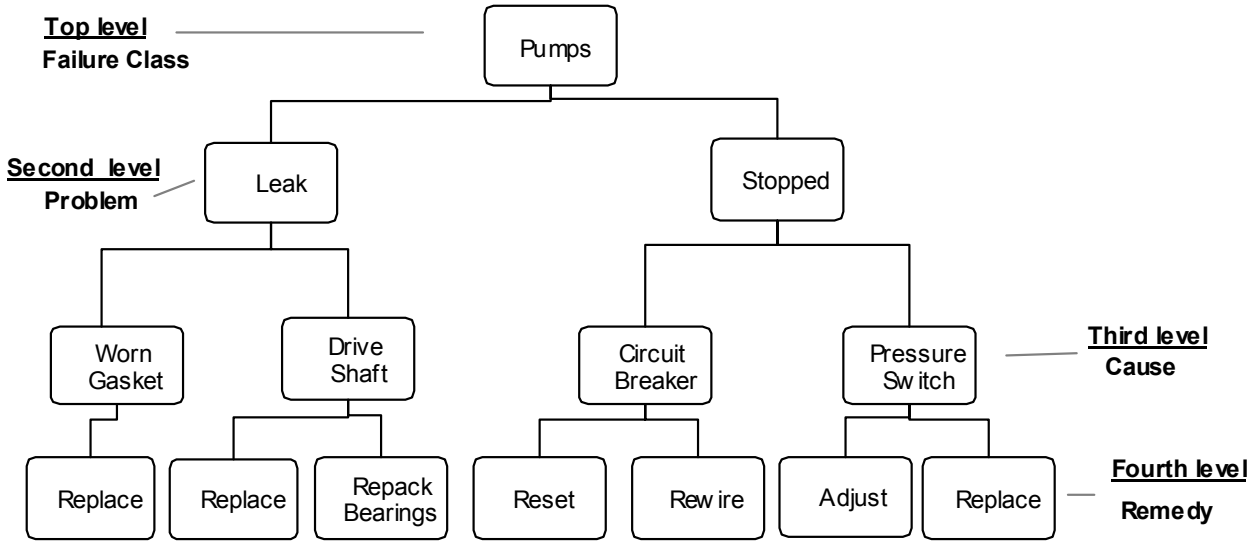
Failure Codes continued

Failure Hierarchy Structure in Maximo

A *failure hierarchy* is a treelike structure that identifies all levels of problems, causes, and remedies. Maximo's failure hierarchy is built on a problem-cause-remedy framework.

- The *failure class* is the top level of the hierarchy.
- The *problem* is the symptom: What looks or feels broken?
- The *cause* creates the problem: Why did the problem occur?
- The *remedy* is the fix: What will correct the problem?

This is a graphical example of a failure hierarchy in Maximo:



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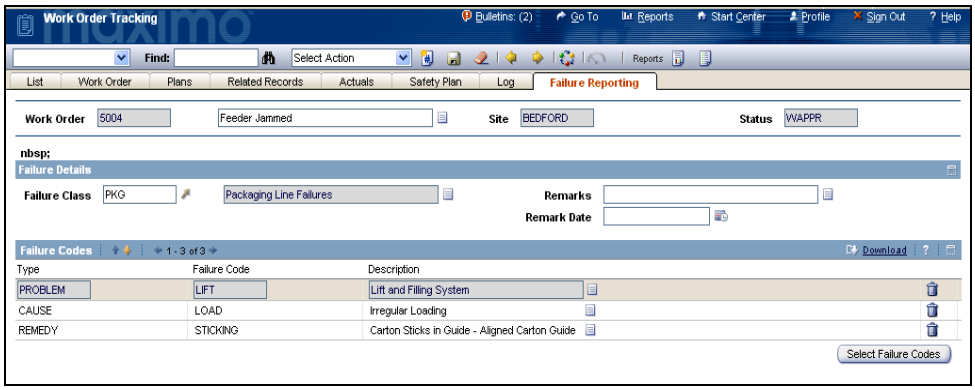
Failure Codes continued

Revisiting Work Order Tracking: Failure Reporting

Failure codes can be reported in the **Work Order Tracking** or the **Quick Reporting** application, if failure codes are associated with the involved asset or location.

As a maintenance best practice, failure codes should be associated with the asset or location. The Work Order Tracking and The Quick Reporting applications identify the work order associated with the asset and its failure class or classes.

The **Failure Reporting** tab, shown below, identifies the problem-cause-remedy hierarchy.



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Setting Up a Failure Hierarchy

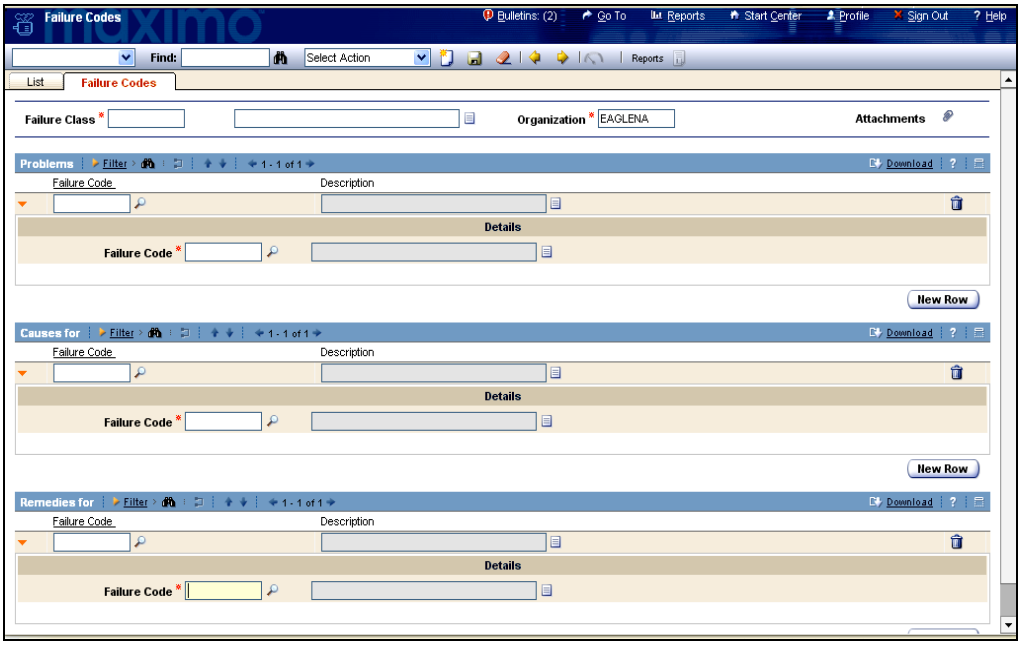
Introduction

In this section we will set up a failure hierarchy in Maximo using the **Failure Codes** application.

Failure Code Application

You use the **Failure Codes** application to build and display failure hierarchies, to help you construct accurate histories of the failures that affect your assets and operating locations.

After reporting and analyzing failure trends, you can take preventive measures. The identifier of a failure hierarchy is the failure class. You can enter this code on asset and location records when you want to report work done on them, and then analyze failure trends for them.



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Setting Up a Failure Hierarchy continued

Failure Codes Tabs

The **Failure Codes** application has two tabs:

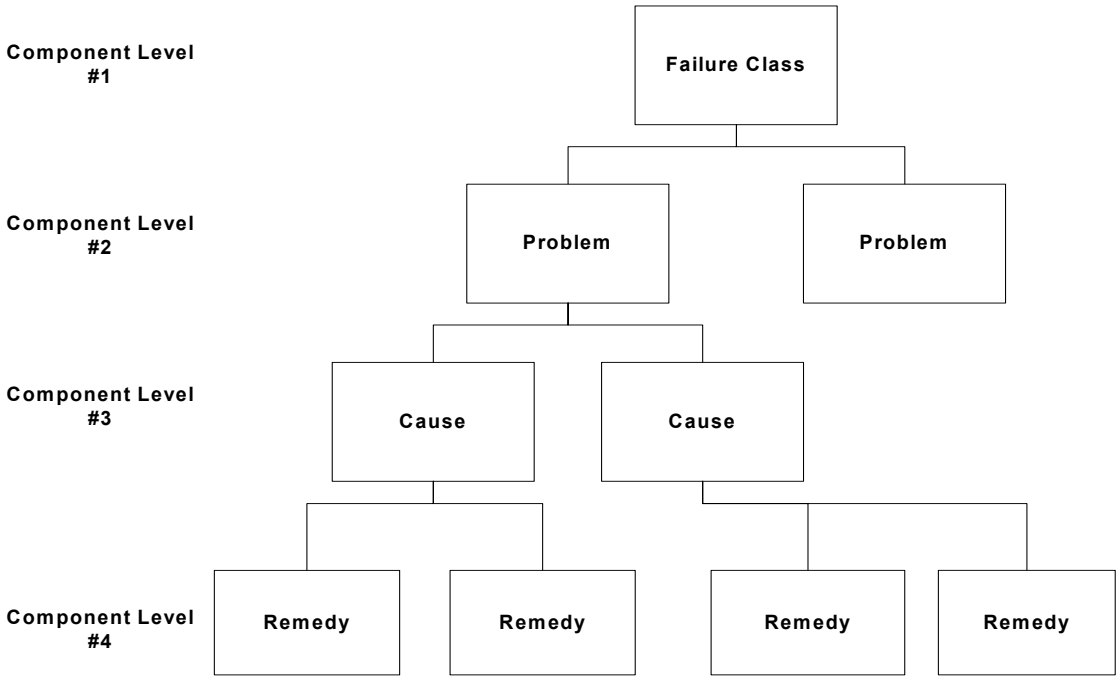


Use this tab…	To…
List	Search for failure hierarchy records.
Failure Codes	Build, view, modify, and delete failure hierarchies.

Building a Failure Hierarchy: Four Components

There are four components to building and setting up a failure hierarchy in Maximo:

1. Identify the class.
2. Identify the problems.
3. Identify the causes.
4. Identify the remedies.



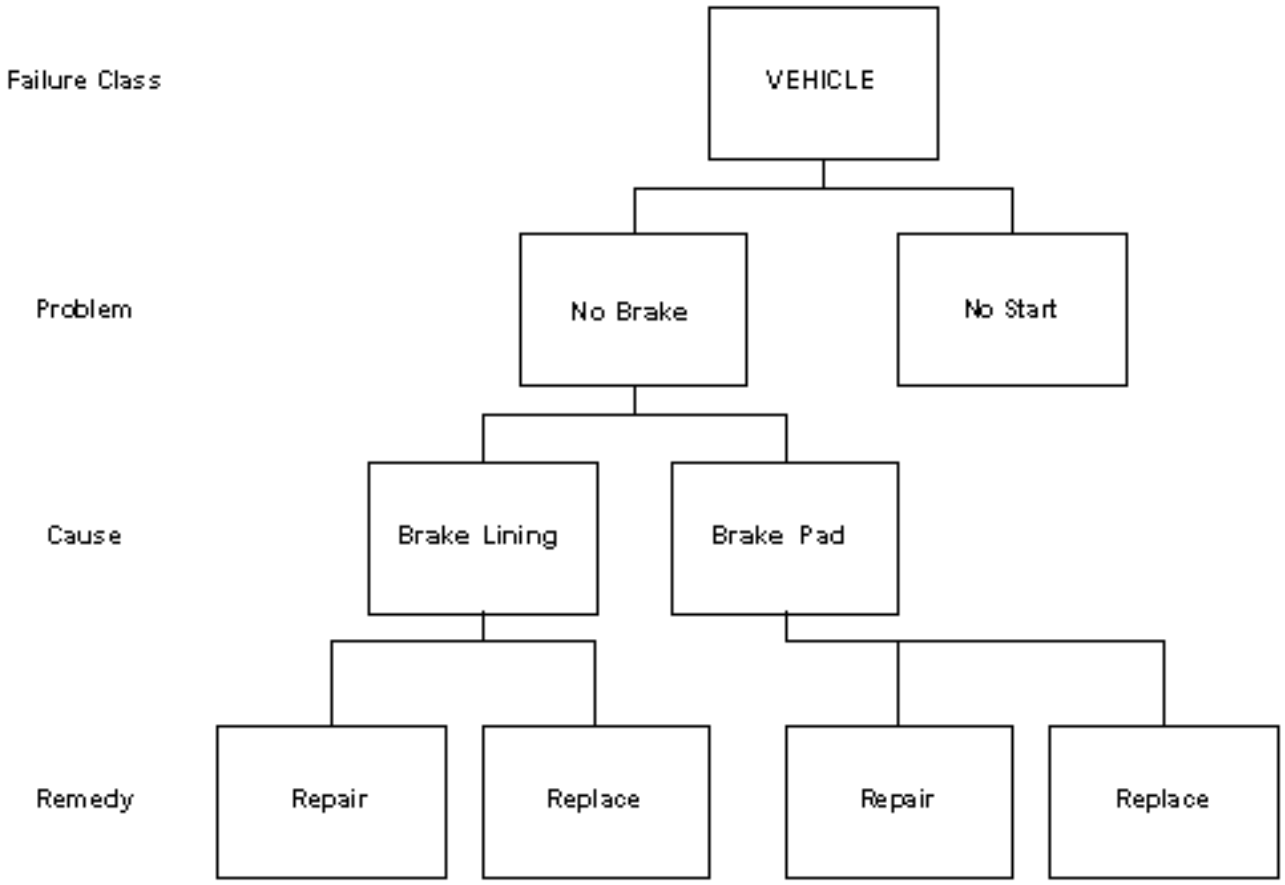
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Setting Up a Failure Hierarchy continued

Setting Up a Failure Hierarchy

In this section we will build one branch of the VEHICLE failure hierarchy, as depicted in this diagram.



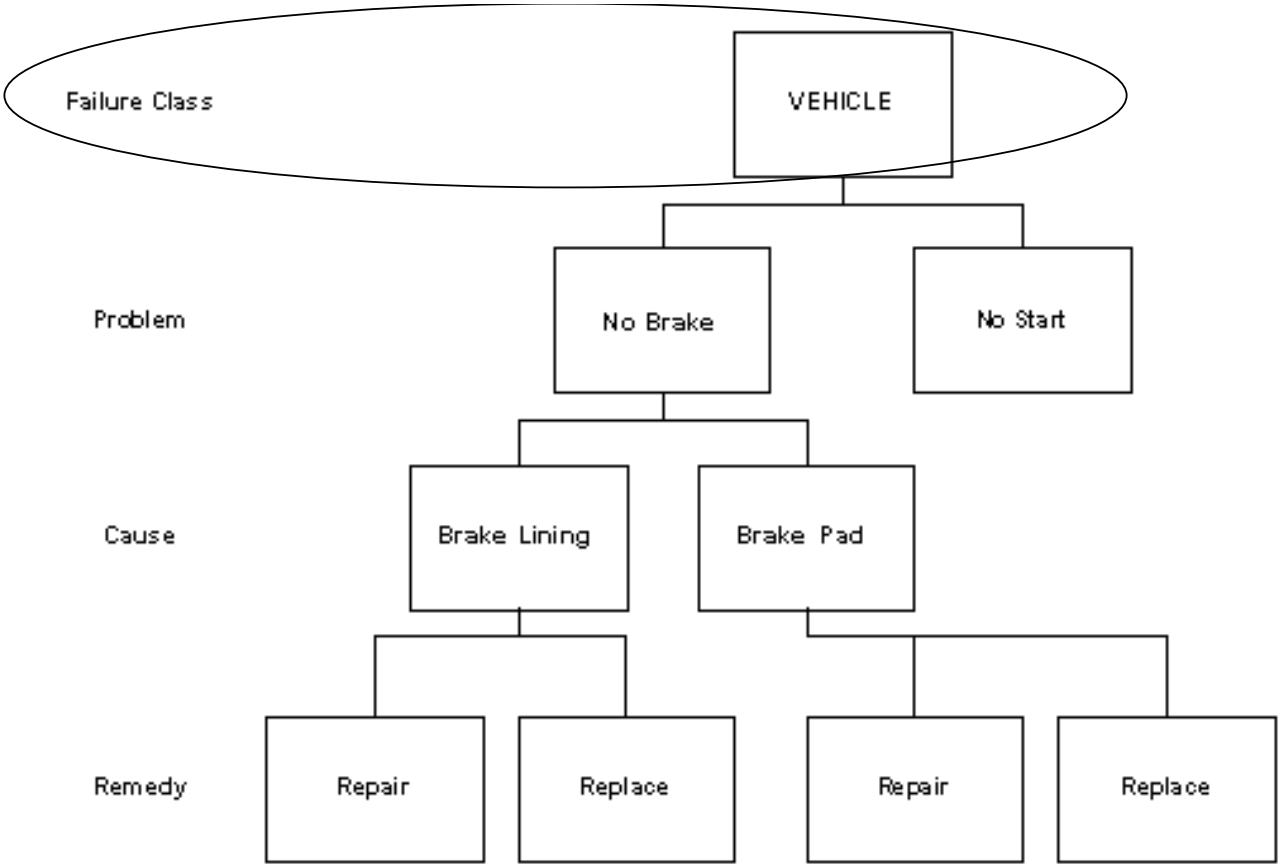
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Setting Up a Failure Hierarchy continued

Building a Failure Hierarchy: Failure Class

A *failure class* in the highest level on a failure hierarchy. You can report failures on a work order only if the asset record has a failure class associated with it and the work order is not closed.



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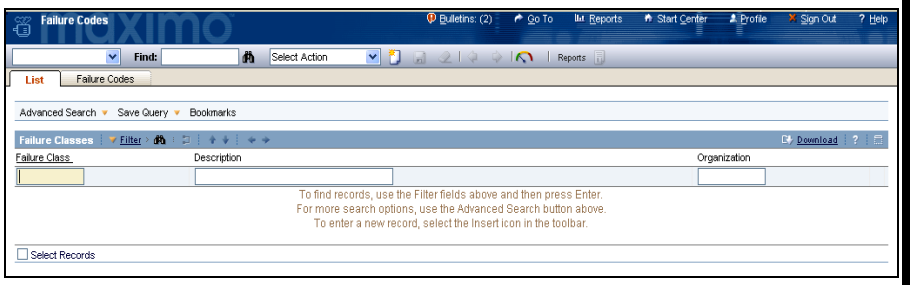
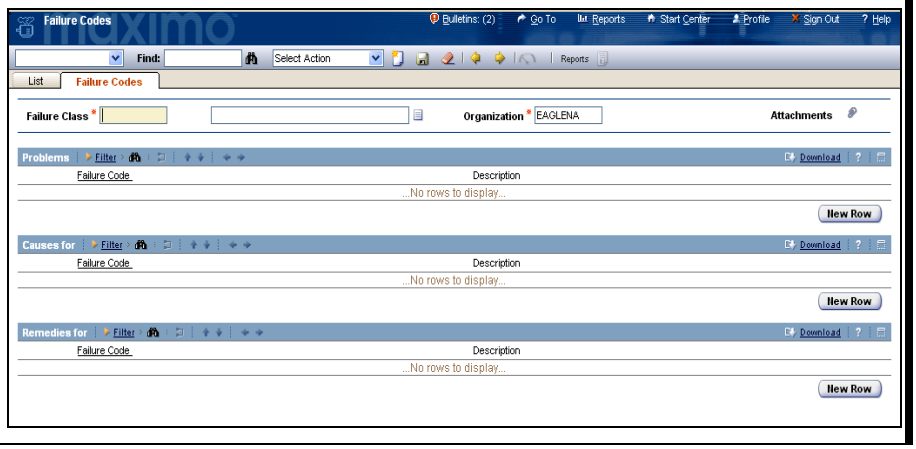
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Setting Up a Failure Hierarchy continued

Inserting Failure Class Records

To insert a failure class record, follow these steps.

Note: Your instructor might assign different failure codes to create unique failure code records.

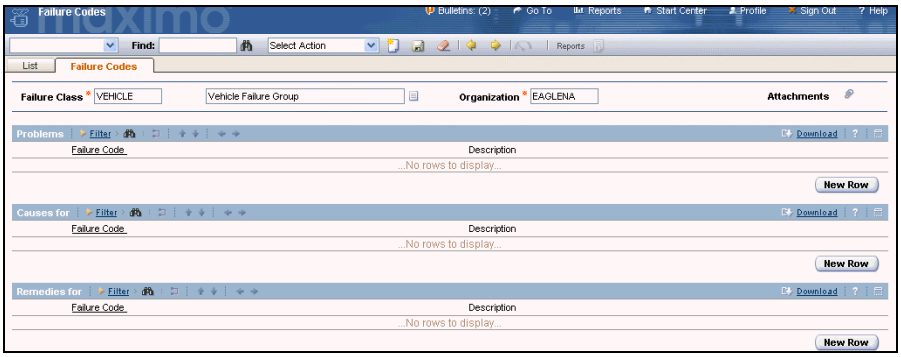
Step	Action
1	From the **Assets** module, go to the **Failure Codes** application. Result: The Failure Codes application opens on the List tab. 
2	Click the **New Failure Code** icon. Result: The Failure Codes tab displays, ready to accept the new failure code information. 

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Setting Up a Failure Hierarchy continued

Inserting Failure Class Records continued

Step	Action
3	On the **Failure Codes** tab, enter the following information: **Field** **Value** **Failure Class** VEHICLE **Description** Vehicle Failure Group
4	**Save** the record. Result: The failure class has been added to the Maximo database. Your screen should look similar to the following graphic. 

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Setting Up a Failure Hierarchy continued

Inserting Failure Class Records continued

5	Repeat steps 2–4 (click the **New Failure Code** icon and **Save** every new record created) using this information: **Field** **Value** **Failure Class** NOTBRAKE **Description** Brake Not Working Properly **Field** **Value** **Failure Class** NOTSTART **Description** Vehicle Not Starting **Field** **Value** **Failure Class** BLINING **Description** Brake Lining Leaking **Field** **Value** **Failure Class** BPAD **Description** Brake Pad Worn Out **Field** **Value** **Failure Class** RPAIR **Description** Repair Part **Field** **Value** **Failure Class** RPLACE **Description** Replace Part

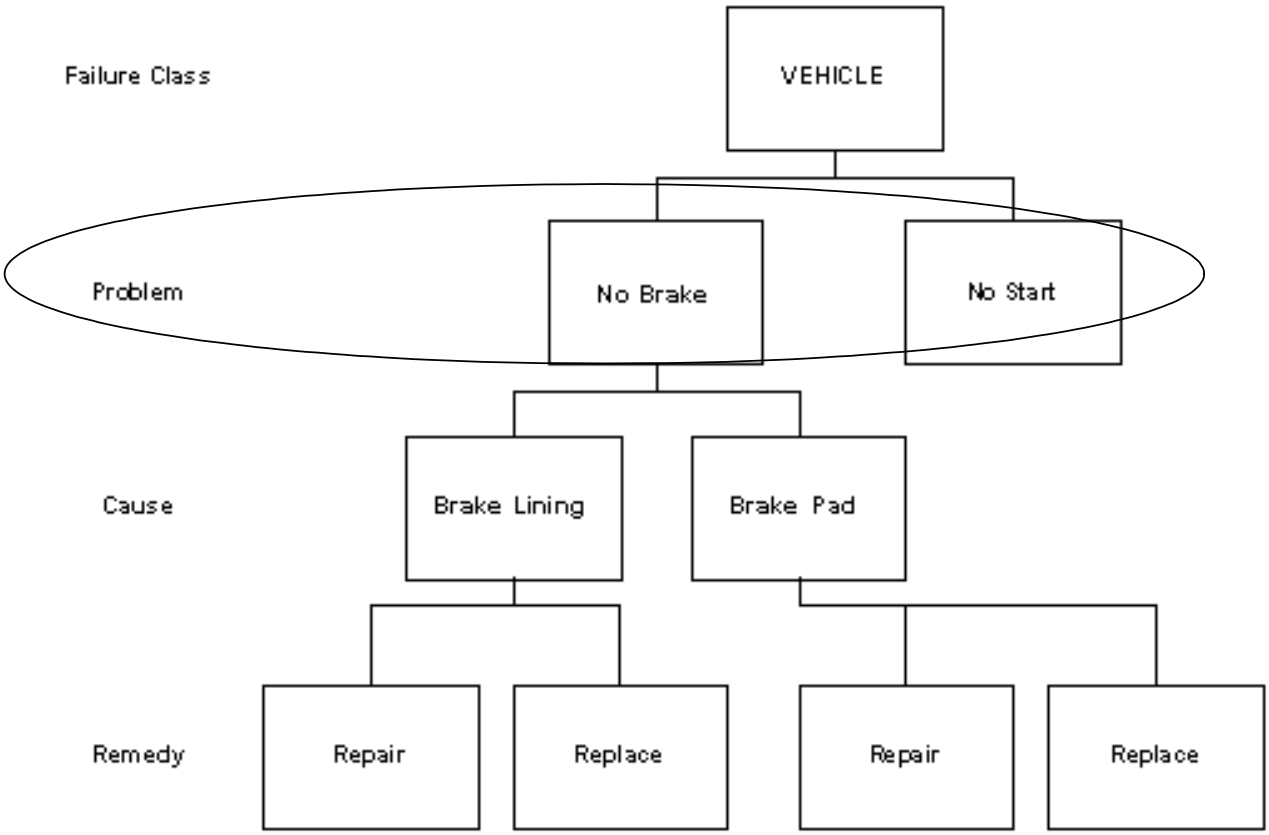
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Setting Up a Failure Hierarchy continued

Building a Failure Hierarchy: The Problem

We will now build a branch of the failure hierarchy beginning with a problem for the failure class we just entered in the previous exercise.



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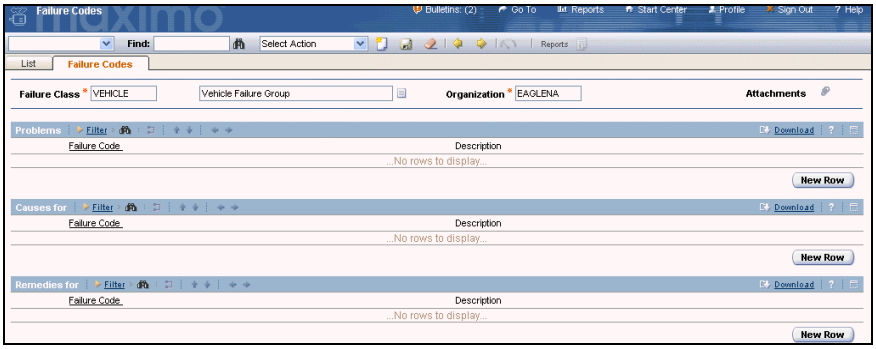
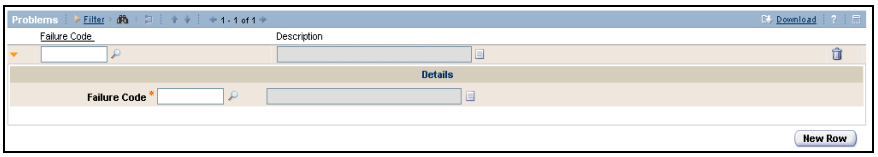
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Setting Up a Failure Hierarchy continued

Adding a Problem to the Failure Hierarchy



After entering new failure class records, the next step is to set up the failure hierarchies. In this exercise we will add problems to the vehicle failure group.

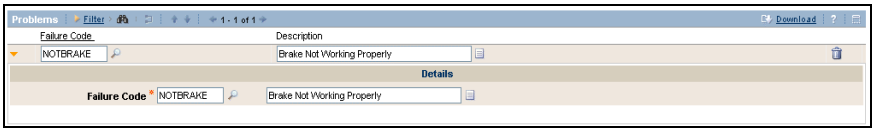
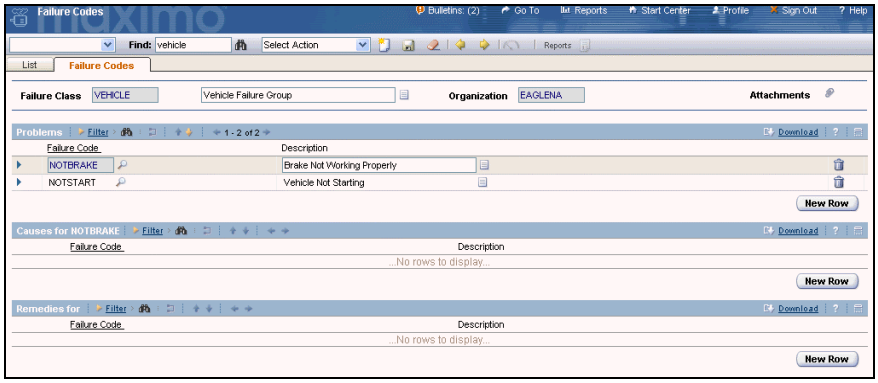
Step	Action
1	From the **Failure Codes** application **List** tab, search for and retrieve the **VEHICLE** record. Result: The Vehicle Failure Group record opens at the Failure Codes tab. 
2	In the **Problems** section, click **New Row**. Result: Maximo displays the Problems frame details. You can now add a problem for the designated failure code. 

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Setting Up a Failure Hierarchy continued

Adding a Problem to the Failure Hierarchy

continued

Step	Action
3	In the **Failure Code** field, click the detail menu icon and choose **NOTBRAKE** from the select value dialog box. Result: NOTBRAKE is selected in the Problem Failure Code field.  Note: The failure class description appears automatically.
4	Add another problem by clicking **New Row** in the **Problems** section, then enter NOTSTART in the **Problems Failure Code** field. Hint: Use the detail menu button if necessary. Result: NOTSTART is added in the Problem Failure Code field.
5	**Save** the record. Result: Your screen should look similar to the one shown below.  Note: Our next exercise will begin at this point.

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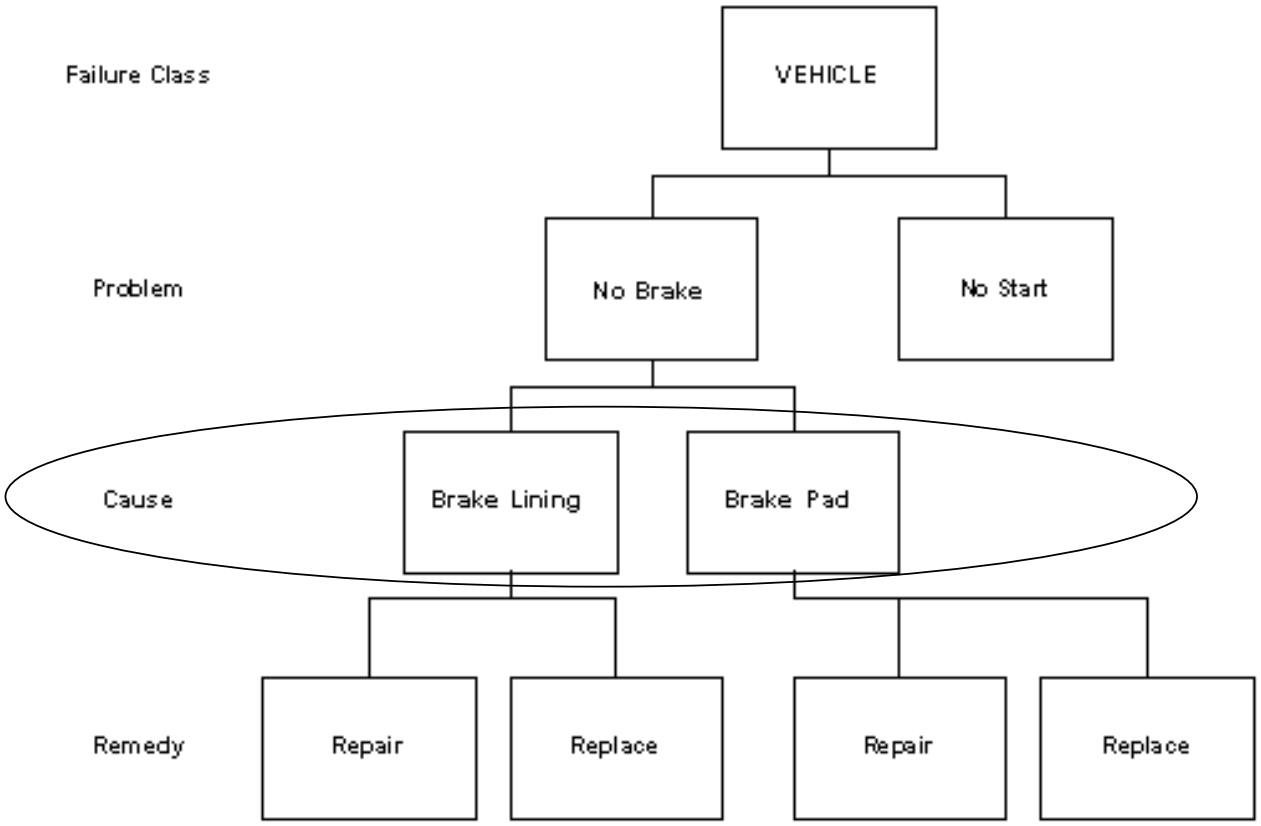
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Setting Up a Failure Hierarchy continued

Building a Failure Hierarchy: The Cause

Now that we have created a problem code for the failure, we must create a code for the cause of the problem.

Example: For this scenario, we will assume that the cause of the starting problem could be attributed to the vehicle brakes. The next exercise will focus on entering the causes.

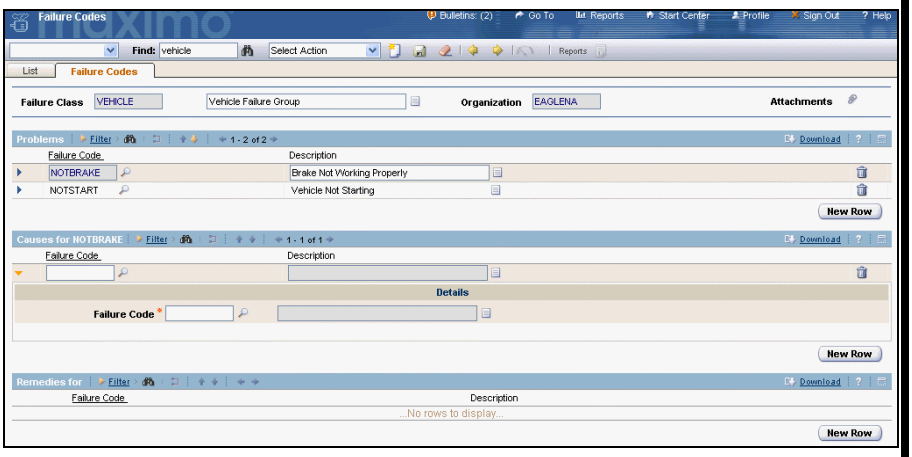


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Setting Up a Failure Hierarchy continued

Building a Failure Hierarchy: The Cause continued

Step	Action
1	Ensure that the **NOTBRAKE** line is selected in the **Problems** section, then click **New Row** in the **Causes for NOTBRAKE** section. Result: You now are now able to add a cause for the NOTBRAKE problem. 
2	In the **Failure Code** field, enter BLINING. Result: BLINING is entered into Cause Failure Code field.
3	In the Causes for NOTBRAKE section, click **New Row**. In the **Failure Code** field, enter BPAD. Result: BPAD is added in the Cause Failure Code field.

