webMethods Task Engine User's Guide

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WEBMETHODS

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About this Guide

This guide provides conceptual and procedural instructions for users of My webMethods who are working with tasks in the My webMethods environment. Both user-oriented and administrator-oriented procedures are documented here. However, role-based access enables any procedure to be assigned to any user by way of the user's role.

To use this guide effectively, you should be familiar with the general terminology and usage of My webMethods. For more information, see *Working with My webMethods*.

For information about creating and publishing task types to My webMethods Server, see *webMethods BPM Task Development Help*.

For information about monitoring processes and tasks using webMethods Business Console, see *Working with webMethods Business Console*.

Document Conventions

Convention	Description
Bold	Identifies elements on a screen.
Narrowfont	Identifies service names and locations in the format *folder.subfolder.service* , APIs, Java classes, methods, properties.
Italic	Identifies: Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
`Monospace font`	Identifies: Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.

Convention	Description
|	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the | symbol.
[ ]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [ ] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

Online Information and Support

Software AG Documentation Website

You can find documentation on the Software AG Documentation website at "http://documentation.softwareag.com". The site requires credentials for Software AG's Product Support site Empower. If you do not have Empower credentials, you must use the TECHcommunity website.

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If you do not yet have an account for Empower, send an email to "empower@softwareag.com" with your name, company, and company email address and request an account.

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To submit feature/enhancement requests, get information about product availability, and download products, go to "Products".

To get information about fixes and to read early warnings, technical papers, and knowledge base articles, go to the "Knowledge Center".

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You can find documentation and other technical information on the Software AG TECHcommunity website at "http://techcommunity.softwareag.com". You can:

- Access product documentation, if you have TECHcommunity credentials. If you do not, you will need to register and specify "Documentation" as an area of interest.

- Access articles, code samples, demos, and tutorials.
- Use the online discussion forums, moderated by Software AG professionals, to ask questions, discuss best practices, and learn how other customers are using Software AG technology.
- Link to external websites that discuss open standards and web technology.

Data Protection

Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

Deprecation of webMethods Broker

webMethods Broker is deprecated for use with webMethods 10.2. If you are starting development using webMethods 10.2, you should use Software AG Universal Messaging instead of webMethods Broker. If you are upgrading to webMethods 10.2, you should consider migrating to Universal Messaging. If you choose to continue to use webMethods Broker, you will still be fully supported, but only until the announced end-of-life dates for webMethods Broker. For details, see "https://empower.softwareag.com/brokerendoflife/".

1 Understanding webMethods Tasks

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Task Overview

The webMethods product suite provides graphical user interfaces that allow you to carry out your business processing and management activities from a central location, using various webMethods components running on multiple servers. These activities include the completion of ongoing business processes that support the day-to-day business operations of your organization.

The webMethods product suite enables your organization to automate these business process activities. Business analysts and developers work together using Software AG Designer to create the automated processes that address your organization's business needs.

Many business processes require human actions, such as approving a purchase order, assigning a telephone number to a new employee, or investigating a problem with an insurance claim. These actions are typically implemented within a business process as *tasks*, and they can be started as part of a running business process or manually. When started, each task invokes an instance of a pre-defined task template that exists in My webMethods Server or Integration Server and executes in webMethods Task Engine.

Software AG Designer enables a task developer to design any kind of custom task required by a process as part of a task application. The task developer creates the task templates (known as *task types*) in Designer and publishes the containing task application to My webMethods Server or deploys the task type to Integration Server. When a task is invoked at run-time, it starts an instance of the specified task type in Task Engine.

In My webMethods tasks are assigned to a My webMethods Server user, role, or group; these assignments can be static (that is, defined at design time), or they can be determined dynamically at run time based on data in the process. It is possible to design a task so that when a task is started, a notification e-mail is sent to the assignee, who can then log on to My webMethods and open the task from their task inbox.

Business data required by the task is passed from the process and is presented to the assignee through the task user interface. For example, in a new employee setup process, this business data could include the employee’s first and last names, the department the employee works in, employee number, start date, whether they are to have an office or a cubicle, and any comments or instructions from the hiring manager or HR reviewer. If your company works across several different campuses, it might also specify which campus or building the new employee is to work in.

Task user interfaces can be designed as part of the task application in Software AG Designer, and displayed to task assignees in My webMethods or in webMethods Business Console.

After opening the task, the assignee carries out whatever actions are required—for example, determining an office space for the new employee. As part of this task, the task developer can require that the assignee must enter the office number in the task before the task can be marked as complete. When the assignee marks the task as completed, the

Task Engine notifies the process of the outcome of the task, along with any new business data (such as the office number).

The task developer can add custom logic to the task to carry out other actions as part of the task activities. For example, suppose your organization maintains a simple database of office assignments. It is possible to configure the task to obtain a list of available offices from the database and provide them (through the task interface) to the task assignee for selection. When the assignee marks the task as completed, the task can check the database of office assignments to ensure the selected office was not already assigned by another worker in the time since the list was obtained. If it was, a message to that effect can be returned to the task assignee, prompting them to select another office. If the selected office is available, the task can update the office assignment database accordingly.

Task Runtimes and Relationship with Software AG Designer

Business analysts and developers create business process models and task types in Software AG Designer. When these process models and task types are ready for deployment, they are published to their respective run-time environments, establishing a publisher/consumer relationship between Software AG Designer and the runtime environments. Tasks, developed in Software AG Designer can be published directly only to My webMethods Server. When deploying task types to Task Engine instances, running on Integration Server, you use Deployer.

Task Engine uses the published task types to create individual task instances as business operations require. Each time you republish or redeploy a task type, the existing task type is overwritten with the modified contents of the republished task type. The properties of the republished task type are also propagated to all running tasks started from that task type. For more information about this behavior, see "About Optimized Task Type Publishing" on page 105.

About Tasks and Task Types

It is important to understand the difference between tasks and task types. Analysts and developers use Software AG Designer to create task types. Each task type serves as a template that addresses a particular kind of human activity that must be carried out to complete a business requirement— for example, approving an order or configuring a new employee's computer.

These task types can be used within an automated *process* developed in Designer and can also be used on a stand-alone basis outside of an automated process.

A task (sometimes referred to as a *task instance*) represents human interaction in a business process, a unit of work that a user must complete before the business process can proceed. Tasks are started from task types that are deployed to My webMethods Server or Integration Server. Users interact with task types and tasks in the following ways:

- Users with administrator privileges can manage, modify, and delete task types using the administrative interfaces in My webMethods.
- Users interact with individual tasks in the task inboxes that are available in My webMethods or Business Console. Regardless of whether a task is started by an automated process or manually by a user, the task is assigned to one or more users, groups, or roles for completion. Each user views and interacts with the tasks assigned to them in one or more task inboxes.

Task types (and tasks) consist of the following elements:

- User interface panels that present information to users. These panels also enable users to enter data and interact with the task in many other ways, such as attaching documents, setting status, and providing comments.
- Event and assignment definitions that define how the Task Engine processes the task.
- The information (custom task business data) contained within the task.

When creating a task type in Designer, the task developer also creates a user interface containing task views that represent the business logic within a process (for example, the criteria used to approve an insurance claim and the actions to take after the claim is approved). When you start a task in My webMethods or Business Console, these tasks views are presented as user interfaces that enable you to:

- View information in text fields or tables, or in attached documents
- Supply information by selecting items from drop-down lists, selecting options, selecting check boxes, typing data in text fields, attaching documents, or by clicking standard buttons (for example, **Submit** or **Approve**).

In My webMethods, each task type can present differing sets of user interface elements or actions based on criteria specified by the task developer, such as the role of the My webMethods user. For example, a task type can be designed to display all account information to a user in managerial role, but to display only a limited set of account information to a user in a subordinate role. Similarly, a senior customer service representative role may be enabled to attach and read documents, but a junior customer service representative role may be enabled only to read attachments.

After a user accepts and completes a task, one of the following happens:

- If the task was started as part of an automated process, the process takes the task results and continues to the next process step.
- If the task was started manually outside of a process, the completion of the task effectively ends the task.

In both cases, the task is marked with a status of Completed.

Task Interaction with Users, Groups, and Roles

The tasks that are assigned to you may be directed to you based on your individual user account or your membership in one or more groups or roles.

My webMethods administrators can assign membership for individual users to one or more My webMethods groups or roles. Roles typically help categorize users by job focus (for example, Customer Service Representative or Information Services), or by level of responsibility (for example, Order Approval, or Order Approval Manager). The primary advantage of a role is that it can be associated with the access privileges and functional privileges available in My webMethods.

Roles can then be used to establish a hierarchy of task access and functional capabilities, based on attributes such as decision making authority. For example, your business model may limit approval of all loan applications over a specified amount to Senior Managers only. In this case, the task can be designed to send applications over that amount directly to the Senior Manager role, and access to those tasks can be limited to that role only. For more information about role-based access and functions, see "How Permission-Based Access Affects Tasks" on page 22.

Groups are typically used to create logical groupings of users, perhaps by geographical location or product specialty.

For more information about creating and configuring users, groups, and roles, see *Administering My webMethods Server*.

About User Information in Tasks and Task Engine Logs

Task instances in the runtime might include identifying information about user accounts. To ensure proper task operation and effective troubleshooting, Task Engine logs some of the user information, such as user names and IP addresses in the log files of the Task Engine runtime.

Depending on the runtime on which you install Task Engine, information is stored in the My webMethods Server or Integration Server log files. For more information about working with the My webMethods Server log files, see *Administering My webMethods Server*. For more information about working with the Integration Server log files, see *webMethods Integration Server Administrator's Guide*.

Task Assignments, Events, and Rules

Business analysts and developers can define the behavior of a task by specifying logic that controls task assignment and that detects certain task events. In My webMethods, these components are presented as rules within a task type. These rules provide the following functions:

- *Assignments* assign a task to a specified user, group, or role depending on the occurrence of a defined condition. For example, when a task is marked for escalation, assign the task to a manager; or, assign the task to a specific user, group, or role when the task is activated. These are configured as Assignments in Designer. Assignment rules are sometimes referred to as *routing rules*.
- *Events* trigger a defined action at a designated point in a task's life cycle (such as Accepted, Assigned, Canceled, Suspended). These are configured as Events in Designer.

- *Filters* filter the tasks viewed by users in their task inbox in My webMethods. For example, do not display any task that has been accepted by another user. This is useful when tasks are assigned to a role containing many members. These are configured as filter Event Types in Designer.
- *Change rules* apply an action when a specified change occurs in the task's status or business data; for example, if the task status changes to Expired, delete the task. An e-mail task notification can be sent to an assigned user or role as a change rule result. These are configured as change-related Event Types in Designer.
- *Schedules* apply an action when specified scheduling conditions are met. These rules are used to apply some time-based conditions to the task; for example, send a task e-mail notification if a loan application has not been accepted for processing within a certain period of time. Or, you might reassign, escalate, or change the priority of tasks based on the passing of a specific date or an interval of time. An e-mail notification can be sent to an assigned user or role as a schedule rule result. These are configured as time or date-related Event Types in Designer.

Task Assignment

Business analysts and developers can control the distribution of tasks based upon both static and dynamic information associated with the task type. For example:

- One example of a static task attribute is the task type itself; suppose a task type is named Setup_Computer, and is used to ensure that a computer is set up and ready for a new employee. In this case, all tasks started from this task type can be assigned to the IT Support group.
- An example of a dynamic task attribute is an order amount. Each time an order approval task is triggered in an automated process, the order amount is likely to be different. In this case, orders over a certain amount can be assigned to a specific role.

A task type can also be designed to enable a user to assign the task to another user, group, or role, or to delegate a task to another user. Some other key points about task assignment:

- Each task instance contains a list of assigned principals (users, groups, or roles). The task may be assigned to more than one principal at a time or not assigned to anyone at all.
- Conditional assignments (assignment rules) associated with the task type can control when and to whom a task is assigned. Also, a task instance can be assigned or re-assigned manually from the Task List Management page in My webMethods, or in a task list in Business Console.
- The owner of the task is the user who started (queued) the task. The task owner is always implicitly assigned to the task.
- Tasks can also be delegated to users with automatic scheduled delegations or manually by a user. Each task instance tracks who tasks are delegated from and to whom they have been delegated.

Task Status and Life Cycle

After a task is started, it can transition through several states. The task status can be set manually by a user, or automatically by the Task Engine as a result of processing rules. The following states are available:

- **New**— The task is new and has not started yet. New status can be used when defining a task event, for example, to detect newly started tasks.
- **Scheduled**— The task is scheduled to start at the specified time. When the task starts, the status of the task changes to Active. To view scheduled tasks in My webMethods, you must have administrator access. You create and modify scheduled tasks in webMethods Business Console, or using the Task Engine built-in and RESTful services. For more information about scheduling tasks, see *Working with webMethods Business Console* and *webMethods Task Engine API and Service Reference*.
- **Active**—The task is running normally and is available for user interaction. A task is placed in Active status when it is started, and can be returned to Active status as a result of a manual status change by a user or as a result of a task event evaluation. Only Active tasks appear in the user inboxes.
- **Completed**—The task is complete as a result of manual completion by a user or as a result of a task event evaluation. No further work can be done on a task that is completed, other than deleting it.
- **Error**—The task has an error condition as identified operationally by the Task Engine or as a result of a task event evaluation. No further work can be done on a task that is in Error status, other than deleting it.
- **Canceled**—The task is canceled as a result of manual cancellation by a user or as a result of a task event evaluation. No further work can be done on a task that is canceled, other than deleting it.
- **Suspended**—The task is suspended as a result of manual suspension by a user or as a result of a task event evaluation. A suspended task is no longer available to users and can be viewed only on the Task List Management page in My webMethods, and no events or assignments are evaluated for a suspended task. A suspended task can be resumed (placed back into Active status) by a manual user action or as the result of a task event evaluation.
- **Expired**—The task has expired as a result of a manual action by a user or as a result of a task event evaluation.

After a task is started, it remains in the system (regardless of its state) until it is deleted manually or by a service. In My webMethods you can create global task rules to automatically delete tasks. My webMethods is installed with a global Delete Task schedule rule. This rule deletes any task in Completed, Canceled, Expired, or Error status after the task has been in that state for a specified period of time (set to seven days by default). This rule is evaluated once per day. For more information, see "Managing Global Rules" on page 121.

How Permission-Based Access Affects Tasks

My webMethods provides an extremely flexible framework for granting or restricting user access to many aspects of the My webMethods interface. This framework is referred to as *permission-based access control*, because access and functional privileges are provided by granting permissions to users, groups, and roles defined in My webMethods. The permissions you have as an individual user depend on the permissions granted to you by an administrator, either as an individual user, or as a role or group member.

By default, members of the My webMethods Administrator role are granted all available permissions. To implement a secure and well-managed business environment, your organization will likely want to define a number of roles or groups that have limited access and functionality—usually tailored to provide just enough access and functionality to carry out the work that is assigned to the role or group.

Task monitoring, management, and administration procedures are all subject to permission-based access control. This guide describes all task-related pages, panels, and the controls available on them. However, as you are working with My webMethods task procedures, or when using Task Engine with different runtimes and user interfaces, you may not see all of these features, depending on the permissions granted to you. You may see all of these features, or only a subset of them. Some task features might not be supported in your installed runtime or user interface at all.

For example, an administrator has the ability to delete tasks, but you may not find a **Delete** button enabled on the page or panel you are viewing, even though the button is described in this guide. This is because you have not been granted the Delete Task permission, either as a user, or through any roles or groups you are a member of.

If that permissions is granted to you, the **Delete** button will become enabled if you refresh or leave and return to the page. If you have any questions about your permissions, talk to your My webMethods administrator.

About Scheduling Tasks

You schedule tasks in webMethods Business Console, or using the Task Engine built-in and RESTful services.

When you create a task instance, you can specify the date and time when the task instance starts. If you specify a schedule for the new task instance, the task instance will be in Scheduled state, and the task state will change to Active when the scheduled task starts at the specified time. If you do not specify a start time when you create a task, the newly created task will be in Active state.

For more information about working with scheduled tasks, see *Working with webMethods Business Console*.

About Collaboration Tasks

Both Software AG Designer and Task Engine provide a set of design-time and run-time functions that allow you to create, modify, assign, and complete collaborative task-based workflows when required.

A key portion of the collaborative workflow feature enables you to quickly create one or more *collaboration tasks* that can be assigned to others users, so that those users can collaborate in completing the parent task. These collaboration tasks exist within a unique collaboration process model that is created when the first collaboration task is created. It is also possible to create tasks for business processes that will dynamically generate and assign one or more collaboration tasks automatically, based on task business data.

A number of general task capabilities are also available to enhance the collaborative work environment, including:

- **Comments**—By default, tasks provide the ability for users to enter, modify, and view free-form comments within the task they are working on.
- **Attachments**—By default, tasks provide the ability for users to add or delete attachments.
- **Data sharing**—You can specify if business data and other task information is to be shared among collaborative users.

For more information about developing collaboration tasks, see *webMethods BPM Task Development Help*.

How Collaboration Tasks Differ from Standard Tasks

Collaboration or instant tasks are essentially identical to standard tasks; the key distinctions are:

- The manner in which they are started.
- Their unique child relationship with the parent task from which they were started.
- Their operation within a unique collaboration process associated with the parent task.

Enabling a collaborative workflow environment requires a defined parent/child relationship between two or more task types. When a run-time process (or user) is working with a task that is designated as a parent task, new child collaboration tasks can be created dynamically and assigned to other users.

This can be done automatically (within a process) or manually, by a user who is working with the task.

Using Collaboration Tasks in a Process

When you include a task representing human activity in a business process, the potential type and number of activities required to complete the task can be quite numerous. While it is possible to construct detailed logic within a task to anticipate all of these possible outcomes, that approach can be very labor intensive and error prone. In addition, if the business use case around the task changes, updating the logic can be difficult.

You can create and configure a parent task type in Designer, and associate it with one or more collaboration tasks. You can then configure the parent task so that when specific business data is received by the parent task, one or more collaboration tasks are created and assigned to specific roles, groups, or users.

Then, when you include the parent task in a business process, the required collaboration tasks will be queued depending on the business data passed to the task in the process pipeline.

For example:

Suppose a satellite television company runs a new order business process containing a task with the nominal activity of installing a dish and receiver. However, different equipment and installation teams are required depending on the service ordered by the customer. In addition, different parts of the country require different kinds of equipment for each type of service. The business data for the process can be configured to contain a field that defines the type of service and a zip code or other designator describing the service area.

Depending on the specified service type and location contained in the pipeline for each individual order, the business process task can queue one child task to the required installation team, and another collaboration task to the inventory team to prepare the correct type of equipment for the installers. The parent task can be configured to complete automatically when all of the collaboration tasks are completed.

For more information about configuring collaboration tasks, see *webMethods BPM Task Development Help*.

Using Collaboration Tasks Manually

You can configure a task so that an individual user (with the proper permissions) can create collaboration tasks from the task after opening it in an inbox. The user can assign these collaboration tasks to other users to help complete the parent task. For example:

Suppose a customer service representative (CSR) receives a task to investigate and resolve a customer's complaint that issues of a magazine subscription are no longer arriving.

To determine the cause, the CSR needs information from a database administrator and the circulation manager. The CSR can create and assign collaboration tasks to both these individuals requesting the information needed to evaluate the problem. In this case, the

circulation manager returns confirmation that the subscription is active and issues are being mailed as scheduled. When returning this information, the circulation manager marks the collaboration task assigned to him as complete.

The database administrator completes his collaboration task by providing the customer's account information—where the CSR finds that the address is incorrect. The CSR then creates a new collaboration task for the database administrator, asking for the customer's record to be updated with the correct information. The database administrator in turn delegates this collaboration task to one of his team members, who enters the correct information and marks the collaboration task as completed. The CSR now marks the parent task as completed.

About Collaboration Processes

A collaboration process is a unique type of process in the My webMethods Server environment and must not be confused with a standard webMethods business process.

A unique collaboration process is created any time a task user creates a collaboration task on the **Collaboration** tab of a parent task (the task must be enabled for collaboration). The collaboration process remains running until the parent task is completed, and any additional collaboration tasks that are created are added to the collaboration process. The collaboration process is owned by the user who created the first collaboration task, and the collaboration process owner has full access and privileges to the collaboration process and the collaboration tasks in it.

The key consideration concerning the collaboration process within Designer is the ability to specify sharing of comments and attachments among all child tasks in a collaboration process by setting the comments and attachments scope. For more information about setting task scope, see "About Task Comments and Attachments Sharing" on page 27.

About the Relationship Between Parent Tasks and Collaboration Tasks

There are two opportunities to define this task parent-child relationship between two or more task types:

- In **Software AG Designer**—You can specify a parent task on the Overview tab of the task editor; this automatically designates the task you are working with as a collaboration task and makes collaboration-specific event actions available within both the collaboration and the parent tasks. A parent task can have one or more child collaboration tasks, but a collaboration task can have only one parent task. If you do not want to designate another task as the parent, you can specify the name of the task you are working with as the parent; this keeps the event actions limited to the current task.

  Typically, both the parent and child task are contained in the same task application project, for ease of maintenance and so they can be published to the runtime at the same time. This type of parent task is best suited for use in an automated business

process, where it can queue its child task(s) as described in "Using Collaboration Tasks in a Process" on page 24.

- In **My webMethods**—On the Task Administration page of My webMethods, you can specify one or more of the task types available in the runtime environment as a child collaboration task for a task type. This enables the user to be able to select from the specified collaboration task types when creating a new collaboration task on the Collaboration tab of the task they are working with (with proper permissions, and assuming the task is enabled for collaboration).

  This type of parent-child relationship is best suited for use in a manual situation, where the user can queue collaboration task(s) as described in "Using Collaboration Tasks Manually" on page 24.

When the task developer defines a parent-child relationship in Designer, both the parent and child tasks are created and configured with a specific relationship and specialized parent-child behavior.

The parent-child mechanism in My webMethods is more informal and enables you to define a parent-child relationship between any two task types available in the runtime environment. As these tasks have already been configured in Designer, the amount of functionality shared by the two tasks will be limited.

In both cases, the parent and child tasks run within a single collaboration process and task comments and attachments can be shared, as described in "About Task Comments and Attachments Sharing" on page 27.

Note that it is possible for a single task type to be both a parent task and a child collaboration task at the same time. For example, suppose you have three task types, Task1, Task2, and Task3. Task2 can be a collaboration task for parent task Task1, and Task2 can also be a parent task for collaboration task Task3.

About Collaboration Tasks and Task Business Data

Task business data can be shared between tasks queued from different task types, as long as they have identical business data (for example, they have been created from the same IS document type).

In My webMethods, you can enable or disable data sharing for each task type. When the user queues a new collaboration task from a task type where data sharing is enabled, the new collaboration task will contain a copy of the business data from the parent task. For more information, see "Disabling and Enabling Task Data Sharing" on page 109.

Key Points About Collaboration Tasks

If you plan to implement collaboration tasks, keep the following key points in mind:

- Collaboration tasks appear in My Inbox, task type inboxes, and Task List Management as a regular task, and all standard task behavior applies.

- If the Collaboration Task column is in the results display, a collaboration icon identifies each collaboration task. This column is not present by default; you can add it by clicking **Properties** in the Tasks window menu.
- A task must be specifically enabled to allow collaboration. For more information, see "Disabling and Enabling Task Collaboration" on page 108.
- A task must have usable collaboration tasks specified. For more information, see "Specifying Allowed Collaboration Tasks" on page 109.
- You can view the details of a collaboration process. For more information, see "Viewing Collaboration Process Details" on page 76.

About Task Comments and Attachments Sharing

As part of a collaborative workflow environment, the task developer can specify a scope that defines how comments and attachments are shared among other tasks. The following scope selections are available for comments and attachments in all tasks:

- **Task Instance**—This is the default scope. Each individual task instance has its own unique attachments and comments (that is, they are not shared).
- **Process Instance**—All tasks within the same business process model instance share their comments or attachments. This applies even when different task types are in use within the process model. When this scope is specified, you will see comments and attachments for all tasks started within that process model when you view the task comments or attachments of any task instance started from within the process model.
- **Process Instance AND Task Control Set**—All tasks within the same business process model instance that use the same control set share their comments or attachments. This applies even when different task types are in use within the process model. When this scope is specified, tasks started within that process model must share a task control set to enable sharing of task comments or attachments. For more information about control sets, see *webMethods BPM Task Development Help*.
- **Collaboration Process**—All tasks within a single collaboration process instance share comments or attachments. This applies even when different task types are in use within the collaboration process. For more information about collaboration processes, see "About Collaboration Processes" on page 25.

About E-form Integration with Tasks

The webMethods product suite provides electronic forms integration to enable the use of e-forms with your tasks. Basic e-form support for tasks can be implemented by storing e-form templates and instances in a file system or a web server. For more information and a list of the supported e-form types, see *Implementing E-form Support for BPM*.

To be able to work with e-forms in tasks, the following preliminary actions are necessary:

- Create a repository for your e-form instances and templates.
- Configure a webMethods e-form environment in My webMethods and deploy that environment to the Integration Server host(s) where you will be creating your IS document types.
- Ensure that you have network connectivity between all of the host servers.
- Review various implementation issues for the supported e-form types.

For more details about these procedures and conceptual information about the use of e-forms in the webMethods product suite, see *Implementing E-form Support for BPM*.

For more information about interacting with e-forms in tasks, see "Working with E-form Data in Tasks" on page 68.

About Task E-mail Notifications

At design time, the task type developer can create a notification event within a task that publishes a notification e-mail when the conditions defining the event are matched. You can subscribe to these notifications for the tasks that are assigned to you (assuming the task type contains notifications).

To receive an e-mail notification, you must satisfy both of the following requirements:

- You must be directly assigned to the task, or be a member of a group or role that is directly assigned to a task. When a task is delegated to another user, the delegation is equivalent to assignment for the purpose of task notification.
- You must be subscribed to the task notification. You can be granted permission to self-subscribe to a task type notification, or a task administrator can subscribe you.

Note: It is possible for the task developer to override the "assigned to" requirement for individual task types. In this case, all subscribed users receive the notification, not just those who are assigned to the task. For more information, see *webMethods BPM Task Development Help*.

Important: A special condition applies to My webMethods administrators, or any user who is assigned the **Task Administration** permission. Any user who has the **Task Administration** permission *and* is subscribed to a task notification will *always* receive task notifications from the task, whether the user is assigned to the task or not.

By default, the e-mail notification contains a link to the associated task instance. When you click on this link, you are taken to the My webMethods log-in page, and from there to the task instance. To do so, you must have a network connection to the My webMethods Server instance that originated the message.

Note: Some e-mail service providers may configure their server to remove, alter, or otherwise disable the URL contained in the "Click here to open task" link to comply with security requirements. In this case, you will not be able to open the task.

Basic examples of notification messages include:

- You have been assigned a new task.
- A task has been delegated to you.
- A task has been cancelled.

In addition, notifications can be published based on business data associated with a task. For example, notifications can be generated for orders over a particular amount, or orders submitted by a specific customer. With proper permissions, you can subscribe to notifications for yourself, and you can subscribe other users. Notifications are sent to the e-mail address specified in the subscribed user's My Profile page in My webMethods.

If a task type does not contain any notifications and you would like to have notifications made available, ask the task type developer to add a notification to a task type in Software AG Designer and then publish the modified task type to My webMethods Server.

For more information about working with task notifications and task notification e-mail replies, see "Working with Notifications" on page 65.

Replying to a Notification without a My webMethods Connection

The task type developer can enable a My webMethods user to remotely execute a pre-defined action on the task that issued the notification by configuring the e-mail notification to contain a Task Action Link. This link enables you to respond to the task without having a connection to My webMethods Server. These task notification reply e-mail actions are logged and displayed on the task's Audit tab.

For example, suppose a business process contains a task that determines if an order is approved or denied, based on a simple maximum order amount. The task type developer can create a task notification that is triggered by an automated denial of the order (for example, the order amount exceeds the limit authorized for the customer). The developer can also craft the logic of the task type so that upon denial, the task is assigned to the appropriate account manager.

Upon denial, the task notification is e-mailed to the account manager for that customer, who is now assigned to the task and who is already subscribed to the notification. The task type developer includes basic task business data in the task notification (for example, the order amount and reason for denial) and includes a Task Action Link in the notification e-mail.

In this case, the developer crafts the link so that it triggers a service that overrides the denial and approves the order. The link appears in the account manager's e-mail

as “Override this denial and approve the order.” The task type developer can add additional links for other responses.

When the account manager receives the e-mail and decides to override the denial, he clicks the “Override this denial and approve the order” link. A reply e-mail is automatically created and sent (by way of the account manager's e-mail client) to an e-mail account specified in the link.

A Task Engine e-mail listener monitoring this account downloads the account manager's reply, deletes the e-mail from the monitored account, and executes the action included by the task developer (in this case, execute the service that overrides the denial and approves the order).

This is a one-time occurrence; if the subscriber clicks the link again, the resulting e-mail will be downloaded by the e-mail listener, but will be ignored. Security measures are in place to prevent e-mail spoofing and the substitution of non-defined actions.

Task notifications are sent to the e-mail address recorded in the user’s My webMethods Server profile. Some e-mail service providers may configure their server to remove, alter, or otherwise disable the URL contained in the “Click here to open task” link to comply with security requirements. In this case the link may be missing or inoperative in the delivered e-mail message.

Permissions Required to Work with Task Notifications

For more information about granting task permissions to user, roles, and groups, see:

- “Configuring Task Access Permissions” on page 95
- “About Task Type Functional Permissions” on page 99
- “Configuring Task Type Functional Permissions” on page 101

A My webMethods user requires the following permissions to work with task notifications:

- The user must be a member of a role or group with the **Access Privileges > Monitoring > Business > Tasks > My Inbox** access permission. For information about the results of not granting this permission, see “Limitations When Denying Access to My Inbox” on page 97.
- The user must be granted the task type functional privilege **Tasks Application Root Page**.
- The user must be granted the task type functional privilege **Subscribe to Task** if the user is to be able to self-subscribe to the task type notifications.
- At a minimum, the task type functional permissions for **View Task Data**, **View Task Info**, **View Task Audit**, and other View task type must be granted to the user to enable the user to see the task contents.
- If the user is to interact with the task instance, additional task type functional permissions, such as **Accept Task**, **Modify Task Data**, and **Complete Task** must be granted.

- If the user is to have access subscriptions from the task type inbox, the task type functional permission **Tasks Application Root Page > Task Inbox Page** must be granted.

About Mobile Task Integration

webMethods Task Engine provides support for Mobile Task Integration (MTI), which enables a user to interact with MTI-enabled tasks running in the Task Engine from an iOS or Android mobile device. For more information about mobile task integration, see *webMethods Mobile Task Integration User's Guide*.

This publication describes the procedures required to create a mobile task application in Software AG Designer, how to publish the application to Mobile Administrator, and how to connect to and interact with the mobile task application from a mobile device.

Where to Find Tasks in My webMethods

My webMethods provides two primary navigation paths on the **Navigate** tab for working with tasks:

- **Applications > Administration**, which allows you access to the pages that you use for administering task types
- **Applications > Monitoring**, which allows you access to the pages you use for monitoring and interacting with tasks

You must have appropriate permissions to access either the **Administration** or the **Monitoring** navigation paths to carry out task-related activities in My webMethods. In addition, you must have permissions for specific task activities.

For more information about configuring permissions, see "Configuring Task Permissions" on page 94. For general information about using these navigation paths and working with My webMethods, see *Working with My webMethods*.

Monitoring Tasks in My webMethods

From the **Monitoring > Business > Tasks** navigation path, you have access to the following navigation selections:

- **My Inbox** to view your task inbox. This inbox displays all of the tasks assigned to you.
- **Task List Management** to monitor and manage all tasks in My webMethods that you have permission to view, regardless of assignment. With proper user, role, or group permissions, you can use the task list to suspend, resume, assign, delegate, and resubmit tasks, among other activities.
- **Task Type Inboxes** to view all of the tasks of a specific task type that are assigned to you (there is a separate task type inbox for each type of task assigned to you). A task

type inbox may not be available if the task type developer has not created one for the task type.

- **Task Charts** to view two default task charts, one displaying the number of all tasks, and one displaying the number of critical tasks. You can modify these default charts, and you can create additional chart portlets for deployment on the Task Charts page or in any other location of My webMethods.

About My Inbox

By default, the My Inbox page in My webMethods displays all of the tasks that have been assigned to you, either directly to your user account, or indirectly, through a role or group that you are a member of. The My Inbox page consists of two panels:

- The Search panel—use this panel to search for tasks by specific keyword or parameter; the results are displayed in the Inbox panel. By default, it is set to search for all tasks assigned to you. For more information, see "Filtering and Searching in My Inbox" on page 47.
- The Inbox panel—use this panel to view the results of the most recent search, as defined by the settings in the Inbox Search panel. You can apply the following actions to selected tasks:
  - Delegate
  - Remove Delegation

  For more information on these actions, see "Delegating Tasks" on page 55.

  The Inbox panel also allows you to perform the following task-related actions:
  - Subscribe to task notifications. For more information on these actions, see "Working with Notifications" on page 65.
  - Define and manage scheduled delegations. For more information, see "Scheduling Task Delegation" on page 57.
  - Export the contents of the Inbox in table format as a comma-separated value (CSV) file. For more information, see "Exporting the Contents of a Task Inbox or Task List" on page 70.

The operation of the Search panel and Inbox panel conform to the general My webMethods search framework; for detailed information about searching in My webMethods, see *Working with My webMethods*.

For more information about My Inbox, and task inboxes in general, see "About Task Inboxes" on page 38.

About Task Actions

Because of the high degree of task customization possible with Software AG Designer, the task type developer can provide virtually any means of interacting with a task.

However, various task action buttons are configured by default in Software AG Designer and may be found in the tasks you work with.

The following default buttons are available for individual tasks:

- **Accept**—Accepts the task for the current user.
- **Submit**—For My webMethods users, this updates all task information from the data fields on the page but does not complete the task (that is, the status is not changed).
- **Complete**—Updates all task information from the data fields on the page and applies a status of Completed to the task.
- **Return**—Discards any user changes and returns the user to the previous page.
- **Release**—Releases an accepted task, indicating it is no longer accepted by the current user.(visible only if the task is not marked for auto-acceptance and is accepted).
- **Assign to Users**—Enables the user to assign the task to one or more a selected users, groups, or roles.

About Task List Management

The Task List Management page displays all of the tasks that you have privileges to view, regardless of assignment or status. The Task List Management page is primarily administrative in nature, and enables you to apply a number of management actions to selected tasks. The Task List Management page consists of two panels:

- The Search panel—use this panel to search for tasks by specific parameter; the results are displayed in the Task List Management Tasks panel. By default, it is set to search for all tasks that you have privileges to view, regardless of assignment. For more information, see "Filtering and Searching the Task Management List" on page 83.
- The Tasks panel—use this panel to view the results of the most recent search, as defined by the settings in the Search panel. Click **Properties** in the Tasks panel menu to modify the column display.

