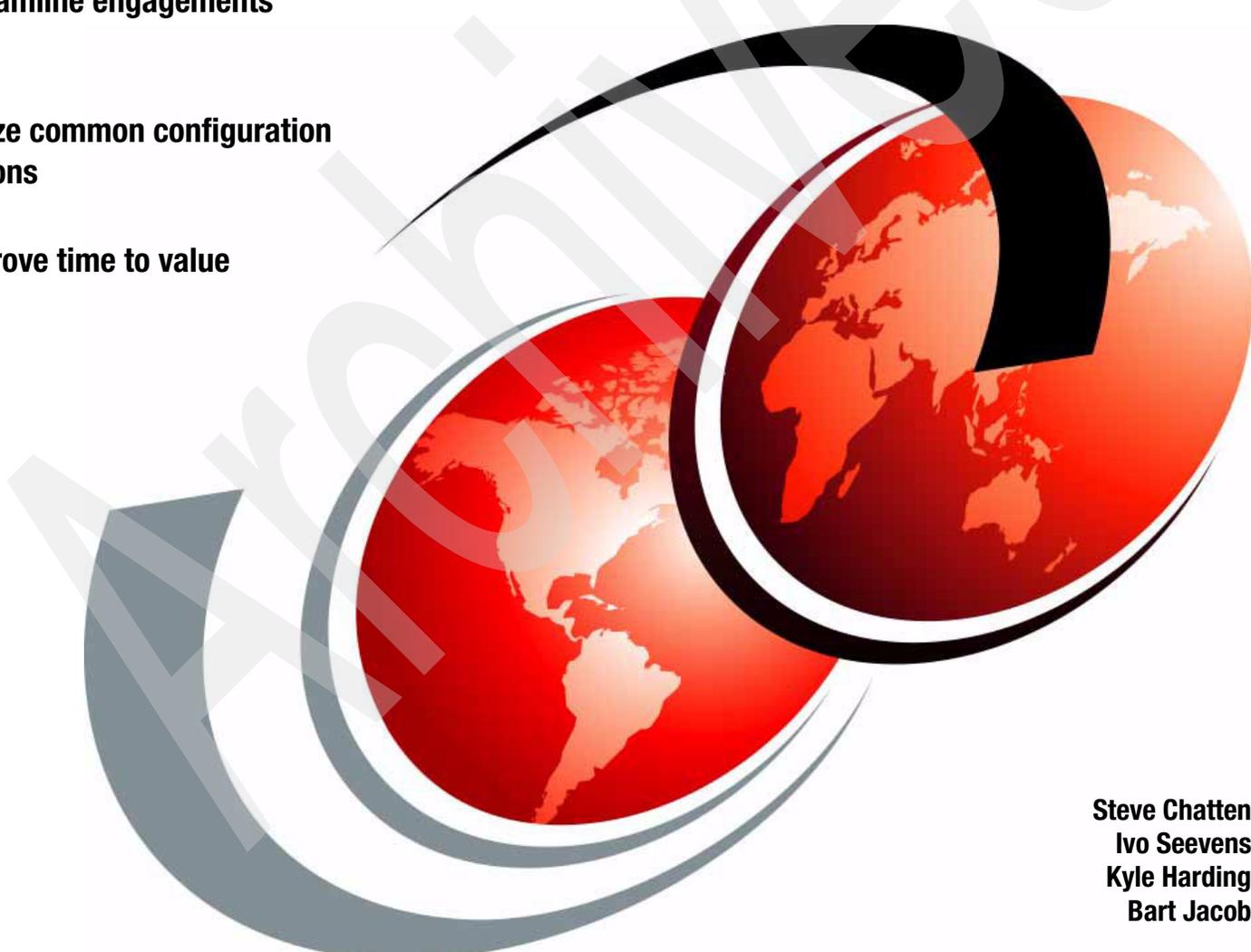


# IBM Maximo Asset Management Essentials: Rapid Engagement Guide

**Streamline engagements**

**Utilize common configuration  
options**

**Improve time to value**



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International Technical Support Organization

**Maximo Essentials: Rapid Engagement Guide**

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**Note:** Before using this information and the product it supports, read the information in “Notices” on page v.

**First Edition (March 2009)**

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# Preface

This IBM® Redpaper publication provides IBM Business Partners and services teams guidance and information to help streamline their engagements related to deploying solutions based on the Maximo Asset Management Essentials product. Maximo Asset Management Essentials provides small to medium businesses a robust platform for enterprise asset management.

Maximo Asset Management Essentials typically requires a services engagement to provide the configuration and customization required for a specific client. For the small to mid-size business that is the target audience for the Maximo Asset Management Essentials product, service engagements for the initial deployment must be kept to a minimum length to help ensure an improved time to value for the client.

The organizations providing these services must be able to efficiently deploy and implement a Maximo Asset Management Essentials-based solution, using repeatable methodologies and common configurations and taking advantage of available tools and techniques.

This paper provides information targeted at the implementers to provide information to help them perform more efficient engagements and improve client satisfaction. This IBM Redpaper provides information about:

- ▶ Maximo Asset Management Essentials product overview
- ▶ Sample questions to help identify the specific requirements of the client
- ▶ Common configuration data that provides a jump start for many implementations
- ▶ Generic process management flows
- ▶ Techniques for pre-loading existing data into the Maximo® database
- ▶ Common reports that can provide immediate value to clients
- ▶ A process description for client acceptance criteria
- ▶ Education road maps for implementers and users of Maximo Asset Management Essentials

This IBM Redpaper is intended to be used in conjunction with product documentation and other information as listed in the bibliography. In addition, a utility that provides the ability to load the generic objects and data that implement some of the generic process management capabilities described in this paper is planned to be made available via the IBM Open Process Automation Library at:

<http://www.ibm.com/software/tivoli/features/opal/>

## The team that wrote this paper

This paper was produced by a team of specialists from around the world working along with the Maximo development team in Bedford, Massachusetts.

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worked on many aspects of Maximo design, installation, deployment, customization, and integration. He has developed specialist knowledge in Java™, SQL, XML, W3C, and Mobilization technologies to customize Maximo functionality, integrate with third parties and mobilize the workforce.

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# IBM Maximo Asset Management Essentials engagements

IBM Maximo Asset Management Essentials is an entry-level member of the IBM Maximo Asset Management product family. It is ideal for smaller organizations that require a basic set of the extensive range of features in the IBM Maximo Asset Management product.

IBM Maximo Asset Management enables smaller organizations and departments to take advantage of proven Maximo Asset Management asset and work management solutions to:

- ▶ Gain insight across all of their assets, asset conditions, and work processes around them for better planning and cost control.
- ▶ Provide a comprehensive maintenance work management solution for planned and unplanned activities including long-term and short-term planning, preventive, reactive, and proactive maintenance, schedule management, resource optimization, and key performance indicators.
- ▶ Plan inventory to meet maintenance demand precisely, making the right parts available at the right location when needed.
- ▶ Manage vendor contracts with comprehensive contract management support for purchase, lease, rental, warranty, rate, master, blanket, and user-defined contracts.

Maximo Asset Management Essentials business benefits include:

- ▶ Maximize asset return on investment by proactively managing assets to extend their life.
- ▶ Manage critical assets using a single platform to leverage common business practices and a single repository for asset data.
- ▶ Meet the needs of small to medium size businesses with proven asset and work management solutions and technologies.
- ▶ Future-proof investment by leveraging the industry-leading Maximo architecture with the ability to easily migrate to the enterprise version of the product.
- ▶ Lower total cost of ownership – eliminate paper-based processes and standalone applications by standardizing on the Maximo platform, to achieve greater efficiencies through system consolidation.

- ▶ Increase asset longevity through effective, proactive maintenance.
- ▶ Reduce asset downtime and boost reliability to increase profits and service quality.
- ▶ Improve cash flow by streamlining spare part inventory and procurement management.
- ▶ Achieve a more efficient workforce with work optimization and resource management.

**Important:** As already stated, Maximo Essentials is targeted at small to medium organizations as a starting point to help automate their asset management and related processes. However, it is assumed that these businesses will grow and as they gain value from the implementation of Maximo Essentials, they will have a desire and need to migrate to the enterprise version of Maximo. Such a migration is primarily achieved by modifying the license key to enable functions that are not available in Maximo Essentials and starting to take advantage of the additional capabilities. Implementers must be aware of this assumption and ensure that they are helping to position and guide their clients to a full Maximo license as the needs of the client's business dictate.

## 1.1 Maximo Asset Management Essentials clients

As stated above, Maximo Asset Management Essentials is intended for small to medium size businesses who want to benefit from better management of their assets and asset-related processes, but do not yet need the extended functions included in the enterprise version of the product.

Typically, these clients do not have the time and resources to commit for an extended engagement that might be required for a more complex implementation, complete with powerful workflow management, integration with existing systems, and a possible re-engineering of their core processes. The contents of this paper are targeted at simpler engagements where core functions, provided by Maximo Essentials with a minimum amount of customization and configuration, can provide an attractive return on investment. The organizations performing the engagement and deploying Maximo Essentials will need to build their plan and proposal based on the amount of custom work and configuration that will be required for a particular client.

**Important:** It must be stated that there is no turnkey asset management solution with Maximo. The intent behind the Maximo Essentials offering is to provide a solution that is smaller in scope and therefore improves the time to value, making it easier for implementers to deploy a solution and be able to reuse their experiences and replicate their efforts across multiple clients. Maximo Essentials provides a good starting point for many clients.

## 1.2 Maximo Asset Management Essentials licensing considerations

In Chapter 2, "Gathering and understanding client requirements" on page 7, we describe Maximo Asset Management Essentials in more detail. However, it is important for us to make clear now various key considerations related to licensing.

Maximo Asset Management Essentials is intended for smaller environments. Based on this intention, there is a limit of 25 primary Maximo users. These users include the individuals who will be using Maximo to view, track, and modify information stored in the Maximo database. It

currently does *not* include self-service users who might use a Maximo-provided Web interface for initiating requests. For clients wishing to take advantage of the self-service capabilities, there are separate licenses available and these licenses do not count against the limit of 25 users of Maximo Asset Management Essentials.

An optional component for the Maximo environment is the Integration Framework. A major component of this Integration Framework is a component formerly known as and often referred to as the Maximo Enterprise Adapter (MEA). In general, the MEA is used to develop and implement integrations with other enterprise applications to allow for data to flow between them and Maximo and back. If used for integration, the client must purchase additional licenses for the MEA. However, the MEA can also be a valuable tool for the initial loading of existing operational data into the Maximo database. For the purposes of this initial data loading, the MEA can be used by the service organization performing the implementation under their license. After the initial data is loaded, the MEA cannot be used for any additional integration without purchasing the appropriate licenses.

For additional information about what Maximo features are supported under the Maximo Asset Management Essentials license and if Maximo Asset Management Essentials is the appropriate product for a prospective client, refer to 2.1, “Determining the applicability of Maximo Asset Management Essentials” on page 8.

## 1.3 Phases of a Maximo Essentials engagement

Because Maximo Essentials is generally targeted at smaller organizations or those organizations with less complex requirements, a typical Maximo Essentials engagement is generally comprised of the following steps or phases.

### 1.3.1 Identify high-level requirements and scope of work

The aim at this point is to understand client objectives and start building an idea of which applications will help the client meet these objectives. You must identify any data sets required to support these processes and discuss the consistency and integrity of these data sets. Chapter 2, “Gathering and understanding client requirements” on page 7 provides information that might be useful in identifying several of these requirements.

### 1.3.2 Proposal creation and submission

In this phase, you document a high-level description of the solution, indicating how application functionality can meet the business’ need.

You must identify any data sets required to support these processes, along with any assumptions about the consistency and integrity of the data in its current state.

If it is understood that the integrity of the data is questionable, you need to include a plan in the proposal for an effort to address the integrity of the data.

After you submit the proposal, the client might want to clarify points in the proposal or ask you to add or remove specific features.

Also, during this phase, it is common to identify all systems, which need to be integrated with Maximo, giving a high-level definition of data flows. In many projects, integration is needed; thus, it will be necessary to estimate the hours for this purpose.

Information in this paper will prove useful in developing a proposal.

### 1.3.3 Identify detailed requirements

This phase follows a receipt of a purchase order or a letter of intent from the client.

Detailed business process analysis is carried out and functional requirements are documented. Any gaps between functional requirements and available functionality must be discussed to identify the options available.

You must list the environments in which to install Maximo Essentials and the required training effort in this document. Typically, environments installed are Test, Training, and Production (Live).

You must submit functional requirements along with a refined work effort.

Chapter 2, "Gathering and understanding client requirements" on page 7 provides information about gathering detailed requirements.

### 1.3.4 Begin the implementation effort

On receipt of a purchase order, software installation and data development can begin.

This phase includes the definition and implementation of processes, configuring Maximo with client's unique data, and migrating any existing data into the Maximo database. You must obtain data sets to be migrated, scrub them if necessary, and execute the migration into test and training systems before loading the production system.

Though they can vary widely based on the industry, geography, and specific client, typical variables involved in a Maximo Essentials engagement might include:

- ▶ Number of asset types
- ▶ Asset registry
- ▶ Functional location set up
- ▶ Taxonomy
- ▶ Integration with other applications
- ▶ Business functions/roles
- ▶ Security group requirements
- ▶ Processes
- ▶ Maximo applications to be implemented (for example, Contracts, Service Desk, Change Management, and so on)
- ▶ Size and expertise of client's technical staff

Based on this information, the implementer must perform a number of specific configuration steps. Certain steps are manual, and other steps are performed through the use of available tools. A summary of these key steps is provided:

1. System installation - Install the software:
  - a. Middleware installer
  - b. Application server
  - c. DB server
  - d. Maximo software

- e. License keys
2. System configuration:
  - a. Create organization
  - b. Create item and company sets
  - c. Create General Ledger account components
  - d. Create GL account
  - e. Create site
  - f. Specify default insert site
  - g. Specify currency codes
3. Functional configuration:
  - a. Start Center and portlet configuration
  - b. Assign users to groups and roles
  - c. Create synonym values
  - d. Create escalation configuration
  - e. Create integration definitions
4. Data preparation:
  - a. Integrity checking:
    - Are required fields present?
    - Are hierarchies properly formed?
  - b. Hierarchy building:
    - Parentage association for locations, assets, item assembly structures, job plans, preventative maintenance structures, and so on.
5. Data loading:
  - a. Data load tool selection
  - b. Data tool specific data formatting and preparation:
    - A load tool requires that data is presented in one form or another, for example, delimited text file, XML, and so on.
    - Perform the data load (assets, locations, GL codes, people, labor, crafts, and users) as appropriate. Tools are efficient for a large number of records. For small numbers of records, a manual load through the user interface might be more appropriate. A manual load can also be useful for training and education purposes.

Information useful for planning and performing this stage is provided throughout this IBM Redpaper.

### 1.3.5 User training

You must schedule training prior to the date that you go live. All of the business areas must receive sufficient training for them to fulfill their daily tasks. Any information specific to the cutover must be communicated at this point.

For more information about user training, refer to 8.3, “Client/user education” on page 86.

### 1.3.6 Live cutover

A migration plan is executed into the production environment, and the users start using the system.

### **1.3.7 User acceptance and sign-off**

Upon solution delivery, ask the client to sign off against the deliverables defined in the functional requirements, which brings the solution deployment phase to a close. For more information, refer to Chapter 7, “Deployment acceptance criteria” on page 77.



## Gathering and understanding client requirements

This chapter provides sample questions related to information that needs to be gathered to:

- ▶ Determine if Maximo Essentials is the proper product on which to base a solution for an engagement
- ▶ Size the engagement and determine the applicability of the tools and techniques that are documented in this paper

## 2.1 Determining the applicability of Maximo Asset Management Essentials

This section provides guidance about how to determine if Maximo Asset Management Essentials is the appropriate product for a particular client in relation to the full Maximo Asset Management product.

Figure 2-1 provides a high-level view of the structure and components of Maximo Asset Management Essentials.

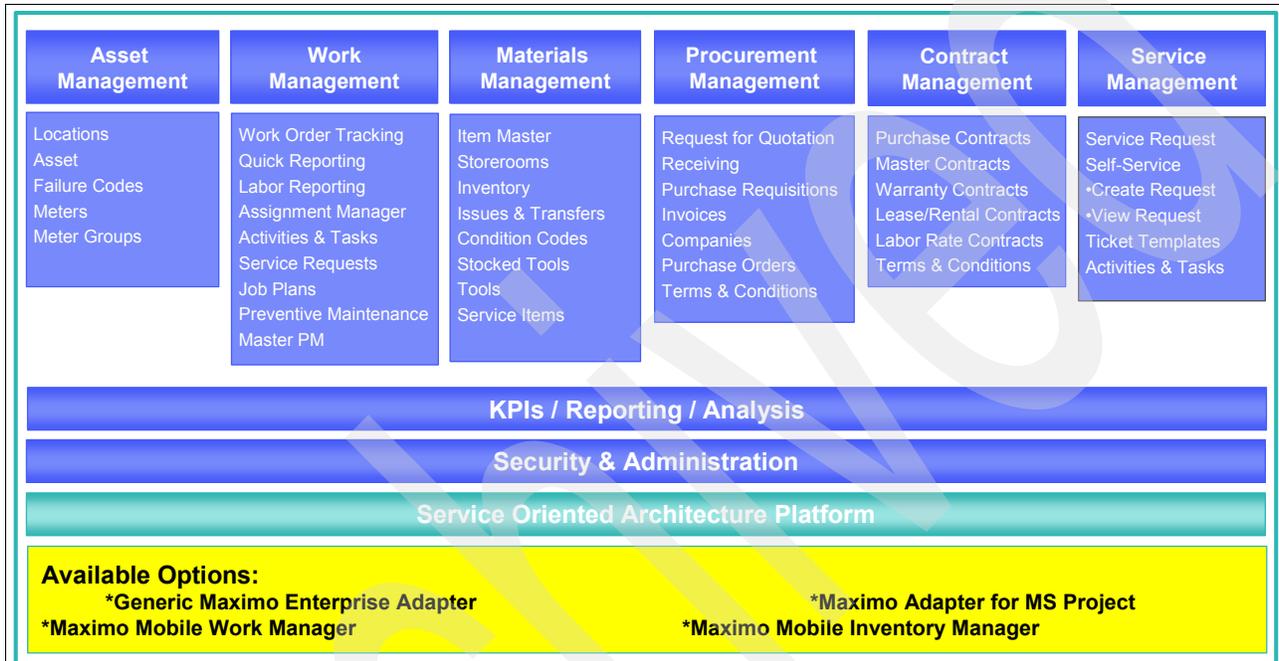


Figure 2-1 Structure and components of Maximo Asset Management Essentials

### 2.1.1 Maximo Asset Management Essentials restrictions

The following restrictions on the licensing of Maximo Asset Management Essentials provides a quick test as to whether Maximo Essentials is applicable to a particular client's requirements:

- ▶ Maximum of 25 users
- ▶ One Maximo Essentials license per site
- ▶ Cannot "mix and match" Maximo Essentials users with Enterprise users
- ▶ Cannot append multiple Maximo Essentials licenses (maximum of 25 users per entity)
- ▶ Cannot connect multiple Maximo Essentials licenses to other Maximo Asset Management products
- ▶ Limited organizational reach:
  - Single site
  - Single organization
  - Language restrictions: Base language + 1
  - Currency restrictions: Single base currency

If a client's requirements do not match these characteristics, propose a solution based on the enterprise version of Maximo Asset Management instead.

## 2.1.2 Functional restrictions

The following information summarizes the functional restrictions of Maximo Asset Management Essentials as compared to the full version.

Advanced applications not included nor available with Maximo Essentials are:

- ▶ Workflow
- ▶ Condition Monitoring
- ▶ Desktop Requisitions
- ▶ Financial - Cost Management
- ▶ Routes
- ▶ Hazards
- ▶ Precautions
- ▶ Lock Out/Tag Out
- ▶ Safety Plans

Components not available for purchase with Maximo Essentials:

- ▶ Industry Solutions
- ▶ Spatial
- ▶ Linear
- ▶ Calibration
- ▶ Change and Corrective Action Manager
- ▶ Service level agreement (SLA) Manager
- ▶ Enterprise Resource Planning (ERP) Integration (SAP and Oracle®)

Clients needing any of this functionality must license the Maximo Asset Management Enterprise product.

Figure 2-2 on page 10 provides a flow chart of questions that can be used to determine if Maximo Asset Management Essentials is the appropriate product to propose to a client.

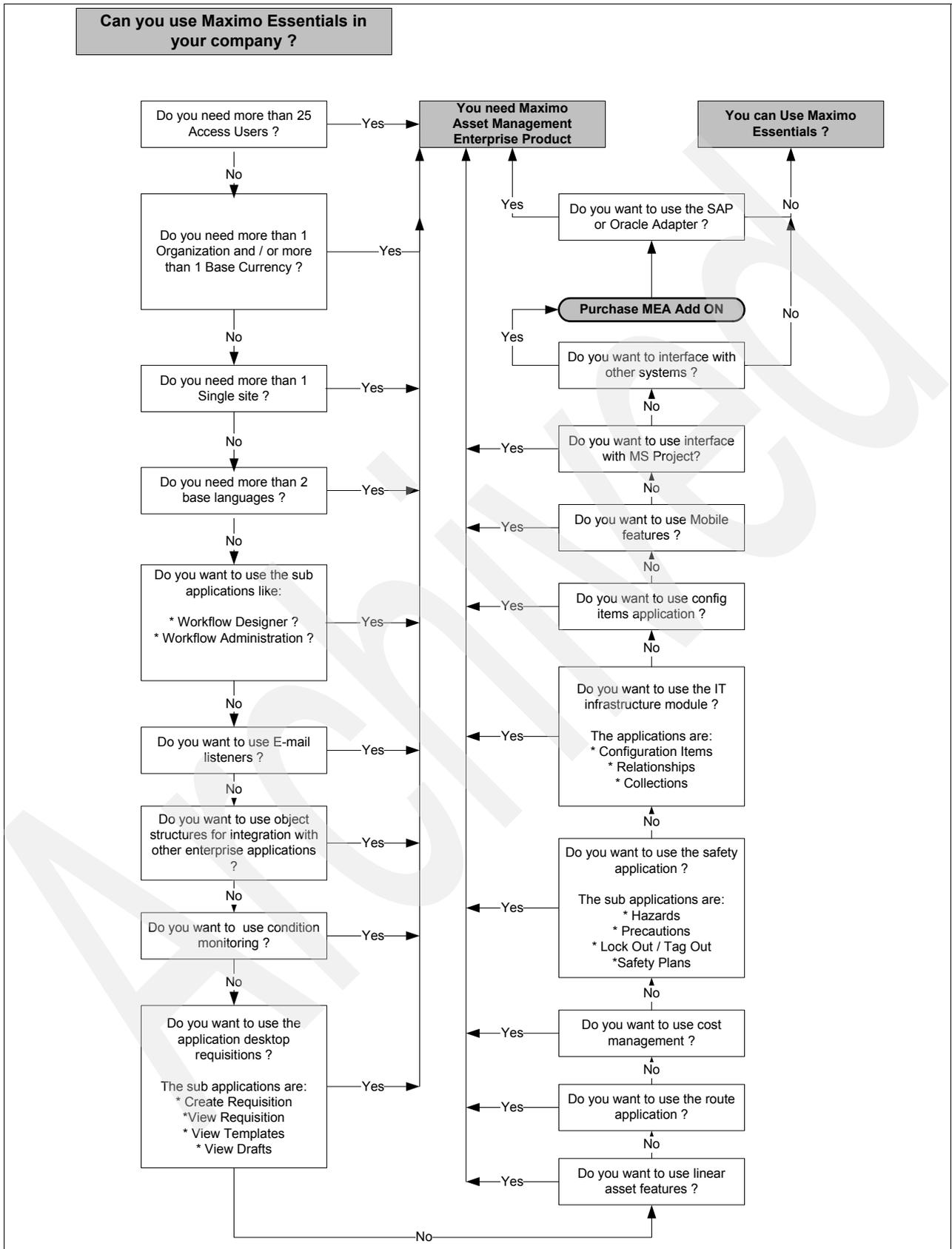


Figure 2-2 Question flow chart to determine applicability of Maximo Essentials

## 2.2 Gathering information for a Maximo Essentials engagement

After you determine that Maximo Asset Management Essentials is appropriate for a particular client based on the restrictions described in 2.1, “Determining the applicability of Maximo Asset Management Essentials” on page 8, you will need to start gathering more detailed information from the client. This information will be used to scope the effort, to build a detailed proposal, and to outline the steps that will need to be performed for a successful deployment.

Table 2-1 provides an outline of the questions that typically need to be asked. Depending on the client and your relationship with the client, several of these questions will need to be asked before a contract is in place in order to create an appropriate proposal. Other questions will be asked after the contract is in place to develop a detailed implementation plan.

Of course, this is just a start. Based on your typical engagement processes and the answers that you receive to the questions provided in Table 2-1, there will be ongoing discussions and additional questions to be answered.

*Table 2-1 Typical questions to ask at the beginning of an engagement*

Questions	Considerations
<b>General</b>	
Is an existing Computerized Maintenance Management System (CMMS) used?	How similar are the data models in the existing system to those data models in Maximo? What kind of translations are required and make sense?
Is the data paper-based?	How will existing data be imported into or made available to Maximo?
What roles are involved within the maintenance department?	Gives an overview of the different maintenance roles.
How big is the workforce? (How many work performers?)	Provides necessary information related to possible users and to scheduling requirements.
What disciplines are contained in the workforce?	Do the job plans represent the various crafts of the workforce?
What does the client hope to improve with Maximo?	What are the priorities: <ul style="list-style-type: none"> <li>▶ Better work planning?</li> <li>▶ Better cost reporting?</li> <li>▶ Clarity of hours worked?</li> <li>▶ Improved SLA management?</li> <li>▶ How will the existing reports and functionality achieve these goals?</li> </ul>
<b>Processes</b>	
How is work managed (scheduled and issued) in the workforce?	Understand how closely the generic process fits the client business process.
Who are the players in the work management process?	Understand how closely the generic process fits the client business process.
Who are the players in the planning process?	Understand how closely the generic process fits the client business process.
How is procurement managed?	Understand how closely the generic process fits the client business process.