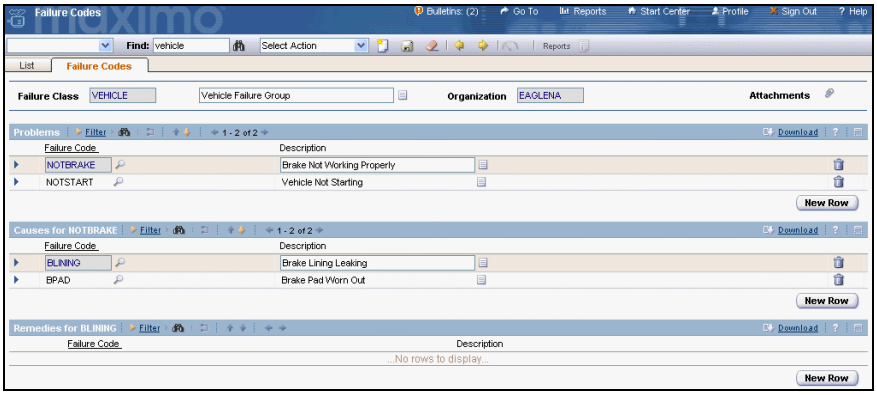
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Setting Up a Failure Hierarchy continued

Building a Failure Hierarchy: The Cause

continued

Step	Action
4	**Save** the record. Result: Your screen should look similar to the one shown below.  Note: Our next exercise will begin at this point.

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Setting Up a Failure Hierarchy continued

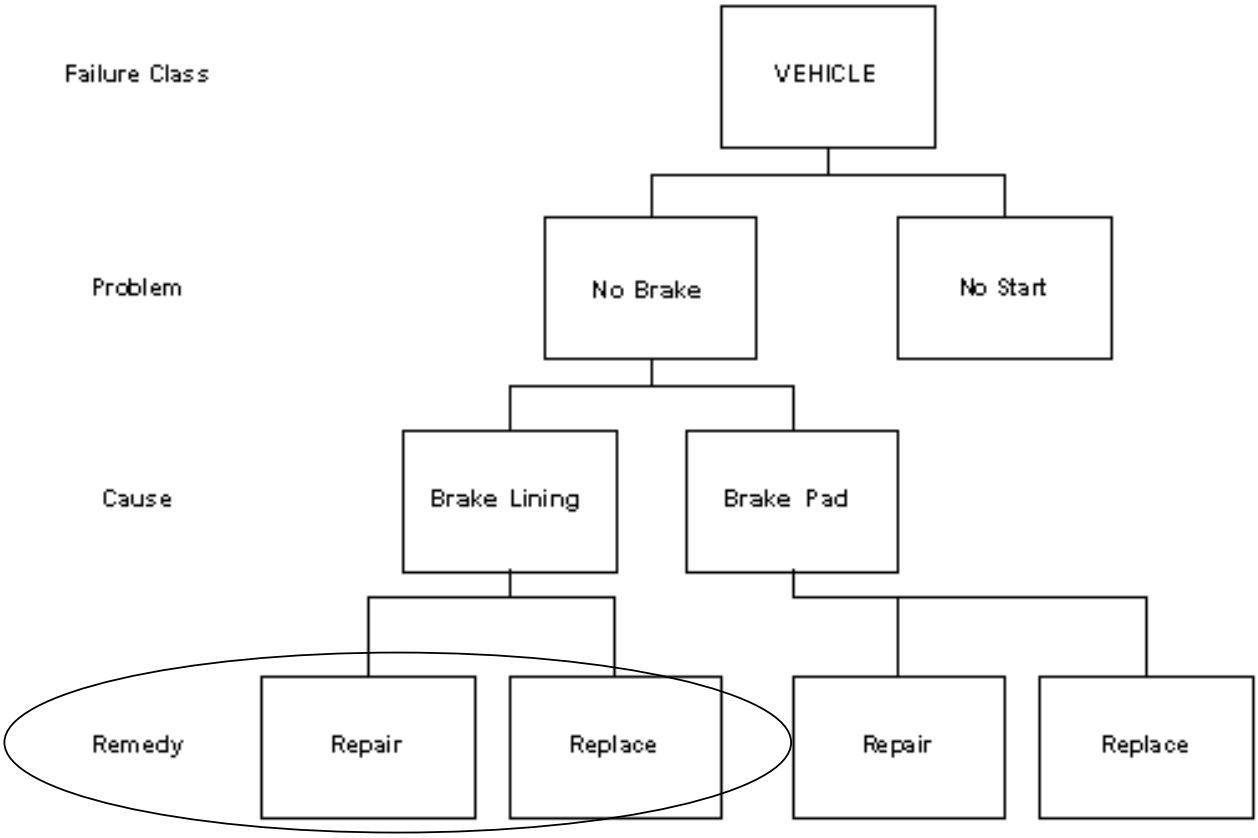
Building a Failure Hierarchy: The Remedy



After determining the failure class, a problem, and a cause for the failure, we must indicate the potential remedies.

In this section, we will add codes for the remedy level of our hierarchy to indicate steps to take to correct the identified cause of the problem.

This time you will have the opportunity to work through the steps on your own with information provided in this section.



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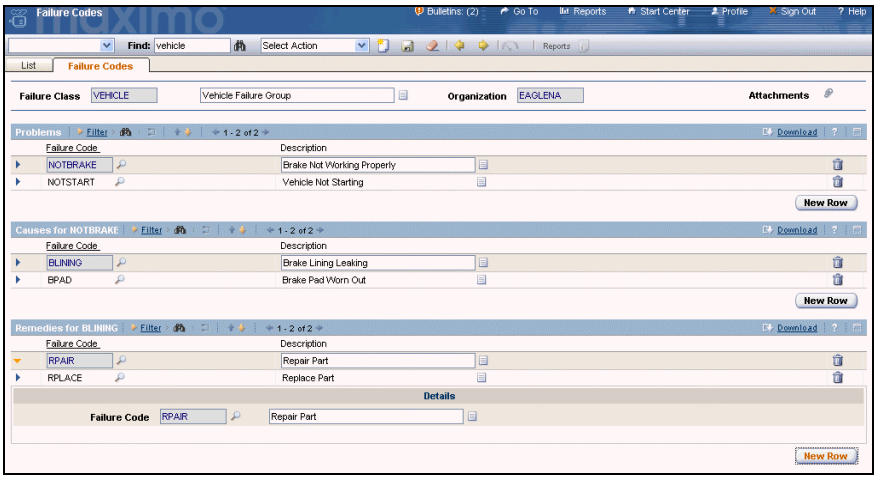
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Setting Up a Failure Hierarchy continued

Adding Remedies: Exercise

The process of adding remedies is similar to the processes of adding problems and causes.

The following tables contain two remedies for the **Brake Pad Worn Out** cause and two remedies for the **Brake Lining Leaking** cause. Using your knowledge of the process, add these remedies to the **Vehicle Failure Group** hierarchy.

Step	Action
1	**Failure Code Remedies for BPAD Section** RPAIR — Repair Part RPLACE — Replace Part **Failure Code Remedies for BLINING Section** RPAIR — Repair Part RPLACE — Replace Part
2	**Save** the record. Result: Your screen should look similar to the one shown below. 

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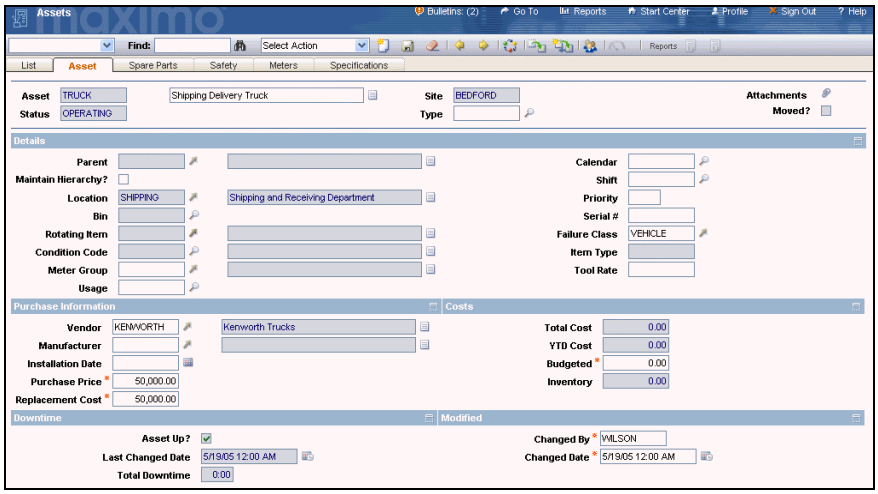
Setting Up a Failure Hierarchy continued

Assigning Failure Hierarchy to an Asset Record



After the failure hierarchy is created in the Failure Codes application, we can assign the failure class to a specific asset or location record from those applications.

The following exercise demonstrates how to do this in the Assets application, although the steps are similar for the Location application.

Step	Action
1	Access the **Assets** application from the **Assets** module, then insert a new record using the following information: **Field** — **Value** **Asset** — Truck **Description** — Shipping Delivery Truck **Location** — Shipping **Failure Class** — VEHICLE **Vendor** — KENWORTH **Purchase Price** — 50,000 **Replacement Cost** — 50,000
2	Change the status of the new asset to **OPERATING**. Result: Your new asset record is saved. Your screen should look similar to the one below. 

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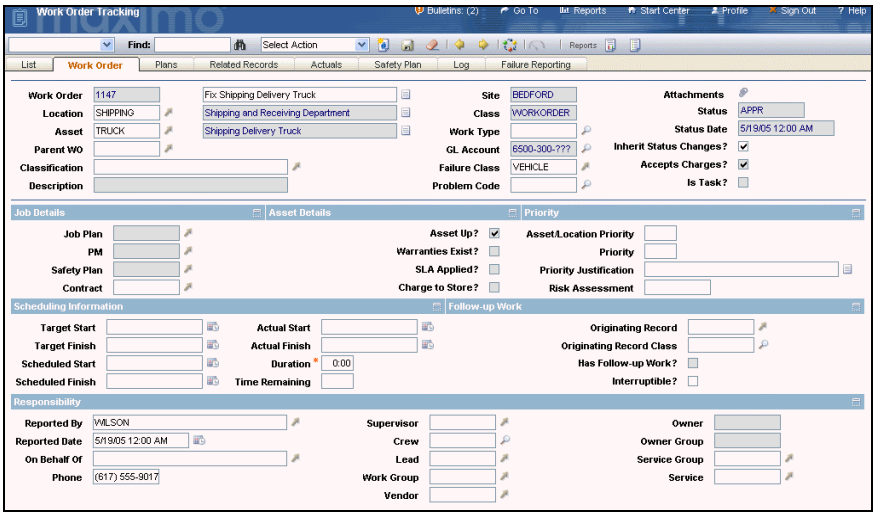
Setting Up a Failure Hierarchy continued

Create a Work Order for the Asset and Add Failure Data

When a work order is created for the asset, the failure class automatically comes over with the asset.

Based on this class, we can use the use the **Failure Report** tab on the work order to indicate problem, cause, and remedy.

Follow the steps below to see how this is done.

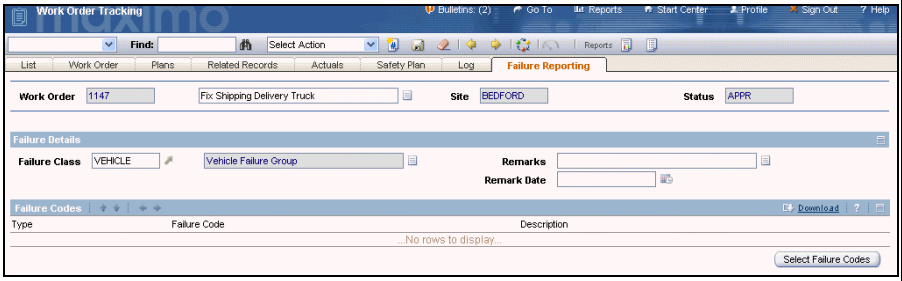
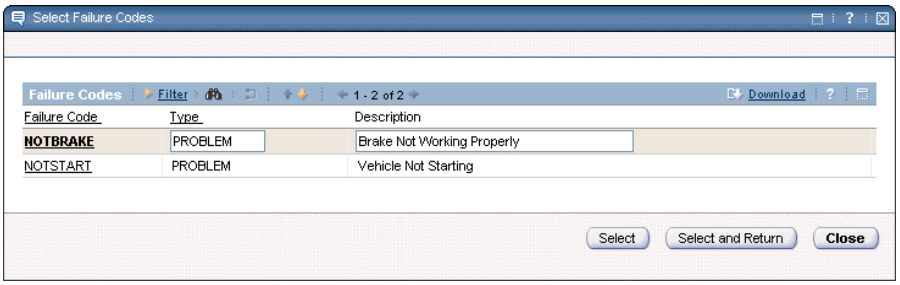
Step	Action
1	Access the **Work Order Tracking** application from the **Work Orders** module, then insert a new record with the following information: **Field** — **Value** **Description** — Fix Shipping Delivery Truck **Asset** — TRUCK Note: When you enter the asset code, the failure code, location, and other information comes with it.
2	**Approve** the work order. Result: Your work order is saved and approved, so now it is ready to accept failure code information. 

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Setting Up a Failure Hierarchy continued

Create a Work Order for the Asset and Add Failure Data

continued

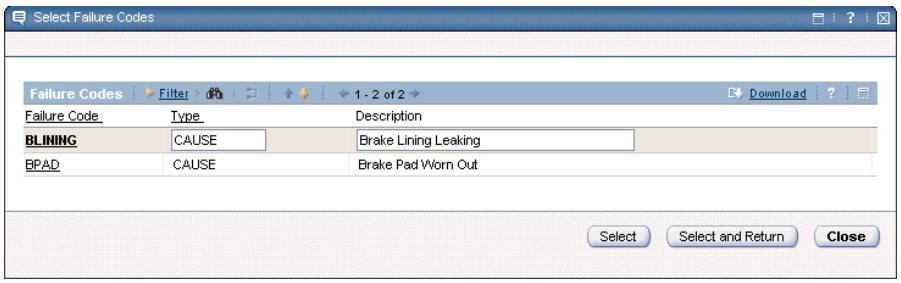
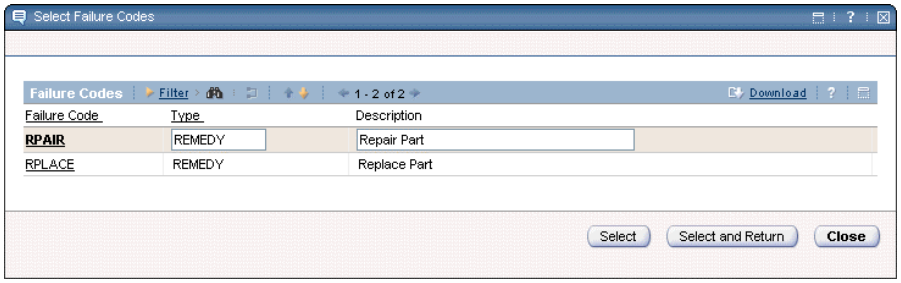
Step	Action
3	Access the **Failure Reporting** tab. Result: The Failure Details section contains the assigned failure code from the asset. 
4	Click **Select Failure Codes**. Result: The Select Failure Codes dialog box displays the possible problems from the selected code. 

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Setting Up a Failure Hierarchy continued

Create a Work Order for the Asset and Add Failure Data continued

Step	Action
5	Click **NOTBRAKE**. Result: In the same dialog box, Maximo displays a list of possible causes for the selected problem. 
6	Click **BPAD**. Result: Maximo displays a list of possible remedies for the selected cause. 

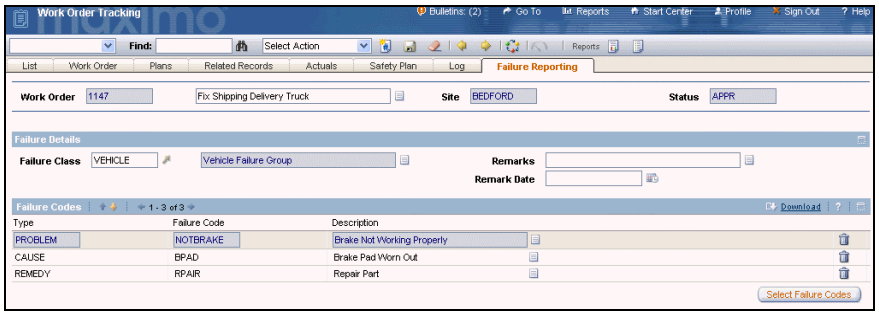
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Setting Up a Failure Hierarchy continued

Create a Work Order for the Asset and Add Failure Data

continued

Step	Action
7	Ensure that the RPAIR line is highlighted, then click **Select and Return**. Result: A list of the problem, cause, and remedy is added to the Failure Reporting tab. 
8	**Save** the work order record. Result: The work order now has the problem, cause, and remedy associated with it. Note: In practice, you would also add actuals data, then complete the work order.

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Warranty Contracts

Introduction

You use a warranty contract or service contract to maintain one or more assets with an outside service provider for a fixed fee, or regularly scheduled payment over a time period; or to track warranty information for multiple assets or locations by time or meter.

Warranty contracts can also be used to track warranty information for multiple assets or locations by time or meter.



Note: In this section we will illustrate how warranty can be applied to an asset. Please contact MRO Educational Services for more information about contracts.

Definitions

The following definitions will be used in this section:

- *Master contracts* associate many contract types for a particular vendor. A master contract defines the relationship with a vendor and contains terms and conditions that apply to the contracts created and listed under it. You can provide detailed information about a contract's terms and contact information.
- *Terms and conditions* associate information such as liability concerns, shipping and handling details, or delivery time expectations.

Better Business Practice



Using warranty contracts for outsourced items or services provides a formal agreement between both the vendor and consumer, thus both parties ensure that the terms and conditions are met and business relationships are fortified.

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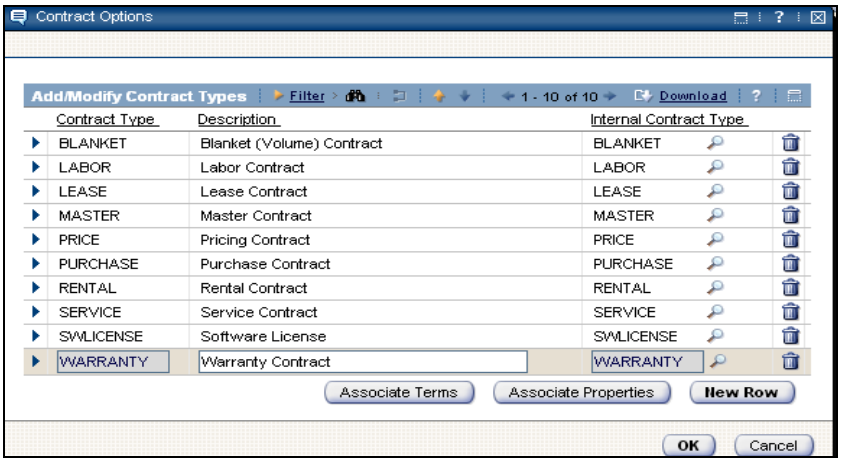
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Warranty Contracts continued

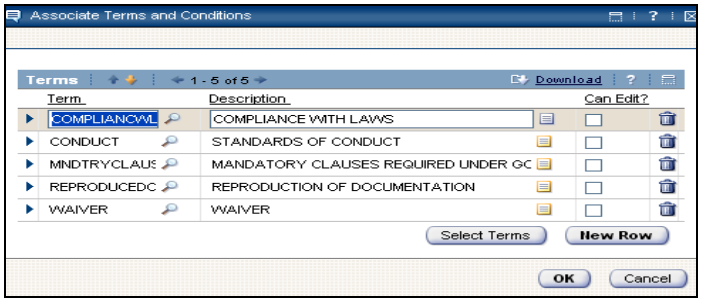
Revisiting the Organizations Application Contract Options

The **Organizations** application **Select Action** menu enables you to set up contract options to all contract types used at the organization level.

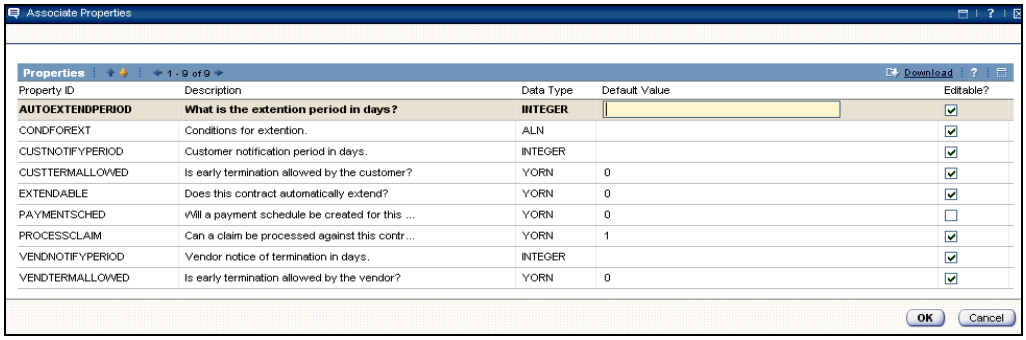
- You can add or modify contract types depending on your transaction requirements.



- You can also associate terms and conditions:



- You can set and associate contract details to all contract types:



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Warranty Contracts continued

Warranty Contracts Application

You will use the **Warranty Contracts** application in the Contracts module to create, modify, or delete Warranty Contract records.

Warranty Contracts Application Tabs

The Warranty Contracts application has six tabs:



Use this tab…	To…
List	Search for warranty contract records.
Contract	Review and modify the contents of a contract on a line-by-line basis.
Properties	Enable or disable fields that pertain to an individual contract.
Contract Lines	Specify the warranty coverage, including duration and/or meters, or the service that is being provided.
Associated Assets	Associate one or more assets or locations to the contract. You can list a rotating asset only once on the Associated Assets tab. Coverage dates and specific meters are specified for each associated asset and location.
Terms and Conditions	Associate terms and conditions with a contract. These terms can contain information such as liability concerns, shipping and handling details, or delivery time expectations.

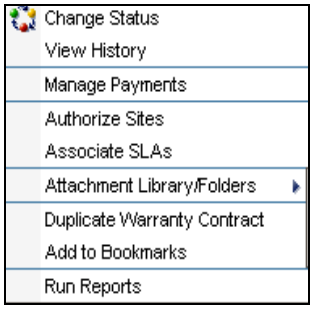
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Warranty Contracts continued

Contract Warranty Actions

You use the **Select Action** menu to manage contract details such as approving the contract, viewing histories, managing payments, authorizing sites, and associating service level agreements.



Contract Status

Maximo has several possible contract statuses:

Status	Description
Draft (DRAFT)	The default status for new contracts.
Approved (APPR)	The contract has been approved. In this status, you can change only the status, to cancel (CAN), close (CLOSE), suspend (SUSPND), or expire (EXPIRED).
Canceled (CAN)	You cannot modify anything on the contract.
Closed (CLOSE)	You cannot modify anything on the contract.
Expire (EXPIRE)	The end date for the contract has passed. You cannot modify anything on a contract in this status. You can change the status from Expire to Pending Revision by creating a revision against the expired contract.

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Warranty Contracts continued

Contract Status continued

Pending Revision (PNDREV)	Similar to Draft, but you can edit only specified fields.
Revised (REVISED)	When a more current revision is approved. You cannot modify anything on the contract, or change the status to any other status.
Suspended (SUSPND)	You cannot modify anything on the contract, but you can change the status to APPR, CAN, or CLOSE.
Waiting on Approval (WAPPR)	You can modify everything (according to properties). You can change WAPPR to DRAFT, APPR, CLOSE, or CAN.
Waiting to Start (WSTART).	Maximo applies this status when you choose APPR and the start date is in the future. You can change this status to APPR.

Changing a Contract Status



Before you can change a contract status, a contract must meet the following conditions:

- You can cancel or close a contract only if all of its children are canceled or closed.
- You can associate child contracts with a parent contract only in Approved status.
- The end date must not be earlier than the start date.
- You must specify a vendor before approval.

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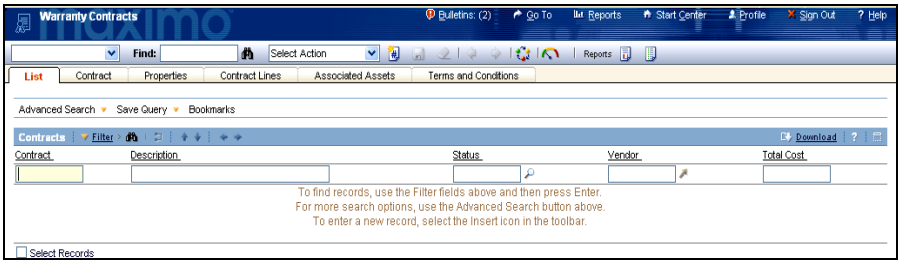
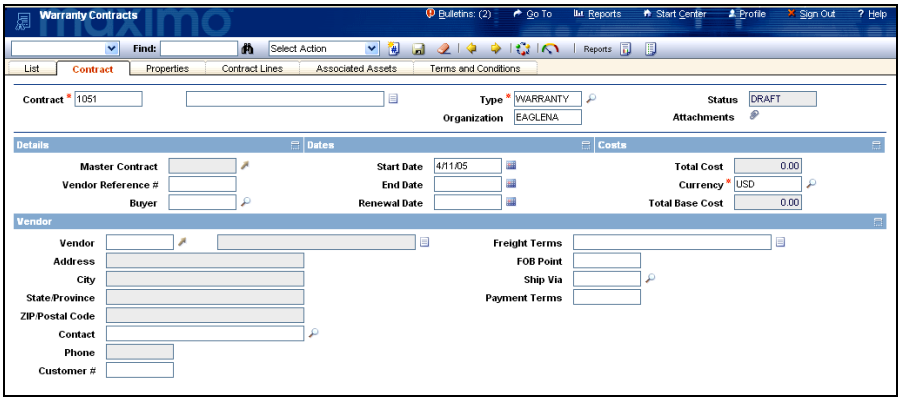
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Warranty Contracts continued

Exercise: Creating a Warranty Contract



In this exercise we will create a warranty contract on parts and labor for Software and Installation Service delivered by White and Bagley in our scenario exercise in Chapter 12: "Requisitioning."

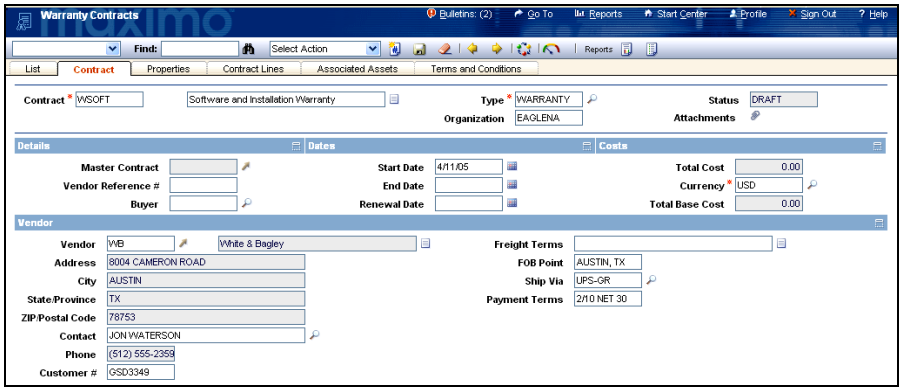
Step	Action
1	Access the **Warranty Contracts** application from the **Contracts** module. Result: The Warranty Contracts application opens at the List tab. 
2	Click the **New Warranty Contract** icon. Result: An automatically numbered new Warranty record opens on the Contract tab  Note that the contract status is Draft.

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Warranty Contracts continued

Exercise: Creating a Warranty Contract continued

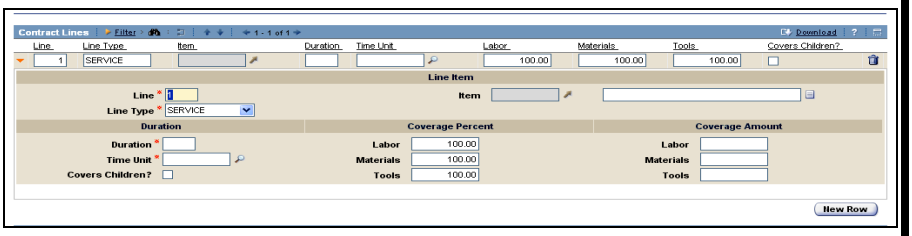
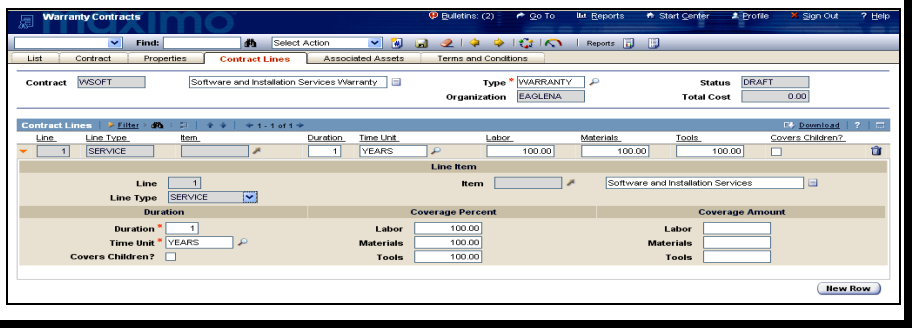
Step	Action
3	Enter the following information. Hint: Use the detail menu icon if necessary. **Field** — **Value** **Line Type** — Service **Contract** — WSOFT **(Description)** — Software and Installation Warranty **Vendor** — WB Note that the vendor default values are retrieved.
4	**Save** the record. Result: Your screen should be similar to the one shown below. 

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Warranty Contracts continued

Exercise: Creating a Warranty Contract continued

Step	Action
5	Click the **Contract Lines** tab. Result: The Contract Lines tab opens.
6	In the **Contract Lines** section, click **New Row**. Result: The Contract Line table window expands. 
7	Enter the following information. Hint: Use the detail menu icon if necessary. **Field** — **Value** **(Description)** — Software and Installation Services **Duration** — 1 **Time Unit** — Years
8	**Save** the record. Result: Your screen should be similar to the one shown below. 

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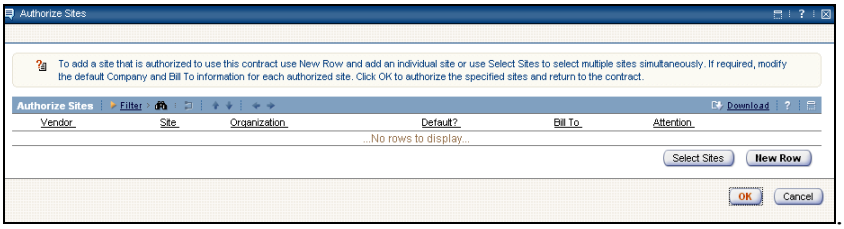
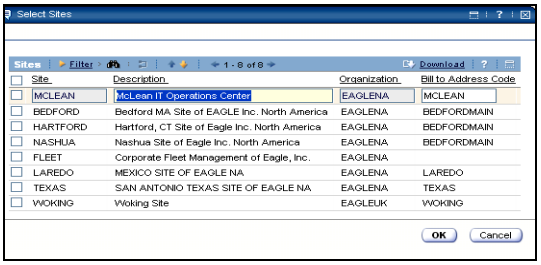
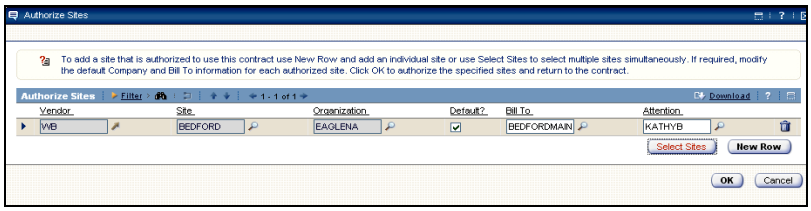
Warranty Contracts continued

Exercise: Creating a Warranty Contract



In the previous exercise, notice that the warranty contract for software installation and services covers 100% (full) labor, materials, and tools services for one year.

In this exercise, you will authorize the contract to be used in the Bedford site and approve the warranty contract with White and Bagley for software for the software installation and services.

Step	Action
1	From the **Select Action** menu, choose **Authorize Sites**. Result: The Authorize Sites dialog box opens. 
2	Click **Select Sites**. Result: The Select Sites dialog box opens. 
3	Check **Bedford** in the select record check box, then click **OK**. Result: The vendor contract record is now authorized for transactions in Bedford. 

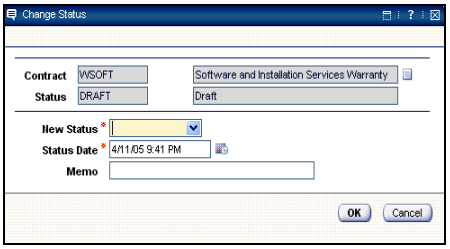
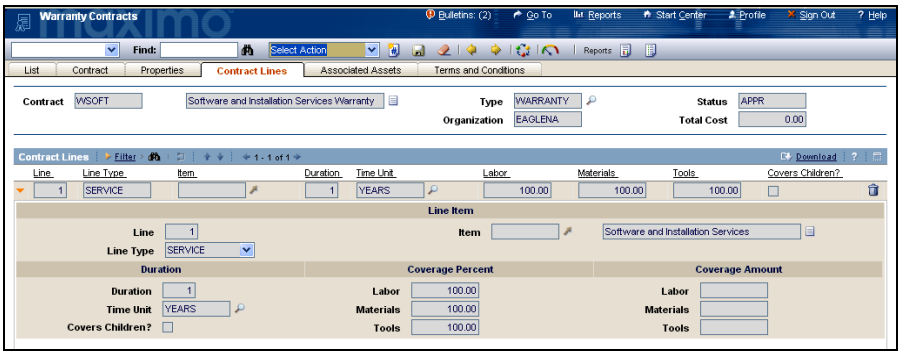
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Warranty Contracts continued

Exercise: Creating a Warranty Contract

continued

Step	Action
4	Click **OK**, then **save** the record. Result: The screen is back on the Contract Lines tab.
5	To approve the warranty contract, click **Change Status**. Result: The Change Status dialog box opens. 
6	Select **Approved** from the **New Status** drop-down list, then click **OK**. Result: The contract status is now APPR.  Note that all the fields are now read-only.