The following task management buttons are available:

- **Resume**—use this button to resume a suspended task.
- **Suspend**—use this button to suspend an active (running) task.
- **Assign To**—use this button to assign a task to one or more users, groups, or roles. The task will appear on the user's My Inbox page.
- **Accept For**—use this button to force acceptance of a task for one or more users or roles. The task will appear in each individual user's inbox as an accepted task.
- **Resubmit**—use this button to resubmit an active task. This forces the task data to be re-evaluated regardless of whether or not any of the data has been modified. Note that resubmitting a task can have an effect on task assignments, which can be configured to be evaluated for each task change. In this case, resubmittal will cause

these assignments to be re-evaluated, possibly resulting in a re-assignment of the task.

- **Set Status**—use this task to change the status of the task. Available settings are Active, Completed, Error, Canceled, and Expired.
- **Delete**—use this button to delete a task from the current process list.
- **Delegate**—enables the user to delegate a task to another user.
- **Remove Delegations**—enables the user to remove all delegations applied to the task.

For specific information about these actions, see "Managing Tasks" on page 85.

The Tasks panel also allows you to perform the following actions:

- Subscribe to task notifications for other users; for more information, see "Subscribing to a Notification Rule for Other Users" on page 66.
- Define and manage scheduled delegations; for more information, see "Scheduling Task Delegation" on page 57.
- Export the contents of the task list in table format as a comma-separated value (CSV) file. For more information, see "Exporting the Contents of a Task Inbox or Task List" on page 70.

About Task Type Inboxes

A separate task type inbox is available for each type of task assigned to you, if the task type developer has created one and you have been assigned access privileges to it. These appear on the Tasks page as individual tabs for each type of task—for example, if you are assigned a task of the task type "Order Approval," an Order Approval task type inbox is available.

These task type inboxes display only those tasks started from that particular task type. These inboxes can be customized by the task type developer as required, and so may differ from task type to task type as to the layout and components that are available.

A task type inbox tab consists of two panels:

- Search For panel—use this panel to search for tasks by specific parameters; the results are displayed in the Tasks List panel. By default, it is set to search for all instances of that tab's specific task type assigned to you. For more information, see "Searching in a Task Type Inbox" on page 48.
- The Tasks Results panel—use this panel to view the results of the most recent search, as defined by the settings in the Search For panel. You can apply the following actions to selected tasks:
  - Delegate
  - Remove Delegation

  For more information on these actions, see "Delegating Tasks" on page 55.

The Task Results panel also allows you to perform the following task-related actions:

- Subscribe to task notifications. For more information on these actions, see "Working with Notifications" on page 65.
- Define and manage scheduled delegations. For more information, see "Scheduling Task Delegation" on page 57.
- Export the contents of the Inbox in table format as a comma-separated value (CSV) file. For more information, see "Exporting the Contents of a Task Inbox or Task List" on page 70.

The operation of the Search For panel and Task Results panel conform to the general My webMethods search framework; for detailed information about searching in My webMethods, see *Working with My webMethods*.

For more information about task type inboxes, and task inboxes in general, see "About Task Inboxes" on page 38.

About Task Charts

webMethods Task Engine provides basic task charting on the Task Charts page. This page contains two default task chart portlets; you can modify these default charts, and you can create additional chart portlets.

Chart results are determined by selecting from the available saved searches. For more information about task charts, see "Working with Task Charts" on page 126.

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About Task Inboxes

My webMethods provides you with two kinds of task inbox:

- **My Inbox**—this is a standardized inbox that is available to My webMethods users who have been granted permissions to work with it. Its layout and components remain the same regardless of the type of tasks you are viewing. For a general description of the My Inbox page, see "About My Inbox" on page 32. The My Inbox page provides you with searchable access to all tasks assigned to you (or to a role or group you are a member of), regardless of task type.

  To access My Inbox, navigate to **Navigate > Applications > Monitoring > Business > Tasks > My Inbox**.

- **Task type inboxes**—task type inboxes (also referred to as *custom task inboxes*) display only the task instances associated with that task type inbox; these inboxes are available to My webMethods users who have been granted permissions to work with them. For example, if you are working with tasks that have been started from task types "Order Approval" and "Shipment Approval," you will find a separate inbox for each of those task types. These inboxes can be customized by the task type developer as required, and so may differ from task type to task type as to the layout and components that are available.

  By default, searches in the task type inbox are limited to the task type associated with the inbox. However, the task developer can configure the task type to search all task types, or a specific list of task types. Check with the task developer if you are not sure which search pattern is applied to a task type inbox.

  To access a task type inbox, navigate to **Navigate > Applications > Monitoring > Business > Tasks > [TaskType]**.

After you open various inboxes, you can switch among inboxes by clicking the tab for the inbox, or by clicking the inbox in the **Navigate** tab. Both kinds of task inbox provide you with the ability to search for tasks and to open tasks to work on them.

Viewing and Opening Tasks in the Task Inboxes

You can view the list of tasks assigned to you either in My Inbox or in a task type inbox, as described in "About Task Inboxes" on page 38 above. For additional information about viewing tasks, see "About Duplicate Task Type Names in the My Inbox Results" on page 40. For information about working with tasks on the Task List Management page, see "Viewing Tasks on the Task List Management Page" on page 80.

To work within an individual task, you must open it, as follows:

Important: You must open and work with only one task at a time. My webMethods does not support working with two or more tasks open at the same time. Unpredictable results may occur when saving task changes.

To open a task in an inbox results list

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox. By default, all of the tasks assigned to you (or to a role or group you are a member of) are displayed in the My Inbox results, and all of the tasks of a particular name are displayed in the task type inbox results.

   Important: You must have the **Task ID** column displayed in the results list to be able to open a task. If this column is not displayed, add it to the list as described in "Customizing the My Inbox and Task Type Inbox Results List" on page 49. You can also open a task from the **Custom ID** column, but this value may not be populated for every task.

3. Click the Task ID link for the task you want to open.

The Details page opens with the **Data View** tab automatically selected the first time you open it. Thereafter it will open to the last tab you viewed.

Selecting Tasks in Task Inboxes

In the task results list, each task row features a selection check box column at the left side of the table by default. To carry out certain actions (for example, delegating a task), one or more tasks must be selected, either by clicking one or more check boxes, or by clicking the select icon at the top of the column. Two select actions are available, depending on the inbox:

- **Select All on Page**—this action is available in My Inbox. Clicking the icon selects all of the tasks displayed in the results list, but does not select any tasks that are not displayed.
- **Select All**—this action is available in a task type inbox. Clicking the icon selects all of tasks contained in the inbox, not just the tasks displayed in the results list. Note that if the number of tasks is very large, this operation can result in slower response.

You can adjust the number of rows and columns displayed in the task results list by modifying the user Preference settings for My Inbox or for a task type inbox. For more information, see "Customizing the My Inbox and Task Type Inbox Results List" on page 49.

Sorting Tasks in the Task Inboxes

You can sort the tasks displayed in the task list results by any of the available columns. By default, the results list is sorted by the **Task ID** column. You can specify a different default sorting column, for more information, see "Customizing the My Inbox and Task Type Inbox Results List" on page 49.

Note that when sorting by the **Assigned To** and **Accepted By** columns in a custom task inbox, the column is sorted by the first user, role, or group name in the list of

principals (these columns are not available in My Inbox). The list of principals is sorted alphabetically and the order of the list cannot be modified.

About Duplicate Task Type Names in the My Inbox Results

In some instances, it may be necessary to create two or more task types with the same task type name. The appearance of duplicate task type names in the My Inbox results can be potentially confusing. When searching or filtering tasks, the **Advanced** tab of the My Inbox enables you to filter the task results by task type name. In the event of task types with duplicate names, the task list will contain an entry for each duplicate name, potentially making it difficult to select the desired task.

To alleviate this problem, the **Value** field on the **Advanced** tab displays the task type ID in parenthesis so you can differentiate the tasks. In addition, you can hover the cursor over the **Value** field or a task name entry in the results list; this displays a tooltip that contains the unique task type ID.

Viewing Detailed Information About a Task

The Task Details page provides three tabs that enable you to view information about the task:

- **Data View**
- **Details View**
- **Audit View**

About the Data View

The **Data View** tab appears by default when the task is first opened. Because of the high degree of customization available to the task type developer, the information displayed on this tab can vary widely, as can the buttons, links, and other controls provided. Although the contents of this tab are determined by the task type developer, it would typically include the most important elements of the task, generally referred to as *business data*.

For example, for a Computer Setup task type, this tab might display the computer user's name, office number, phone number, e-mail address, and any special instructions pertaining to how the computer should be set up. In addition, it might display a due date and the task priority, as well as **Complete**, **Submit**, and **Cancel** buttons.

About the Details View

The **Details View** tab contents include task information of a secondary nature—that is, information that is not necessarily required to complete a task. The following information appears in the default task configuration:

- **Task Type**—The task type name.

- **Task ID**—The task identification number assigned to the task by the Task Engine.
- **Name**—The name of the task as entered by the user or defined by a process. This value can be modified by the user.
- **Description**—A description of the task as entered by the user or defined by a process. This value can be modified by the user.
- **Priority**—The priority of the task (None, Low, Medium, High, Critical). This value can be modified by the user.
- **Status**—The status of the task (New, Scheduled, Active, Completed, Error, Cancelled, Suspended, or Expired).
- **Accepted By**—Name of any users who have accepted the task.
- **Accepted Date**—Date and time when the task was last accepted.
- **Assigned To**—Name of any users, groups, or roles to whom the task is assigned.
- **Delegation**—Displays how the task has been delegated by showing the From and To user names.
- **Created Date**—The date the task was created.
- **Created By**—The user that created the task.
- **Start Date** —The date and time when the task is scheduled to start.
- **Last Updated Date**—The date the task was last modified.
- **Last Updated By**—The user that last modified the task.
- **Expiration Date**—The expiration date of the task (if specified).
- **Custom ID**—The custom ID of the task as entered by the user or defined by a process.

The tab also provides an **Apply** button to apply a change to the **Name**, **Description**, or **Priority** values, and a **Return** button to take the user back to the previous page.

About the Audit View

The **Audit View** tab provides a tabular audit log of all of the operations performed on a task.

The following table lists the operations, included on the Audit View tab:

Column	Description
Operation	The type of operation performed on the task, such as "Task Updated" or "Routing Rule Fired." Some operations appear as a link that enable you to view additional information about the operation.

Column	Description
Created Date	The date and time the operation was applied to the task.
Source	The actor that applied the operation to the task; this can be a user, or a mechanism, such as a routing rule. Some entries appear as a link that enable you to view additional information about the source.
Delegated By	Displays the name of any user that delegates a task. Applies only to delegation operations.
Roll Back	When enabled, click this icon to roll back, or "undo" the associated operation. If roll back is not possible, the icon is disabled. For more information, see "Rolling Back a Task" on page 92.

The tab also provides a **Return** button to take the user back to the previous page.

You can limit the amount of audit log information shown here, or turn of audit logging entirely. For more information, see "Specifying Task Audit View Logging Levels" on page 126.

About the Task Comments View

The **Comments** tab provides the ability for you to view, add, and manage comments within a particular task. Two conditions apply for the display of this tab:

- The task must be enabled for commenting; for more information, see "Disabling and Enabling Comments and Attachments" on page 107.
- You must have the proper permissions to view, add, and manage comments. For more information, see "About Task Type Functional Permissions" on page 99.

For more information about working with comments, see "Working with Comments and Attachments in the Comments Tab" on page 60. The **Comments** tab provides the following controls:

- **Add Comment**—Opens the New Comment panel.
- **Refresh**—Updates the contents of the **Comments** tab.
- **Return**—Returns the user to the previous page.

In addition, the **Comments** tab includes a table that contains the following:

- Comments entered by task users, including the user name, comment text, a time and date stamp.
- Attachments added by task users. Each attachment is represented by a link to the file.

An Update link opens the Edit Comment panel.

A Delete link removes the associated comment and attachment (if present). No confirmation prompt is provided.

About the New Comments/Edit Comments Panel

These two comment panels are very similar:

- Open the New Comment panel with the **Add Comment** button.
- Open the Edit Comment panel with the Update link.

These panels contain the following boxes:

- **Comment Text**—Free form text area for entering comments.
- **Attachments**—Display box showing the name of the file selected for attachment by using the associated **Browse** button.

As well as the following buttons:

- **Browse** button—Opens a standard file system browsing dialog box, enabling the user to select any file available through the local operating system.
- **Clear**—Removes text from the attachment browse results box.
- **Attach**—Marks the selected file for attachment to the task.
- **Create**—Available on the New Comment panel only. Adds any comment or attachment to the task.
- **Update**—Available on the Edit Comment panel only. Applies any changes to the comment or attachment.
- **Cancel**—Closes the New Comments panel without saving any changes.

About the Collaboration Tab

The **Collaboration** tab enables users to add, modify, and delete comments and attachments in a task. For more information about working with collaboration tasks, see"Working with Collaboration Tasks" on page 72. The following controls are available:

- A formatted message panel for displaying any JSF context messages.
- A Process Information panel that displays the following information about the collaboration process associated with the task (the collaboration process is not created until the first collaboration task is completed):
  - **Name**—name of the collaboration process (editable).
  - **Created By**—name of the user that created the first collaboration task, thereby creating the collaboration process.

- **Last Modified By**—name of the user who last modified the process or any of its contents.
- **Created Date**—date and time the collaboration process was created.
- **Last Modified Date**—date and time the collaboration process was last modified. This field also displays a duration value showing the total time the collaboration process has been running.
- **Status**—status of the collaboration process.

The following buttons are provided on the Process Information panel:

- **Open Details**—opens the Process Detail page which displays a graphic representation of the collaboration process, as well as tabbed information displays of Process Info, Step Info, Task Info, Task Audit, and Task Comments.
- **Update**—refreshes the process information display.
- **Delete**—enables the user to delete the collaboration process and all of its collaboration tasks.

- A search results tree that displays information about the parent task and all active collaboration tasks, arranged in row and column format.

The following buttons are provided:

- **Create Child Task**—Opens the New Collaboration Task dialog box.
- **Assign To**—enables the collaboration process owner to assign a selected collaboration task to one or more users, groups, or roles.
- **Set Status**—enables the collaboration process owner to set the status of a selected collaboration task.
- **Delete**—enables the collaboration process owner to delete a selected collaboration task.
- **Return**—returns the user to the previous page.

About the New Collaboration Task Panel

When you click **Create Child Task**, the New Collaboration Task panel appears, providing the following controls:

- A formatted message panel for displaying any JSF context messages.
- **Collaboration Task Type**—a list of all the available task types that can be used to create a collaboration task, as assigned on the Task Engine Administration page.
- **Name**—The name you want to assign to the collaboration task.
- **Description**—The description you want to assign to the task.
- **Priority**—The priority you want to assign to the task.

- **Expiration Date**—The date on which the task will be placed in expired status, as selected by an included calendar control.
- **Time**—A specific time of day on which the expiration will take place.
- **Assignees**—A list of the user, group, and role names to which the collaboration task has been assigned.
- **Queue Task Immediately**—A check box option that controls whether the task is started immediately upon creation or is deferred for later starting. If this check box is cleared, the collaboration task is created with a status of New, and it appears in the collaboration task list and in the Task List Management results, but will not appear in the assigned user's inbox or the task type inbox. To queue the collaboration task (causing it to appear in the assignee's inbox), set the status for the collaboration task to Active from the collaboration task list or from the Task List Management results.
- **Mandatory** — A check box option that controls whether the task is a mandatory task or not. If a task is specified as mandatory, the corresponding parent task can be marked as completed only when the status of all the mandatory child tasks is Completed, Error, Canceled, or Expired.

The following buttons are also included

- **Pick**—Opens the included modal Select Users dialog box for selecting assignees.
- **Create New**—Creates the new collaboration task with the specified values.
- **Cancel**—Discards all information and returns the user to the **Collaboration** tab.

Customizing the Task Inbox Search Options

You can customize your search preferences with the **Options** tab on the Search panel in both My Inbox and the task type inboxes.

To customize the task inbox search options

1. In My Inbox or in a task type inbox, click the **Options** tab.
2. Do any or all of the following:
   - Specify which search tab appears by default (Basic, Saved, or Saved with Details).
   - Specify the default saved search.
   - Specify if the default saved search is to be run automatically when the inbox is opened.

   The following additional options are available on task type inboxes only:

   - Enter a value in the **Max Results** field to limit the number of tasks returned as search results, or:
   - Click the **No Maximum** check box to return all search results, subject to the following conditions:

- When selected, the maximum is subject to the `task.max.results` option (default = 1000 tasks); for more information, see "Limit the Number of Tasks Returned to a Results List" on page 191.
- If the task type associated with the task type inbox is configured with an indexed search provider, clearing or selecting the **No Maximum** check box has no effect; all search results are always returned, and the value defined in the `task.max.results` option is ignored.
- Use care when selecting this option. For task type inboxes containing a large amount of tasks, response times may be slowed appreciably.

3. Click **Save**.

Searching and Filtering the Task List

You can search for and filter tasks in both My Inbox and the task type inboxes. By default, searches are case-sensitive, but the task developer has the ability to make individual custom search fields case-insensitive.

You can create a filtered view of the task list, showing only those results that match the search or filter criteria. For information about searching the task list in the Task List Management page, see "Filtering and Searching the Task Management List" on page 83.

Note: Searches in My Inbox apply to all tasks assigned to you, and that you have permission to access. By default, searches in the task type inbox are limited to the task type associated with the inbox. However, the task developer can configure the task type to search all task types, or a specific list of task types. Check with the task developer if you are not sure which search pattern is applied to a task type inbox.

For the My Inbox and the task type inboxes, the default Search window provides the following tabs:

- **Advanced (My Inbox only)**—Enables you to create, execute, and save a filtered set of tasks with a user-defined set of filter terms.
- **Basic (Task type inboxes only)**—Enables you to create, execute, and save a search with a user-defined set of search terms.
- **Saved**—Enables you to execute a search by selecting from a list of saved searches. A **Details** button displays or hides controls that enable you to create, execute, and save a new search configuration, or to update, execute, and save the current search configuration.
- **Options**—Enables you to define options for search behavior. For more information, see "Customizing the Task Inbox Search Options" on page 45.

Filtering and Searching in My Inbox

On the **Advanced** tab of My Inbox, you can filter the task list using any or all of the following values provided in the Filter panel in the Search window. Select a filter term in the **Field Name** list, then specify a value for the selected term in the **Value** field. For example:

Accepted = Yes

Created Date = This month

Priority = Critical

Task Name = MyTask

creates a filter that displays all Critical priority tasks with the name MyTask that were created this month, and have been accepted. You can add or remove filter terms by clicking the icons to the right of the **Value** field.

- **Accepted**—Apply the filter to tasks that have been accepted. Click the **Value** list to select Yes or No.
- **Collaboration Task**—Apply the filter to collaborations tasks. Click the **Value** list to select Yes or No.
- **Created By**—Apply the filter to tasks created by a particular user. Click **Browse** to select a user.
- **Created Date**—Apply the filter to tasks created within a selected time range. Click the **Value** list to select a time range.
- **Custom ID**—Apply the filter to tasks with a specific custom ID (that is, the custom identification that was created for the task when it was started). Enter the text you want to search for in the **Value** box.
- **Expiration Date**—Apply the filter to tasks that expire within a selected time range. Click the **Value** list to select a time range.
- **Last Accepted By**—Apply the filter to tasks that were last accepted by a particular user. Click **Browse** to select a user.
- **Last Updated Date**—Apply the filter to tasks that were last updated within a selected time range. Click the **Value** list to select a time range.
- **Modified By**—Apply the filter to tasks modified by a particular user. Click **Browse** to select a user.
- **Priority**—Filter by task priority. Click the **Value** list to select a priority level (None, Low, Medium, High, Critical).
- **Process ID**—Filter by the process ID assigned to the task by the Task Engine. Enter the text you want to search for in the **Value** box.
- **Task**—Filter by task type.

- **Task ID**—Filter by the task ID number assigned to the task by the Task Engine.
- **Task Name**—Filter by the task name assigned to the task. Enter the text you want to search for in the **Value** box.

In addition, you can search My Inbox using any of the following default saved searches on the **Saved** tab:

- All My Tasks
- My Accepted Tasks
- My Critical Tasks
- New Tasks This Week
- Tasks That Expire Today

You can also create and save your own custom searches. For additional information about searching in My webMethods, see *Working with My webMethods*.

Searching in a Task Type Inbox

On the **Basic** tab of a task type inbox, you can search the task list using any or all of the following values provided in the default Search panel:

- **Task ID**—Search by the task ID number assigned to the task by the Task Engine.
- **Priority**—Search by task priority (None, Low, Medium, High, Critical).
- **Accepted Only**—Apply the search only to tasks that have been accepted.
- **Created**—Search for tasks created within a selected time range. Click the arrow button to the left of the label to specify a time range.
- **Expiration**—Search for tasks that expire within a selected time range. Click the arrow button to the left of the label to specify a time range.
- **Last Updated**—Search for tasks that were last modified within a selected time range. Click the arrow button to the left of the label to specify a time range.

Note: By default, searches in the task type inbox are limited to the task type associated with the inbox. However, the task developer can configure the task type to search all task types, or a specific list of task types. Check with the task developer if you are not sure which search pattern is applied to a task type inbox.

These fields may be added to or replaced by custom fields provided by the task developer. By default, searches are case-sensitive, but the task developer has the ability to make individual custom search fields case-insensitive.

Initially, a task type inbox does not contain any saved searches. However, you can define and save searches for future use. For additional information about searching in My webMethods, see *Working with My webMethods*.

Customizing the My Inbox and Task Type Inbox Results List

You can customize the results list in My Inbox and in a task type inbox to suit your needs. Note that the default results display for a task type inbox (as well as the available columns and other preferences) can be customized at design time by the task type developer. Therefore, the available preferences may vary from one task type inbox to another.

To customize the task results list

1. Do one of the following:
   - To customize the My Inbox task results list, click **Properties** in the Inbox window menu.
   - To customize a task type inbox task results list, click **Properties** in the Task Results window menu.
2. Click the **Preferences** tab to specify:
   - **Number of Rows to Display**—select from 10, 20, 50, 100, or Show all. Note that larger numbers of rows (and especially Show All) may cause slower response times when accessing the inbox.
   - **Sort by**—select from any of the available display columns to set the default column for sorting the results list. Although it is not required, verify that the selected column is selected for display in the **Selected Columns** list. For more information about sorting the results list, see "Sorting Tasks in the Task Inboxes" on page 39.
   - **Sort Order**—Ascending or Descending.
   - **Column Display**—Move the columns you want to view into the **Selected Columns** list, or remove columns by moving them to the **Available Columns** list. Use the up and down arrows to reposition the columns in the **Selected Columns** list.

     Important: You must have the **Task ID** column displayed in the results list to be able to open a task. You can also open a task from the **Custom ID** column, but this value may not be populated for every task.
3. Click **Save**.

Directing a Task to a User

Within My webMethods, a task can be assigned and *delegated*. Although the actions are similar, it is important to understand the differences between them.

About Task Assignment

Task assignment results from manual assignment of a task by a My webMethods user or as a result of a task's assignment rule evaluation applied by the Task Engine. In the latter case, the conditions that trigger the task assignment and the results of the assignment action are defined within the task. When a task type developer creates a task type, the designer typically configures the task type for automatic assignment when the task is started.

Assignment simply means the task appears in a user's task inbox results list. A task can be assigned to more than one user, group, or role. Although a task can be assigned to a user, group, or role, assignment of the task does not result in acceptance of the task.

For example, your business model may call for each customer service request to be reviewed by a manager and then assigned by the manager to an available customer service representative. This can be accomplished by creating the task type with an assignment rule that assigns the task to the CS Manager role when the task is started. The customer service manager can then manually assign the task to an available customer service representative.

Note: This is a very basic example. It would be more efficient for the task developer to include logic in the task to monitor the task for an approval by a member of the CS Manager role and then use the task distribution capability of the Task Engine to automatically assign the task to the next available customer service representative.

Similarly, an incoming customer service request can trigger a customer service task, which can then be assigned to the Customer Service role. In this case, the new task appears in the My Inbox list of every member user of the Customer Service role. From this location, the new task can be accepted by any role member.

After a task is assigned to a role, group, or user, it remains assigned to that role, group, or user until it is manually or programmatically reassigned, deleted by a user, or otherwise removed from the task inbox results list. With proper permissions, you can set a task assignment to an empty value to make an assigned task into an unassigned task.

In addition to automated assignment by Task Engine evaluation, tasks can be manually assigned from the following locations, with appropriate permissions:

- Task List Management Page—The **Assign To** button on this page enables you to assign the task to any available user, group, or role in My webMethods. When modified, this assignment list replaces any and all assignments made from My Inbox or a task type inbox.
- Details Page—If the task type developer has configured the task type to include task assignment, the **Assign to Users** button on the **Data View** tab of the Details page enables you to assign a task to any available user, group, or role in My webMethods. Assignments made here are added to the existing assignment list.

Additional rules can be contained in a task type to assign it to a different role, group, or user when a particular condition is matched, such as a change in the task status. For more information about how to view the assignment rules contained in a task type, see "Viewing Task Type Rules in My webMethods" on page 117.

Differences in Task Assignment and Delegation

There are two basic differences between assigning a task and delegating a task:

- Tasks can be assigned to users, groups, and roles; tasks can be delegated only to individual users.
- Assignment and delegation information is displayed separately in the task's **Details View** tab. When a task is assigned, only the current user, group, and role assignments appear in the **Assigned To** field; there is no display of who applied the assignment action. When a task is delegated, the complete "delegation trail" appears in the **Delegation** field. That is, it displays the user delegating the task and the user to whom the task was delegated, for all delegations actions. For example:

  Delegation:
  ```
  user1 -> user2
  user2 -> user3
  ```

  indicates that the task was initially delegated from user1 to user2, and then delegated from user2 to user3. Both delegation and assignment information is also available as details of chronological Task Updated operations on the **Audit View** tab. For more information about task delegation, see "Delegating Tasks" on page 55.

Essentially, task assignment can be viewed as an administrative or managerial function, whereas task delegation can be viewed as a user-oriented (or peer-to-peer) activity. The task assignment and task delegation actions each have a separate permission, and can be granted jointly or independently of one another. For more information about providing permissions, see "Configuring Task Access Permissions" on page 95.

Working with the Select Principals and Select Users Dialog Boxes

Depending on where you are working, you use the Select Principals or Select Users dialog boxes to assign or delegate a task, accept a task for another user, or subscribe to a task notification. These dialog boxes have a standard set of controls for finding the users, groups, and roles with which you want to work.

Depending on the area in which you are working, you can select from users, groups, and roles, for example, when assigning a task or subscribing to a task notification on the Task List Management page. In other cases, such as delegating a task or assigning a collaboration task, the Select Users dialog box appears and you can only select from users (groups and roles are not available).

Regardless of which dialog box is in use, you have two methods of creating a filter for displaying principals or users in the **Available** list:

- **Keyword.** This tab enables you to search by typing text keywords; matching entries for existing users (or groups and roles, depending on the selected options) appear

in the **Available** list when you click **Search**. A **Save** button enables you to save the search for future use from the **Saved** tab. The following behavior applies to text in the **Keywords** field:

- For internal directories - The search matches only principal names that contain the keyword text. For example, `nor` will match norbert and norman. Wildcards and multiple words are not supported.
- For LDAP directories - The search matches principal names that contain the keyword text. Wildcard (*) characters are allowed inside the keyword. For example, `nor` will match norbert and norman, `t*m` will match tim and tom. Multiple words are not supported.
- For DB directories - Behavior varies depending on the SQL implementation.

- **Advanced.** This tab enables you to construct advanced filter conditions for locating principals and users by specifying one or more field name = value pairs; additional pairs can be added or removed by clicking . Matching entries for existing users (or groups and roles, depending on the selected options) appear in the **Available** list when you click **Search**. A **Save** button enables you to save the search for future use from the **Saved** tab. You can select the field to match from a drop-down list; the available fields include:
  - E-mail address
  - First name
  - Last name
  - Name
  - Various user preferences
  - Many user profile values, including address, phone number, area code, country code, postal code, state/province, and title.

Assigning a Task from a Task Inbox

Important: When assigning a task, the users, groups, or roles you assign the task to must be granted the access and functional privileges required to work with the task type you are assigning. Otherwise, the task will not appear in the user's inbox, or the user may not be able to work with the task. For more information, see "Configuring Task Access Permissions" on page 95.

For information about assigning a task from the Task List Management page, see "Assigning a Task from the Task List Management Page" on page 86.

To assign a task from the Data View tab in My Inbox or a task type inbox

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Select **My Inbox** or a task type inbox.

3. Open the task you want to assign.

> **Note:** In the following step, the **Assign to Users** button is available only if the task type developer has selected the Enable User Routing option for the task type.

4. On the **Data View** tab, click **Assign To Users**. The Select Principals dialog box appears. Note that the **Selected** list is empty. Any users, groups, or roles you specify here will be added to the assignment list.

> **Note:** If you click **Apply** with an empty **Selected** list, the task will be unassigned.

5. Use the controls in the **Search** panel to search for the users, groups, or roles you want to assign the task to; for more information, see "Working with the Select Principals and Select Users Dialog Boxes" on page 51. The result of the search appears in the **Available** list.
6. In the **Available** list, select the user, group, or role names you want to work with, then click ▸ to move your selection to the **Selected** list.
7. Click **Apply** to add the selected users, groups, or roles to the existing assignment list.

The selected task appears in the task inboxes of the selected users, groups, and roles. The assignment action is recorded in the task's audit log displayed on the **Audit View** tab of the task's Details page.

Viewing Task Assignments

You can view the current assignment of tasks in the following ways:

- From any task results list, open the task and click the **Details View** tab. Task assignments are listed in the **Assigned To** field.
- In the Task List Management page and the Task Inbox page, the **Assigned To** column is displayed by default in the Tasks list. To display the **Assigned To** column if it is not visible on either of these pages:
  1. In the Task window menu, click **Properties**, then click the **Preferences** tab.
  2. In the **Column Display** panel, select **ASSIGNED TO** in the **Available Columns** list then click ▸ to move your selection to the **Selected Columns** list.
  3. Click **Apply**. The assignments for all tasks now appear in the task list.

Unassigning a Task

After you have assigned a task to a user, group, or role, you may want to withdraw that assignment. You cannot remove a task assignment from My Inbox or from a task type inbox. Task assignments can only be removed on the Task List Management page. For more information, see "Unassigning a Task from a User, Group, or Role" on page 87.

Delegating a Task

Task delegation is similar to assignment, but the main difference is that there is a complete audit trail for all users involved in the delegation. When a task is delegated, the task appears in the inbox of the user to whom it was delegated. For more information, see "Delegating Tasks" on page 55.

Accepting a Task

After a task is assigned to you, you must first accept the task to work on it. Task acceptance can be carried out in the following ways:

- Manually, by clicking an **Accept** button on the task **Data View** (if available).
- Automatically, as determined by the task type developer. A task type can be configured to be automatically accepted when:
  - You open a task from a task type inbox.
  - You modify a task.

  In these cases, an **Accept** button is not displayed.

Tasks may be assigned directly to your user name, or to a group or role that you are a member of. When a task is assigned specifically to you, it appears in your inbox only. When a task is assigned to a group or role, it will appear in the inbox of every user who is a member of that group or role.

After you have accepted a task, My webMethods displays a ✔ in the Accepted column of the results list in your inbox (you must have the Accepted column selected for display in the display options page).

By default, a task can be accepted by only one user at a time; however, the task type developer can configure a particular task type to be accepted by two or more users. In addition, the task type developer can define task filter rules that can prevent you from seeing tasks accepted by other users.

If you attempt to accept a task that has already been accepted by another user, you will receive a message that you cannot accept the task. Click the **Details View** tab on the Details page to see who has accepted the task.

If you have been granted Task Management permissions, you can accept a task for other users. If the task is not yet assigned, it is assigned and accepted at the same time. For more information, see "Accepting a Task for a User" on page 87.

Releasing a Task

After you accept a task, the task becomes your responsibility. In most cases, the task cannot be accepted by other users (however, it is possible for a task type developer to

configure a particular task type to be accepted by two or more users). If the task contains a **Release** button, you can release an accepted task, enabling another user to accept the task.

To release a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to release.
4. On the **Data View** tab of the Details page, click **Release**.

The task is released for acceptance by another user, and the ✔ is removed from the task entry in your task inboxes. The release action is recorded in the task's audit log displayed on the **Audit View** tab of the task's Details page.

Delegating Tasks

Task delegation enables you to forward a task that is in your inbox to another user, with a complete audit log of who the task was delegated from, who it was delegated to, and who did the delegating. The delegated task continues to be visible in your inbox. If you want to assign a task instead, see "Assigning a Task from a Task Inbox" on page 52. Delegation has no effect on the task's acceptance:

- If you delegate an accepted task, the task continues to be accepted by the initial user. The initial user must release the task to enable the delegated user to accept it, as described in "Releasing a Task" on page 54.
- A delegated task is automatically accepted by the delegated user—the delegated user must accept the task as described in "Accepting a Task" on page 54.

By default, the **Delegate** button is available in My Inbox and in the task type inboxes, making it more accessible than the **Assign To** button, which is on the Task List Management page only (a **Delegate** button is also available on the Task List Management page).

Delegating a Task from Your Inbox

You can delegate any task in My Inbox or in any of your task type inboxes to another user. For information about delegating a task from the Task List Management page, see "Delegating a Task from One User to Another" on page 90.

Important: When delegating a task, the users you delegate the task to must be granted the access and functional privileges required to work with the task type you are delegating. Otherwise, the task will not appear in the user's inbox, or the user may not be able to work with the task. For more information, see "Configuring Task Access Permissions" on page 95.

To delegate a task in your inbox

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click the tab for My Inbox or for a task type inbox.
3. Select the task or tasks you want to delegate.
4. Click **Delegate**. The Select Users dialog box appears.
5. Use the controls in the **Search** panel to search for the user you want to forward the task to; for more information, see "Working with the Select Principals and Select Users Dialog Boxes" on page 51. The result of the search appears in the **Available** list.
6. In the **Available** list, select the user name you want to work with, then click to move your selection to the **Selected** list. Only one user name can be selected.
7. Click **Apply** to delegate the task to the selected user.

The task in you task inbox is marked with . In the inbox of the user to whom the task is delegated, the task is marked with .

On the task's **Detail View** tab, and anywhere the delegation information appears, the delegated from and delegated to users are shown, for example: `User1 ->User2`. This information is also presented in a different form on the **Audit View** tab, along with the name of the user who applied the delegate action (in the **Source** column).

Removing a Delegation

You can remove a task delegation from tasks that you have delegated to another user in My Inbox or in any of your task type inboxes. Removing the task delegation effectively cancels the last delegation action.

For more information about removing all delegations of a task from the Task List Management page, see "Removing All Task Delegations" on page 91.

Note: The ability to remove a delegation does not apply to tasks that have been delegated to you; you can only remove the delegation from tasks you have delegated to another user.

To remove a task delegation

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click the tab for My Inbox or for a task type inbox.
3. Select the task or tasks you want to remove the delegation from. Delegated tasks are be marked with .
4. Click **Remove Delegation**. A confirmation dialog box appears.
5. Click **Remove Delegation**.