Questions	Considerations
Who are the players in the procurement process?	Understand how closely the generic process fits the client business process.
<b>Locations and assets</b>	
Is there an asset register?	If not, a work effort will be needed to determine the assets to be maintained: <ul style="list-style-type: none"> <li>▶ Are the assets organized hierarchically?</li> <li>▶ If not, does it make sense to do so?</li> </ul>
Is there a list of discrete assets as opposed to locations?	If not, a location hierarchy will need to be constructed from the asset hierarchy (if one exists).
How many assets are to be maintained?	Give an idea of the work effort in data scrubbing if required.
Are hierarchical assets classified by more than one logical system?	If not, does the client wish to use multiple systems? If so, this need might require data development.
<b>Preventive maintenance</b>	
Are job plans used?	If so, how well structured are they and where are they stored and referenced? How much effort is required to get them into Maximo?
Is there a preventive maintenance (PM) regimen in place?	If so, how well structured are they and where are they stored and referenced? How much effort is required to get them into Maximo?
How many PMs?	Gives an idea of the work effort in data scrubbing if required.
How many job plans?	Gives an idea of the work effort in data scrubbing if required.
Will PMs will be triggered based on time or meter readings?	In many simple implementations, PMs are based on the time and the calendar, because it is easier to operate this way. In case the answer is that part of the PMs are based on meters, it is necessary to include time to implement the meters and the meter groups.
<b>Warehousing</b>	
How is inventory managed?	Understand how closely the generic process fits the client business process.
Is inventory managed in a separate system?	Is integration required here?
Who are the individuals involved in the Inventory Management process?	Understand how closely the generic process fits the client business process.
<b>Data and IT</b>	
How up-to-date is the data?	The data might need to be reviewed.
How consistent is the data?	Fields important to the business might not be consistently present, requiring data scrubbing.
In what format can the data be extracted?	If the data is held in another system, can it be extracted in a format that can be used?

Questions	Considerations
How IT-literate is the workforce?	<ul style="list-style-type: none"> <li>▶ Is there a desire for the workforce to interact directly with Maximo? Assignment Manager?</li> <li>▶ Or, is there a separate business function for data entry?</li> <li>▶ Is there a vision to mobilize the workforce?</li> </ul>
Does the workforce have access to personal computers and the network?	Is there hardware in place to give the workforce access to Maximo if required?
<b>Reporting</b>	
How is work reporting currently done?	What other systems do you use for this reporting?
What measurements does the business currently use to measure performance?	What are the key metrics used to measure performance?
How is financial reporting done?	Are cost centers already in place for tracking costs throughout the business? If so, is the GL code structure consistent?
How is failure reporting currently done?	Is there a failure code hierarchy already in use, or is there a desire to develop one and report against it?

Based on the information obtained by asking these questions, you can determine if the client requirements match the generic process defined in Chapter 4, "Process management" on page 23. If so, your implementation plans can be simplified based on the content in this paper and the Maximo Essentials Rapid Implementation Kit and Maximo Rapid Implementation Utility available from OPAL. If there is not a match, you can still utilize the information in this paper to develop an implementation plan that meets your client's requirements.

Archived

## Getting started with a solution implementation

Maximo solutions are extremely powerful. Part of this power comes from its flexibility and the many options and capabilities available. This flexibility implies a more complex configuration process. This initial configuration can require a relatively large amount of time on the part of the implementer.

Significant savings can be achieved by standardizing several of the configuration data sets, such as:

- ▶ Work Types
- ▶ Start Centers
- ▶ Security Groups
- ▶ Key performance indicators (KPIs)
- ▶ Saved Queries
- ▶ User Interface Adjustment
- ▶ Classifications

This chapter describes in simple terms the key steps involved in the configuration of Maximo. The tasks described are categorized as those tasks that need to be performed and those tasks that can optionally be performed based on the client's requirements.

For a more detailed discussion of these steps and more information, refer to the product documentation and the IBM Redbooks publication *Maximo Asset Management Essentials V7.1 Implementers Guide*, SG24-7645.

## 3.1 Required configuration tasks

The following sections provide a brief overview of the configuration that must be done after the initial installation and before the application can be used or client-specific asset data is loaded.

These steps are manually performed, and the steps are documented in the installation and administration guides. Experienced implementers are familiar with these steps, and after the client-specific information is known, these steps can usually be performed in a relatively short period of time.

The steps below are in a logical order, but not necessarily in the order that they will actually be performed.

### 3.1.1 Create currency codes

One or more currencies will need to be defined, and a base ledger currency must be specified for the organization. A second base currency is not permitted in the Maximo Essentials product.

Further currencies can be defined, however, to support procurement functions. Sample currency codes might include USD, GBP, or EURO.

### 3.1.2 Specify exchange rates

Having defined the currencies in use, exchange rates must be defined. An *exchange rate* is defined to cover a period between two specified dates. Any financial transaction that takes place for a currency other than the base currency must have an exchange rate defined to cover the point in time when the transaction takes place.

This exchange rate is necessary so that the value of the transaction in the base currency can be calculated.

### 3.1.3 Configure general ledger accounts

Several activities must take place to configure general ledger (GL) accounts:

1. The GL account format must be defined.

Maximo is quite open regarding the structure of the GL account that can be defined in the Database Configuration application. Here, you can specify the size and number of segments and the delimiter to use.

After this GL account format is defined, a database configuration will need to be performed to apply the field size settings to the database.

2. GL accounts can now be defined for the various ledger accounts.

Business-wide accounts, such as the clearing account, the “received but not invoiced” (RBNI) account, and stores accounts are also defined here.

3. Next, the GL accounts that you have just defined can be applied to the various entities in Maximo, such as Organization, Stores, Companies, and so on.

For further information about the GL account configuration, refer to the *Maximo Financial Managers Guide* or *Maximo Asset Management Essentials V7.1. Implementers Guide*, SG24-7645.

### 3.1.4 Create an organization

An organization must be set up to hold key information about the installation. The Maximo Essentials license mandates that no more than one organization is used per Maximo Essentials installation. Information configured at the organization level includes base currency, clearing GL account, and the list of sites and addresses associated with that organization. In many cases, application-specific behavior is also defined at this level, such as Work Order, Inventory, and Purchasing options.

### 3.1.5 Create a site

A site must be configured for the organization. Information, such as address and contact information, is defined against the site along with auto-numbering settings. After the site is configured, domain value lists can be defined against the site along with certain application-specific behavior.

Again, the Maximo Essentials license mandates that only one site can be configured per Maximo Essentials installation.

### 3.1.6 Specify financial periods

A financial period must be defined and cover the point in time when a financial transaction takes place. This feature allows financial transactions to be reported on and reconciled by the specified period. The required granularity of financial periods is a question that the client will need to answer.

### 3.1.7 Create security groups and assign users

Maximo security is defined at the group level. Group privileges are defined for application access and features using the Security Group application. Users are associated with security groups in either the Security Group or Users application. A user can belong to one or more security groups.

For simplicity in a Maximo Essentials deployment, we suggest that security groups be defined by business function. To further simplify group configuration, we also suggest that person groups be established in association with security groups.

There is not a hard relationship between security groups and person groups, but maintaining users in these two groups simultaneously eases the administrative overhead. For example, if a number of users will be fulfilling a planning function, we suggest that they be associated with a planning security group and a planning person group. In this way, escalations can be developed if required using the person group.

We list a suggested security matrix, based on a generic work management process, in 4.1.4, “Security Groups” on page 33.

## 3.2 Optional configuration tasks

The following sections describe configuration tasks that are optional in the sense that certain Maximo Essentials applications can be used without performing these steps. However, these tasks might need to be performed for the common applications used by most Maximo Essentials clients.

### 3.2.1 Define work types

*Work type* is a field on the Work Order Tracking application that is used to indicate the category of work for that work record.

Typical categories are:

<b>PM</b>	Preventative Maintenance
<b>CM</b>	Corrective Maintenance
<b>EM</b>	Emergency Maintenance
<b>HS</b>	Health and Safety work
<b>CP</b>	Capitalized Projects

Work types can be edited through the Organization application.

### 3.2.2 Develop Start Centers

By default, a Start Center is the first thing that a user sees when the user logs on to Maximo. The Start Center serves as a community notice board for monitoring performance and managing the workload among a security group. It also serves as a launchpad to favorite or frequently used applications and quick insert applications, saving mouse clicks and simplifying the user experience.

A Start Center can be modified from the user's Start Center, providing the user has the rights to do so. After a Start Center has been defined, it can be specified for one or more security groups on the Group tab of the Security Groups application.

A Start Center can display up to seven types of entities commonly referred to as *portlets*.

The types of portlets available are:

- ▶ Favorite Applications  
Provides a single-click means to open an application that the user regularly visits, which saves mouse clicks navigating the Go To menu.
- ▶ Quick Insert  
Similar to Favorite Applications, this portlet launches a frequently visited application and inserts a record for you, saving further mouse clicks.
- ▶ Bulletin Board  
This portlet is used to view notices that are typically of an administrative nature.
- ▶ KPI Graph  
This portlet can display simple bar, pie, or dashboard charts of key performance indicator (KPI) data.
- ▶ KPI List  
This portlet displays a tabulation of performance targets compared to performance actuals for a number of performance measures.
- ▶ Result Set  
This portlet displays a tabulation of data from a saved query.  
  
Useful applications of this portlet include an in-box to show work records at a given status or belonging to a specific owner group.

A user can have as the same number of Start Centers available to them as the number of security groups to which that user belongs. When multiple Start Centers are available to a user, the Start Centers are accessible via discrete tabs along the top of the Start Center.

A common use of these features is to display results portlets and KPIs specific to the business function of that security group. For example, a planner might want a KPI indicating how many jobs the individual needs to plan along with a results portlet listing the jobs and favorite applications for WO Track, Job Plan, and PM.

These Start Center requirements clearly differ from the Start Center requirements of a Purchasing Coordinator, for example.

A suggested matrix of Start Center features by business function based on a generic work management process is listed in 4.1.5, “Start Centers” on page 36.

### 3.2.3 Create saved queries

Maximo has sophisticated querying capability and a means to save frequently used queries for an application. Having created a query on the list window, you can save it and control its availability to other users. Saved queries can be called from the drop-down menu on the List tab of the application in which it was created or used from a result portlet as previously mentioned.

### 3.2.4 Establish owner/owner group usage

We suggest that you use the owner/owner group functionality on work orders to assign work records to the various business functions/roles.

A good way to represent a person/person groups job pool is using KPI and result portlets on the group’s Start Center along with saved queries, in WO Track, for example.

Taking ownership of a record removes the record from group ownership into person ownership. Where a team of people fulfill a single business function, the take ownership feature is a good way to indicate who is working on that work order and to remove that record from the group’s job pool.

Saved queries and portlets can be set up to show those records belonging to the logged in user’s person group and to the logged in person.

### 3.2.5 Create escalations

The Maximo Asset Management Essentials does not include the workflow engine that is part of the full Maximo Asset Management product. For the organizations to which Maximo Essentials is targeted, there is typically not a requirement for a full workflow engine. However, there is often a desire to have a level of process management to help ensure that company procedures and policies are being followed. Escalations can be used in Maximo Essentials to provide simple work process automation.

*Escalations* run on a timed frequency and look through a specified data set for specified records. We suggest that escalations are developed to change the ownership of records based on their current status. For example, you can develop an escalation to look for Work Orders having a status of WPLAN, but whose owner does not belong to the PLANNER group and whose group is not PLANNER. The escalation can set the owner group of these records

to PLANNER, so that the records will show up in the planner's result portlet on the Start Center if configured.

**Note:** We do not recommend that you include many escalations with short-term frequency, because too many escalations with short-term frequency might cause a performance issue when the DB starts growing.

### 3.2.6 User interface adjustment

The client might have a requirement to change the positioning of certain fields on the Maximo applications. A specific use of these fields related to a business process will often drive this desire.

The Application Designer application allows the implementer to make these changes.

You can also clone applications and tailor each clone to the specific needs of a business function. While this cloning is possible and not overly challenging, make sure that the client is aware that this activity will start to drive up the cost of an implementation when the effort in defining which fields to display to which users on which tab in which order is considered along with the increased security permutations for the cloned applications.

We suggest that the client keeps user interface changes to a minimum, because the client will have to assume the cost of maintaining consistency with these changes and all documentation, online help, pop-up windows, reports, user manuals, and so on. An alternative to a needed change, such as when a term conflicts with another concept already present in the organization, will be to maintain both terms in the user interface (for example, using the original label followed by the proper term for the organization).

### 3.2.7 SMTP configuration

It is likely that the client wants to receive e-mails from Maximo under certain scenarios, such as from a communication log or an escalation notification.

To support outbound e-mail, you need to specify a Simple Mail Transfer Protocol (SMTP) server for Maximo.

You need to assess considerations, such as the location of the SMTP server, available ports, firewalls, and the sensitivity of the e-mail content.

### 3.2.8 Failure Code Reporting

Failure reporting in Maximo allows the user to record the problem, cause, and remedy against a specific asset type. The client might often want the asset type to be copied down from the asset application using crossover functionality.

The failure code hierarchy is often client-specific, and the client must be aware of the effort involved in developing a complete failure code hierarchy from nothing. Alternatively, the client might want to adopt a standard set of classification data.

Either way, the client needs to recognize the effort to get that data into Maximo and train the users on its use.

### 3.2.9 Classifications

Classifications can appear similar to failure codes; however, the function is more generic. A failure code hierarchy is used to record what failed, why it failed, and what was done to fix it. *Classifications* can offer a finer, more flexible level of detail.

Classifications can be used to classify items, assets, and locations and collect rich attribute information. Furthermore, classifications can now be used to prompt for specific information on a work order or service request after the job has been classified.

These classification hierarchies are asset-specific and industry-specific. If the client wishes to build their own structure, the client must be aware of the significant effort involved here.

A more cost-effective approach might be for a client to adopt an industry standard. Having adopted a standard, effort will still be required to load the classifications into Maximo and train the users on how to use them. If asset classifications are also to be used, further effort is also required to populate the asset/item/location attributes.

### 3.2.10 Crafts, skills, and qualifications

Qualifications are a relatively new addition to Maximo and are a good way of tracking the competency of the workforce. The Work Order Tracking and Assignment Manager applications, however, do not currently provide any capability to specify or schedule work for a specific qualification, for example, a Corgi level 1-qualified gas fitter.

As a work-around for not providing the capability to specify or schedule work for a specific qualification, a craft skill level can be used to indicate qualifications for a given craft. For example, a craft of GASFIT can be created with skill levels of CORGI1, CORGI2, CORGI3, and so on. The craft and skill can then be assigned to the labor codes as appropriate and specified for planned work. In this way, assignments can then be matched to the appropriate labor in the Assignment Manager application.

Crafts and skills are good candidates for preconfigured generic data, although there will likely be additions specific to geography and industry.

### 3.2.11 Shifts and calendars

Shifts are used to define the recurring work patterns for different teams in the workforce. A shift might be 9 - 5 Monday - Friday or 12 midnight to 12 noon for 21 days followed by 21 days of leave, and so on.

Shifts can then be applied to a calendar along with non-working days for holidays, shutdowns, and so on to build a picture of the availability of the workforce. When defined, a calendar can then be associated with a labor resource.

Investing the effort to define crafts, skills, shifts, and calendars for labor resources, along with good work planning and estimation, renders the Assignment Manager application as a powerful scheduling tool.

## 3.3 Summary

This chapter has provided an overview of the most common configuration and customizations that might be involved in a Maximo Essentials engagement. Depending on the client's business requirements, there will usually be other configurations and customizations as well that need to be considered when sizing and performing the engagement.

There are common configurations that might apply to many clients. One way to make your engagements more efficient is to be able to take advantage of and reuse these common configurations across multiple engagements.

In the next chapter, we describe generic processes that might be applicable to many Maximo Essentials clients, and we explain the configuration that you perform to enable and implement these common processes. The Maximo objects required to implement these common processes are available from the IBM Tivoli Open Process Automation Library (OPAL) Web site along with a utility to automatically configure a freshly installed Maximo Essentials environment. If the process that we have defined is applicable to a specific client, this utility and data will speed up the deployment process and reduce the length of your engagement. We also document how you can start with this generic implementation and modify it to meet the unique requirements of a client.

## Process management

Maximo Asset Management Essentials does not include the workflow engine that is part of the full Maximo Asset Management product. For the organizations for which Maximo Essentials is targeted, there is typically not a requirement for a full workflow engine. However, there is often a desire to have a level of process management to help ensure that company procedures and policies are followed.

This chapter describes two generic processes (work and procurement) that are commonly implemented by organizations implementing Maximo Asset Management Essentials. These processes can be used “as is” in certain client environments. For clients that desire a modified version of these generic processes, the implementer can choose to start with the process as documented here and make the changes required. The objects and data required to implement the work process automation described next will be available for download from the IBM Open Process Automation Library at:

<http://www.ibm.com/software/tivoli/features/opal/>

Specifically, Maximo Essentials Rapid Implementation Kit will provide predefined data and objects to use to preload a freshly installed Maximo Essentials environment. This data will be loaded through the use of the Maximo Rapid Implementation Utility (also from OPAL).

## 4.1 Work process automation

In this section, we describe a generic work management process that can apply directly to many potential clients. If a client can agree that this process can be applied to their environment, the mechanisms to implement this process in Maximo Essentials can be downloaded from the OPAL Web site and installed using Maximo Rapid Implementation Utility. Of course, changes to this generic process might be required for certain clients, and in these cases, you will need to decide whether to start with the default process as described here or to develop a custom process from nothing.

### 4.1.1 Work maintenance processes

For our discussion, we have divided maintenance into different categories. This categorization is important, because maintenance work can be initiated differently depending on its type.

#### **Corrective Maintenance**

Corrective work addresses a failure that has not caused and does not pose an immediate risk of loss of production.

#### **Preventive Maintenance**

Preventive maintenance is based on fixed time and meter reading. Using preventive maintenance will minimize the breakdown of installations. Repeating maintenance work is covered in standard job plans (for example, inspection lists or standard tasks for changing parts). The Maximo modules preventive maintenance and job plans can be used to set up a maintenance program. Work orders are automatically generated by the system.

#### **Emergency Maintenance**

Emergency work is typically performed to restore a loss or immediate risk of loss of production. This type of work might progress through an accelerated planning process or get recorded after the event.

#### **Health and Safety work**

Organizations often want to track the amount of Health and Safety work carried out around the facility. The type of work can vary from repainting white lines around an eye wash station to replacing a guard rail to clearing hazardous material.

#### **Capital Projects**

Capital Work indicates new projects, which are paid for out of a separate budget, typically to improve efficiency or operation of the plant.

The generic work management process described next primarily addresses the corrective maintenance and preventive maintenance processes just described. However, it is a straightforward exercise to build the other maintenance process types into the process described next.

### 4.1.2 Generic work management automation process

The following diagram in Figure 4-1 on page 25 depicts a generic work management process that we will use as the basis for our discussion throughout this chapter.

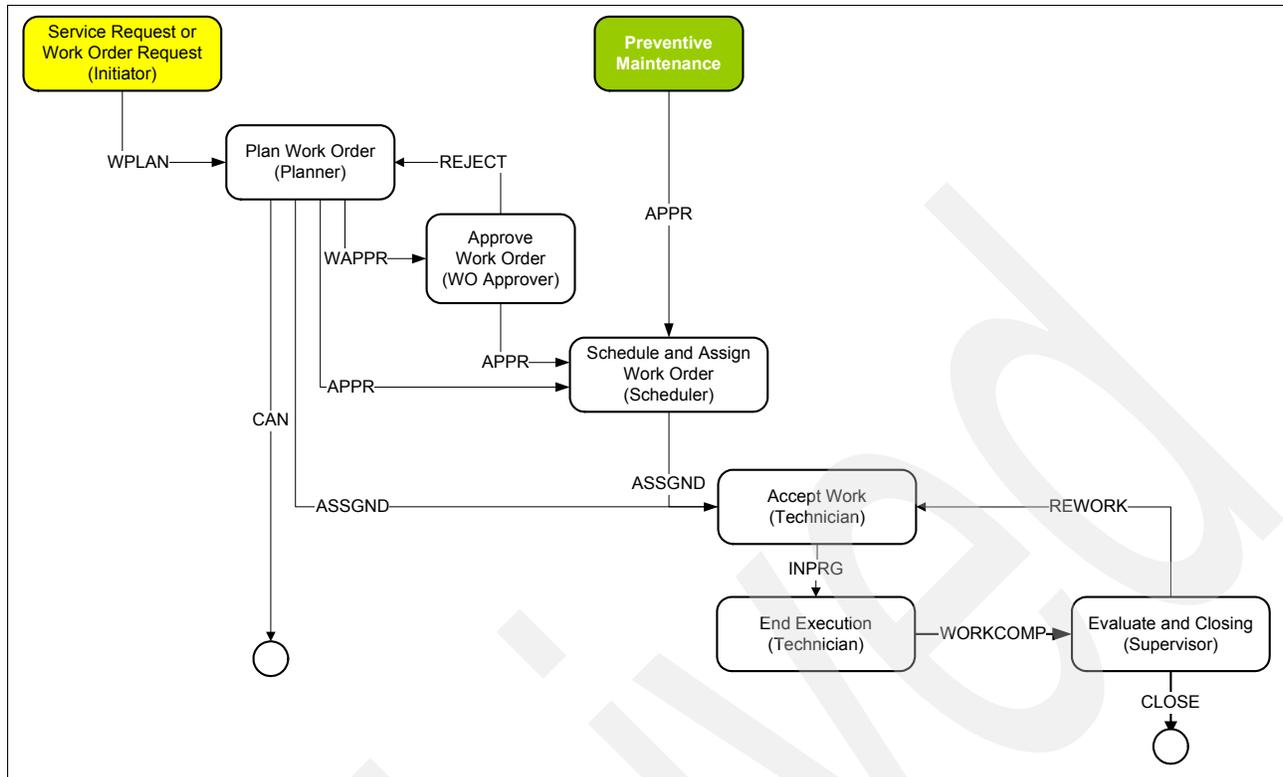


Figure 4-1 Generic work management automation process

The work management model described identifies the business functions involved in the plan-do-review work cycle. In the smallest of maintenance departments, many of these business functions might be performed by the same person. For the larger size Maximo Essentials client, however, these business functions might well be performed by different individuals or teams.

In certain larger scenarios, it might be desirable to capture all requests for work from the business and have a coordinator review the requests before generating valid work orders from them.

This approach ensures that only valid work requests make it into the Work Order application and that the valid work requests are achieved using the Service Request application.

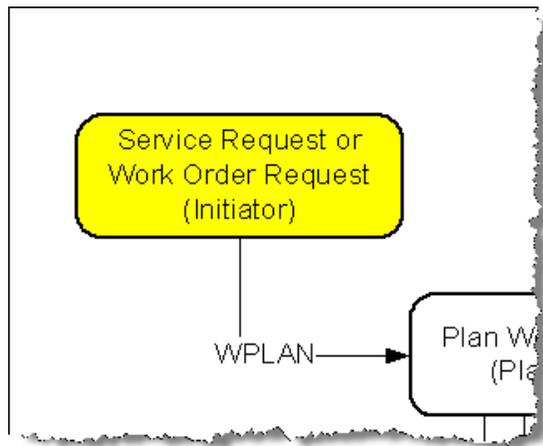
### 4.1.3 Process steps and business functions

The following sections provide more detail about each of the steps shown in Figure 4-1.

In general, a maintenance department aims to progress work through a Plan-Do-Review cycle. The extent to which each element applies will depend on the nature of the work and any best practice or regulatory compliance objectives.

When using Maximo Essentials, saved queries and Start Center portlets are a good way to identify records available for specific business functions on which to take action.

## Service Request or Work Order Request



The volume and nature of work requests along with the available resource in the maintenance department will help guide a decision about the best approach for raising requests.

We outline three typical scenarios depending on the aforementioned considerations.

### ***Self Service***

Where there is a requirement for a group of people outside the maintenance team to make a request for work, and it is feasible that the group can be given access to the system, the Self Service application is a good candidate. The Self Service licenses are not accounted for in the 25 user limit for Maximo Essentials, and the per user cost for this kind of user is extremely low.

In this way, work requests take the form of Service Requests.

A role is necessary here to review the Service Requests and generate related Work Orders for planning as required. Feedback to the work requestor can be done by phone, by using a worklog, or by using the communication functionality.

The status of the requests can also be reviewed by the requestor in the Self Service application.

### ***Call Center***

If like the Self Service Scenario, there is a large base of potential requestors of work, but it is not feasible or appropriate for that group to gain access to Maximo, a call center or service desk might be appropriate. These requests can be entered as Service Requests by service desk operators.

Given that the operator might not be qualified to indicate the validity of a Service Request, a role to review these requests before creating related Work Orders to be planned might be appropriate.

Feedback for the work requestor might be made verbally or by using communication functions.

### ***Raised by Maintenance***

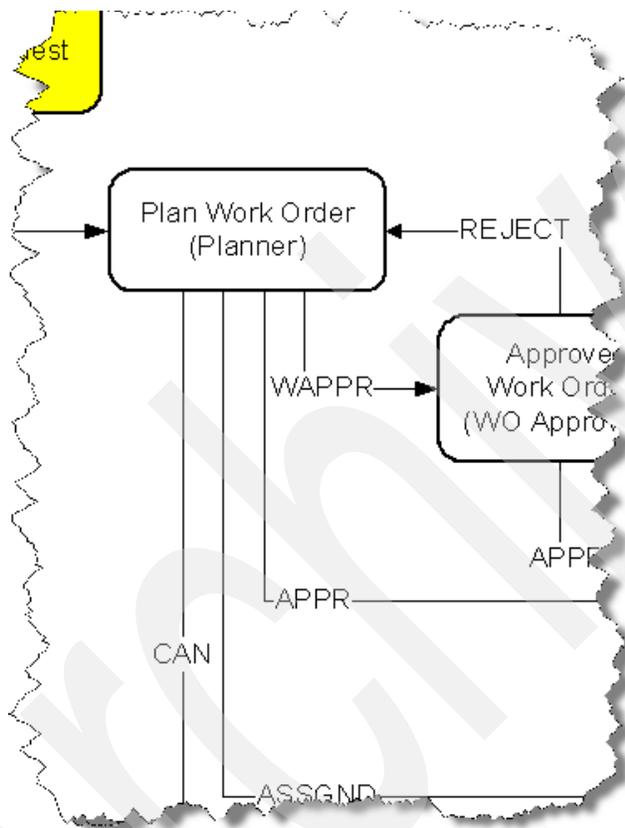
In a smaller maintenance team, or where the work is largely identified by the maintenance team or skilled personnel, use of the Service Request application might be too cumbersome.

In this situation, work can be entered directly into Work Order Tracking by a member or members of the maintenance team.

In all the previous scenarios, the work requestor needs to summarize what needs attention, where the asset is located, the work to be performed, and a priority. Any priority specified can be challenged as the work progresses through the planning phase.

The status of a new work order (WO) can stay at a status of NEW, which is a synonym of the Maximo WAPPR (Waiting for Approval) status, until it is submitted for planning as WPLAN (Waiting for plan).