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Item Kits

Introduction

An *item kit* is a group of items that are issued as one single unit. You assemble an item kit and add it to a storeroom as one "package" of items that carries with it the required costing and balance information.

Using kits allows you to put all the items needed for a job plan or maintenance task into one container and issue them as a single unit. The item kit record is unique at item set, just as an item record is.

This section provides a use case and shows you how to create a kit.

Better Business Practice: Benefits of Kitting



Creating kits ensures that all the necessary items and tools are picked up in one instance, thus maximizing the billable time of service personnel by preventing frequent visits to the storeroom.

You can then issue an item kit to a work order using the single kit item record, instead of entering multiple, separate item records.

For example, a construction company writes several hundred work orders each year to maintain its paving equipment. Most of these jobs are similar and require the same type of labor craft, bill of materials, and tools. If maintaining a steamroller always requires the same six items, you can create an item record and flag it as a kit

You can define the list of component items and their quantities on the Item Assembly Structure tab in the Item Master application.

The technicians on the work order use all the components within the kit to perform their work, or they can return any unused components back to a storeroom.

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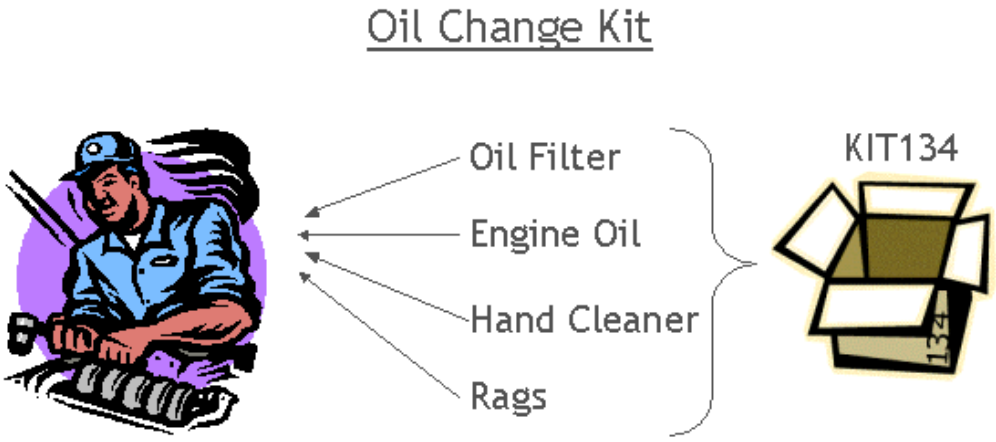
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Item Kits continued

Use Case

Let's say that you want to create a kit with the items needed to change the oil in a vehicle. This kit can even include cleanup items and can be added to work or job plans as a single item.

The graphic below shows the items that might be in this kit.



The maintenance technician can pick up the pre-made kit, knowing that all the needed items will be there. When availability of kits gets low, Maximo can indicate that more kits need to be made, just as with other items in stock.

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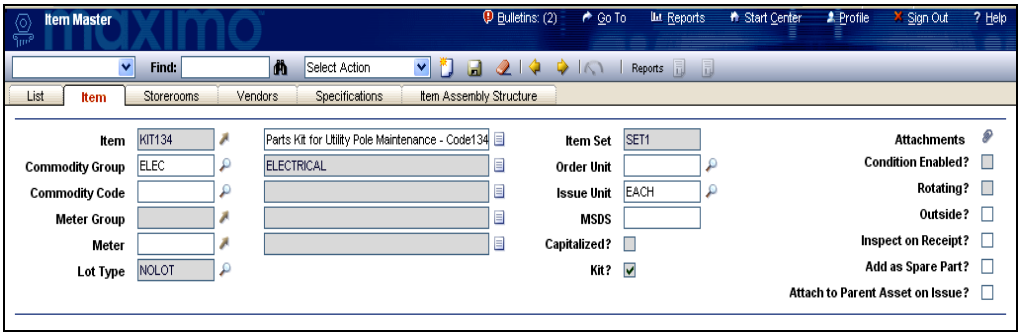
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Item Kits continued

Revisiting the Item Master Application

You use the **Item Master** application from the **Inventory** module to define items that will be stocked in your storerooms. You group these items in an item set, which can then be shared by the organizations using that item set.

An item kit can be entered in the Item Master application as a single item record, which can consist of several other items that belong to the kit.

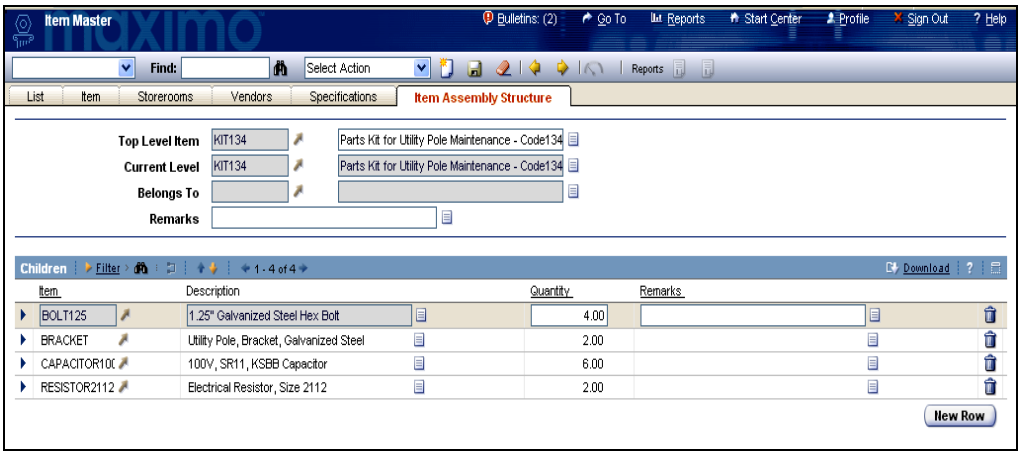


Item Assembly Structure Tab

The Item Assembly Structure (IAS) tab in the Item Master application enables you to create a list of the individual parts and subassemblies that are required components of an item.

You then can use the IAS as a template, copying it to an asset or location record rather than retyping the parts information.

Although you can define an IAS for any item, you use IAS primarily on rotating items and items in a kit.



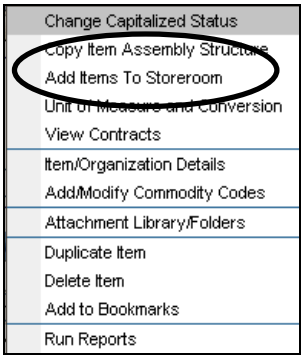
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Item Kits continued

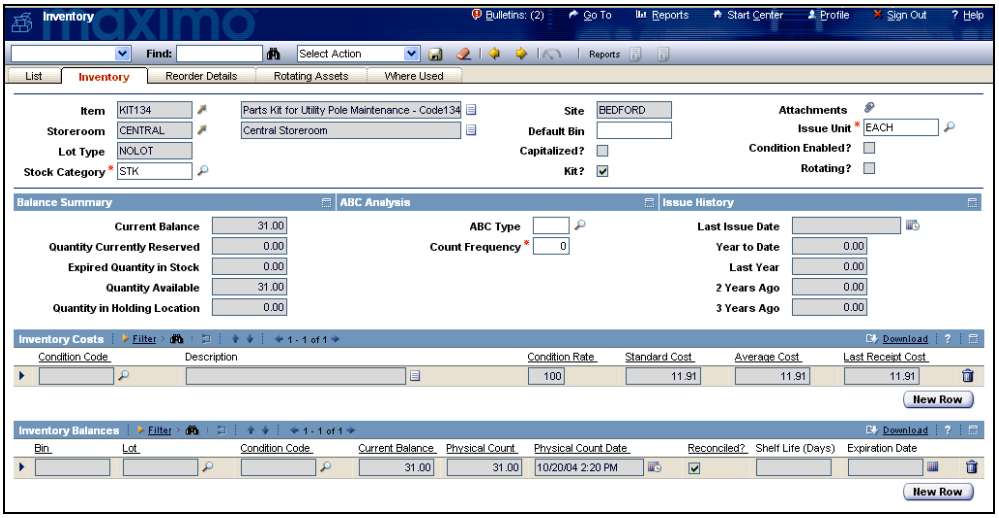
Add Items to Storeroom Action

After creating the item kit records using the Item Master application, you use the **Add Items to Storeroom** action to record the item kit record in the Inventory.



Revisiting the Inventory Application

The **Inventory** application duplicates the item descriptions entered in the Item Master application and also records the item's storeroom balance, condition, inventory costs, reorder details, and other pertinent inventory management information.



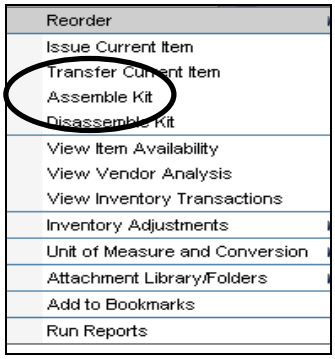
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Item Kits continued

Assemble Kit Action

Items with children assembly or assemblies created in the Item Assembly Structure can be assembled, stored, and recorded in the inventory as an item kit using the **Assemble Kit** action in the Inventory application.



Disassembling Kits

You use the **Disassemble Kit** action from the Inventory application to disassemble kits.

Creating Item Kits

We will use the following steps in creating an item kit:

1. Create an item kit record.
2. Add the item kit record to the storeroom.
3. Assemble the item kit.

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Item Kits continued

Item Kits Considerations



You should consider the following conditions when assembling kits:

- When adding a kit to a storeroom, if the component items do not already exist in the storeroom, Maximo creates inventory records for these items.
- You cannot create item kits that contain condition-enabled, rotating, or lotted (expiring) items.
- You cannot assemble or disassemble item kits across storerooms. You must gather or return items to a single storeroom location.
- You cannot assemble more kits than there are individual parts in the storeroom.
- You cannot assemble a kit if there is no available balance (zero balance or current balance is reserved) for each of the items in the kit.
- Commodities are grouped by item set. An item kit record should be associated to a commodity group in order to belong to an item set.
- Order and issue units should be entered.

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Item Kits continued

Exercise: Step 1: Creating an Item Kit Record



In this exercise we will create an item kit for Bearing Lubrication from a previous exercise in Chapter 7, "Entering Supporting Records for Work Management: Job Plans."

To keep our example simple, we will have only two items in the kit:

- Grease for the bearing lubrication
- Rags for the cleanup

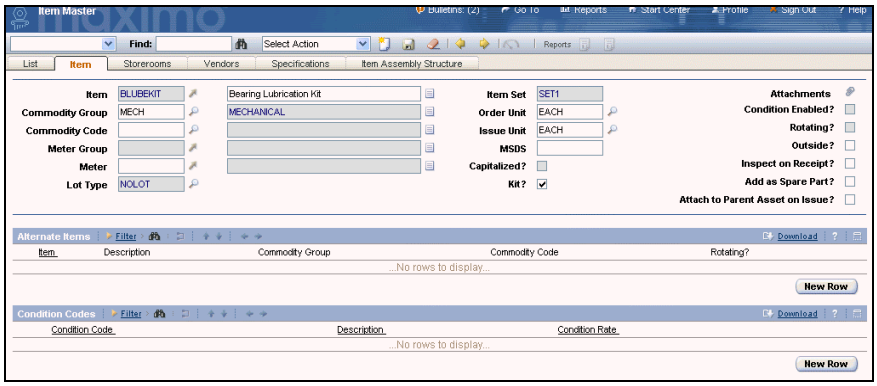
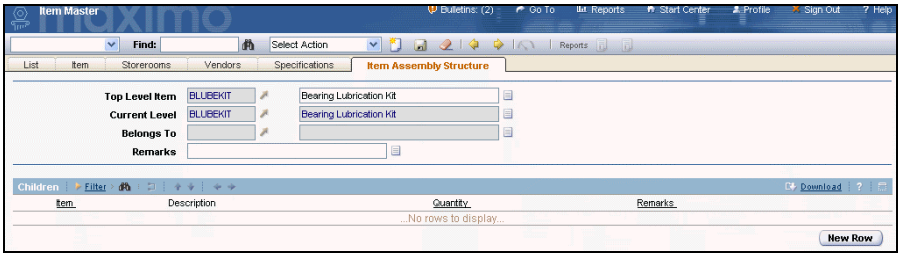
Step	Action
1	Access the **Item Master** application from the **Inventory** module. Result: The Item Master application opens on the List tab.
2	Click the **New Item** icon and enter the following information: **Field** — **Value** **Item** — BLUBEKIT **Description** — Bearing Lubrication Kit **Commodity Group** — MECH **Order Unit** — Each **Issue Unit** — Each **Kit?** — [*Checked*] Note: Item set SET1 is automatically entered on this record because the default insert site for WILSON is Bedford and that site is in the EAGLENA organization, which uses SET1.

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Item Kits continued

Exercise: Step 1: Creating an Item Kit Record continued

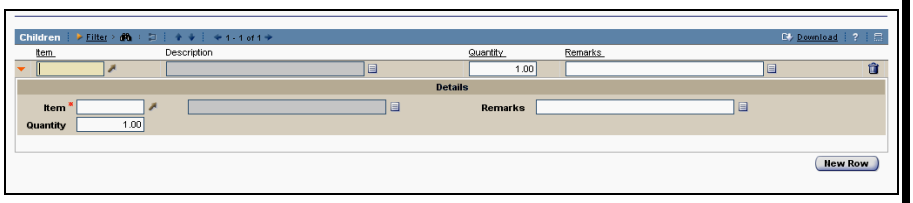
Step	Action
3	**Save** the record. Result: Your screen should look similar to the one shown below. 
4	Click the **Item Assembly Structure** tab. Result: The IAS tab opens. 

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Item Kits continued

Exercise: Step 1: Creating an Item Kit Record continued

Step	Action
5	To add the first item, click **New Row**. Result: The Item table window expands. 
6	Enter the following information to include the rags in the kit. Hint: Use the detail menu icon if necessary. **Field** **Value** **Item** Z-RAGS **Quantity** 4
7	Insert a new row, then enter the second item for the kit – the grease. **Field** **Value** **Item** Z-LG1 **Quantity** 1
8	**Save** the record. Result: The kit is now defined in Maximo.

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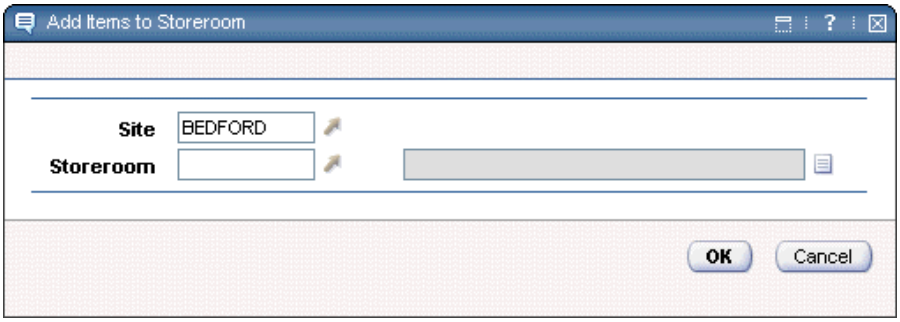
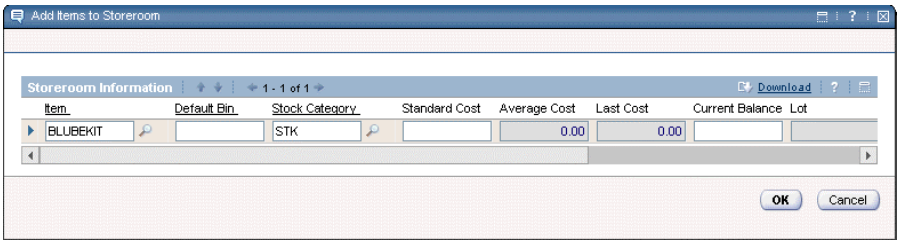
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Item Kits continued

Exercise: Step 2: Adding the Item Kit Record to the Storeroom

Now that the item kit record is created in the Item Master application, the next step is to add the item kit record to the storeroom using the Add Items to Storeroom action.

In this exercise, we will select the CENTRAL storeroom as the location at which the item kit(s) should be kept.

Step	Action
1	From the **Select Action** menu, choose **Add Items to Storeroom**. Result: The Add Items to Storeroom dialog box opens. 
2	Enter CENTRAL in the **Storeroom** field, then click **OK**. Result: The Add Items to Storeroom dialog box changes to accept additional information. 
3	Enter 2 in the **Current Balance** field, then click **OK**. Result: The item has been added to the Central storeroom.
4	**Save** the record.

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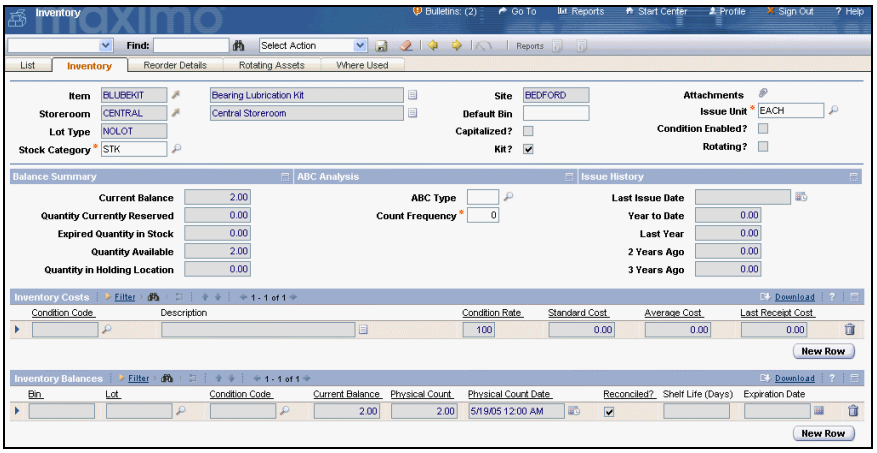
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Item Kits continued

Exercise: Step 3: Assembling the Item Kit

After the BLUBEKIT record has been added to the Central storeroom, the next step is to assemble additional kits using the **Inventory** application.

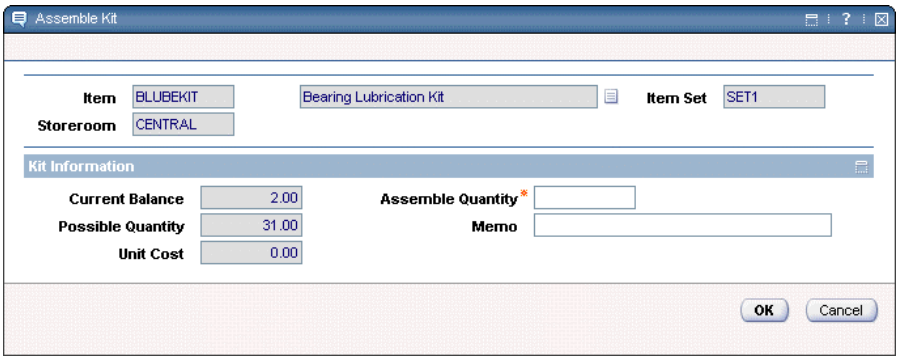
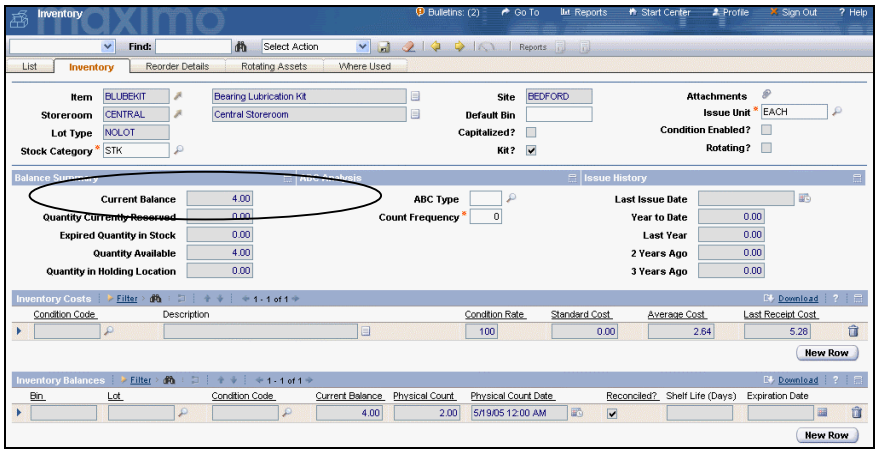
In this exercise, we will assemble two more sets of kits for Bearing Lubrication.

Step	Action
1	Access the **Inventory** application from the **Inventory** module. Result: The Inventory application opens at the List tab.
2	Search for and retrieve the **Bearing Lubrication Kit** we created from the previous exercise. Result: The BLUBEKIT record opens.  Note: In the **Balance Summary** section, Current Balance is 2.00 because we indicated that two were available when we added the item to the storeroom.

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Item Kits continued

Exercise: Step 3: Assembling the Item Kit continued

Step	Action
3	From the **Select Action** menu, choose **Assemble Kit**. Result: The Assemble Kit dialog box opens.  Note: The value in the Possible Quantity field is determined from the available quantity of kit components.
4	Enter 2 in the **Assemble Quantity** field, and then click **OK**. Result: Maximo records the assembly of two more kits and changes the Current Balance to a total of 4. 

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Chapter Summary

Classifications

You use the Classifications application to establish an overall classification hierarchy. Classifications can aid you in retrieving historical data from other applications within Maximo.

Classifications provide you with a means to logically store information, and can be used on locations, assets, items, work orders, tickets, and solutions. You can classify and then search for things that have been classified.

Failure Codes

Use of failure analysis requires setting up a failure hierarchy beforehand to capture activities performed on assets. This provides the following benefits:

- It structures failure data so that you can analyze asset failures and determine where the most money is being spent for repairs.
- It identifies all levels of asset problems, causes, and remedies so that you can drill down the hierarchy to pinpoint what's wrong, what caused it, and how to fix it.
- It can be directly associated to safety measures specifically when asset or location failures have produces hazardous results. Thus, appropriate precautions could be observed.

Introduction

You use a warranty contract or service contract to maintain one or more assets with an outside service provider for a fixed fee, or regularly scheduled payment over a time period; or to track warranty information for multiple assets or locations by time or meter.

Warranty contracts can also be used to track warranty information for multiple assets or locations by time or meter.

Item Kits

An *item kit* is a group of items that are issued as one single unit. You assemble an item kit and add it to a storeroom as one "package" of items that carries with it the required costing and balance information.

Using kits allows you to put all the items needed for a job plan or maintenance task into one container and issue them as a single unit. The item kit record is unique at item set, just as an item record is.

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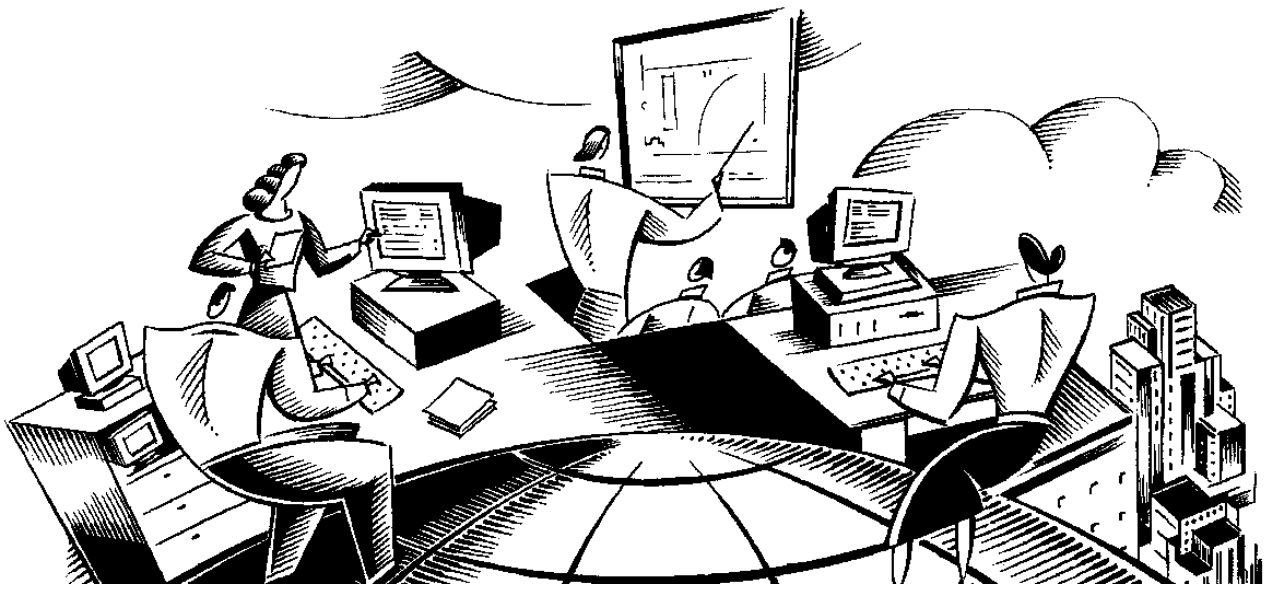
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MXES Immersion Training for EAM

Chapter 15: Automating the Approval Process



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In This Chapter This chapter contains the following topics:

Topic	See Page
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Workflow in Maximo	15-2
Workflow Configuration Applications	15-7
Workflow Stages	15-14
Creating a Workflow Process Record	15-15
Starting the Workflow Process	15-28
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Chapter Overview

Chapter Focus



The previous chapters discussed and illustrated how the Maximo modules and applications record and manage your business processes. This chapter provides an overview of Workflow applications, functions, and stages.

Note: For a more in-depth discussion about Workflow in Maximo, contact MRO Educational Services.

Learning Objectives

When you have completed this chapter, you should be able to:

- describe the purpose of Workflow,
- List Workflow Configuration applications,
- list Workflow components,
- list the types of records that can be routed in a Workflow,
- list the advantages to using Workflow,
- enable and validate a Workflow process,
- start a Workflow process,
- view a Workflow process's history,
- view an in-process assignment, and
- complete a Workflow assignment.

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Workflow in Maximo

Introduction

A *workflow* is a process that can be thought of as a map that guides a record, or a user's interaction with the processed record, through a set of steps.

The Workflow applications in Maximo enable your organization to design, track, and manage these steps as the workflow is strategically communicated throughout the organization.

What Is Workflow?

Workflow is comprised of many related components that are integrated in Maximo. These components are used to:

- design and administer processes, and
- create the elements used to develop the workflow process.

Most of these components are created using a variety of applications, including:

- Workflow Administration
- Workflow Designer
- Actions
- Roles
- Communication Templates
- Escalations

There are a number of other applications used when designing workflow processes and related components:

- People
- People Groups
- Security
- Security Groups
- Labor

There a couple of other Workflow components to consider:

- A *non-application* component of Workflow is the Inbox/Assignments table, which resides on each user's Start Center.
- Workflow options are configured using the Organizations application.

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Workflow in Maximo continued

Workflow Goals

The goals of Workflow are to:

- provide a solution that allows you to customize business processes;
- manage defined processes from start to finish;
- push information to the right people at the right time; and
- provide an audit trail of your business processes.

Workflow Capabilities

The Workflow components provide a variety of features that you can include in your workflow design to streamline your approval processes.

These features include:

- Assignments to roles that can be comprised of labor, people, person groups, supervisors, and delegates
- User-defined escalation periods and procedures
- Manual initiation of a Workflow process on a specific process
- Automatic initiation of a Workflow process; for example, when the system generates purchase requisitions or purchase orders from inventory reorder
- Escalation of processes based on determined time intervals
- Notifications using communication templates
- Use of a SQL Expression Builder to more easily build detailed criteria for process points
- Context-based interactivity to bring the right application or application component to people when needed to perform a specific task in the process
- Manual reassignment of tasks using the Workflow Administrator

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Workflow in Maximo continued

Types of Workflow

In Maximo there are several possible workflow types:

- **Process workflow** (traditional, assignment-oriented), where a structured process manages a record's lifecycle – conditionally pushing assignments to people, running actions, and sending notifications along the routing paths.

  Example: Route a corrective work order for cost approval, safety approval, scheduling, labor assignments, and supervisory signoff on completion.

- **Context-based interactions** (assignment-less), where a menu of action choices is presented to the user based on the current record's data properties, "scripting" the user's interaction with the application.

  Example: When a help desk technician enters a service request (SR) and presses **Route**, properties such as ticket type and status conditionally present the available next steps—for example, Close or Create Incident. **Close** could go to the Start Center; **Incident** could take the user to the newly inserted incident in its application.

- **Hybrids**, where there is a mix of structured routings along with interactive, conditional page, and dialog box navigation.

  Example: Detect at the time of a work order's completion that a failure report should have been entered, and take the user to the Failure Reporting tab with instructions to that effect.

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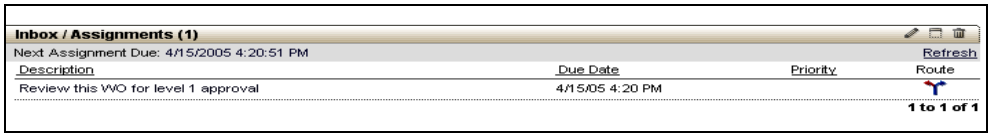
Workflow in Maximo continued

Workflow Inbox/ Assignments Tab

The **Workflow Inbox/Assignments** tab is a Maximo Start Center feature that allows you to view your current assignments quickly and efficiently in a modifiable list format.

This list saves time by presenting you with the relevant information of your choice in an easy-to-read form. This reduces the need to sort through multiple records as you search for your assignments and develop priorities.

Workflow also makes your business practices repeatable.



E-mail Notifications

Workflow allows you to send a configurable e-mail message when events occur during the process. With e-mail notification, you can notify the right people at the right time about what is happening in the process. You can configure the system to generate e-mail messages at the onset of the following events:

- When the system assigns a task
- When the assigned user completes or rejects a task
- When a manual input node is reached
- When the system evaluates a condition as true or false
- When there is a stop in Workflow

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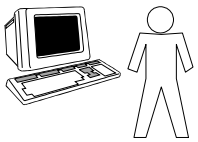
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Workflow in Maximo continued

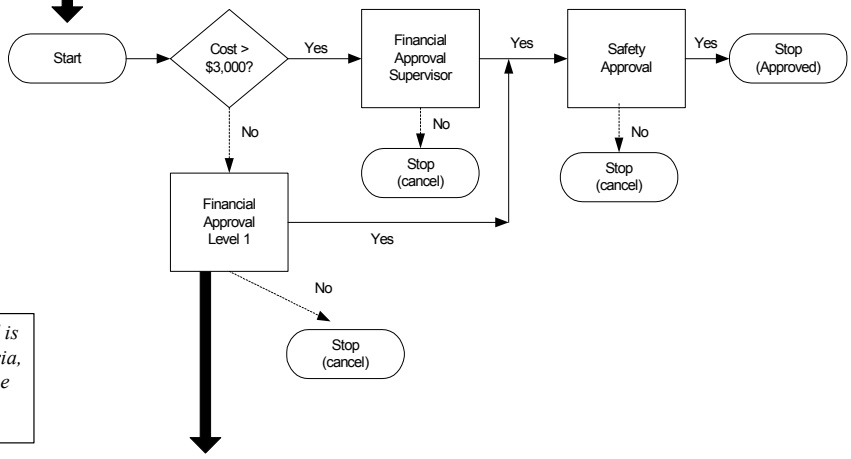
Pushing Information

Workflow gets information to the right people at the right time. Therefore, Workflow provides you with all of your work assignments *in one place*.

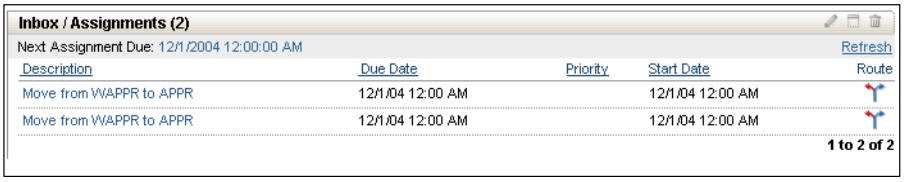
You do not need to search through long lists of information to find what you need to do.



Service work is requested and, using the Work Order Tracking application, is entered into Maximo.



A work order begins its Workflow journey and is waiting for approval. Based on the right criteria, Maximo pushes the right task assignment to the right person.