Viewing Task Delegations

You can view the delegation information for a single task by opening the task from any task results list and clicking the **Details View** tab. Task delegations are listed in the **Delegation** field.

For task results lists, My webMethods displays task delegation information in the Delegated To and Delegated From columns of the list. You must select the Delegated To and Delegated From columns for display on the display options page for the results list, as described in "Customizing the My Inbox and Task Type Inbox Results List" on page 49.

By default, the Task List Management page in My webMethods does not display task delegation information.

To display task delegations on the Task List Management page

1. In the **Tasks** window menu, click **Properties**, and then click the **Preferences** tab.
2. On the display options panel, select **DELEGATIONS** in the **Column Display** list.
3. Click the single right arrow button to move the selection to the **Selected Columns** list.
4. Click **Save**.

The Task List Management page in My webMethods displays delegation information for all tasks.

Scheduling Task Delegation

There may be times when you want to schedule delegation of tasks from your own user account to another user, or from one user to another. You can create a scheduled delegation for each type of task in your task inboxes, and define a time period during which all tasks of that type are delegated to a specified user.

The most common example is to accommodate known leaves of absence—during the time when one user is out of the office, you want to delegate those tasks to a second user for processing.

- To schedule delegations from your own user account to another user, you access the delegation scheduling feature from any of your task inboxes.
- To schedule delegations from one user to another, you access the feature from the Task List Management page.

Scheduling a Task Delegation

Important: When delegating a task, the users you delegate the task to must be granted the access and functional privileges required to work with the task type you are delegating. Otherwise, the task will not appear in the user's inbox,

or the user may not be able to work with task. For more information, see "Configuring Task Access Permissions" on page 95.

To schedule a task delegation

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Do one of the following:
   - To create a scheduled task delegation for another user, click **Task List Management**.
   - To create a scheduled task delegation for your account, click **My Inbox** or one of the task type inbox tabs.
3. In the results list panel, click the **Scheduled Delegations** link. The Scheduled Delegations page opens.
4. Click **Add Delegation**.
5. In the Add Delegation dialog box, select the type of task you want to delegate in the **Task** list.
6. Do one of the following:
   - If you are creating a scheduled task delegation for another user on the Task List Management page, use both **Browse** buttons to specify the user you want to delegate from and the user you want to delegate to.
   - If you are creating a scheduled task delegation for your account, use the **Browse** button to specify the user you want to delegate to.
7. To specify the period during which tasks are delegated, select one of the following in the **Scheduled Delegation Dates** list:
   - **Custom**—This selection enables you to define a custom time period with the start and end date and time controls.
   - **All**—this selection causes all tasks of the specified type to be delegated beginning immediately and continuing until the delegation is removed. The start and end date controls are set to 01-Jan-1970 and 31-Dec-9999, respectively.
   - **Time period**—select a time period (for example, **This Day**, **This Week**, **Coming Seven Days**). The selected values are displayed in the start and end date and time controls.
8. Click **Save**.
9. The new scheduled delegation appears as follows:
   - If you are creating a scheduled task delegation for another user, the new scheduled delegation appears in the list of scheduled delegations on the Scheduled Delegations page accessed from the Task List Management page. It also appears on the Scheduled Delegations page accessed from the user's My Inbox or task type pages. The user can delete or modify the delegation from that location when the user's role has been granted permissions to do so.

- If you are creating a scheduled task delegation for your account, the new scheduled delegation appears in the list of scheduled delegations on the Scheduled Delegations page accessed from the **My Inbox** or task inbox tabs.

Deleting a Scheduled Task Delegation

You can delete a scheduled task delegation that you have created for your own account, or for another user's account.

To delete a scheduled task delegation

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Do one of the following:
   - To delete a scheduled task delegation for another user, click **Task List Management**.
   - To delete a scheduled task delegation for your account, click **My Inbox**.
3. In the results list panel, click the **Scheduled Delegations** link. The Scheduled Delegations page opens.
4. Select the scheduled delegation you want to delete.
5. Click **Delete**. A confirmation dialog box appears.
6. Click **Delete**.

If the scheduled delegation is active, delegation will cease immediately.

Viewing Scheduled Task Delegations

You can view scheduled task delegations as follows:

- To view scheduled task delegations you have created to for another user, click the **Scheduled Delegations** link on the **Task List Management** page.
- To view scheduled task delegations you have created for your own account, click the **Scheduled Delegations** link in My Inbox or in a task type inbox.

Working with Attachments

Some tasks in your inbox may carry attached documents or other files. Depending on the permissions assigned to you, you can work with these files and add additional attachments to the task.

In earlier versions of Designer and Task Engine, attachment support was provided by including an attachments panel to the task interface at design time. With version 8.0, general attachment support is provided by default on the task **Comments** tab; this implementation is considerably simpler and easier, and is recommended over the previous approach.

It is possible that users who work with tasks created with earlier versions encounter the attachments panel. For more information, see:

- "Working with Comments and Attachments in the Comments Tab" on page 60 - about working with attachments on the **Comments** tab.
- "Working with Attachments in an Attachments Panel" on page 63 - about working with attachments on an attachments panel.

Working with Comments and Attachments in the Comments Tab

If the proper permissions are granted to you, you can add, delete, modify comments and attachments on a task's **Comments** tab. At design time, the task developer can set a scope for the comments and attachments, defining how comments and attachments are shared.

For more information about scope, see "About Task Comments and Attachments Sharing" on page 27.

Note: The comment permissions cover functionality for both comments and attachments. That is, if you grant permission to a user for comments, you are also granting permission for attachments.

Adding a Comment to a Task

With proper permissions, you can add a comment to a task from the task's **Comments** tab.

To add a comment to a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > My Inbox**, or select a task type inbox.
2. In the results list, click the **Task ID** or **Custom ID** link to open the task you want to modify.
3. On the Details page, click the **Comments** tab.
4. Click **Add Comment**.
5. Type your comment into the **Comment Text** box.
6. Click **Create**.

Updating a Comment in a Task

With proper permissions, you can add a comment to a task from the task's **Comments** tab. Separate permissions are available to enable users to update their own comments, and to update the comments of other users.

To update a comment in a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > My Inbox**, or select a task type inbox.
2. In the results list, click the **Task ID** or **Custom ID** link to open the task you want to modify.
3. On the Details page, click the **Comments** tab.
4. Click the **update** link for the comment you want to work with.
5. On the Edit Comment panel, modify the comment in the **Comment Text** box.
6. Click **Update**.

Deleting a Comment from a Task

With proper permissions, you can delete a comment from a task on the task's **Comments** tab. Separate permissions are available to enable users to delete their own comments and attachments, and to delete the comments and attachments of other users.

To delete a comment from a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > My Inbox**, or select a task type inbox.
2. In the results list, click the **Task ID** or **Custom ID** link to open the task you want to modify.
3. On the Details page, click the **Comments** tab.

   Important: No delete confirmation is given in the following step; the comment is deleted permanently when the **delete** link is clicked.

4. Click the **delete** link for the comment you want to work with.

Adding an Attachment to a Task

With proper permissions, you can add an attachment to a task from the task's **Comments** tab.

To add an attachment to a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > My Inbox**, or select a task type inbox.
2. In the results list, click the **Task ID** or **Custom ID** link to open the task you want to modify.
3. On the Details page, click the **Comments** tab.
4. Click **Add Comment**.

5. Type a comment into the **Comment Text** box (comment text is required to add an attachment).
6. Click **Browse** and select the file you want to attach (one file can be selected).
7. Click **Open** (Windows) or otherwise accept the selected file.
8. Click **Attach**.
9. Do one of the following:
   - Repeat steps 6 - 8 to continue adding attachments.
   - Click **Create** to add the comment and the attachment(s) to the task.

Updating an Attachment in a Task

After you attach a file to a task, the attached file is independent of the original. In other words, if you apply modifications to the original file, they will not appear in the attachment. To update the attachment you must:

- Delete the original instance of the file from the attachments list. For more information, see"Deleting an Attachment from a Task" on page 62.
- Add the latest version of the file as an attachment. For more information, see "Adding an Attachment to a Task" on page 61.

Deleting an Attachment from a Task

With proper permissions, you can delete an attachment from a task on the task's **Comments** tab. Separate permissions are available to enable users to delete their own comments and attachments, and to delete the comments and attachments of other users.

To delete an attachment from a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > My Inbox**, or select a task type inbox.
2. In the results list, click the **Task ID** or **Custom ID** link to open the task you want to modify.
3. On the Details page, click the **Comments** tab.
4. On the **Comments** tab, do one of the following:

   Important: If you click the **delete** link for the comment at this point, this will remove *both the comment and all attachments*. No delete confirmation is given when deleting attachments; the item is deleted permanently when the **delete** link is clicked.

   - Click the **delete** link to remove the comment and all attachments.

- Click the **update** link to remove attachments only. On the Edit Comment panel, you can delete an individual attachment by clicking the **delete** link for the attachment you want to work with.

Working with Attachments in an Attachments Panel

In earlier versions of Designer and Task Engine, attachment support was provided by including an attachments panel in the task interface at design time. This implementation is deprecated, but still may found in some older task applications.

Attaching a File to a Task

The following procedure applies to the deprecated attachment panel only.

To attach a file to a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. On the **Data View** tab, click the **Add** button in the Attachments panel. The Add Attachments dialog box appears. This dialog box enables you to add up to three files at one time.
5. Click **Browse** to locate and select the file you want to attach.
6. Specify the encoding type for the file; for example, binary for a PDF file. If the value you require is not in the **Encoding** list, click **Other** to specify a custom value.
7. Click **Add** to add the file to the task.

Viewing an Attached File

You must have the appropriate application installed on your computer to read a file attachment. For example, to view a PDF file, you must have a PDF application such as Acrobat Reader installed. My webMethods does not provide any internal viewing capability.

To view a file that is attached to a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. On the **Data View** tab, click the attachment name in the Attachments panel. In the resulting dialog box, specify that you want to open the file (you can also save the file first and then open it from your file system).
5. Click **OK** to view the file.

Downloading an Attached File

To download a file that is attached to a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. On the **Data View** tab, click the file name in the Attachments panel. In the resulting dialog box, specify that you want to save the file.
5. Click **OK**.
6. Specify the file name and location for saving the file.
7. Click **OK** to save the file.

Updating an Attached File

After you attach a file to a task, the attached file is independent of the original. In other words, if you apply modifications to the original file, they will not appear in the attachment. You must upload the updated file to the task.

To update an attached file

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. In the Attachments panel on the **Data View** tab, click the **Update** button next to the file you want to update. The Update Attachment dialog box appears.
5. Click **Browse** to locate and select the updated file in your file system.
6. Specify the encoding type for the file; for example, binary for a PDF file. If the value you require is not in the **Encoding** list, click **Other** to specify a custom value.
7. Click **Update** to update the file attached to the task. The updated file replaces the previous file.

Removing an Attached File

To remove an attached file from a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. On the **Data View** tab, select the file you want to remove in the Attachments panel.

5. Click **Remove**. A confirmation dialog box appears.
6. Click **Remove** to remove the document.

Working with Notifications

The task type developer can create notification events within a task that will publish a notification e-mail when the conditions of the event are matched. For more information, see "About Task E-mail Notifications" on page 28.

The notification e-mail you receive may contain one or more Task Action Links that enable you to execute specific actions on the task that sent the notification, without requiring a connection to My webMethods Server. These task notification reply e-mail actions are logged and displayed on the task's **Audit View** tab.

For information about replying to task e-mail notifications, see "Responding to an E-mail Notification" on page 67.

Subscribing to a Task Notification for Your Own User Account

You must be granted the Subscribe to Tasks functional permission to carry out this procedure. An administrator can subscribe you to a task notification if you do not have this permission.

For more information about the conditions governing the sending of task notifications, see *webMethods BPM Task Development Help*.

Note: You are subscribing to a notification for a specific task type. This means that you will receive notifications for all task instances that are started from that task type and that are assigned to you.

To subscribe to a task notification for your own user account

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. In the results list panel, click the **Subscriptions** link.
4. On the Task Subscriptions page, click **Subscribe**.
5. In the Select Task Subscriptions wizard, select the task type you want to subscribe to in the **Task** list and click **Next**.
6. If the task type you selected in step 4 contains notifications, they are listed in the **Task Subscriptions** list in the next dialog box. If the task type contains no notifications, the **Task Subscriptions** list will be empty.
7. Select the task subscriptions that you want to subscribe to.
8. Click **Subscribe**.

The selected subscription appears on the Task Subscriptions page.

Unsubscribing from a Task Notification for Your Own User Account

To unsubscribe from a notification for your own user account

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. In the results list panel, click the **Subscriptions** link.
4. On the Task Subscriptions page, select the task notification that you want to unsubscribe from and click **Unsubscribe**.
5. On the confirmation dialog box, click **Unsubscribe**.

The selected subscription is removed from the Task Subscription page.

Subscribing to a Notification Rule for Other Users

You must be granted the Task List Management access permission and the Subscribe to Tasks functional permission to carry out this procedure. An administrator can subscribe other users to a task notification if you do not have this permission. It is not necessary for the other users to have the Subscribe to Tasks functional permission to be subscribed.

For more information about the conditions governing the sending of task notifications, see *webMethods BPM Task Development Help*.

To subscribe to a notification for other users

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **Task List Management**.
3. In the results list panel, click the **Subscriptions** link.
4. On the Task Subscriptions page, click **Subscribe**. The Select Task Subscriptions wizard appears.
5. Select the task type you want to subscribe to in the **Task** list and click **Next**.
6. If the task type you selected in step 4 contains notifications, they are listed in the **Task Subscriptions** list in the next dialog box. If the task type contains no notifications, the **Task Subscriptions** list will be empty.
7. Select the task subscriptions that you want to subscribe to. The entire name of the subscription may not be visible; place the cursor over the subscription name to see the entire name in tool tip form.
8. Click **Browse** to open the Select Principals dialog box. Use the controls in the **Search** panel to select the user, group, or role you want to subscribe; for more

information, see "Working with the Select Principals and Select Users Dialog Boxes" on page 51. The results appear in the **Available** list.

9. In the **Available** list, select the user, group, or role name you want to work with, then click to move your selection to the **Selected** list. Only one user, group, or role can be specified.

   Note: When you subscribe a role, the role must have an e-mail address associated with it. This is done by adding a dynamic attribute "email" to the specific role, using a data type of String, with the value set to the desired e-mail address.

10. Click **Apply**.
11. Click **Subscribe**.

The selected subscription appears on the Task Subscription page for the specified user, or for users belonging to a specified group or role. Repeat this process to subscribe additional users, groups, or roles.

Unsubscribing from a Notification Rule for Other Users

To unsubscribe from a notification for other users

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **Task List Management**.
3. In the results list panel, click the **Subscriptions** link.
4. On the Task Subscriptions page, select the task subscription/subscriber pair you want to unsubscribe.
5. Click **Unsubscribe**.
6. On the confirmation dialog box, click **Unsubscribe**.

Responding to an E-mail Notification

Standard e-mail notifications are sent by way of an automated process; although you can reply to them, there is no mechanism available to process the reply e-mail. However, a task type developer can include one or more Task Action Links in the body of the notification e-mail; when you open the e-mail, the Task Action Link appears as a standard hypertext link.

When you click on a Task Action Link, an automated e-mail response (predefined by the task type developer) is sent to an e-mail account specified within the Task Action Link. This reply e-mail usually contains a reference to a specific task action that will be executed upon receipt of the reply e-mail—for example, approve or deny an order, or escalate the priority of the task. For more information, see "Replying to a Notification without a My webMethods Connection" on page 29.

It is up to the task type developer to include information in the notification e-mail informing you of the results of clicking a Task Action Link. These task notification reply e-mail actions are logged and displayed on the task's **Audit View** tab in My webMethods.

> **Note:** To respond to a task notification e-mail with a Task Action Link, your computer must have an HTML-capable e-mail client installed and running, with a connection to an outgoing mail server.

After you click the Task Action Link, you do not need to take any further action. The reply e-mail is sent by way of the e-mail client on your computer. All standard e-mail behavior applies. For example, if you collect outgoing messages in your Outbox to be sent manually, the reply notification e-mail will follow this behavior.

You can execute a Task Action Link one time only. Each subsequent time you click on a Task Action Link, a reply e-mail will be sent, but it will be ignored and will have no effect on the task.

For information about the configuration of task e-mail listeners and further information about the behavior of task reply e-mails, see "Configuring a Task E-mail Listener" on page 173.

> **Note:** Task notifications are sent to the e-mail address recorded in the user's My webMethods Server profile. Some e-mail service providers may configure their server to remove, alter, or otherwise disable the URL contained in the "Click here to open task" link to comply with security requirements. In this case the link may be missing or inoperative in the delivered e-mail message.

Working with E-form Data in Tasks

A task developer can create a task application that uses information obtained from an e-form to provide some or all of the task's business data. From the task user's point of view (within My webMethods), there is no indication of the fact that this business data was sourced from an e-form, and the task provides the same functionality as any other task running on the Task Engine.

However, the task developer can implement an e-form-enabled task with download and upload capability. This enables you to:

- Download the e-form data in its original e-form format.
- Work with the e-form in your own local environment without having to be connected to the e-form repository.
- Reconnect to the repository and upload the form back to the task that you downloaded it from; your modifications are applied to the task business data.

  > **Note:** The default implementation of e-form support for the task interface provides a **Download** button, and **Upload** button, and optionally, a download link in the results list of the task type inbox. Your task developer

> may have customized the e-form portion of the task interface with more or less functionality. This material describes the default implementation.

For additional information about e-forms, see "About E-form Integration with Tasks" on page 27.

Downloading an E-form from a Task

Be aware that although you can download the e-form to a folder location, you must have the appropriate e-form application installed on your computer to be able to open and modify the downloaded e-form. Software AG products do not provide the functionality for creating, modifying, and managing your electronic forms.

Also, Microsoft Office InfoPath is a Windows-only application; although you can download an InfoPath e-form to a non-Windows operating system, you will not be able to work with it locally.

To download an e-form from a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate the e-form-enabled task you want to work with.

   > **Note:** The task developer can choose to add a download link to the results list of the task type inbox. If provided, this link appears at the far right end of the row containing the e-form-enabled task. Click the link to download the e-form without opening the task. If this link is not provided, use the following steps.

4. Open the e-form-enabled task.

   > **Note:** You may be required to accept the task before you can complete the following step.

5. On the **Data View** tab, click **Download**.
6. In the Save dialog box, specify a target folder location for the downloaded e-form.
7. Click **Save**.

Uploading an E-form to a Task

You can upload an e-form to a task from a folder location in your file system.

> **Important:** The e-form you upload must be the exact same type and version as the e-form used to source the information you downloaded in e-form format; also, always be sure to upload the form to the same task you downloaded it from.

For example, if you download an e-form to your file system, modify the data in it, and then upload it back to the task, you must not make any changes to the structure of the e-form. Doing so will result in errors. Restrict your changes to form data only.

To upload an e-form to a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the e-form-enabled task you want to work with.

   Note: You may be required to accept the task before you can complete the following step.

4. On the **Data View** tab, click **Upload**.
5. In the Open dialog box, select the e-form you want to upload.
6. Click **OK**.

Exporting the Contents of a Task Inbox or Task List

You can export the contents of the following task lists as a comma-separated value (CSV) text file:

- My Inbox
- Task type inboxes
- Task List Management
- Task Configuration (on the Task Engine Administration page)

All of the task information fields associated with the task type are saved to the file (not just the fields marked for display as columns in the list).

To export the contents of an inbox

1. Navigate to the inbox or task list you want to work with.
2. Click **Export Table**.
3. Select a character encoding format for the output file.
4. Click **Export**.
5. On the File Download dialog box, do one of the following:
   - Click **Open** to open the file using the CSV application defined on your system.
   - Click **Save** to save the file to a location in your file system.

Other Task Actions

As you work with tasks in your inbox, you may be able to carry out a portion of the work required, but not complete all of the required activities. To record your interim activities, you must submit a task. After you carry out all of the required activities for a task, you can complete it.

Submitting a Task

You must accept a task before you can submit it. For more information, see "Accepting a Task" on page 54.

To submit a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. Make your modifications to the task as required.
5. On the **Data View** tab of the Details page, click **Submit**.

Your changes to the task are saved and will be displayed for any other user who has access to the task details. The task remains in your inbox and can be opened, modified, and submitted as often as necessary.

Completing a Task

After you carry out all of the activities required by a task, you must indicate that the task is complete.

Note: It is possible for the task developer to include logic in the task to move the task to Completed status upon the matching of a defined condition. In this case, manual completion is not necessary.

To complete a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. Make any final modifications to the task as required.
5. On the **Data View** tab of the Details page, click **Complete**.

Your changes to the task are saved and the task is removed from all of your inboxes, and the inboxes of any other users to whom it has been assigned. The task status displays

in the Task List Management Tasks panel for all users to whom the task has been assigned. If the task is part of an automated process, the process receives the task completion information and continues on to the next step. No further work on the task is possible.

Working with Collaboration Tasks

With proper permissions, you can create and assign collaboration tasks—these tasks can also be created and assigned by a running business process. These dynamically created new tasks enable other users to provide assistance in completing a parent task. For more information about collaboration tasks, see "About Collaboration Tasks" on page 23, and *webMethods BPM Task Development Help*.

To enhance this collaborative environment, tasks provide users with the ability to add comments and attachments to task in the run-time environment. For more information, see "Working with Comments and Attachments in the Comments Tab" on page 60.

To be able to create a collaboration task from a running task:

- The task type must be enabled as a collaboration task parent.
- One or more task types must be specified for use as collaboration tasks.

For information about enabling these options, see:

- "Disabling and Enabling Task Collaboration" on page 108.
- "Specifying Allowed Collaboration Tasks" on page 109.

Creating a Collaboration Task

With proper permissions, you can create a collaboration a task on the task's **Collaboration** tab.

To create a collaboration task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > My Inbox**, or select a task type inbox.
2. In the results list, click the **Task ID** or **Custom ID** link to open the task you want to modify.
3. On the Details page, click the **Collaboration** tab.
4. Do one of the following:
   - If no collaboration tasks exist for this task, click **Create Child Task**.
   - If one or more collaboration tasks exist, select the parent task, or any child task, to indicate which task you want to create the collaboration task for, and click **Create Child Task**. If properly enabled, a child task can also serve as a parent task for additional collaboration tasks.

5. Specify the following task information for the collaboration task:
   - **Collaboration Task Type**—select a task type from a list of all the available task types that can be used to create a collaboration task, as specified on the Task Engine Administration page. If no tasks types have been specified, the list is empty.
   - **Name**—The name of the collaboration task. This field is automatically filled out by Task Engine to a concatenation of the Task Type name and the assignee names after you select one or more assignees. You can replace this text with your own value.
   - **Description**—(optional) The description you want to assign to the task.
   - **Priority**—(optional) The priority you want to assign to the task.
   - **Expiration Date**—(optional) The date on which the task will be placed in expired status. Click the calendar icon to set the date.
   - **Time**—(optional) A specific time of day on which the expiration will take place.
   - **Assignees**—(optional) A list of the user names to which the collaboration task has been assigned. Click **Pick** to search for and specify one or more user names. If you do not specify a user name, the collaboration task will be unassigned upon creation. It will appear in Task List Management and can be assigned from there.
   - **Queue Task Immediately**—A check box option that controls whether the task is started immediately upon creation or is deferred for later starting. Enabled by default.
   - **Mandatory** — A check box option that controls whether the task is a mandatory task or not. If a task is specified as mandatory, the corresponding parent task can be marked as completed only when the status of all the mandatory child tasks is Completed, Error, Canceled, or Expired.

Viewing a Collaboration Task

Collaboration tasks are, in general, just like other tasks that you work with in My webMethods, and can be viewed in all of the same locations:

- In My Inbox
- In a task type inbox
- In Task List Management

If the Collaboration Task column is in the results display, identifies each collaboration task. This column is not present by default; you can add it by clicking **Properties** in the results window menu. For information about working with these areas, see "Where to Find Tasks in My webMethods" on page 31.

You can also view and open collaboration tasks on the **Collaboration** tab of the parent task. Depending on the permissions granted to you, you may not have access to all of the collaboration tasks.

If you are the user who started the first collaboration task in a parent task, you are the owner of the collaboration process in which all the collaboration tasks are running, and you will have access to all of the collaboration tasks.

You can also view process, step, task, audit, and comment information on the collaboration process Details page.

For more information, see "About Collaboration Tasks" on page 23, and "Administering Task Types" on page 103.

Opening a Task on the Collaboration Tab

To open a collaboration task on the Collaboration tab

1. In My webMethods: **Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. Click the **Collaboration** tab.
5. If there is more than one collaboration task, click the expand icon next to the parent task name in the Task display to view all of the immediate child collaboration tasks. Continue clicking any additional expand icons to view all available collaboration tasks.
6. Click the collaboration task name to open the collaboration task.

Modifying the Collaboration Task Display

You can modify the Task display on the **Collaboration** tab.

To modify the collaboration task display on the Collaboration tab

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. Click the **Collaboration** tab.
5. Click **Options**.
6. Set the following display options:
   - **Number of Rows to Display**—select from 10, 20, 50, 100, or Show all. Note that larger numbers of rows (and especially Show All) may cause slower response times when accessing the inbox.
   - **Sort by**—select from any of the available display columns. Although it is not required, verify that the selected column is selected for display in the **Selected Columns** list.

- **Sort Order**—Ascending or Descending.
- **Column Display**—Move the columns you want to view into the **Selected Columns** list, or remove columns by moving them to the Available Columns list. Use the up and down arrows to reposition the columns in the **Selected Columns** list.

7. Click **Apply**.

Modifying a Collaboration Task

You can apply the following changes to a collaboration task on the **Collaboration** tab:

- Change status
- Add or change assignment

To modify a collaboration task on the Collaboration tab

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. Click the **Collaboration** tab.
5. Expand the collaboration task display if necessary.
6. Select the collaboration task you want to work with by selecting the check box next to the collaboration task name.
7. Do one of the following;
   - Click **Set Status** to change the collaboration task status value.
   - Click **Assign To** to view and modify the existing collaboration task assignments, as described in "Assigning a Task from a Task Inbox" on page 52.
8. Click **Apply** to save your changes.

Deleting a Collaboration Task

With proper permissions, you can delete a collaboration task just as you would delete any task on the Task List Management page. For more information, see "Deleting a Task" on page 89.

You can also delete a collaboration task on the **Collaboration** tab.

To delete a collaboration task on the Collaboration tab

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.

4. Click the **Collaboration** tab.
5. Expand the collaboration task display if necessary.
6. Select the collaboration task you want to delete by clicking the check box next to the collaboration task name.
7. Click **Delete**.

Searching for Collaboration Tasks

You can search for collaboration tasks in My Inbox or in Task List Management by specifying a Collaboration Task value of Yes in your search criteria. For more information, see "Filtering and Searching in My Inbox" on page 47.

If the Collaboration Task column is in the results display, identifies each collaboration task, and you can sort the task list to show collaboration tasks at the top of the list. This column is not present by default; you can add it by clicking **Properties** in the results window menu.

Working with Collaboration Processes

When a user creates the first collaboration task within an existing task, the collaboration task is created within a unique collaboration process associated with the parent task. Any and all subsequent collaboration tasks started within the parent task are also added to this collaboration process.

The user who started the first collaboration task is the owner of the collaboration process in which all the collaboration tasks are running; that user will have access to all of the collaboration tasks. Note that the collaboration process owner can be a different user than the parent task owner.

Viewing Collaboration Process Details

You can view the details of a collaboration process from the **Collaboration** tab of a task with child collaboration tasks.

To view collaboration process details

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks**.
2. Click **My Inbox** or a task type inbox.
3. Locate and open the task you want to work with.
4. Click the **Collaboration** tab.
5. Click **Open Details**.
6. The Process Detail window displays the following process information:

- A Process panel with a graphical flow view of the process, with the ability to zoom in or out and move around the process.
- A Details panel that provides the following tabs:
  - **Process Info** tab—basic information and status of the collaboration process.
  - **Step Info** tab—basic information about a selected step in the process diagram.
  - **Task Info** tab—basic information about the collaboration task.
  - **Task Audit**—audit information about the collaboration task.
  - **Task Comments**—Comments and attachments from the collaboration task.

7. Click **Return** to return to the **Collaboration** tab.

Searching for Collaboration Processes

Depending on the permissions granted to you, you can search for instances of collaboration processes of which you are the owner, or for instances of your own instances and the collaboration processes owned by other users. The two abilities are provided by separate permissions. In both cases, the procedure is the same.

To view collaboration process details

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Collaboration Processes**.
2. By default, the Results window displays all collaboration processes owned by you.
3. On the Collaboration Processes window, specify your search criteria in each of the following panels:
   - Process—search by:
     - **Process ID**—specify text
     - **Process Creator**—browse for a user name
     - **Participant**—browse for a user name
     - **Process Name**—specify text
   - Task
     - **Task ID**—specify text
     - **Task Type**—select from a list of available task types
     - **Task Status**—select from a list of status values
   - Date Ranges
     - **Created**—select from a list of available time periods
     - **Modified**—select from a list of available time periods

4. Click **Search**. Any matching collaboration processes are displayed in the Results window.

Completing a Collaboration Process

A collaboration process will continue to run until one of the following occurs:

- All collaboration tasks in the collaboration process are completed.
- The parent task is completed or deleted.
- The collaboration process is deleted.
- The collaboration process is manually canceled from webMethods Monitor.

Viewing Collaboration Processes in webMethods Monitor

Some, but not all, collaboration processes can be viewed in webMethods Monitor. The following conditions apply:

- Manually started collaboration processes are not visible in webMethods Monitor.
- Collaboration processes started from within a BPM process are visible in webMethods Monitor.
- Visible collaboration processes appear as a subprocess.
- Only limited information is available.

For more information, see *webMethods Monitor User's Guide*.

3 Managing Tasks from the Task List Management Page

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Overview

Within My webMethods, each user is granted access to various task functions and features through permission-based access control (for more information, see "How Permission-Based Access Affects Tasks" on page 22). In a typical business environment, one or more roles are created for administrators or managers who monitor and supervise task activity, and separate roles are created for those with responsibilities limited to task processing.

When an administrator creates a task-enabled role, the members of that role can be granted access to any or all of the following task pages:

- **My Inbox**—this standardized inbox enables the user to search, view, and interact with all of the tasks assigned to the user.
- **Task Type Inboxes**—each of these inboxes is much like the **My Inbox** tab, except that it displays only one specific type of task type. It is also customizable by the task type designer. By default, this page enables the user to search, view, and interact with all of the tasks of the specific task type.
- **Task List Management**—this standardized page enables the user to search, monitor, interact with, and manage all items in the task list. With proper role permissions, the user can suspend, resume, assign, and delegate tasks, among other activities.
- **Task Charts** —this page contains two default task chart portlets that show task counts for all tasks and for critical tasks; you can modify these default charts and you can create additional chart portlets.

This chapter covers the capabilities of the Task List Management page, which would typically be made available for administrative or managerial users.

- For general information about the Task List Management page, see "About Task List Management" on page 33.
- For more information about providing task features and functions to roles, see "Administering Tasks" on page 93.

Viewing Tasks on the Task List Management Page

You can view, manage, and interact with the list of tasks present on the Task List Management page. To work with a task individually, you must open it, as follows:

To open a task in the Task List Management results list

1. In My webMethods: **Navigate** > **Applications** > **Monitoring** > **Business** > **Tasks**
2. Click **Task List Management**. By default, the first time you open the Task List Management page, no tasks appear in the Task List Management results. You must enter search terms or use a saved search from the **Saved** tab and click **Search** to generate a list of tasks. You can customize the behavior of the Task List Management

page as described in "Customizing the Task List Management Search Options" on page 82.

3. Click the **Task ID** link for the task you want to open.

> **Important:** If the **Task ID** column is not displayed, add it to the display as described in "Customizing the My Inbox and Task Type Inbox Results List" on page 49. You can also open a task from the **Custom ID** column, but this value may not be populated for every task.

4. The Details page opens with the **Data View** tab automatically selected the first time you open it. Thereafter it will open to the last tab you viewed.
5. You can filter the results shown in the Tasks list and search for tasks as described in "Filtering and Searching the Task Management List" on page 83.

Selecting Tasks in Task List Management

In the task results list, each task row features a selection check box column at the left side of the table by default. To carry out certain actions (for example, delegating a task), one or more tasks must be selected, either by clicking one or more check boxes, or by clicking the **Select All on Page** icon at the top of the column. Clicking the icon selects all of the tasks displayed in the results list, but does not select any tasks that are not displayed.

You can adjust the number of rows and columns displayed in the task results list by modifying the user Preference settings for Task List Management. For more information, see "Customizing the List of Task Results" on page 82.

Sorting Tasks in the Task Results List

You can sort the tasks displayed in the task list by any of the available columns. By default, the results list is sorted by the **Task ID** column. You can specify a different default sorting column, for more information, see "Customizing the List of Task Results" on page 82.

Note that when sorting by the **Assigned To** and **Accepted By** columns, the column is sorted by the first user, role, or group name in the list of principals. The list of principals is sorted alphabetically and the order of the list cannot be modified.

About Duplicate Task Type Names in the Task List Management Results

In some instances, it may be necessary to create two or more task types with the same task type name. Programmatically, this is not a problem because the Task Engine tracks each task type by its task type ID, not its task name. However, the appearance of duplicate task type names in the Task List Management results could be potentially confusing to Task List Management users.

When searching or filtering tasks, the **Advanced** tab of the Task List Management page enables a user to filter the task results by task type name. In the event of task types with duplicate names, the list of tasks will contain an entry for each duplicate name, potentially making it difficult for the user to select the desired task.

To alleviate this problem, the **Value** field on the **Advanced** tab displays the task type ID in parenthesis so you can differentiate the tasks. In addition, you can hover the cursor over the **Value** field or a task name entry in the results list; this displays a tooltip that contains the unique task type ID.

Customizing the Task List Management Search Options

You can customize your Task List Management search preferences with the **Options** tab on the Search panel.

To customize the task inbox search options

1. In My Inbox or in a task type inbox, click the **Options** tab.
2. Do any or all of the following:
   - Specify which search tab appears by default (Advanced, Saved, or Saved with Details).
   - Specify the default saved search.
   - Specify if the default saved search is to be run automatically when the inbox is opened.
3. Click **Save**.

Customizing the List of Task Results

You can configure how the Task List Management page displays and exports the list of task results.

To customize the task results list

1. In the **Tasks** panel of the Task List Management page, click ▾ and select **Properties**.
2. On the **Preferences** tab, configure one or more of the following:
   - **Number of Rows to Display** - the number of rows to display on a single page. The options are `10`, `20` (default), `50`, and `100`. Larger numbers of rows to display might cause slower response times when accessing the Task List Management page.
   - **Maximum Number of Rows to Export** - the number of rows to include in the .csv file when exporting task results from the Task List Management page. The default is `20`.
   - **Sort by** - the default column to use for sorting the results list. Although it is not required, verify that the column you specified as default is selected for display in

the **Selected Columns** list. For more information about sorting the results list, see "Sorting Tasks in the Task Results List" on page 81.