## Plan Work Order



A member of the planning team will be responsible for determining the quantity of labor, tools, and materials required to carry out the work. This information can be captured in the plans tab of the Work Order Tracking application.

Specific tasks can be detailed for the work and the required resources associated with the tasks.

The planner can specify target start and completion dates considering work already in the pipeline. Target dates can also be driven by any Service Level Agreement (SLA) that is associated with the work.

After the job is priced in this way, the status can be changed to WAPPR, indicating it is ready for approval.

Work already planned and submitted for approval can be returned by the approver with a status of REJECT. Depending on the reason for rejection, the work estimate might need to be refined and resubmitted for approval, or the work can be cancelled using a status of CAN.

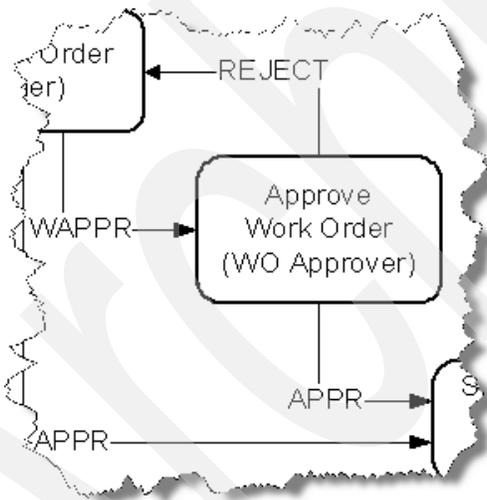
The planner must execute a level of diligence for new work ensuring that the request is reasonable. Under certain scenarios, the planner might also have the authority to assign work to the workforce.

To summarize, status moves for this business function will typically be from WPLAN or REJECT to:

- ▶ WAPPR (Waiting for Approval): Total cost of work above the planner's approval limit - work to be approved by an approval authority.
- ▶ APPR (Approved): Work is ready for scheduling.
- ▶ ASSGND (Assigned): Work is assigned to a work performer or a job pool.
- ▶ CAN (Cancelled): Work will not be performed.

**Note:** The Planning team is also responsible for developing Job Plans and PM regimens. They will likely be involved with rationing spare parts across the business and evaluating the spare part availability. The planners might also be involved with developing SLAs for the work and asset types.

## Approve Work Order



Planned work is moved to a status of WAPPR indicating that it is ready for approval by an approving authority. It is typical for all work below a nominal value to be auto-approved, bypassing an approval authority.

This scenario can be facilitated with an escalation, looking for all of the work at the status of WAPPR with a total cost below the nominal value.

A work approver can reject the job for a variety of reasons, including budgetary constraints. If rejected, the work order goes back to the planner to either rework the plan or to cancel the work order.

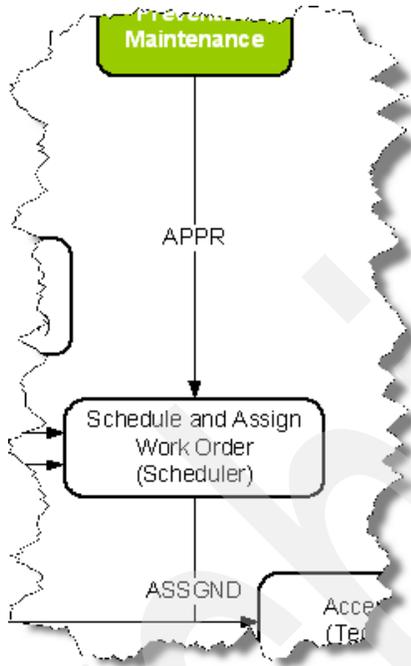
Approved work must be moved to a status of APPR indicating that it is ready for scheduling.

Rejected work must be moved to a status of REJECT, a synonym of WAPPR. When work is rejected, the reason why it is rejected can be entered as a worklog entry, a communication log, or simply as a comment in the status memo field for the Work Order.

To summarize, status moves for this business function will typically be:

- ▶ WAPPR → APPR (Approved): Work is ready for scheduling.
- ▶ WAPPR → REJECT (Rejected): The work order and plan are not accepted as is and will either be replanned or cancelled.

## Schedule and Assign Work Order



Target start and finish dates can aid the scheduler along with the priority and the availability of the materials, the tools, the workforce, and the plant. The scheduler can choose to move the work order to a status of ASSGND and set the owner group of the work record to maintain traceability of the work.

Typically, the Work Order Details reports are printed and issued to the workforce in the morning and handed back at the end of the day when the job is completed, sometimes days or weeks later depending on the nature of the work.

Alternatively, the scheduler can choose to use the Assignment Manager application to manage the work at the task or assignment level, managing assignments by specific craft and skills available. Effort and rigor are required to ensure that the crafts and skills associated with the labor records are kept up-to-date to make the most of Assignment Manager's features.

The work management process described assumes that inventory is managed efficiently and store stock will always be available to perform the job. Approving work, which has direct issue materials on order but not yet received, will instead move the work order to a status of WMATL. When the ordered materials for the job are fully received (in Maximo), the Work Order is changed to a status of APPR.

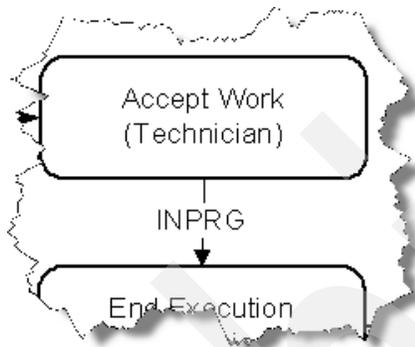
A scheduler might also choose to use the WMATL status or a synonym of it, such as WSMATL, to indicate work that is waiting for the availability of stocked material. No functionality exists to change the Work Order to APPR when stocked materials are received. It is the responsibility of the scheduler to schedule work appropriately based on the available materials.

The Material Shortage Report is a useful report to help identify work waiting on stocked materials. However, this report does not identify a shortage where the total requirement of the same parts between two jobs exceeds the balance held in store. In this scenario, the shortage will not display on the report until the first job has consumed the materials.

To summarize, status moves for this business function will typically be:

- ▶ APPR → ASSGND (Assigned): Work is assigned to a work performer or a job pool.

### Accept Work (Job execution)



Indicating when work is being executed is often difficult to manage practically in the absence of a mobile solution. Ideally, work is moved to a status of INPRG (in progress) to indicate that the work is truly being undertaken. However, managing this responsibility is not always straightforward, especially if access to Maximo is restricted.

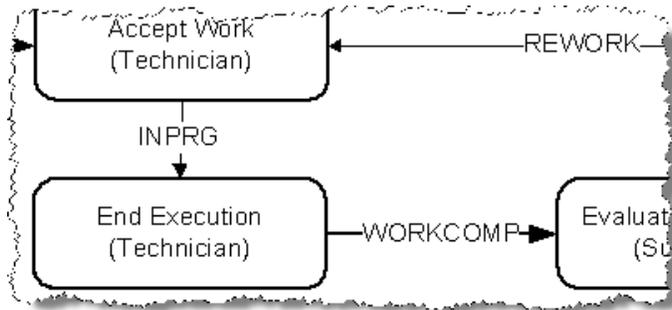
Moving the work to a status of ASSGND by the scheduler is often enough, and the status is changed to WORKCOMP when the job completed information is handed back. Diligence and communication are essential on the part of the scheduler and the workforce to keep track of work that is truly in progress.

A mobile solution can help provide this clarity, allowing the workforce to indicate the status of work as it happens by using a mobile device. Interestingly, training the mobile workforce in this area can be one of the biggest challenges along with understanding record ownership between Maximo and the mobile device.

To summarize, the status move for this business function will typically be:

- ▶ ASSGND → INPRG (In Progress): The work is being performed. Moving to this status updates the actual start time.

## End Execution (Complete work)



A Technician will provide details of the work performed and hours and materials spent on the job and any meter readings. Depending on capability, the technician might have direct access to enter this information, perhaps via quick reporting or a mobile solution.

Alternatively, the information can be recorded in paper format and passed to a clerk for entry into the system. For accurate reporting, it is important that work start times and end times are captured.

A WORKCOMP status synonym of INPRG instead of CLOSED is often used to indicate the work has been completed. WORKCOMP allows further information to be added to the work record or allows the work to be restarted if necessary.

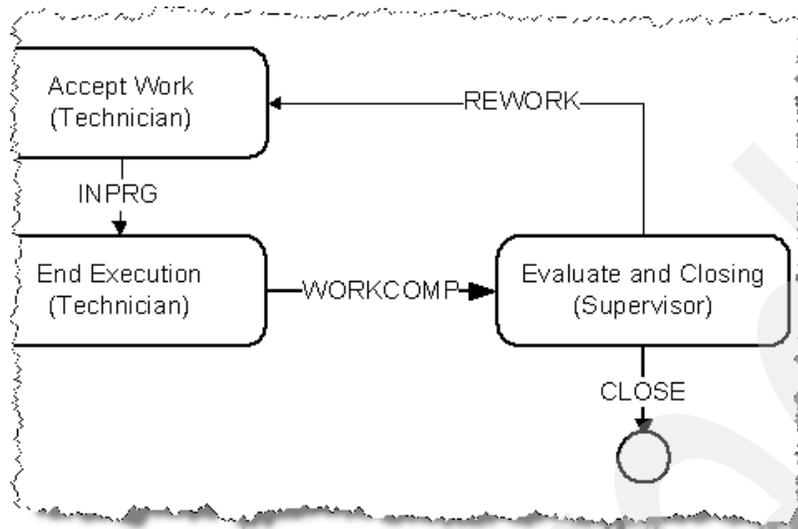
Further information to submit can include attaching compliance certificates, and any general observations about the condition of the asset need to be noted. Any awareness of PM Schedule or Job Plan information deemed relative to the work, particularly emergency work, must be noted and communicated to the planning team.

Any deficiency in the scheduled resources or timing of PM work must also be noted and communicated for review by the planner.

To summarize, the status move for this business function will typically be:

- ▶ INPRG → WORKCOMP (Work Complete): This status move indicates that the work is physically done, although technical submission might still be required.

## Evaluate and Closing



A Supervisor or peer can review the work that has been done to ensure that it has been completed satisfactorily. If the supervisor is satisfied, the Work Order can be progressed to a status of COMP.

Alternatively, if further work is required, the status can be moved back to INPRG using a synonym called REWORK and the owner group is updated.

Any awareness of PM Schedule or Job Plan information deemed relative to the work, particularly emergency work, must also be noted and communicated to the Planning team. Any deficiency in the scheduled resources or timing of PM work must also be noted and communicated for review by the Planner.

To summarize, status moves for this business function will typically be:

- ▶ WORKCOMP → REWORK (In progress): This status move indicates that the work was not finished in an acceptable manner and needs additional work before it is considered complete.
- ▶ WORKCOMP → COMP (Complete): This status move indicates that the work is complete and that any review and technical submission have been performed.

### ***Closing the work order***

Following the completion of the work, a planner might periodically review the work that was performed and assess whether PM regimens and Job Plans need to be modified or created.

It might be helpful to leave these records at a status of COMP and move each record to a status of CLOSE after it has been reviewed. Alternatively, an escalation might be put in place to move the status of work records on to CLOSE after a period of time from completion.

To summarize, the status move for this business function will typically be:

- ▶ COMP → CLOSE (Closed): This status move indicates that the work is closed, and the review by a planner is complete.

## 4.1.4 Security Groups

We described a sample work management process earlier in this chapter that details the ownership of activities by business function.

The following suggested security matrix reflects the application and feature access that each business function will require to fulfill their activities.

For simplicity, a one-to-one relationship has been assumed between the conceptual business function and the Maximo security and person groups.

We expect that, in certain scenarios, one person might fulfill several of the business functions described. You handle this scenario by adding a user and person to multiple security and person groups.

You give application access to a person by placing the person into the security groups for each of the business functions that person performs; whereas record ownership is granted by assigning the person to whichever person groups are required.

### Steps to add a user to a business function

To fit the generic work management process, you undertake several tasks to position a newly created Maximo user into their business function:

1. The user must be registered as a person, so that they can be assigned to a person group in the next step. When creating a new user, you will be prompted to create the person if a person with that user ID does not already exist.

For simplicity, accept the name of the person as the user ID entered.

2. The user must be made a member of a security group in order to gain access to the applications that are needed to fulfill their tasks.
3. In addition, the person must also be a member of a person group in order for that person to view records owned by a person group through the suggested portlets and saved queries.
4. If the user is a work performer, a labor record also needs to be generated and associated with the user and person.

Note that if a work performer is not intended to have access to the system, but work needs to be tracked against that labor record, do not generate a user ID for that person.

**Tip:** When creating a user/person, create the user first. Maximo will prompt to create the person record for you.

The following table identifies the business functions in our generic environment and the access rights that need to be assigned to each of those roles.

As part of the packages to be made available on OPAL, the following content will be made available to streamline the initial load of users and associations to persons and security groups.

Business function	Application name	Read	Write	Insert	Status moves	Actions
Administrator	All applications and all functions	Y	Y	Y	Y	All

<b>Business function</b>	<b>Application name</b>	<b>Read</b>	<b>Write</b>	<b>Insert</b>	<b>Status moves</b>	<b>Actions</b>
Asset Owner	Meter Groups	Y	Y	Y	Y	All
Asset Owner	Meters	Y	Y	Y	Y	All
Finance Manager	Assets	Y	N	N	N	None
Finance Manager	Chart of Accounts	Y	Y	Y	Y	All
Finance Manager	Currency Codes	Y	Y	Y	Y	All
Finance Manager	Exchange Rates	Y	Y	Y	Y	All
Finance Manager	Locations	Y	N	N	N	None
Finance Manager	Request for Quotations	Y	Y	Y	Y	All
Initiator	PR	Y	Y	Y	Y	None
Initiator	SR	Y	Y	Y	Y	None
Mtc Coordinator	Service Requests	Y	Y	Y	Y	All
Mtc Coordinator	SR	Y	Y	Y	Y	All
Mtc Coordinator	WOTrack	Y	Y	Y	Y	All
Planner	Activities and Tasks	Y	Y	Y	Y	All
Planner	Assets	Y	N	N	N	
Planner	Crafts	Y	Y	Y	-	All
Planner	Faliure Codes	Y	Y	Y	-	All
Planner	Inventory	Y	N	N	N	All
Planner	Item Master	Y	Y	Y	Y	All
Planner	Job Plan	Y	Y	Y	Y	All
Planner	KPI Manager	Y	Y	Y	Y	All
Planner	Labor	Y	N	N	N	All
Planner	Locations	Y	Y	Y	Y	All
Planner	Meter Groups	Y	Y	Y	-	All
Planner	Meters	Y	Y	Y	-	All
Planner	PM	Y	Y	Y	Y	All
Planner	PM Master	Y	Y	Y	Y	All
Planner	PO	Y	Y	Y	Y	All
Planner	PR	Y	Y	Y	Y	All
Planner	Releases	Y	Y	Y	Y	All
Planner	Work View	Y	Y	Y	Y	
Planner	WOTrack	Y	Y	Y	Y	All

<b>Business function</b>	<b>Application name</b>	<b>Read</b>	<b>Write</b>	<b>Insert</b>	<b>Status moves</b>	<b>Actions</b>
PO Approver	Invoices	Y	Y	Y	Y	
PO Approver	PO	Y	Y	Y	Y	None
PO Approver	PR	Y	Y	Y	Y	None
PO Approver	Request for Quotations	Y	Y	Y	Y	All
PO Approver	Service Requests	Y	Y	Y	Y	All
PO Approver	WOTrack	Y	N	N	N	None
Purchasing Coordinator	Companies	Y	Y	Y	Y	
Purchasing Coordinator	Inventory	Y	N	N	N	None
Purchasing Coordinator	Invoices	Y	Y	Y	Y	
Purchasing Coordinator	PO	Y	Y	Y	Y	None
Purchasing Coordinator	PR	Y	Y	Y	Y	None
Purchasing Coordinator	Request for Quotations	Y	Y	Y	Y	
Purchasing Coordinator	WOTrack	Y	N	N	N	None
Scheduler	Assignment Manager	Y	Y	Y	Y	All
Scheduler	Calendars	Y	Y	Y	Y	All
Scheduler	Inventory	Y	N	N	N	All
Scheduler	Item Master	Y	N	N	N	All
Scheduler	Work Order Tracking	Y	Y	Y	Y	All
Store Manager	Condition Codes	Y	Y	Y	Y	All
Store Manager	Inventory	Y	Y	Y	Y	All
Store Manager	Issues and Transfers	Y	Y	Y	-	All
Store Manager	Item Master	Y	N	N	N	All
Store Manager	Receiving	Y	Y	Y	Y	All
Store Manager	Service Items	Y	Y	Y	Y	All
Store Manager	Stocked Tools	Y	Y	Y	Y	All
Store Manager	Storerooms	Y	Y	Y	Y	All
Store Manager	Tools	Y	Y	Y	Y	All
Supervisor	Assignment Manager	Y	Y	Y	Y	All

Business function	Application name	Read	Write	Insert	Status moves	Actions
Supervisor	Crafts	Y	Y	Y	-	All
Supervisor	Failure Codes	Y	Y	Y	-	All
Supervisor	Inventory	Y	N	N	N	
Supervisor	Item Master	Y	N	N	N	
Supervisor	KPI Manager	Y	N	N	-	None
Supervisor	Labor	Y	Y	Y	-	All
Supervisor	Meter Groups	Y	Y	Y	-	All
Supervisor	Meters	Y	Y	Y	-	All
Supervisor	PR	Y	Y	Y	Y	All
Supervisor	Qualifications					
Supervisor	Quick Reporting	Y	Y	Y	Y	
Supervisor	Work View	Y	Y	Y	Y	
Supervisor	WOTrack	Y	Y	Y	Y	All
Technician	Activities and Tasks	Y	Y	Y	Y	
Technician	Assignment Manager	Y	N	N	Y	None
Technician	Failure Codes	Y	N	N	-	None
Technician	Inventory	Y	N	N	N	
Technician	Issues and Transfers	Y	Y	Y	-	All
Technician	Item Master	Y	N	N	N	
Technician	Labor Reporting	Y	Y	Y	-	
Technician	Meter Groups	Y	Y	N	-	Restricted
Technician	Meters	Y	Y	N	-	Restricted
Technician	Quick Reporting	Y	Y	Y	Y	
Technician	WOTrack	Y	Y	Y	Y	All
WO Approver	Inventory	Y	N	N	N	
WO Approver	WOTrack	Y	Y	Y	Y	

### 4.1.5 Start Centers

The Start Center is the home page of the primary interface for users of Maximo Asset Management Essentials. The contents of the Start Center can be customized on a user-by-user basis. However for many clients, it is best to provide Start Centers that are defined by business functions. Therefore, every individual performing a specific business function will have the same elements in their Start Center as other people performing the same business function. This consistency might make it easier for these users to communicate clearly with one another and will also make it easier from a support standpoint.

In Chapter 3, “Getting started with a solution implementation” on page 15, we have mentioned key components that can be utilized to customize the Start Centers for various users, which include:

- ▶ Quick Insert
- ▶ Favorite Applications
- ▶ Result Portlets
- ▶ Key Performance Indicators (KPI) Portlets

The following table provides a suggested set of elements that might be added to the Start Center for each business function in our work management process as described previously.

## 4.2 Implementing work process automation in Maximo Essentials

We have implemented the work management process as described in Figure 4-1 on page 25 by simulating a typical implementation process for a new client, assuming that the Work Management Process and all of its supporting data are the required components of the implementation. The data that we have created can be divided into two categories: *Work Management Process-specific data* and *generic data*.

Work Management Process-specific data includes data, such as functionally configured Start Centers, KPIs, Queries, Escalations, Actions, Communication Templates, Security Groups, Person Groups, Roles, Work Order Synonym Domain Values, and so on.

Generic data includes data, such as domain values, work types, currency codes, measurement units, conversion units, commodity, commodity groups, and so on.

In order to create the Work Process Management Content Package, we loaded all of the configuration data into a clean Maximo Essentials installation. After we completed loading all of the configuration data, we have extracted both the generic data and the Work Management Process-specific data from our development instance, and we have created a package that you can install. This package can be installed on top of a new Maximo Essentials instance. During installation of the tool kit, you will be presented with options to select the data that you want to install. As an example, you might want to install the currency values provided in the package but not the work types. Logic exists in the tool kit package that will drive the automatic selection of certain data based upon dependency rules that have been configured within the package.

The package that you install is available from the OPAL Web site.

### Steps to install the Work Process Management package

First, install Maximo Essentials and complete the required configuration tasks that are described in 3.1, “Required configuration tasks” on page 16.

Second, download the installable Content Package from OPAL and install it on top of your Maximo Essentials instance. We provide further details of downloading and installing the package in Appendix A, “Maximo Rapid Implementation Utility” on page 91.

### 4.2.1 Details of data included in the sample Content Package

Our goal for the Maximo Essentials Rapid Implementation Kit and Maximo Rapid Implementation Utility is to provide a Work Management Process that automates the path and

the actions that occur as a Work Order is driven through its life cycle. We define the *path* as the logical ownership progression that a work order typically follows as it moves from one status to the next status within the work management process. In effect, we have created a relationship between the status and the owner group and are utilizing the escalation mechanism to set the owner group value on the work order based upon the current status of the work order. As the status of the work order changes, the owner group is updated via an escalation process.

Work Process Management, for non-Maximo Essentials clients, is typically done by implementing a Maximo Work Order Work Flow Process. However, for Maximo Essentials clients, Maximo Work Flow is not available. So, in order to implement a Maximo Work Management Process, which will drive the work order from one owner group to the next owner group based upon the current status of the work order, we used the Maximo tools that are available to enable this process. We have created work order *synonym statuses*, and we have created *escalations* that evaluate the current work order status in order to set the value on the work order owner group, based upon that current status of the work order.

Additionally, we are providing Start Centers with query-based Result Sets that present the appropriate work orders to the user when they log into Maximo.

For example, as the Work Order Approver logs into Maximo, only work orders that are waiting for approval will be presented to the Work Order Approver within their Start Center Result Set. When the Work Order Approver approves or rejects the WO, an escalation, running periodically in the background, will find that work order and set the value of the owner group appropriately. If the WO is Rejected, the owner group will be set to the planning group, and if the WO is Approved, the owner group will be set to the Scheduler group. So now, when any person who is a member of either of those groups logs in, that person will be presented with that work order in order to perform their function in the process. After they perform their function and update the status of the work order, the WO is pushed along to the next function by an escalation that sets the owner group appropriately.

We have also utilized conditional domain functionality to control the available status options that are presented. So continuing with our example, when the Work Order Approver calls the change status action, only REJECT and APPROVE will be available to them.

## **Work management process-specific data**

The following sections describe the work management process-specific data that we developed for our generic process and that is included in the package available from OPAL.

### ***Work order status synonym values***

A set of WO status synonym values will be provided in the content. *WO statuses* drive the work order ownership. *Ownership* is set via an escalation action based upon the current value of the work order status. So if a WO has a status of WPLAN, the owner group value is set to Planner. Ownership drives the Start Center presentation. So in our example, the WO with a status of WPLAN will be presented to all members of the Planner Owner Group in a Result Set portlet on their Start Center when they log in to Maximo. Planners have four status options available to them. They can change the status to Cancel, Waiting for Approval, Approved, or Assigned. The owner group value that is set on the WO is determined by the status that is selected by the Planner.

The following table shows the various synonym values and related information for work order status.

Maximo internal value	Synonym value	Status available to:	Typical actions	Conditional expression name
WAPPR	WPLAN - Default insert status when inserting a new work order	Initiator	WOs with WPLAN status are presented to the Planner. The Planner can change the status to CAN, APPR (Scheduler), WAPPR (WO Approver), or ASSGND (Technician).	WMP_INIT
WAPPR	WAPPR	Planner	If the planner determines that a WO requires approval, they change the status to WAPPR, which routes the WO to the WO Approver.	WMP_PLANNER
WAPPR	REJECT	WO Approver	If the WO Approver rejects the WO, it is assigned back to the Planner who can provide additional details and resubmit for approval or can cancel the WO.	WMP_REJECT
APPR	APPR	WO Approver, Planner	All WOs that are approved are assigned to the Schedulers.	WMP_APPR
APPR	ASSGND	Planner, Scheduler	All WOs that are ASSGND are routed to the Technicians.	WMP_ASSGND
INPRG	INPRG	Technician	When the Technician begins work on an ASSGND WO, they change the status to INPRG.	WMP_TECH
INPRG	WORKCOMP	Technician	When the Technician completes work on an INPRG WO, they change the status to WORKCOMP.	WMP_WRKCMP
INPRG	REWORK	Supervisor	WORKCOMP WOs are routed to the Supervisor, who evaluates the work and changes the status to REWORK or CLOSE. Work orders with a REWORK Status are routed back to the Technicians.	WMP_SUPR
CLOSE	CLOSE	Supervisor	WORKCOMP WOs are routed to the Supervisor, who evaluates the work and changes the status to REWORK or CLOSE.	WMP_SUPR
CAN	CAN	Planner		WMP_PLANNER

Some clients may choose to use the self-service module to allow employees to enter service requests that will result in work orders. To support such environments, the following synonym was defined for Service Requests.

MX internal value	Synonym value	Status available to	Typical actions	Conditional expression name
NEW	WPLAN	Initiator	SRs with WPLAN status are presented to the Planner. The Planner can change the status to CAN, APPR (Scheduler), WAPPR (WO Approver), or ASSGND (Technician).	WMP_PLNRSRS

The following table shows the various status synonyms that can be used by each of the person groups associated with our generic work process.

Person group	Available status values
Initiator	WPLAN
Planner	CAN, ASSGND, APPR, WAPPR
WO Approver	APPR, REJECT
Scheduler	ASSGND
Technician	INPRG when current status=ASSGND and WORKCOMP when current status=INPRG
Supervisor	CLOSE, REWORK

Again, to support the possibility of a client using the self-service application to enter service requests, the following table shows the status value available to a service request initiator.

Person group	Available status value
Initiator	WPLAN

Figure 4-2 shows an example of the definition for a conditional expression for the Planner role.

The screenshot displays the 'Conditional Expression Manager' application. A table lists various conditions, with 'WMP\_PLANNER' selected. The details for 'WMP\_PLANNER' are shown below the table:

- Condition:** WMP\_PLANNER (Used to Make WAPPR and CAN Available to Pln)
- Type:** EXPRESSION
- Expression:** :ownergroup = 'WMP\_PLNR' or :owner in (select respartygroup from persongroupteam where persongroup = 'WMP\_PLNR')
- Always Evaluate?:**
- Reference Count:** 2

Figure 4-2 Example conditional expression for WMP\_PLANNER

Figure 4-3 shows how a condition is associated with the WOSTATUS domain.