Inbox / Assignments (2)

Next Assignment Due: 12/1/2004 12:00:00 AM — Refresh

Description	Due Date	Priority	Start Date	Route
Move from WAPPR to APPR	12/1/04 12:00 AM		12/1/04 12:00 AM	
Move from WAPPR to APPR	12/1/04 12:00 AM		12/1/04 12:00 AM	

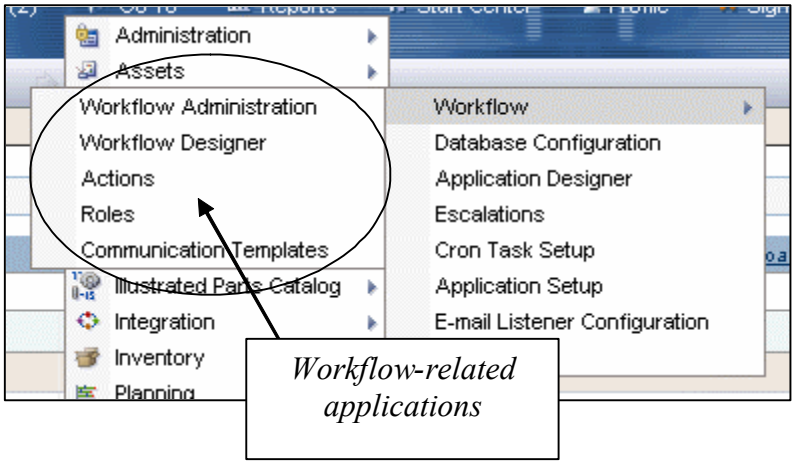
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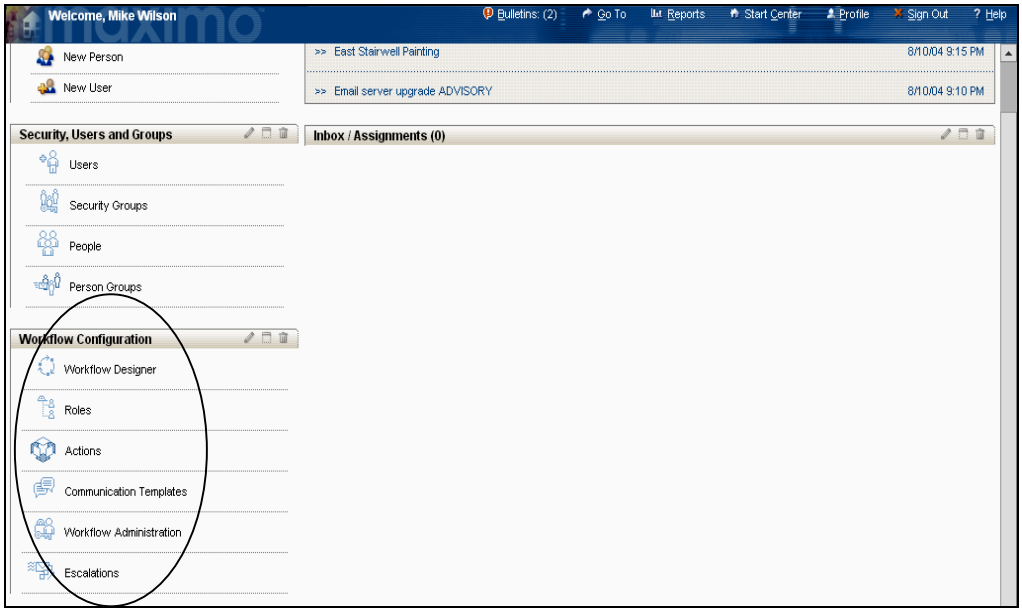
Workflow Configuration Applications

Accessing Workflow Applications

The Maximo administrator can give users privileges to access Workflow applications, most of which are located in the **Configuration** module, **Workflow** submodule.



The Start Center can be configured to provide access directly, similar to the graphic below.



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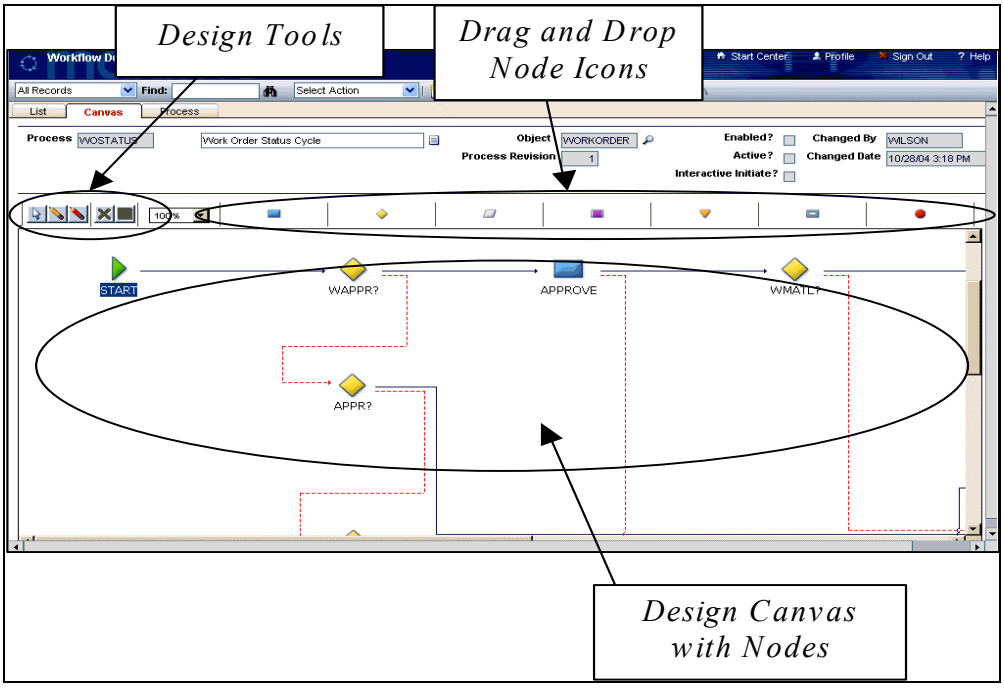
Workflow Configuration Applications continued

Overview of Workflow Configuration Applications

Automating the approval process requires several Maximo applications to be "tailored" in order to create, start, and complete the workflow process.

These applications include:

- The **Workflow Designer** application. You use the Workflow Designer application to create a series of paths for records to flow through, called a *process*. The graphical interface of the Workflow Designer illustrates the possible paths the record can follow through the use of simple components called *nodes and actions,* enabling you to route critical business processes to simple or complex paths as your business process demands.



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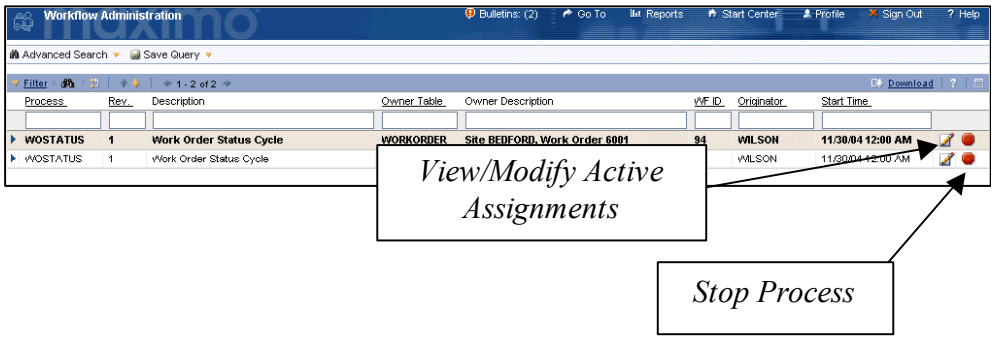
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Workflow Configuration Applications continued

Overview of Workflow Configuration Applications

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- The **Workflow Administration** application. You use the Workflow Administration application to view, modify, and stop Workflow assignments.



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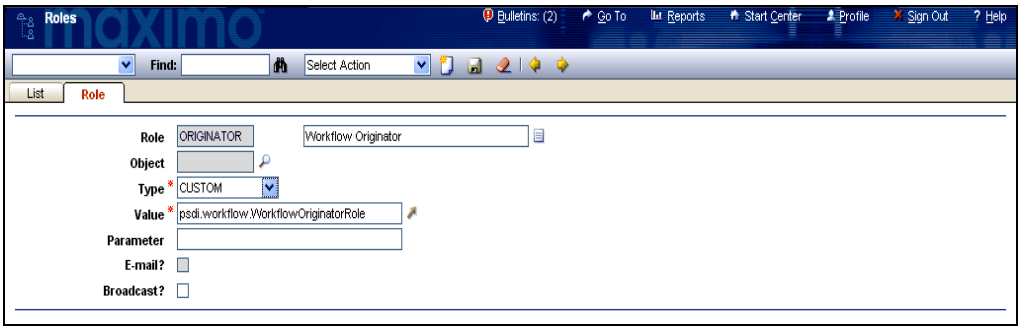
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Workflow Configuration Applications continued

Overview of Workflow Configuration Applications

continued

- The **Roles** application. You use the Roles application to create and manage a custom user, a set of data related to a record or login user, a person or person groups, or an e-mail address, and to create hyperlinks between a process design and the supporting roles.



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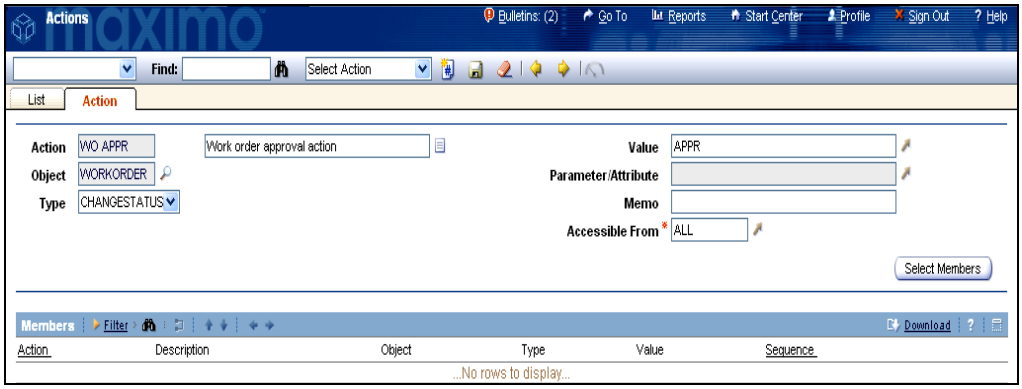
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Workflow Configuration Applications continued

Overview of Workflow Configuration Applications

continued

- The **Actions** application. The Actions application allows you to manage the administrative functions of creating actions and action groups within Workflow, Escalation, and Service Level Agreements (SLA) processes. *Actions* are scheduled events that occur when a record leaves a Workflow node. An action can cause a Maximo status change, execute a defined program, set a field value, or execute a custom class action for individual action or action groups.



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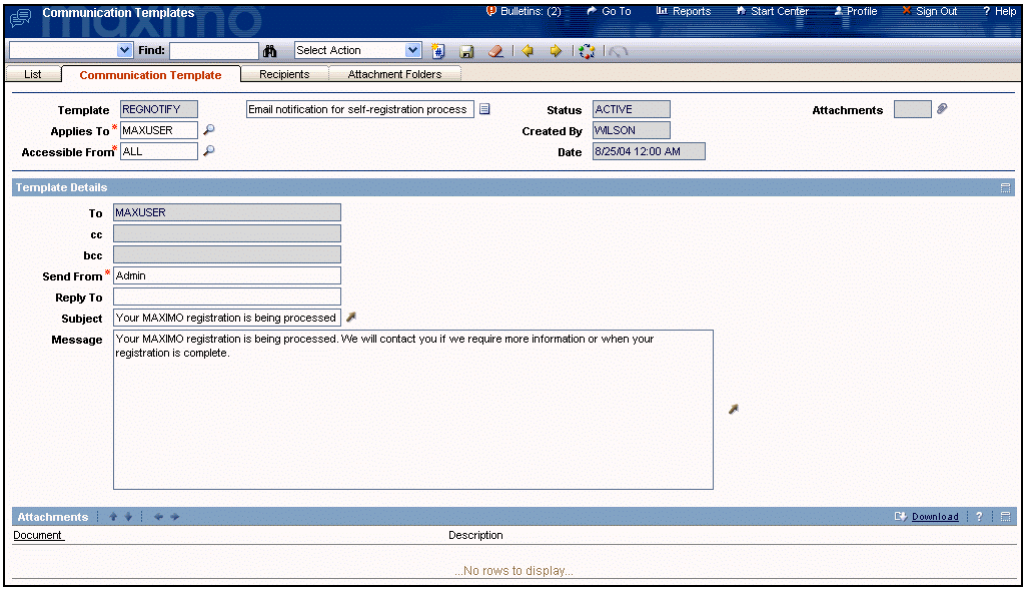
Workflow Configuration Applications continued

Overview of Workflow Configuration Applications

continued

- The **Communication Templates** application. The Communication Templates application allows you to create and manage generic communication templates that Maximo users can leverage to standardize frequently used e-mail communications (also known as *notifications*). You can also use communication templates to create e-mail notifications for use with the automated workflow and escalation processes.

  Example: A workflow process has been designed to send a message to new self-registered Maximo users. The process calls out the REGNOTIFY template to send a predetermined response to self-registered users.



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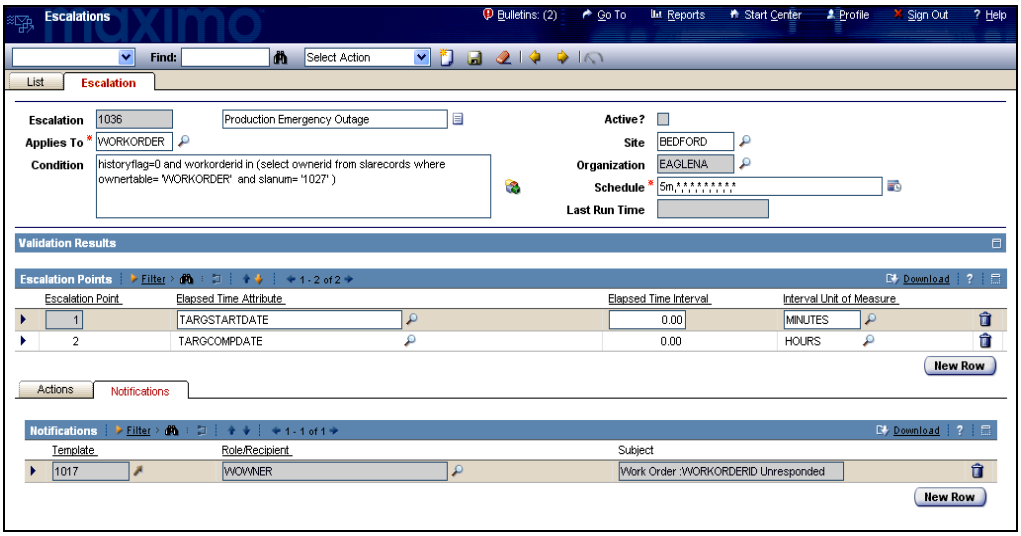
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Workflow Configuration Applications continued

Overview of Workflow Configuration Applications

continued

- The **Escalations** application. The Escalations application allows you to automatically monitor critical processes across your enterprise. The primary goal of escalation management is to ensure that critical tasks are completed on time, such as those defined in service level agreements. When you assign specific steps in a workflow process to employees, those assignments display in their Inbox. If the assignments are not completed promptly, they time out in the recipients' Inboxes. When this happens, you can use escalations to assign the tasks to other people. This helps get tasks completed on time and helps to prevent work backlogs.



Review

√

1. You use the **Workflow Designer** application to do what?

2. You use the **Workflow Administration** application to do what?

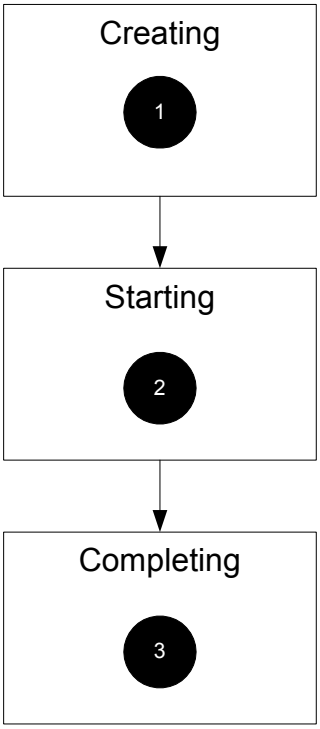
3. You use the **Workflow Inbox/Assignments** tab to do what?

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Workflow Stages

Introduction

To better acquaint you with the Workflow solution, in this section and for the remainder of this chapter, a high-level overview of Workflow stages will be explored. The following chart illustrates and describes what these stages are:



In the first stage, you use the **Workflow Designer** application to do three steps after *creating or revising* a Workflow process:

Step 1: Validate the process.

Step 2: Enable the process.

Step 3: Activate the process.

In the second stage, a Workflow process record can be started:

- *Manually* by clicking on the **Start/Continue Route** icon in a Workflow-enabled Maximo application, such as Work Requests.
- *Automatically* by using the **Set Process to Auto-Initiate** action in the **Workflow Designer application**, where records of certain types automatically enter a Workflow process when the record is **Saved** or **Submitted**.

In the third stage, you use the **Workflow Inbox/Assignments** tab in your Start Center to perform Workflow assignments.

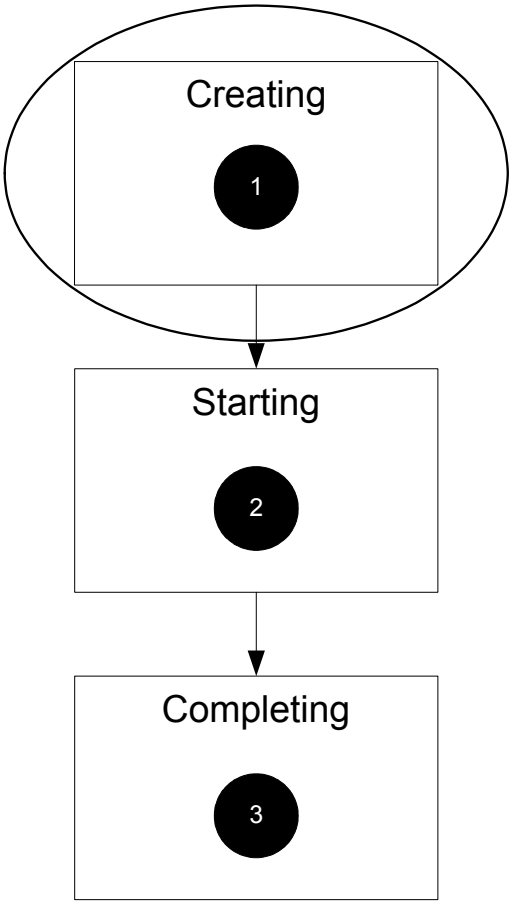
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Creating a Workflow Process Record

Introduction

As introduced earlier, Workflow consists of three stages—Creating, Starting, and Completing—with each stage having its own application to meet the requirements. In this section we will learn how to navigate the Workflow Designer application and enable and activate an already existing Workflow process. We will not create a new Workflow process.

We Are Here



In the first stage, you use the **Workflow Designer** application to accomplish three steps after *creating or revising* a Workflow process:
Step 1: Validate the process
Step 2: Enable the process
Step 3: Activate the process

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Creating a Workflow Process Record continued

Workflow Designer Application

You use the **Workflow Designer** application to create, revise, and/or modify series of design paths for records to flow through. Then the records will be *validated, enabled,* and *activated.*

Workflow Designer Application Tabs

The Workflow Designer application has three tabs:



Use this tab…	To…
List	Search for existing workflow process records.
Canvas	Get an overall picture of the Workflow process: graphical design paths, target Maximo Object, Process status, and revision history.
Process	List all the processes and actions contained in the nodes

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Creating a Workflow Process Record continued

Overview of Workflow Designer Elements

The Workflow processes consist of components called *task nodes.*

Node	Description
Start node 	Indicates the beginning of a Workflow process. Workflow places one Start node on the canvas when you create a new process. There can be only one starting point to any process.
Stop node 	Marks the point where a Workflow process ends and a record leaves Workflow control. Workflow places one Stop node on the canvas when you create a new process. You can place additional Stop nodes on the canvas as needed.
Process node 	Allows you to direct the path of the record. You must have at least one connection coming out of a Task node. You use a Task node when your business rules call for an affirmative or negative user response to an inbox assignment.
Condition node 	Automatically direct records according to information contained in the record. There must be one positive connection and one negative connection coming out of a Condition node. The connection used by a record as it exits a Condition node is dictated by the SQL expression within the node, which resolves to either true (positive connection) or false (negative connection).
Manual Input node 	Allows you to direct the path of a record. Use a Manual Input node when you want the user to select the next step from a menu.
Subprocess node 	Represents a complete Workflow process nested within another Workflow process. A Subprocess can have a negative line flowing out of it, in addition to the positive. When a Subprocess encounters a stop node it returns to the master process along the same line on which it finished. This enables the Subprocess to carry back the logic that caused the termination to the master process.

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Creating a Workflow Process Record continued

Overview of Workflow Designer Elements continued

Node	Description
Interaction node 	Must have one or more action lines entering it, but only one action line can exit. You use an Interaction node to help lead an end user down particular problem resolution paths by offering well-defined choices, which guide the user through a scripted path and manage the relationship with the record in any given session. A Manual Input node usually precedes the Interaction node.
Wait node 	Creates a certain reaction to an action. You can define any action to trigger a specified reaction in a Wait node. When Workflow encounters a Wait node in an active process, the process pauses at that node indefinitely until any of the specified events occur. When the specified event does occur, it informs the node and the process resumes by exiting the node at the single exit point.

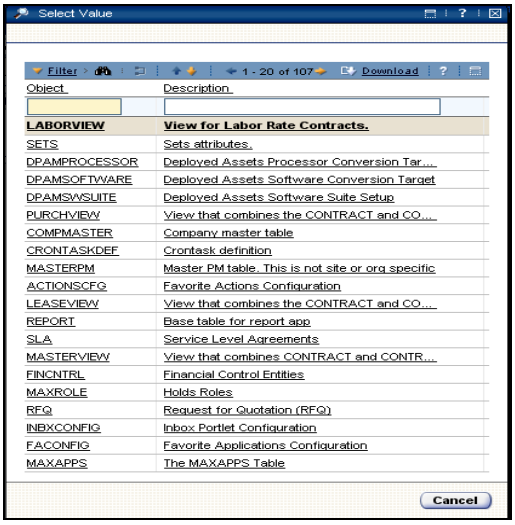
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Creating a Workflow Process Record continued

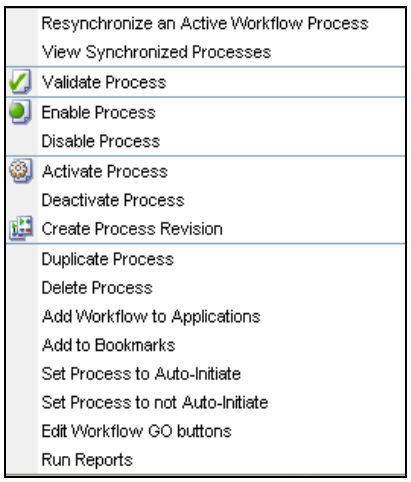
Overview of Maximo Business Objects

In the Workflow Designer application, Canvas tab, Object field, detail menu, you can select a Maximo Business Object, which contains specific criteria of processes in which Workflow can be applied.



Workflow Actions

You can use the Select Action menu in the Workflow Designer application to manage the Workflow processes.



The following sections provide some screenshots and descriptions of Workflow actions.

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Creating a Workflow Process Record continued

Workflow Action: Validate Process

You can *validate* a workflow process by choosing **Validate Process** in the Select Action menu or by clicking the **Validate Process** icon in the Workflow Designer toolbar.



The validation process checks to see if all of the components necessary to a Workflow process are present and that the process has paths that travel through its entire length without interruption. The validation process does not attempt to determine the suitability of a process for your business needs.

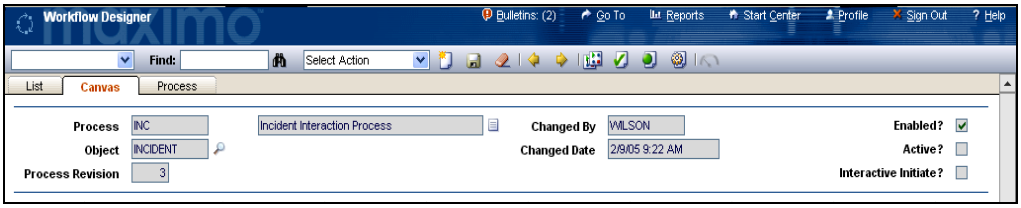
Workflow Action: Enable Process

You can *enable* a workflow process by choosing **Enable Process** in the Select Action menu or by clicking the **Enable Process** icon in the Workflow Designer toolbar.





The **Enabled?** check box in Workflow Designer, Canvas tab will be checked once the Workflow process is enabled.





Note: Enabling a Workflow process will automatically validate a "valid" process.



Note: You cannot enable an invalid process.

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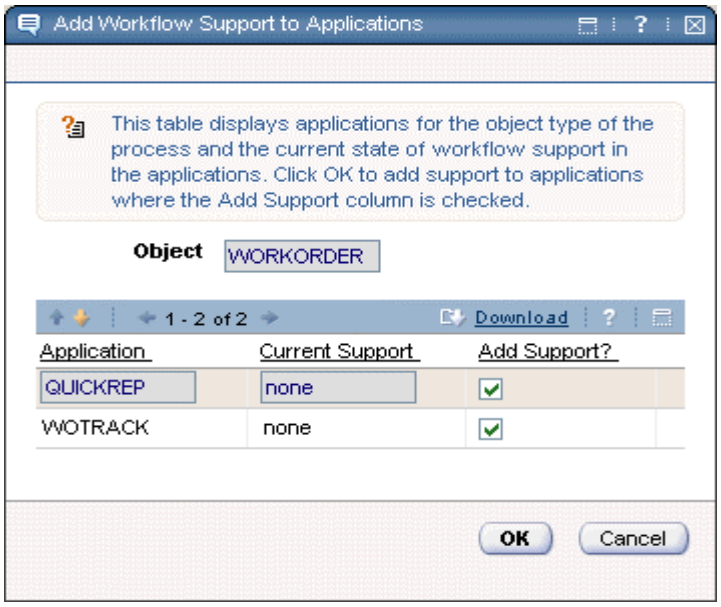
Creating a Workflow Process Record continued

Work Flow Action: Activate Process

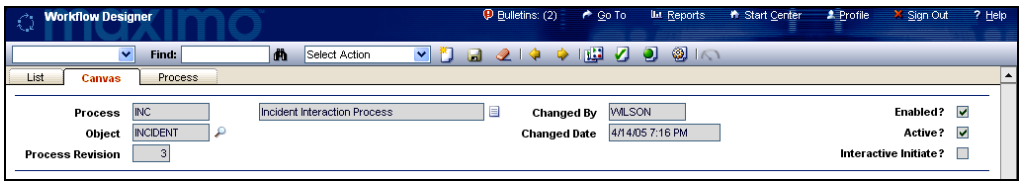
You can *activate* a workflow process by choosing **Activate Process** in the Select Action menu or by clicking the **Activate Process** icon in the Workflow Designer toolbar



Activating the workflow process will prompt the **Add Workflow Support to Applications** dialog box to open. This table displays applications for the object type of the process and the current state of Workflow support in the applications.



Note: The **Active?** check box in Workflow Designer, Canvas tab will be checked once the Workflow process is enabled.



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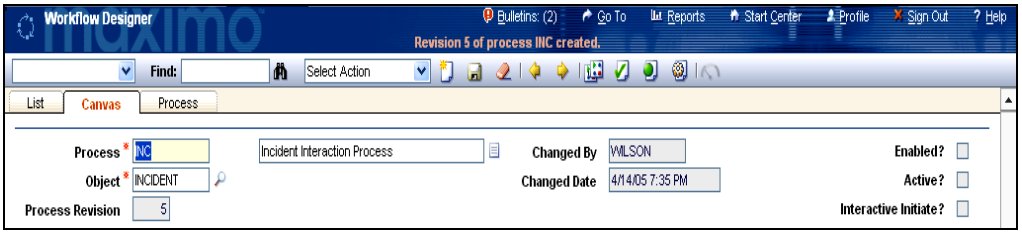
Creating a Workflow Process Record continued

Work Flow Action: Create Process Revision

You can *revise* an existing workflow process by choosing **Create Process Revision** in the Select Action menu or by clicking the **Create Process Revision** icon in the Workflow Designer toolbar.



A new revision of the process opens with Enabled? and Activated? Checkboxes *cleared* and the revision number adjusted to the next available number. Make the modifications to the nodes as needed, and enable and activate the process. Maximo deactivates and disables the original process and activates and enables the new process automatically.



Exercise Scenario Premise

To demonstrate how a Workflow process can be started and completed, we are going to **Revise** an existing Work Order Approval (WOAPPROVE) Workflow process record in the Workflow Designer application. Specifically, we will apply the Workflow stages to:

- validate, enable, and activate the revised Workflow record using Workflow Designer;
- start the Workflow; and
- complete the Workflow by accessing the Workflow Inbox/Assignments tab in the Start Center.

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Creating a Workflow Process Record continued

Exercise Scenario Premise

To demonstrate how a Workflow process can be started and completed, you (Maximo administrator) will activate an existing Workflow process record for Work Order Approvals (WOAPPROVE) using the Workflow Designer application.

Specifically, you will be applying the Workflow stages to:

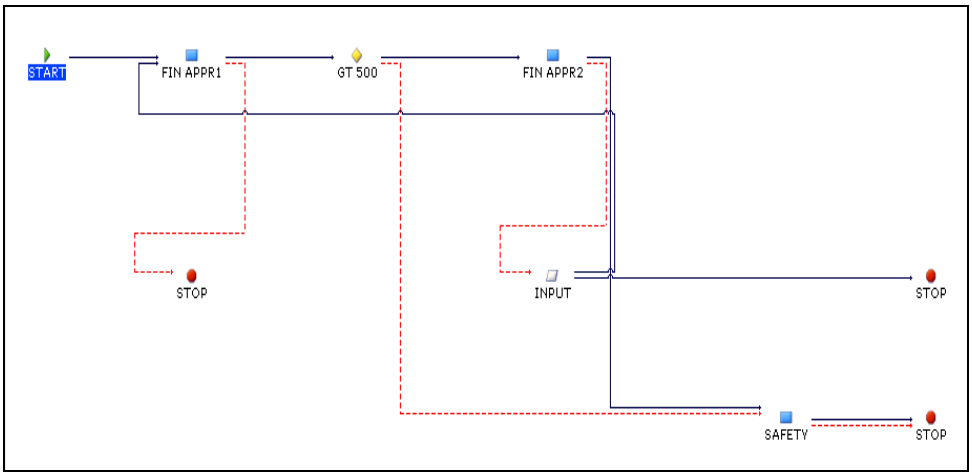
- validate, enable, and activate the revised Workflow record using Workflow Designer;
- start the Workflow; and
- complete the Workflow by accessing the Workflow Inbox/Assignments tab in the Start Center.

In this process, Wilson accesses an existing work order (1000) using the Work Order Tracking application. Based on the Workflow setup, Wilson manually starts the record (START) in Workflow.

The new work order record requires a Financial Approval (FIN APPR1) by Roland Smith. After Smith reviews it, he can cancel (STOP) it or give it Approval 1, which will then send it on to a financial condition (GT 500), where it is evaluated to see if the labor cost is less than or equal to $500.

If the Labor cost is greater than $500, it moves onto a second Financial Approval (FIN APPR2), where an assignee – Todd Winston – determines that the routing should be determined manually.

At this point, Winston is asked whether the record should be sent for financial approval or canceled (INPUT). He decides to cancel the work order (STOP).

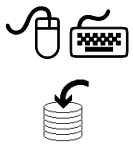


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Creating a Workflow Process Record continued

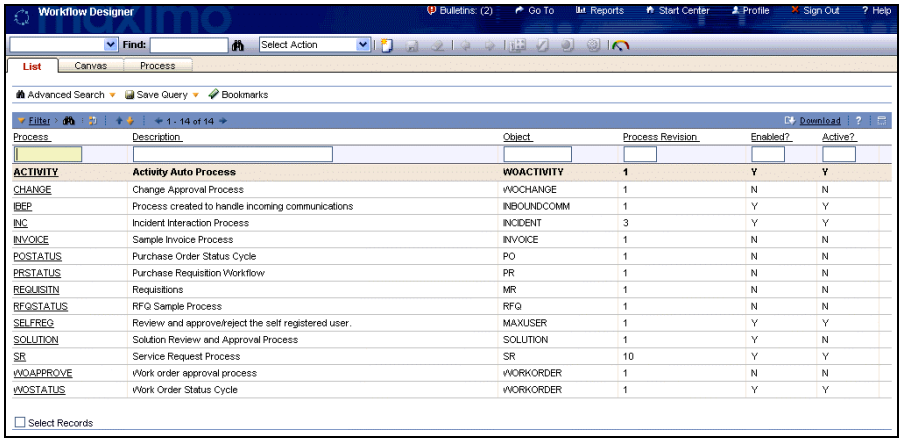
Step 1: Enable and Activate a Workflow Record



In this exercise you will act as a Maximo administrator who will revise, enable, activate, and apply an existing Workflow process according to the premise stated previously.

In this section you will learn to view and configure the task nodes according to your scenario premise before a workflow process is applied.

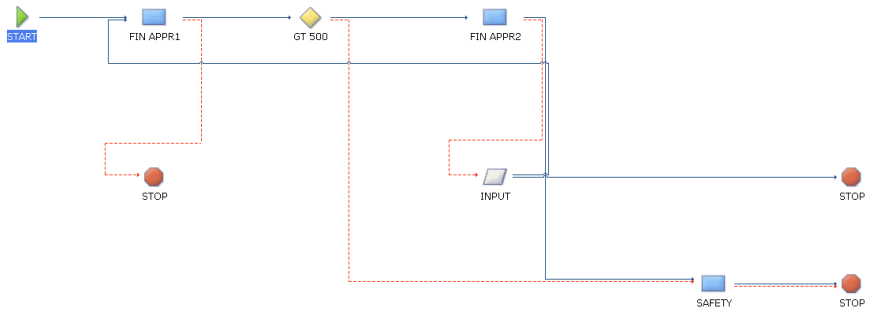
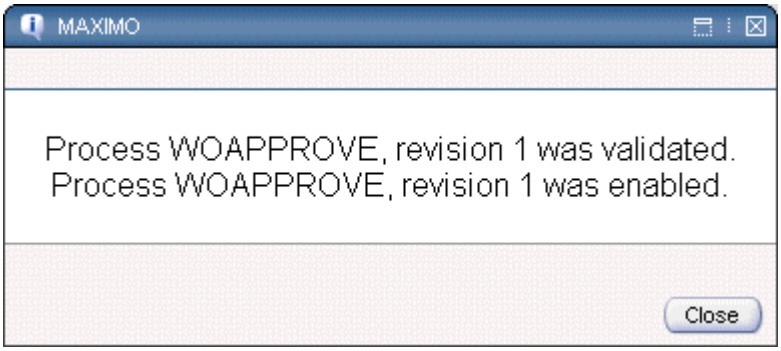
Step	Action
1	From the **Configuration** module**, Workflow** submodule, access the **Workflow Designer** application (or access it using the Start Center). Result: Workflow Designer opens on the List tab.