- **Sort Order** - **Ascending** or **Descending** (default).
- **Column Display** - the columns that the Task List Management page displays. Move the columns to display to the **Selected Columns** list. Remove columns from the page by moving them to the **Available Columns** list. Use the up and down arrows to reposition the columns in the **Selected Columns** list. When exporting the data to a .csv file, Task Engine includes only the fields that the Task List Management page displays.

> **Important:** To be able to open a task, you must have the **Task ID** or the **Custom ID** column displayed in the results list. The **Custom ID** might not be available for all tasks.

3. Click **Save**.

Filtering and Searching the Task Management List

On the **Advanced** tab of the Task List Management page, you can filter the task list using any or all of the values provided in the Filter panel in the Search window (described below). This provides a filtered view of the task list, showing only those results that match the filter terms. For example:

Status = Expired

Created Date = This month

Priority = Critical

Task Name = MyTask

creates a filter that displays all Critical priority tasks with the name MyTask that were created this month, with a status of Expired. You can add or remove filter terms by clicking the icons to the right of the **Value** field.

- **Accepted By**—Apply the filter to tasks that have been accepted by a particular user. Click **Browse** to select a user.
- **Accepted Date**—Apply the filter to tasks accepted within a selected time range. Click the **Value** list to select a time range.
- **Assigned To**—Apply the filter to tasks that have been assigned to a particular user. Click **Browse** to select a user.
- **Collaboration Task**—Apply the filter to collaborations tasks. Click the **Value** list to select Yes or No.
- **Created By**—Apply the filter to tasks created by a particular user. Click **Browse** to select a user.
- **Created Date**—Apply the filter to tasks created within a selected time range. Click the **Value** list to select a time range.

- **Custom ID**—Apply the filter to tasks with a specific custom ID (that is, the custom identification that was created for the task when it was started). Enter the text you want to search for in the **Value** box.
- **Expiration Date**—Apply the filter to tasks that expire within a selected time range. Click the **Value** list to select a time range.
- **Last Accepted By**—Apply the filter to tasks that were last accepted by a particular user. Click **Browse** to select a user.
- **Last Updated Date**—Apply the filter to tasks that were last updated within a selected time range. Click the **Value** list to select a time range.
- **Modified By**—Apply the filter to tasks modified by a particular user. Click **Browse** to select a user.
- **Priority**—Filter by task priority. Click the **Value** list to select a priority level (None, Low, Medium, High, Critical).
- **Process ID**—Filter by the process ID assigned to the task by the Task Engine. Enter the text you want to search for in the **Value** box.
- **Status**—Filter by task status.
- **Task**—Filter by task type.
- **Task ID**—Filter by the task ID number assigned to the task by the Task Engine.
- **Task Name**—Filter by the task name assigned to the task. Enter the text you want to search for in the **Value** box.

In addition, you can search using any of the following default saved searches on the **Saved** tab:

- All tasks
- Critical tasks
- This week's tasks

You can also create and save your own custom searches. For detailed information about searching in My webMethods, see *Working with My webMethods*.

Viewing Task Details

You can open an individual task in the Task List Management Tasks panel to view task information using the same procedures for opening a task in My Inbox or a task type inbox. For more information, see "Viewing Detailed Information About a Task" on page 40.

Managing Tasks

You can apply various task management actions to the tasks in the Task List Management Tasks panel. To do so, a task must have a status of Active or Suspended. You cannot apply task list management actions to tasks with a status of Canceled, Completed, Error, or Expired.

From the point of view of the Task Engine, tasks with a status of Canceled, Completed, Error, or Expired are all considered as terminated tasks upon which no further work is to be allowed. If you want to restart a task in any of these states, you must use webMethods Monitor to resubmit the task; for more information, see *webMethods Monitor User's Guide*.

Suspending a Task

You can suspend a task to keep it in the system but prevent it from being worked on. You might want to suspend a task when you know that although it eventually must be completed, you know that if it is completed now it will cause a conflict with other activities.

- When you suspend a task, the task is removed from the inboxes of all users who have been assigned or delegated the task; however, the task remains in the Task List Management tasks list with a status display of Suspended.
- You cannot change any properties of a suspended task other then to set its status back to Active in Task List Management.

To suspend a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > Task List Management**.
2. Select the task or tasks you want to suspend.
3. Click **Suspend**. A confirmation dialog box appears.
4. Click **Suspend**.

My webMethods displays ⏻ in the Status column of the results list.

Note: A task designer can also cause a task to be suspended as a result of conditions defined in a task event, using the Suspend Task task action.

Resuming a Task

To resume a suspended task

1. In My webMethods: **Navigate** > **Applications** > **Monitoring** > **Business** > **Tasks** > **Task List Management**.
2. Select the suspended task or tasks you want to resume.
3. Click **Resume**. A confirmation dialog box appears.
4. Click **Resume**.

The task is returned to the Active state. The task will appear in the task inboxes for all assigned users.

Assigning a Task from the Task List Management Page

Important: When assigning a task, the users, groups, or roles you assign the task to must be granted the access and functional privileges required to work with the task type you are assigning. Otherwise, the task will not appear in the user's inbox, or the user may not be able to work with the task. For more information, see "Configuring Task Access Permissions" on page 95.

To assign a task from the Task List Management page

1. In My webMethods: **Navigate** > **Applications** > **Monitoring** > **Business** > **Tasks** > **Task List Management**.
2. Select the task or tasks you want to assign.
3. Click **Assign To**. The Select Principals dialog box appears.

   Important: Note that the **Selected** list is empty. The entries you specify here will replace all existing assignments when you click **Apply**. The task will be unassigned if you click **Apply** with an empty **Selected** list.

4. Use the controls in the **Search** panel to search for the users, groups, or roles you want to assign the task to; for more information, see "Working with the Select Principals and Select Users Dialog Boxes" on page 51. The result of the search appears in the **Available** list.
5. In the **Available** list, select the user, group, or role names you want to work with, then click to move your selection to the **Selected** list.
6. If you have implemented user calendars as described in "Working with Personal User Calendars" on page 169, a user calendar icon appears to the left of a user name in the **Selected** list. Click the calendar icon to view the user's calendar.
7. Click **Apply** to assign the task to the selected users, groups, or roles.

8. The selected task will appear in the task inboxes of the selected users, groups, or roles. The assignment action is recorded in the task's audit log displayed on the **Audit View** tab of the task's Details page.

Unassigning a Task from a User, Group, or Role

After you have assigned a task to a user, group, or role, you may want to withdraw that assignment. You do this by resetting the task assignment to an empty value. You can also modify the task assignment list to omit an individual user, group, or role assignment.

Note: Before modifying the task assignment list, make a note of the current task assignments as shown on a task's **Details View** tab. They will not be available to you during this procedure.

To unassign a task from the Task List Management page

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > Task List Management**.
2. Select the task or tasks you want to unassign.
3. Click **Assign To**. The Select Principals dialog box appears. Note that the **Selected** list is empty. Do one of the following:
   - To unassign the task from all users, groups, or roles, click **Apply**. The empty selection list is applied, and the task is now completely unassigned.
   - To unassign the task from an individual user, group, or role, use the controls to reconstruct the assignment list and omit the users, groups, and roles that you no longer want the task assigned to, then click **Apply** to modify the task assignment. For more information about selecting principals, see "Working with the Select Principals and Select Users Dialog Boxes" on page 51.

The selected task is removed from the task inboxes of the removed users and roles. The assignment action is recorded in the task's audit log displayed on the **Audit View** tab of the task's Details page. When modified, this assignment list replaces all assignments made from My Inbox or a task type inbox.

Accepting a Task for a User

You can accept a task for another user on the Task List Management page. When modified, this assignment list replaces any and all acceptances made from My Inbox or a task type inbox.

Note: Before modifying the task acceptance, make a note of the current task acceptance as shown on a task's **Details View** tab. This information will not be available to you during this procedure.

To accept a task for another user

1. In My webMethods: **Navigate** > **Applications** > **Monitoring** > **Business** > **Tasks** > **Task List Management**.
2. Select the task or tasks you want to accept for another user.
3. Click **Accept For**. The Select Users dialog box appears.

   Important: Note that the **Selected** list is empty. The entries you specify here will replace all existing acceptances when you click **Apply**. If you click **Apply** with an empty **Selected** list, the task will not be accepted by any users.

4. Use the controls in the **Search** panel to search for the user you want to accept the task for; for more information, see "Working with the Select Principals and Select Users Dialog Boxes" on page 51. The result of the search appears in the **Available** list.
5. In the **Available** list, select the user name or names you want to work with, then click to move your selection to the **Selected** list.
6. If you have implemented user calendars as described in "Working with Personal User Calendars" on page 169, a user calendar icon appears to the left of the user name in the **Selected** list. Click the calendar icon to view the user's calendar.
7. Click **Apply** to assign the task to the selected user.

The Accepted By information for the selected task is updated in all locations where the task is viewed. The action is recorded in the task's audit log displayed on the **Audit View** tab of the task's Details page.

Setting the Task Status

You can set the status for a task on the Task List Management page. For more information about task status, see "Task Status and Life Cycle" on page 21.

To set the task status

1. In My webMethods: **Navigate** > **Applications** > **Monitoring** > **Business** > **Tasks** > **Task List Management**.
2. Select the task or tasks you want to set the status for.
3. Click **Set Status**. The Select Status dialog box appears.

   Important: If you apply a status of Canceled, Completed, Error, or Expired, the Task Engine will consider the task as terminated and will allow no further work on the task (other than deletion).

4. Select the status you want to apply in the **Status** list.

   Note: You cannot set the status of a task to Scheduled, or modify the status of a scheduled task from the Task List Management page. Scheduled tasks

can be modified only in webMethods Business Console, or by using Task Engine built-in and RESTful services.

5. Click **Set Status** to apply the status to the selected task or tasks.

The status information for the selected task is updated in all locations where the task is viewed. The action is recorded in the task's audit log displayed on the **Audit View** tab of the task's Details page.

Deleting a Task

You can delete a running task (also known as a task instance) on the Task List Management page.

Important: When you delete a task, the running task is removed from all task inboxes and is no longer in the system. A deleted task cannot be restored. Exercise caution when deleting Active tasks; for more information, see "Process Implications When Deleting a Task" on page 89.

This action does not delete the task type from My webMethods. To accomplish this, see "Deleting a Task Type from My webMethods Server" on page 114. Tasks can also be deleted with the scheduled global Delete Task Rule. For more information, see "Managing Global Rules" on page 121.

To delete a running task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > Task List Management**.
2. Select the task or tasks you want to delete.
3. Click **Delete**. A confirmation dialog appears.
4. Click **Delete**.

The deleted task is removed from all locations where the task is viewed.

Process Implications When Deleting a Task

It is possible to delete a task with an Active status (that is, the task is currently running with a status of Active and is visible on the Task List Management page). You can delete a task directly from the Task List Management page or by deleting the task type which defines the task. For information about how to delete a task from the Task List Management page, see "Deleting a Task" on page 89. For information about how to delete a task type, see "Deleting a Task Type from My webMethods Server" on page 114).

In those situations where the task was started by a task step in a running process, the process will be currently waiting for a response from the task to indicate that the task has completed. If the task is deleted, the response will never be sent; when you delete

an Active task that was started by a running process, no indication of this deletion is provided to the Process Engine where the parent process is running.

Therefore, the process will continue to wait indefinitely for a response from the deleted task step. If you have configured a timeout value, it will eventually time out.

Deleting a Completed, Cancelled, or Expired task will not affect the running process because the task's status was previously delivered to the process; however, it will affect monitoring, in that the task will no longer appear in the monitoring results.

Best practices call for designing processes with adequate transition logic to handle non-responsive tasks (such as a deleted Active task). When a task is Completed, Cancelled, or Expired, the task business data is delivered to the process and the process will continue its execution. The status field value is an implicit output of every task step. Therefore, it is possible to implement transition logic based on a status value of Completed, Cancelled, or Expired.

Delegating a Task from One User to Another

When you delegate a task on the Task List Management page, you can specify the user the task is being delegated from, and the user the task is being delegated to. For information about delegating tasks from one of your inboxes, see "Delegating Tasks" on page 55. Delegation has no effect on the task's acceptance:

- If you delegate an accepted task, the task continues to be accepted by the initial user. The initial user must release the task to enable the delegated user to accept it, as described in "Releasing a Task" on page 54.
- A delegated task is not marked as accepted by the delegated user—the delegated user must accept the task as described in "Accepting a Task" on page 54.

> **Important:** When delegating a task, the users you delegate the task to must be granted the access and functional privileges required to work with the task type you are delegating. Otherwise, the task will not appear in the user's inbox, or the user may not be able to work with the task. For more information, see "Configuring Task Access Permissions" on page 95.

To delegate a task on the Task List Management page

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > Task List Management**.
2. Select the task or tasks you want to delegate.
3. Click **Delegate**. The Delegate Selected Tasks dialog box appears.
4. Use the **Browse** buttons to specify the user you want to delegate from and the user you want to delegate to. In the Select User dialog box:
   a. Use the controls in the **Search** panel to search for the user you want to accept the task for; for more information, see "Working with the Select Principals and Select

Users Dialog Boxes" on page 51. The result of the search appears in the **Available** list.

b. In the **Available** list, select the user name you want to work with, then click to move your selection to the **Selected** list. You can specify only one user for delegation.

c. Click **Apply**.

5. Click **Apply** to delegate the task to the selected user.

The delegation information for the selected task is updated in all locations where the task is viewed. The action is recorded in the task's audit log displayed on the **Audit View** tab of the task's Details page.

In the task inbox of the user that you delegate a task from, the task is marked with . In the task inbox of the user that you delegate a task to, the task is marked with .

Removing All Task Delegations

You can remove all task delegations from tasks on the Task List Management page.

To remove all task delegations

1. In My webMethods: **Navigate** > **Applications** > **Monitoring** > **Business** > **Tasks** > **Task List Management**.
2. Select the task or tasks you want to remove the delegation from. Delegated tasks are marked with icon.
3. Click **Remove Delegations**.
4. On the confirmation dialog box, click **Remove Delegations**.

Scheduling a Task Delegation

You can create a scheduled delegation from one user to another user for each type of task in your task inboxes and define a time period during which all tasks of that type are delegated to a specified user. For specific instructions, see "Scheduling a Task Delegation" on page 57.

Modifying Task Properties

If you are a member of a role with proper permissions, you can modify the following task properties from the Task List Management page.

- Name
- Description
- Priority

- Expiration date and time
- Custom task ID
- Mandatory (this option is available only for a collaboration task)

To modify task properties

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > Task List Management**.
2. In the Task List Management Tasks list, click the **Task ID** or **Custom ID** link for the task you want to modify.
3. On the Details page, click the **Details View** tab.
4. Modify the task name, description, priority, expiration date and time, or custom task ID as required.
5. Click **Apply**.

Rolling Back a Task

In My webMethods, you can roll back task activity to any available audit point in the task's audit history. When you roll back a task, all of the task's audit information is retained, but the actual task status, priority, assignment, and other task data is reset to match the task data in effect at the time of the selected audit point.

After you roll back a task, you can also use the roll back feature to "roll forward" a task to a later audit point. For example, if you roll back to audit point number 10, and you also have an available audit point number 25, you can use the roll back feature to "roll forward" to audit point number 25 after you roll back to audit point number 10.

With proper permissions, you can roll back a task from the Task List Management page, or from any task inbox.

To roll back a task

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > Task List Management**, or to **My Inbox** or to a task type inbox.
2. In the results list, click the **Task ID** or **Custom ID** link to open the task you want to modify.
3. On the Details page, click the **Audit View** tab. The **Roll Back** column displays for every available roll back audit point. If an audit point is not available for roll back, the icon is disabled.
4. Click for the selected audit point.
5. The task data is reset to match the conditions in effect at the selected audit point, and a "Task Rolled Back" entry appears in the audit list.

4 Administering Tasks

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Configuring Task Permissions

Through its permissions control feature, My webMethods enables administrators to provide or deny access to Task Engine features and functions to users, roles, or groups. Like all other permission control, you implement task permissions from the **Navigate > Applications > Administration > System-Wide > Permissions Management** navigation path. For more information about administering users, roles, and groups, see *Administering My webMethods Server*.

You can grant permissions for a user, role, or group for three different aspects of task interaction:

- **Task type permissions**— these permissions grant or deny the ability to administer, manage, and start task instances for each task type that is present in My webMethods Server, as well as granting access to the task type inbox in the **Monitoring > Business > Tasks** portion of the user's **Navigate** tab.
- **Access permissions**—these permissions enable you to grant or deny access to My Inbox, Task List Management, and Task Charts in the **Monitoring > Business > Tasks** portion of the user's **Navigate** tab, and to the Task Email Listener Administration, Task Analytics Configuration, and Task Engine Administration pages in the **Administration > Business > Tasks** portion of the user's **Navigate** tab.
- **Functional permissions**—these permissions enable you to grant or deny functionality for Global Task Rules Management, Collaboration Process Administration, and Impersonate Users for Remote Clients.

About Access Permissions

You can grant or deny access to tasks to any user, role, or group. You can provide the user, role, or group with access to the following task-based pages within My webMethods:

- **My Inbox**—this standardized inbox enables the user to search, view, and interact with all of the tasks assigned to the user. This can be considered the basic mechanism to enable a user to receive, display, and interact with tasks assigned to the user. Some limitations apply if you deny access to My Inbox. For more information, see "Limitations When Denying Access to My Inbox" on page 97.
- **Task Type Inboxes**—each of these inboxes is much like the **My Inbox** tab, except that it displays only one specific type of task type. It is also customizable by the task type developer. By default, this page enables the user to search, view, and interact with all of the tasks of the specific task type. You can make this inbox available to users who need the ability to interact with tasks in a specialized way, or to enable a user to view a list of specific tasks without having to search and sort for those tasks in **My Inbox**.
- **Task List Management**—this standardized page enables the user to search, monitor, interact with, and manage all items in the task list. With proper role permissions, the user can suspend, resume, assign, subscribe to, and delegate tasks, among other

activities. You can make this page available to supervisory or managerial users who need to be able to distribute and manage tasks.

- **Task Charts**—this page contains two default task chart portlets that show task counts for all tasks and for critical tasks; you can modify these default charts and you can create additional chart portlets.
- **Task Email Listener Administration**—this standardized page enables the user to configure a connection to an e-mail server to be used for processing replies from task notifications that contain a Task Action Link.
- **Task Analytics Configuration**—this standardized page enables the user to specify the URL for an installation of webMethods Broker (deprecated) or a JMS server, and to deploy event maps.
- **Task Engine Administration**—this standardized page displays all of the types of task currently running or available for running on My webMethods. The page enables you to enable, disable, and search for all instances of a task type, to delete a task type, to start a stand-alone task type, and view and modify the rules for a task type. This page is typically assigned to administrative users of My webMethods.
- **Task Event Orchestrator Configuration** - this standardized page displays all task types with date/time events, currently running or available for running on My webMethods Server. From the **Task Event Orchestrator Configuration** page, you can recalculate the triggering time for date/time events, or schedule automatic recalculation per task type. This page is typically assigned to My webMethods users who administer or manage tasks.

After you make these pages available to a role, you can further customize access by granting or denying specific functional privileges for each page; for more information, see "About Task Type Functional Permissions" on page 99.

Configuring Task Access Permissions

You configure access permissions by granting or denying access permissions to a user, role, or group.

To configure task access permissions

1. In My webMethods: **Navigate > Applications > Administration > System-Wide > Permissions Management**.
2. In the Advanced tab, select **My webMethods Applications** as the resource type, and click **Search**.
3. The search results place the My webMethods Applications in the Selected panel
4. Click **Next**.
5. In the Edit Permissions panel, do one of the following:
   - Select an existing principal and click **Delete** to remove it from the list of available principals.

- Click **Add Users/Groups/Roles** to open the Add Principals panel, enabling you to search for and all any available user, role, or group to the list of available principals.

6. Click the link in the **Permissions** column for the principal that you want to set permissions for. The text for this link can display either of these values:
   - **Granted All**—the principal has been granted all available permissions.
   - **Custom**—One or more of the available permissions is denied to the principal.
7. On the Permissions panel, do one of the following:
   - Select the **Grant** or **Deny** check box for the following task monitoring permissions:

     Important: Clearing the **Grant** check box is *not* sufficient to deny the permission. You must explicitly select the **Deny** check box to ensure the permission is denied.

     Note: Some limitations apply if you deny access to My Inbox. For more information, see "Limitations When Denying Access to My Inbox" on page 97.

     - My Inbox
     - Task List Management
     - Task Charts
     - Collaboration Processes
   - Select the **Grant** or **Deny** check box for the following task administration permissions:
     - Task Email Listener Administration
     - Task Saved Searches Analytics Administration
     - Task Analytics Configuration
     - EDA Events Configuration
     - Task Event Orchestrator Configuration
     - Task Engine Configuration
8. Click **OK** to complete your selections (this does *not* save your selections).
9. Click **Apply** to save your selections.
10. Repeat steps 6 - 9 to continue setting permissions for other principals, or click **Back** to return to the Permissions Management page.
11. The selected pages appear in the My webMethods navigation path for specified user, roles, and groups.

12. If you are creating a new user, role, or group, you must also specify task functional permissions, as well as permissions for the task types you want to make available.

Limitations When Denying Access to My Inbox

In some circumstances, limitations apply when you deny a user access to My Inbox. These limitations can occur when you grant the user access to a task type inbox, but deny the same user access to My Inbox:

- When the user clicks the Subscriptions link in the task type results list panel, the error message "You are not authorized to view the resource" occurs.
- When the user clicks the Scheduled Delegations link in the task type results list panel, the error message "You are not authorized to view the resource" occurs.

These errors occur because the Subscriptions page and the Scheduled Delegations page are part of My Inbox. When you deny the user access to My Inbox, the user is not authorized to access these page. There are several ways to address this situation:

- You can provide the user with My Inbox access permission. Doing so will enable access to all aspects of My Inbox, not just subscription management and scheduled delegation management.
- You can ask the task developer to set the Rendered property of the subscription and scheduled delegation portlet simple link controls to false (or remove the controls entirely) on the Default view of the task Inbox Results portlet, and republish the task. This will remove both links from the custom task inbox display. The user will have no access to subscription management or scheduled delegation management.
- You can ask the task developer to create custom subscription and scheduled delegation pages by copying the existing Task Subscription and Scheduled Delegations portlets included in My Inbox, and then publish these custom pages to the runtime for the user to access. The task developer must also modify the two link controls to access the new custom pages instead of the default pages.

For additional information, see *webMethods BPM Task Development Help*.

About Functional Permissions

My webMethods enables you to provide or deny various task related functions to a user, role, or group. By default, you can assign functionality for global task rule management, and functionality associated with each type of task in a user's inbox.

- **Global Task Rules Management**—this set of functions provides the ability to create, delete, or modify global task rules, or modify global task rule variables. The actions apply only to global task rules created in the **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration > Global Schedule Rules** and **Global Change Rules** pages. These functional privileges are typically reserved for administrative user roles.

- **Collaboration Processes**—this single function enables the user to administer collaborations processes.
- **Impersonate Users for Remote Clients**—Any My webMethods Server user account that is intended for use with remotely executing components must be granted this functional privilege. In practice, this is granted to the Administrator role to enable WmTaskClient services. For more information, see "Specifying a User Account for the WmTaskClient Package" on page 182.

Configuring Global Task Functional Permissions

You configure task functional permissions for all task types by granting or denying global functional permissions to a user, role, or group.

To configure task functional permissions

1. In My webMethods: **Navigate > Applications > Administration > System-Wide > Permissions Management**.
2. In the Advanced tab, select **My webMethods Applications** as the resource type, and click **Search**.
3. The search results place the My webMethods Applications in the Selected panel
4. Click **Next**.
5. In the Edit Permissions panel, do one of the following:
   - Select an existing principal and click **Delete** to remove it from the list of available principals.
   - Click **Add Users/Groups/Roles** to open the Add Principals panel, enabling you to search for and all any available user, role, or group to the list of available principals.
6. Click the link in the **Permissions** column for the principal that you want to set permissions for. The text for this link can display either of these values:
   - **Granted All**—the principal has been granted all available permissions.
   - **Custom**—One or more of the available permissions is denied to the principal.
7. On the Permissions panel, do one of the following:
   - Select the **Grant** or **Deny** check box for the following global task rule management functional permissions:

     Important: Clearing the **Grant** check box is *not* sufficient to deny the permission. You must explicitly select the **Deny** check box to ensure the permission is denied.

     - Create New Rule
     - Modify Rule

    - Modify Rule Variables
    - Delete Rule
  - Select the **Grant** or **Deny** check box for the Collaboration Process Administration permission.
  - Select the **Grant** or **Deny** check box for the Impersonate Users for Remote Clients permission.
8. Click **OK** to complete your selections (this does *not* save your selections).
9. Click **Apply** to save your selections.
10. Repeat steps 6 - 9 to continue setting permissions for other principals, or click **Back** to return to the Permissions Management page.
11. If you are creating a new user, role, or group, you must also specify task access permissions, as well as permissions for the task types you want to make available.

About Task Type Functional Permissions

You can provide or deny task type functional permissions to any user, role, or group. These task type functional permissions are available, and can be configured, for each individual task type that is present in My webMethods Server.

It is through the task type functional permissions that you provide access to the task type inbox the **Monitoring > Business > Tasks** portion of the user's **Navigate** tab. Permissions are available in the following categories:

- **Tasks Administration**—this set of permissions provides access to the Task Administration page, and enables users to enable or disable the task type settings, delete task types, and queue (start) tasks on the Task Administration page.
  - Tasks Administration
  - Update Task Type
  - Delete Task Type
  - Queue New Task Instance
- **Tasks Management**—this set of permissions enables users to apply any of the granted permissions to a task, either in one of the task inboxes or in the Task List Management Tasks panel (if they have been granted permission to Task List Management through the access permissions).
  - View Task Data
  - View Task Info
  - View Task Audit
  - Complete Task
  - Cancel Task

  - Suspend Task
  - Resume Task
  - Delegate Task
  - Accept Task
  - Assign Task
  - Modify Task Data
  - Modify Task Info
  - Subscribe to a Task
  - Rollback Task
  - Delete Task
- **Rules Management**—this set of permissions provides users with the ability to create, delete, or modify task rules, or modify task rule variables associated with the task type.
  - Create New Rule
  - Modify Rule
  - Modify Rule Variables
  - Delete Rule
- **Task Comments**—these permissions enable the user to work with comments and attachments on the **Comments** tab of a task instance. The task type must be enabled for comments as described in "Disabling and Enabling Comments and Attachments" on page 107.
  - View Comments
  - Add Comment
  - Update Comment
  - Update Other People's Comment
  - Delete Comment
  - Delete Other People's Comment
- **Task Collaboration**—these permissions enable the user to work with collaboration tasks on the **Collaboration** tab of a task instance. The task type must be enabled for collaboration as described in "Disabling and Enabling Task Collaboration" on page 108.
  - View Collaboration Process
  - Queue Collaboration Tasks
  - Update Collaboration Tasks

- Delete Collaboration Tasks
- Search User's Collaboration Processes
- Search Other People's Collaboration Processes

- **Task Application Root Page**—these permissions provide users with access to the task type inbox and display the task type inbox name in the **Monitoring > Business > Tasks** portion of the user's **Navigate** tab.
  - Task Inbox Page

Configuring Task Type Functional Permissions

You configure task type permissions by granting or denying the available functional permissions to a user, role, or group.

To configure task access permissions

1. In My webMethods: **Navigate > Applications > Administration > System-Wide> Permissions Management**.
2. On the Advanced tab, select **Tasks** in the **Resource Type** list.
3. Select a filter you want to apply in the Filter list, or leave the box empty.
4. Click **Search**. All matching task types are displayed in the Found panel.
5. In the Found panel, select the tasks you want to set permissions for and move them to the Selected panel.
6. Click **Next**.
7. In the Edit Permissions panel, do one of the following:
   - Select an existing principal and click **Delete** to remove it from the list of available principals.
   - Click **Add Users/Groups/Roles** to open the Add Principals panel, enabling you to search for and all any available user, role, or group to the list of available principals.
8. Click the link in the **Permissions** column for the principal that you want to set permissions for. The text for this link can display either of these values:
   - **Granted All**—the principal has been granted all available permissions.
   - **Custom**—One or more of the available permissions is denied to the principal.

Important: Clearing the **Grant** check box is *not* sufficient to deny the permission. You must explicitly select the **Deny** check box to ensure the permission is denied.

9. On the Permissions panel, select the **Grant** or **Deny** check box for the permissions you want to work with, as described in "About Task Type Functional Permissions" on page 99.
10. Click **OK** to complete your selections (this does *not* save your selections).
11. Click **Apply** to save your selections.
12. Repeat steps 8 - 11 to continue setting permissions for other principals, or click Back to return to the Permissions Management page.
13. If you are creating a new user, role, or group, you must also specify task access permissions, as well as task functional permissions.

Configuring Task Support for a User

You can provide or deny access to tasks to any user by assigning the user to a role that has task access. All members of the role are given the task access specified in the role.

For more information about configuring roles for task access, see "Configuring Task Permissions" on page 94. For more information about administering users and roles, see *Administering My webMethods Server*.

Subscribing Users to Notifications

When a task type developer creates a task type containing a task notification, individual users can subscribe to the notification e-mails generated by the task notification event conditions. Some limitations apply if you deny a user access to My Inbox. For more information, see "Limitations When Denying Access to My Inbox" on page 97.

You can also subscribe other users to a task notification; for more information, see "Subscribing to a Notification Rule for Other Users" on page 66.

My webMethods displays notification events as rules. For more information, see "About Task Type Rules and Events" on page 117.

Configuring Support for Collaboration Tasks

In general, most administrative functions for collaboration tasks are the same as regular tasks. Additional administration procedures for collaboration tasks include:

- Grant collaboration permissions—a set of permissions pertaining to collaboration tasks can be granted to users, roles, and groups. For a list of task collaboration permission, see "About Task Type Functional Permissions" on page 99.
- Enable/disable collaboration—you must enable a task type for collaboration to allow user to create and work with collaboration tasks from within instances of that task

type. For more information, see "Disabling and Enabling Task Collaboration" on page 108.

- Enable/disable task data sharing—you must enable task data sharing if you want task business data to be shared between parent and child tasks. For more information, see "Disabling and Enabling Task Data Sharing" on page 109.
- Specifying allowed collaboration tasks—you can assign specific task types for selection by the user when the user creates a collaboration task. For more information, see "Specifying Allowed Collaboration Tasks" on page 109.
- Set display options for collaboration process diagrams—you can specify the layout of the collaboration process diagram on the Process Details page (horizontal or vertical), and the icon used to represent a task step in the collaboration process diagram. For more information, see "Setting Display Options for the Collaboration Process Diagram" on page 110.
- Specify a task e-mail listener—a user can reply to a specially configured task notification by e-mail. To process these replies, you must specify and configure an e-mail server and account for this activity. For more information, see "Configuring a Task E-mail Listener" on page 173.

Note: Although it is not strictly a collaboration administration procedure, you must also configure a connection to an instance of webMethods Monitor if you want to monitor collaboration processes started from a running business process.

Administering Task Types

When a task type developer creates a task type within Software AG Designer, the developer creates what is essentially a template for a particular kind of human activity that will be carried out at run time— for example, approving an order, or configuring a new employee's computer.

These task types can be used within a process, also developed in Designer. The task type developer can also create stand-alone task types that can be published to My webMethods Server. Within the My webMethods Server run-time environment, tasks can be started from these stand-alone task types as often as necessary. For information about creating and modifying task types, see *Software AG Designer Online Help*.

When the task type developer modifies a task type that already exists on My webMethods Server and then re-publishes the task type (or a process that contains it) from Designer to My webMethods Server, the current task type in My webMethods Server is overwritten with the modified portions of the republished task type. It is important to note that any changes made in My webMethods to the modified portions of the task type will be overwritten when the task type is re-published. For more information about this behavior, see "About Optimized Task Type Publishing" on page 105 and "Considerations When Publishing Task Types with Duplicate Names" on page 104.

The Task Engine Administration portion of My webMethods enables you to manage, modify, and delete the task types available on My webMethods Server.

Administrative Considerations for Task Publishing

Task types are created in Software AG Designer as part of a *task application* project. A task application can contain just one task type or many, subject to the judgment of the task developer. These task applications and the task types they contain are published to My webMethods Server to make them available in the run-time environment.

There are several administrative considerations that apply to task type publishing. For more information about task type publishing considerations, see:

- "Considerations When Publishing Task Types with Duplicate Names" on page 104
- "About Optimized Task Type Publishing" on page 105
- "Forcing a Full Publication of a Task Application" on page 105
- "Considerations When Publishing Task Types with Indexed Data" on page 112

Considerations When Publishing Task Types with Duplicate Names

In some instances, it may be necessary to create two or more task types with the same task type name. For example, multiple process models might contain a user task step named "Cancel Order", but, to accommodate different conditions in the order processing workflow for different departments, a different task type is implemented and invoked for each process model.

Programmatically, this is not a problem because the Task Engine tracks each task type by its task type ID, not its task name. However, the existence of duplicate task type names in the My webMethods user interface has two major ramifications:

- You will encounter problems when you publish task types with duplicate names unless you take the task editing precautions described below. Specifically, the most recently published task type will overwrite any existing task type with the same task type name.
- Duplicate task type names could be potentially confusing to task users. This would be especially true if multiple custom task inboxes are present, all with identical names.

Precautions

For these reasons, whenever a task developer creates a task type with a duplicate name, *before publishing the task type, the developer must use the task editor to manually rename the task application root page* to make it unique among all tasks deployed to My webMethods Server; otherwise, the most recently deployed duplicate task type will overwrite the existing task application pages. This will also ensure that custom inbox page names

will be unique. For information about modifying the task application root page, see *webMethods BPM Task Development Help*.

In addition, the **Advanced** tab of the My Inbox and Task List Management pages enables a user to filter the task results by task type name. In the event of task types with duplicate names, the list will contain an entry for each duplicate name, potentially making it difficult for the user to select the desired task. To alleviate this problem, the user can hover the cursor over a task name entry in the list; this displays a tooltip that contains the task type description text entered by the task developer as well as the unique task type ID.

About Optimized Task Type Publishing

Task types are published to My webMethods Server by publishing the task application—all task types within the task application are published as a result. The task application that a task type belongs to is shown on the Task Administration page.

When a task application is first published to a run-time environment, the publishing process can take a considerable amount of time, especially if the task application is a complex one with many tasks, custom inboxes, assignments, and events. Network capacity and traffic can also affect the publishing time.

To ensure that the subsequent publishing of task application is as rapid as possible, Software AG Designer optimizes this process by publishing *only those portions of the task application that have changed* since the last publication. In most cases this optimization is completely transparent.

However, it is possible to modify portions of the task application in the My webMethods Server run-time environment (although this is generally not recommended). If these changes are not applied to the task application project in Designer as well, the two versions will no longer be synchronized.

For instance, if the task application taxonomy is changed in My webMethods Server (for example, the inbox page is renamed), publication of the task application will not update the renamed page if that portion of the task application was not updated in Designer. You can force a publication of the entire task application project; for more information, see "Forcing a Full Publication of a Task Application" on page 105.