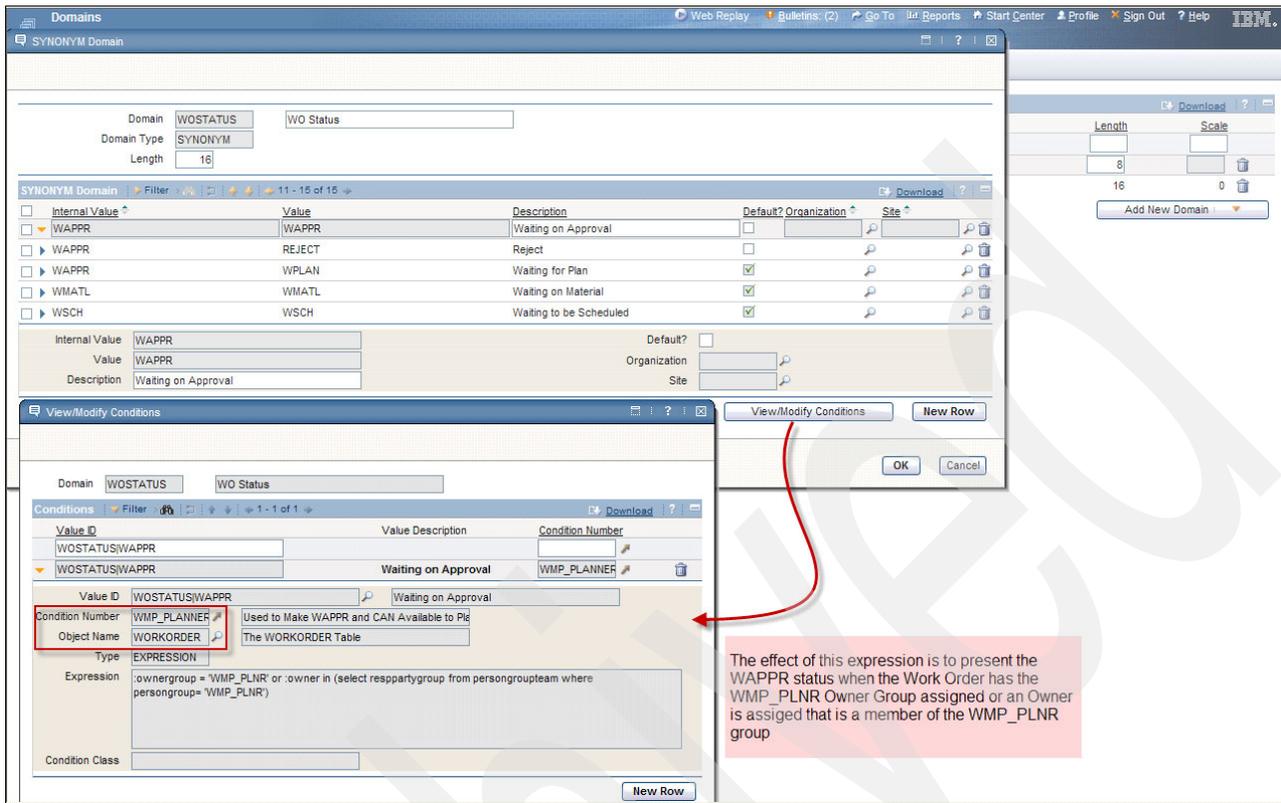


Figure 4-3 Example of associating condition to the WOSTATUS domain

### Escalations

The Maximo escalation mechanism is used to set the Owner Group on the work order according to the current status of the work order. Escalations are set to run every 15 minutes. You can modify this interval to your client's needs.

Work View Result Sets have been utilized on all Start Centers to present the work currently assigned to the groups to which the logged in user belongs. As the work order moves through its status life cycle, the combination of escalations and the work view Result Set pushes the work order through the work management process, presenting it to the appropriate groups, at the appropriate time, so that they can perform their function in the process.

In addition to work view results set, the escalation also triggers a communication to all members of the owner group, when the owner group is assigned.

The following table shows the various escalations that we use to set work order status along with related actions and notifications.

Escalation ID	Escalation point condition SQL	Purpose	Action ID	Notification ID
WMP_APVR	Status = 'WAPPR'	Sets value of ownergroup of the Work Order to WO Approver	WMP_APVR	WMP_COMM
WMP_PLNR	Status='WPLAN'	Sets value of ownergroup of the Work Order to Planner	WMP_PLANNER	WMP_COMM

Escalation ID	Escalation point condition SQL	Purpose	Action ID	Notification ID
WMP_PLNRSRS	Status='WPLAN	Sets value of ownergroup of the SR to Planner	WMP_PLANNERSRS	WMP_COMMSRS
WMP_REJECT	Status='REJECT	Sets value of ownergroup of the Work Order to Planner	WMP_PLANNER	WMP_COMM
WMP_REWORK	Status='REWORK	Sets value of ownergroup of the Work Order to Technician	WMP_TECH	WMP_COMM
WMP_SCHD	Status='APPR	Sets value of ownergroup of the Work Order to Scheduler	WMP_SCHD	WMP_COMM
WMP_SUPR	Status='COMP	Sets value of ownergroup of the Work Order to Supervisor	WMP_SUPR	WMP_COMM
WMP_TECH	status ='ASSGND	Sets value of ownergroup of the Work Order to Technician	WMP_TECH	WMP_COMM

As an example, Figure 4-4 shows the definition of one of the escalations defined above.

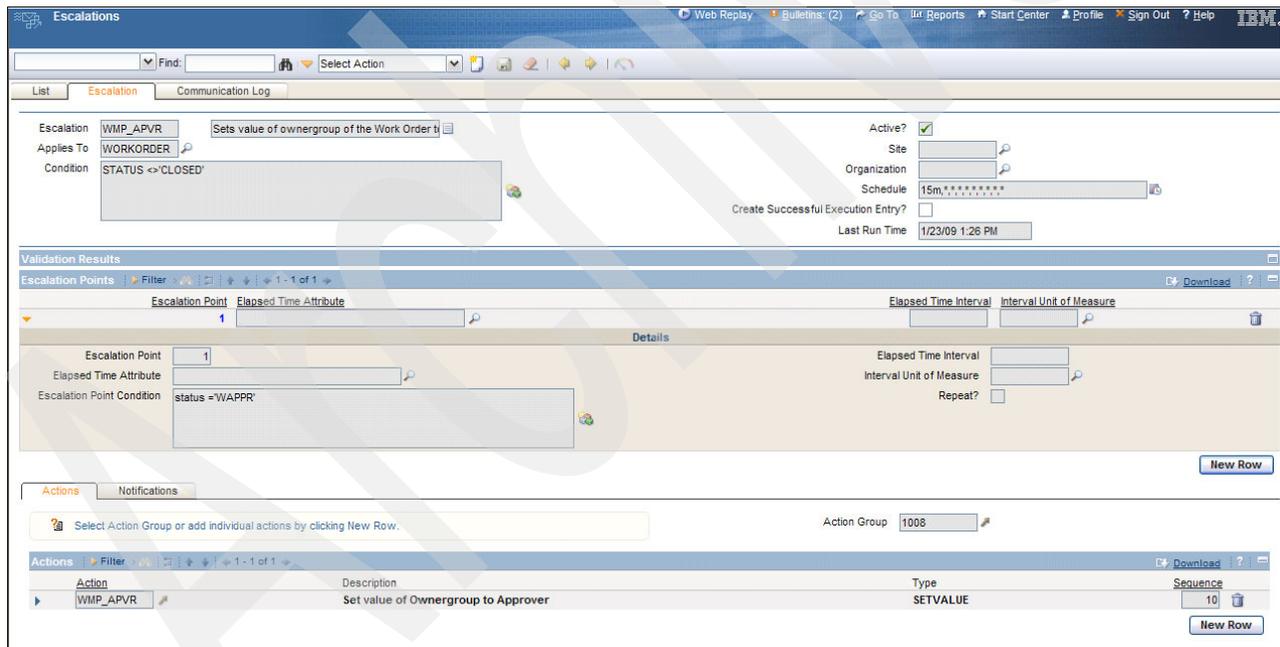


Figure 4-4 WMP\_APVR escalation

Automated Actions are utilized by the escalation to Set Value on the Owner Group Attribute for all records that meet the escalation point criteria.

Figure 4-5 on page 43 shows the definition of an escalation action.

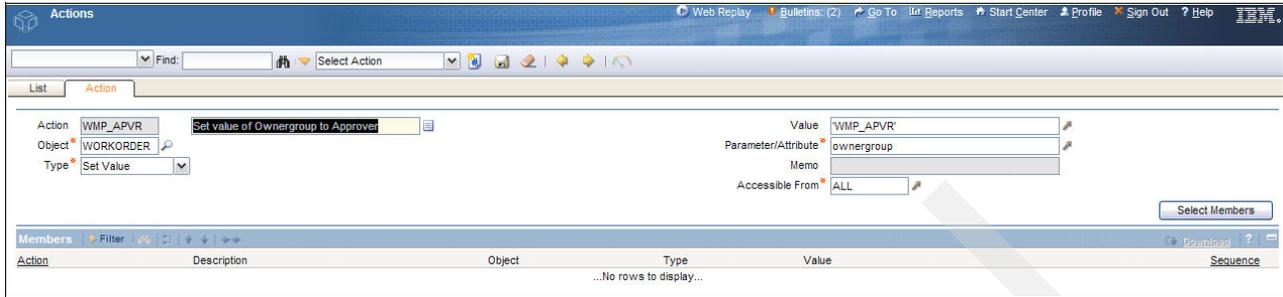


Figure 4-5 Defining an action for the WMP\_APVR escalation

### Automated Communications

The WMP\_COMM template is a standard communication template that is utilized to alert all members of a group of a newly assigned Work Order to their group. The template utilizes Work Order Substitution Variables to provide the appropriate Work Order details and a Role to resolve to all members of the owner group assigned to the work order. You will need to set the Send From attribute appropriately for your client.

Template ID	Subject	Message	Role
WMP_COMM	WO :WONUM - :DESCRIPTION	WO:wonum -:description was assigned to your group at :changedate. Description - :description Reported By- :reportedby Reported Date -:reportdate Priority -:wopriority	WMP_OWRGRP

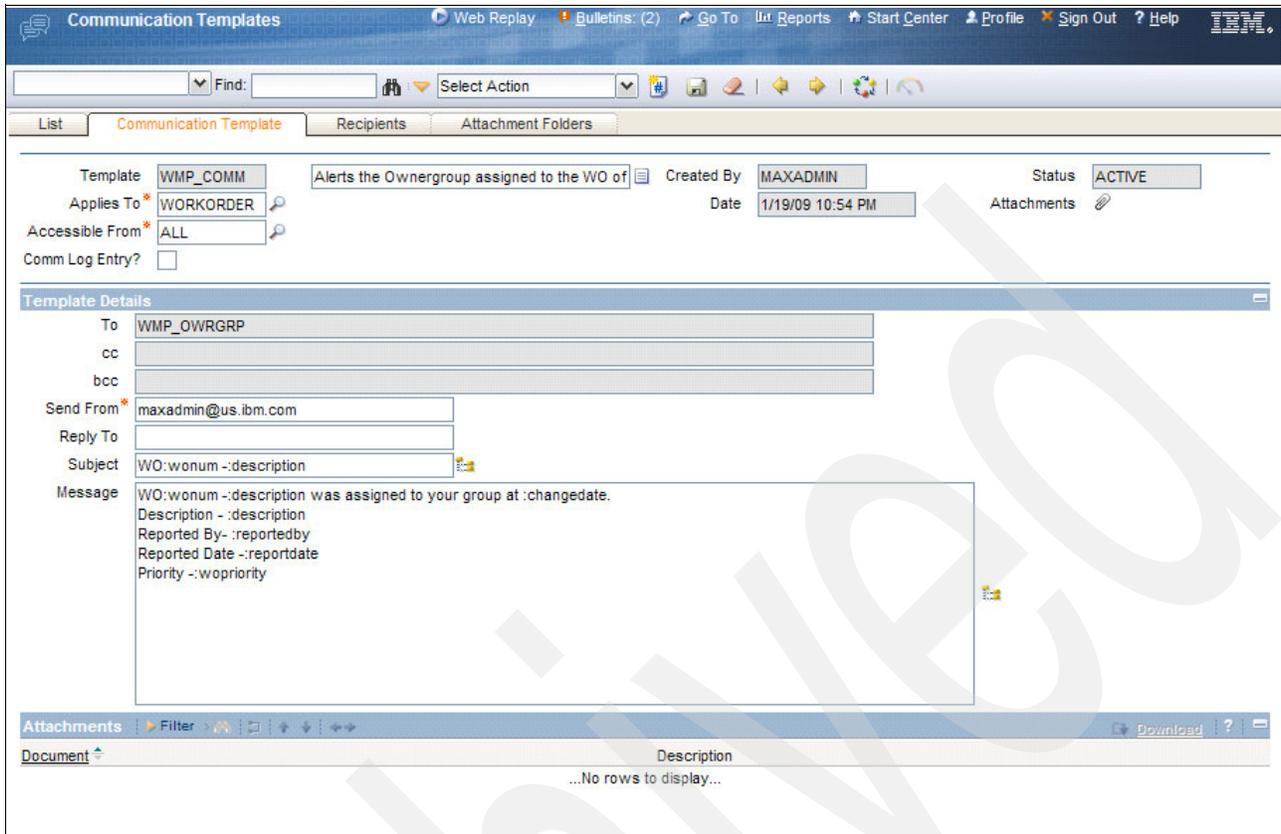


Figure 4-6 WMP\_COMM communication template for work orders

Again, when self-service is used, a similar definition should be created for service requests as shown below.

Template ID	Subject	Message	Role
WMP_COMMSR	SR :TICKETID - :DESCRIPTION	SR :ticketid -:description was assigned to your group at :OWNERHISTORY.owndate Reported By- :reportedby Reported Date -:reportdate Priority -:reportedpriority	WMP_SROWNG

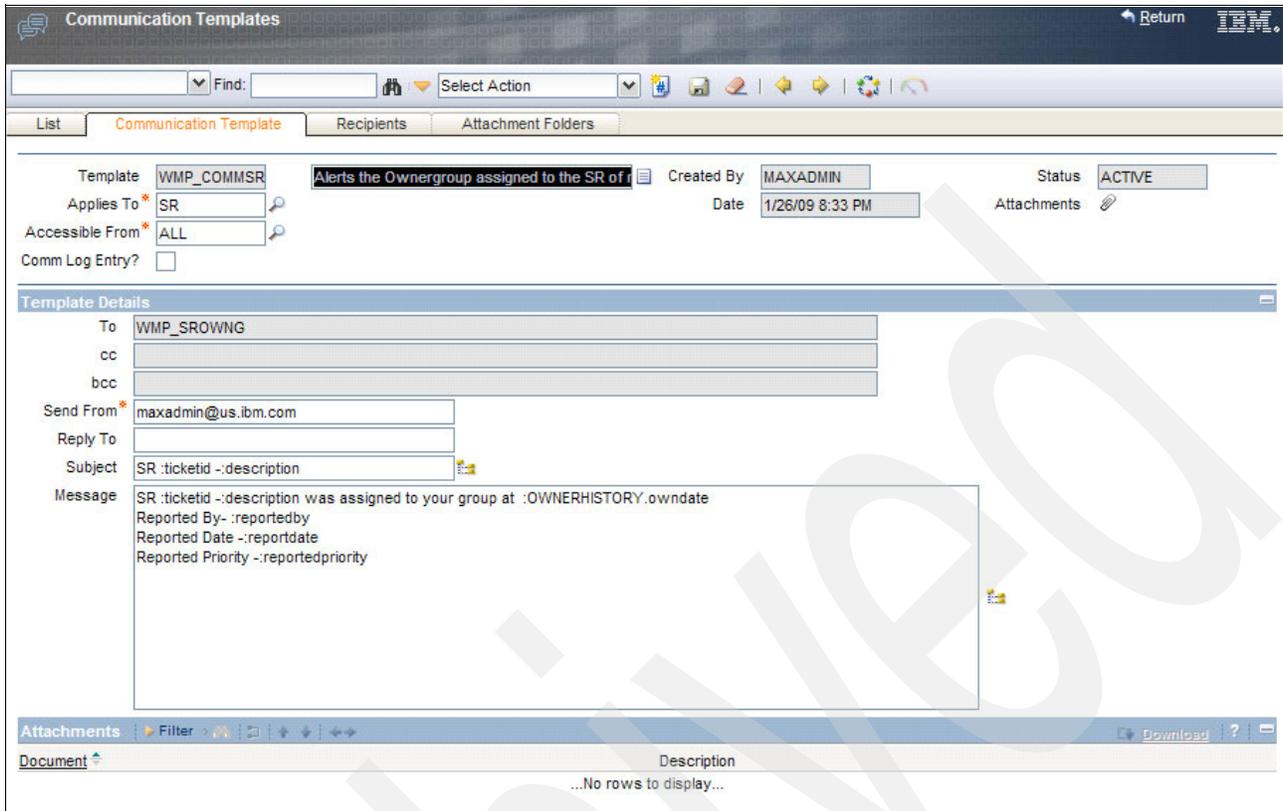


Figure 4-7 Communication template for service requests

### Communication Template Role

Communication Template Roles are used to resolve to all the e-mail addresses of the owner group currently assigned to the Work Order to proactively notify the members of the owner group of a newly assigned Work Order.

The following figures show the definitions of the WMP\_OWRGRP and WMP\_SROWNG roles.

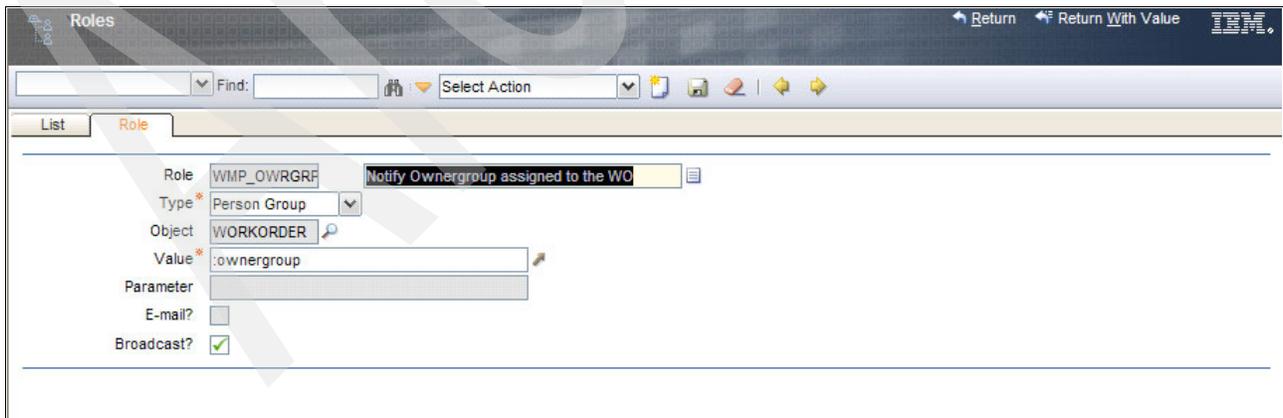


Figure 4-8 WMP\_OWRGRP role definition

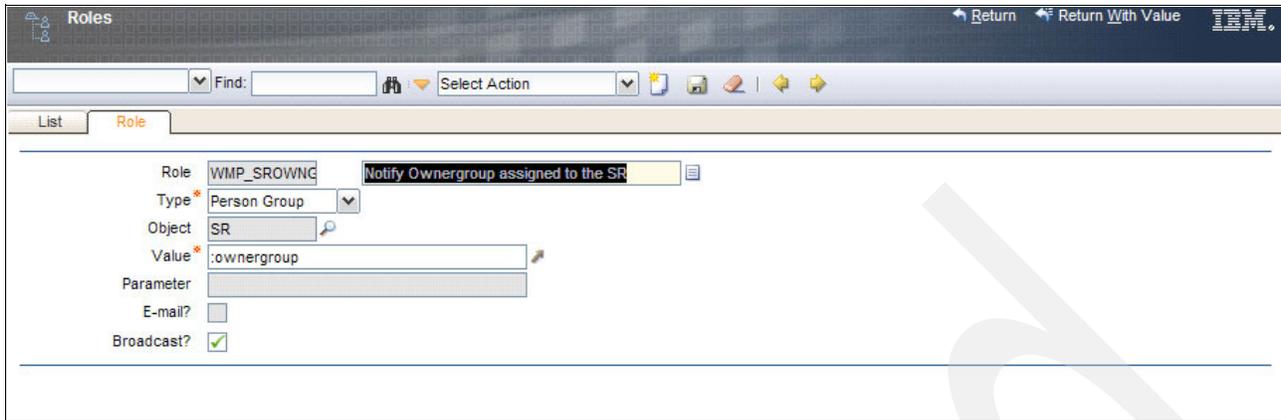


Figure 4-9 WMP\_SROWNG role definition

### Security Groups/Start Centers/User/Person/Person Group Content

Start Center content will be functionally based and will be provided for each of the following roles:

- ▶ Maximo Administrator
- ▶ Initiator
- ▶ Planner
- ▶ Work Order Approver
- ▶ Scheduler
- ▶ Technician
- ▶ Supervisor

Each Start Center will include function-related Application Shortcuts, Quick Inserts, Report Links, Result Sets, KPIs, and Bulletin Board.

### Common Result Sets

The Work View Result Set will be utilized to present Work Orders and Service Requests currently owned by the logged in user or by any group in which the logged in user is a member.

The Generic Work View Result Set definition is shown in Figure 4-10 on page 47.

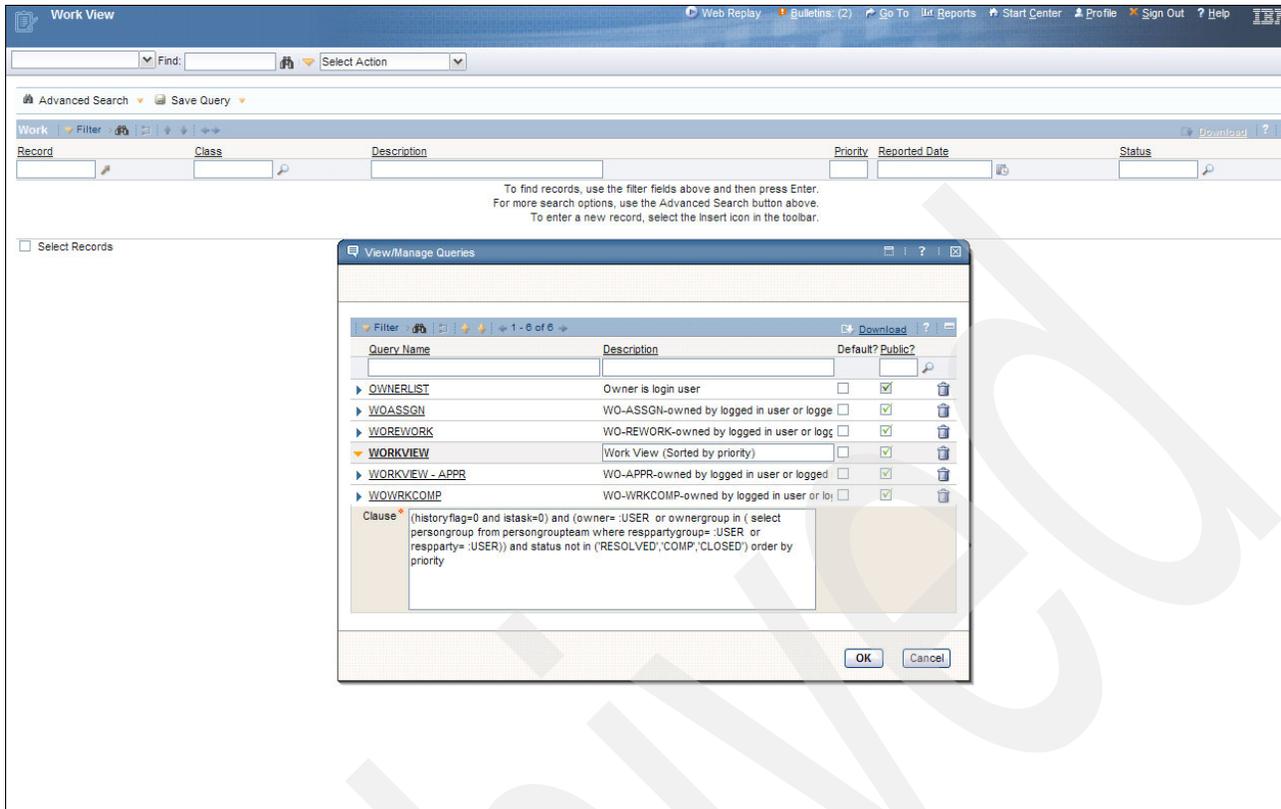


Figure 4-10 Generic Work View Result Set definition

### **Start Center Result Set defaults**

Results are presented graphically by default:

- ▶ Pie chart format: Grouped by priority
- ▶ List view: Sorted by priority (Priority 1 = Highest)

Default color alerts on List view:

- Priority 1 = Red
- Priority 2 = Orange
- Priority 3 = Purple
- Priority 4 and above = Green

### **Role-based Start Centers**

For each role in our generic process, we show:

- ▶ Related information for the user
- ▶ Information related to the Start Center template for that user
- ▶ A figure representing the Start Center that the user will see when logging into Maximo Essentials.