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Creating a Workflow Process Record continued

Step 1: Enable and Activate a Workflow Record continued

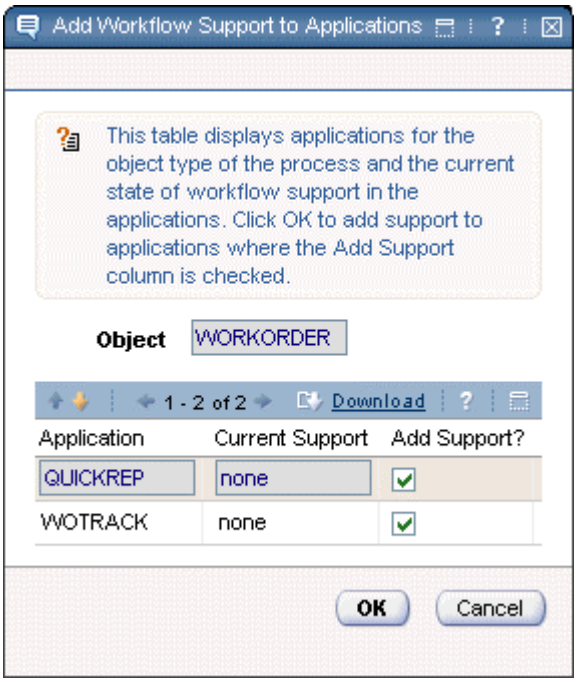
Step	Action
2	Select the **WOAPPROVE** process from the **List** tab. Result: Maximo displays the WOAPPROVE process record on the Canvas tab.  Note: You will need to use the scroll bars or zoom out to see all the components of the canvas.
3	Click the **Enable Process** button.  Result: Maximo displays confirmation. 

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Creating a Workflow Process Record continued

Step 1: Enable and Activate a Workflow Record continued

Step	Action
4	Click **Close** to close the dialog box. Result: The Enabled? checkbox is selected.
5	Click the **Active Process** button.  Result: The Add Workflow Support to Applications dialog box displays a list of the applications that use the object indicated on the process. 

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Creating a Workflow Process Record continued

Step 1: Enable and Activate a Workflow Record continued

Step	Action
6	Click **OK**. Result: Maximo works behind the scenes to add code to support Workflow for the selected applications. The Active? check box is selected. The process is now ready to be used in Maximo. Note: There is quite a bit going on here, so it might take Maximo a few minutes to complete this process.

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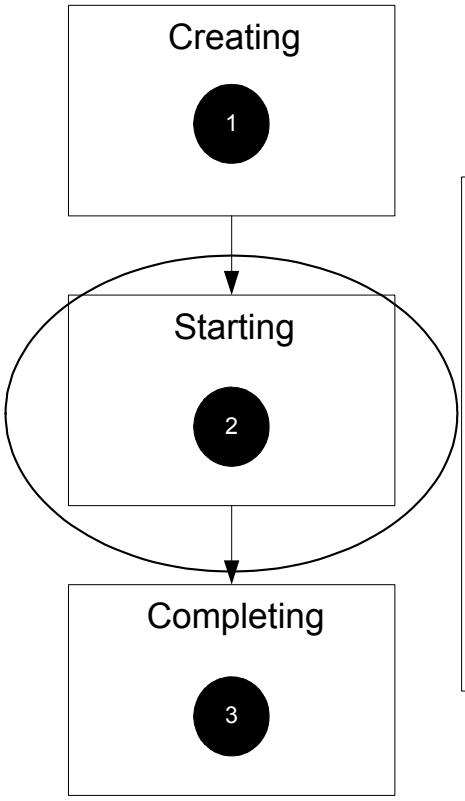
Starting the Workflow Process

Introduction

As we learned earlier, Workflow consists of three stages—Creating, Starting, and Completing—with each stage having its own application to meet its requirements.

In this section, we will manually start a workflow process using the **Work Order Tracking** application.

We Are Here



In the second stage a Workflow process record can be started:

Manually by clicking on the **Start Continue Route** icon in a Workflow-enabled Maximo application such as **Work Requests**.

Automatically using the **Set Process to Auto-Initiate** action in the **Workflow Designer** application, where records of certain types automatically enter a Workflow process when the record is **Saved** or **Submitted**.

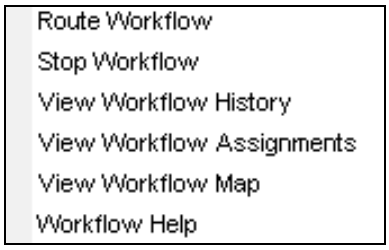
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Starting the Workflow Process continued

Application-Level Workflow Actions

Workflow actions applied in Maximo applications can be selected using the Select Action menu, Workflow action.

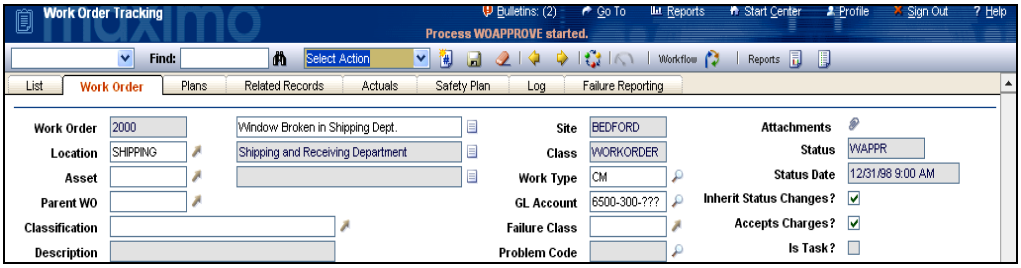


The following sections describe each action.

Workflow Action: Route Workflow

In Maximo applications where Workflow is applied, you can start the Workflow process by choosing **Route Workflow** in the **Select Action** menu, **Workflow** action, or by clicking the **Start/Continue Route** icon.





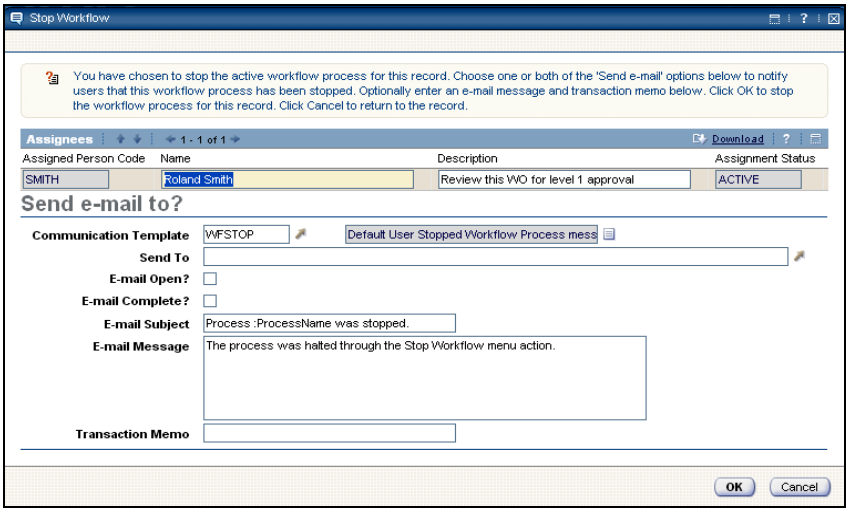
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Starting the Workflow Process continued

Workflow Action: Stop Workflow

You can stop the Workflow process by choosing **Stop Workflow** in the **Select Action** menu, **Workflow** action.



Upon stopping, Maximo takes the record out of Workflow, notifies the specified recipients, and writes a transaction history record.

You can notify both past and current participants of the stoppage using a standard communication template or a free-form e-mail message.

Workflow history stays recorded permanently, regardless of whether it was stopped by an administrator or a default user, or stopped due to the end of the Workflow process.

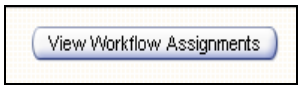
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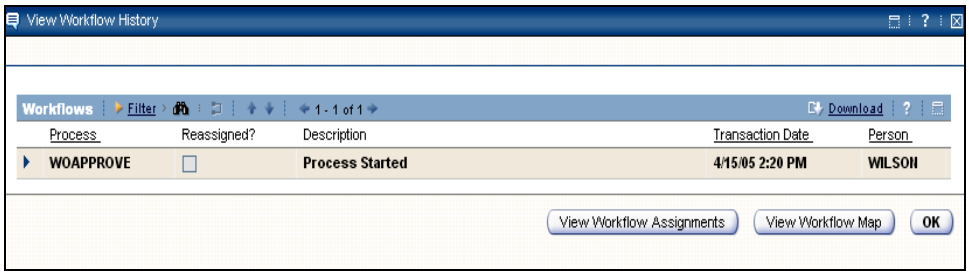
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Starting the Workflow Process continued

Workflow Action: View Workflow History

You can view the Workflow history by choosing **View Workflow History** in the **Select Action** menu, **Workflow** action, or by clicking the **View Workflow History** button in the **View Workflow Assignment** or **View Workflow Map** dialog boxes.





The **Workflow History** table window displays Workflow-related actions taken on the record by users. The table window displays the nodes the record has visited, with the type of transaction each node requires, what action took place at each node, the date of the action, and the labor code that took this action.

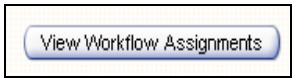
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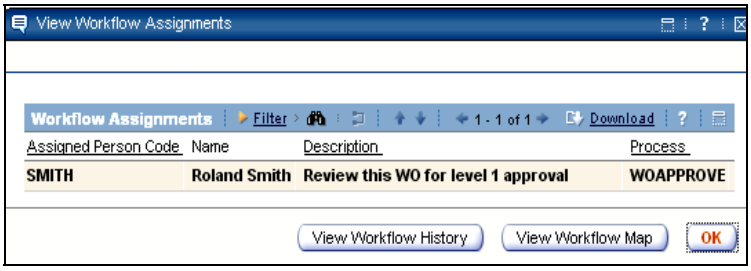
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Starting the Workflow Process continued

Workflow Action: View Workflow Assignments

You can view the Workflow assignments by choosing **View Workflow Assignments** in the **Select Action** menu, **Workflow** action, or by clicking the **View Workflow Assignments** button in the **View Workflow History** or **View Workflow Map** dialog boxes.





You use the View Workflow Assignments action to view the currently assigned user to take action on the Workflow processed record.

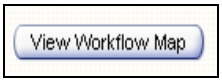
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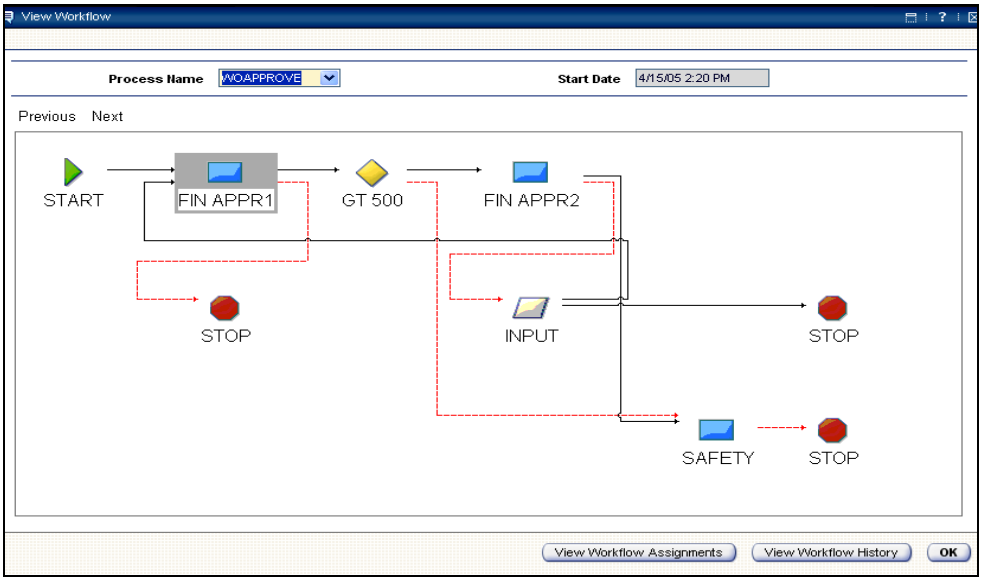
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Starting the Workflow Process continued

Workflow Action: View Workflow Map

You can view the Workflow map by choosing **View Workflow Map** in the **Select Action** menu, **Workflow** action, or by clicking the **View Workflow Map** button in the **View Workflow History** or **View Workflow Map** dialog boxes.





The **Workflow Map** tab shows a picture of the Workflow process. A highlighted node marks the record's location in the process and uses the View Workflow Assignments action to determine the person or person groups who can or must act on the record before it can move to the next step in the Workflow process.

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Starting the Workflow Process continued

Workflow Action: Workflow Help

You can view Workflow help by choosing **Workflow Help** in the **Select Action** menu, **Workflow** action.



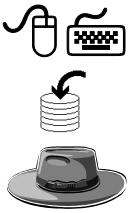
The Workflow Help action gives additional information in using and navigating the Workflow process.

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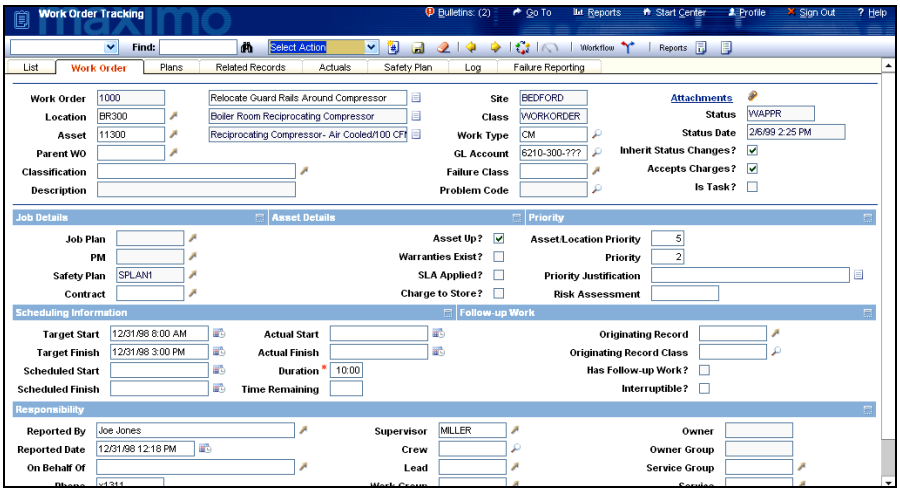
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Starting the Workflow Process continued

Step 2: Starting the Workflow Process



In this exercise you will be shifting roles from Maximo administrator to Maximo user (WILSON) who will *manually* start the Workflow process "created" in the Workflow Designer application.

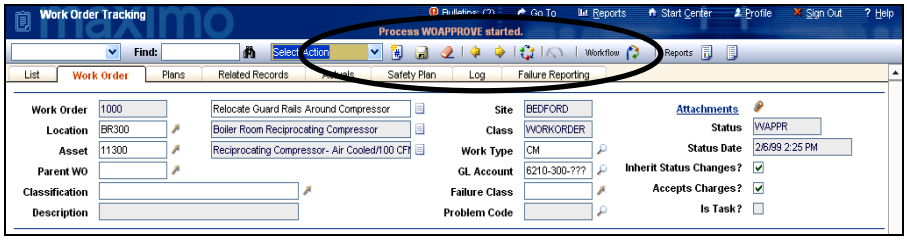
Step	Action
1	Go to the **Work Order Tracking** application. Result: The Work Order Tracking application opens on the List tab.
2	Search for and retrieve work order number **1000**. Result: The Work Order record opens. 

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Starting the Workflow Process continued

Step 2: Starting the Workflow Process continued

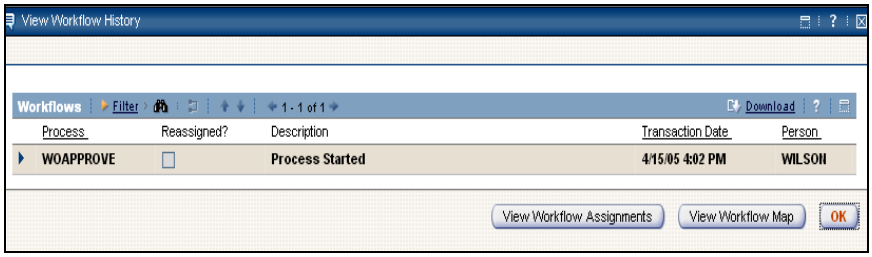
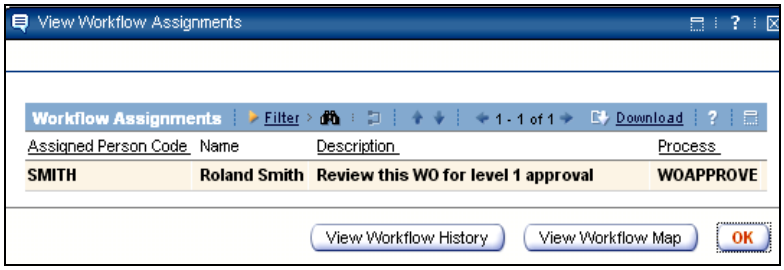
Step	Action
3	Click the **Route Workflow** icon.  Result: The Workflow process is started.  Note: The Route Workflow icon has changed to the button shown below. The new button indicates that the record is now in a Workflow process. 

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Starting the Workflow Process continued

Step 2: Starting the Workflow Process continued

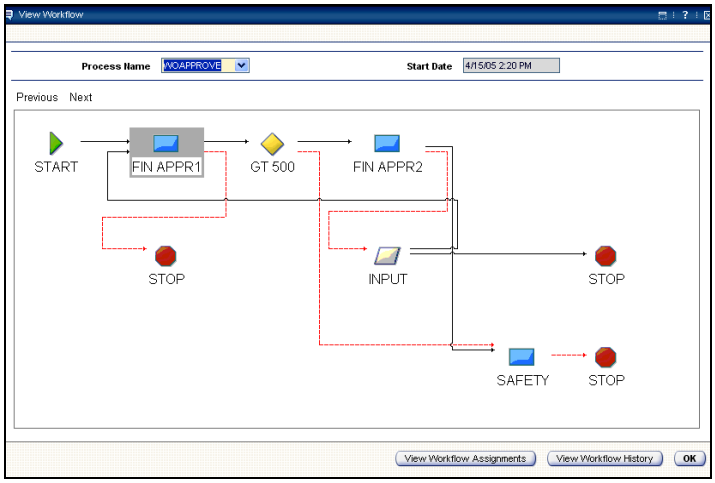
Step	Action
4	From the **Select Action** menu, **Workflow** action, choose **View Workflow History**. Result: The View Workflow History dialog box opens.  Note: Due to caching in your browser, you might need to sign out, then sign back in to access the Workflow choice in Select Action. Any new users who access Work Order Tracking will have this access.
5	From the **View Workflow History** dialog box, click the **View Workflow Assignments** button. Result: The View Workflow Assignments dialog box opens.  Notice that the first Workflow assignment is assigned to Roland Smith.

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Starting the Workflow Process continued

Step 2: Starting the Workflow Process continued

Step	Action
6	From the **View Workflow Assignments** dialog box, click the **View Workflow Map** button. Result: The View Workflow Assignments dialog box opens.  To whom is the current task assigned? _____
7	Click **OK** to close the dialog box.
8	We will next sign in as the assignee of the next task, so sign out of Maximo now. Note: Our next exercise will begin at this point.

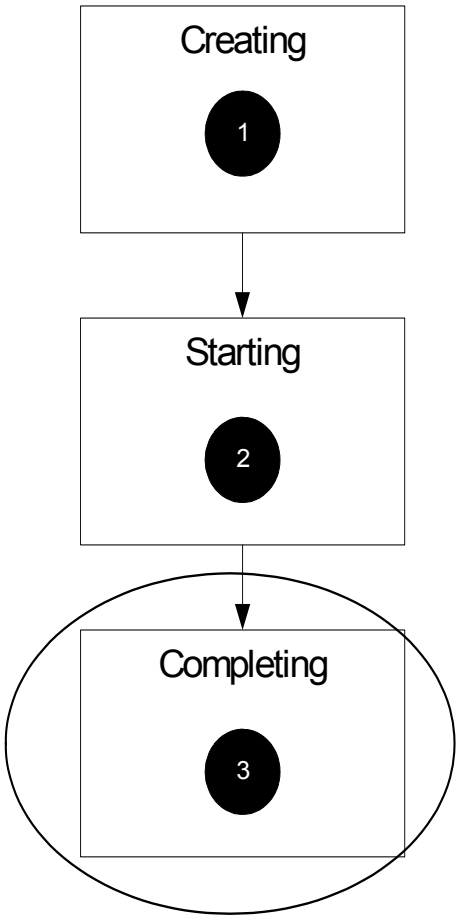
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Completing the Workflow Process

Introduction

In this section you will learn how to navigate the **Workflow Inbox/ Assignments** tab in the Maximo Start Center to complete a Workflow process.

We Are Here



In the third stage, you use the **Workflow Inbox/Assignments tab** in your Start Center to perform Workflow assignments.

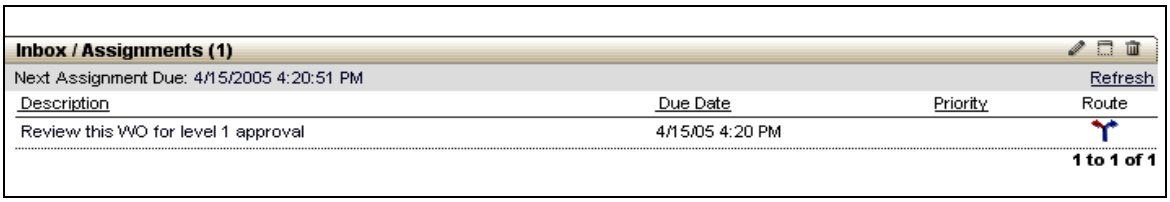
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Completing the Workflow Process continued

Workflow Inbox/ Assignments Tab

In the Maximo Start Center, you use the **Workflow Inbox/Assignments** tab to review, route, and complete task assignments.



Workflow Inbox/ Assignments Fields

Workflow Inbox/Assignments includes several fields:

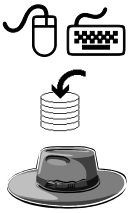
Field	Description
Description	Click the Description field to view the Maximo application where Workflow is applied.
Due Date	The calculated time value needed to complete the workflow assignment
Priority	The Workflow priority level.
Route	Clicking the Route icon routes the Workflow process to the next assignment level.

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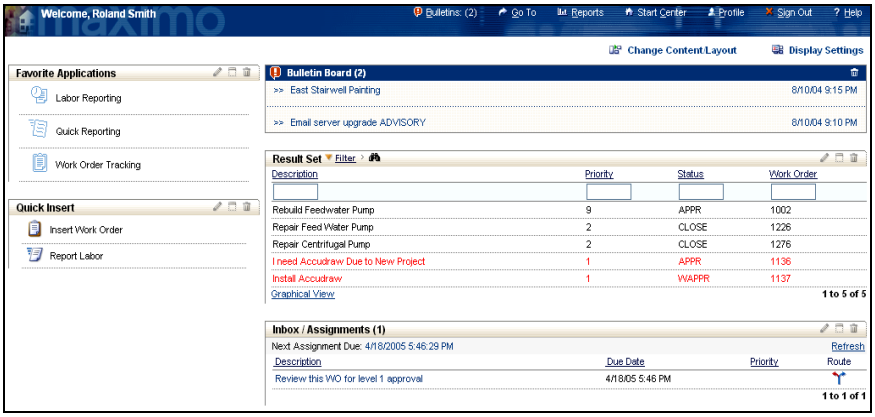
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Completing the Workflow Process continued

Step 3: Completing the Workflow Process



Now you will log in as Roland Smith, who approves the financial condition. From the **Workflow Inbox/ Assignments** tab, we will route the Workflow assignment to complete the workflow process.

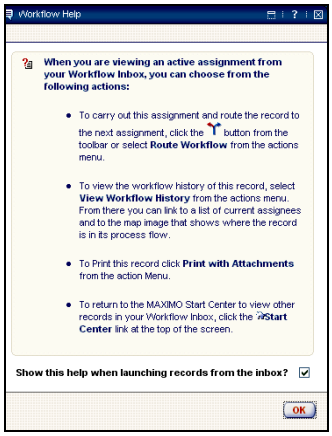
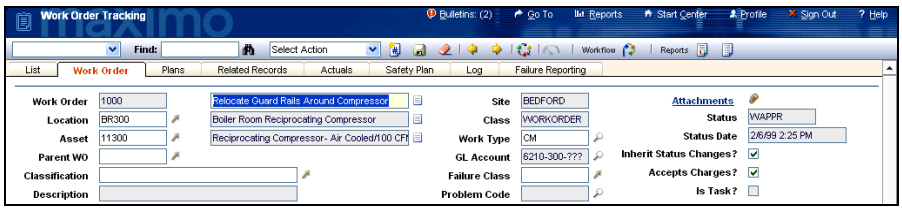
Step	Action
1	Sign in to Maximo again as: **User** smith **Password** smith1 Result: Maximo opens in Roland Smith's default Start Center. 

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Completing the Workflow Process continued

Step 3: Completing the Workflow Process continued

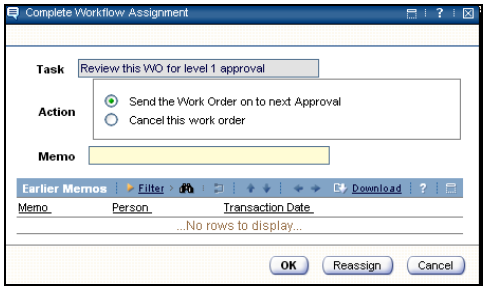
Step	Action
2	From the **Inbox/Assignments** tab of the Maximo Start Center, click on **Review this WO for level 1 approval** (below the Description field). Result: Work Order 1000 is retrieved and Workflow help is opened. 
3	Click **OK**. Result: The screen is back to work order 1000. 

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Completing the Workflow Process continued

Step 3: Completing the Workflow Process continued

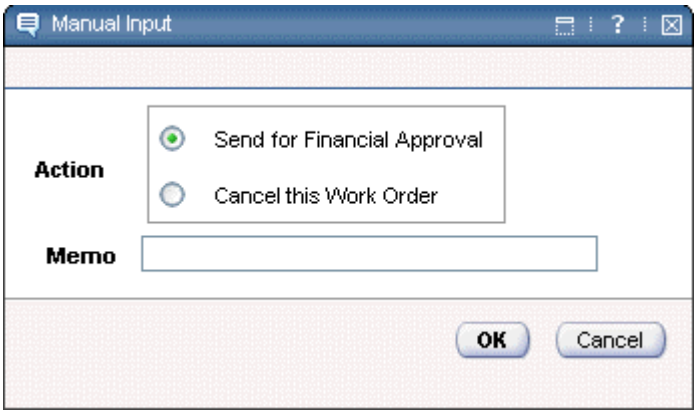
Step	Action
4	Click the **Route Workflow** icon.  Note: The icon above is displayed, indicating that the Workflow process has started. Result: The Complete Workflow Assignment dialog box opens.  Note: With the Complete Workflow Assignment dialog box, you can either Send the Work Order to the next Approval, Cancel, or Reassign the Work Order.
5	Choose **Send the Work Order to the Next Approval,** then click **OK**. Result: The Work Order is routed to the next assignment. Todd Winston is the assignee.
6	Sign out of Maximo, then sign in again as winston/winston.

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Completing the Workflow Process continued

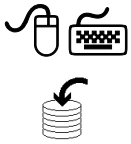
Step 3: Completing the Workflow Process continued

Step	Action
7	Find the assignment on the Inbox, then route it through the process. Note: After clicking the Route Workflow button, for Todd Winston's next assignment, choose **Determine Routing for Work Order,** then click **OK.** Result: You are taken to a Manual Input node in the process. 
8	Todd Winston determines that the work order should be canceled. Choose **Cancel this Work Order,** then click **OK**. Result: The process is completed. Note: In practice, you would probably send a notification to the person who created the work order. You might even send the record to another subprocess to be reassessed. However, we will end our example here.

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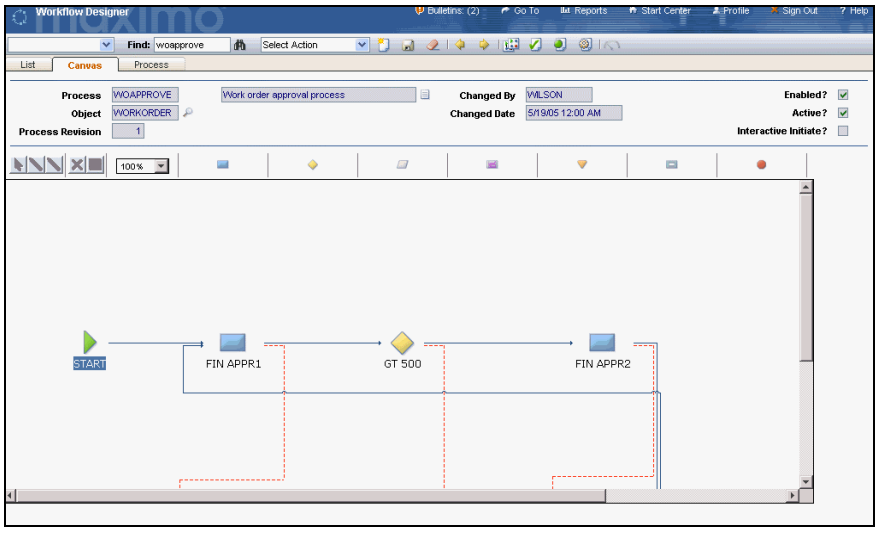
Deactivating the Workflow Process

Exercise 2: Deactivating the Workflow Process



As long as there are no active records in a process, you can choose to deactivate the Workflow using the **Workflow Designer** application.

The steps below show you how.

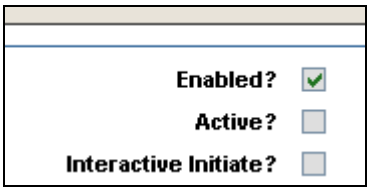
Step	Action
1	Sign in to Maximo as **Wilson**. Result: The Maximo Start Center opens at Wilson's default Start Center.
2	Access the **Workflow Designer** application from the **Workflow Configuration** tab. Result: The Workflow Designer application opens on the List tab.
3	Search for and retrieve the **WOAPPROVE** process. Result: The Workflow process record is retrieved. 

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Deactivating the Workflow Process continued

Exercise 2: Deactivating the Workflow Process continued

Step	Action
4	From the **Select Action** menu, choose **Deactivate Process.** Result: The Workflow process is deactivated.  Note that the Active? check box is now cleared.

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Chapter Summary

Workflow Introduction

A Workflow is a process that can be thought of as a map that guides a record, or a user's interaction with the processed record, through a set of steps.

The Workflow applications in Maximo enable your organization to design, track, and manage these steps as they are strategically communicated throughout the organization.

What Is Workflow?

Workflow is comprised of a number of related components that are integrated into Maximo. These components are used to:

- design and administer processes, and
- create the elements used to develop the workflow process.

Workflow Capabilities

The Workflow components provide a variety of features that you can include in your Workflow design to streamline your approval processes.

These features include:

- Manual initiation of a Workflow process on a specific work order, purchase requisition, or purchase order
- Automatic initiation of a Workflow process (e.g., when the system generates purchase requisitions or purchase orders from inventory re-order)
- Workflow records can be assigned for action to a person, a person group, a person's delegate (alternate) or a role via e-mail notification or Workflow Inbox/Assignments.
- User-defined escalation periods and procedures
- Reassigning tasks using an application wizard

Workflow Inbox/ Assignments Tab

The **Workflow Inbox/Assignments** tab is a Maximo Start Center feature that allows you to view your current assignments quickly and efficiently in a modifiable list format.

This list saves time by presenting you with the relevant information of your choice in an easy-to-read form. This reduces the need to sort through multiple records as you search for your assignments and develop priorities.

Workflow also makes your business practices repeatable.

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Chapter Summary continued

Accessing Workflow Applications

The Maximo administrator can give users privileges to access Workflow applications from:

- **Configuration** module, **Workflow** submodule; or
- the **Start Center**, **Workflow Configuration** tab.

Overview of Workflow Configuration Applications

Automating the approval process requires several Maximo applications to be "tailored" in order to create, start, and complete the workflow process.

These applications include:

- The **Workflow Designer** application to create a series of paths for records to flow through, called a *process*. The graphical interface of the Workflow Designer illustrates the possible paths the record can follow through the use of simple components called *nodes and actions,* enabling you to route critical business processes to simple or complex paths as your business process demands.
- The **Workflow Administration** application to view, modify, and stop workflow assignments.
- The **Roles** application to create and manage a custom user, a set of data related to a record or login user, a person or person groups, or an e-mail address, and to create hyperlinks between a process design and the supporting roles.
- The **Actions** application to manage the administrative functions of creating actions and action groups within Workflow, Escalation, and Service Level Agreements (SLA) processes. *Actions* are scheduled events that occur when a record leaves a Workflow node. An action can cause a Maximo status change, execute a defined program, set a field value, or execute a custom class action for individual actions or action groups.

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Chapter Summary continued

Overview of Workflow Configuration Applications

continued

- The **Communication Templates** application to create and manage generic communication templates that Maximo users can leverage to standardize frequently used e-mail communications (also known as *notifications*). You can also use communication templates to create e-mail notifications for use with the automated workflow and escalation processes.
- The **Escalations** application to automatically monitor critical processes across your enterprise. The primary goal of escalation management is to ensure that critical tasks are completed on time, such as those defined in service level agreements. When you assign specific steps in a workflow process to employees, those assignments display in their Inbox. If the assignments are not completed promptly, they time out in the recipients' Inboxes. When this happens, you can use escalations to assign the tasks to other people. This helps get tasks completed on time and helps to prevent work backlogs.

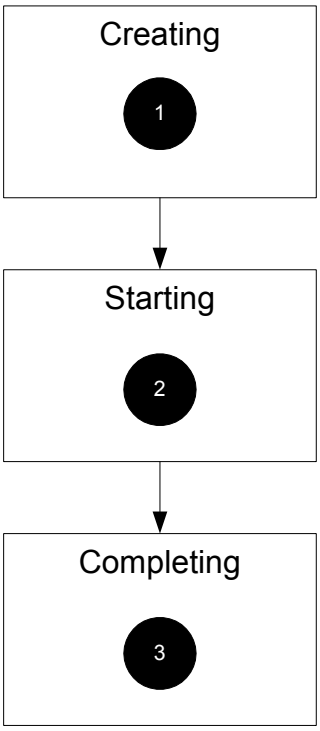
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Chapter Summary continued

Workflow Stages

A high-level overview of Workflow stages was explored in this chapter. The following chart illustrates and describes these stages:



In the first stage, you use the **Workflow Designer** application to accomplish three steps after *creating or revising* a Workflow process:

Step 1: Validate the process.

Step 2: Enable the process.

Step 3: Activate the process.