Forcing a Full Publication of a Task Application

Software AG Designer optimizes the task application publication process by publishing *only those portions of the task application that have changed* since the last publication. To force a full publication of the entire task application, you can use either of the following procedures:

- In My webMethods Server, delete all of the task types contained in the task application as described in "Deleting a Task Type from My webMethods Server" on page 114, and then republish the task application from Designer.
- Install the task application from within My webMethods Server using the Install Administration functionality. For information about how to use the Installing Administration functionality, see *Administering My webMethods Server*.

Searching for Task Type Instances

You can search for all instances of a particular task type from the Task Engine Administration page (that is, all of the tasks started from a particular task type).

To search for all instances of a task

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Locate the task type you want to search for and click in the **Actions** column for that task. The Task List Management page opens with all tasks that were started from the selected task type displayed in the Task List Management Tasks panel.

Deleting All Task Type Instances

You can delete all instances of a particular task type from the Task Engine Administration page (that is, all of the tasks started from a particular task type).

To delete all instances of a task

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Locate the task type you want to work with and click in the **Actions** column for that task. A confirmation dialog appears.
3. Click **Delete**.

All task instances started from that task type are deleted from user inboxes and the Task List Management list.

Disabling and Enabling a Task Type

When you disable a task type, you prevent tasks from being started from it, either manually or automatically from within a process. The results of disabling a process-started task type depend on how the process developer created the process. If no accommodation for a non-starting task is included, the process will most likely fail as a result of the task not starting. Task types are enabled by default.

To disable and enable a task type

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Click the link in the **Task Type ID** column.

3. Select or clear the **Task Type Enabled** check box as required.
4. Click **Update**.

My webMethods displays ● when a task type is enabled and ● when a task type is disabled.

Disabling and Enabling Task Analytics

When you enable analytics for a task type, the Task Engine collects task instance metrics in the run-time environment and sends this information to webMethods Optimize for Process. When you disable task analytics for a task type, metrics for instances started from this task type are no longer sent to Optimize for Process. Task analytics are disabled by default.

The following conditions apply when a task is included in a process:

- When analytics are enabled for a process, any tasks queued by this process will be reported to Optimize for Process regardless of the above setting.
- When you enable analytics for the task type, all tasks of this type will be reported to Optimize for Process regardless of the process setting.

Note: Full implementation of task analytics requires additional configuration as described in "Configuring Task Analytics" on page 176.

To disable and enable task analytics

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Click the link in the **Task Type ID** column.
3. On the Task Type Details panel, select or clear the **Task Analytics Enabled** check box as required.
4. Click **Update**.

Disabling and Enabling Comments and Attachments

With proper permissions, users can add, modify, and delete comments and attachments within a task on the task's **Comments** tab. However, task commenting must be enabled for the task type on the task type's administration page; otherwise, the **Comments** tab will not appear.

To disable and enable comments and attachments

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.

2. Click the link in the **Task Type ID** column.
3. On the Task Type Details panel, select or clear the **Task Commenting Enabled** check box as required.

> **Note:** If a task instance of this task type has existing comments or attachments and you clear this check box, the **Comments** tab is no longer visible to the user. However, the comments and attachments are retained, and will be present if this option is re-enabled.

4. Click **Update**.

> **Note:** You must also grant users the various comment permissions to enable them to add, modify, or delete comments and attachments. For a list of content permissions, see "About Task Type Functional Permissions" on page 99.

Disabling and Enabling Task Collaboration

With proper permissions, users can create, assign, and set status for collaborations tasks within a task on the task's **Collaboration** tab. However, task collaboration must be enabled for the task type on the task type's administration page; otherwise, the **Collaboration** tab will not appear.

To disable and enable task collaboration

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Click the link in the **Task Type ID** column.
3. On the Task Type Details panel, select or clear the **Task Collaboration Enabled** check box as required.

> **Note:** If a task instance of this task type has existing collaboration tasks and you clear this check box, the **Collaboration** tab is no longer visible to the user. However, the collaboration tasks and process are retained, and will be present if this option is re-enabled.

4. Click **Update**.

> **Note:** You must also grant users the various comment permissions to enable them to add, modify, or delete collaboration tasks. For a list of task collaboration permissions, see "About Task Type Functional Permissions" on page 99.

Disabling and Enabling Task Data Sharing

This administrative option becomes available when a task type is enabled for task collaboration. When this option is enabled, task business data is shared, or passed, between the parent task its various child tasks. In some cases, access to this task business data will be helpful to the users who are collaborating on the parent task. However, in other instances, the task business data may contain sensitive information that should not be shared among the collaborators.

To disable and enable task data sharing

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Click the link in the **Task Type ID** column.
3. On the Task Type Details panel, select or clear the **Task Data Sharing Enabled** check box as required.

   Note: This option is disabled until the task collaboration option is enabled.

4. Click **Update**.

Specifying Allowed Collaboration Tasks

Collaboration tasks can be started automatically within a business process, or manually by a user from within an existing task that is enabled for collaboration. For more information about these two approaches, see "How Collaboration Tasks Differ from Standard Tasks" on page 23.

To start a collaboration task manually, the user must specify a task type that will determine what kind of collaboration task instance will be created. The available task types are specified on the Task Type Details page for each task type.

To specify allowed collaboration tasks

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Click the link in the **Task Type ID** column.
3. On the Task Type Details panel, select the task types you want to make available in the **Available** list and move them to the **Selected** list.

   Note: This functionality is disabled until the task collaboration option is enabled.

4. Click **Update**. The selected task types will be available to the user in the **Collaboration Task Type** list on the New Collaboration Task panel.

Setting Display Options for the Collaboration Process Diagram

When the user views the Process Details page, a graphical process diagram is displayed showing the collaboration process; each collaboration task is shown as a step. For more information, see "Viewing Collaboration Process Details" on page 76.

You can specify the layout of the diagram and the icon used to represent collaboration task steps.

To set display options for a collaboration process diagram

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Click the link in the **Task Type ID** column.
3. On the Task Type Details panel, do one or both of the following:
   - Specify a diagram layout of Horizontal or Vertical from the **Collaboration Diagram Layout** list.
   - Specify an icon for the collaboration task steps in the diagram from the **Collaboration Step Icon** list.

     Note: This functionality is disabled until the task collaboration option is enabled.
4. Click **Update**.

Administering Indexed Task Business Data

In the Task Development perspective in Software AG Designer, you can create task types to support searches of standard task business data and indexed task business data. Depending on the task type, Task Engine can store the indexed task business data in the My webMethods Server database, or in both the database and a separate Elasticsearch store. When using task types that include indexed business data, you must follow the considerations for publishing the tasks and administering the database table, described in the following sections:

- "About Business Data Field Searches" on page 110
- "Considerations When Publishing Task Types with Indexed Data" on page 112
- "Reindexing Task Business Data" on page 113

About Business Data Field Searches

When a task application is published to the My webMethods Server runtime, individual task instances can be started either automatically from a process or manually by a user.

The business data for a task instance is populated from various sources as the task moves through its life cycle.

Depending on the task type configuration, Task Engine stores the business data fields and their values in the following places:

- The Task Engine stores all task business data for all tasks as a binary large object (BLOB) within a full-search database table. While this makes all business data available for all tasks, the BLOB must be de-serialized to make the information available, and it can be quite large when many tasks are present.
- When a task contains indexed business data fields, those fields are stored in a separate indexed fields database table as well as the BLOB; this table contains only indexed business data fields and their values. The indexed field table is created dynamically when a task application containing indexed business data fields is published to My webMethods Server. The indexed field table provides a limited but much faster search mechanism that is especially useful in situations when a very large number of tasks are present in a task inbox.
- When a task contains HPSTRA-enabled fields, Task Engine stores those fields in an Elasticsearch store. However, the different indexing types that Elasticsearch supports can affect how Task Engine searches and retrieves business data fields at runtime. For more information about indexing types, see *webMethods BPM Task Development Help*.

Task Engine maintains both database tables and the Elasticsearch index and updates them dynamically as new tasks are queued in the system or as existing tasks are deleted from the system.

Users can search within a task inbox for specific business data; the search behavior depends on how the task developer has configured the task:

- If the task is configured with a standard search provider, the search examines all business data in all the tasks in the inbox. If the number of tasks in an inbox is relatively small, this search executes quickly. However, when a large number of tasks are present, a standard (full) search can take significantly longer.
- If the task is configured with an indexed search provider, the search examines only the business data in the indexed fields table and ignores all other fields, resulting in a much faster search. In this case, the task developer must mark one or more business data fields as indexed fields, otherwise the search will return no results.
- If the task is configured to use the HPSTRA search content provider, Task Engine retrieves the task data from the Elasticsearch store. Search results are retrieved faster than those from the default search provider, even for a large number of tasks.

In addition, separate task client services are available in the WmTaskClient package to execute a full search on data in the BLOB, the limited search on the indexed field table, or a full search on an Elasticsearch store. For more information, see *webMethods Task Engine API and Service Reference*.

Database-indexed business data fields are available as a standard feature with Task Development Version 8.2 and later. HPSTRA-indexed business data fields are available as a standard feature with Task Development Version 10.0 and later. Task applications

created with earlier versions can be modified to support any of the indexing options. Any task application, regardless of version, can be configured to use either search method. Consult with the task developer if you want to modify the search behavior of an existing task.

Considerations When Publishing Task Types with Indexed Data

Publishing a task type that is enabled for indexed searches has a distinct impact on the My webMethods Server run-time environment. You must take into account these considerations before you publish indexed search tasks to My webMethods Server.

Task Engine creates and maintains a database table for each task type with database-indexed business data that you publish to the runtime. At runtime, when a user executes a business data search from a task inbox with an indexed search provider, Task Engine searches these database entries.

For HPSTRA-indexed business data fields, Task Engine creates, maintains and searches a separate Elasticsearch index per task type.

When a task type with indexed business data is published for the first time, Task Engine creates the database table or Elasticsearch index for the type. You must take into account the following considerations when you republish the task type:

- If the task developer modifies the task type interface, assignments, events, and so on, but makes no changes to the indexed data fields, there is no impact in the run-time environment.
- If the task developer modifies the structure of the indexed business data, for example, adds or removes a field, or changes a field type or attribute, Task Engine detects the changes automatically, drops the existing index table or Elasticsearch index for the task type, and creates a new one. Dropping the table or index also deletes all stored data, and the newly created table or index is empty.
- If the task developer modifies the structure of the indexed business data, and the task publisher republishes the task type while a reindexing procedure is running, Task Engine stops the reindexing procedure and sets its status to “Failed.” Then Task Engine drops the existing index table or Elasticsearch index with all stored data, and creates a new empty table or index.

To populate a newly created table with data from existing task instances in your system, you must run the task reindexing procedure as described in “Reindexing Task Business Data” on page 113. However, for the time period between the republishing of the modified task type and the completion of the reindexing procedure, any searches from a task inbox of the type will return incomplete results or no results at all.

For production environments, you must publish updates to task types with modified indexed business data and reindex business data only during scheduled maintenance periods.

For more information about task business data reindexing, see “Reindexing Task Business Data” on page 113. For more information about creating and working with tasks with indexed business data, see *webMethods BPM Task Development Help*.

Reindexing Task Business Data

Each time you modify the indexing settings of a task type that includes a database or HPSTRA index, you must redeploy the task type and run a reindexing operation.

Before you start reindexing business data, see "Considerations when Reindexing Task Business Data" on page 113.

To reindex the business data for a task type

1. In My webMethods, navigate to **Applications** > **Administration** > **Business** > **Tasks** > **Task Engine Administration**.

   Task Engine displays all task types, available in the runtime, on the **Task Configuration** window.

2. Under **Task Configuration**, click the ID of the task type to reindex.
3. On the **Task Type** panel, click one of the following tabs:
   - **DB Indexes** - to reindex task business data, stored in the indexing table of the My webMethods Server database.
   - **HPSTRA Indexes** - to reindex task business data, stored in a HPSTRA index in Elasticsearch.
4. Click **Reindex** to reindex all business data for the task type, stored in the selected index.

   Note: If the task type is not configured to work with indexed business data, or has no indexed business data, the **Reindex** button is not available and the **Indexes** field is empty.

   Task Engine displays the progress of a reindexing procedure on the top-right of the **Indexes** tab, in the following format: **Reindexing:** ***nnnn*/*xxxx***, where *nnnn* is the number of processed tasks, and *xxxx* is the total number of task instances. Task Engine updates the total count of processed tasks for every 1000 tasks.

   To stop reindexing, click **Stop Reindex**.

   Note: If you stop the reindexing procedure before it completes, business data searches from a task instance of the type might return incomplete results.

Considerations when Reindexing Task Business Data

- Reindexing completely repopulates the index table in the database or the HPSTRA index in Elasticsearch with indexed business data from all instances of the task type currently in the system.
- If the number of task instances is very large, reindexing the database can take a relatively long time to complete. For example, several thousand task instances may

take two to five minutes to process; larger numbers will take proportionately longer. Reindexing a HPSTRA index in Elastic search is much faster.

- Reindexing deletes all index contents and reinserts the task business data for the available task instances of the task type. For HPSTRA indexes, reindexing also drops the existing index in Elasticsearch.
- You can reindex two or more task types simultaneously. However, if the number of task instances is large, this may result in increased consumption of system resources and performance issues.
- Reindexing runs as a background process. You can continue working in other areas of My webMethods.
- You cannot pause a reindexing procedure.

Indexing Considerations in a Clustered Environment

Although the reindexing process runs in the background, in a clustered environment this process is not distributed across the cluster. When you start a reindexing process, it is executed on the node that you are currently connected to (for example, through a load balancer).

However, the behavior of the reindexing process is propagated to all nodes in the cluster. Regardless of which node you are connected to, you can:

- View as read-only the structure of the indexed business data structure on the **DB Indexes** tab, or the **HPSTRA Indexes** tab.
- Check reindexing status messages (with progress information, or the last start time, stop time, and status).
- Stop a running process with the **Stop Reindex** button.

For example, if you start the reindexing process while logged on to Node A, then log out and log on later on Node B, you will still see the same information and have the same control over the process as if you were logged on to the original node.

Deleting a Task Type from My webMethods Server

You can completely remove a task type from the My webMethods Server environment. In doing so, the task type is removed from all inboxes as well as the Task Configuration window, and all running task instances started from that task type are removed as well.

Important: When you delete a task type, all task instances of that task type are deleted regardless of the task status. This action can delete currently running tasks with a status of Active. Exercise caution when deleting Active tasks; for more information, see "Process Implications When Deleting a Task" on page 89.

To delete a task type from My webMethods Server

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All task types available in My webMethods appear in the Task Configuration window.
2. Select the task type you want to delete.
3. Click **Delete**. A confirmation dialog appears.
4. Click **Delete**.

The deleted task type is completely removed from My webMethods Server and all running task instances started from that task type are removed from user inboxes and the Task List Management list. You can restore the task type by republishing it to My webMethods Server from Software AG Designer. For more information, see *Software AG Designer Online Help*.

Deleting a Task Application from My webMethods Server

A task application is deleted by removing all of the task types contained in the task application.

To delete a task application project from My webMethods Server

1. Log in to My webMethods Server with administrator permissions.
2. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**.
3. If a task application contains two or more task types, sort the task list by clicking the **Task Application** column to group together all of the tasks in that application.
4. Select all task types in the task application you want to delete and click **Delete**.

Starting a New Task

When a task type developer creates a task type with capability for manual starting, you can start an instance of that task from the Task Configuration window. When a task type is configured for manual starting, you can start that task by clicking in the **Actions** column for that task. If the Start icon is disabled, you cannot start a task instance manually.

To start a task manually

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Locate the task type you want to start and click in the **Actions** column for that task type. The Start page opens.

3. Enter the task information you want to apply to this task instance in the New Task panel:
   - **Name**—the name you want to apply to this task instance.
   - **Description**—your description of this task instance.
   - **Priority**—the priority you want to assign to the task instance.
   - **Custom Task ID**—any custom identification you want to apply to the task instance.
4. Click **Start Task**. A confirmation dialog box appears.
   - Click **Show Details** to view the task ID number, otherwise click **OK**. The started task is assigned to any users, groups, and roles defined within the task according to its assignment rules, and it appears in the inboxes of all recipients. If the task type contains no assignments, you must assign the task from the Task List Management page.
   - Click **Open the task** to view the task details page for the new task.

     Important: You can continue to click **Start Task** after you first start a task; each time you click **Start Task**, a new task instance is started using the task information values you have specified. If you do not change the task information before you start any subsequent tasks, each task instance will display the same task information
5. Browse to any other location after you have finished starting tasks.

Modifying Task Types in My webMethods Server

When modifying a task type in My webMethods, always keep in mind that any changes you make to that task type will be overwritten the next time the task type is published to My webMethods Server. For more information about this behavior, see "About Optimized Task Type Publishing" on page 105.

In general, the recommended method for making changes is to ask the task developer to make the changes in Software AG Designer and then republish the task type to My webMethods Server. This ensures that task types will remain in synchronization between the two environments.

Note that you can change the *task type name* in Software AG Designer; this changes the task type name displayed on the task inbox tab and anywhere the task type name is displayed. Certain considerations apply to the creation of task types with duplicate names; for more information, see "Considerations When Publishing Task Types with Duplicate Names" on page 104.

The *task type ID* cannot be changed after the task type is created and serves as a unique identifier for programmatically identifying the task type in both environments.

About Task Type Rules and Events

Most task types in My webMethods contain rules that define how a task behaves in the run-time environment. These rules are created as assignments and events in Software AG Designer, and consist of a condition that must be matched when the rule is evaluated, and a resulting action that occurs when the condition is matched. You cannot edit task type rules in My webMethods, however, you can view existing rules for a task type on the Task Engine Administration page, or change the order in which those rules are evaluated. Task type rules fall into the following types:

- **Assignments**—these rules assign a task to a specified user, group, or role depending on the occurrence of a defined condition. For example, when a task's status is marked for escalation, assign the task to a manager; or, assign the task to a specific user or role when the task is activated. An e-mail task notification can be sent to a user or role as an assignment result. These are configured as assignments in Designer.
- **Filters** filter the tasks viewed by users in their task inbox in My webMethods. For example, "do not display any task that has been accepted by another user." This is useful when tasks are assigned to a role containing many members. These are configured as filter event types in Designer.
- **Change rules** apply an action when a specified change occurs in the task's status or business data; for example, if the task status changes to Expired, delete the task. An e-mail task notification can be sent to a user or role as a change result. These are configured as change-related event types in Designer.
- **Schedules** apply an action when specified scheduling conditions are met. These rules are used to apply some time-based conditions to the task; for example, send a task notification if a loan application has not been accepted for processing within a certain period of time. Or, you might reassign, escalate, or change the priority of tasks based on the passing of a specific date or an interval of time. An e-mail task notification can be sent to a user or role as an schedule result. These are configured as time or date-related event types in Designer.

Viewing Task Type Rules in My webMethods

My webMethods provides read-only view for task type rules. You cannot edit task type rules in My webMethods, however, you can change the order in which the rules are evaluated, as described in "Changing the Rule Evaluation Order" on page 124.

To view task type rules My webMethods

1. In My webMethods, navigate to **Applications > Administration > Business > Tasks > Task Engine Administration**. All task types available in My webMethods are displayed in the Task Configuration window.
2. Locate the task type you want to work with and click the appropriate rule icon in the **Actions** column for that task type (Assignment, Filter, Schedule, or Change rule).

The Manage [Rule Type] page opens for the selected rule type (for example, Manage Schedules).

3. Click the **View Rules** tab if it is not already displayed.
4. Click a rule name to view read-only details for that rule.

Administering Task Types with Date/Time Events

webMethods Task Engine uses date/time events to schedule task actions for a particular time. The task developer configures date/time events when creating the task type in Software AG Designer. Event triggering times are defined as fixed dates or time intervals, and the time intervals can be calculated using a business calendar, or the output of a webMethods Integration Server service. For more information about configuring date/time events for a task, see *webMethods BPM Task Development Help*.

When a task type with a date/time event is published to My webMethods Server, Task Engine stores precalculated values for the triggering time of the event. Those precalculated values might become irrelevant over time.

To correct this behavior, you can recalculate the existing triggering times for date/time events manually, when republishing a task type, or periodically, by setting automatic recalculation that fits the workflow of your organization. For more information about manual date/time event recalculation, see "Recalculating Date/Time Events for a Single Task Type" on page 118 and "Recalculating Date/Time Events for All Task Types" on page 119. For more information about automatic date/time event recalculation, see "Scheduling Date/Time Event Recalculation for a Task Type" on page 119.

Recalculating Date/Time Events for a Single Task Type

You can recalculate the stored values for date/time event triggering time manually, per task type.

Important: If the recalculated triggering time for an event is in the past, the action for that event will be executed immediately.

To recalculate the triggering time of date/time events for a single task type

1. In My webMethods, navigate to **Administration > Business > Tasks > Task Event Orchestrator Configuration**.
2. On the **Recalculation Settings** tab, locate the task type with date/time event you want to recalculate and click ▽ in the **Tools** column for that task type.
3. On the drop-down menu, click **Recalculate**.
4. In the confirmation dialog box, click **Submit**.

Recalculating Date/Time Events for All Task Types

You can recalculate the stored values for date/time event triggering time manually, for all task types. This option can be very time-consuming, especially when working with a large number of task types with date/time events.

Important: If the recalculated triggering time for an event is in the past, the action for that event will be executed immediately.

To recalculate the triggering time of date/time events for all task types

1. In My webMethods, navigate to **Administration > Business > Tasks > Task Event Orchestrator Configuration**.
2. On the **Recalculation Settings** tab, click **Recalculate All**.
3. In the confirmation dialog, click **Submit**.

   Note: Recalculating the date/time event triggering times for a large number of tasks can take a long time. Consider recalculating trigger times during off-peak hours, or recalculate one task type at a time.

Scheduling Date/Time Event Recalculation for a Task Type

You can schedule recurring recalculation of the stored values for date/time event triggering time per task type.

Important: If the recalculated triggering time for an event is in the past, the action for that event will be executed immediately.

To schedule automatic date/time event recalculation for a task type

1. In My webMethods, navigate to **Administration > Business > Tasks > Task Event Orchestrator Configuration**.
2. On the **Recalculation Settings** tab, locate the task type with date/time event for which you want to schedule automatic recalculation and click ▽ in the **Tools** column for that task type.
3. On the drop-down menu, click **Configure**.
4. In the **Edit Recalculation Recurrence** dialog box, define the time interval for recalculation of the triggering time for the date/time event.

   To turn off scheduled recalculation for a task type, select **Not Scheduled** from the drop-down list.
5. In the **Next Scheduled Event** field:
   - Leave the current date and time if you want **Task Engine** to calculate the time interval, starting from the current day and time.

- Enter a new date and time if you want **Task Engine** to calculate the time interval, starting from that day and time.

For example, if you schedule monthly recalculation for a task type, recurring on every last Friday, and you want **Task Engine** to skip the current month, select the last Friday of the following month as the next scheduled event date.

6. Click **Submit** to save your recalculation settings.

Configuring a Custom Data Source

By default, Task Engine stores the precalculated event triggering times in the My webMethods Server database. From the Task Event Orchestrator page, you can configure Task Engine to use Terracotta for storing the precalculated values.

Before you can store precalculated event values to Terracotta, you must configure a Terracotta server. For more information on using Terracotta with webMethods products, see *Using Terracotta with webMethods Products*.

To configure Terracotta as the data source for precalculated date/time events

1. In My webMethods, navigate to **Administration > Business > Tasks > Task Event Orchestrator Configuration**.
2. From the **Select Data Source** drop-down list, select Terracotta.
3. Under **Additional Properties**, configure the following:
   - **Terracotta Server Host** - the host name of the Terracotta server.
   - **Terracotta Server Port** - the connection port of the Terracotta server.
4. Click **Save**.
5. Restart the My webMethods Server instance.

Working with Global Task Rules

You can create, modify, and delete global task rules in My webMethods; these rules apply to all tasks running in the My webMethods Server environment. Global task rules can be created as *change rules* or as *schedule rules*. For information about expressions for global rules, see "About Global Rule Expressions" on page 218.

Note: Global task rules are created and maintained in the My webMethods Server environment only, and are not affected by the publishing of task types from Software AG Designer. You cannot create, modify, or delete global task rules in Designer.

Although the navigation path to global task rules is different from the navigation path to individual task rules, the procedures for working with them are the same. Individual task rules are evaluated in the specified order, and then the global task rules

are evaluated, in their specified order. The precedence of individual task rules over global rules is fixed and cannot be modified. For specific procedures, see:

- "Modifying a Global Task Rule" on page 123
- "Removing a Global Task Rule" on page 124
- "Creating a Global Task Rule" on page 122
- "Copying a Global Task Rule" on page 123
- "Understanding Task Expressions" on page 214
- "Changing the Rule Evaluation Order" on page 124

Managing Global Rules

By default, Task Engine provides these global task rules:

- Delete Task Rule - this global schedule rule deletes a task in Completed, Canceled, Expired, or Error status after a specified period of time. The time interval is set by the `keepDays` parameter. The default value of that parameter is 30 days. This rule is evaluated once per day.
- Infinite Loop Task Rule - this global change rule places a task in Error status when the one-hundredth version of the task is created. You can edit the expression for this rule to specify a different number.

To manage global task rules

1. In My webMethods, navigate to **Applications > Administration > Business > Tasks > Task Engine Administration**.
2. On the Task Engine Administration page, do one of the following:
   - Click to view and modify global schedule rules.
   - Click to view and modify global change rules.
3. On the Global [Rule Type] Rules page for the rule type, manage rules with the following tabs:
   - **View Rules.** Click this tab to view all available global rules of the selected type.
   - **Change Rule Evaluation Order.** Click this tab to rearrange the order in which global task rules of the selected type are evaluated, as described in "Changing the Rule Evaluation Order" on page 124.
   - **Create New Rule.** Click this tab to create a new global task rule. For information about how to create a new rule, see "Creating a Global Task Rule" on page 122.

Creating a Global Task Rule

You can create a new global schedule or change rule, that applies to all task types in My webMethods.

To create a new global task rule

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**.
2. On the Task Engine Administration page, click the appropriate icon for the global rule type you want to create, as described in "Managing Global Rules" on page 121.
3. On the Global [Rule Type] Rules page for the selected rule type (for example, Manage Change Rules), click the **Create New Rule** tab.
4. In the **Name** and **Description** boxes, type a unique name for the rule and a description of the intended behavior of the rule.
5. Create a condition expression by typing in the expression terms and clicking the **Add Operator** button, and then selecting the desired value from the resulting display. When this condition is matched, the rule will be enforced.

   For example:

   ```
   #{oldTask.taskInfo.status} == "new"
   ```

   This indicates a condition for a task change rule where the task status is "new". This occurs when a task is started. For more information about creating conditions, see "About Condition Expressions" on page 215.

   Note: Global change rules support expressions such as caf["MyWebApp"].valueOf("managedBeanName.method"), which is invoked when any task instance in the system is changed. This functionality enables you to access managed beans in other contexts.

6. Create a results expression by typing in the expression terms and clicking the **Add Operator** button, and then selecting the desired value from the resulting display.

   For example:

   ```
   #{currentTask.completeTask}
   ```

   With the condition and result examples given above, this rule would auto-complete any newly started task.

   For more information about expressions, see "Understanding Task Expressions" on page 214.

7. When creating a global schedule rule, specify the rule variables and attributes as follows:

a. Under Rule Variables, specify values for any variables that your task expression contains.

b. Under Rule Attributes, in the **Every n day/hour/minute** fields, specify how often the rule is evaluated. For example, every 10 minutes, every 12 hours, every 3 days.

8. Click **Create Rule** to save your entries. The rule appears beneath the selected rule type.

Modifying a Global Task Rule

You can modify all global schedule and change rules, available in webMethods, including the default global task rules that Task Engine provides.

To modify a global task rule

1. In My webMethods, navigate to **Applications > Administration > Business > Tasks > Task Engine Administration**.
2. On the Task Engine Administration page, click the appropriate icon for the global rule type you want to create, as described in "Managing Global Rules" on page 121.
3. On the Global [Rule Type] Rules page for the selected rule type (for example, Manage Change Rules), click the **View Rules** tab if it is not already displayed.
4. On the **View Rules** tab, click the name of the rule you want to modify, or click in the Tools column, and then click **Modify Rule**.
5. On the **Modify Rule** tab, edit the properties of the rule in accordance with the instructions in "Creating a Global Task Rule" on page 122.
6. Click **Update Rule** to save your entries.

The changes to the rule are applied immediately.

Copying a Global Task Rule

You can copy a global task rule in My webMethods and use the copy to create a new global rule.

To copy a global task rule

1. In My webMethods, navigate to **Applications > Administration > Business > Tasks > Task Engine Administration**.
2. On the Task Engine Administration page, click the appropriate icon for the global rule type you want to create, as described in "Managing Global Rules" on page 121.
3. On the Global [Rule Type] Rules page for the selected rule type (for example, Manage Change Rules), click the **View Rules** tab if it is not already displayed.

4. On the **View Rules** tab, click in the Tools column for the rule you want to work with and then click **Copy Rule**.
5. On the **Copy Rule** tab, type a new name and description for the rule.
6. Click **Copy the Rule**.

The renamed rule appears in the rules list on the **View Rules** tab. All condition expressions, result expressions, variables, and other properties of the rule are copied.

Removing a Global Task Rule

You can remove a global task rule from My webMethods.

To remove a global task rule

1. In My webMethods, navigate to **Applications > Administration > Business > Tasks > Task Engine Administration**.
2. On the Task Engine Administration page, click the appropriate icon for the global rule type you want to create, as described in "Managing Global Rules" on page 121.
3. On the Global [Rule Type] Rules page for the selected rule type (for example, Manage Change Rules), click the **View Rules** tab if it is not already displayed.
4. On the **View Rules** tab, click in the Tools column for the rule you want to work with and then click **Remove Rule**.
5. Click **OK** in the confirmation dialog box. The rule is removed.
6. Click **Return** to go back to Task Engine Administration page.

Changing the Rule Evaluation Order

When a you have two or more rules of a particular rule type, the rules of that rule type are evaluated in a specific order. Different results can be obtained by changing the order in which the rules are evaluated. You can set the rule evaluation order in My webMethods. Individual task rules are evaluated in the specified order, before global task rules. After all individual task rules are evaluated, global task rules are evaluated in their specified order. The precedence of individual task rules over global rules is fixed and cannot be modified.

To change the rule evaluation order

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration panel.
2. On the Task Engine Administration page, do one of the following:

- To change the rule evaluation order for task type rules, locate the task type with the rule type you want to reorder and click the appropriate rule icon in the **Actions** column for that task type.
- To change the rule evaluation order for global task rules, click the appropriate icon for the global rule type you want to create.

3. Click the **Change Rule Evaluation Order** tab. The **Evaluation Order** list displays the current order of rule evaluation. The rule evaluation order begins at the top of the list and moves downward.
4. Select a rule in the **Evaluation Order** list, and click the up and down arrow buttons to modify the evaluation order.
5. Click **Update** to enter your changes.

Disabling Auditing for Task Rules

Task rules execution can result in a large number of audit entries in the Task Audit table. Inspection of the Task Audit table indicates that for each task and global rule execution, a table entry of "Trigger Rule Fired mm/dd/yyyy hh:mm am|pm Trigger Rule (GlobalTaskEventRule)" is created. In systems with a large number of tasks running, this can result in an unwanted increase in size of the Task Audit table.

To avoid the Task Audit table issue, you can disable auditing for specified task and global task rules in a configuration file.

Note: You can also disable audit logging for tasks in a process. For more information, see "Disable/Enable Task Logging in Processes" on page 191.

To disable auditing for specific task and global rules

1. Open the following file in a text editor:

   Software AG_directory/mws/server/*instance*/config/auditDisabledRules.properties

2. Type the rule names as a comma separated string in the appropriate rule type line (change, routing, and schedule). For example:

```
change=ChangeRule1,ChangeRule2
routing=AssignmentRule1
schedule=ScheduleRule1,ScheduleRule2,ScheduleRule3
```

   Note: Routing rules are more generally known as Assignment rules. To view the available task and global rules in My webMethods Server: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration** Click the appropriate global rule icon, or a task rules icon in the **Actions** column.

   If no task or global rules are specified in this file, audit entries are created for all task and global rules.

3. Save the modified properties file and restart My webMethods Server.

For more information about task logging levels, see "Configuring the Task Engine Logging Level" on page 158.

Specifying Task Audit View Logging Levels

You can specify the amount of information logged for each task type that has been published to My webMethods Server. This audit data is displayed on the **Audit View** tab for each instance of that task type. For information about setting Task Engine logging levels, see "Configuring the Task Engine Logging Level" on page 158.

To specify the task type audit view logging level

1. Log in to My webMethods Server as sysadmin.
2. In My webMethods: **Folders** > **System** > **Task** > **Task Definitions**
3. In the **Name** column, click the name of the task you want to work with (the task type ID is displayed here), or click **Properties** in the **Tools** menu for the task type.
4. In the Task Definition panel of the Properties page, select one of the following values in the **Task Auditing** list:
   - **Full**—The task **Audit View** page displays all logged task data (default setting).
   - **Task Updates and Rule Firing (No Business Data Auditing)**—The task **Audit View** page displays task creation and all task updates and event actions.
   - **Task Updates Only**—The task **Audit View** page displays only task creation and updates.
   - **No Auditing**—Task auditing is disabled. No data appears on the **Audit View** page.
5. Click **Apply** to save your changes.

Working with Task Charts

webMethods Task Engine provide basic task charting on the Task Charts page. This page contains two default task chart portlets, one displaying the number of all tasks, and one displaying the number of critical tasks. You can modify these default charts, and you can create additional chart portlets for deployment on the Task Charts page or in any other location of My webMethods.

You define the results displayed in a chart portlet by selecting from the saved searches available in the following locations: My Inbox, Task List Management, and all task type inboxes.

Note: To work with task charts, users or roles must be granted access to the Task Charts page. For more information, see "Configuring Task Access Permissions" on page 95.

Viewing and Refreshing Charts on the Task Charts Page

You can view and refresh task charts on the Task Charts page.

To view and refresh charts on the Task Chart page

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > Task Charts**. By default, two chart portlets are displayed, one with information on all tasks, and one displaying information on critical tasks.
2. To refresh (update) the chart display, click the Refresh button on your browser or press F5 on your keyboard. All charts on the page are updated to current conditions.

Configuring a Task Chart

You can configure a task chart on the Task Charts page or in any other location where a task chart has been placed.

To configure a task chart

1. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks > Task Charts**.
2. On the chart window menu, click **Properties**.
3. On the **Preferences** tab, specify the following configuration properties, or accept the default values:
   - **Chart Height** — The display height of the chart in pixels. Enter 0 (zero) for default (auto) sizing.
   - **Chart Width** — The display width of the chart in pixels. Enter 0 (zero) for default (auto) sizing.
   - **Show Current User Results** — Select this check box to create a separate graph displaying results for the current user.
   - **Show Results Per Task Type** — Select this check box to create a separate graph displaying results for each task type in the results.
   - **Selected Searches** — Use the **Select Saved Searches** button to specify one or more saved searches that will be used to determine the task chart results. The selected searches are displayed in the **Available** list; double-click a saved search, or use the Move arrows, to transfer a saved search to the **Selected** list or back again.
   - **Saved Search Screen** — Click the **Select** button to specify the search page that will open when you double click on the task chart. You have a choice of all

available task pages, including My Inbox, Task List Management, and all task type inboxes. The selected page is displayed to the left of the **Search Screen** label.