## Maximo Administrator

Login/Password	Person group	Person record	User record	Security group
maxadmin/ maxadmin		maxadmin	maxadmin	maxadmin

Start Center template ID	Start Center name	Queries	KPIs
Template-2	Administration	N/A	CURRENTLOGIN
			USERSESSION
			SCHEDREP
			SUCCESSREP

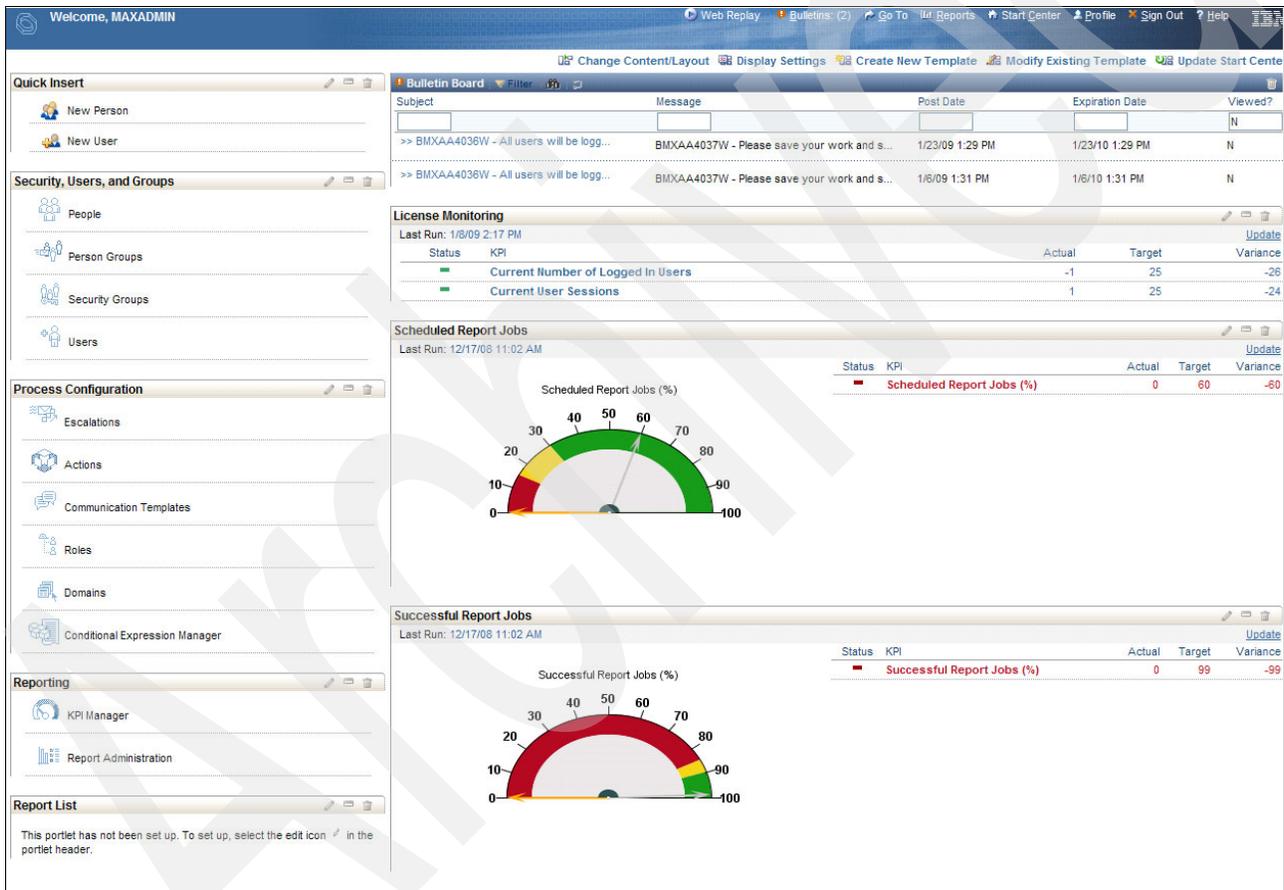


Figure 4-11 Start Center for maxadmin

### Initiator

The initiator business function has been configured to utilize the Service Request as the starting point for a work request. Not all clients will utilize the Self-Service applications. However, there are savings associated with driving your users to the self-service applications. The self-service applications allow you to streamline your communication channels. If implemented, the self-service applications are the single point of contact for requesting work and getting updates.

<b>Login/Password</b>	<b>Person group</b>	<b>Person record</b>	<b>User record</b>	<b>Security group</b>
initiator/initiator	WMP_INIT	initiator	Initiator	WMP_INIT
<b>Start Center template ID</b>	<b>Start Center name</b>	<b>Queries</b>	<b>KPIs</b>	
Template-8	WMP_Initiator	N/A	WMP_INITIATOR	

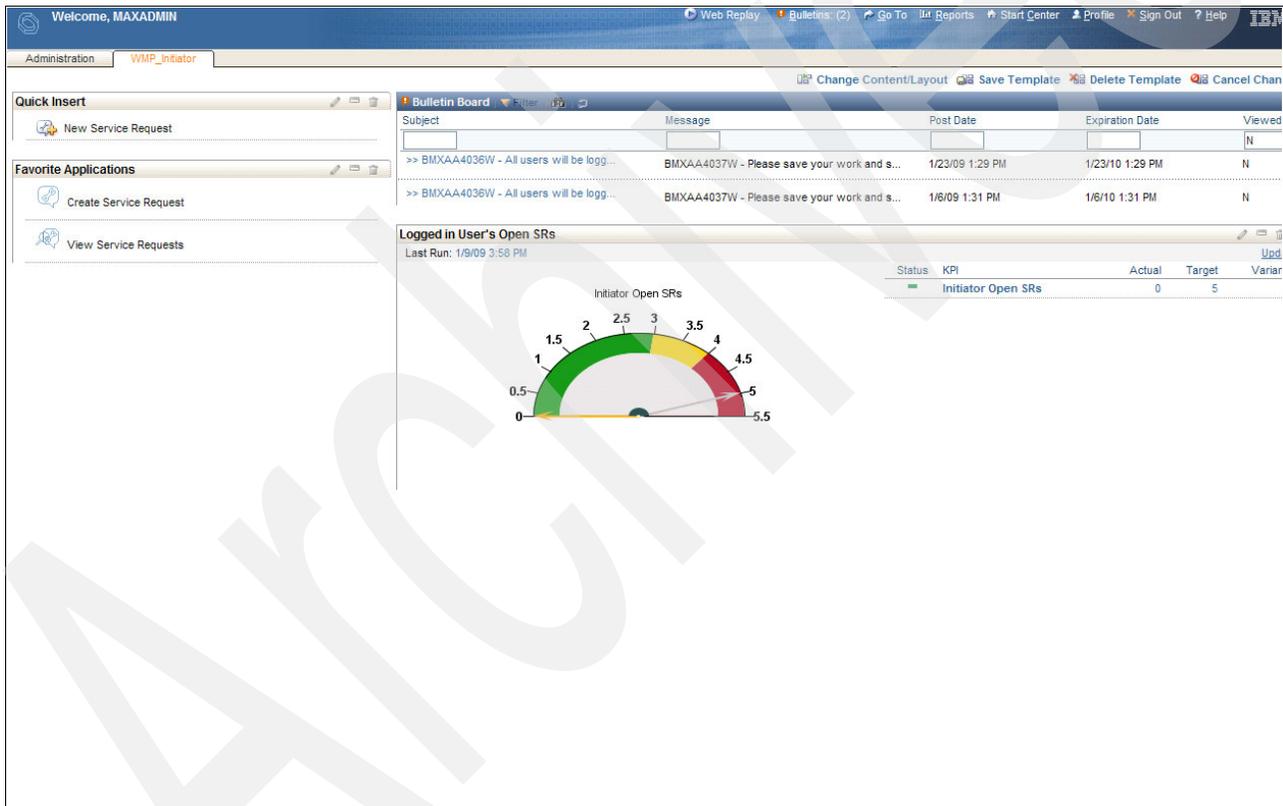


Figure 4-12 Start Center for Initiator

## Planner

Login/Password	Person group	Person record	User record	Security group
planner/planner	WMP_PLNR	planner	planner	WMP_PLNR

Start Center template ID	Start Center name	Queries	KPIs
Template-10	WMP_PLNR	WORKVIEW - Work View (sorted by priority)	WMP_WPWPLAN
		WOREJECT - WORKORDER	

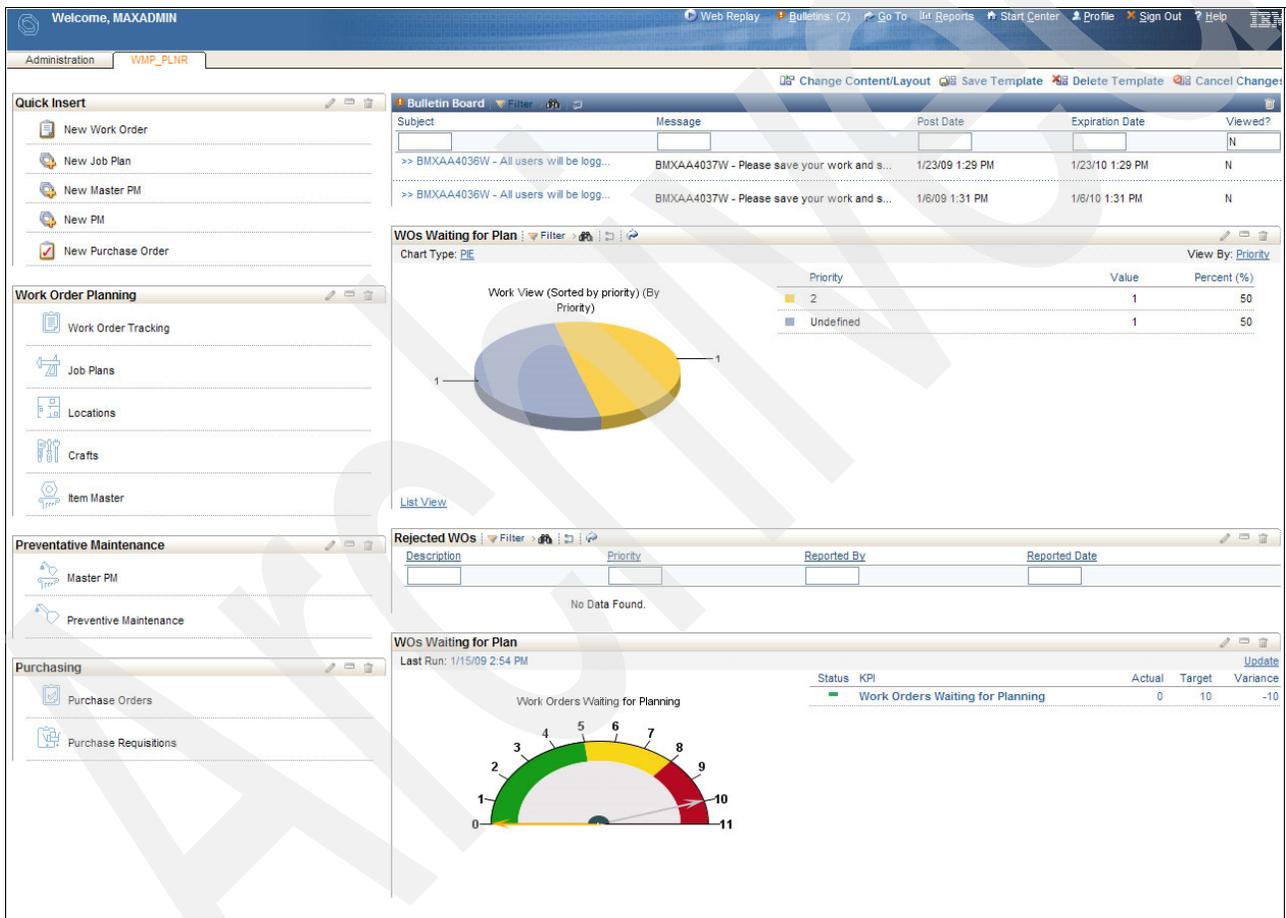


Figure 4-13 Start Center for Planner

## Work Order Approver

Login / Password	Person group	Person record	User record	Security group
woapprv/woapprv	WMP_APVR	woapprv	woapprv	WMP_APVR

Start Center template ID	Start Center name	Queries	KPIs
Template-4	WMP_WOAPPRV	WORKVIEW - Work View (sorted by priority)	WMP_WOWAPR

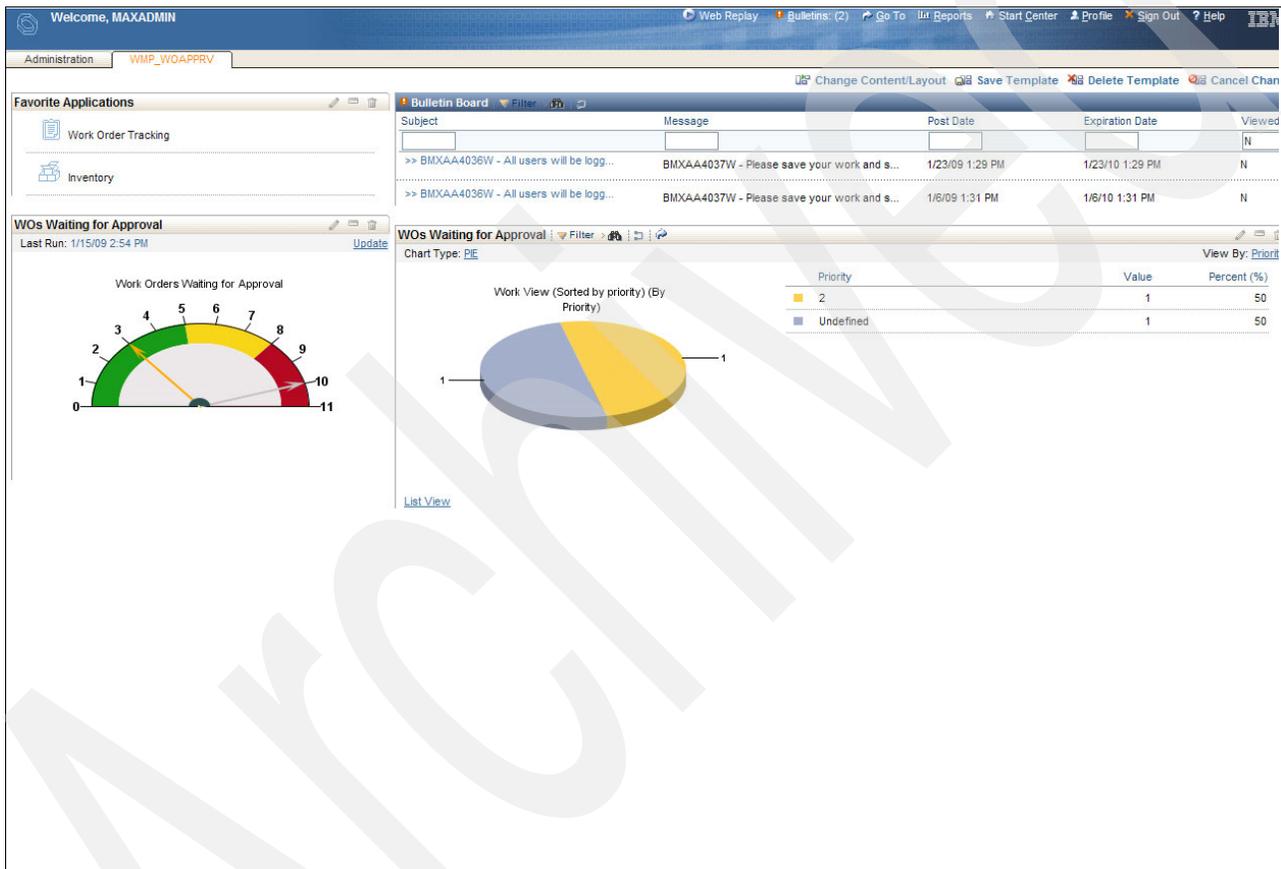


Figure 4-14 Start Center for Work Order Approver

## Scheduler

Login/Password	Person group	Person record	User record	Security group
scheduler/scheduler	WMP_SCHD	scheduler	scheduler	WMP_Schedulers

Start Center template ID	Start Center name	Queries	KPIs
Template-14	WMP_SCHD	WORKVIEW - APPR - WO owned by logged in user or logged in user's ownergroup	WMP_PMPERF - PM Performance
		APPRPMS - PM Waiting to be scheduled	WMP_PMSOVRDUE - PMs Overdue
			WMP_WOWAIT - Work Orders Assigned but work has not yet begun
			WMP_WOAPPR - Work Orders Approved / Waiting for Scheduling

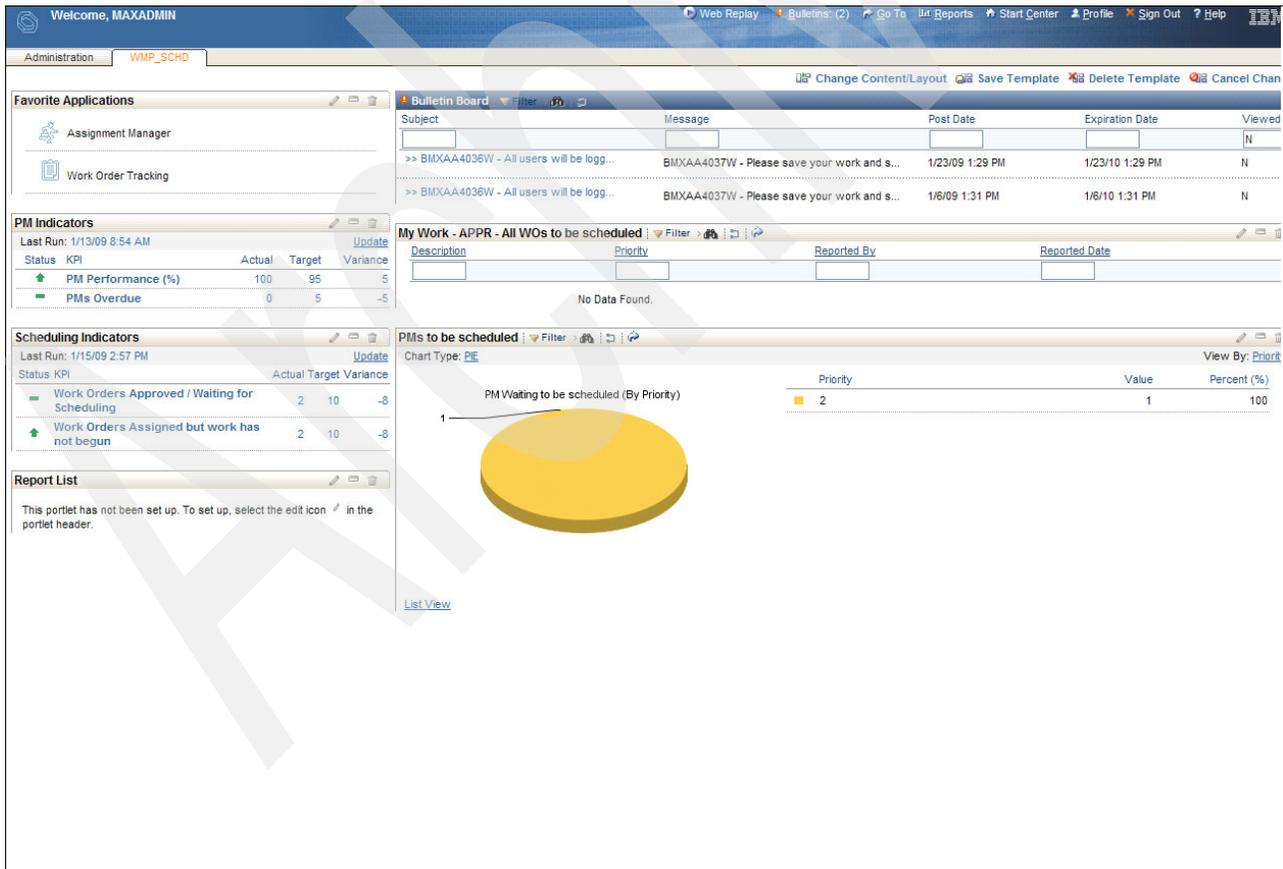


Figure 4-15 Start Center for Scheduler

## Technician

Login/Password	Person group	Person record	User record	Security group
technician/technician	WMP_TECH	technician	technician	WMP_TECH

Start Center template ID	Start Center name	Queries	KPIs
Template-12	WMP-TECH	WOINPRGLIU - Logged in User's WOs INPRG	WMP_WOWAIT - Work Orders Assigned but work has not begun
		WOASSGN - WOs owned by logged in user or logged in user's ownergroup and work has yet to begin	
		WOREWORK - REWORK owned by logged in user or logged in user's ownergroup	

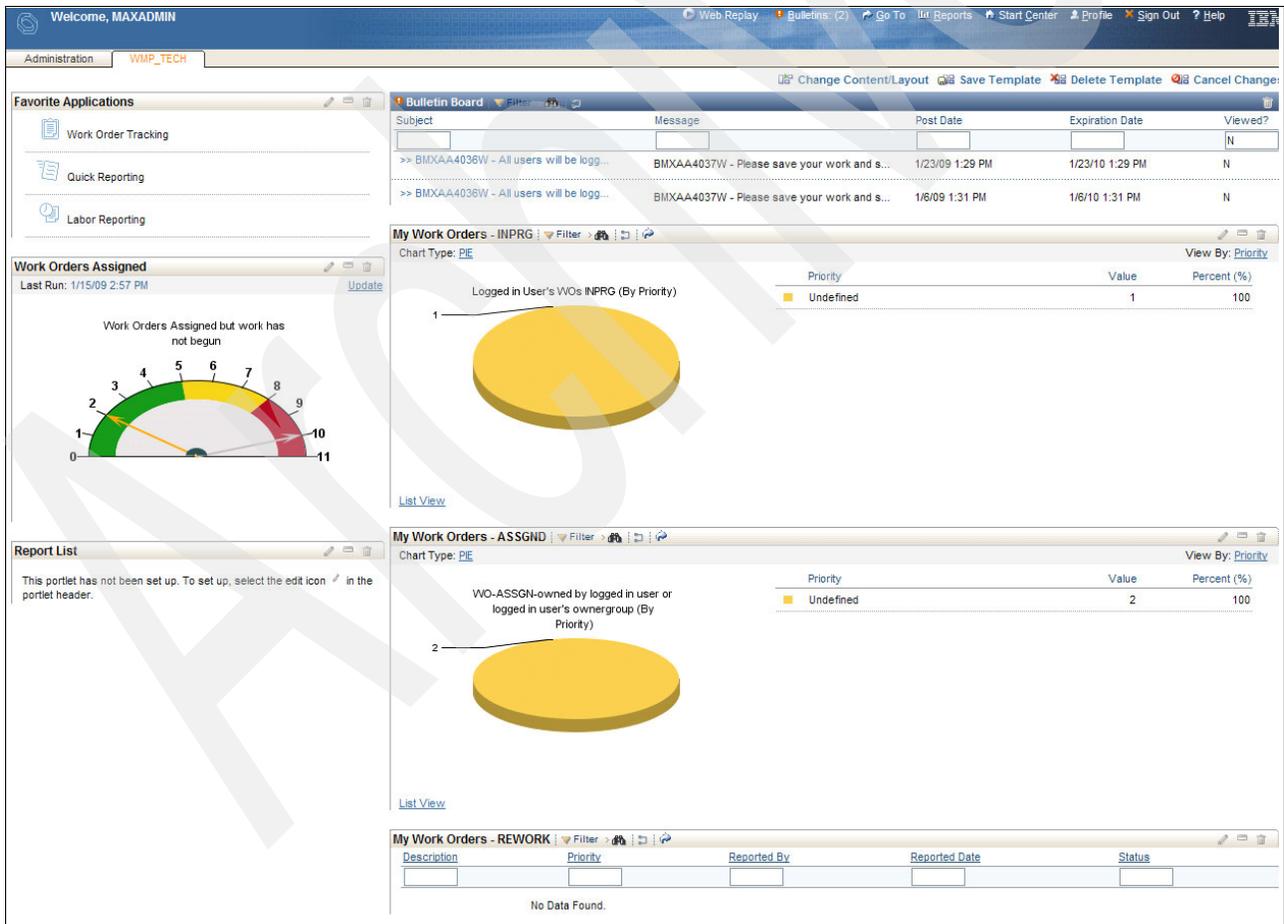


Figure 4-16 Start Center for Technician

## Supervisor

Login/Password	Person group	Person record	User record	Security group
supervisor/supervisor	WMP_SUPR	supervisor	supervisor	WMP_SUPR

Start Center template ID	Start Center name	Queries	KPIs
Template-16	WMP-SUPR	WOWRKCOMP - WO with status WRKCOMP-owned by logged in user or logged in user's ownergroup	WMP_AVEHSWOAGE - Ave Age in Days of Health and Safety Work Orders
		OPENWO - All WO with Status <> Closed	WMP_AVEPMWOAGE - Ave Age in Days of Preventative Maintenance Work Orders
			WMP_AVEEMWOAGE - Ave Age in Days of Emergency Maintenance Work Orders
			WMP_AVECMWOAGE - Ave Age in Days of Corrective Maintenance Work Orders
			WMP_WOWAPR - Work Orders Waiting for Approval
			WMP_WPWPLAN - Work Orders waiting for Planning
			WMP_WOREJECT - Work Orders - Rejected
			WMP_WOWAIT - Work Orders Assigned but work has not begun
			WMP_WOINPROG - Work Orders in Progress
			WMP_WOCOMP - Work Orders Complete
			WMP_WOREWORK - Work Orders Requiring Rework
			WMP_WOAPPR - Work Orders Approved/Waiting for Scheduling

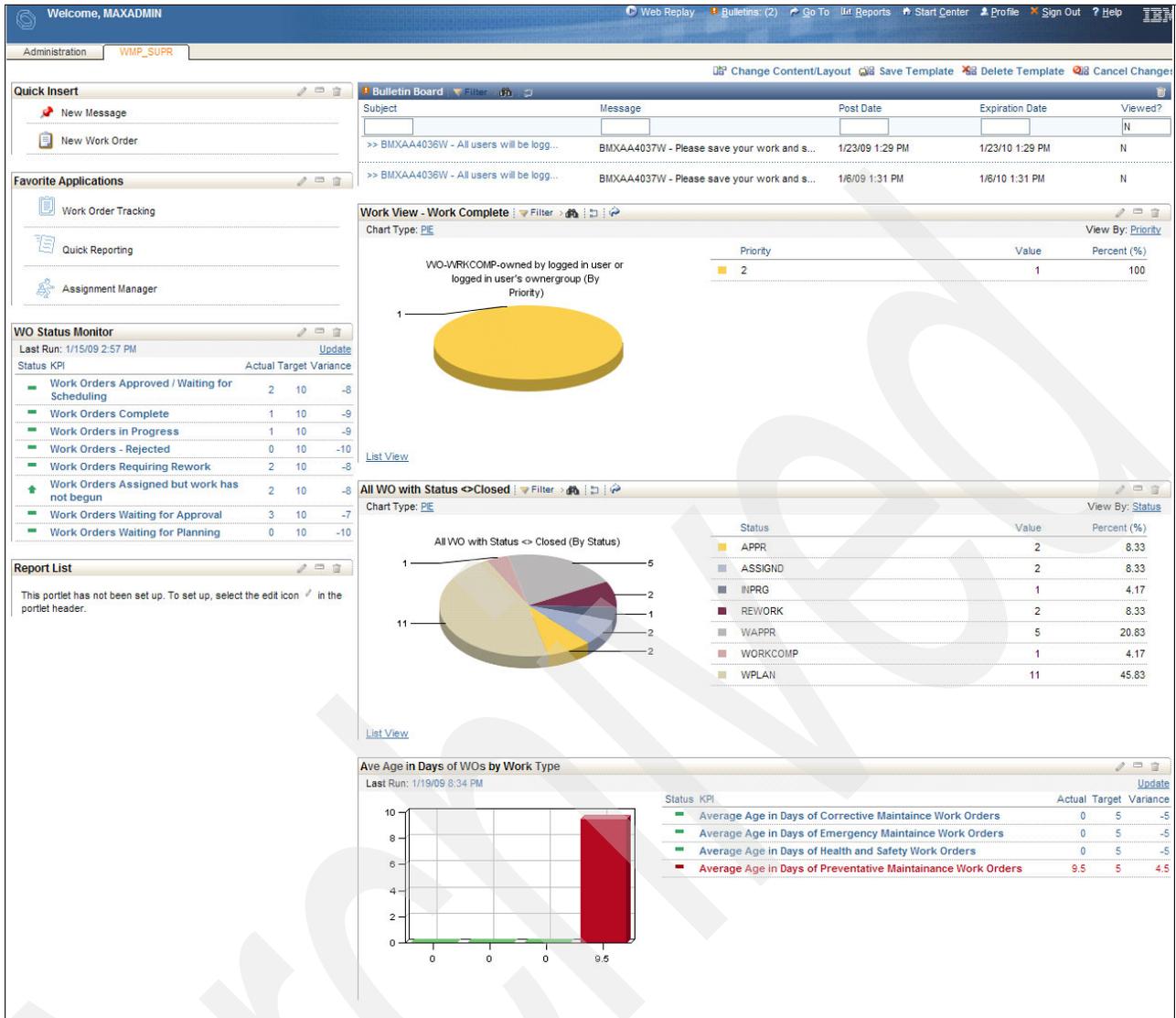


Figure 4-17 Start Center for Supervisor

### Generic Content provided as part of the Tool Kit

The following sections provide a reference for the generic data that is included in the package available from OPAL. You can select to have this data configured or not when using the Maximo Rapid Implementation Utility.