In the second stage, a Workflow process record can be started:

- **Manually**, by clicking on the **Start/Continue Route** icon in a Workflow-enabled Maximo application, such as Work Requests.
- **Automatically**, using the **Set Process to Auto-Initiate** action in the **Workflow Designer** application, where records of certain types automatically enter a Workflow process when the record is saved or submitted.

In the third stage, you use the **Workflow Inbox/Assignments** tab in your Start Center to perform Workflow assignments.

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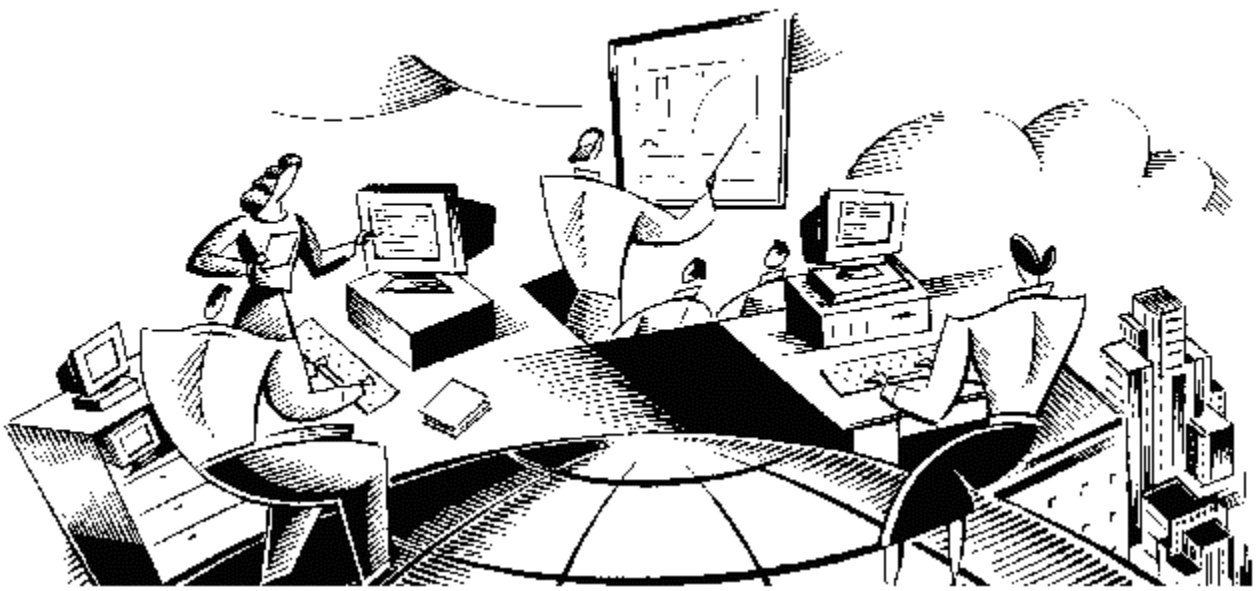
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MXES Immersion Training for EAM

Chapter 16: Asset Management



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In This Chapter

This chapter contains the following topics:

Topic	See Page
Chapter Overview	16-1
Purchasing an Asset	16-2
Managing and Processing Work	16-12
Chapter Summary	16-22

Chapter Overview

Introduction

This chapter will focus on generating work requests and requisitions and incorporating data from the additional applications that were set up in Unit 5: "Maximo Working for You" to support asset management activities.

Learning Objectives

When you have completed this chapter, you should be able to:

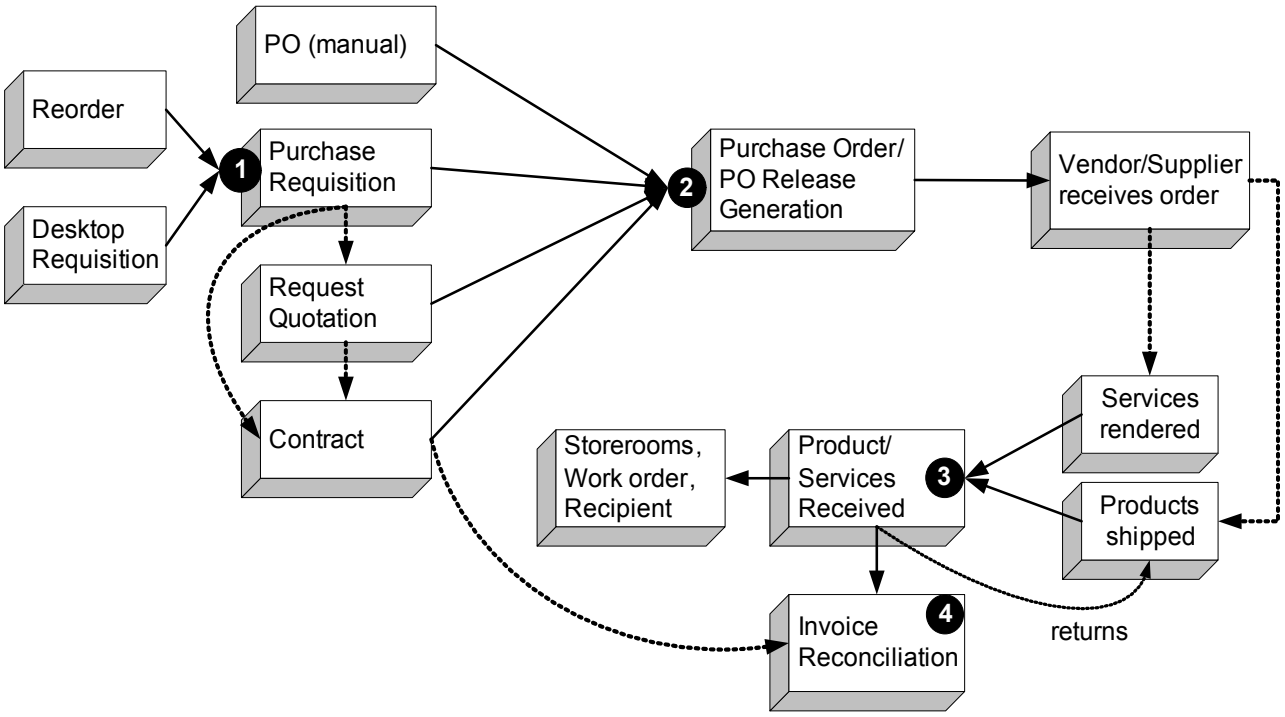
- create a purchase order for a rotating asset,
- process a rotating asset through the procurement lifecycle,
- set up an asset in the Assets application,
- move and view asset transactions,
- explain the difference between child work orders and tasks,
- use task functionalities in work management, and
- navigate the work order hierarchy.

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Purchasing an Asset

Introduction

In this section we will focus on purchasing a rotating asset and processing it through the procurement lifecycle.

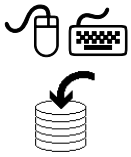


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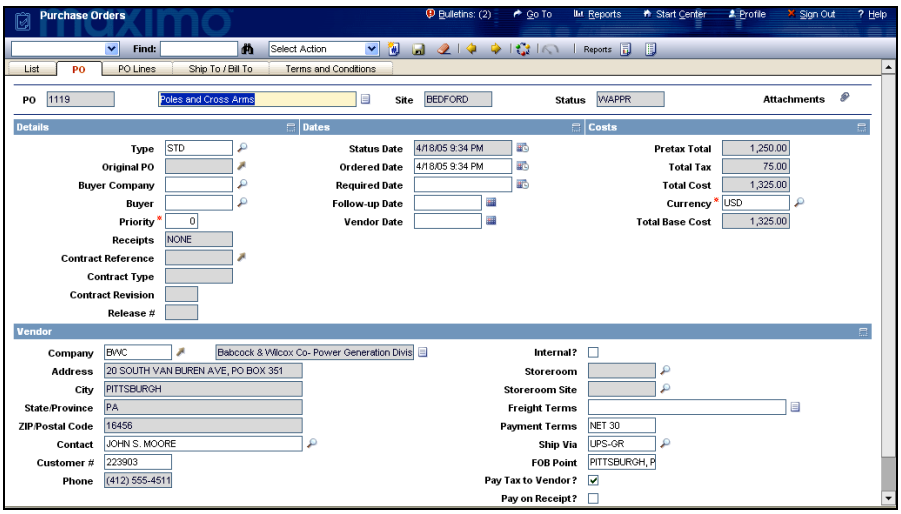
Purchasing an Asset continued

Utility Scenario Exercise: Creating a PO



In this exercise we will create and process a purchase order (PO) for utility poles and cross arms.

Creating a PO follows the same steps as creating a purchase requisition (PR).

Step	Action
1	Go to the **Purchase Order** application and create a new PO using the following information: **Field** — **Value** **(Description)** — Poles and Cross Arms **Company** — BWC Note that Vendor default information is retrieved. Write your PO number here: _____
2	**Save** the record. Result: Your screen should be similar to the one shown below. 

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Purchasing an Asset continued

Utility Scenario Exercise: Creating a PO continued

Step	Action
3	Enter the following information on the **PO Lines** tab. Hint: You can use the **Vendor Items** button to see the list of items available only from that vendor.  Place an order for the following items and charge to the Central Storeroom. Hint: Expand the Line details using the view details icon  . **Field** / **Value** **Item** CARM **Quantity** 5 **Order Unit** Each **Conversion Factor** 1 **Unit Cost** 250 **Storeroom** CENTRAL **Inspection Required?** [*checked*] **Field** / **Value** **Item** PT455 **Quantity** 5 **Order Unit** Each **Conversion Factor** 1 **Unit Cost** 500 **Storeroom** CENTRAL **Inspection Required?** [*checked*]

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Purchasing an Asset continued

Utility Scenario Exercise: Creating a PO continued

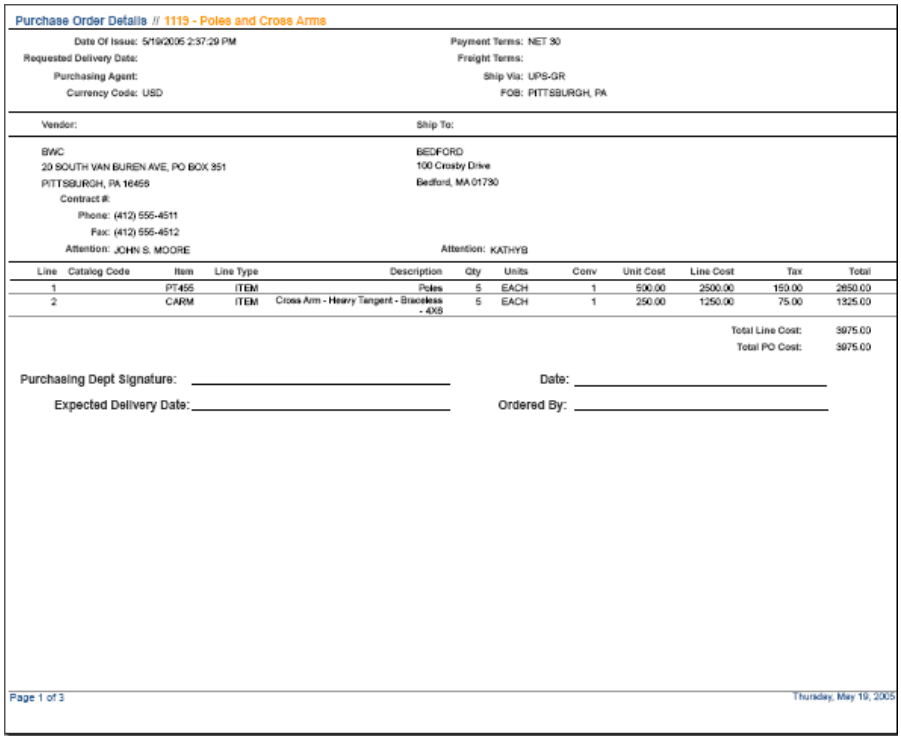
Step	Action
4	On the **Ship To/Bill To** tab, enter the following information, then **Save**. **Field** — **Value** **Ship To** — [*Keep default data*] **Ship to Attention** — Smith **Bill To** — [*Keep default data*] **Bill to Attention** — Liberi

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Purchasing an Asset continued

Utility Scenario Exercise: Creating a PO continued

Step	Action
5	**Approve** the PO and run (don't print) the **Purchase Order Details** report. Result: Your PO details report should look like the one below. Your PO number may be different. 
6	Click **Close Report** to close the report window. Note: At this point, the PO would be submitted to the vendor. Exit from the report.

Purchase Order Details // 1113 - Poles and Cross Arms

Date Of Issue: 5/19/2005 2:37:29 PM
Requested Delivery Date:
Purchasing Agent:
Currency Code: USD
Payment Terms: NET 30
Freight Terms:
Ship Via: UPS-GR
FOB: PITTSBURGH, PA

Vendor:
BWC
20 SOUTH VAN BUREN AVE, PO BOX 351
PITTSBURGH, PA 16456
Contract #:
Phone: (412) 555-4511
Fax: (412) 555-4512
Attention: JOHN S. MOORE

Ship To:
BEDFORD
100 Crosby Drive
Bedford, MA 01730
Attention: KATHYB

Line	Catalog Code	Item	Line Type	Description	Qty	Units	Conv	Unit Cost	Line Cost	Tax	Total
1		PT455	ITEM	Poles	5	EACH	1	500.00	2500.00	150.00	2650.00
2		CARM	ITEM	Cross Arm - Heavy Tangent - Braceless - 4X8	5	EACH	1	250.00	1250.00	75.00	1325.00

Total Line Cost: 3975.00
Total PO Cost: 3975.00

Purchasing Dept Signature: _____ Date: _____
Expected Delivery Date: _____ Ordered By: _____

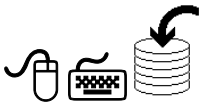
Page 1 of 3 Thursday, May 19, 2005

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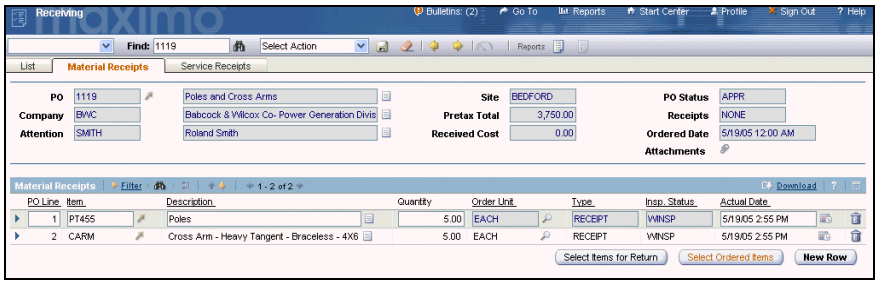
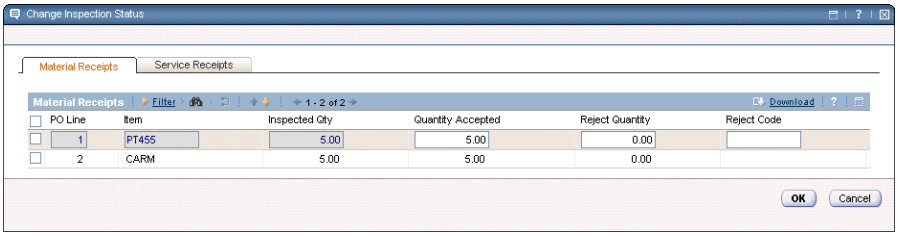
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Purchasing an Asset continued

Receiving Materials and Setting Up Rotating Asset Records



In this exercise you will indicate that you have received all the materials ordered on the PO and then set up the asset records.

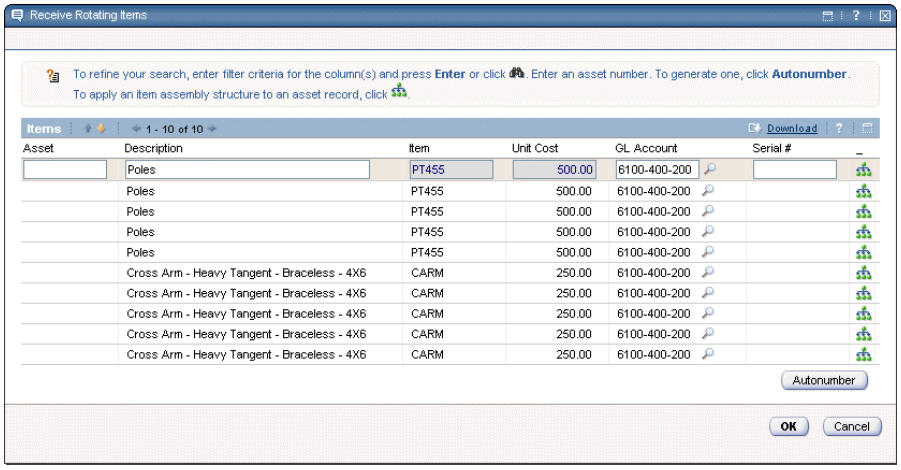
Step	Action
1	Go to the **Receiving** application and retrieve the purchase order created in the previous exercise.
2	Receive *all* the lines items for this PO. Hint: Use the Select Ordered Items button. Result: Your screen should be similar to the one shown below. 
3	**Save** the record.
4	From the **Select Action** menu, choose **Change Inspection Status**. Result: The Change Inspection Status dialog box displays the total quantity for each item listed in the Quantity Accepted column. 

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Purchasing an Asset continued

Receiving Materials and Setting Up Rotating Asset Records continued

Step	Action
5	We will be accepting all the items, so check both items, then click **OK**. Result: The Inspection Status of both lines changes from WINSP to WASSET.
6	We now need to assign an asset number for each of the new rotating items. From **Select Action** choose **Receive Rotating Items**. Result: The Receive Rotating Items dialog box opens. In Maximo, each rotating item goes into inventory with an item number and is also tracked in the Assets application through an asset number. 

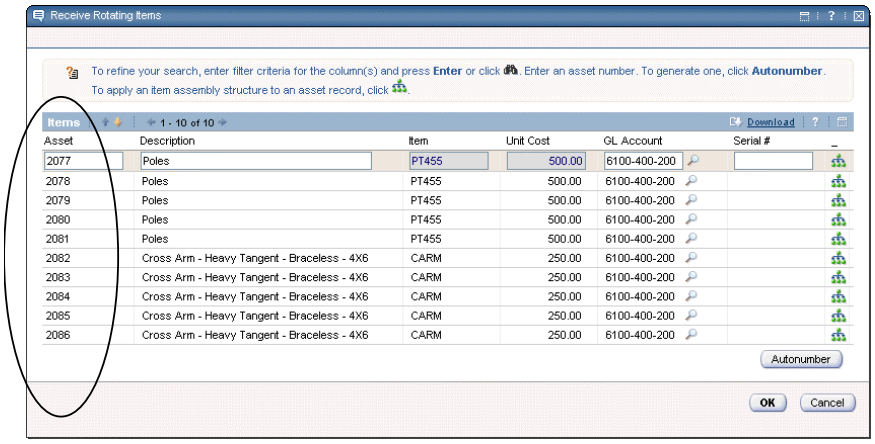
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Purchasing an Asset continued

Receiving Materials and Setting Up Rotating Asset Records

continued

Step	Action
7	To create an asset record in the **Assets** application, click **Autonumber**.  Result: An identifying asset number is generated for each of the listed assets. Their numbers are indicated in the Asset column.  Record the asset numbers: _____ _____ Note: Asset numbers that your system generates will vary from this example.

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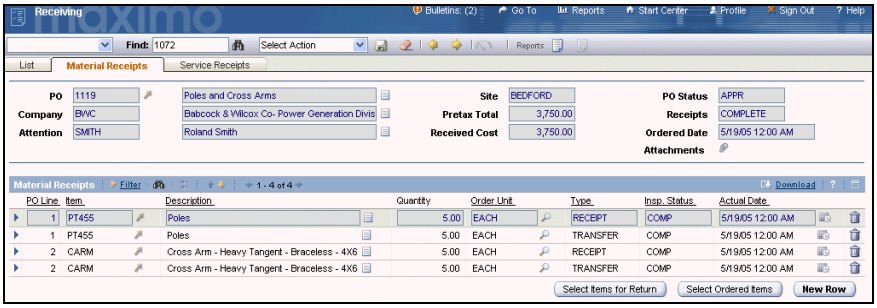
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Purchasing an Asset continued

Receiving Materials and Setting Up Rotating Asset Records

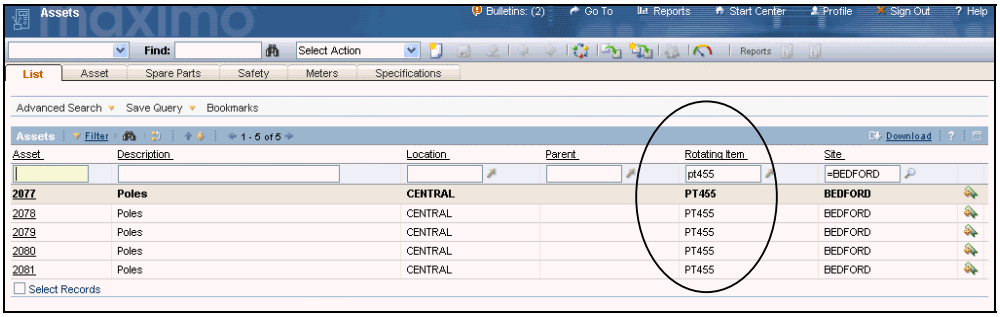
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Step	Action
8	Click **OK** to close the dialog box. Result: You are returned to the Material Receipts tab. The Inspection Status for each line is COMP. The status listed in the Receipts field is COMPLETE.



Verify Asset Creation

If you wanted to verify that the assets were created, you could go to the **Assets** application and do a search on the **Rotating Item** field for any of your items.

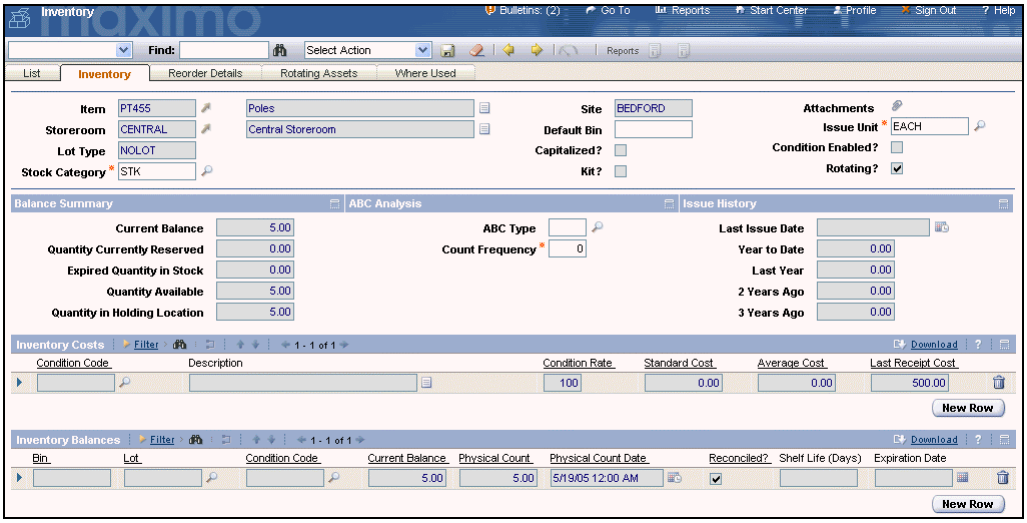


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Purchasing an Asset continued

Asset Storeroom Verification

If you wanted to verify that the rotating items are in the appropriate storeroom, you could go to the Inventory application and do a filter on the Item field for any of your items.



Note: You could also go to the Storerooms application and search for the items by storeroom.

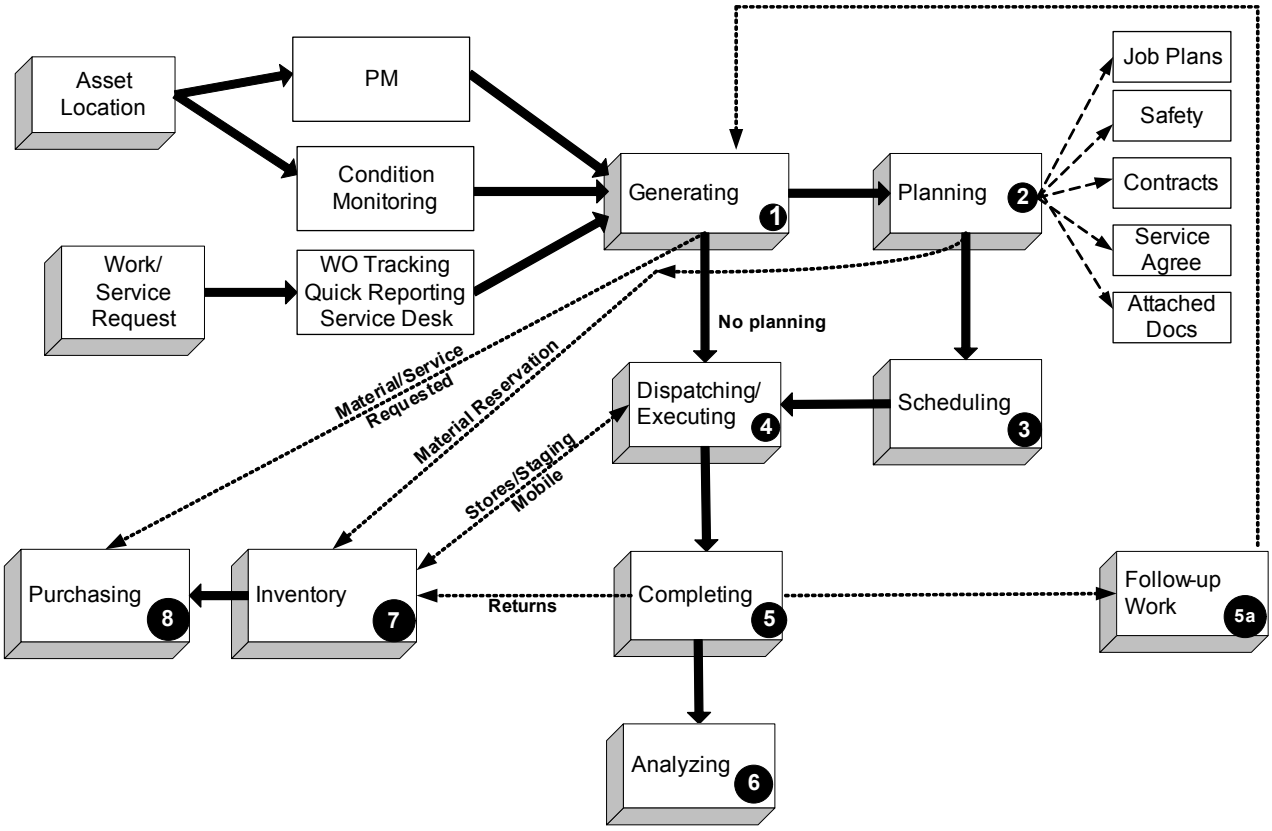
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Managing and Processing Work

Introduction

Maximo offers great flexibility with the managing and processing of work. In Unit 3, "Using What You've Got: Work Management," functionality related to work management was discussed.

In this section, additional functionality will be discussed as it relates to work processing and asset management.



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Managing and Processing Work continued

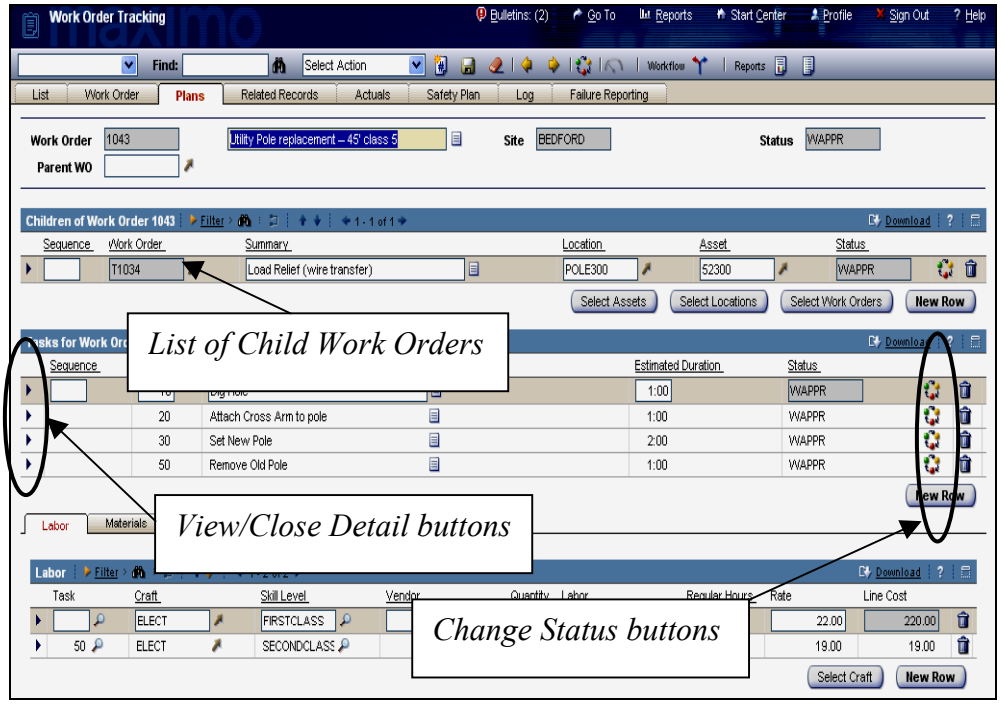
Section Focus

In this section we will process the corrective maintenance for the utility pole replacement.

Work Order Hierarchy

To build a hierarchy, first create the top-level work order, then create or associate child work orders, where each child order could have a work plan (tasks) detailing the steps. There are two methods to building work order hierarchies:

- Create a **Work Order Hierarchy** in the **PM** application.
- Use the **Work Order Hierarchy** window on the **Plans** tab of the **Work Order Tracking** application.



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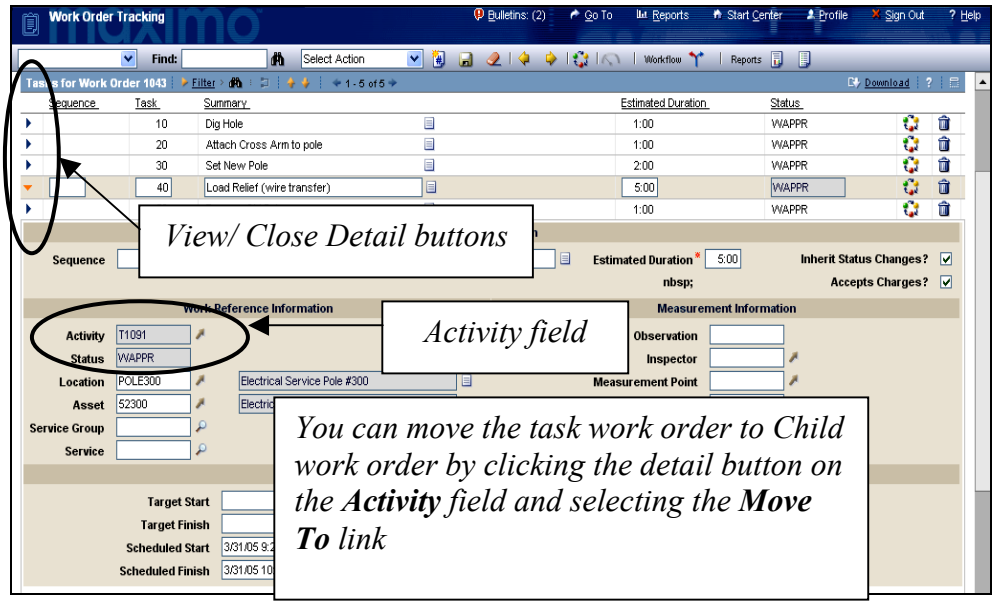
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Managing and Processing Work continued

Tasks

Tasks on a work order can act as a singular task managed as part of the (parent) work order or can be acted on and managed individually. Managing a task individually allows for the following:

- Each individual task has all the scheduling functionality of a regular work order.
- Each individual task has complete flexibility in terms of assignments, supervisors, crews, and so forth.
- Each individual task can be given a status: automatically by the work order it belongs to (this is the default), or manually if each task requires its own status.
- Each task can be converted into a child work order with tasks of its own.
- If an individual task is complex, you can manage it with all of the same tools as a regular work order.
- You can charge individual tasks separately to assets, locations, and/or general ledger (GL) accounts.



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Managing and Processing Work continued

Child Work Orders vs Task Work Orders

While task work orders are at the lowest level of the work hierarchy and can be managed individually, their costs are part of the entire work order and are not broken down at the task level.

Like tasks, child work orders can be managed independently. The costs incurred by child work orders can be broken down and reported independently or rolled up into the hierarchy.

Maximo allows you to view the costs for the entire hierarchy or from any point in the hierarchy.

Processing the Work Order: Planning



1. Go to the **Work Order Tracking** application and retrieve the **Utility Pole 300** emergency work order record.
2. **Duplicate** the work order. (Note: In Chapter 10 we completed the original, so we can no longer make changes to it.)
3. Give this work order a **CM** work type.
4. Because these are work tasks that are performed on a regular basis, we had created a job plan (Pole Replacement) for this type of work. In the **Job Plan** field, enter POLEREP.
5. In the **Safety Plan** field, click on the detail menu and search for **ELECPOLE** (Safety Plan for work on Electrical Service Pole).
6. **Save** the work order.

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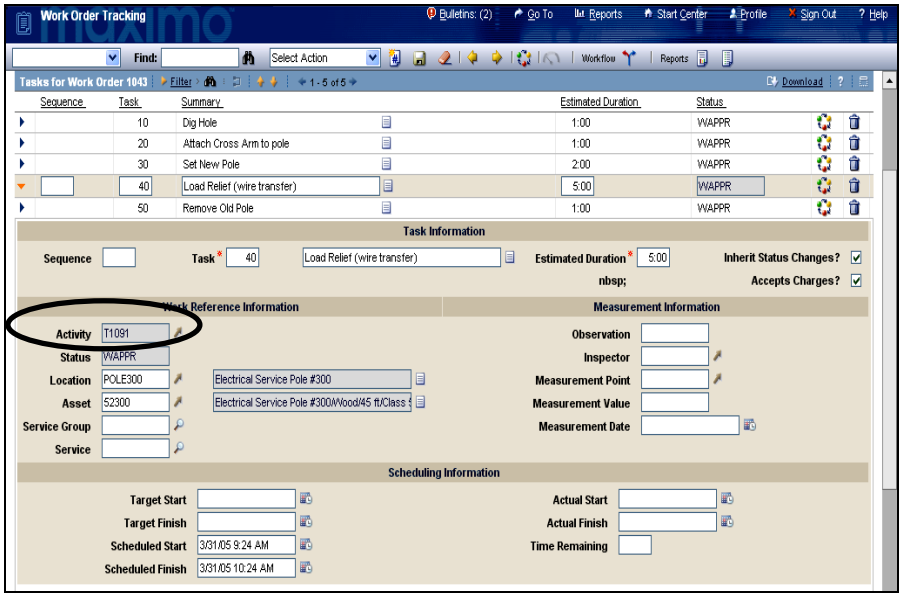
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Managing and Processing Work continued

Processing the Work Order: Creating a Child Work Order

The planner wants to separate out the costs and has decided to create a child work order for the load transfer.