4. Click **Apply** to apply your changes and return to the task chart.

Working with Task Chart Portlets

You can create new task chart portlets and define properties for existing task chart portlets. These activities require you to log on to as the My webMethods Server system administrator. For additional information on working with portlets and pages in My webMethods Server, see *Administering My webMethods Server*.

Creating a Task Chart Portlet

To create a task chart portlet

1. Log on to My webMethods as sysadmin.
2. Access the page where you want to create the task chart portlet; for example:
   a. In My webMethods: **Folders > My webMethods Applications > Fabric Tasks > Monitoring > Business > Tasks**.
   b. Click **Task Charts**.
3. On the Task Charts page, click for the page and choose **Edit Page** from the menu. The page editing view appears.
4. In the **Tools** list, click **Portlets**.
5. In the **Portlets** list, expand wm_task_chart.
6. Drag the TaskChart portlet entry to the desired location on the Task Charts page. A new TaskChart portlet is added to the page.
7. With the new TaskChart portlet selected, click **Properties** at the top of the page view.
8. Click the **General** tab if it is not already displayed.
9. Type a name for the task chart portlet; add a description and keywords as desired.
10. Click **Save**.
11. Log off as sysadmin and log on as a My webMethods user.
12. In My webMethods: **Navigate > Applications > Monitoring > Business > Tasks** and click **Task Charts**. The new task portlet is displayed on the page.
13. If you need to create a custom saved search to define the task chart results, do so now.
14. Configure the task chart as described in "Configuring a Task Chart" on page 127.

For additional information on working with portlets and pages in My webMethods Server, see *Administering My webMethods Server*, and *My webMethods Server Portlet Reference*.

Renaming a Task Chart Portlet

You can configure a task chart so that the results displayed no longer match the name of the task chart portlet. You can change the name of the task chart portlet to reflect the new data display.

To change the name of a task chart portlet

1. Log on to My webMethods as sysadmin.
2. Access the page where you want to create the task chart portlet; for example:
   a. In My webMethods: **Folders > My webMethods Applications > Fabric Tasks > Monitoring > Business > Tasks**
   b. Click **Task Charts**.
3. On the Task Charts page, click in the task chart portlet toolbar and choose **Properties** from the menu. The Properties page appears.
4. In the General panel, type the new name for the task chart portlet, and modify the description and keywords as required.
5. Click **Apply**.
6. For additional information on working with portlets and pages in My webMethods Server, see *Administering My webMethods Server*, and *My webMethods Server Portlet Reference*.

Placing Task Portlets on Other Pages in My webMethods

As initially installed, My webMethods provides access to tasks in two primary navigation paths: **Administration** and **Monitoring**. You can customize the My webMethods interface to place task portlets on other existing pages, or you can create new pages and add task portlets to them.

If you place related task portlets on a new page (for example, a task type portlet and a search portlet for that task type), you must wire the portlets together to obtain proper operation. Specifically, the 'queryString' property of a result portlet must be wired to the 'lastSearchState' property of a search bar portlet to ensure they work together.

For information on these procedures, see *Administering My webMethods Server*. It is possible to add an inbox results portlet without a search bar portlet; in this case the inbox results portlet will always display all tasks without any search criteria applied.

Deleting and Hiding Task Type Entries in My webMethods

When you rename a task type root label name or page name in Software AG Designer and publish the task to My webMethods Server, the previous name will continue to appear in the **Navigate** tab or in the task interface and must be manually deleted.

Deletion of the following task type entries is required whenever any of these items are renamed in Software AG Designer:

- Task type inbox root label
- Task inbox page
- Task details page
- Task start page

For information on how to change these names, see *Software AG Designer Online Help*.

When a task type does not contain a task type inbox, an empty task type inbox entry will appear in the **Navigate** tab ofMy webMethods by default. In this case, you can configure the entry to be hidden.

Deleting a Task Type Inbox Entry

Deleting a task type inbox entry in the **Navigate** tab of My webMethods Server is necessary in those instances when you change the task type root label name in Software AG Designer and publish the renamed task type to My webMethods Server. You must then manually delete the previous task type inbox entry in the **Navigate** tab of My webMethods Server. For more information about changing the task type root label in Designer, see *Software AG Designer Online Help*.

Important: Do *not* delete the previous task inbox entry until *after* you have published the renamed task type to My webMethods Server. If there are currently running task instances displayed on the task type inbox entry you want to delete, be sure you *first* rename the task type in Designer and publish the renamed task type to My webMethods Server; alternatively, you can delete the running tasks as described in "Deleting a Task Type from My webMethods Server" on page 114.

To delete a task type inbox entry

1. Log on to My webMethods Server using the 'sysadmin' account (default password is '`manage`').
2. Do one of the following:
   - Navigate to **Folders > My webMethods Applications > Fabric Tasks > Monitoring > Business > Tasks**

- Go to the following URL in the address field of your browser:

  ```
  http://ServerName:Port/webm.apps.workflow?layout=details
  ```

  where *ServerName:Port* specifies your My webMethods Server location.

3. Click for the task type inbox you want to work with and click **Delete**.
4. Log out as sysadmin and log back on to My webMethods.

Hiding and Displaying a Task Type Inbox Entry

Hiding a task type inbox entry in the **Navigate** tab of My webMethods Server is desirable when a task type does not contain a task type inbox. In this case, an empty task type inbox entry appears in the **Navigate** tab of My webMethods by default. If you add a task type inbox to the task type at a later time, you can then configure the hidden entry to be displayed again.

To hide or display a task type inbox tab

1. Log on to My webMethods Server using the 'sysadmin' account (default password is '`manage`').
2. Do one of the following:
   - Navigate to **Folders** > **My webMethods Applications** > **Fabric Tasks** > **Monitoring** > **Business** > **Tasks**
   - Go to the following URL in the address field of your browser:

     ```
     http://ServerName:Port/webm.apps.workflow?layout=details
     ```

     where *ServerName:Port* specifies your My webMethods Server location.
3. Click for the task type inbox you want to work with and click **Properties**.
4. Do one of the following:
   - To hide the task type inbox entry, clear the **Is Task Folder** check box.
   - To display the task type inbox entry, select the **Is Task Folder** check box.
5. Click **Apply**.
6. Log out as sysadmin and log back on to My webMethods.

Deleting a Task Type Page

Deleting a task type page in My webMethods Server is necessary in those instances when you change any of the following task type page names in Software AG Designer and publish the renamed task type to My webMethods Server:

- Task Inbox page
- Task Details page

- Task Start page

You must manually delete the previous task type page in My webMethods Server. For more information about renaming a task type page in Designer, see *Software AG Designer Online Help*.

To delete a task type page

1. Log on to My webMethods Server using the 'sysadmin' account (default password is '`manage`').
2. Do one of the following:
   - Navigate to **Folders > My webMethods Applications > Fabric Tasks > Monitoring > Business > Tasks**
   - Go to the following URL in the address field of your browser:

     ```
     http://ServerName:Port/webm.apps.workflow?layout=details
     ```

     where *ServerName:Port* specifies your My webMethods Server location.
3. Open the task type you want to work with and locate the original version of the page and the relabeled version of the page. For example:

Note: The Start page windows shown above are in the minimized state.

4. Click for the page you want to delete (that is, the original version of the page) and click **Delete**.
5. Log out as sysadmin and log back on to My webMethods.

Hiding and Displaying a Task Type Page

It is possible to hide a task type page within the My webMethods taxonomy with the procedure described below. However, this approach is essentially temporary, as the page will be displayed again the next time the task type is published to My webMethods Server.

For a permanent solution, modify the task type page properties in Software AG Designer as described in "Hiding and Displaying a Task Page" in the Designer online help, and then publish the task type to My webMethods Server.

Note: In general, the default Inbox page is displayed by default, but not select the Details page or the Start page (if one is present). If custom pages have been added to the task, they may configured to be displayed or hidden as required.

You can hide or display any of the following task type page names in My webMethods Server:

- Task Inbox page
- Task Details page
- Task Start page

To temporarily hide or display a task type page

1. Log on to My webMethods Server using the 'sysadmin' account (default password is '`manage`').
2. Do one of the following:
   - Navigate to **Folders > My webMethods Applications > Fabric Tasks > Monitoring > Business > Tasks**
   - Go to the following URL in the address field of your browser:

     ```
     http://ServerName:Port/webm.apps.workflow?layout=details
     ```

     where *ServerName:Port* specifies your My webMethods Server location.
3. Open the task type you want to work with and locate the task type page you want to hide or display. For example:

Note: The page windows shown above are in the minimized state.

4. Click for the Details, Inbox, or Start page you want to hide or display and click **Properties**.
5. Do one of the following:
   - To hide the task type page, clear the **Is Task Folder** check box.
   - To display the task type page, select the **Is Task Folder** check box.
6. Click **Apply**.
7. Log out as sysadmin and log back on to My webMethods.

Analyzing Task Engine Runtime Performance

My webMethods Server provides you with built-in capabilities for tracking and analyzing Task Engine performance.

To view the Task Engine performance information

1. Log on to My webMethods Server using the 'sysadmin' account (default password is '`manage`').
2. Navigate to **Folders > Administrative Folders > Administration Dashboard > Analysis > Performance Analysis and Configuration**.
3. In the **Refine** drop-down list, select **Task**.

   The resulting list displays columns for the **Number of Actions**, the **Total Time**, and the **Average Time** for the following task activities:

   - TaskCompletionHandler.execute -- send task completion to Process Engine.
   - TaskSchedulerHandler -- task Date/Time events.
   - TaskMechanics.updateCluster -- cluster notification for task updates.
   - TaskMechanics.getInfo -- obtain basic task info.
   - TaskMechanics.getData -- obtain task business data.
   - TaskMechanics.delete -- delete task.
   - TaskMechanics.update -- any task updates, including queuing a new task.
   - TaskFormFlowService.nnn -- form flow operations.
   - TaskChangeHandler.onEvent -- process all task assignments and events.
   - TaskApplyChangesWait -- task updates from client (CAF) applications.
   - TaskMechanics.countIndex -- indexed search count.
   - TaskMechanics.searchIndex -- indexed search.
   - TaskMechanics.search -- non-indexed search.
   - Any task assignments or events are tracked under "rule:<name>" with the name of the assignment or event.

   Note: With proper permissions, you can also access the Performance Analysis portlet from the My webMethods user interface at **Tools > MWS Monitoring and Diagnostics > Performance Information > Performance Analysis**

Administering Task EDA Event Emission

Task Enginecan emit EDA events for the actions that occur during the lifecycle of a task. The events are emitted using webMethods Event Routing. Subsequently, you can implement any custom logic for handling the events.

Note: You cannot define task EDA event emission settings for an individual task type in Software AG Designer. These settings must always be applied in My webMethods Server.

You can enable and disable EDA event emission for a task type within the My webMethods Server run-time environment. You can also opt to emit an event that contains only standard task information, or you can also add the task business data to the emitted event. For more information about working with EDA events for tasks, see:

- "About Global Settings for EDA Events" on page 135
- "Enabling and Disabling EDA Event Emission for a Task Type" on page 136
- "Enabling and Disabling Global EDA Event Emission for Tasks" on page 135
- "About EDA Predefined Task Event Types" on page 137

For more information about how to implement an EDA system with webMethods products, see *Implementing Event-Driven Architecture with Software AG Products*.

About Global Settings for EDA Events

To emit EDA events for tasks, the following global task EDA event settings must be enabled in My webMethods.

- **Produce EDA Events**. Enables or disables global task EDA event emission at run time. When this setting is disabled, no EDA task events are emitted by any task.
- **Include Task Business Data in Events**. Enables or disables the inclusion of task business data in the emitted EDA events at run time.

These global-level settings are enabled by default when the Task Engine is installed. In this case, the only requirement for emitting task EDA events is to configure the individual task types, as described in "Enabling and Disabling EDA Event Emission for a Task Type" on page 136.

Enabling and Disabling Global EDA Event Emission for Tasks

The global settings for the emission of EDA events and the inclusion of business data for tasks are enabled by default.

To enable or disable global EDA event emission

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > EDA Events Configuration.**
2. In the **General Settings** table, do any of the following:
   - In the **Produce EDA Events** list, select **Enabled** to enable the global emission of EDA events. You must also enable task EDA event emission for each individual task type, as described in "Enabling and Disabling EDA Event Emission for a Task Type".

- In the **Produce EDA Events** list, select **Disabled** to disable the global emission of EDA events. When this setting is disabled, no EDA task events are emitted by any task.
- In the **Include Task Business Data in Events** list, select **Enabled** to include business data in the emitted events. This setting is ignored if the **Produce EDA Events** setting is set to Disabled.
- In the **Include Task Business Data in Events** list, select **Disabled** to exclude business data from the emitted events.

3. Click **Save**.

Enabling and Disabling EDA Event Emission for a Task Type

You can choose to emit an EDA event when a task instance of a particular task type is created, updated, or deleted.

Important: The emission of task EDA events and the inclusion of business data per task type are disabled by default. Therefore, even when the global EDA settings are enabled, the Task Engine sends no events or task business data for a particular task type at run time unless you specifically enable event and business data publishing for that task type.

Conversely, if you disable the **Produce EDA Events** global setting, the Task Engine will emit no events for any task type, regardless of whether you enabled the respective settings for a particular task type.

Note: You cannot define task EDA event emission settings for an individual task type in Software AG Designer. These settings must always be applied in My webMethods Server.

To enable or disable emission of EDA events for a task type

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Engine Administration**. All of the task types available in My webMethods are displayed in the Task Configuration window.
2. Locate the task type you want to work with and click the link in the **Task Type ID** column.
3. Click the **EDA** tab and do any of the following:
   - Select the **Emit Event** check box to enable an event type for emission.
   - Clear the **Emit Event** check box to disable the event type for emission.
   - Select the **Include Business Data** check box to include task business data in the event.
   - Clear the **Include Business Data** check box to include only basic task data in the event.

Tip: Click the text in the column headings to select or clear all events.

4. Click **Update**.

About EDA Predefined Task Event Types

As part of its integration with EDA, the Task Engine emits specific predefined events for each task instance. The ability to emit these events can be enabled and disabled on a per-task type basis. For more information, see "Enabling and Disabling EDA Event Emission for a Task Type" on page 136.

Each EDA event represents a change to the status of the task instance, and it also contains standard information about the task. The content of each EDA event is defined by the event type XSD schema files installed with the Task Engine. For specific information, see "EDA Task Event Element Definitions" on page 138.

The Task Engine emits the Task Changed predefined task event type when a task instance is created, updated, or deleted, as shown in the following table.

Task Event Type	Task Operation	Description
Task Changed	Task instance created	Emitted when a new task instance is started (queued) from the task type. For more information, see "Task Instance Created" on page 138.
Task Changed	Task instance updated	Emitted when a task instance is modified by a user or by the system. For more information, see "Task Instance Updated" on page 139.
Task Changed	Task instance deleted	Emitted when a task instance is deleted. For more information, see "Task Instance Deleted" on page 140.

For information about task instances and task statuses, see "Task Status and Life Cycle" on page 21.

About Task Event Schemas

The Task Engine installation contains an XSD schema file describing the predefined EDA task event type.

- To view the XSD file, you must first import the predefined event type project as described in "Importing the EDA Predefined Event Type Project in Designer" on page 145.

- You can browse to the schema in the Software AG Designer Project Explorer view by expanding these nodes: **PredefinedEventTypes > Event Types > WebM > Task > 1.0**.
- You can also access the schema file in your file system at *Software AG_directory*\common\EventTypeStore\WebM\Task\1.0.
- For more information about the elements found in the schema file, see "EDA Task Event Element Definitions" on page 138.

EDA Task Event Element Definitions

For detailed information about the elements that make up a task event, see:

- "The EDA Predefined Task Event Type" on page 138
- "Key Supporting Schemas" on page 140

The EDA Predefined Task Event Type

The task event schema can be found in the folder *Software AG_directory*\common\EventTypeStore\WebM\Task\1.0

The Task Changed EDA predefined event type is emitted for the following task operations:

Task Event Type	Task Operation	Description
Task Changed	Task Instance Created	Emitted when a new task instance is started (queued) from the task type.
Task Changed	Task Instance Updated	Emitted when a task instance is modified by a user or by the system.
Task Changed	Task Instance Deleted	Emitted when a task instance is deleted.

Task Instance Created

Emitted when a task instance is started (queued) from the task type.

Schema file: TaskChanged.xsd

Element	Description
operation	Integer. The code for the task operation. Value is `1`.
operationText	String. The type of the task operation. Value is `created`.

Element	Description
source	String. The user name of the principal (users, groups, and roles on My webMethods Server) who created the task instance.
taskURL	The relative URL for the task on My webMethods Server. This URL can be used to open the task instance in a browser.
oldTask	The old state of the task instance. Not used for this task operation.
newTask	The new state of the task instance. Includes standard information (TaskInfo) and business data, when available, about the task. For more information, see "Task" on page 140.

Task Instance Updated

Emitted when a task instance is modified by a user or by the system.

Schema file: TaskChanged.xsd

Element	Description
operation	Integer. The code for the task operation. Value is `2`.
operationText	String. The type of the task operation. Value is `updated`.
source	String. The user name of the principal (users, groups, and roles on My webMethods Server) who updated the task instance.
taskURL	The relative URL for the task on My webMethods Server. This URL can be used to open the task instance in a browser.
oldTask	The old state of the task instance. Includes standard information (TaskInfo) and business data, when available, about the task. For more information, see "Key Supporting Schemas" on page 140.
newTask	The new state of the task instance. Includes standard information (TaskInfo) and business data, when available, about the task. For more information, see "Key Supporting Schemas" on page 140.

Task Instance Deleted

Emitted when a task instance is deleted.

Schema file: TaskChanged.xsd

Element	Description
operation	Integer. The code for the task operation. Value is `3`.
operationText	String. The type of the task operation. Value is `deleted`.
source	String. The user name of the principal (users, groups, and roles on My webMethods Server) who deleted the task instance.
taskURL	The relative URL for the task on My webMethods Server. This URL can be used to open the task instance in a browser.
oldTask	The old state of the task instance. Standard information (TaskInfo) and business data, when available, about the task. For more information, see "Key Supporting Schemas" on page 140.
newTask	The new state of the task instance. Not used for this task operation.

Key Supporting Schemas

The Task schema provides support for the predefined EDA task event type. The schema can be found in the folder *Software AG_directory*\common\EventTypeStore\WebM\Task\1.0, along with the EDA task event schema.

Task

Provides standard information (TaskInfo) and business data information, when available, about a task.

Schema file: Task.xsd

Element	Description
acceptedbyList	String List. Optional. The IDs (on My webMethods Server) of the users, groups, and roles that have accepted the task.

Element	Description
assignedToList	String List. Optional. The IDs of the principals (users, groups, and roles on My webMethods Server) to which the task is assigned.
attributes	Map. Optional. Contains data that is used by the process run-time. For internal use only.
auditContext	String. Optional. The AuditContext value from the pub.prt:ProcessData document. This value appears in TaskInfo only if the task was queued by a business process.
collaborationProcessID	String. Optional. The unique ID of the collaboration process flow created when a task is used for collaboration workflow.
collaborationStepID	String. Optional. The unique ID of the task step in the process flow when the task is used for collaboration workflow.
createdBy	String. Required. The user ID (on My webMethods Server) of the user that initially queued the task.
createdDate	DateTime. Required. The date and time when the task was queued.
customTaskID	String. Optional. An optional, application-defined identifier for the task. This ID is separate from the internal taskID that the Task Engine uses to identify tasks. The identifier in *customTaskID* is visible in the user interface and is also searchable using the searchTasks operation.
delegatedFromList	String List. Optional. List of user IDs who delegated this task.
delegatedToList	String List. Optional. List of user IDs to whom the task was delegated.
delegationMap	Map. Optional. A map containing task delegation information. The map key is the user ID of the user who delegates the task; the value for the key is the user ID of the users to whom the task is delegated.

Element	Description
	■ *key* String. User ID of delegating user. ■ *value* String. User ID of target user.
description	String. Optional. A descriptive comment or remark associated with the task. This description appears in various places in the My webMethods user interface, such as on the **Details View** tab in My Inbox and in the Task Management Results list.
errorCode	String. Optional. A code that identifies the error condition that caused the task to end. This field is usually present when the value in *status* is "error." However, the Task Engine does not require an application to report an error code, so this field might be null even if the task ends with an error.
errorMessage	String. Optional. A message describing the error condition that caused the task to end. This field is usually present when the value in *status* is "error." However, the Task Engine does not require an application to report an error message, so this field might be null even if the task ends with an error.
expireDate	DateTime. Optional. The date and time when the task expires. When *expireDate* is reached, the Task Engine switches the *status* value for the task to "expired." If an expire date is not specified, the task never expires.
lastAcceptedBy	String. Required. The user ID (on My webMethods Server) of the last user to accept the task. The field is set to null if no user has accepted the task, or when acceptedByList is reset to null.
lastAcceptedDate	DateTime. Required. The date and time the task was last accepted.
lastModifiedBy	String. Required. The user ID (on My webMethods Server) of the user that last updated the task. If a process within the Task Engine was the last entity to modify the task (for example, if the Task Engine marked the task "expired"), this element contains the name of the task rule associated with that process.

Element	Description
lastModifiedDate	DateTime. Required. Date and time when the task was last updated.
name	String. Optional. The name of the task. This name appears in various places in the My webMethods user interface, such as on the **Details View** tab in My Inbox and in the Task List Management Results list.
parentTaskID	String. Optional. The value of the parent task ID in the case when tasks are used for collaboration workflow. When queuing a new task, if a valid taskID is specified for *parentTaskID* , the task to be queued is created as a child task of the parent task.
priority	String. Optional. The priority of the task. Values are: ■ `none` ■ `low` ■ `medium` ■ `high` ■ `critical`
processInstanceID	String. Optional. The ProcessInstanceID value from the pub.prt:ProcessData document. This value only appears in TaskInfo if the task was queued by a business process.
processIteration	Integer. Optional. The ProcessIteration value from the pub.prt:ProcessData document. This value only appears in TaskInfo if the task was queued by a business process.
processModelID	String. Optional. The ProcessModelID value from the pub.prt:ProcessData document. This value only appears in TaskInfo if the task was queued by a business process.
processModelVersion	String. Optional. The ProcessModelVersion value from the pub.prt:ProcessData document. This value only appears in TaskInfo if the task was queued by a business process.
status	String. Optional. The state of the task. Must contain one of the following values:

Element	Description
	■ `new`. Task is new and not yet started. Immediately after the task starts, the status of the task changes from `new` to `active`. ■ `scheduled`. Task is scheduled to start at the specified time. When the task starts, the status of the task changes from `scheduled` to `active`. ■ `active`. Task is active and is available in the user's inbox queue. Only active tasks can be modified by the user. ■ `suspended`. Task is suspended and is not available in the user's inbox queue. Suspended tasks still appear in the Task Management Results list. ■ `completed`. Task has been successfully completed and is no longer available in the user's inbox queue. Completed tasks still appear in the Task Management Results list. ■ `cancelled`. Task has been cancelled and is no longer available in the user's inbox queue. Cancelled tasks still appear in the Task Management Results list. ■ `expired`. Task has expired and is no longer available in the user's inbox queue. Expired tasks still appear in the Task Management Results list. ■ `error`. Task has failed or an unrecoverable error occurred during the processing of the task. This is often due to an incorrect task rule. The *errorCode* and *errorMessage* fields generally contain additional information about the error.
stepID	String. Optional. The StepID value from the pub.prt:ProcessData document. This value only appears in TaskInfo if the task was queued by a business process.
stepIteration	Integer. Optional. The TryCount value from the pub.prt:ProcessData document. This value only appears in TaskInfo if the task was queued by a business process.
taskID	String. Required. A unique identifier assigned to the task by the Task Engine when the task is queued.
taskScheduleDate	Date. Optional. Specifies the date and time when the task should start. If you specify a date that is later than the current date, the task status will be `scheduled`.

Element	Description
	If you do not specify a date, the task status will be `active`. When the task starts at the scheduled time, the global rule for task schedule changes the status of the task from `scheduled` to `active`.
taskTypeID	String. Required. Specifies the task's type. Each task type that is deployed on the Task Engine has a unique ID. This ID is assigned by the developer when he or she creates a task application using Software AG Designer.
taskURL	String. Optional. The relative URL for the task on My webMethods Server. This URL can be used to open the task instance in a browser.
taskVersionNumber	Integer. Required. This is the current version number of the task record that is automatically incremented for each task update action. This property can be used in the updateTask() service. If a value different than 0 is passed in when executing updateTask(), then the Task Engine verifies this value against the current value of the task instance and throws the exception "Task is Out of Date" if they mismatch.
taskData	Base64-encoded String. Optional. The task business data serialized in JSON format.

Importing the EDA Predefined Event Type Project in Designer

Your Software AG installation contains all the predefined event types that have been defined for Software AG products, as well as some sample EDA event types. You can import these event types into Software AG Designer as an EDA event type project in your local event type repository.

After you import the project, it appears in the Package Explorer view, available by default in the Designer Events Development perspective. You can open these EDA event types in the event editor to see how they are constructed, and you can use them as templates for other events.

To import the EDA predefined event type package into your local event type repository

1. In Designer: **File > Import**

2. In the Import dialog box, click **General** and then **Existing Projects into Workspace**. Then click **Next**.
3. Click **Browse** and navigate to this directory in your Software AG installation: *Software AG_directory*`\common\PredefinedEventTypes`.
4. Click **OK** to accept the directory and place it in the **Select root directory** field. If the PredefinedEventTypes project is not already selected in the **Projects** list, select it.
5. Click **Finish**.

After you import the PredefinedEventTypes project, you can access the events in it from the Project Explorer view, available in the Events Development perspective.

Exporting Task EDA Event Settings

You can export the EDA settings for a task type, along with the task type and all other task type settings, from one My webMethods Server to another. For more information about how to export task types and settings within the My webMethods Server run-time environment, see "Exporting and Importing Task Types at Run Time" on page 147.

Archiving Task Data with webMethods Event Persistence

You can persist the EDA events that Task Engine emits to an event store of your choice using webMethods Digital Event Persistence. You can use persisted task events for different purposes such as logging, archiving, and analytics. To emit events from Task Engine, you must configure EDA events as described in "Administering Task EDA Event Emission" on page 134.

Digital Event Persistence can persist Task Engine events to different storage engines such as Elasticsearch and HDFS.

To store Task Engine events with Digital Event Persistence, you must configure an Digital Event Persistence service, as follows:

1. In Software AG Command Central, create a new Digital Event Persistence service for Elasticsearch or HDFS.
2. Configure a custom service group that contains the new service.
3. Associate the new group with the TaskChanged event of Task Engine.

For information about how to create and configure Digital Event Persistence services, see *Software AG Command Central Help* and *Communicating Between Software AG Products Using Event Routing*.

You can configure Task Engine to emit TaskChanged events for different task operations, such as creating, updating, and deleting a task instance. Digital Event Persistence can store the TaskChanged events for all task operations. To enable or disable the emission of EDA events for a particular task operation, see "About EDA Predefined Task Event Types" on page 137.

You can control whether task business data is included in the EDA event, as described in "About Global Settings for EDA Events" on page 135. When persisted together with an event, task business data is encoded in Base64 format.

Exporting and Importing Task Types at Run Time

You can export a task type from one My webMethods Server and import the task type into another My webMethods Server. To do so, you must:

1. Copy the .war file for the task type from the source My webMethods Server to the target My webMethods Server. For more information, see "Exporting and Importing a Task Type" on page 147.
2. Export the task type settings from the target My webMethods Server. For more information, see "Exporting Settings for a Task Type" on page 147.
3. Import the task type settings to the source My webMethods Server or servers. For more information, see "Importing Settings for a Task Type" on page 148.

Exporting and Importing a Task Type

To export and import a task type

1. Copy the .war file containing the task application project from this directory in the source My webMethods Server:

   Software AG_directory\MWS\server\default\deploy

   To this directory on the target My webMethods Server:

   Software AG_directory\MWS\server\default\deploy

   > **Tip:** When you deploy a very large (~200 MB) .war file to My webMethods Server, it is possible that My webMethods Server can attempt to start internal deployment of the file before it is fully copied. In this case, change the file name extension of the .war file before you copy it (for example, to filename .war.tmp). When the copy procedure finishes, rename the .war file back to its original name.

2. The deployed task type is imported by My webMethods Server without having to stop and start the server or run the update command.

Exporting Settings for a Task Type

To export settings for a task type from the target My webMethods Server, you must log on to My webMethods as system administrator.

To export settings for a task type

1. As system administrator: **Folders > Administrative Folders > Administration Dashboard > Migration > Content Import/Export**.
2. On the **Migration Properties** page, configure the following options and click **Next**:
   - For **Migration Source Type**, select **Single Object**
   - For **Migration Mode**, select **Export**
3. In the **Export Name** field, type a name for the exported task type.
4. For **Item to export**, click **Browse**.
5. Navigate to the item to export: **Folders > System > Task > Task Definitions**.
6. Specify the task definition you want to export settings for:
   a. Click the arrow next to the task definition you want to export to place it in the **Selected Items** column.
   b. Click **Select**.
7. In the Exporting Properties window, select a check box for each task setting you want to include in the export.
8. Click **Next**.

   My webMethods Server creates a .cdp file that contains the task type settings to be exported.
9. Typically, your browser will open a save/download dialog box that enables you to save the .cdp file to your file system. If this does not happen, click the download link on the page displayed in My webMethods Server. The downloaded file name is wm_*yourFileName* .cdp.

   Note: Internet Explorer might append a .zip file name extension to the downloaded .cdp file. You must remove this file name extension before you can use the file.

Importing Settings for a Task Type

To import settings for a task type

1. Import the task type as described in "Exporting and Importing a Task Type" on page 147.
2. Copy the exported .cdp file to the *Software AG_directory* \MWS\server\default \deploy directory of the target My webMethods Servers.

   The deployed settings file is imported by My webMethods Server without having to stop and start the server or run the update command.

5 Running Task Engine on Integration Server

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About Task Engine on Integration Server

In a typical webMethods installation Task Engine and Process Engine reside on different runtimes - My webMethods Server and Integration Server; and communicate over the network to exchange data between processes and tasks. You can install webMethods Task Engine as a layered product on Integration Server and benefit from direct in-process communication with Process Engine on a single runtime, while keeping the task administration and end-user interfaces on a separate My webMethods Server/Business Console node.

When you install Task Engine on Integration Server, Task Engine uses the database, together with Universal Messaging as a JMS provider to communicate and synchronize with the My webMethods Server instance that hosts the task administration interfaces, and REST interfaces to communicate with webMethods Business Console.

My webMethods Server displays the Task Engine instance, running on Integration Server as a cluster node on the **Cluster Administration** page in My webMethods, but does not provide status information or administration options for the node.

About Task Engine Packages on Integration Server

A Task Engine installation as a layered product on Integration Server consists of two Integration Server packages. The wmTaskEngine package is the run-time component that contains all Task Engine services. The wmTaskAssets is the assets package that stores the deployed task applications for execution at runtime.

For more information about services in the wmTaskEngine package, see "About Services in the WmTaskEngine Package" on page 150.

About Services in the WmTaskEngine Package

Services in the wmTaskEngine package can be invoked by other webMethods products such as Process Engine or Dynamic Business Orchestrator from the wmTaskClient package.

To invoke Task Engine services from custom applications, you use the services in the wmTaskClient package. For more information about the services in the wmTaskClient package and how to use the Task Engine API, see *webMethods Task Engine API and Service Reference*.

Before you can use Task Engine services with the wmTaskClient package, you must configure the connection between Task Engine and the wmTaskClient package, as described in "About the Task Engine Configuration" on page 156.

Installation Requirements and Post-Installation Steps

When you install webMethods Task Engine as a layered product on Integration Server, you must also install the following webMethods products and components:

- My webMethods Server - for permission configuration, task administration, and running Business Console. To use the task administration interfaces in My webMethods, you must also install Task Engine on My webMethods Server.
- Business Console - for creating and displaying task user interfaces.
- Universal Messaging - for JMS messaging and synchronization between Task Engine and My webMethods Server.
- wmTaskClient - for communication with Process Engine or Dynamic Business Orchestrator.
- webMethods Deployer and Asset Build Environment - for building and deploying task applications, created with Designer or exported from an existing Task Engine installation on My webMethods Server.

During installation, you must specify the same database and Universal Messaging server for My webMethods Server and Integration Server.

After you complete the product installation and before you initialize the product instances, do the following:

- Create the database components for My webMethods Server and any other products in the installation, using the Database Component Configurator.
- Create a My webMethods Server instance that uses the same database as Task Engine on Integration Server.
- Start the Universal Messaging server and configure the My webMethods Server cluster settings with the URL to the Universal Messaging server. For more information about the My webMethods Server cluster configuration, see *Administering My webMethods Server*.
- Open the `ini.cnf` file for the Integration Server instance that hosts Task Engine in a text editor and verify whether the following lines are present in the file:

  ```
  %COMMON_LIB%wm-caf-ws-wss.jar;\
  %COMMON_LIB%wm-caf-ws-glue.jar;\
  %COMMON_LIB_TASK_ENGINE%reflections.jar;\
  %COMMON_LIB_TASK_ENGINE%javassist.jar;\
  ```

  If any of the lines are not present, add them to the bottom of the file. You can find the `ini.cnf` file for Integration Server in *`SoftwareAG_directory`*`\IntegrationServer\instances\`*`instanceName`*`\bin`. Start/restart the Integration Server instance after modifying the file.
- Configure a connection to a JDBC data source for the Central Users (CDS) component in Integration Server and point it to the My webMethods Server database. This step is not required when you install Integration Server and

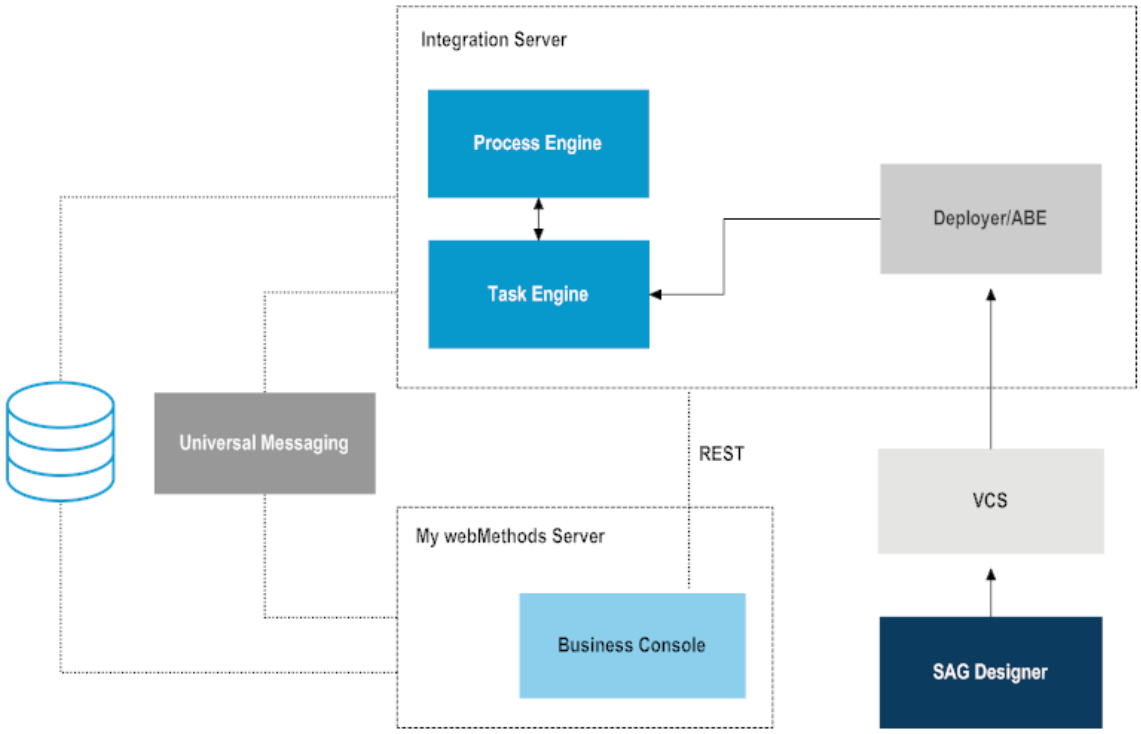
My webMethods Server on the same machine and create and initialize a My webMethods Server instance. For more information about creating JDBC pools, see *webMethods Integration Server Administrator's Guide*.