#### Currency codes

Currency	Description	Active
AUD	Australian Dollar	Yes
BOLIVAR	Venezuelan Bolivar	Yes
CAD	Canadian Dollar	Yes
DINAR	Kuwaiti Dinar	Yes
EUR	euro	Yes

Currency	Description	Active
GBP	British Pound Sterling	Yes
HKD	China (Hong Kong S.A.R.) Dollar	Yes
INR	Indian Rupee	Yes
KPW	Democratic People's Republic of Korean Won	Yes
KRW	Republic of Korean Won	Yes
KWD	Kuwaiti Dinar	Yes
MXN	Mexican New Peso	Yes
NZD	New Zealand Dollar	Yes
PESO	Chilean Pesos	Yes
QAR	Qatari Riyal	Yes
RAND	South African Rand	Yes
SAR	Saudi Riyal	Yes
SGD	Singapore Dollar	Yes
SUR	Union of Soviet Socialist Republics Rouble	Yes
TWD	Taiwan Dollar	Yes
USD	United States Dollar	Yes
YEN	Japanese Yen	Yes

### Work types

**Note:** At the time this paper was published, the following work types needed to be manually loaded. In future versions of the Maximo Rapid Implementation Utility, these work types might be automatically loaded.

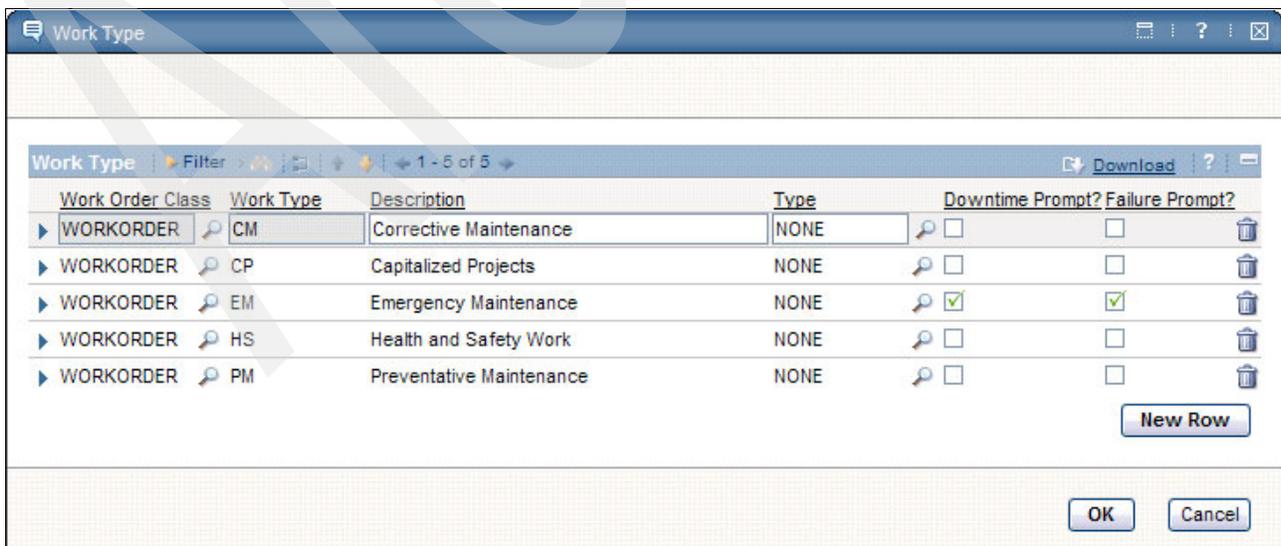


Figure 4-18 Work Types for the generic work process

### **Measurement units**

<b>Unit of measure</b>	<b>Description</b>	<b>Abbreviation</b>
AMPERE	Ampere	Amp
BAR	Bar	BR
BARREL	Barrel	Bbl
BIT	Bit	B
BOX	Box	Bx
BYTE	Byte	B
CFM	Cubic feet per minute	CFM
CM	Centimeters	Cm
CM3	Cubic centimeters	CM3
COIL	Coil	Coil
DEG C	Degrees Celsius	C
DEG F	Degree Farenheit	F
DEG K	Degree Kelvin	K
DOZEN	Dozen	Doz
EACH	Each	Ea
FEET	Feet	Ft
FLOZ	Fluid ounces	fl oz
FTHD	Foot head	FtHd
GAL	Gallon	Gal
GB	Gigabyte	GB
GHZ	Gigahertz	GHZ
GPM	Gallons per minute	GPM
GRAIN	Grain	Gr
GRAM	Gram	G
GROSS	Gross	Grs
HECTARE	Hectare	Ha
HOURS	Hours	Hrs
INCHES	Inches	Ft
KB	Kilobyte	KB
KG	Kilogram	Kg
KILOWATT	Kilowatt	Kw
KL	Kiloliter	Kl

<b>Unit of measure</b>	<b>Description</b>	<b>Abbreviation</b>
KLWATTHR	Kilowatt-hour	Kwh
KM	Kilometers	Km
LITER	Liter	L
LITERS	Liters	L
LONGTON	Long Ton	LT
M2	Meter Sq	m2
M3	Meter Cu	m3
MB	Megabyte	MB
MBS	Megabits per second	Mbs
METER	Meter	M
METRICTN	Metric ton	MT
MHZ	Megahertz	MHZ
MICROGR	Microgram	Mcg
MILES	Miles	Mi
MILLIGRM	Milligram	Mg
MILLILTR	Milliliter	MI
MILLIMTR	Millimeter	Mm
MPH	Miles per hour	Mph
NAUTMILE	Nautical miles	Nm
PINT	Pint	Pt
POUNDS	Pounds	Lb
PSI	Pounds per square inch	PSI
QUARTS	Quarts	Qt
ROLL	Roll	Roll
RPM	Revolutions per minute	RPM
SECONDS	Seconds	Se
TABLESPN	Tablespoon	Tbsp
TEASPN	Teaspoon	t.
TON	Ton	T
VOLTS	Volts	V
WATT	Watts	W
YARD	Yard	YD

## Conversion Units

**Note:** At the time this paper was published, the following conversion units needed to be manually loaded. In future versions of the Maximo Rapid Implementation Utility, these conversion units might be automatically loaded.

From unit of measure	To unit of measure	Conversion factor
FEET	CM	30.48
FEET	INCHES	12.00
FEET	METER	0.30
FEET	YARD	0.33
GAL	LITERS	3.79
GAL	PINT	8.00
IN2	CM2	6.45
INCHES	CM	2.54
KG	POUNDS	2.20
KM	METER	1,000.00
LITERS	PINT	1.76
METER	CM	100.00
MILES	KM	1.61
MILES	YARD	1,760.00
OUNCE	GRAM	28.35
POUNDS	OUNCE	16.00

## WOSTATUS

The following table lists the created synonym values for work order status that will be the main driver of the WO through the Work Management Process.

Value	Internal value	Description	Default
ASSGND	APPR	Assigned	N
APPR	APPR	Approved	Y
WPCOND	APPR	Waiting on Plant Cond	N
CAN	CAN	Canceled	Y
CLOSE	CLOSE	Closed	Y
COMP	COMP	Completed	Y
HISTEDIT	HISTEDIT	Edited in History	Y
INPRG	INPRG	In Progress	Y

Value	Internal value	Description	Default
REWORK	INPRG	Rework	N
WORKCOMP	INPRG	Work Complete	N
WAPPR	WAPPR	Waiting on Approval	Y
WPLAN	WAPPR	Waiting for Plan	N
WMATL	WMATL	Waiting on Material	Y
WSCH	WSCH	Waiting to be Scheduled	Y

### ***SRSTATUS***

The following status is the created synonym value for work order status that will be the main driver of the WO through the Work Management Process.

Value	Internal value	Description	Default
WPLAN	NEW	Waiting for Plan	Y

### **Modifying the Work Management Process**

Ideally, while you implement Maximo Essentials for a new client, the client will be able to fully implement the work automation process content that we have outlined in the previous section. More likely than not, this generic process will require some modification to fit the client requirements. To that end, we have constructed the content so you will be able to modify it as needed.

#### ***What can be modified***

Since all of the content that we are providing has been created using the Configuration Tools provided within the Maximo Tool Set, any piece of the data can be modified.

#### ***Example use case***

In this section, we provide a simple example of a slightly modified version of our process and explain the changes that are required to the data that we are providing to support the modified process.

Let us assume that a specific client does not have a planner. All Work Orders are routed to the WO Approver, who performs all the tasks typically associated with a Planner role in addition to the WO Approval Process.

The process will need some modification. It will not look like it did in Figure 4-1 on page 25 (and represented in Figure 4-19).

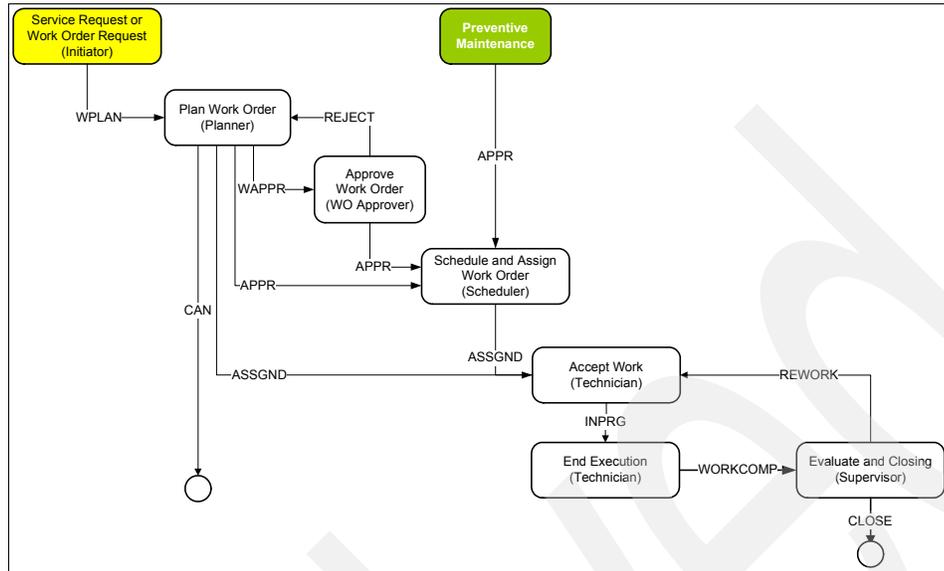


Figure 4-19 Original process as described

The process will look like Figure 4-20.

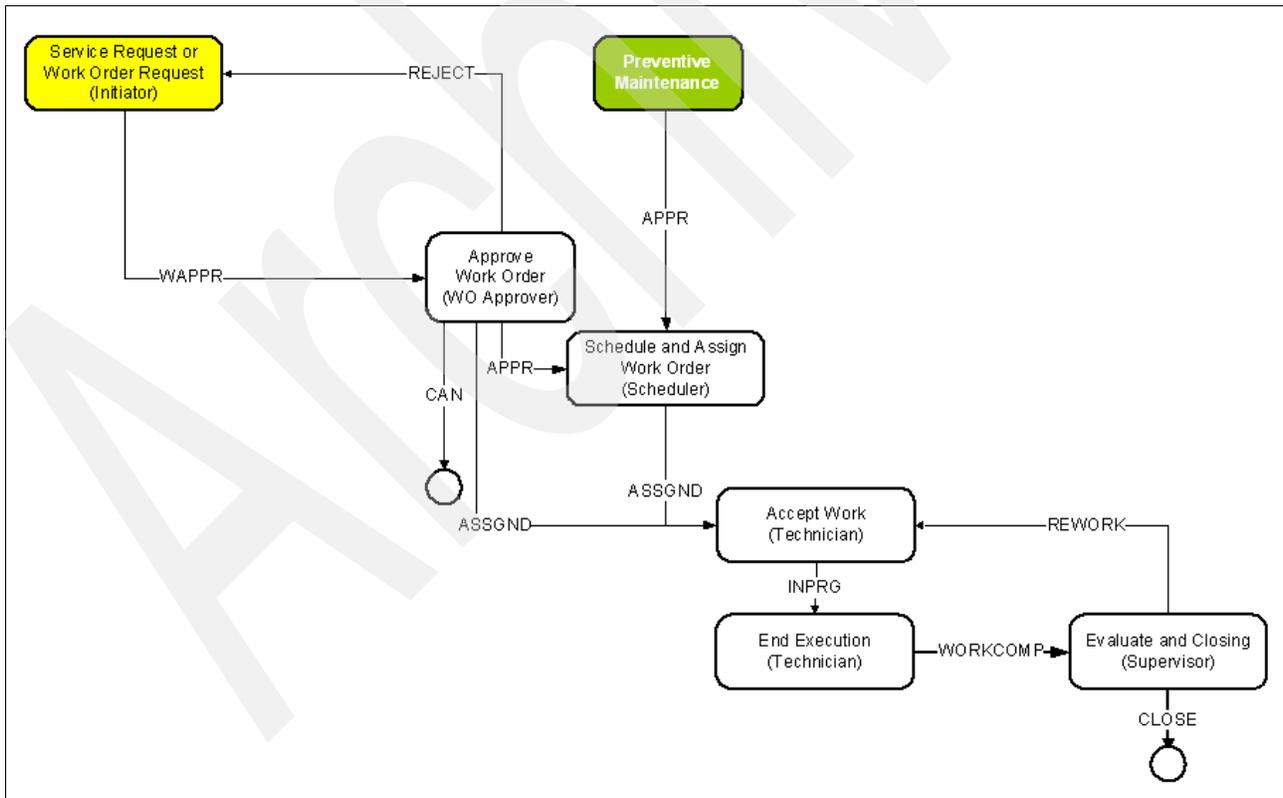


Figure 4-20 Modified process as required by client

The required changes to enable the modified work automation process are:

1. Modify the default insert Status Value for WOs from WPLAN to WAPPR as shown in Figure 4-21.

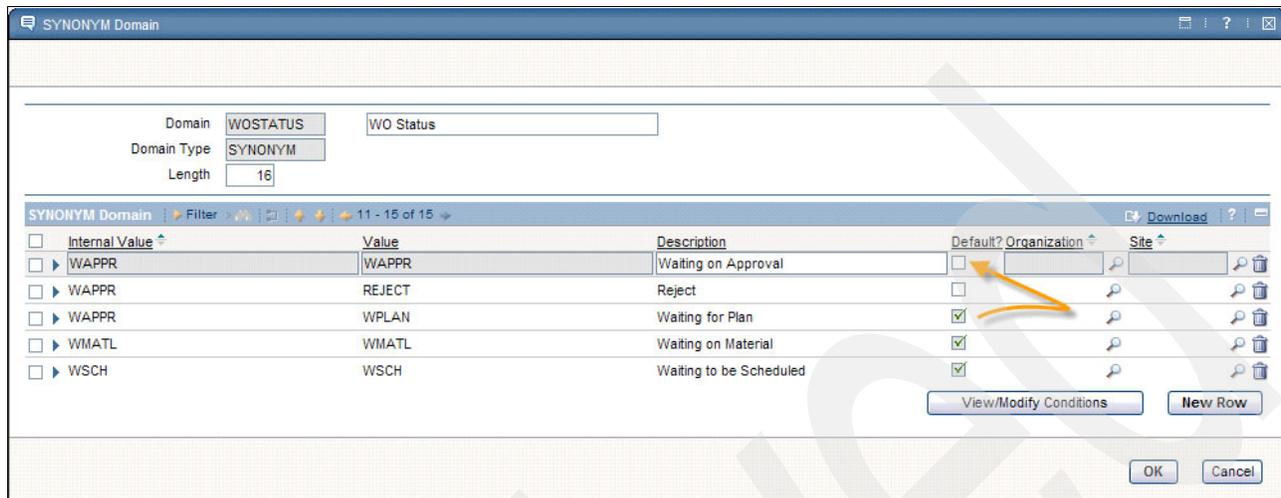


Figure 4-21 Modifying the default insert status for WOs

2. Delete the WMP\_PLNR escalation looking for WO with a status of WPLAN.
3. Modify the WMP\_REJECT escalation to set ownergroup value to Initiator.
4. Modify the WMP\_APPR, WMP\_ASSGND, and WMP\_PLANNER conditional expression so the appropriate set of status values will be available to the WO Approver Role:
  - a. ASSGND
  - b. CAN
  - c. Reject
5. Modify the Initiator Start Center to display Rejected WOs in a Result Set.

The previous steps provides a brief overview of the steps required to modify the generic process and related content. Obviously, depending on the extent of the differences between the generic process and the process that is required by your client, you will have to evaluate and build into your plan the effort required to customize the process for your client. For clients new to Maximo Essentials and new to automating their work process management, we recommend that you to work with the client to utilize the generic process with as few modifications as possible to speed the deployment and improve the time to value.

### 4.3 Procurement process management

In the previous section, we have detailed a generic work management process that might be applicable to many Maximo Essentials clients, and we provided an example of how it can be implemented. In this section, we provide a high-level overview of a procurement process. We have not documented a detailed implementation as we did with the work management process, but this process can be used as a basis for many Essential clients using similar methodologies as demonstrated with the work management process.

Sample implementations of this process and its related configuration data can be a candidate for posting on the Open Process Automation Library site in the future.

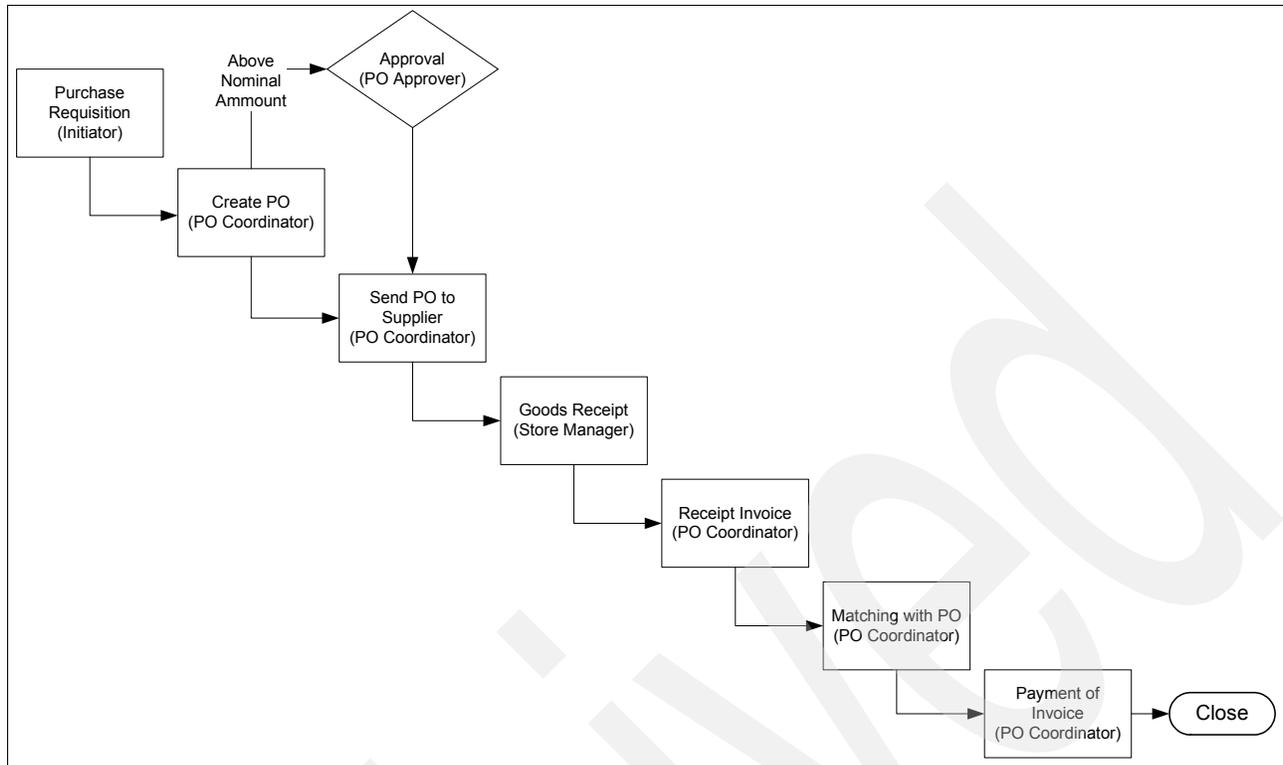


Figure 4-22 Generic procurement process

### 4.3.1 Business functions in the procurement process flow

The following procurement business functions are predefined for the procurement process. These business functions are fairly common and may apply in some organizations. They can be used as a ready to use solution. One or more of these described business functions can apply to one person.

#### Purchase initiator

In the procurement process, a purchase requisition can be raised when there is a need for materials or external services. A purchase requisition can be created manually by an initiator or automatically through the system, for example, when stock is below a specified stock level. When a purchase requisition is raised manually, the PR lines need to be filled in. You can create a purchase requisition line for items, materials, and services. In the purchase requisition, the company name and line costs are not mandatory fields. These fields can be filled later by the purchase coordinator.

#### Purchase coordinator

In the generic procurement process, the business function of the purchase coordinator is very important. The purchase coordinator can change the purchase requisition into a purchase order. Maximo has the capability to combine different purchase requisition lines into one purchase order. Sometimes, the purchase coordinator has limited authority to approve a purchase order. The level of approval must be predefined in the pre-production phase. Purchase orders that are above a specified amount need to be approved by the PO approver (budget holder). This approval is a separate business function in the procurement process.

There are other Maximo applications that a purchase coordinator can use, such as a request for quotation (for price requests) and the Companies application (for creating new suppliers and vendors).

After purchase orders are created and approved, they can be sent out to the suppliers. When goods are received, the purchase coordinator can book the invoice and process the financial payment. The purchase coordinator is also responsible for closing the purchase order.

### **PO approver**

The purchase order approver business function must have budget authority. The PO approver is in the position to approve purchase orders. In this document, the PO approver is defined as a separate business function, but it can be the same person as the work order approver. The PO approver is responsible for the budget and must have a solid understanding of procurement costs.

### **Store manager**

The store manager is responsible for replenishment of the entire warehouse. In this scenario, the store manager needs to receive the goods into Maximo. The store manager can use the receiving application for this purpose. We realize that more activities can be assigned to this business function, but these additional activities are not described in this paper.

## Data loading

An implementation often requires that you load exist data into the Maximo database. This data usually includes asset, job plan, preventive maintenance, inventory, and company records. It also includes transactional data, such as work orders, purchase orders, and company records.

So how can this data be effectively loaded into the Maximo database?

The Maximo database is made up of numerous tables of information. Though in theory, you can develop SQL to load preexisting data into these tables, many projects fail or experience significant difficulty where data has been loaded directly into the database using SQL. A database expert might go through a lengthy and often painful exercise to ensure that the data loaded will meet the stringent validation requirements of Maximo. The smallest slip or omission however can often cause Maximo to behave unpredictably. These data errors can be almost impossible to identify after the fact. Customizing the business rules often compounds this kind of problem.

The Maximo Integration Framework, whose main component was previously known as the Maximo Enterprise Adapter (MEA), provides the capability to load data into the Maximo database and validating that data against the business rules in place. Therefore, it ensures that any data loaded is valid and consistent. It is the recommended way to load data into the Maximo database.

As noted in 1.2, “Maximo Asset Management Essentials licensing considerations” on page 2, the Integration Framework (formerly MEA) is licensed separately from Maximo Asset Management Essentials. However, organizations performing implementations for clients typically have these licenses in place and can utilize their own license for the initial data load. After the initial data load, any other use of the framework to perform integrations with other applications requires the client to purchase the appropriate licenses for the Integration Framework.

## 5.1 Data loading with the Integration Framework

The Integration Framework offers an excellent way to load data. Data loaded through the MEA is validated against the Maximo business rules as though it were entered by a user through the interface.

The message tracking functionality in Version 7 of Maximo Essentials makes error resolution and reprocessing even more accessible than before with a user front end.

The steps listed next outline the process to load data through the MEA. These steps provide a high-level overview of the steps. It is assumed that the individual performing this process is very familiar with the use of the MEA. For more details about the MEA, refer to the *Maximo Integration Guide*:

1. Prepare and develop the data to ensure the required fields and fields pertinent to the business process are populated accordingly. Also, make sure that field data types are as expected by the Maximo data dictionary.
2. Identify Maximo objects to load data into, and the attribute names to populate.  
Objects and attributes generally relate to tables and fields in the database. Non-persistent or virtual objects and attributes can also be used to load data, but the data loader must understand where the virtual components will put the data as it passes through them.
3. Identify existing Object Structures/Enterprise Services that will facilitate data load into the required tables. Maximo comes with a number of “pre-formatted” Object Structures associated with Enterprise Services that the data loader might choose to use.
4. Where existing Enterprise Services and Object Structures do not exist, use the Object Structure application to define the Maximo Object Structure to load into and then create an Enterprise Service, associated to the newly created Object Structure. Finally, associate the Enterprise Service with an External System.