Note: This exercise demonstrates Maximo functionality and is not representative of all the tasks and costs associated with pole replacement.

Step	Action
1	Click on the **Plans** tab.
2	In the **Tasks for Work Order** section, click on the **View Details** button for **Task ID 40 Load Relief**. Result: The task 40 row opens. Note the Activity field in the Work Reference Information section. 

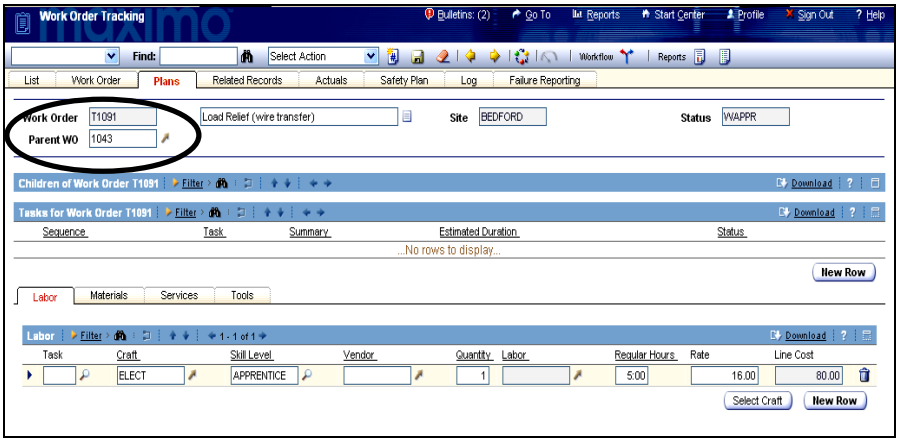
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Managing and Processing Work continued

Processing the Work Order: Creating a Child Work Order

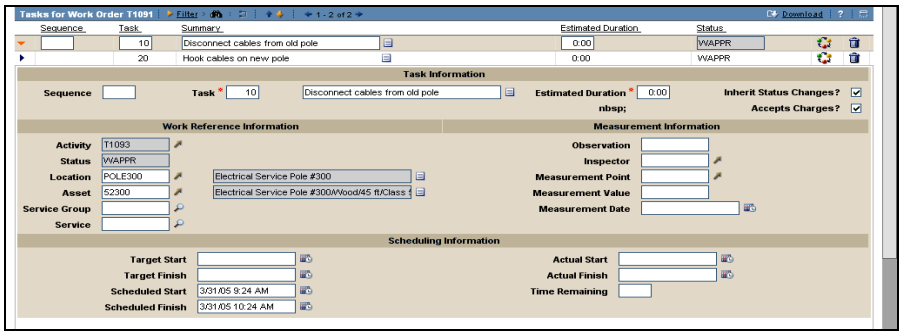
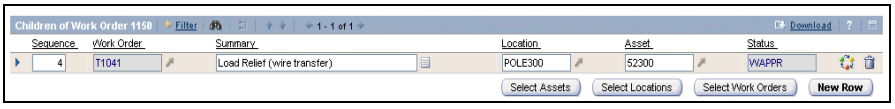
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Step	Action
3	Click on the **Activity** field detail menu button and select **Move to [Activity]**. Result: The Activity (task) is moved to Work Order Tracking and the Planned labor for this task has carried over. 
4	In the **Task for Work Order** window, add two tasks by clicking the **New Row** button: • Task 10, enter: Disconnect cables from old pole. • Task 20, enter: Hook cables on new pole.

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Managing and Processing Work continued

Processing the Work Order: Creating a Child Work Order continued

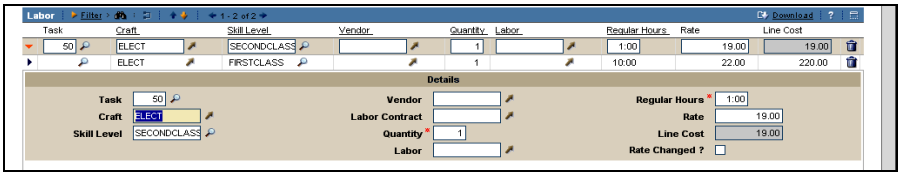
Step	Action
5	**Save** the record. Result: Your screen should look similar to the one below. 
6	In the **Parent WO** field, click on the **detail** button and move to the parent WO. Result: The Parent (Originating) Work Order is displayed and task 40 is now a child work order to this work order. Hint: Use the Show Table icon  to view the Child Work Order. Result: Child Work Order (formerly Task 40) appears in the list of child work orders.  Note: Task 40 no longer belongs to Task for Parent Work Order.

continued on next page

Managing and Processing Work continued

Processing the Work Order: Creating a Child Work Order

continued

Step	Action
7	On the **Labor** subtab, for **Task 50**, add a non-contract **ELECT Second Class** for **one hour**. 
8	**Approve** this work order. Result: The status of the children work orders and tasks is changed to Approve. This is because on the Work Order tab, we accepted the default value on **Inherit Status Changes?** check box. 

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Managing and Processing Work continued

Processing the Work Order: Scheduling



At this stage we can schedule the entire work order, including all the tasks, individual tasks, or a combination.

Click on the **Work Order** tab and schedule the work to start tomorrow and enter a scheduled finish date one day later.

Go back to the **Plans** tab and click on the **task 50** row. Schedule work for this task to start and finish on the scheduled finish date used above. **Save** the record.

Processing the Work Order: Assigning



Using the **Assignment Manager** application, search for and retrieve the work order record that corresponds to the craft. Select tomorrow's date for Work Date, then assign the following labor to the craft.

Hint: Filter the WO Group field in the Work List section and use the Filter Labor to Match Work button in the Labor List section, then use the Assign Labor Icon.

Labor	Craft	Skill Level
Hunter	ELECT	FIRST CLASS
Smith	ELECT	SECOND CLASS
Gormley	ELECT	APPRENTICE

Save the record.

The assignments for this work order are made. If you wanted to assign the child work order (Load Relief), search for and retrieve the work order record and assign the corresponding labor.

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Managing and Processing Work continued

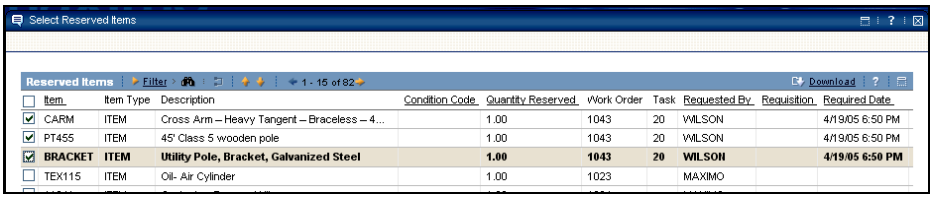
Processing the Work Order: Executing



1. Go to the **Inventory** module, **Issue and Transfers** application, and search for the Utility Pole replacement work order that is associated to the **Central** storeroom.
2. Select all the materials.

   Hint: Use the Select Reserved Items button and check the items belonging to the work order number we are using.

   Result: The Item Rows open up.



3. **Save** the record to process the issue transaction.
4. Go back to the work order and change the status to **In Progress**.
5. At this point we are going to assume that the pole has been installed, the load relief is completed, and the old pole has been removed and sent back to the utility company where it sits in shipping and is waiting to be picked up and disposed of. We need to electronically record the location move. Move this pole to the **Shipping** location.

Where could we view the Move/ Modify Asset transaction history for both the old and the new pole?

Processing the Work Order: Completing



The last step is to complete and then close the work order.

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Chapter Summary

Moving/ Modifying Assets

You can use the Asset or Work Tracking application to move assets from one location to another.

Tasks

Managing a task individually allows for the following:

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- Each individual task has complete flexibility in terms of assignments, supervisors, crews, and so forth.
- Each individual task can be statused automatically by the work order it belongs to (this is the default), or manually if each task requires its own status.
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Maximo allows you to view the costs for the entire hierarchy or from any point in the hierarchy.

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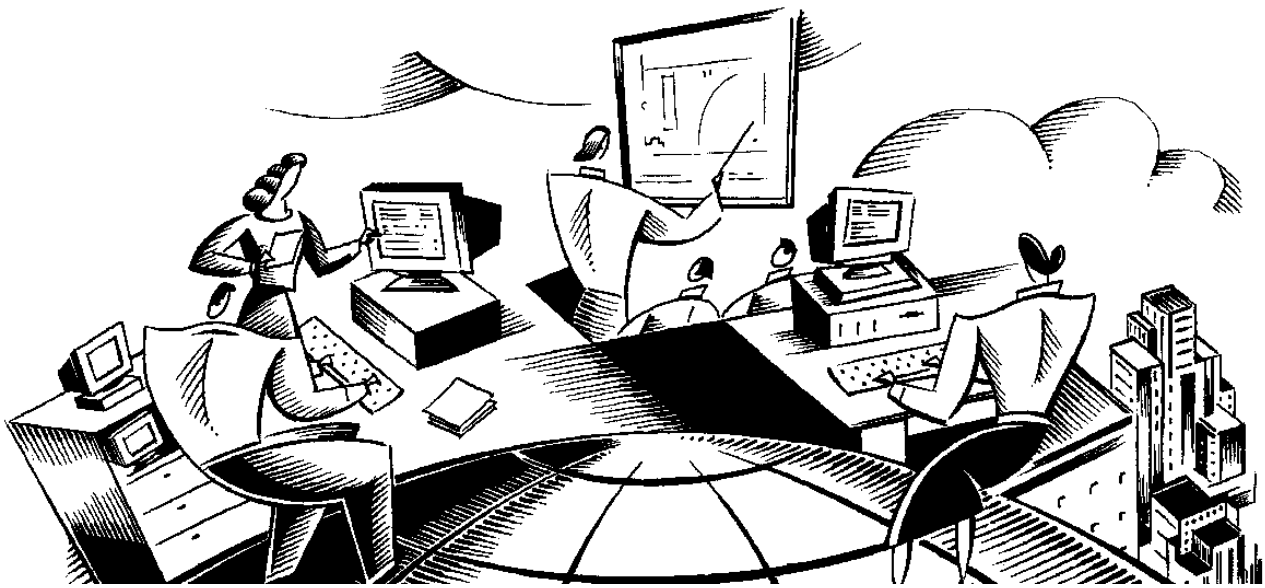
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MXES Immersion Training for EAM

Chapter 17: Putting It All Together



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In This Chapter This chapter contains the following topics:

Topic	See Page
Chapter Overview	17-1
Group Exercise: Putting It All Together	17-2

Chapter Overview

Introduction

In this chapter you will perform a group exercise in which you will use what you have learned in this course.

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Group Exercise: Putting It All Together

Revisiting: Group Exercise

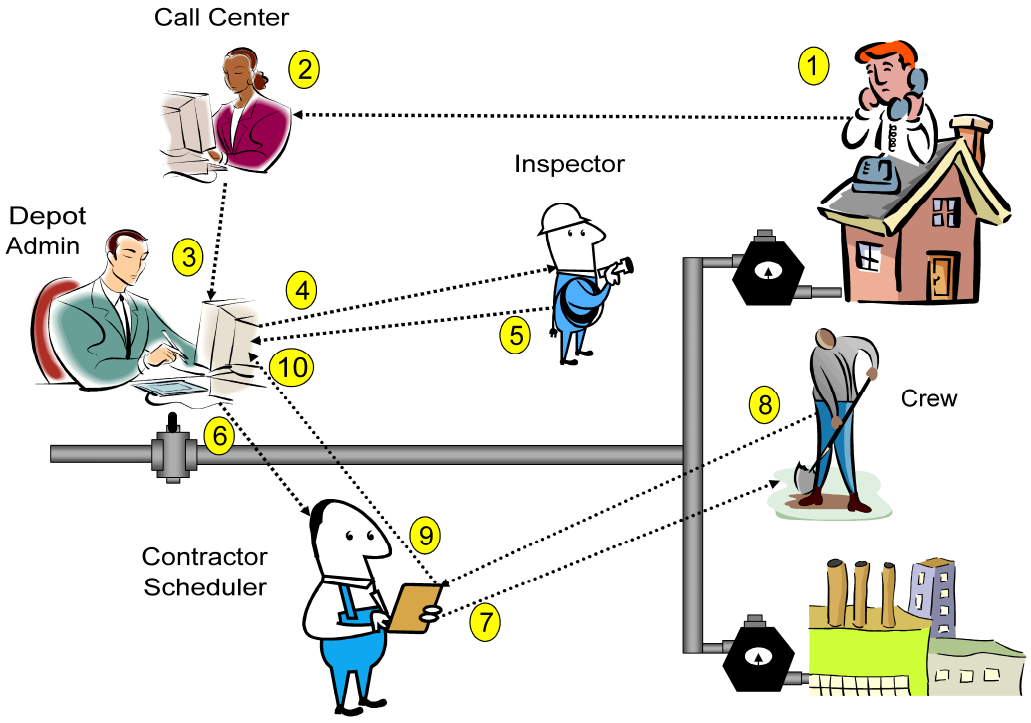


Throughout this course implementation questions were asked, KPIs were given, and exercises demonstrating Maximo use were conducted.

Reexamine the business scenario below by breaking into groups and spending approximately 20 minutes identifying areas that could be streamlined and where Maximo could be implemented to help make this company's work process more efficient.

- What kinds of questions would you ask this organization regarding their business process flow?
- What applications could be implanted?
- What decisions would the organization have to consider?
- What data would they have to have in order to "set up" Maximo?
- What suggestions and recommendations would you offer to this organization? Remap the processes if necessary.

Share your recommendations with the class. Remember—there is no right or wrong answer.



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Group Exercise: Putting It All Together continued

Key discoveries regarding this water company's business process include the following:

1. The customer typically recognizes a water problem (for example, no water pressure).
2. The customer contacts the call center and describes the problem. The call center acknowledges that it has had several complaints today regarding the same issue. The customer is assured that the complaint will be given to the right resources to handle the problem.
3. The responsible depot receives an incident report faxed from the call center.
4. Depot administration raises a work order in its legacy system requesting that an inspector go to the site to verify the problem.
5. The inspector returns to the depot the following morning, gathers up all new work orders, and goes to the field. Sometime during the day, or the next day, or the next day…the inspector determines that in fact there is a problem. In the meantime, the customer has contacted the call center repeatedly for a status. The call center indicates that it will have to contact the depot and get back with them.
6. The inspector returns to the depot and provides the completed work order to depot administration. Depot administration then raises another work order for the preferred contractor to complete the repairs to a potential leak outside of the residence.
7. The contractor receives the work order the following day and proceeds to prioritize and schedule work. His lead man is free and he decides to give this problem to him, as the customer's complaints about lack of response have finally made it to the depot.
8. The lead man gathers up his partner and they head to the job site. The leak is detected and repaired after a long delay created by a trip to two storerooms to find the part.
9. The completed work order is given to the contract scheduler, after a quick check to make sure everything is complete. Then a copy is created, with the original going back to depot administration.
10. Depot administration receives the completed work order the following day and enters the labor and materials into the system (to be used later for invoice matching). The work order is closed. No other information is entered into the system. The call center is not notified of the completed work.

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MXES Immersion Training for EAM

Appendix A: Tools



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In This Chapter

This chapter contains the following topics:

Topic	See Page
Overview	A-1
Creating Tool Records	A-2
Adding Tools to Storerooms	A-9
Managing Stocked Tools	A-11

Overview

Introduction

Tool records, like material item records, are created, added to inventory, and managed accordingly in order to account for availability, performance, cost tracking, and retirement.

Learning Objectives

After completing this chapter, you should be able to:

- describe the tool concepts used in Maximo,
- define the procedures used in creating a tool record, and
- manage tool records in inventory.

Definitions

Tools are typically non-consumable items for which you usually charge an hourly rate for their use. Some examples of tools include air compressors, nail guns, calibration equipment, and heavy equipment such as cranes and excavators. You can add these tools to storerooms, and use them on job plans and work orders. When you use a tool on a work order, Maximo can reserve the tool in the specified storeroom. You also can issue, receive, and transfer tools from storerooms.

Stocked tools are tools that are stored and managed in inventory.

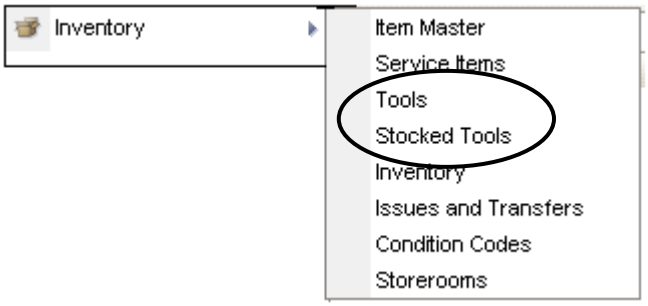
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Creating Tool Records

Introduction

The **Inventory** module consists of applications that allow you to manage and track items and tools. Tool records can be managed with these applications:

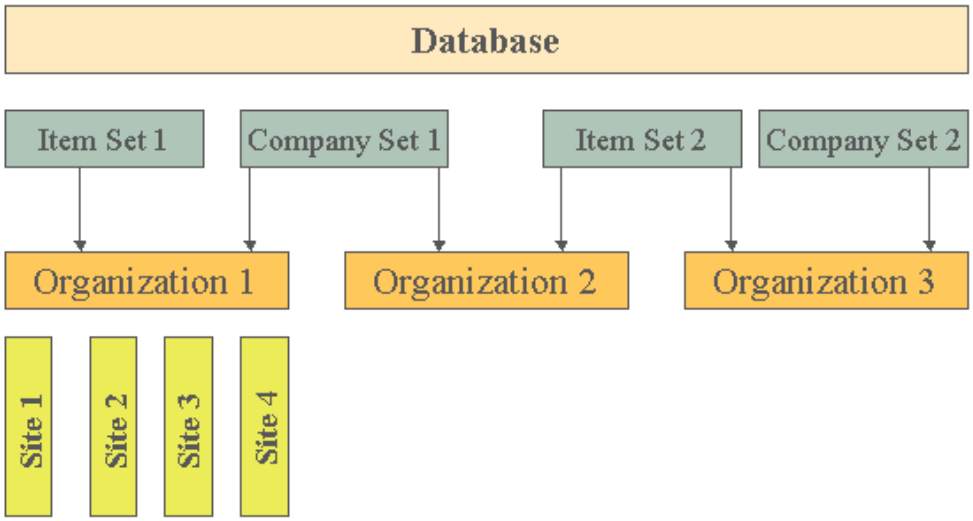
- Tools application
- Stocked Tools application



Sets Application Revisited

If two or more organizations share a set of items or companies, they can use the same data in their internal transactions and can share this same data (including tools) among all the organizations that use the same item set.

The following diagram shows the interrelationships between the database, sets, organizations, and sites.



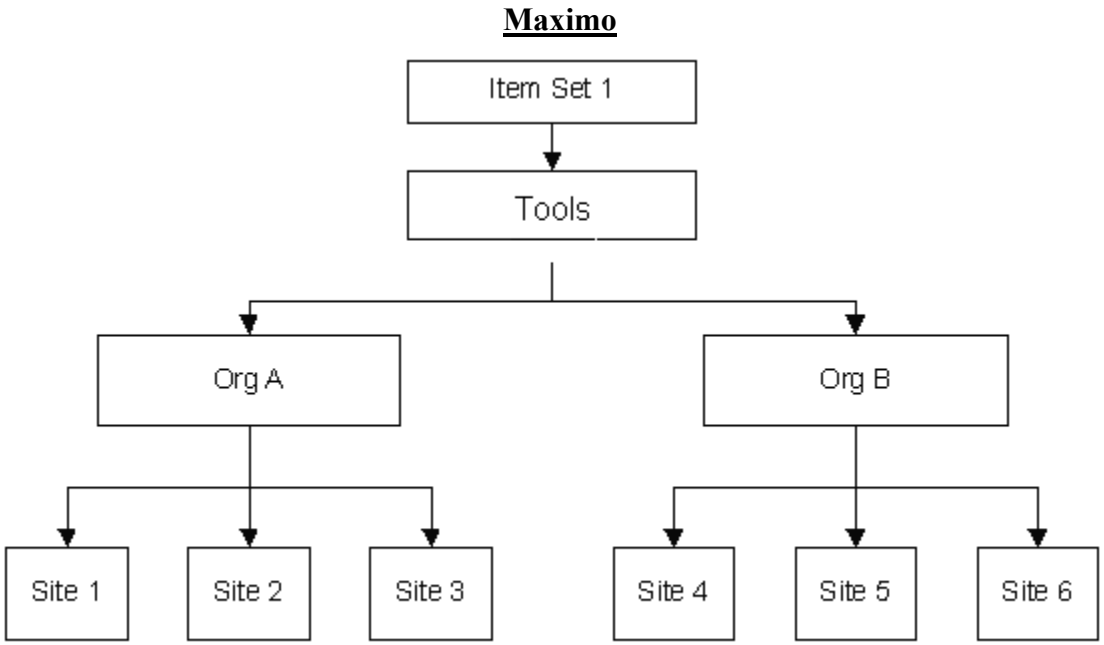
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Creating Tool Records continued

Item Sets and Tools

The following graphic shows how tools work in an item set. Organizations that use the same item set also use the same tools. Therefore, they can share tool items across organizations and sites.



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Creating Tool Records continued

Tools Application

You use the Tools application to:

- create a tool record;
- add the tool to one or more storerooms;
- specify the tool rate, GL accounts, associated vendor, and tax codes that vary by organization;
- add a list of vendors that carry the tool;
- list the specifications for the tool;
- duplicate or delete the tool; and
- attach documents outside of Maximo that relate to the tool.

Tools Application Tabs

The Tools application consists of five tabs:



Use This Tab…	To…
List	Search for tool records.
Tool	Create, modify, and delete tool records.
Storerooms	Get a view-only information list of storerooms where the tool is stored.
Vendors	Manage a list of vendors supplying the tool. You can use the historical vendor data to compare vendor prices and delivery information.
Specifications	Classify a tool and apply the specification template that is associated with the classification you used.

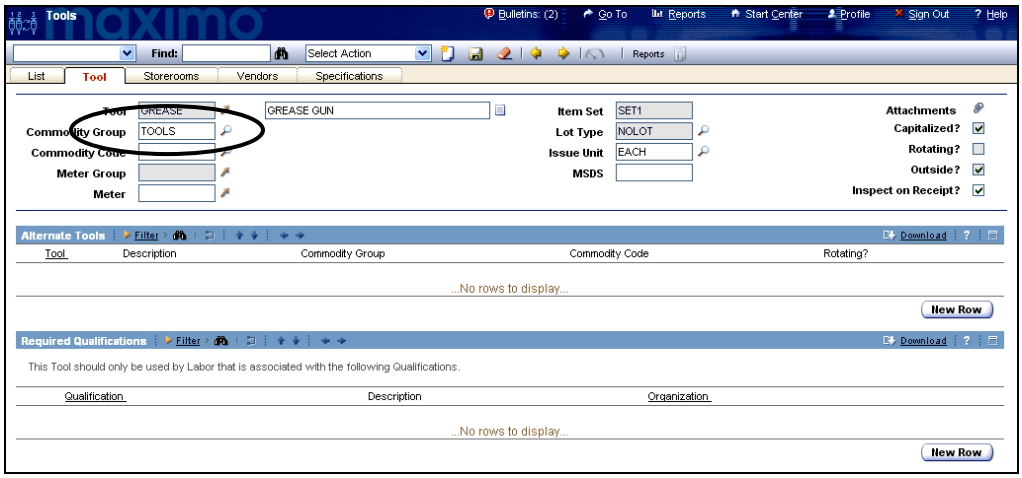
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Creating Tool Records continued

Entering Tool Records

Entering tool records in the Tools application is very similar to entering item records in the Item Master application. The main difference is that tool records belong to commodity group TOOLS.



Follow these steps to create a tool record:

1. From the **Tools** application, create a new tool record by clicking the **New Too**l icon on the Maximo toolbar.
2. Enter a value in the **Tool** field.
3. Enter a description in the **Description** field.
4. On the **Tool** tab, specify if the tool is Rotating, supplied by an Outside vendor, Issue Unit, has a Material Safety and Data Sheet (MSDS), requires Inspection Upon Receipt, or has pertinent record Attachments.
5. View inventory balances on the **Storerooms** tab, then view or add vendor information on the **Vendors** tab or apply specific tool classifications on the **Specifications** tab.
6. **Save** the record.

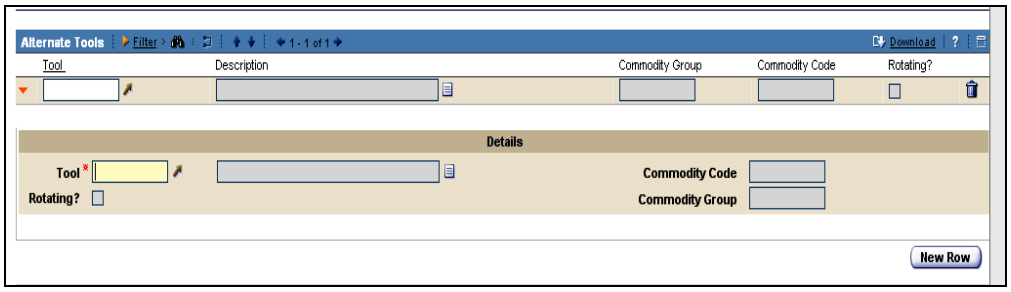
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Creating Tool Records continued

Adding/Deleting an Alternate Tool

In the **Tools** application, **Tool** tab, **Alternate Tools** section, you can add a list of alternate tools that can be used to perform the same work if a shortage of this tool were to occur, or there are two types of tools that you would want to be used alternately.



Follow these steps to create an alternate tool record:

1. From the **Tools** application, **Tool** tab, **Alternate Tools** section, add an alternate tool record by clicking the **New Row** button.
2. Enter a value in the (Alternate) **Tool** field using the detail menu icon. (Note that Maximo automatically enters the values in the **Tool Description**, **Commodity Code**, **Commodity Group**, and **Rotating?** fields.)
3. Enter any additional alternate tools using steps 1 and 2.
4. **Save** the record.

To delete alternate tools:

1. In the **Tools** application, **Tool** tab, **Alternate Tools** section, find the row of the alternate tool you want to delete and click the **Row Delete** icon. (You can select different rows.) To cancel a deletion, click the **Undelete Row** icon.
2. **Save** the record.

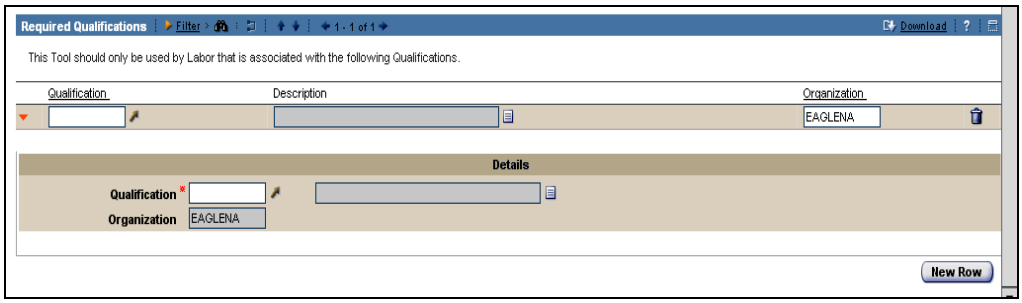
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Creating Tool Records continued

Associating Qualified Skills with a Tool

In the **Tools** application, **Tool** tab, **Required Classifications** section, you can add qualifications to a tool record if there are certain skills or certifications that a person requires to use the tool, provided that the person's qualification records are entered in the **Qualifications** application in the **Resources** module. Maximo filters the list of available qualifications to show only those created for the organizations and item set to which you are associated.



Follow these steps to associate a qualified person skills with a tool record:

1. From the **Tools** application, **Tool** tab, **Required Qualifications** section, add a new qualification record by clicking the **New Row** button.
2. Enter a value in the **Qualification** field using the detail menu icon. (Note that Maximo automatically enters the description.)
3. Enter any additional qualifications using steps 1 and 2.
4. **Save** the record.

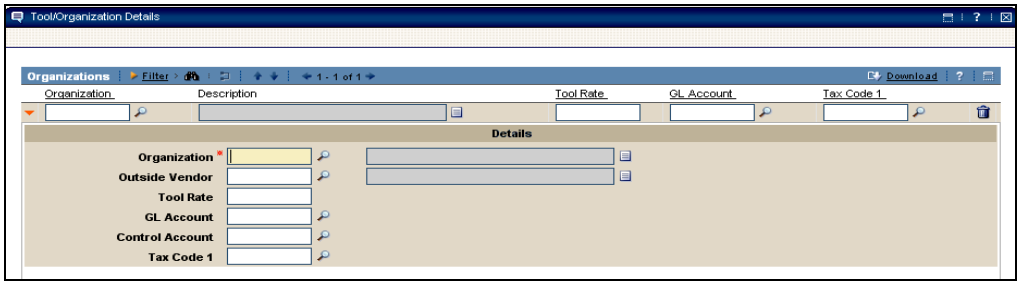
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Creating Tool Records continued

Associating Organization-specific Details to a Tool Record

Tool records are accessible to multiple organizations that use the same item set; however, the hourly tool rates, GL accounts, and tax codes that you apply to a tool are generally specific to a single organization. You use the **Tool/Organization Detail** action (on the Select Action menu) to create, view, or modify these organization-specific tool records.



Some notes regarding organization-specific records:

- Maximo lists only those organizations that are associated with the item set to which this tool belongs.
- If you selected the **Outside?** field on the Tools tab to indicate that the tool is supplied by an outside vendor, you can add the vendor company in the **Outside Vendor** field. You must have the vendor defined as a company in the Companies application.
- When you associate a vendor to a tool at the organizational level, Maximo defaults that company's control account number in the **Control Account** field, if one is defined. If the tool is not supplied by an outside vendor, Maximo defaults the control account from the tool control account for the organization, as defined in the Chart of Accounts application.
- The **Tool Rate** field value describes the hourly rate that is charged to job plans, work order plans, and work order actuals when this tool is used.
- You use the GL Account to track resource usage of the tool; Maximo merges this account segment with the work order GL account to populate the debit account when you report tool actuals. Maximo defaults the GL account from the Chart of Accounts application.
- You use the **Control Account** to track tool costing amounts; Maximo populates the credit account with this value when you report tool actuals.
- Maximo uses this Tax Code during the purchasing process.

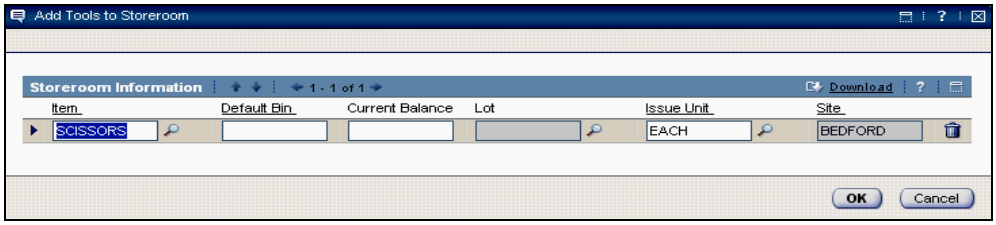
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Adding Tools to Storerooms

Adding Tools to Storerooms: Using the Add Tools to Storeroom Action

After you define and create tool records, add them in Inventory using the **Add Tools to Storeroom** action.





1. Save the tool record you created, then from the **Select Action** menu, select **Add Tools to Storeroom**. The **Add Tools to Storeroom** dialog box opens.
2. In the **Storeroom** field, enter a value or click the **Detail Menu** icon to select an option and retrieve a storeroom location. Maximo returns the storeroom and its description to the dialog box.
3. If appropriate, change the **Site** for the storeroom. (Note: Maximo defaults the site to your default insert site. If you change the site, Maximo clears the value in the **Storeroom** field, allowing you to select a storeroom for the site you entered.)
4. Click **OK**. Maximo copies the storeroom location to the next Add Items to Storeroom dialog box.
5. If appropriate, enter a **Default Bin** and **Current Balance**.
6. In the **Issue Unit** field, enter a value or click **Select Value** to retrieve the measure unit used for issuing the tool. (Examples of possible issue units include EACH, CASE, or ROLL.)
7. Click **OK**. The Add Tools to Storeroom dialog box closes. Maximo adds the tool to the storeroom, and the storeroom is displayed in the list on the Storerooms tab.

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Adding Tools to Storerooms continued

Other Ways to Add Tools to Storerooms

Aside from using the Add Tools to Storeroom action on the Tools tab, you can also add tools to a storeroom using one of the following methods:

- Transfer a tool from one storeroom to another using the **Stocked Tools** or **Issues and Transfers** application.
- Return a tool in the **Issues and Transfers** application, **Issue** tab, **Select Items for Return** button.
- Purchase (Requisition or Reorder) and receive a tool via the Maximo purchasing process.

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Managing Stocked Tools

Introduction

After you create a tool record, you should stock the tool in storerooms for future use. Maximo enables you to manage stocked tools in storerooms with the **Stocked Tools** application.

Stocked Tools Application

You use the Stocked Tools application to manage existing tools in storerooms; view information about a stocked tool, including balance summaries, balance details, and issue history; add new bin location and balance information for a stocked tool; associate vendors with a tool and analyze vendor data; view a list of all assets associated with a rotating tool; issue, return, or transfer and inventory transactions; and adjust a tool's physical count and current balance.

Stocked Tools Application Tabs

The Stocked Tools application has five tabs:



Use This Tab…	To…
List	Search for tool records.
Stocked Tool	View information about a stocked tool, such as balance information and issue history.
Vendors	Manage a list of vendors that supply the tool.
Rotating Tool Assets	View all instances of the rotating tool.
Where Used	Indicate the assets on which a tool is used as a spare part (or child tool). If in the Assets application you use the Spare Parts tab to associate tools to the asset, you can view them on this tab in the Stocked Tools application.