Using Task Engine on Integration Server with the webMethods Suite

The typical flow of actions when using Task Engine on Integration Server with other webMethods products to create, run, administer, and work with user tasks is as follows:

- A task developer creates a task type in Software AG Designer, or exports an existing task type from a Task Engine instance, running on My webMethods Server.
- A task developer then deploys the task type to Task Engine on Integration Server using webMethods Deployer.
- A gadget developer creates and configures the task end-user interfaces in Business Console.
- A task administrator configures access permissions in My webMethods, as described in "Configuring Task Access Permissions" on page 95.
- Business processes and task administrators with the appropriate permissions queue instances of the deployed task type.
- Task end-users work with the task in Business Console.

The following diagram shows a high-level overview of the interactions between products and components of a single-node installation of Task Engine on Integration Server.



Task administrators configure and administer task types in My webMethods and Business Console, but end-users interact with tasks, running in Task Engine on Integration Server using only user interfaces in Business Console.

Custom services and applications can interact with tasks using the Task Engine API.

For information about developing task applications with Designer, see *webMethods BPM Task Development Help*.

For information about how to export assets from My webMethods Server, see *Administering My webMethods Server*

For information about how to deploy task types on Task Engine on Integration Server, see *webMethods Deployer User's Guide*.

For information about creating task user interfaces for Business Console, see *Developing Gadgets for webMethods Business Console Guide* and *Working with webMethods Business Console*.

For more information about developing and administering business processes, see *webMethods BPM Process Development Help* and *Administering webMethods Process Engine*

For information about how to work with tasks types and instances using the Task Engine APIs, see *webMethods Task Engine API and Service Reference*.

6 Configuring the Task Engine Environment

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About the Task Engine Configuration

In a typical production environment webMethods Task Engine interacts with other webMethods components, such as Process Engine or Dynamic Business Orchestrator, and webMethods Monitor. To enable proper operation, you must configure the connection between Task Engine and the other webMethods components. The configuration settings are specific to the runtime on which Task Engine is installed.

For Task Engine on My webMethods Server, you must configure the following:

- In My webMethods, a connection to the Integration Server on which Process Engine is installed to enable Task Engine to provide results from completed tasks to the Process Engine. You do this by specifying the location of the Integration Server on which the Process Engine is running.
- In Integration Server Administrator, a connection between the Process Engine and Task Engine that it is to work with. You do this by specifying the location of the My webMethods Server on which Task Engine is running on the configuration page of the wmTaskClient package.

The Task Engine also requires a connection to a JDBC data source on Integration Server to enable the Task Engine to provide log events for webMethods Monitor. When the Task Engine first requires this connection, it queries the specified Integration Server to determine the name of this JDBC pool, and configures a connection automatically. If the name or location of the JDBC pool on Integration Server changes, you can redefine the configuration as described in "Configuring a JDBC Data Source" on page 163.

For Task Engine on Integration Server, you must configure the location of the Integration Server on which Task Engine is installed. You do this on the configuration page of the wmTaskClient package, by specifying the location of the Integration Server, or selecting in-process communication when Task Engine and Process Engine are installed on the same Integration Server.

Running Task Engine in a Clustered Environment

Depending on the runtime on which Task Engine is installed certain requirements and considerations apply for using Task Engine in a clustered environment.

For Task Engine on My webMethods Server:

- If you are working in a clustered Integration Server environment, all Process Engines in the cluster typically share a single instance of webMethods Broker (deprecated) or Universal Messaging, a Process Engine database component, or both. In this case you can connect from Task Engine on My webMethods Server to any Integration Server/ Process Engine in the cluster. Communications will be established with all Process Engines in the cluster.
- If you are working in a clustered My webMethods Server environment, you must apply the Task Engine server role to each server node in the cluster, as described

in *Administering My webMethods Server*. This role must be applied to all nodes of the cluster where Task Engine operations are performed; for example, tasks being worked on (either from an inbox or Task List Management) or queued from the Process Engine. If there are nodes in the cluster where these operations would never happen, this role can be omitted from these nodes.

For Task Engine on Integration Server:

- When Task Engine is running on Integration Server, you use a separate My webMethods Server/Business Console node to administer tasks and provide task user interfaces. Task Engine registers as a My webMethods Server cluster node and requires Universal Messaging for JMS communication and event synchronization.
- When creating a clustered environment, you must add Task Engine instances, running on either Integration Server or My webMethods Server. You cannot create a cluster of Task Engine instances, running on different servers.

Configuring Task Engine in My webMethods

When you install all products on the same machine at the same time, the connection between Task Engine on My webMethods Server and Process Engine on Integration Server is configured at the time of installation. During installation, the connection is configured with the default user name and password `Administrator/manage` and the default Integration Server host and port which are `localhost:5555`. If your installation requires different settings, use the following procedure to configure the connection.

To configure the Task Engine in My webMethods

1. In My webMethods, navigate to **Applications > Administration > My webMethods > System Settings > Task Engine**.
2. In the **Task Engine Settings** section of the System Settings panel, specify the following settings to connect to the Process Engine on the Integration Server you want to work with:
   - **Username** - the name of the user account to use to connect to Integration Server. The user must be a member of the Administrators group on the Integration Server.
   - **Password** - the password for the specified user account.
   - **Password Confirmation** - re-type the password for the specified user account.
3. In the **Integration Server (Process Engine Host)** section of the System Settings panel, specify:
   - **Host** - the URL of the Integration Server where the Process Engine is running.
   - **Port** - the port number of the specified Integration Server host.
4. If you are connecting to the Integration Server in a Secure Socket Layer environment, select the **Use SSL** check box.

5. Click **Save**.

Configuring the Task Engine Logging Level

By default, the Task Engine records task application log messages into the My webMethods Server log files, which are located in the following directory: *Software AG_directory*\MWS\server*serverName* \logs.

with a logging level of INFO, which reports only limited information. To help analyze Task Engine problems or to assist with task application development, it can be useful to have the Task Engine log more information; this is done by setting the DEBUG value for task applications.

Note: This setting has no relationship to the information displayed on a task's **Audit View** tab; for more information on that capability, see "Specifying Task Audit View Logging Levels" on page 126.

To configure the Task Engine logging level

1. Log in to My webMethods as sysadmin.
2. In My webMethods: **Folders > Administrative Folders > Administration Dashboard > Analysis > Logging Configuration**. This page controls logging levels for all available logging categories in My webMethods Server. For more information working with logging levels in general, see *Administering My webMethods Server*.
3. Locate the **task** logging category and select the DEBUG logging level. You can also set logging levels for individual task applications, as well as for:
   - /wm_task_analytics
   - /wm_task_chart
   - /wm_task_migration
   - /wm_task_search
4. Depending where you would like the output to show up (in the console, in the logs, or both) select the DEBUG value for Console and log file output.
5. Click **Apply**.
6. Log out as sysadmin.

When you complete the procedure you are working on, be sure to log back in to My webMethods as sysadmin and set the logging level back to INFO; otherwise, your log files will grow at a much faster rate.

Configuring HPSTRA

With the High-Performance Task Search Reference Architecture (HPSTRA) module in Task Engine you can store and search task business data on an Elasticsearch server. Task Engine uses a built-in REST client to communicate to Elasticsearch.

You enable and configure the HPSTRA module in My webMethods. You can use the predefined module settings that Task Engine provides, or apply custom settings to match an existing Elasticsearch configuration.

To configure the HPSTRA module

1. In My webMethods, navigate to **Applications > Administration > Business > Task > HPSTRA Configuration**.
2. By default, the HPSTRA module is disabled. Select **Enable Module** to enable it.

   Note: After you enable the module, you can add a preset configuration with default values for all configurable fields by clicking **Create Default**. All default values for the Task Engine HPSTRA module are described in the following tables. For the default values of configurations specific to Elasticsearch, see the Elasticsearch documentation.

3. On the **Basic** tab, click **Add** to add an Elasticsearch server, and specify the following settings in the **Add new Elasticsearch sever** dialog:

Field	Description
Host	The host name of the server where Elasticsearch is installed. The default value is `localhost`.
Port	Optional. The port number to connect to the Elasticsearch server. The default value is `9200`.
Use SSL	Select to enable secure communication to the Elasticsearch server. Disabled by default.

4. Under **Authentication**, select **Enable Authentication** and type the name and password of the user to connect to the Elasticsearch store.

   The Authentication settings are required when the Elasticsearch server is configured to use basic authentication. For more information, see the Elasticsearch documentation.

5. To configure advanced HPSTRA settings, go to the **Advanced** tab. Click **Edit** to open the configuration dialog for each section.

a. In the **Connection Pool** section, specify the following settings for connecting to the Elasticsearch server:

Field	Description
Connection Timeout	The time in seconds to wait for establishing a connection to the Elasticsearch server. The default value is `60`.
Request Timeout	The time in seconds to wait to get a response from the Elasticsearch server, before failing the request. This setting applies to all requests that Task Engine sends to the Elasticsearch server, for example requests to persist or search task data. The default value is `60`.
Maximum Connections	The maximum number of connections to the Elasticsearch server in the connection pool. The default value is `50`.

b. In the **Auto Discovery** section, specify the following Elasticsearch clustering settings:

Field	Description
Enabled	Select to enable the automatic discovery of available Elasticsearch nodes for round-robin distribution of requests across the nodes in the cluster. This option is disabled by default.
Polling Interval	Time interval in seconds to poll and update the list of Elasticsearch servers when the automatic discovery of cluster nodes is enabled. The default value is `10`.

c. In the **Persistence** section, specify the following data storing settings:

Field	Description
Consistency	The number of available shards or replicas that Elasticsearch requires when indexing or deleting task data. The options are: ■ **quorum** - Default. Elasticsearch requires that the majority of shards or replicas are available before indexing or deleting task data. The majority consists of half the shards and replicas in the cluster (including the primary shard), plus one more shard.

Field	Description
	■ **one** - Elasticsearch requires that only the primary shard is available before persisting the task data. ■ **all** - Elasticsearch requires that the primary shard and all replicas are available before persisting the task data. For more information about consistency settings, see the Elasticsearch documentation.
Timeout	The time in seconds to wait for the required number of shards or replicas to become available. Select **Use Elasticsearch Defaults** to use the default Elasticsearch setting. For more information about the default setting, see the Elasticsearch documentation.

d. In the **Create Index** section, specify the following index creation settings:

Field	Description
Append Cluster ID	Enabled by default. The HPSTRA module creates an Elasticseach index for every HPSTRA-enabled task type. When this option is enabled, the HPSTRA module appends the ID of the My webMethods Server cluster node to the name of the Elasticsearch index and creates an index name in the following format: `sag_mws_te_taskdef_`*`taskTypeID_clusterID`*.
Number of Shards	The number of shards to include when creating the Elasticsearch index. Use this setting to improve the scalability of the Elasticsearch cluster. Select **Use Elasticsearch Defaults** to use the default Elasticsearch setting. For more information about Elasticsearch shards and default settings, see the Elasticsearch documentation.
Number of Replicas	The number of replicas to include when creating the Elasticsearch index. Use this setting to improve the availability of the Elasticsearch cluster. Select **Use Elasticsearch Defaults** to use the default Elasticsearch setting.

Field	Description
	For more information about Elasticsearch replicas and default values, see the Elasticsearch documentation.

Note: The shard and replica settings apply only when creating a new Elasticsearch index using the HPSTRA configuration page. You cannot modify an existing Elasticsearch index through the HPSTRA configuration page.

e. In the **Synchronization** section, specify the following guaranteed delivery settings:

Field	Description
Enabled	Select to enable the synchronization between the nodes in a My webMethods Server cluster for guaranteed delivery of tasks and task types to the Elasticsearch server. When synchronization is enabled and a cluster node fails to persist a task entry to Elasticsearch, the node stores the entry in the My webMethods Server database. All My webMethods Server nodes poll the database, retrieve failed task entries in batches, and retry persisting the entries in Elasticsearch until all entries are successfully persisted. If a node tries to store a task, but a newer version of the task is already persisted, the node discards the old version. You can configure the time interval for polling, and the number of events in the batches.
Polling Interval	The interval in seconds at which My webMethods Server nodes poll the server database for failed task entries, and retry sending the entries to Elasticsearch. The default value is `20`.
Batch Size	The number of failed task entries that My webMethods Server nodes retrieve from the server database in a single read operation. A particular entry can be included only in one batch at a time. The default value is `100`.
Lock Timeout	The interval of time in minutes for which a My webMethods Server node can lock a task entry for processing. After a lock expires, other My

Field	Description
	webMethods Server nodes can pick up the entry for processing. The default value is `10`.

f. In the **Search** section, specify the following distributed search settings:

Field	Description
Search Type	The type of search to execute across the shards of an Elasticsearch index. Use these settings to control how Elasticsearch calculates the relevancy of the documents in the index to a specified search query. The options are: ■ **Query then Fetch** - Default. Elasticsearch calculates the term/document frequency for a search request locally for each shard and returns aggregated search results from relevant shards. ■ **Dfs, Query then Fetch** - Elasticsearch calculates the term/document frequency for a search request across all shards in the index. This option increases the relevancy of search results, but includes a preliminary search phase which decreases the search speed. For more information about search types and search term relevancy options, see the Elasticsearch documentation.
Timeout	The interval of time in seconds for which to wait before failing the search request. Select **Use Elasticsearch Defaults** to use the default Elasticsearch setting. For more information about the default setting, see the Elasticsearch documentation.

6. Click **Save Configuration**.

Configuring a JDBC Data Source

To enable the Task Engine to provide log events for webMethods Monitor, a JDBC data source must be specified as a JDBC pool existing on the Integration Server specified in "Configuring Task Engine in My webMethods" on page 157. Otherwise, it will not be possible to view task-related information when browsing process instances with webMethods Monitor.

The name of the pool must be `ProcessAudit` and it must point to the process audit database used by webMethods Monitor. If this JDBC pool is not already defined locally on the My webMethods Server, the Task Engine automatically checks to see if this pool exists on the configured Integration Server. If the pool is defined there, the Task Engine creates an identical pool in My webMethods Server.

Note: The Task Engine checks for the presence of an existing pool on the configured Integration Server only after the first task is queued from a business process following a start-up of My webMethods Server. During the interval between start-up and the queuing of the first task from a business process, the JDBC pool may not exist on My webMethods Server.

In general, no manual configuration is required. However, in the event the name or location of the JDBC pool on Integration Server changes, you can redefine the configuration as follows:

To reconfigure a Task Engine JDBC data source

1. In My webMethods: **Navigate > Applications > Administration > My webMethods > Data Sources**. This panel displays all available data sources. Note that the **default** data source cannot be deleted or modified.
2. On the Data Source panel, click for the `ProcessAudit` data source and choose **Modify** from the menu.
3. On the Data Source Properties panel, modify the display name and database server type from list if required.
4. Click **Next**.
5. Modify the required database connection information as needed:
   - Server host name
   - Server port number
   - Database name
   - User name
   - Password
6. Click **Submit**.

Creating a Task Time-to-Live Eviction Policy

You can create a Time-to-Live (TTL) eviction policy for My webMethods Server caches to remove tasks based on the last used object date. This policy enables automatic shrinkage of caches by removing completed tasks that are no longer being accessed, thus allowing more space for active tasks in the cache. To configure a TTL eviction policy, you must add the following setting to "TaskDataCache" and "Thing Cache" in the cache.xml. To do so:

1. Obtain the cache.xml configuration file by running the following command: `MWS/bin/mws.bat|sh getconfig cache.xml`

   This saves a local copy of cache.xml to MWS/server/default/config.

2. Open /MWS/server/default/config/cache.xml and edit the following cache configuration attributes in "TaskDataCache" and "Thing Cache" in the cache.xml file:

   - `lastAccessedEvictionPolicy="true"`
   - `timeToLive="seconds"`

3. Save the file.

4. Upload cache.xml back to the database by running the following command: `MWS/bin/mws.bat|sh putconfig cache.xml`

This setting specifies that if an entry is not accessed in the cache for the specified number of seconds, then it will be automatically evicted from the cache. For example, to set a 24 hour eviction policy:

```
<cache name="Thing Cache"
  class="com.webmethods.portal.service.meta2.impl.ThingTransientCache"
  maxSize="10000"
  isClustered="true"
  timeToLive="86400"
  lastAccessedEvictionPolicy="true"
  ID= "1"
  enabled="true"/>
<cache name="TaskDataCache"
  class="com.webmethods.portal.service.cache.impl.TransientCache"
  maxSize="10000"
  isClustered="true"
  timeToLive="86400"
  lastAccessedEvictionPolicy="true"
  ID="12"
  enabled="true"/>
```

Working with Business Calendars

Software AG Designer and My webMethods Server support the use of business calendars and user calendars to assist with task definition and behavior. Both business and user calendars are set up and configured in My webMethods Server. Each type of calendar is configured separately, and you can define business calendars only, user calendars only, or both.

Business calendars define standard business days and hours for your business organization, including holidays, weekends, or any other times when your organization is not conducting business. For example, you might define your business calendar for normal business hours of Monday through Friday, 8:00 A.M. to 5:00 P.M. Eastern Standard time. You can define multiple business calendars.

These business calendars are defined in My webMethods Server and can be specified when you define a task date/time event type, for example. This ensures that when counting days, only business days will be considered and that non-business days such as weekends and holidays are not included.

A business calendar can also be associated with a process. In this case, the business calendar is used only to determine process time outs and joins and does not apply to any tasks in the process.

Creating a Business Calendar

You can create multiple business calendars, enabling you to accommodate operations that may span different locations. For example, you may have an office in one location that works 8 A.M. to 4:30 P.M Monday through Friday, and another office that works 8 A.M. to 6:30 P.M Tuesday through Friday.

In this case, you can define two different business calendars, and associate users in each location with the appropriate calendar. When calculating time intervals, the Task Engine will take the proper business schedule into account.

Note: After you create a business calendar on an instance of My webMethods Server version 8.2 or later, you can use webMethods Deployer to migrate the calendar to other instances of My webMethods Server. In addition, in Software AG Designer 8.2 or later, you can locate the business calendar in the MWS Admin view, right-click it and then click **Import/Export > Extract Asset Into Project**. This extracts the calendar into a deployable My webMethods Server component.

To configure a business calendar

1. In My webMethods: **Navigate > Applications > Administration > System-Wide > Calendars Management**.
2. Click on the **Business Calendars** tab.
3. On the Calendar Administration panel, click **Create New Calendar**.
4. On the Create New Calendar panel, enter the following:
   - **Name** — A name for the calendar; this name must be unique within My webMethods Server. This name is displayed in the My webMethods and Designer interfaces as the name of the calendar.
   - **Lookup Name** — This is an internal name (or alias) used to identify the calendar. This name must be unique within My webMethods Server. For example, a task may define an event to set an expiration date based on business calendar. The calendar to use may be specified during task design time or it could be taken from a piece of business data; in either case, the task will use the lookup name to identify the given calendar.
5. The time zone is set to the system time zone by default. If you are setting up a calendar for another time zone, select it from the drop-down list.
6. Add the workdays of the week by clicking the New Workday link. The New Workday dialog box appears.
7. Select the day of the week, specify the hours of the day, and click **Add**.

8. Repeat steps 5 and 6 to add additional days of the week.
9. Add any holidays you want to include in the calendar by clicking the New Holiday link. The New Holiday dialog box appears.
10. Enter a name for the holiday. Click to select a date, and then specify the duration (one day, by default). Click **Add**.
11. Repeat steps 8 and 9 to add additional holidays.

> **Important:** Calendars are not limited to the current year, but continue automatically into following years. *Holidays are not carried forward from year to year, and must be manually defined for each calendar year*. Consider creating a task (or other reminder) to notify you near the end of a year to schedule holiday date creation for the coming year.

12. To delete a workday or a holiday from the calendar, click next to the workday or holiday.
13. Click **Create New**.

The new calendar appears in the Calendar Administration list. Be sure you specify a default business calendar, as described in "Specifying a Default Business Calendar" on page 167.

Specifying a Default Business Calendar

When you define a My webMethods user, you can specify a business calendar for the user. By default, this value is set to "Default," indicating that the default calendar specified on the Calendar Administration panel is used.

> **Important:** No default calendar is defined initially. If you do not specify a default calendar, any user with the Default calendar will have no business calendar association.

To specify a default business calendar

1. In My webMethods: **Navigate > Applications > Administration > System-Wide > Calendars Management**.
2. Click on the **Business Calendars** tab.
3. On the Calendar Administration panel, select the calendar you want to specify as the default calendar.
4. Click **Set As Default**.
5. The word **Yes** is displayed in the **Default Calendar** column for that calendar.

Modifying a Business Calendar

To modify a business calendar

1. In My webMethods: **Navigate > Applications > Administration > System-Wide > Calendars Management**.
2. Click on the **Business Calendars** tab.
3. On the Calendar Administration panel, click the link for the calendar in the **NAME** column. The Edit Calendar panel appears.
4. Make changes to the calendar as described in "Creating a Business Calendar" on page 166.

   Important: You can change the calendar Name as needed, but *changing the Lookup Name will break any associations made to the calendar* for My webMethods Server users, and for any tasks or processes that reference the calendar. In this case, the task or process will revert to calculating time intervals using every day of the week (including weekends and holidays).

5. Click **Update** to save the changes.

Deleting a Business Calendar

Important: *Deleting a calendar will break any associations made to the calendar* for My webMethods Server users, and for any tasks or processes that reference the calendar. In this case, the task or process will revert to calculating time intervals using every day of the week (including weekends and holidays).

To delete a business calendar

1. In My webMethods: **Administration > System-Wide > Calendars Management**
2. Click on the **Business Calendars** tab.
3. On the Calendar Administration panel, select the calendar you want to delete.
4. Click **Delete**.A confirmations dialog appears.
5. Click **Delete**.

Specifying a Business Calendar for a User Account

To specify a business calendar for a user

1. In My webMethods: **Navigate > Applications > Administration > System-Wide > User Management**.
2. Click **Users**. All of the user accounts available in My webMethods are displayed in the Users panel.

3. Click the **User ID** link for the user account, or click for the role.
4. On the Edit User page, click the **Calendar** tab.
5. Do one of the following:
   - If you have created and specified a default business calendar as described in "Specifying a Default Business Calendar" on page 167, and you want the user account to be associated with the default calendar, ensure that **Default** is selected in the **Business Calendar** list. If it is not, select **Default**.
   - If you have created and specified another (non-default) business calendar and you want the user account to be associated with that calendar, select the calendar in the **Business Calendar** list.
6. Click **Save**

Working with Personal User Calendars

Personal user calendars are maintained in a third-party application such as Microsoft Outlook or Lotus Notes, where the user maintains daily calendar events that define the user's availability. When a task is being assigned to or accepted for another user, the Task Engine checks the user's personal calendar to determine if the user is available on this working day, taking into consideration only Out of the Office and Busy types of calendar events that are *scheduled for the entire day*.

You can also view a user's personal calendar on the Task List Management page in My webMethods when you manually assign a task or accept a task for another user. In this case, all of the events in the user's calendar are displayed.

You can configure My webMethods Server to provide access to user calendars, enabling you to view individual user calendars. User calendars are accessible when you are assigning a task, or accepting a task for others, on the Task List Management page.

When you open the Select Principals dialog box and select a user, a small calendar icon appears next to the user name if a user calendar is configured for that user. When you click on the icon, the user's calendar appears, and you can determine when the user is available.

You can also view the user's calendar on the **Calendar** tab of the Edit User page, accessed from **Navigate > Applications > Administration > System-Wide > User Management > Users**.

Configuring User Calendars — Microsoft Exchange

Configuration of user calendars has the following prerequisites:

- You must have a network connection to your e-mail server.
- You must have the URL of the Microsoft Exchange server. Consult with your mail server administrator to obtain this information.
- Each user account must be configured with the user's e-mail address as recognized by the e-mail server. Navigate to **Navigate > Applications > Administration > System-Wide >**

User Management > Users. Click the **User ID** link to open the Edit User panel and specify the user's e-mail address.

> **Note:** This typically needs to be done only for users that have been created manually in My webMethods. Users derived from an LDAP directory would normally already have an e-mail address.

To configure user calendars for Microsoft Exchange

1. In My webMethods: **Navigate > Applications > Administration > System-Wide > Calendars Management**.
2. Click the **User Calendars** tab.
3. On the User Calendars Configuration panel, enter the following:
   - **External User Calendar**—Select Microsoft Exchange from the drop-down list.
   - **External host name or IP**—Enter the URL for the Exchange e-mail server; for example, `main.mail.server.com`. To use a secure connection to the server, you must specify a server URL starting with https://. Otherwise, the http protocol is used by default.
   - **Email User Attribute**—This is the attribute from User attribute page that is used to pass the e-mail account name to the server to identify the correct user calendar on the Exchange server. The default value `email` passes the e-mail address entered on the Edit User page; in most cases, this is the information required by the server. If this value does not work, consult with your mail server administrator to determine the required value. In this case, you must define a new dynamic attribute at the role level and configure it to pass the required information.
   - **Calendar Data Caching**—This value specifies how often the user calendar information is retrieved from the mail server. Select a value from the drop-down list. The information is cached in My webMethods Server until the next refresh time. Select No Cache to retrieve the calendar information from the mail server with each request.
   - **Time Window** —This value specifies the calendar time period that is retrieved from the mail server, beginning with today's date. Select from the drop down list.
   - **Time Slot**—This value defines the time divisions displayed in the user calendar. Events that are of a shorter duration than the selected value are "rounded up" to the selected value. Select a value from the drop-down list.
   - **Exchange User**—The user name for connecting to the Exchange server.
   - **Exchange User Password**—Password for the Exchange user.
4. Click **Update**.
5. In My webMethods: **Navigate > Applications > Administration > System-Wide > User Management > Users**.
6. Click the **User ID** link to open the Edit User panel.

7. Click the **Calendar** tab. The calendar appears in the User Personal Calendar panel.

Configuring User Calendars — Lotus Notes

Configuration of user calendars has the following prerequisites:

- You must have a network connection to your e-mail server.
- You must have the URL of the Lotus Notes Domino server. Consult with your mail server administrator to obtain this information.
- You (or your mail server administrator) must apply configuration changes to your Lotus Notes Domino server, as described in "Configuring the IBM Lotus Domino Server" on page 173.
- You must install the notes.jar file in the My webMethods Server file system, as described in "Installing the notes.jar File" on page 172.
- Each user account must be configured with the user's e-mail address as recognized by the e-mail server. Navigate to **Navigate > Applications > Administration > System-Wide > User Management > Users**. Click the **User ID** link to open the Edit User panel and specify the user's e-mail address.

To configure user calendars for Lotus Notes

1. Ensure that all prerequisite activities have been completed.
2. In My webMethods: **Navigate > Applications > Administration > System-Wide > Calendars Management**.
3. Click the **User Calendars** tab.
4. On the User Calendars Configuration panel, enter the following:
   - **External User Calendar**—Select IBM Lotus Notes from the drop-down list.
   - **Calendar hostname or IP**—Enter the URL for the Lotus Domino e-mail server containing the desired calendar; for example, `main.mail.server.com`.
   - **Calendar Server Port**—Enter the port number for the Lotus Domino e-mail server containing the desired calendar
   - **Email User Attribute**—This is the attribute from User attribute page that is used to pass the e-mail account name to the server to identify the correct user calendar on the Lotus Domino server. The default value `email` passes the e-mail address entered on the Edit User page; in most cases, this is the information required by the server. If this value does not work, consult with your mail server administrator to determine the required value. In this case, you must define a new dynamic attribute at the role level and configure it to pass the required information.
   - **Calendar Data Caching**—This value specifies how often the user calendar information is retrieved from the mail server. Select a value from the drop-down list. The information is cached in My webMethods Server until the next refresh

time. Select No Cache to retrieve the calendar information from the mail server with each request.

- **Time Window**—This value specifies the calendar time period that is retrieved from the mail server, beginning with today's date. Select from the drop down list.
- **Time Slot**—This value defines the time divisions displayed in the user calendar. Events that are of a shorter duration than the selected value are "rounded up" to the selected value. Select a value from the drop-down list.
- **Notes Admin User ID**—Administrator user name for connecting to the Lotus Domino server.
- **Notes Admin Password**—The password for the administrator user.

5. Click **Update**.
6. In My webMethods: **Navigate > Applications > Administration > System-Wide > User Management > Users**
7. Click the **User ID** link to open the Edit User panel.
8. Click the **Calendar** tab. The calendar appears in the User Personal Calendar panel.

Installing the notes.jar File

Access to IBM Lotus Notes user calendars requires the use of the Notes.jar file. This file is distributed with the Lotus Notes Domino server installation and can be found in this directory:

```
..\jvm\lib\ext
```

Copy this file and place it in the My webMethods Server file system in the following directory:

Software AG_directory]\MWS\lib\ext

> **Important:** It is your responsibility to read and conform to all IBM requirements concerning the use and distribution of this jar file.

After the jar file is in place, you must update My webMethods Server.

To update My webMethods Server

1. If My webMethods Server is running, stop it.
2. Open a command window and change directory to: [

   Software AG_directory]\MWS\bin
3. Run the following update command:

   ```
   mws -s [Name of your MWS] update
   ```

   > **Note:** Unless you have specified a My webMethods Server name during installation, the name `default` is applied to the installation.

4. Start My webMethods Server.

Configuring the IBM Lotus Domino Server

The installation, setup, and configuration is intended to be done by a qualified Lotus Notes Administrator that is qualified and trained on the Domino Server version 7.

Note that the following documents and information are based on the Domino version 6, but the user calendar feature has been developed and tested on a Domino version 7. There is no implied or expressed backward compatibility with the earlier version of the IBM Domino server. For configuration and trouble-shooting information, see the IBM web site.

Make the following changes to your Domino server:

Important: If you are configuring over a remote connection do not issue quit or restart commands in the Domino server console. This will terminate your Lotus Domino server connection and it will have to be restarted from an admin session on the physical Lotus Domino server machine.

- On the Internet Protocols tab, HTTP tab and R5 Basics tab, Set the "Allow HTTP clients to browse databases" field to Yes.
- On the Internet Protocols tab and the DIIOP tab, specify the Internet host name for the server in the Host name/Address field (Domino Internet Inter-Orb Protocol).
- Anonymous access must be allowed. In the Server document in the Domino Directory, go to the Ports tab, then the Internet Ports tab, then the Web tab. Ensure that the Anonymous field under Authentication options is set to Yes.

Useful Lotus Domino server console commands:

- `tell diiop show config` — this lists all the configuration information that is needed for setting up the server. If this shows an error then DIIOP may not be loaded. If DIIOP is not loaded than run this command:
- `load diiop` — this will also refresh/update the DIIOP setting instead of waiting the default time interval (5 minutes) for updates.

Configuring a Task E-mail Listener

Task notifications can be configured to contain a Task Action Link control, which enables the recipient to send a predefined e-mail response to a specified e-mail account; you must specify and configure a task e-mail listener to monitor the e-mail account for incoming messages.

You can configure multiple e-mail listeners to monitor different mailboxes on different schedules. When the listener checks the specified account, it downloads any e-mails in the monitored account. For more information about creating task notification e-mail replies, see *webMethods BPM Task Development Help*.

To configure a task e-mail listener

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Email Listener Administration**.
2. In the Task Email Listener Administration window, specify the following settings:
   - **Name**—The name you want to assign to this listener.
   - **Type**—Select either **POP3 Mailbox** or **IMAP Mailbox** from the drop-down list.
   - **Run Every**—Select an interval that determines how often the specified server is contacted.
   - **Email Server**—The host name of the mail server.
   - **Port**—The incoming server port. For example, by conventional usage:
     - POP3: 110
     - POP3 secure: 995IMAP: 143IMAP secure: 993
   - **Is secure**—Indicates if a secure SSL (Secure Socket Layer) connection is required.
   - **User name**—User name with access to a mail account.
   - **Password**—Password for the specified user name.
3. Click **Create**.

When the listener checks the specified account, it downloads any e-mails in the monitored account and deletes the e-mail from the server.

Managing Task E-mail Listeners

After you create a task e-mail listener, you can modify or delete an e-mail listener.

To modify or delete a task e-mail listener

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Email Listener Administration**.
2. In the Task Email Listener Administration window, do either of the following:
   - To delete a listener, select the check box for the listener, then click **Delete**.
   - To modify a listener, click the link to the listener in the **Name** column, apply your changes, and then click **Update**.

About E-mail Listener Security

Security concerns must be addressed as the task e-mail listener effectively provides access to the Task Engine through an e-mail gateway.

In the case of task notifications, the key security considerations concern the following scenarios:

- A subscribed user uses the e-mail notification to perform an action on a task he does not have permission to work with.
- A subscribed user uses the e-mail notification to perform an action on a different task from the one that sent the notification e-mail.
- A malicious user attempts to spoof a reply e-mail and execute an action on an arbitrarily task.

This request body created by the Task Action Link is sent to the specified e-mail account monitored by the Task Engine, encoding the following data:

- TaskID—identifier of the task.
- GUID—A unique, one-time security ID assigned to this notification. This is used to prevent a user from spoofing an e-mail and performing actions on arbitrarily tasks.
- Action identifier—ID of an action to be performed on given task when the e-mail is processed by Task Engine. As noted, an action is configured as a binding expression when the Task Action Link is defined, but the e-mail body does not contain the actual binding expression; instead, it contains an identifier of the action. The actual action binding expression is stored on the server. This also prevents a user from spoofing an e-mail body and executing a random action on the task.