**Tip:** Use Alt+F1 and Application designer to determine the underlying Maximo objects behind the user presentations.

**Tip:** Be aware of virtual fields that can help you. That is, location parentage can be specified by populating LOCATIONS.PARENT and LOCATIONS.SYSTEMID, both of which are not real database fields but the use of these virtual fields will populate the LOCHIERARCHY table.

5. Prepare the data in “MEA ready” format indicating which Enterprise Service to load into, and ensure that the attributes to populate are accurately represented in the load file.

A sample asset load file using the preformatted Object Structure and Enterprise Service might look like:

```
<?xml version="1.0" encoding="UTF-8"?>
<SyncMXASSET
  xmlns="http://www.ibm.com/maximo"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  creationDateTime="2008-12-12T19:03:47+00:00"
  transLanguage="EN" baseLanguage="EN"
  maximoVersion="7 1 137 V7110-890" event="0">
  <MXASSETSet>
    <ASSET>
      <ASSETNUM>7901</ASSETNUM>
```

```

    <DESCRIPTION>Standard Laptop Computer</DESCRIPTION>
  <SITEID>BEDFORD</SITEID>
</ASSET>
<ASSET>
  <ASSETNUM>7902</ASSETNUM>
  <DESCRIPTION>Standard Desktop Computer</DESCRIPTION>
  <SITEID>BEDFORD</SITEID>
</ASSET>
</MXASSETSet>
</SyncMXASSET>

```

The tag structure of the load file is:

[Operation] [Object Structure Name]/[Object Structure Name]Set/[Business object name]/[attribute names]

A common mistake when preparing an xml load file is to leave off the SITEID tag. The SITEID tag is mandatory. The MEA will accept files in delimited format or XML.

There are a number of considerations when preparing data as xml or as delimited text:

a. XML

If using XML, the main challenge is to transpose the tabulated data into an XML structure by using an XML DOM generation program that will take care of any special characters for you. The XML load file must have specific features and attributes as outlined in the example above.

b. Delimited File

There are a number of challenges when using delimited format:

- i. Choose a delimiter that does not exist in the data that you are loading. If there is a delimiter in the data you are loading, the MEA will think there are more columns in the data than were intended, and for this reason, will probably start having problems because some fields will not validate properly.
- ii. If an error has occurred during the load for the reason mentioned above, it can be difficult to find the offending line in the load file to rectify.

Also, the load halts at the offending line, leaving the file in a partially loaded state.

- iii. If the object structure has more than one level, care must be taken when defining the column names at the top of the load file, because the MEA will decide what the name of a column will be if that column name exists in more than one level in the object structure.

To work out what a column will be called in such a case, try exporting sample data through a publish channel for the same object structure.

6. Import Data using the Data Import button on the Enterprise Services tab of the External Systems application.

Archived



## Common reports and recommendations

Maximo Asset Management Essentials provides over 150 ready to use standard reports. This chapter provides information for the implementer regarding several of the reports that might be most applicable to typical Maximo Essentials clients. Providing useful reports to clients can demonstrate real business value and improve time to value.

## 6.1 General report information

There are over 150 reports readily available that ship with Maximo Asset Management Essentials V7. For more information, refer to the Report Booklet:

[http://www.ibm.com/support/docview.wss?rs=3214&context=SSLKT6&q1=v7+report+booklet&uid=swg21305005&loc=en\\_US&cs=utf-8&lang=en](http://www.ibm.com/support/docview.wss?rs=3214&context=SSLKT6&q1=v7+report+booklet&uid=swg21305005&loc=en_US&cs=utf-8&lang=en)

This link provides a spreadsheet and supporting data that provides a list, descriptions, and samples of all of the preformatted reports. This spreadsheet can be a valuable tool to use with a client to identify the reports that they will find most useful and what if any customizations they want developed.

In addition, utilize the *Report Developer Guide* that is available at the Maximo product documentation site:

<http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/index.jsp>

As of Version 7.1.1.4, a new feature is introduced called “Ad hoc” reporting that allows the user to specify sorting, grouping, and filters on the existing reports. This sorting and grouping can be saved by the user and optionally shared among other users. Refer to 6.4, “Ad hoc or Query-Based Reporting” on page 74 for more details. This capability provides powerful capabilities for the user and can eliminate the need for certain customizations that previously required development effort.

## 6.2 Key reports

Next, we list several reports that we see as particularly applicable to Maximo Asset Management Essentials clients along with suggestions about how the user might want to sort and group the reports.

### **Work Order Details report**

The Work Order Details report that is shown in Figure 6-1 on page 71 indicates the job, its tasks, and the planned labor for the job.

Blocks of the report are hidden depending on the information available, which keeps the report simple and easy to understand.

Consultants need to ensure that the fields related to the process, that is, Owner/Owner Group are adequately reflected in the report.

## Work Order Details

1005: Electric Cart Tune-Up

Asset: 12300 Electric Cart  
 Location: SHIPPING Shipping and Receiving Department  
 CI:

Sched Start:		Site: BEDFORD	Job Plan: JP12300
Sched Finish:		Priority: 7	Supervisor: MILLER
Target Start:	12/31/98	Work Type: CM	Lead:
Target Finish:	12/31/98	Status: APPR	Vendor:
Actual Start:		Parent:	Owner:
Actual Finish:		Failure Class:	Owner Group:
Report Date:	12/31/98	Problem Code:	Service:
Reported By:	Joe Jones		Service Group:
		GL Account: 6500-300-7??	Classification:

Task IDs							
Task ID	Description	Status	Measurement Point	Value	Date	Observations	
10	Check tires, lights, horn, mirrors.	APPR		0			
20	Check windshield wipers and steering.	APPR		0			
30	Check key, seat, forward/reverse switches.	APPR		0			
40	Check brakes, brake lights, and emergency brake.	APPR		0			
50	Check battery. Add water as needed.	APPR		0			
60	Check terminals and cables, battery charger.	APPR		0			
70	Lubricate chain and check sprockets.	APPR		0			
80	Repack wheel bearings. Grease steering chassis.	APPR		0			
90	Test-operate vehicle and check for safety.	APPR		0			

Planned Labor										
Task ID	Craft	Skill Level	Labor	Vendor	Contract	Qty	Hours	Rate	Line Cost	
	MECH	FIRSTCLASS				1	1:00	18.50	18.50	
Total Planned Labor:									18.50	

Planned Materials						
Task ID	Item	Description	Storeroom	Qty	Unit Cost	Line Cost
	GLOVES	Gloves, Disposable Latex	CENTRAL	1	3.52	3.52

September 6, 2007 8:44:47 AM EDT

1 / 2

Figure 6-1 Sample Work Order Details report

## Work Order List report

The Work Order List report that is shown in Figure 6-2 is useful to summarize the workload for the different business functions by filtering, sorting, or grouping on:

- ▶ List of WOs in a given status
- ▶ Lists of overdue work
- ▶ List of WOs owned by a Person/Group
- ▶ List of WOs in the backlog (that is, ready to go to work)
- ▶ List of WOs pending materials
- ▶ List of WOs that cannot progress due to lack of materials (for example, WMATL or APPR but lacking stock)
- ▶ List of new WOs in last 24 hours

Work Order	Description	Type	Status	Priority	Lead	Location:	Asset	Job Plan	Parent WO	Schedule Start	Schedule Finish
1000	Relocate Guard Rails Around Compressor	CM	WAPPR	2		BR300	11300				
1001	12 Month Service on Shipping Dept #1 Conveyor	CM	INPRG	5		SHIPPING	12600	JP13140			
1002	Rebuild Feedwater Pump	CM	APPR	9		BR450	11450	JP11430			
1003	Check for Plumbing Problem	CM	APPR	5		BOILER		JP1000			
1004	Generator Overhaul	CM	INPRG	1		BR230	11230	JP11210			
1005	Electric Cart Tune-Up	CM	APPR	7		SHIPPING	12300	JP12300			
1006	Feedwater Pump Service	CM	APPR	7		BR450	11450	JP11430			
1007	Packaging Mech. Elevator & Drainpan Inspection	CM	APPR	8		BPM3100	13141	JP1314A			
1008	Repair Damaged Conduit Feeding Generator	CM	WAPPR	7		BR230	11230				
1009	12 Month Service on Shipping Dept #2 Conveyor	PM	INPRG	8		SHIPPING	12700	JP13140			
1013	Inspect and Repair Pump as Required	CM	APPR	5		REPAIR	11470				
1018	Paint Guard Rail Around #1 Fan	CM	WAPPR	4		BR210	11210				
1019	Conveyor Overhaul- Pkg. Dept.	PM	COMP	8		BPM3100	13140	JP1314A			
1020	Generator Overhaul	EM	WSCH	2		BR230	11230	JP11210		4/22/02	4/28/02
1021	Conveyor Overhaul- Conveyor #2	PM	WSCH	8		SHIPPING	12700	JP1314A			
1022	Electric Cart Tune-Up	PM	WSCH	3		SHIPPING	12300	JP12300			
1023	Conveyor Overhaul- Conveyor #1	PM	WSCH	8		SHIPPING	12600	JP1314A			
1024	Condensate Return Pump Quarterly Service	PM	WSCH	9		BR430	11430	JP11430A			
1025	Conveyor Overhaul- Pkg. Dept.	PM	WSCH	8		BPM3100	13140	JP1314A			
1026	HVAC Quarterly Inspections & Certification	PM	WSCH	9		BR200	11200	INS11200			
1027	Compressor Quarterly Inspection and Certification	PM	WSCH	9		BR300	11300	INS11300			
1028	Burner Quarterly Inspection and Certification	PM	WSCH	9		BR460	11460	INS11460			
1029	Crane Quarterly Inspection and Certification	PM	WSCH	7		SHIPPING	12210	INS12200			
1030	Forklift #1 Quarterly Inspection and Certification	PM	WSCH	7		SHIPPING	12100	INS12100			
1031	Top Breaker Quarterly Inspection and Certification	PM	WSCH	9		BPM3100	13150	INS-SUBSYS			
1032	Feeder System Inspection and Certification	PM	WSCH	9		BPM3100	13110	INS-SUBSYS			
1033	Filler/Lifter System Inspection and Certification	PM	WSCH	9		BPM3100	13160	INS-SUBSYS			
1034	Bottom Sealing System Inspection and Certification	PM	WSCH	9		BPM3100	13120	INS-SUBSYS			
1035	PKG Dept. Elevator Inspections & Certification	PM	WSCH	9		BPM3100	13141	INS13141			
1040	Dig hole for new service pole	WAPPR		3		POLE300	52300				
1041	Install new pole	WAPPR		3		POLE300	52300				

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Figure 6-2 Sample Work Order List report

## Estimated versus Actual Work Order Costs report

The Estimated versus Actual Work Order Costs report that is shown in Figure 6-3 is useful for the planner to determine if the work estimates are accurate.

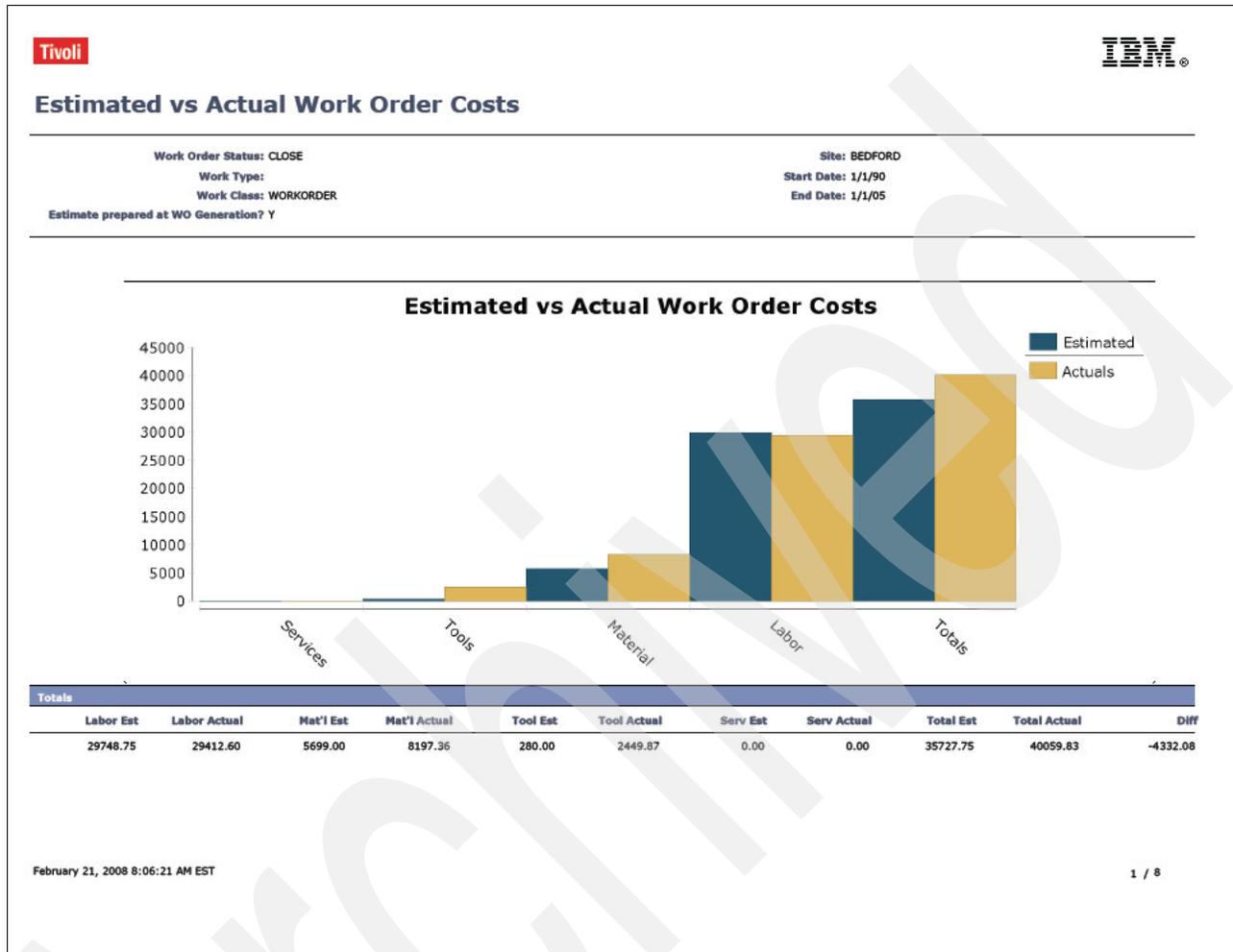


Figure 6-3 Sample Estimated versus Actual Work Order Costs report

### Work Order Material Shortage report

This report is useful for the Store Manager and Scheduler for making sure that stock has been reordered appropriately.

### PO Details report

The PO Details report is an important report that is used to fax or e-mail POs to the supplier. It is common here to add a client logo to this report.

Refer to 6.3, "Report Customization" on page 74 to find information about report customization.

### Purchase order list

The purchase order list is useful for the purchase coordinator to have an overview of all the active purchase orders. This list provides information about the PO description, status, vendor, vendor required date, and vendor delivery date.

### **Job plan list**

This list is useful for the planner to have an overview of all available job plans. There is a link on the job plan number to navigate to the job plan details.

### **Job plan details**

The job plan details are useful for the planner to review the high-level job plan detail.

### **Item order status**

This list is useful for the store manager, because it indicates PRs and POs in the pipeline for specified items.

### **Invoice list**

This list is useful for the Purchasing Coordinator to indicate invoices that need approval or payment. Useful types of filtering here are invoices to approve or invoices to pay.

### **Inventory Cycle Count**

This report is useful for the store manager when performing stock checks.

### **Maintenance Cost Rollup**

This report is useful for the planner and maintenance manager to assess the cost of ownership of the assets.

## **6.3 Report Customization**

Although there are many ready to use reports provided that ship with the product, often, there is a need to customize these reports for the client, even if just to add the client's company logo and other types of identifying information to the report pages.

You can obtain information about the use of the Business Intelligence Reporting Tool (BIRT) and getting started on report customization the *Report Developer's Guide* and on the IBM Support Web site, specifically at:

[http://www-01.ibm.com/support/docview.wss?rs=3214&context=SSLKT6&q1=configuring+birt+designer&uid=swg21315837&loc=en\\_US&cs=utf-8&lang=en](http://www-01.ibm.com/support/docview.wss?rs=3214&context=SSLKT6&q1=configuring+birt+designer&uid=swg21315837&loc=en_US&cs=utf-8&lang=en)

You need to include the cost of the effort for any customization in a project plan and proposal.

## **6.4 Ad hoc or Query-Based Reporting**

Query-Based Reports (QBR) are enabled in Maximo V7 to meet the ad hoc reporting needs of users. QBRs enable users to create their own unique reports by selecting columns, specifying sorting and grouping, and identifying the query that the report will run against. After the user saves the report, this information is fed through an application programming interface (API) to create an XML report design file, which is then executed through the BIRT Report Engine.

The intention of this functionality is to make it as easy as possible for all types of Maximo V7 users, who have a wide range of technical skills, to create their own custom reports. This capability is critical for many reasons, including it:

- ▶ Enables users to quickly create their own reports for their unique business needs
- ▶ Does not require technical, development skills, such as Java, to create the report
- ▶ Does not consume development hours in creating and maintaining large numbers of unique reports that might only be used by a very small number of users

QBRs are sometimes referred to as “*ad hoc*” reports. They are different than the traditional, enterprise reports for the following reasons:

- ▶ Enterprise reports are developed by a developer in the BIRT Designer as opposed to QBRs that are initiated by a user and created dynamically within the Maximo applications.
- ▶ Enterprise reports are developed for a large number of users and are enabled for quick access. QBRs are developed for a single user or business case and are not designed for mass distribution.
- ▶ Enterprise reports often involve complex SQL that has been optimized for performance, whereas QBRs typically involve only single table joins or a few table joins.
- ▶ Enterprise reports can only be deleted by an administrator who has access to the V7 Report Administration application or the database. QBRs can be deleted either by the user who created the report or by the administrator in the Report Administration application.
- ▶ Enterprise reports have group level security, where groups can be granted access at either an individual report level or an application level. QBRs however are unique, because they might be used for a individual business need that is shared with other users. Because of this requirement, QBRs utilize user-level report security.

Implementers of Maximo Essentials can utilize QBRs or ad hoc reporting to quickly and easily provide clients with reports that meet their needs. This capability not only helps deliver business value to the client in a timely manner (improving time to value), but it also can eliminate the need for implementers to spend time during a deployment developing custom reports through the traditional mechanisms.

For more information and details about QBR or ad hoc reporting, refer to the following Web site and search on V7 Ad Hoc (QBR) Reporting:

<http://www.ibm.com/software/sysmgmt/products/support/IBMaximoAssetManagement.html>

Archived

## Deployment acceptance criteria

The User Acceptance Test (UAT) is a critical part of an engagement for the implementation of Maximo Essentials. This phase must be executed before you go “live.” The UAT must consist of a detailed plan with all the test activities that are needed to test the installation and configuration. The objective of UAT is to have formal acceptance by the client regarding system requirements, as well as to check the data integrity and user readiness. The outcome of the UAT can be issues or “bugs” that need to be resolved prior to going live.

## 7.1 Methodology

The configured Maximo Essentials system will be tested according to scenarios covering defined business processes. These processes can either come from the generic solution presented in this paper or company-specific processes. User guides can also be used during these tests. Also, uploaded data needs to be tested, which can be done by checking the data loader sheet with the uploaded data in Maximo. Depending on the amount of data uploaded, a spot check for part of this uploaded data might be sufficient.

## 7.2 People involved

Generating agreement or “buy-in” from the user community is critical to the success of the project. Identifying the key users and getting them involved in the project early on is essential. These users can then champion the use of the system and communicate its benefits to their peers.

By the time that User Acceptance Testing begins, it is important that these users have already been trained and are ready for the rollout. These users must be familiar with the base product and be aware of the objectives of the solution, which makes these key users prime candidates to perform the user acceptance testing.

## 7.3 Test scenarios

A common reason for overrun during the testing phase can be that the testing team might not understand the functionality to be tested. Often a lack of understanding of the base product combined with unclear testing objectives can generate a wealth of invalid error reports. A clear test plan outlining the steps to perform and the expected behavior is crucial. Table 7-1 is a sample table representing a test plan.

Table 7-1 Example of a (simple) test plan

Test number	Description	Test steps	Expected behavior	Observed behavior	Did it pass
1	Create Work Order	<ol style="list-style-type: none"><li>1. Log in to Maximo.</li><li>2. Navigate to Work Order Tracking.</li><li>3. Create new record.</li><li>4. Enter description.</li><li>5. Save record.</li></ol>	Record is saved with a status of WAPPR. The name of the logged in user must display in the Reported By field.		Yes
2	Approve Work Order	<ol style="list-style-type: none"><li>1. Navigate to the record created in test 1.</li><li>2. Click <b>Change Status</b>.</li><li>3. Select <b>Approved</b> from the drop-down list.</li><li>4. Click <b>OK</b>.</li></ol>	The workorder must be at a status of APPR.		Yes

Test number	Description	Test steps	Expected behavior	Observed behavior	Did it pass
3	Move Work Order Status to INPRG	<ol style="list-style-type: none"> <li>1. Navigate to the approved record from test 2.</li> <li>2. Click <b>Change Status</b>.</li> <li>3. Select <b>In Progress</b> from the drop-down list.</li> <li>4. Specify a time and date later than that specified for the APPR status change.</li> <li>5. Click <b>OK</b>.</li> </ol>	The record must be at a status of INPRG with the status date specified. The actual start field must also display the status date entered.		Yes

Where a test fails, record the the observed behavior accurately to aid the resolution of the problem. Again, ensuring quality feedback in the test results can often pose a challenge. Test plan results are often managed by using a spreadsheet or a specific testing or debug management package for more complex projects.

## 7.4 Environment

The complexity of the project and any phasing of the rollout to the business will dictate the number of environments that will be required for testing.

Prior to going live, the future production environment is often used as a UAT system while freeing up a further test system for unit and functional testing. This approach is typically the case for large or more complex installations.

Following going live initially, any subsequent phased rollout to the business might require further testing prior to the promotion of code, configuration, or data load that necessitates that a test environment's availability be maintained.

Note that you can use the Migration Manager feature of Maximo Essentials to migrate data from one environment to another environment, for example, from test to production.

## 7.5 User accounts

To also test the defined users and security groups, the testing needs to be processed with the same user accounts that are also present in the production environment. When there is an authorization issue during test, the security groups need to be adapted. Ensure that testing is role-based to verify security profiles.

## 7.6 Additional test

The following list provides ideas about additional tests to consider. There is no need to predefine these steps in a test document:

- ▶ Determine speed
- ▶ Determine reliability
- ▶ Spot-check the data
- ▶ Test the usability of user guides
- ▶ Perform random free testing by users (after the official UAT is executed)

## 7.7 Handling issues

During testing, the tester needs to record all the program bugs, issues, and questions. The test coordinator (the IBM Business Partner consultant) must analyze the issue and determine if there is a direct solution available. In case there is no direct solution available, the issues need to be listed by the tester. After testing, the test coordinator will set up an issue list containing the following content:

- ▶ Issue number
- ▶ Date
- ▶ Issue description
- ▶ Action needed
- ▶ Scheduled finish date
- ▶ Person responsible
- ▶ Priority
- ▶ Status resolving
- ▶ Remarks

## 7.8 Acceptance

Issues that cannot be solved during UAT will be analyzed for impact. Considerations to determine the impact include:

- ▶ What is the impact of this issue on going into production?
- ▶ Is there a temporary work-around possible?
- ▶ What is the risk of resolving the issue after going into production?
- ▶ What is the effort for resolving the issue?

After finalizing the issue list, it is necessary to come to an agreement with the client. After this agreement is reached, we advise a formal signing of the user acceptance test by the client.



## Training

IBM provides a curriculum to educate implementers and users of Maximo Asset Management. This chapter provides an overview of this curriculum and provides suggestions about what specific modules might be of most interest for those individuals involved with Maximo Asset Management Essentials.

## 8.1 Available Maximo Education

IBM provides an extensive curriculum of educational offerings related to Maximo and related products. You can obtain detailed information about the various offerings at:

<http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/index.jsp>

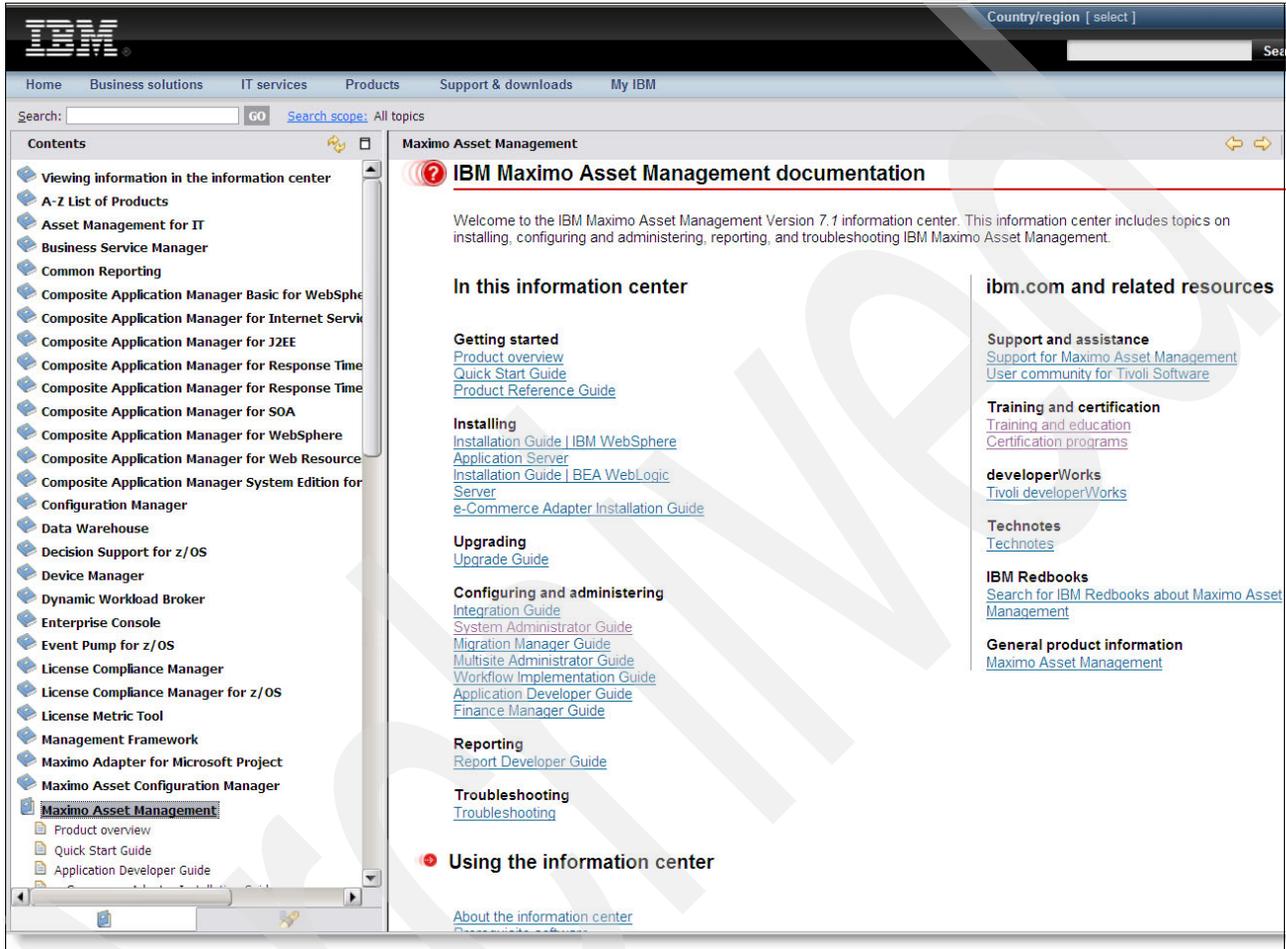


Figure 8-1 Accessing the Maximo Information Center for documentation and education

On the right side of the window shown in Figure 8-1, select **Training and education**.