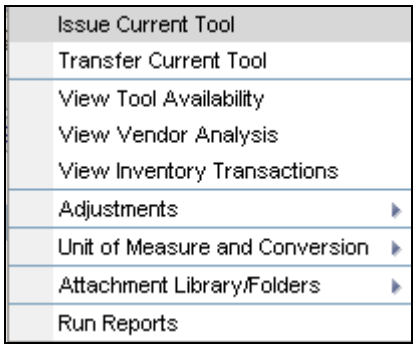
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Managing Stocked Tools continued

Stocked Tools Application Actions

You use the Select Action menu in the Stocked Tools application to issue or transfer a tool, and to view information about tool availability, vendors, and transactions.



Issuing a Tool

Using the Stocked Tools application, you can issue stocked tools on:

- job plans and work orders, or
- directly to someone (labor code) who needs them to perform work.

Follow these steps to issue a stocked tool:

1. Search for and retrieve the tool record to be issued.
2. From the **Select Action** menu, select **Issue Current Tool**. The Issue Current Tool dialog box opens. Maximo defaults the storeroom location for this stocked tool.
3. Change the value in the **Bin** field if you want to issue the tool from a different bin.
4. In the **Quantity** field, enter how many of the tool you want to issue.
5. If the tool is rotating, in the **Rotating Asset** field, enter a value or click **Detail Menu** to select an option and retrieve the asset. Maximo returns the value to the field.

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Managing Stocked Tools continued

Issuing a Tool continued

6. In the **Transaction Type** field, enter a value or click **Select Value** to retrieve a type:
   - ISSUE, which issues a tool to a person, and optionally to an asset, location, or work order; or
   - RETURN, which returns a tool to a storeroom.
7. In the **Issue To** field, enter a value or click **Detail Menu** to select an option and retrieve the recipient of the tool (person ID). Maximo returns the value to the field.
8. If appropriate, complete any of the remaining optional fields to further define the transaction.
9. Click **OK**. The Issue Current Tool dialog box closes.
10. Maximo issues the tool to the intended recipient and deducts the stocked tool's balance for the quantity issued. If you issue the tool for use on a work order, you can select this issued tool from the **Actuals** tab in the **Work Orders** application to report its usage information.

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Managing Stocked Tools continued

Transferring a Tool

You use the **Stocked Tools** application to transfer a stocked tool. You can transfer stocked tools from one storeroom or site to another. When you transfer a tool, the **From Storeroom** field defaults to the current storeroom for the stocked tool you are viewing.

You can transfer only non-rotating tools in Stocked Tools. To transfer rotating tools, or to transfer tools to a courier or labor location, use the **Issues and Transfers** application or choose **Move Asset** from the **Select Action** menu in the **Assets** application.

Follow these steps for transferring a tool:

1. Search for and retrieve the tool record to be transferred.
2. Choose **Transfer Current Tool** in the **Select Action** menu. The Transfer Current Tool dialog box opens.
3. In the **Quantity** field, enter how many of the tool you want to transfer.
4. Choose the **GL Debit Account** and **GL Credit Account** numbers.
   Note: The GL Debit Account and GL Credit Account fields let you view or enter general ledger account code information for the accounts that will be affected. The debit account affects the receiving storeroom, and the credit account affects the supplying storeroom.
5. Enter a value in the **From Bin** field.
6. Enter a value in the **To Storeroom** field.
7. If the **Conversion Factor** field is empty, enter the conversion ratio for this transaction. For example, if the storeroom you are transferring from is measured in *boxes*, and your receiving storeroom is *each*, then your conversion ratio is between *box* and *each*. If you have a box of 12, the conversion value is 12. You can change the default conversion if needed.
8. Enter a value in the **To Bin** field.
9. Enter a value in the **To Site** field.
10. Click **OK**. The Transfer Current Tool dialog box closes. Maximo transfers the tool(s) to the storeroom you specified and adjusts the balance of both the supplying and the receiving storerooms.

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Managing Stocked Tools continued

Viewing Inventory Transactions

Use the **View Inventory Transactions** action to view changes in the balance or cost of the inventory.

Follow these steps to view inventory transactions:

1. Search for and retrieve the tool record.
2. Click the **Inventory** tab.
3. From the **Select Action** menu, choose **View Inventory Transactions**.
4. The **View Inventory Transactions** dialog box opens with the focus on the **Receipts and Transfers** subtab. The item and storeroom information for the current inventory record is displayed.
5. Click a subtab, based on the transaction type you would like to view. For example, if you want to view transactions of the material usage type, click the **Issues and Returns** subtab.
6. The transactions are displayed in the **Transaction Details** window.
7. Click **OK**. Maximo returns to the previous page.

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Appendix B: Meters



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In This Chapter

This chapter contains the following topics:

Topic	See Page
Overview	B-1
Meters in Maximo	B-2
Meter Groups in Maximo	B-6

Overview

Introduction

Defining and classifying meters to track assets, PMs, or locations are integral parts of condition monitoring.

Maximo uses the **Meters** and **Meter Groups** applications to manage meter definitions and usage.

Learning Objectives

After completing this chapter, you should be able to:

- describe the meter definitions used in Maximo;
- define the procedures for creating a meter and meter group record; and
- associate meter definitions in assets, PMs, locations, and other condition-based applications.

Definitions

- *Characteristic meters* are observational and have a list of possible values. They are used to track things such as noise level, vibration level, clarity, or color. Characteristic meters are recorded via condition monitoring points.
- *Condition monitoring* is the task of inspecting and recording physical conditions with a goal of preventing potential failures.
- *Continuous meters* are cumulative values that tend to measure consumption or accumulation. They include meters that track such things as miles, hours, engine starts, pieces produced, or fuel consumed.
- *Gauge meters* show a range of values, such as fuel levels, temperature, pressure, noise level, or oil level. Gauge meters are recorded via condition monitoring points.
- *Meter definitions* include the names for the meters, as well as sets of attributes that describe the meters.
- *Meter groups* refers to a collection of meter definitions where an asset, PM, or location meter belongs.

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Meters in Maximo

Introduction

You use the **Meters** application to create and classify meter attributes to a specific meter group, asset, rotating item, location, or PM for condition-based monitoring.

Meters Application

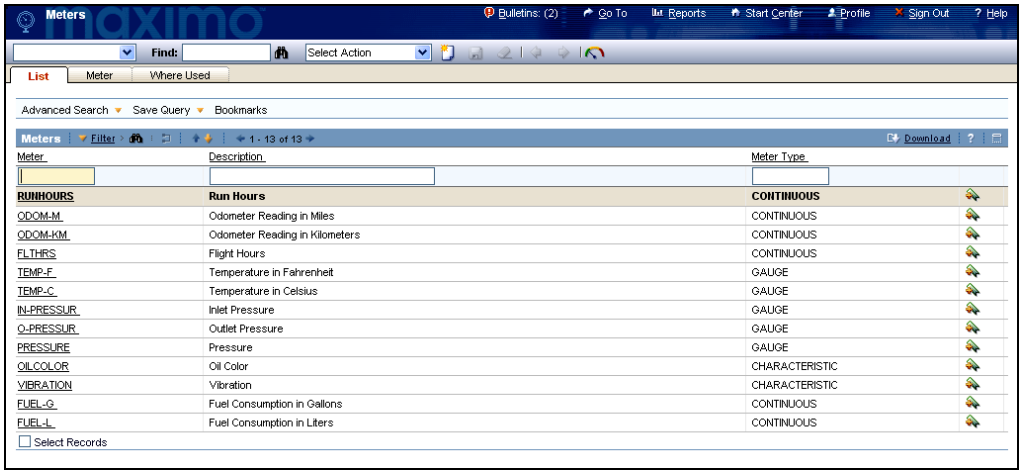
The Meters application enables you to create, view, modify, and delete meter definition records.

Meters Application Tabs

The Meters application consists of three tabs:



- **List** to search for meter records



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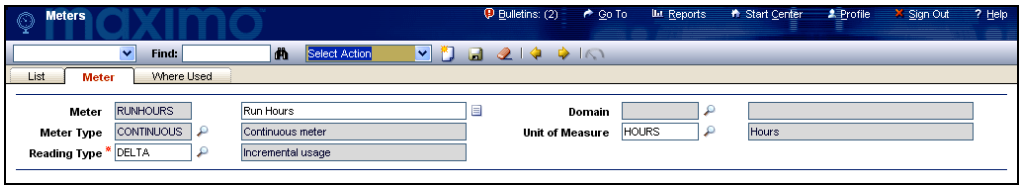
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Meters in Maximo continued

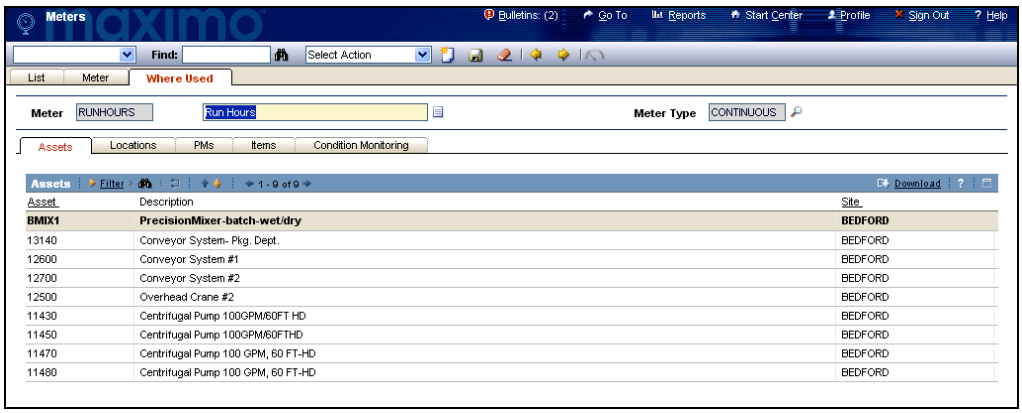
Meters Application Tabs

continued

- **Meter** to view, add, edit, and delete meter records



- **Where Used** to see where a meter is currently attached

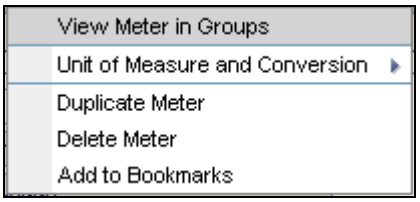


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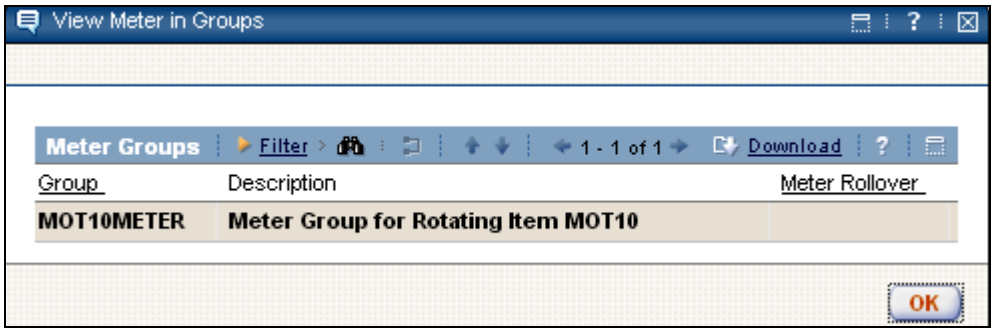
Meters in Maximo continued

Meters Application Actions

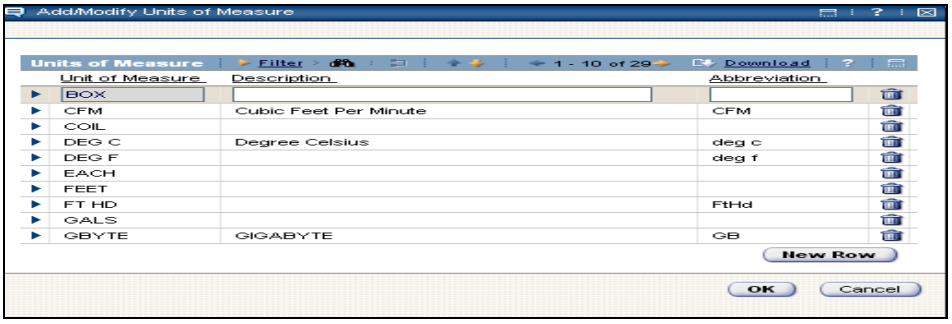
You can also use the Meters application Select Action menu:



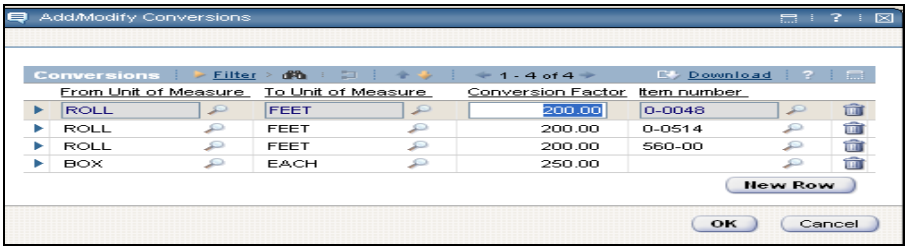
- To view the group where the meter definition is used



- To add and modify units of measure



- To add and modify units of conversion



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Meters in Maximo continued

Creating a Meter Record

You will use the **Meters** application to create a new meter record. Meters must be defined using the Meters application before they can be added to a meter group or used in other Maximo applications.

Follow these steps to create (define) a meter record:

1. In the **Meters** application, click the **New Meter** icon.
2. Enter a meter name in the **Meter** field. You can choose to enter a description in the **Meter Description** field.
3. Specify the type of meter in the **Meter Type** field.
4. If the meter type is *Characteristic*, you must enter a value in the **Domain** field. Only the value associated with this domain will be available when this meter is attached to an asset, PM location, or condition monitoring point.
5. If the meter type is *Continuous,* you must enter a reading type in the **Reading Type** field.
6. Fill in the other fields as needed.
7. **Save** the record.

Deleting a Meter Record

Follow these steps to delete a meter record:

1. Display the meter record that you want to delete.
2. From the **Select Action** menu, choose the **Delete Meter** action. The meter is deleted from the database.

You cannot delete a meter if it is attached to any of the following types of Maximo records:

- Asset
- Location
- Item
- Condition monitoring
- Preventive maintenance (applies to master PMs only)
- Meter group

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Meter Groups in Maximo

Meter Groups Application

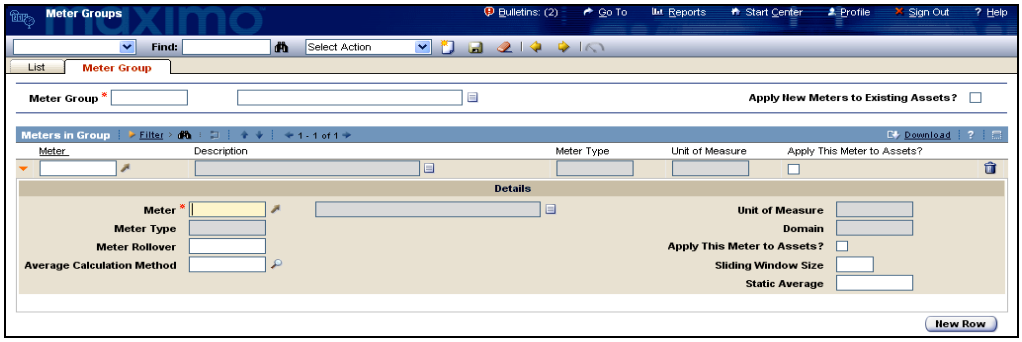
You use the **Meter Groups** application to define a logical collection of meter definitions with multiple uses. By creating a meter group you can add multiple meters to an asset or location at the same time.

After meters groups are defined, meters can be added to, and removed from, the group as required.

Meter groups can be applied to assets, to locations, and to rotating items in inventory to designate meters commonly associated with a rotating item.

Meter group information is copied to a record in the following instances:

- When an **Item Assembly Structure** containing rotating items that have meter groups is applied to an asset record.
- When the **Asset or Location** record includes a rotating item number that has a meter group.
- When a **Non-Rotating Asset** or **Location Record** is created and a meter group is specified on the Asset tab of the Asset application.



Meter Groups Application Tabs

The Meter Groups application has two tabs:



Use This Tab…	To…
List	Search for meter definition records.
Meter Group	View and modify existing meter groups, and add new meter groups to the database.

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Meter Groups in Maximo continued

Creating a Meter Group

You must define meters using the Meters application before they can be added to a meter group or used in other Maximo applications. You will use the Meter Groups application to associate meter definitions to assets, locations, PMs, inventory items, and condition monitoring applications.

Note: The same meter name cannot be added to a group more than once. If you want to track readings for multiple meters of the same type for a given piece of equipment, you must create separate meter names for each meter.

Follow these steps to create a meter group:

1. In the **Meter Groups** application, click the **New Meter Group** icon.
2. Enter a unique value in the **Meter Group** field, then enter a description in the **Meter Group Description** field.
3. In the **Meters in Group** section, check the **Apply New Meter to Existing Assets** check box if you want to add the new meter to existing assets. If you leave the box unchecked, the new meter will only be added to assets that use this meter group in the future.
4. Click the **New Row** button to add meters to the group.
5. Enter a value in the **Meter** field using the **Detail** menu button.
6. Enter a value in the **Average Calculation Method** field.
7. Check the **Apply New Meters to Existing Assets** check box if you want the default record values to be applied to assets.
8. **Save** the record.

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Appendix C: Safety Plans



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In This Chapter

This chapter contains the following topics:

Topic	See Page
Overview	C-1
The Safety Module	C-2
Creating and Associating Safety Plans	C-3

Overview

Introduction

An important part of implementing Strategic Asset Management (SAM) is having a sound and effective safety plan to meet the standard requirements for occupational safety, health, and environmental compliance.

Learning Objectives

When you have completed this chapter, you should be able to:

- describe the Safety module and its applications,
- determine hazards/hazardous materials,
- associate a safety plan to a work asset and location, and
- distinguish the relationship between Tag Out and Lock Out procedures.

Purpose

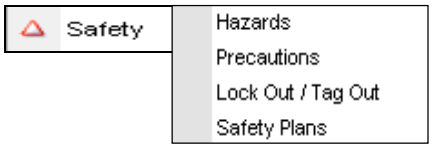
The safety plan establishes standard procedures for normally occurring activities in order to decrease the number of work-related accidents and injuries.

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The Safety Module

Introduction

The Safety module consists of the safety-related applications that enable you to associate a safety plan to work orders, assets, or job plans.



Defining Safety-Related Information

You use the Safety module applications to define safety-related information:

- Use the **Hazards** application to define hazards that exist in the workplace, associate preventive measures with these hazards, and link hazards to other related documents and applications.
- Use the **Precautions** application to define actions in order to prevent hazards. When you define precautions and associate them with workplace hazards, you enable employees to reduce or eliminate hazards involved with workplace tasks.
- Use the **Lock Out/Tag Out** application to define the procedures for taking work assets out of service or placing them back into service, to ensure a safe work environment. You create a tag-out procedure to eliminate a defined hazard on a specific asset or at a specific location.
- Use the **Safety Plans** application to define the safety procedures and to associate these procedures to work orders, assets, locations, or job plans.

The next section will provide an overview of these applications and their roles in creating a safety plan.

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Creating and Associating Safety Plans

Introduction

You use the Safety module applications to create and associate safety plans to work orders, assets, locations, or job plans.

Safety Plan Considerations

You should consider the following points before creating a safety plan:

- Have a specific job in mind that requires a safety plan.
- Have a clear understanding of how hazards relate to a safety plan's work assets.
- List all assets and locations that might cause hazards or other safety problems when a job plan is used.
- (Optional) List the work assets on which the job plan might be carried out using this safety plan. When you are creating a safety plan, the work asset combined with the type of work should dictate what safety information is required.

Creating Safety Plans

A high-level overview of the steps in creating a safety plan follows:

1. Define the **Hazards** and **Hazardous Materials** in the Safety Hazards application.
2. Define the **Precautions** in the Safety Precautions application.
3. Define **Lock Out/Tag Out** procedures in the Lock Out/Tag Out application.
4. Create the **Safety Plan** record and associate the defined Hazards, Hazardous Materials, Precautions, and Lock Out/Tag Out procedures if necessary.

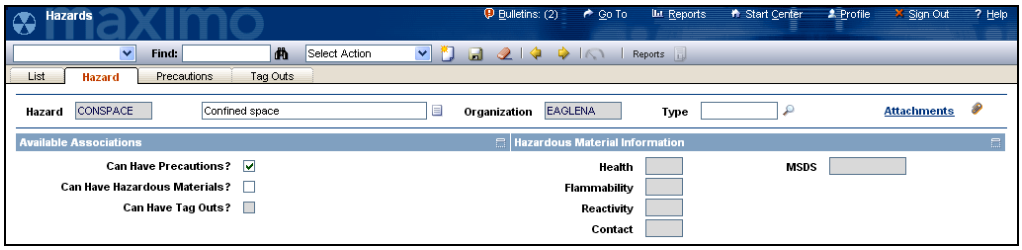
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Creating and Associating Safety Plans continued

Defining Safety Hazards

Using the **Hazards** application, you can create and classify a safety hazard record, associate the hazard record to precautions or tag-out procedures, identify hazardous materials, and provide additional related information.



Follow these steps to define a safety hazard record:

1. Enter a new hazard record in the **Hazards** application, **Hazard** tab, **Hazard** field. You can choose to enter a **Description** or classify the **Hazard Type**.
2. In the **Available Associations** section, choose the appropriate safety-related information to associate with the hazard record.
   - Select the **Can Have Precautions?** check box and enter the precaution on the **Precautions** tab.
   - Select the **Can Have Hazardous Materials?** check box and enter the appropriate information in the **Hazardous Material Information** section on the **Hazard** tab.
   - Select the **Can Have Tag Outs?** check box to enable Lock Out/Tag Out and enter Tag Outs.

   Note: If you associate a hazard with a tag-out procedure, you cannot associate the hazard record with a precaution or hazardous material.
3. **Save** the record.

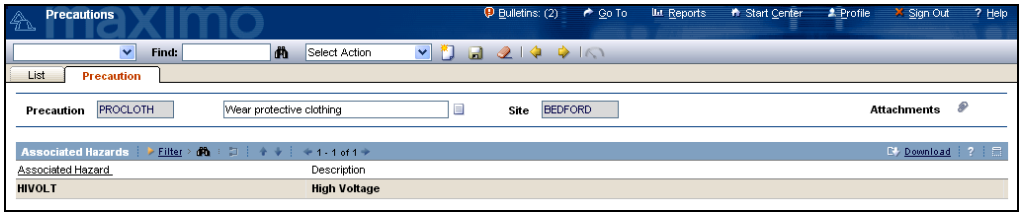
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Creating and Associating Safety Plans continued

Defining Safety Precautions

Using the **Precautions** application, you can create a safety precaution record and associate it with the hazard record you created in the Hazards application.



Follow these steps to define a safety precaution record:

1. Enter a new precaution record in the **Precautions** application, **Precaution** tab, **Precaution** field.
2. Enter a description in the **Description** field.
3. **Save** the record.

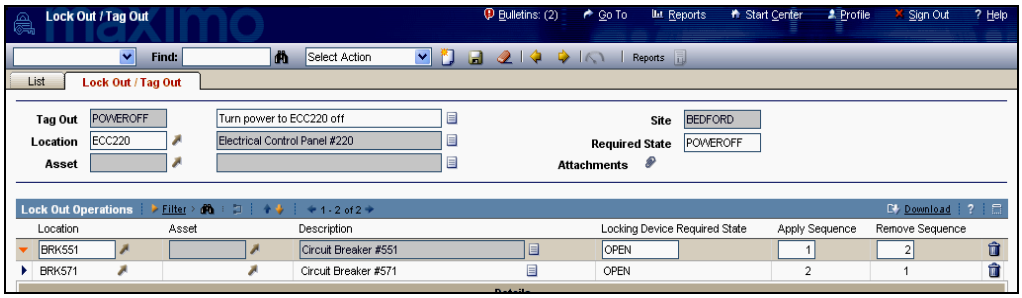
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Creating and Associating Safety Plans continued

Defining Lock Out/Tag Out Procedures

Using the **Lock Out/Tag Out** application, you can create a Lock Out/Tag Out record to specify Lock Out state and sequence. Lock Out/Tag Out records can be associated with an asset or a location.



Follow these steps to define a Lock Out/Tag Out procedure:

1. Enter a new Lock Out/Tag Out record in the **Lock Out/Tag Out** application, **Lock Out/Tag Out** tab, **Tag Out** field.
2. Enter a description in the **Description** field.
3. Enter a value in the **Asset or Location** field where the *Tag Out* procedure will be used.
4. Enter a value in the **Required State** field which is the asset's or location's condition after *Tag Out*.
5. In the **Lock Out Operations** section, select an asset or a location where *Lock Out* procedures will be applied.
6. Enter a value in the **Locking Device Required State** to determine the asset's or location's condition after *Lock Out.*
7. Enter a value in the **Apply Sequence** field to indicate the *Tag Out* sequence.
8. Enter a value in the **Remove Sequence** field to indicate the steps to *Restore* the asset or location to service.
9. Complete the remaining Lock Out procedures using steps 6 to 8.
10. **Save** the record

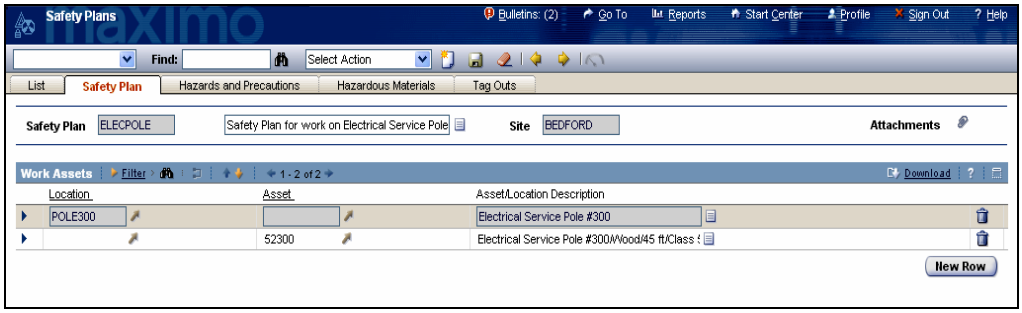
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Creating and Associating Safety Plans continued

Creating a Safety Plan

Using the **Safety Plans** application, you can create a safety plan record to consolidate all the safety-related information we previously created. The safety plan records can be generally applied to all related assets or locations, or can be specific to a work order, asset, location, or job plan.



Follow these steps to create a safety plan:

1. Enter a new Safety Plan record in the **Safety Plans** application, **Safety Plan** tab, **Safety Plan** field.
2. Enter a description in the **Description** field.
3. In the **Work Assets** section, select an asset or a location where the safety plan will be applied.
4. To include **Hazards** in the safety plan, add the hazard record directly using the **Hazards and Precautions** tab, or through the **Select Action** menu.
5. To associate **Hazardous Materials** in the safety plan, select a previously defined hazardous material record using the **Hazardous Material**s tab.
6. To associate **Lock Out/Tag Out** procedures in the safety plan, select a previously defined lock out/tag out record using the **Tag Outs** tab.
7. **Save** the record.

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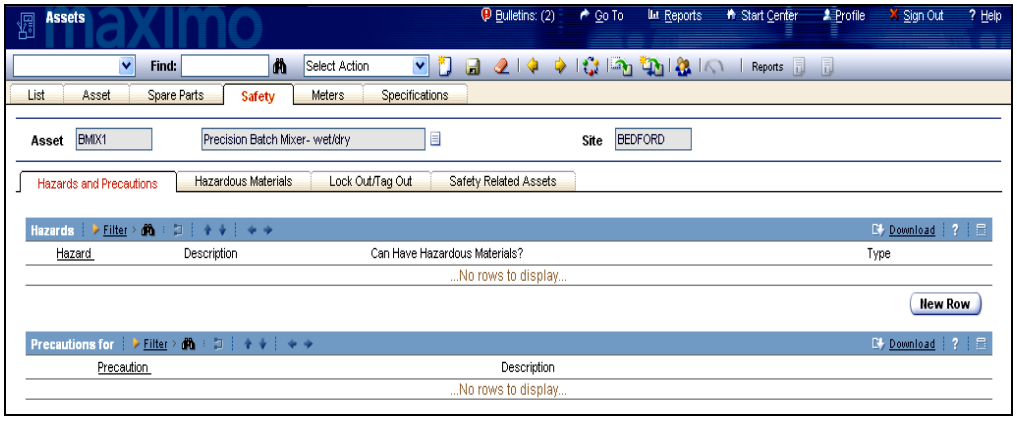
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Creating and Associating Safety Plans continued

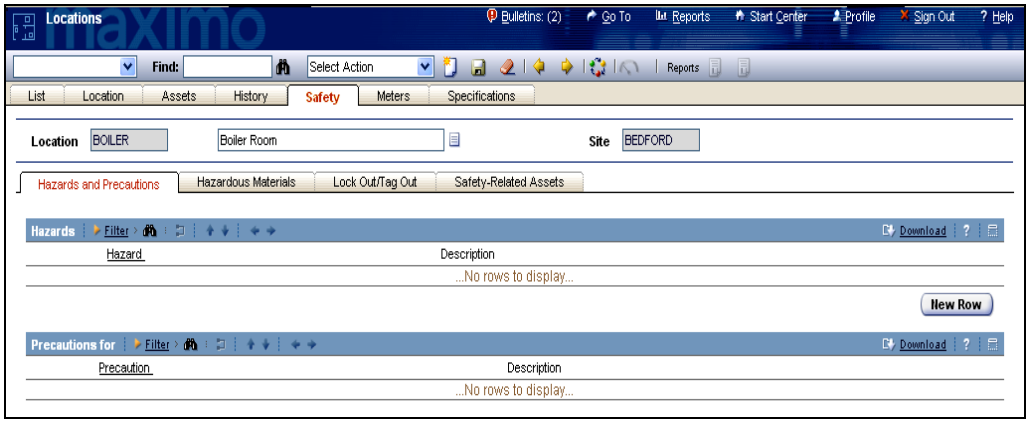
Associating Safety Plan Records

After you create a safety record in the Safety Plans application, you can associate it with:

- **Assets** – use the **Assets** application, **Safety** tab



- **Locations** – use the **Locations** application, **Safety** tab



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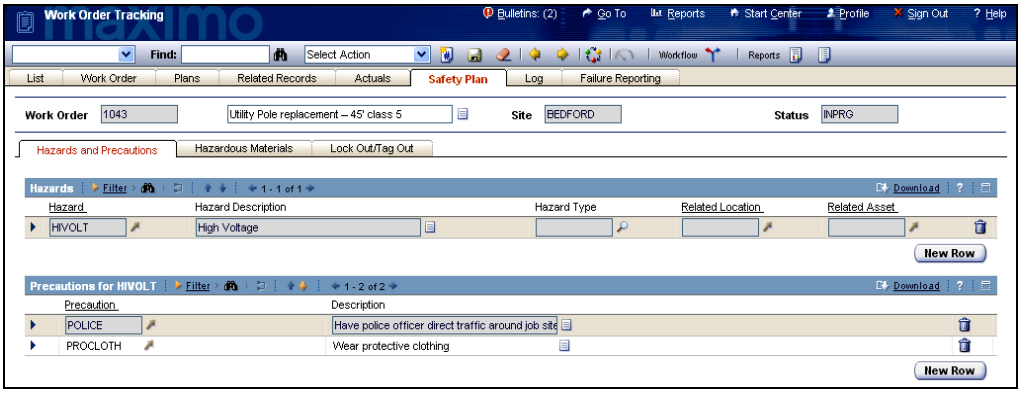
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Creating and Associating Safety Plans continued

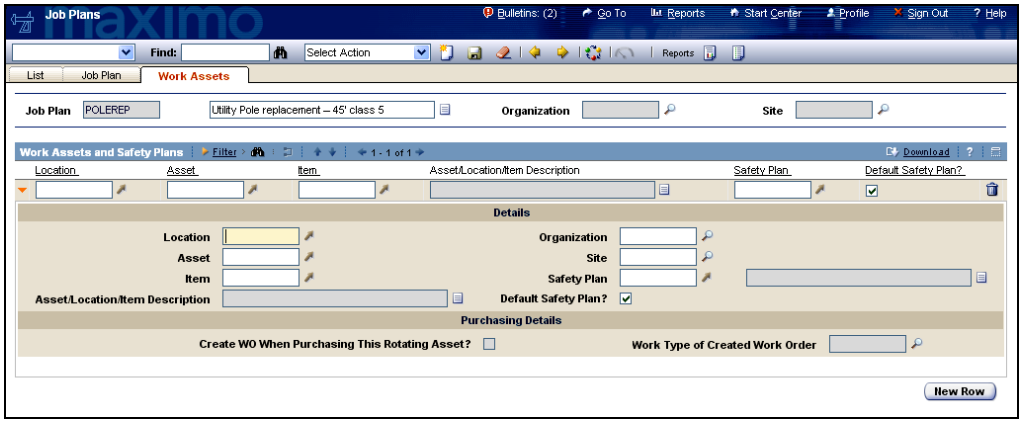
Associating Safety Plan Records

continued

- **Work orders** – use the **Work Order Tracking** application, **Safety Plan** tab



- **Job plans** – use the **Job Plans** application, **Work Assets** tab



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Educational Services
Student Feedback Form

Name: _____ **Instructor:** _____
Class: _____ **Date:** _____

	Excel-lent	Very Good	Good	Fair	Poor	Very Poor
1. The course structure and style was:						
2. The course content was:						
3. The workshops as a whole were:						
4. The length of the course was :						
5. Course organization was:						
6. Relevance and usefulness of course content was:						
7. Opportunity for practicing what was learned was:						
8. Amount you learned in the class was:						
9. The instructor's effectiveness in teaching the subject matter was:						
10. Use of class time was:						
11. Instructor's use of examples and illustrations was:						
12. Instructor's ability to answer student questions was:						
13. Instructor's ability to present alternative explanations when needed was:						
14. Tailoring of instruction to varying student skill levels was:						
15. Instructor demonstrations were:						
16. Instructor's ability to solve unexpected problems was:						

17. Which aspects of this course were most effective? _____
_____
_____

18. Which aspects of this course detracted from your learning? _____
_____
_____

19. What suggestions do you have for improving this course? _____
_____
_____
_____

MRO Software Ed. Services
Fax: (781) 280-2201

Thank You!

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