Figure 8-2 Training and certification

Select **Product Training** under the “What we offer” heading, and then scroll down to the Maximo Asset Management section as shown below.

IBM Maximo Asset Management		
Title	Type	Duration
IBM Enterprise IT and Asset Management 7.1: Customizing Business Objects <b>NEW</b>	Classroom	5 Days
IBM Maximo Asset Management 7.1 Fundamentals	Classroom	4 Days
IBM Maximo Asset Management 7.1 Implementation <b>NEW</b>	Classroom	5 Days
IBM Maximo Asset Management 7.1 Work Management <b>NEW</b>	Classroom	3 Days
IBM Maximo Core Consultant for Enterprise Asset Management: Week 1	Classroom	5 Days
IBM Maximo Core Consultant for Enterprise Asset Management: Week 2	Classroom	5 Days
IBM Maximo Core Consultant for IT: Week 1	Classroom	5 Days
IBM Maximo Core Consultant for IT: Week 2	Classroom	5 Days
IBM Maximo for Utilities with Work Crews	Classroom	2 Days
IBM Maximo Mobile Applications Training Package	Classroom	1 Day
IBM Tivoli Reporting for Enterprise IT and Asset Management 7.1	Classroom	3 Days
IBM Tivoli System Administration for Enterprise IT and Asset Management	Classroom	2 Days

Figure 8-3 Available Maximo education offerings

The education available for Maximo is provided through various delivery methods:

- ▶ Classroom
- ▶ Instructor-led online
- ▶ Online (computer-based training)
- ▶ Documents

For each offering, simply click its title for detailed information related to its content, schedule, prerequisites, and so on.

## 8.2 Implementer education and certification

In order to be a consultant to deploy the Maximo solution, you need to have the following capabilities.

To implement Maximo, you need to be familiar with:

- ▶ Operating systems, for example, Windows®, Linux®, and so on
- ▶ Running the install packages
- ▶ Building and deploying the ear files
- ▶ Editing XML and properties files

You need these Maximo configuration skills:

- ▶ Create Currency Codes
- ▶ Create Item and Company Sets
- ▶ Define GL Account Component structure
- ▶ Create Organization
- ▶ Create GL Account
- ▶ Create Site
- ▶ Specify default insert site

### 8.2.1 Education

The following table includes a list of the education modules provided on the IBM Web site mentioned above that might apply to an implementer of Maximo Asset Management Essentials. Some of these modules are courses targeted at add-on modules that are available for Maximo Essentials, but they are not included as part of Maximo Essentials. So if the particular option is not part of the implementation plan, the course content does not necessarily apply to a particular implementation.

Title	Type	Duration
IBM Maximo Asset Management 7.1 Fundamentals	Classroom or instructor-led online	4 days
IBM Maximo Asset Management 7.1 Implementation	Classroom or instructor-led online	5 days
IBM Maximo Asset Management 7.1 Work Management	Classroom or instructor-led online	3 days
IBM Maximo Core Consultant for Enterprise Asset Management: Week 1	Classroom or instructor-led online	5 days

Title	Type	Duration
IBM Maximo Core Consultant for Enterprise Asset Management: Week 2	Classroom	5 days
IBM Maximo Mobile Applications Training Package	Classroom	1 day
IBM Tivoli Reporting for Enterprise IT and Asset Management 7.1	Classroom	3 days
IBM Tivoli System Administration for Enterprise IT and Asset Management	Classroom or instructor-led online	2 days
Migration Manager for IBM Enterprise IT and Asset Management 7.1	Classroom or instructor-led online	1 day
Tailoring and Configuring for Enterprise and IT Asset Management	Classroom or instructor-led online	3 days
IBM Enterprise IT and Asset Management 7.1: Customizing Business Objects	Classroom	5 days
IBM Maximo 7.1 Integration Framework Architecture Basics (Acrobat® PDF, 579 KB)	Document	30 pages
IBM Maximo 7.1 Integration Framework Configuration Basics (Acrobat PDF, 897 KB)	Document	36 pages
Installing and Configuring Maximo Asset Management 7.1 Component by Component (Acrobat PDF, 2943 KB)	Document	46 pages
Enterprise and IT Asset Management Prerequisites for Components Customization and Integration Framework Courses	Online	6 hours
IBM Maximo Asset Management 7.1 New Features	Online	4 hours
IBM Maximo Prerequisites for Components Customization and MEA Courses	Online	4 hours
Navigation and Querying for Enterprise IT and Asset Management 7.1	Online	4 hours
Security and Registration of New Users for Enterprise and IT Asset Management	Online	4 hours
Using Key Performance Indicators for Enterprise and IT Asset Management	Online	2 hours

## 8.2.2 Certification

Many clients expect that the implementer of their Maximo-based solution is certified by IBM. This section describes this certification and its requirements.

*An IBM Certified Deployment Professional - Maximo Asset Management V7.1 implementation* is a technical professional responsible for configuring the asset life cycle management of an IBM Maximo Asset Management V7.1 solution. This individual will be expected to perform these tasks with limited assistance from peers, product documentation, and support resources.

## Key areas of competency

You must be competent in these areas:

- ▶ Describe the IBM Maximo Asset Management V7.1 architecture and components
- ▶ Configure the asset life cycle management (hardware and software), including inventory, contracts, purchasing, resources, work management, and service requests
- ▶ Perform problem determination and basic performance tuning for a IBM Maximo Asset Management V7.1 solution

## Recommended Prerequisite Skills

We recommend these skills:

- ▶ Knowledge of IBM Maximo Asset Management V7.1 infrastructure components: Skill level 3
- ▶ Knowledge in asset management life cycle: Skill level 3
- ▶ Knowledge of application servers (WebSphere® Application Server and WebLogic Server): Skill level 2
- ▶ Knowledge of operating systems, networking, and firewall concepts: Skill level 2
- ▶ Knowledge of XML: Skill level 1
- ▶ Knowledge of SQL databases, such as DB2®, Oracle, and SQL Server: Skill level 3
- ▶ Knowledge of security (secure sockets layer (SSL), data encryption, system user accounts, and directory servers): Skill level 1
- ▶ Knowledge of protocols, including HTTP, Simple Mail Transfer Protocol (SMTP), and Lightweight Directory Access Protocol (LDAP): Skill level 1
- ▶ Knowledge of the Information Technology Infrastructure Library (ITIL®) roles for V2 or V3: Skill level 1

More information regarding certification, the certification process, and the available education to help prepare for certification is available at:

<http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/index.jsp>

## 8.3 Client/user education

For the Maximo Essentials client, delivering training in a modular format can help define the target audience. Typically, the service organization providing the implementation for the client also provides education for the users of Maximo within the client's organization. The following list provides suggested topics by business function, based on the generic work management process that is described in 4.1, "Work process automation" on page 24.

We suggest that you take on a modular education approach where content can be delivered to the target individuals and where the content focuses on the specific use cases of which they will be a part:

- ▶ Work Initiator:
  - Self-Service application:
    - Creating an SR
    - Checking on the status of an SR

- ▶ Maintenance Coordinator:
  - SR application:
    - Overview of key fields and functions
    - How status relates to the activities to be performed
    - Generating a work order from an SR
- ▶ Planner:
  - Creating Job Plans:
    - Adding crafts, materials, and tools to a Job Plan
    - Changing status
    - Consider crafts and qualifications
  - Creating PMs:
    - Assigning Job Plan to PM
    - Defining PM schedule
  - WGen
 

How to generate work orders from PM schedule
  - WOTrack:
    - Overview of key fields and functions
    - How status relates to the activities to be performed
    - Features enabled at each status in the process
    - How to change status to indicate that planning or the review is complete
    - Specifying the Job Plan
    - Adding planned labor, materials, and tools
    - How status changes affect actual dates and PM schedule dates
    - Flow control
  - Meters and meter groups
 

Overview of key fields and functions (simple examples)
  - Crafts
 

Overview of key fields and functions
  - Qualifications
 

Simple overview
  - Calendars and shifts
  - Item Master
 

Overview of key fields and functions
- ▶ Asset Owner:
  - Asset:
    - Overview of key fields and functions
    - Moving an asset between locations and parent assets
    - Adding and updating meter information
  - Location:
    - Overview of key fields and functions
    - Moving location
    - Adding and updating meter information
  - Meters and meter groups
 

Overview of key fields and functions (simple examples)

- Item Master
  - Overview of key fields and functions
- Warranty contracts
  - Overview of key fields and functions
- ▶ Scheduler:
  - WOTrack:
    - Overview of key fields and functions
    - How status relates to the activities to be performed
    - Features enabled at each status
    - How to change status to indicate scheduling is complete
  - Assignment manager:
    - Overview of key fields and functions
    - Making assignments
    - Starting, interrupting, and finishing assignments
    - Effects on the work order
- ▶ Supervisor:
  - WOTrack:
    - Overview of key fields and functions
    - How status relates to the activities to be performed
    - Features enabled at each status
    - How status changes affect actual dates and PM schedule dates
    - Flow Control
- ▶ Store Manager:
  - Issues and transfers
  - Cycle counts
  - Inventory:
    - Overview of tabs and key fields
    - Concept of rotating items
    - Receiving rotating assets: Double step (1. receive, must click Save, 2. Give serial number)
    - Adding records
    - Reconcile balances
    - Zero YTD quantities
    - Physical count
    - Standard cost and average cost
    - Reorder details
    - Reorder process: How to run it, what it does, and what the next actions are
    - Reorder cron task
- ▶ Purchasing Coordinator:
  - PR application:
    - Overview of tabs and key fields
    - PO generation

- PO Application:
  - Overview of tabs and key fields
  - Approval process and effects of tolerances
- Invoicing application:
  - Overview of tabs and key fields
  - Approval process and effects of tolerances
- Purchase contracts:
  - Overview of key fields and functions
- ▶ Finance Manager:
  - Chart of accounts:
    - Defining financial periods
    - Entering and maintaining GL codes
  - Currency codes:
    - Adding currency codes
  - Exchange rates:
    - Overview of key fields and functions
- ▶ Technician/Clerk:
  - WOTrack:
    - Overview of key fields and functions
    - How status relates to the activities to be performed
    - How status changes affect actual dates and PM schedule dates
    - Flow control
  - Labor reporting:
    - Overview of key fields and functions
  - Quick reporting:
    - Overview of key fields and functions

## 8.4 Web Replay

Web Replay is a feature originally made available with IBM Tivoli Provisioning Manager, but it is now available for use with Maximo. You can download the latest version of Web Replay from the OPAL Web site:

<http://www.ibm.com/software/brandcatalog/portal/opal/details?catalog.label=1TW10MA2A>

Web Replay works by enabling experts to capture their knowledge and make it available to other users. With Web Replay, a user can “record” the mouse clicks and actions going through any complex task. Afterwards, any user with the appropriate access can run the task. Operations that might require a whole series of clicks can be condensed down to a single push of a button.

System administrators can use the Tivoli Web Replay feature to record and play back complex tasks as scenarios and play them back. Consequently, experts on a subject can develop and record the actions needed to execute very complex tasks just once. These

“recordings” can then be used as needed by other people who are not subject matter experts. This method ensures that tasks are executed correctly and completely, every time.

Captured scenarios can also be used to guide users through a complex task step-by-step. Context-sensitive help provides guidance along the way that explains what is happening, and what input is expected by the user. The Tivoli Web Replay feature can be utilized as a training mechanism to help lead users through the steps to perform a specific task. Once the user has been led through a task one or more times and becomes familiar with it, the user will learn the steps and be able to apply those steps to similar tasks.

When performing an engagement, you might want to generate a series of predefined Web Replay scenarios that addresses common tasks to help with the training of the users. You might also want to generate automated Web Replay scenarios that can be used to perform complex tasks, which will help eliminate user errors.



# Maximo Rapid Implementation Utility

To take advantage of commonly used and predefined content, such as the content described in Chapter 4, “Process management” on page 23, you need a tool that can be used by implementers to easily select and load the content needed for a particular implementation.

Maximo Rapid Implementation Utility is an application to facilitate content in a Maximo environment:

- ▶ Packaging
- ▶ Distribution
- ▶ Loading

A first release of this tool is being made available on the Open Process Automation Library Web site. You can use the Maximo Rapid Implementation Utility to load the data objects and information required to implement the Work Management process as described in Chapter 4, “Process management” on page 23.

## A.1 Obtaining the Maximo Rapid Implementation Utility (MRIU)

Facilitating the evolution of both content definition and content development by IBM and IBM Business Partners, MRIU will have a phased release via the IBM Tivoli Open Process Automation Library (OPAL), which is a fast, easy to access, and comprehensive online catalog that contains technically validated extensions developed by IBM Tivoli and Tivoli Business Partners. OPAL downloads are prepared or reviewed by IBM and are offered “as is” to existing clients.

OPAL will include downloads for:

- ▶ The Maximo Rapid Implementation Utility
- ▶ MRIU Published Content Packages

You can access the OPAL Web site at:

<http://www-01.ibm.com/software/brandcatalog/portal/opa1>

Using the OPAL “Search in catalog” search string, enter MRIU, Maximo Rapid Implementation Utility, and Content Package to ensure that you find all related OPAL packages. There might be several Published Content Packages available and the selection will grow over time. The steps are:

- ▶ Download the Maximo Rapid Implementation Utility.
- ▶ Select and download the Published Content Package (one or many) that you require.
- ▶ After you download the package, follow the easy to understand directions contained within the MRIU downloaded “readme” file to prepare and run the MRIU.

To import a Content Package, you will need:

- ▶ To ensure that the MRIU application has access (path) to Java library 1.5 or higher.
- ▶ Location and read permission of your target maximo root directory. Note MRIU and Content Packages do not need to be on the maximo server.

### A.1.1 What is a Content Package

In general, MRIU supports various types of content, including:

- ▶ Configuration content: Client-independent best practices for areas, such as role definition, classification schemes, work management escalations, and so on. Configuration content can have multiple options based on industry or specific vertical markets.
- ▶ Operational content: Client-specific assets, inventory, account codes, and other data that can be entered or transferred from other systems.
- ▶ Scripts: Support for Web Replay scripts (sales demos, task automation, and job aids) as another form of content.

Content can be defined and distributed in packages, such as the Maximo Essentials Rapid Implementation Kit that is described in Chapter 4, “Process management” on page 23.

A Content Package is an organized and packaged set of maximo “metadata. MRIU allows for definition of collected data based upon the Maximo Business Objects, however, organized at a logical level for the simplification of distribution and selection criteria. The MRIU user importing content does not need to be an expert with the Maximo Business Object and data dictionary.

The following diagram (not intended as a fully detailed Maximo Entity Relationship Diagram (ERD)) illustrates the simplification introduced via MRIU and an example Content Package.

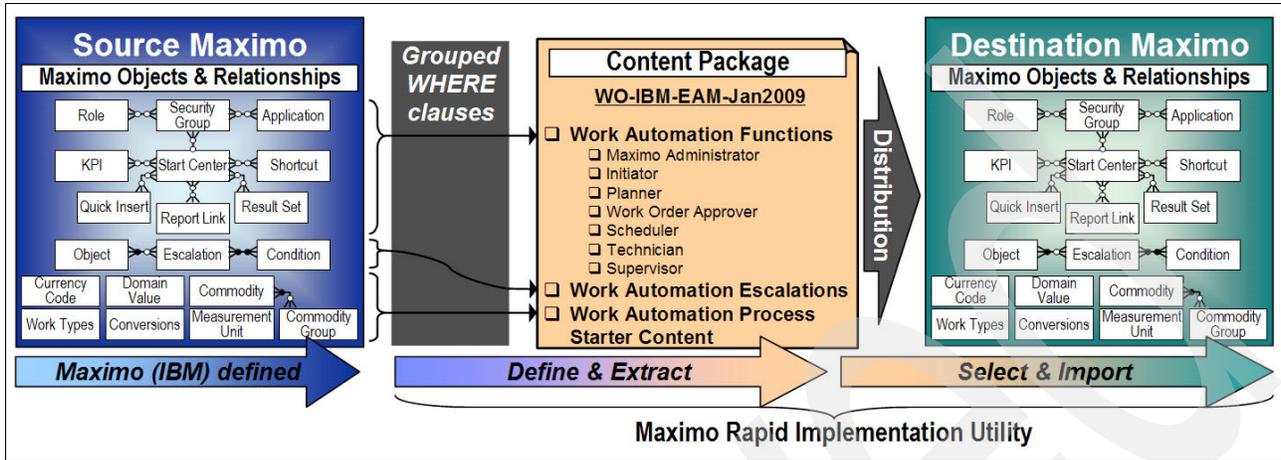


Figure A-1 MRIU Overview

## A.2 Running the Maximo Rapid Implementation Utility

Enter the Maximo root directory under the Windows Preferences menu option resembling Figure A-2.

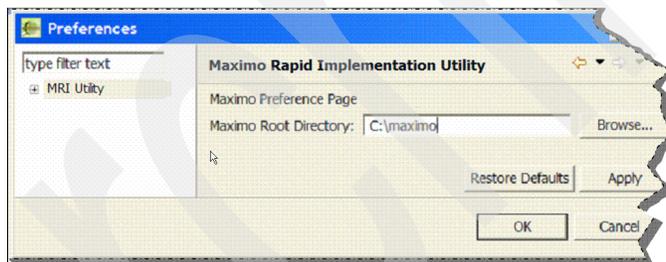


Figure A-2 Preferences options

Complete instructions for MRIU are included in the readme file. Tabs include:

- ▶ Export Single View
- ▶ Export Package View
- ▶ Import Single View
- ▶ Import Package View

The Import Package View allow you to select and import the downloaded Content Package. Figure A-3 on page 94 provides an example of the user interface to select content to be loaded into the target Maximo environment.

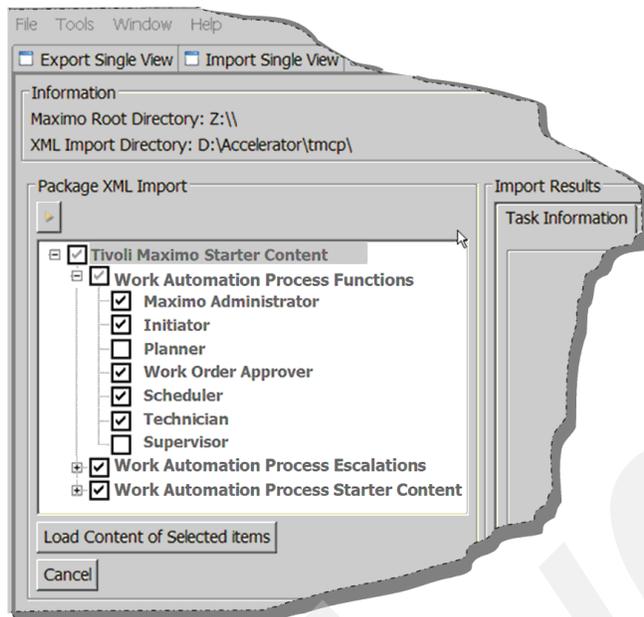


Figure A-3 Import package view

Simply select the content required and then select **Load Content of Selected Items**.

Note there might be rules applied for content relationships either requiring related content sections or other selections that might be in conflict. Selection rules are defined as part of the Published Content Package and will be applied in the index selection accordingly.

The content will now be loaded into the identified target maximo environment. Note for duplicating this process into other maximo environments (development, test, and production), simply change the target maximo root directory and select and load accordingly.

## A.3 Evolution of MRIU

The MRIU application and Published Content Packages are continually evolving content data, content definitions, and content publishing and loading functions. Where the initial MRIU application that we have described enables IBM to publish Starter content as outlined in Section 4, subsequent releases will enable:

- ▶ Content selection, extraction, and packaging by:
  - IBM Services
  - IBM Maximo Industry Solutions
  - IBM Maximo Sales
  - IBM Maximo Development Partners
- ▶ Additional content structures and metadata support
- ▶ Support for definition and selection of extended content, such as:
  - Operational Content: Client-specific assets, inventory, account codes, and other data that might be entered or transferred from other systems.
  - Alternate Sources: Enable IBM Services definition, development, and publication of alternate import formats (for example, comma-separated value (CSV) files) with IBM Business Partners.

The diagram in Figure A-4 outlines the architectural evolution of the MRIU. The Open Process Automation Library (OPAL) provides the ideal distribution mechanism for continued updates as both content and application evolve.

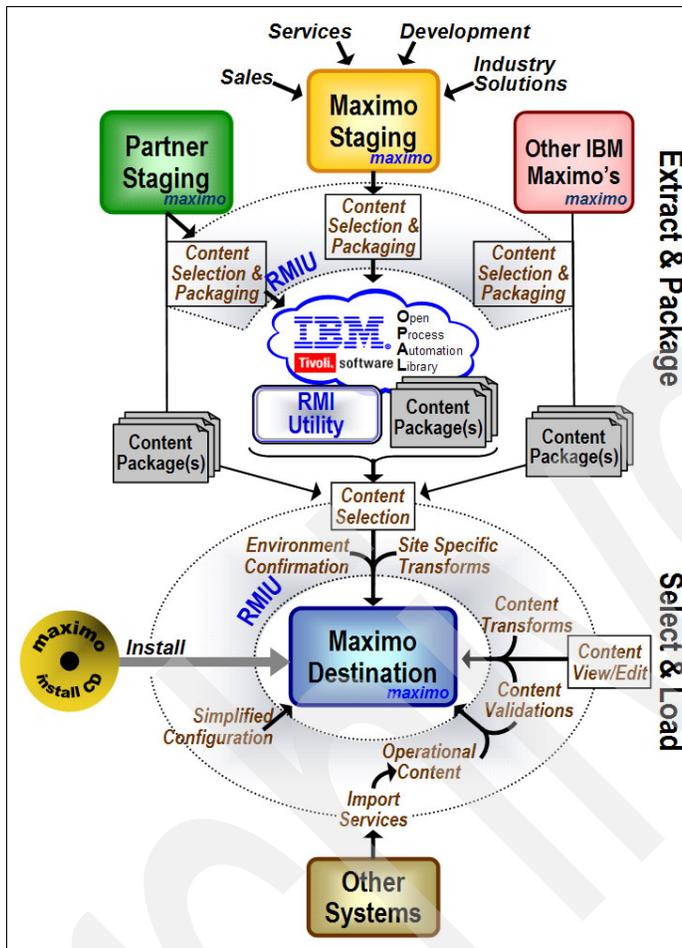


Figure A-4 Evolution of MRIU

Archived

# Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this paper.

## IBM Redbooks publications

For information about ordering these publications, refer to “How to get IBM Redbooks publications” on page 98. Note that the documents referenced here might be available in softcopy only:

- ▶ *Maximo Asset Management Essentials V7.1 Implementers Guide*, SG24-7645
- ▶ *Deployment Guide Series: Maximo Asset Management V7.1*, SG24-7640

## Other publications

Maximo product documentation applicable to Maximo Essentials:

- ▶ *Getting started*
- ▶ *Product overview*
- ▶ *Quick Start Guide*
- ▶ *Product Reference Guide*
- ▶ *Installation Guide IBM WebSphere Application Server*
- ▶ *Installation Guide BEA WebLogic Server*
- ▶ *Upgrade Guide*
- ▶ *Configuring and Administering*
- ▶ *Integration Guide*
- ▶ *System Administrator Guide*
- ▶ *Migration Manager Guide*
- ▶ *Application Developer Guide*
- ▶ *Finance Manager Guide*
- ▶ *Report Developer Guide*
- ▶ *Troubleshooting*

## Online resources

These Web sites are also relevant as further information sources:

- ▶ IBM Software Support Handbook  
<http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html>
- ▶ Open Process Automation Library  
<http://www.ibm.com/software/tivoli/features/opal/>
- ▶ IBM Maximo Documentation and Education site  
<http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/index.jsp>

- ▶ Maximo Essentials Rapid Implementation Kit

<http://www-01.ibm.com/software/brandcatalog/portal/opal/details?catalog.label=1TW10MA2B>

- ▶ Web Replay Tool for Maximo on OPAL

<http://www-01.ibm.com/software/brandcatalog/portal/opal/details?catalog.label=1TW10MA2A>

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# IBM Maximo Asset Management Essentials: Rapid Engagement Guide



## Streamline engagements

This IBM Redpaper provides IBM Business Partners and services teams guidance and information to help streamline their engagements related to deploying solutions based on the IBM Maximo Asset Management Essentials product. Maximo Asset Management Essentials provides small to medium businesses a robust platform for enterprise asset management.

## Utilize common configuration options

Maximo Asset Management Essentials typically requires a services engagement to provide the configuration and customization required for a specific client. For the small to mid-size business that is the target audience for the Maximo Asset Management Essentials product, service engagements for the initial deployment must be kept to a minimum length to help ensure a quicker time to value for the client.

## Improve time to value

The organizations providing these services must be able to efficiently deploy and implement a Maximo Asset Management Essentials-based solution, using repeatable methodologies, common configurations, and taking advantage of available tools and techniques.

This paper provides information targeted at the implementers to provide information to help them perform more efficient engagements and improve client satisfaction.

This IBM Redpaper is intended to be used in conjunction with product documentation and other information as listed in the bibliography. In addition, a utility that provides the ability to load the generic objects and data that implement some of the generic process management capabilities described in this paper is planned to be made available via the IBM Open Process Automation Library.

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