There is no sensitive information in the reply-to body, nor does this information give a user access into the system, so it formatted with Base64 encoding.

About E-mail Listener Behavior

For each downloaded e-mail, the e-mail listener does the following:

1. Instructs the mail server to delete the e-mail.
2. Parses the e-mail body looking for encoded action request. If a request is not found or is malformed, an error is logged in the Task Engine logs and the e-mail is ignored.
3. Fetches the task instance for the given task ID specified in the request.
4. Checks that the security GUID contained in the request matches the one stored on the task (the latter is generated during task notification publishing). If these values do not match, an error is recorded in the logs and in the task audit and the e-mail is ignored
5. Determines the binding expression of the action from the action ID from the request (this is again stored in the task instance during task notification publishing).
6. Executes the specified action for the given task and records an e-mail receive event in the task audit.

The status of each task e-mail listener is displayed on the Task E-Mail Listener Administration page (**Navigate > Applications > Administration > Business > Tasks > Task Email Listener Administration)**:

- Whether it is currently paused or running, and what the monitoring interval is.

- Last run date and time.
- Last run status.

Running an E-mail Listener in a Clustered Environment

By itself, an e-mail listener does not implement any synchronization and relies on the external mail server to delete processed e-mails to ensure they are not processed twice.

In a cluster, it is possible that under certain timing conditions the same e-mail will be downloaded and processed multiple times for a given task instance. However, this is not a problem, because during processing, the e-mail listener checks against a security GUID attached to the task. This is a one-time token; after a request is processed, the token is removed from the task, thus preventing a second e-mail request instance from being processed.

Configuring Task Analytics

You can configure the Task Engine to collect task instance metrics in the run-time environment and send this information to webMethods Optimize for Process. This capability requires that both webMethods Broker (deprecated) and webMethods Optimize for Process are installed and configured for interaction with My webMethods Server.

To work with the available task metrics in Optimize for Process, you must:

- Define a connection to webMethods Broker (deprecated) and deploy the event maps as described in "Configuring a webMethods Broker (Deprecated) or JMS Server Connection and Deploying Event Maps" on page 178.
- Enable one or more task types as described in "Disabling and Enabling Task Analytics" on page 107.

A default Task Metrics event map is available, containing predefined dimensions, facts, and key performance indicators (KPIs). You can begin monitoring tasks immediately with these predefined KPIs, and you can add custom task monitoring KPIs as required.

About the Task Metrics Event Map

With the installation of webMethods Optimize for Process and its components, a default Task Metrics event map is available that consists of the following:

Dimension attributes:

- **Assignee** — Name of a user, group, or role that the task is assigned to.
- **ModelId** — Identifies the process model that triggered the task (where applicable).
- **ModelStepId** — Identifies the step ID within the process model that triggered the task (where applicable).

- **Operation** — Identifies and action that is applied to the task (for example, queued, reassigned, or completed).
- **ProcessId** — Identifies the unique ID number for the process that contains the task (where applicable).
- **TaskId** — Identifies the unique ID number for the task.
- **TaskType** — Identifies the task type from which the task instance was started.
- **User** — Identifies the user that performed a reported operation.

Fact attributes:

- **AcceptedCount** — Tasks that have been accepted by a user.
- **CancelledCount** — Tasks in Canceled status.
- **CompletedCount** — Tasks in Completed status.
- **Count** — Number of tasks.
- **ExpiredCount** — Tasks in Expired status.
- **FailedCount** — Tasks in Failed status.
- **IsFirstTransactionFlag** — Identifies the first event when multiple transactions are sent per task. Value is 1 for the first event, 0 for remaining events. Not user-editable.
- **QueuedCount** — Tasks started (queued).
- **QueueTime** — Time elapsed between start (queue) time and the time the task was first accepted.
- **ReleasedCount** — Tasks that have been released by a user.
- **ReassignedCount** — Tasks reassigned to a new user, group, or role.
- **ResumedCount** — Tasks that have been resumed from a Suspended status.
- **SuspendedCount** — Tasks in Suspended status.
- **TotalTime** — Total time elapsed between start (queue) time and task termination (completed, expired, canceled).
- **UserTime** — Total time less queue time.

Generic Attributes

- **StepId** — Identifies the step ID within the process instance where the task is being executed (where applicable).

A number of predefined KPIs are provided for each fact except Count.

You can manage and monitor the Task Metrics KPIs just as you would any other KPIs. For information about working with and monitoring KPIs in My webMethods, see *webMethods Optimize User's Guide*.

Working with the Task Metrics Event Map

To access the Task Metrics event map

1. Ensure that webMethods Broker (deprecated) and webMethods Optimize for Process are installed and configured.
2. In My webMethods: **Navigate > Applications > Administration > Analytics > KPIs > Business Data**.
3. In the KPIs list, expand **Business Process**, then expand **Intrinsic Task Engine Metrics** to view the Task Metrics event map.

You can create one or more new event maps in the **Intrinsic Task Engine Metrics** list and add, modify, or delete KPIs as described in the *webMethods Optimize User's Guide*. After making any changes, be sure to re-deploy the Intrinsic Task Engine Metrics event maps.

Configuring a webMethods Broker (Deprecated) or JMS Server Connection and Deploying Event Maps

You can configure the Task Engine to collect task instance metrics in the run-time environment and send this information to webMethods Optimize for Process. This capability requires that both webMethods Broker (deprecated) and webMethods Optimize for Process are installed and configured for interaction with My webMethods Server.

Note: If you have installed My webMethods Server/Task Engine and webMethods Broker (deprecated) on the same system at the same time, these values are set at the time of installation, using the default host value `broker://localhost:6849/Broker #1/analysis`; if you specified a different port number at installation time, it will be used. If you require different values, specify them with the procedure below.

To configure a webMethods Broker (deprecated) or JMS server connection and deploy the event map

1. In My webMethods: **Navigate > Applications > Administration > Business > Tasks > Task Analytics Configuration**.
2. On the Task Engine Analytics Configuration panel, type the URL of your webMethods Broker server (deprecated) or JMS server in the **JMS Server URL** field.
3. Click **Deploy Event Maps** to deploy all event maps contained in the Intrinsic Task Engine Metrics list on the Business Data page.

About Modifying the Task Analytics Schema

The task analytics schema is defined by the TaskEngineEvent.xml file, which is located in the following directory: *Software AG_directory*\MWS\server\ *serverName* \config \analytics\taskEngine\eventMap. Any changes to the task analytics schema require

modifications to this file. However, these modifications are not easily applied and Software AG customers are strongly advised not to apply changes to this file manually.

Changes to the task analytics schema are most often required as a result of product enhancements provided by Software AG, typically in the form of product fix packages or as part of an upgrade to a later version. To apply these changes, an administrative portlet is available in My webMethods Server. When necessary, the product fix package or upgrade documentation will contain instructions about how you can use this portlet to apply the changes.

Important: Any time modifications are applied to the task analytics schema, all historical analytic data gathered to date is discarded. In addition, Optimize will delete all runtime data and metadata for "Task Metrics."

To access the administrative portlet, log in as sysadmin and go to **Folders > System > Portlets > wm_teeventmapoverwrite**. If you have questions about modifying the TaskEngineEvent.xml file, contact Software AG Global Support.

Configuring an E-form Environment

To work with e-forms in your task applications you must do the following:

- Create a repository for your e-form instances and templates (in certain circumstances, you can keep your templates in a file system or web server).
- Configure a e-form environment in My webMethods and deploy that environment to the Integration Server host(s) where you will be creating your IS document types and running your business processes.
- Ensure that you have network connectivity between all of the host servers.
- Review various implementation issues for the supported e-form types.
- Create and publish e-form enabled tasks, either separately or as part of a business process model, using an IS document type that is created from an e-form template as task business data.

For more information about working with e-forms, see:

- *Implementing E-form Support for BPM*
- *webMethods Service Development Help*
- *webMethods BPM Process Development Help*
- *webMethods BPM Task Development Help*
- *webMethods CAF and OpenUI Development Help*

Applying Task Engine Optional Settings

To apply a Task Engine optional setting

1. Shut down My webMethods Server.
2. Open the `custom_wrapper.conf` file for My webMethods Server in a text editor.

   The `custom_wrapper.conf` file is located in: *Software AG_directory*`\profiles\MWS_`*serverName*`\configuration`
3. Locate the following section in the file:

   ```
   # Java Additional Parameters
   ```
4. After the section header, find an appropriate location in the section and type the option you want to set, using the following format for each individual setting:

   ```
   wrapper.java.additional.nnn=-Dtask.inbox.search.threads=25
   ```

   where *nnn* is a unique sequential number, such as between 400 and 499, inclusive. For example:

   ```
   wrapper.java.additional.400=-Dtask.inbox.search.threads=25
   wrapper.java.additional.401=-Dtask.wait.time=6000
   ```
5. Save the file.
6. Start My webMethods Server.

Configuring the WmTaskClient Package

Use the following procedure to configure the WmTaskClient package in Integration Server, or to modify the default configuration, created during installation.

To configure the WmTaskClient package

1. In Integration Server Administrator, go to **Packages > Management**.
2. In the **Package List** column, locate the WmTaskClient package. If the package is disabled, enable it.
3. In the **Home** column, click for the WmTaskClient package.
4. On the WmTaskClient Configuration page, specify:

Field	Description
Task Task Server	The type of the runtime on which Task Engine is installed. Specify one of the following: ■ In Proc - when Task Engine is installed on the same Integration Server as the wmTaskClient package.

Field	Description
	■ Remote MWS - when Task Engine is installed on a remote My webMethods Server instance. ■ Remote IS - when Task Engine is installed on a remote Integration Server instance.
Task Server URL	The host name and port number of the My webMethods Server or Integration Server instance that hosts the Task Engine to which you want to connect. The default value is `http://localhost:8585`.
Task Server Username	The user account that you want to use to connect to Task Engine. The default value is `Administrator`. For more information about the requirements that apply to the user account, see "Specifying a User Account for the WmTaskClient Package" on page 182.
Task Server Password	The password for the specified user account. Type a password or accept the default value.
Socket Timeout (milliseconds)	The timeout period in milliseconds that all services will wait for a response on the WmTaskClient package Home page. The default value is `60000`. The value applies to all WmTaskClient services and cannot be overridden for individual service invocations.
Number of Retries on Service Failure	The number of times to attempt to invoke a service if the initial attempt fails. The default value is `0`. The value applies to all WmTaskClient services, but can be overridden for individual service invocations by specifying the *retryOnFailureCount* parameter when invoking a service.
Delay Between Service Retries (milliseconds)	The number of milliseconds to wait between attempts. The default is `1000`. The value applies to all WmTaskClient services, but can be overridden for individual service invocations by specifying the *retryDelay* parameter when invoking a service. This field is ignored if the value for **Number of Retries on Service Failure** is `0`.

Field	Description
Integration Server ACL containing users allowed to impersonate	The Integration Server Access Control List (ACL) that controls execution access for services in WmTaskClient. By default, this is the Internal ACL. The ACL must include a group that contains the specified user. For more information about working with ACLs, see *webMethods Integration Server Administrator's Guide*.
Use JMS	The protocol that WmTaskClient uses to communicate with My webMethods Server. Values are: ■ `true` - WmTaskClient uses Universal Messaging as a Java Message Service (JMS) provider to communicate with My webMethods Server. You can use this option only when Universal Messaging is configured as a JMS provider on the My webMethods Server cluster configuration page. For more information about using Universal Messaging as a JMS provider in a My webMethods Server cluster, see *Administering My webMethods Server*. ■ `false` - WmTaskClient uses SOAP calls to communicate with My webMethods Server. This is the default value.

5. Click **Save**.

Specifying a User Account for the WmTaskClient Package

The My webMethods Server user account you specify for the WmTaskClient package must conform to the following requirements:

- Must be a member of an existing My webMethods Server role.
- Must be assigned the My webMethods Server functional permission, "Impersonate Users for Remote Clients." This is normally done by a making the user a member of a group or role that grants this permission, although this permission can be granted directly to the user if necessary. For additional information, see "Remote Session Timeout Values" on page 194. For general information about granting permissions, see "Configuring Task Access Permissions" on page 95.
- Must be granted permissions to the appropriate tasks, and permissions for all actions that you want to apply to the task using WmTaskClient (again, through group or role membership, or directly).

- Must be included as a group member in an Integration Server ACL that provides execution access to the services in the WmTaskClient package. If you have central user management enabled for your installation, you can add both My webMethods Server groups and roles to the ACL as an ACL group.

For example, if you are running instances of a task type named OrderApproval on My webMethods Server and you want to access these instances using WmTaskClient, the user name you specify must have been granted all permissions for the OrderApproval task type, and must be granted the "Impersonate Users for Remote Client" privilege.

Furthermore, you must ensure that the specified user is a member of a group that is included in an ACL that enables execution of the services in the WmTaskClient package. For more information about working with ACLs, see *webMethods Integration Server Administrator's Guide*.

About WmTaskClient and Session Pooling

The WmTaskClient package maintains sessions with Task Engine using a session-affinity model, also known as cookie-based or sticky sessions. When connecting to Task Engine through load-balancing hardware, the load balancer should be configured to use session affinity.

In this configuration, WmTaskClient reuses the sessions, which enables clients to avoid repeated re-authentication. The session pooling will reuse an established session when one is available, and if all sessions are busy, a new session is created. When returning that session to the pool, the session is placed at the end of the list of available sessions. This session affinity model can create a situation where one node in the cluster receives more requests than the other, which can cause saturation in high-volume environments.

With session affinity, pool sizes will grow as needed and will shrink as individual sessions within the pool expire, which is unlikely to happen since sessions are re-used. Session expiration is not handled by the client, but is managed by the target My webMethods Server.

If the load balancer is set to use round-robin session management, WmTaskClient creates a new session per request on My webMethods Server and does not reuse them. This provides a better balance but affects performance, as the client needs to re-authenticate and logon again with each request. In addition, Jetty EofException errors may be observed in the server log.

Configuring Task Service Retry and Timeout Values

The Task Engine supports a number of built-in Integration Server services for working with tasks remotely. When you execute one of these services, the service establishes a connection with the Task Engine to carry out its interaction with one or more tasks. Because of issues such as network latency and heavy network traffic, it is possible for the initial connection attempt to fail.

When you invoke an IS service, you can specify the following parameters to help ensure the connection is established:

- *retryOnFailureCount* . This parameter specifies how many times to attempt to invoke the service after the initial attempt fails. The default is 0 times.
- *retryDelay* . This parameter specifies the number of milliseconds to wait between attempts. The default is 1000 ms (this field is ignored if *retryOnFailureCount* = 0).

You can set global values for this behavior on the WmTaskClient Home page in Integration Server Administrator. These values apply to all WmTaskClient service invocations, but are overridden when you pass a *retryOnFailureCount* or *retryDelay* value to the service when you invoke it.

You can also specify the timeout period that all services will wait for a response on the WmTaskClient package Home page. The default value is 60000 ms. This value cannot be overridden for individual service invocations.

- For more information about setting the global values, see "Configuring the WmTaskClient Package" on page 180.
- For more information about WmTaskClient IS services, see *webMethods Task Engine API and Service Reference*.

Configuring Task Engine on Integration Server

You can use the Integration Server Administrator user interface to configure Logging categories and levels for Task Engine instances, running on Integration Server, or apply custom logging settings and runtime configurations using the Integration Server configuration files.

About Task Engine Logging

When running on Integration Server, Task Engine writes runtime log data in `te.log.YYYY-MM-DD` files, located in the following directory *`SoftwareAG_directory`*`\IntegrationServer\instances\`*`instanceName`*`\logs`.

Task Engine uses the Log4J logging utility to write log data according to the configured standard Log4J levels.

You can configure the logging levels for the following categories:

- `Framework`
- `eventService`
- `root`
- `rules`
- `sqlDebug`

Task Engine Logging Configuration files

You can configure Task Engine logging using the administration page of the package in Integration Server, or the logging configuration files for Task Engine. The logging configuration files are stored in the database of the My webMethods Server instance that you use for task administration.

The following configuration files customize logging for Task Engine on Integration Server:

- `log4j.te.init.properties`: Turn internal debugging on or off for the Apache Log4J logging package.
- `log4j.te.override.properties`: Modify the default configuration of the Apache Log4J logging package for Integration Server.
- `logging.te.properties`: Customize logging folders, patterns, log appenders, and other options.

Modifying the Logging Configuration Files

Before you can configure logging on the package administration page for Task Engine in Integration Server, you must set the default logging levels in the `log4j.te.init.properties` file.

To set default logging levels for Task Engine on Integration Server

1. Retrieve the `log4j.te.init.properties` from the database of the My webMethods Server that hosts the Task Engine administration user interface.

   To download the file from the database, use the following command:

   ```
   mws getconfig log4j.te.init.properties
   ```

   For more information about My webMethods Server command-line syntax, see *Administering My webMethods Server*.

2. Open the `log4j.te.init.properties` file in a text redactor and configure the default logging level for Task Engine:

   Find and replace all occurrences of `${log4j.default.log.level}` with `INFO` and save the file.

3. Return the modified file to the My webMethods Server database, and delete the local copy.

   To return the file to the database, use the following command:

   ```
   mws putconfig log4j.te.init.properties
   ```

4. Restart Integration Server.

Configure Logging for Task Engine on Integration Server

To configure the logging levels for Task Engine on Integration Server

1. In Integration Server Administrator, navigate to **Packages > Management** and click the icon for the WmTaskEngine package.
2. On the **Task Engine Configuration > Logging Configuration** page, specify the logging level for one or more of the available Log4J categories.
3. Click **Save**.

Applying Task Engine Optional Settings

To apply a Task Engine optional setting

1. Shut down Integration Server.
2. Open the `custom_wrapper.conf` file for Integration Server in a text editor.

   The `custom_wrapper.conf` file is located in: *Software AG_directory*`\profiles\IS_`*serverName*`\configuration`
3. Locate the following section in the file:

   ```
   # Java Additional Parameters
   ```
4. After the section header, find an appropriate location in the section and type the option you want to set, using the following format for each individual setting:

   ```
   wrapper.java.additional.nnn=-Dtask.inbox.search.threads=25
   ```

   where *nnn* is a unique sequential number, such as between 400 and 499, inclusive. For example:

   ```
   wrapper.java.additional.400=-Dtask.inbox.search.threads=25
   wrapper.java.additional.401=-Dtask.wait.time=6000
   ```
5. Save the file.
6. Start Integration Server.

About Task Engine Optional Settings

You can configure a number of optional environment settings for Task Engine. These settings all carry default values and are not exposed in the My webMethods user interface; however, in certain situations, you may want to optimize your environment by altering these default values.

For instructions about how to apply optional settings to a Task Engine instance, running on My webMethods Server, see "Applying Task Engine Optional Settings" on page 180.

For instructions about how to apply optional settings to a Task Engine instance, running on Integration Server, see "Applying Task Engine Optional Settings" on page 186.

Optional settings include:

Description	Optional Setting
"Allow Attachment Download for Task Instances" on page 189	`-Dtask.comment.attachment.forcedownload`
"Allow Empty Business Data Field" on page 189	`-Dtask.data.allow.nulls`
"Completed Task Re-Delivery Count" on page 190	`-Dtask.completion.redeliver.count`
"Completed Task Re-Delivery Interval" on page 190	`-Dtask.completion.redeliver.interval`
"Disable Task Engine Initialization on Integration Server Start-up" on page 190	`-Dtask.library.mode.enable`
"Disable/Enable Task Logging in Processes" on page 191	`-Dtask.prt.audit.enabled`
"Limit the Number of Tasks Returned to a Results List" on page 191	`-Dtask.max.results`
"Look Up Principal Retry Behavior" on page 192	`-Dtask.retry.lookup.principal`

Description	Optional Setting
"Look Up Principal Retry Timeout" on page 192	`-Dtask.retry.lookup.principal.timeout`
"Maximum Thread Count" on page 192	`-Dtask.max.processing.threads`
"Preload the Task Cache at Startup" on page 192	`-Dtask.max.preload`
"Remote Session Timeout Values" on page 194	`-Dtask.remote.session.timeout` `-Dtask.remote.session.ttl`
"Return of Empty Documents" on page 194	`-Dcom.webmethods.caf.common.model.emptydoc`
"Return Order of Task Data Fields" on page 195	`-Dtask.data.return.in.order`
"Set Conditions for Task Preloading" on page 196	`-Dtask.preload.condition`
"Suppress Task Deleted Events" on page 196	`-Dtask.delete.event.suppressed`
"Synchronous Cluster Updates" on page 196	`-Dtask.update.sync`
"Task Event Processing Wait Time" on page 197	`-Dtask.wait.time`
"Task Locking in a Cluster Environment" on page 197	`-Dtask.lock.lightweight` (Deprecated)

Description	Optional Setting
"Task Lock Timeout Values" on page 197	`-Dtask.lock.wait.timeout` `-Dtask.lock.valid.time`
"Task Permission Checking Behavior" on page 198	`-Dtask.based.permission`
"Task Search Thread Count" on page 198	`-Dtask.inbox.search.threads`
"Task Update Behavior" on page 199	`-Dupdate.completed.task`
"Task Update Thread Count" on page 199	`-Dtask.update.threads`
"Adjust for Network Latency in Service Call to Task Engine" on page 199	`-DqueueTask_ws.delay.time`
"Turn on Oracle Database Hints" on page 200	`-Dtask.use.oracle.hint`

Allow Attachment Download for Task Instances

This option specifies whether to download attachments in a task instance.

`-Dtask.comment.attachment.forcedownload=true|false`

By default, `-Dtask.comment.attachment.forcedownload` is set to `false`. When you click an attachment on the **Comments** tab of the Task Details page, the attachment is either opened or downloaded, based on your browser settings.

If you set `-Dtask.comment.attachment.forcedownload` to `true`, attachments are downloaded regardless of your browser settings.

Allow Empty Business Data Field

This option specifies whether to allow empty fields in task data:

```
-Dtask.data.allow.nulls=true|false
```

By default, `-Dtask.data.allow.nulls=false`, and Task Engine does not initialize business data if any of the sub-documents of business data is empty. If `-Dtask.data.allow.nulls=true`, business data is initialized even if sub-documents contain empty fields.

Completed Task Re-Delivery Count

This option specifies the number of times the Task Engine attempts to re-deliver a task completion event to the Integration Server that hosts the Process Engine. For example, when a transport failure occurs between Task Engine and Integration Server (Integration Server is off-line or there are network problems) and a task is completed, the attempt to deliver the completion event to Integration Server fails. The Task Engine attempts to re-deliver the completion event until the specified number of attempts is reached. If the Task Engine is unable to deliver the completion event after the specified number of attempts, it places the task into an error state with an appropriate error code. When connectivity between the Task Engine and Integration Server is restored, you can re-submit the task completion event by manually changing the task status back to Active and then to Completed. To change the interval between re-delivery attempts, see "Completed Task Re-Delivery Interval" on page 190.

```
-Dtask.completion.redeliver.count=<number of redelivery attempts>
```

The default value is 30.

Completed Task Re-Delivery Interval

This option specifies the time the Task Engine waits until attempting to re-deliver a task completion event to the Integration Server that hosts the Process Engine. For example, when a transport failure occurs between Task Engine and Integration Server (Integration Server is off-line or there are network problems) and a task is completed, the attempt to deliver the completion event to Integration Server fails. The Task Engine waits for the specified period of time before attempting to re-deliver the completion event so business process execution can proceed. To change the number of re-delivery attempts, see "Completed Task Re-Delivery Count" on page 190.

```
-Dtask.completion.redeliver.interval=<wait time in milliseconds>
```

The default time is 60000 milliseconds.

Disable Task Engine Initialization on Integration Server Start-up

Applies to Task Engine, installed on Integration Server. This option specifies whether to initialize Task Engine core libraries when Integration Server initializes:

```
-Dtask.library.mode.enable=true|false
```

By default, `-Dtask.library.mode.enable=true`, and Task Engine core libraries initialize on Integration Server startup. If `-Dtask.library.mode.enable=false`, Task Engine libraries do not initialize. The Integration Server node initializes as a standard CDS node.

Disable/Enable Task Logging in Processes

When a task is included in a webMethods business process, it is referred to as a *user task*. In earlier releases of Task Engine, a logging mechanism was enabled that writes task status to the audit logging component of Process Engine. Under certain circumstances, this audit logging behavior can cause unexpected behavior in webMethods Monitor, specifically:

- A task step (user task) in a completed process instance displays the status "Task Completed" instead of "Completed".
- A grey arrow icon appears on the user task in the process diagram in Monitor instead of green check mark.
- The logged times of the different steps indicate that the final step in the process completed before the task step was last updated.

Beginning with fix MWS_8.2_SP1_Fix11 and in later releases, task audit logging is controlled by the optional setting:

```
-Dtask.prt.audit.enabled=true | false
```

The default is `false` (task audit logging is disabled). To enable task audit logging, set this value to `true`.

Note: You can also disable audit logging for task rules. For more information, see "Disabling Auditing for Task Rules" on page 125.

Limit the Number of Tasks Returned to a Results List

It is possible to configure the properties of a task type inbox to specify a limit to the number of tasks returned in the search results, or to select the **No Maximum** check box, which effectively returns all matching tasks (note that this check box is not available in My Inbox or Task List Management). For certain queries or certain environments, selecting the **No Maximum** check box can return an extremely large number of tasks, causing performance problems as well as Out Of Memory errors.

You can use the following option to specify a maximum number of tasks to be returned when the **No Maximum** check box is selected for a task type inbox:

```
-Dtask.max.results=<number of tasks>
```

The default is 1,000.

Note: If the task type associated with the task type inbox is configured with an indexed search provider, clearing or selecting the **No Maximum** check box has

no effect; all search results are always returned, and the value defined in this option is ignored.

Look Up Principal Retry Behavior

This option specifies whether the Task Engine is to attempt another lookup for a My webMethods Server principal (a user, group, or role) when the initial lookup fails. If this option is set to true and the initial principal lookup attempt fails, Task Engine waits for the time specified by the Look Up Principal Retry Timeout property and attempts the lookup again. If the second attempt fails, no further attempts are made, and the procedure associated with the lookup fails (for example, task assignment).

This option (and the associated timeout option) addresses a situation where users, groups, or roles are being created by a remote API just before queueing a task. In a clustered environment, these changes can take up to 2 seconds to propagate to all nodes in the cluster. Thus, it is possible that the Task Engine might not find this newly created principal when attempting to queue the task. Setting this option and the associated timeout value will help to handle this condition.

```
-Dtask.retry.lookup.principal=true|false
```

The default is false.

Look Up Principal Retry Timeout

This option specifies the time the Task Engine waits before attempting another lookup for a My webMethods Server principal (a user, group, or role) when the initial lookup fails.

```
-Dtask.retry.lookup.principal.timeout=<wait time in milliseconds>
```

The default time is 2000 milliseconds.

Maximum Thread Count

You can specify the maximum number of processing threads in the Task Engine with the following option (these are threads which process task events and assignments):

```
-Dtask.max.processing.threads=<ThreadNumber>
```

The default value is 4.

Preload the Task Cache at Startup

This option preloads tasks into the My webMethods Server internal caches in a single query during startup of My webMethods Server. This helps alleviate performance problems during a restart of My webMethods Server when there is a very large number of tasks in the database.

Note: This cache preloading option has no impact on indexed task searches, as indexed searches do not use caches and always load tasks from database.

When this option is not enabled, the caches are empty upon restart, and performance issues can occur with task search queries that need to scan large number of tasks. Because tasks are loaded into the caches one at a time, it may take a very long time to process these initial queries until the caches are fully loaded.

Task preloading is disabled by default. To enable preloading, you must specify how many tasks to preload using the following system property:

```
-Dtask.max.preload=<maximum number of tasks to preload>
```

By default, only Active tasks are preloaded. You can also specify an optional condition to define which tasks to preload. For more information, see "Set Conditions for Task Preloading" on page 196.

One thing to consider when setting this option is the size of business data and the total maximum memory given to My webMethods Server. In some cases it may be not possible to fit all tasks into the available in-memory caches. If you specify too many tasks to preload, it should not cause an out of memory error (as in-memory caches will not grow beyond of memory available), but it will waste system resources during preload.

Before you implement preloading, you must also configure the default cache sizes for My webMethods Server to be at least equal to or greater than the number of tasks to be preloaded. To do so:

1. Obtain the cache.xml configuration file by running the following command: `MWS/bin/mws.bat|sh getconfig cache.xml`. This saves a copy of the cache.xml file to the following directory: *Software AG_directory*/MWS/*serverName* /config.
2. Open the cache.xml and edit maxSize for "ThingCache" and "TaskDataCache" to be equal to or greater than the number of tasks to preload.
3. Save the file.
4. Upload cache.xml back to the database by running the following command: `MWS/bin/mws.bat|sh putconfig cache.xml`

For example:

```
<cache name="TaskDataCache"
  class="com.webmethods.portal.service.cache.impl.TransientCache"
  maxSize="number of tasks to preload"
  isClustered="true"
  ID= "12"
  enabled="true"/>
<cache name="Thing Cache"
  class="com.webmethods.portal.service.meta2.impl.ThingTransientCache"
  maxSize="number of tasks to preload"
  isClustered="true"
  ID= "1"
  enabled="true"/>
```

Remote Session Timeout Values

When impersonating a user through the use of the Task Engine APIs, the Task Engine handles role membership updates for the impersonated users. The Task Engine updates a user's role membership when:

- A specified time has passed since last time the user ID was impersonated. The default value is 30 minutes.
- A specified time has passed since the last time the user's role membership was updated. The default value is 24 hours (session total time-to-live).

These default time periods can be modified with the following environment settings:

```
-Dtask.remote.session.timeout=<the time period in seconds between
updates of user role information. The session is not invalidated
or expired.>
-Dtask.remote.session.ttl=<user session time-to-live in seconds>
```

Important: It is important to understand that the `-Dtask.remote.session.timeout` setting does *not* affect the duration of the actual session. The only purpose of the setting is to specify the time interval between updates to the impersonated user's role membership.

For more information about working with the Task Engine APIs, see *webMethods Task Engine API and Service Reference*.

Return of Empty Documents

This option specifies whether or not empty documents are returned by the Task Engine. The option is:

```
-Dcom.webmethods.caf.common.model.emptydoc=true|false
```

The default is false. The Task Engine does not return uninitialized documents of task business data to Integration Server, or when using the pub.task.taskclient.getTask and pub.task.taskclient.searchTasks services, or services that depend on getTask and searchTasks, such as:

- GET Task Instance
- GET Tasks
- POST a Complex Task Search

Prior to MWS_8.0_SP2_Fix11, these documents were returned as empty even if the represented data did not exist. The default value of false prevents the return of empty documents. Set this property to true to revert to the behavior prior to Fix11 (that is, empty documents are returned).

Return Order of Task Data Fields

This option specifies how task data fields are ordered when returning task business document values back to Integration Server, or when using the pub.task.taskclient.getTask and pub.task.taskclient.searchTasks services, or services that depend on getTask and searchTasks, such as:

- GET Task Instance
- GET Tasks
- POST a Complex Task Search

The option is:

```
-Dtask.data.return.in.order=true|false
```

The default is false. When set to false, task business data document fields are returned in an order that does not match the order defined in the document type. Set the value to true to ensure the proper order of fields is returned (that is, corresponding to the order defined in the document type).

When this value is set to true, additional data is returned, which may affect existing consumers of Task Engine Web services. When set to false, existing web service behavior does not change.

This flag impacts WmTaskClient services, standard Task Engine Web services, and REST web services. For Task Engine Web services, business data documents are returned in a SOAP serialized map, which does not define an order for its entries. When this option is set to true, Task Engine returns the __fieldsOrder key of the business data, which contains the order of the fields as a string array of field names in the order they are present in the document.

This option requires that the metadata describing the field order in the document type must be present in the task application. For versions prior to 8.2, you must install the Designer fix DES_8.0_SP2_CAD_Fix5 to obtain this functionality. After this fix is applied to Designer, the required metadata is generated whenever a new task is created. To generate metadata for previously created tasks after you apply this fix:

1. In Designer, open the previously created task in the task editor.
2. On the **Business Data** tab, select the document type you want to create metadata for.
3. Click **Refresh**. This re-generates the business data document and creates the field order metadata used by the runtime.
4. Repeat for any additional documents in the task.

Set Conditions for Task Preloading

If you enable task preloading as described in "Preload the Task Cache at Startup" on page 192, you can use this optional setting to define the tasks to be preloaded. Use the following optional setting to specify an SQL WHERE clause as a preload condition:

```
-Dtask.preload.condition=WHERE <condition statement>
```

Use "T" as a table alias for the "T_TASK" table. For example, the following condition specifies that only "Active" and "Completed" tasks are to be preloaded:

```
-Dtask.preload.condition=WHERE T.STATUS = 1 OR T.STATUS = 3
```

This is a pure SQL query and it must use the values that are in the tables, for example, numeric values for statuses, milliseconds for dates, and so on. If more information is needed, contact Software AG Global Support.

Suppress Task Deleted Events

This option enables you to suppress the generation of Task Deleted events. In a task application, it is possible to create custom code that handles Task Deleted events. However, this custom code is not typically implemented. In such cases, disabling these Task Deleted events further reduces the number of SQL queries needed to delete a task and improves performance. The option is:

```
-Dtask.delete.event.suppressed=true|false
```

The default value is false. When set to true, Task Deleted events are not generated.

Synchronous Cluster Updates

This option applies only to cluster environments. The option helps to solve the problem that when a task is updated, there is a small (up to 2 second) delay until other nodes in the cluster reflect the change. This is normally is not an issue for standard task interfaces, but it can present a problem for remote Task Engine web service APIs, including APIs from the WmTaskClient package and REST web services.

Unless the end-point is set to single cluster node, the API call can be routed by a load-balancer to any node in a My webMethods Server cluster. In this case, it is possible that a call to updateTask() followed immediately by getTask() may return incorrect (out of date) data, because the cluster node has not been updated yet. In this case setting this flag will ensure that up-to-date data is always returned. The option is:

```
-Dtask.update.sync=true|false
```

The default value is false. If set to true, any task update operation will attempt to synchronously refresh caches on all other cluster nodes and wait until other cluster nodes report back that their caches have been updated

A disadvantage to setting this option to true is that any task update operation will have to wait until all cluster nodes are refreshed. This does not introduce any additional load on the server, but it does increase task update operation response time

Task Event Processing Wait Time

This option specifies the time the Task Engine waits for any asynchronous task event processing to complete when a task update is initiated from a user interface page (such as custom inbox, Task List Management, or My Inbox). This option does not apply to updates initiated by task events or task APIs. For example, if a task is updated from the task details page, the Task Engine will wait for this period of time to enable any associated task events to finish processing. This ensures that the user who changed the task receives an up-to-date task following the change.

```
-Dtask.wait.time=<wait time in milliseconds>
```

The default time is 10000 milliseconds.

Task Locking in a Cluster Environment

Note: This optional setting is deprecated. With the application of the following fixes (and in all subsequent releases), the Task Engine now *always* uses database locking for tasks to ensure transactional updates, and this optional setting, if present, is ignored:

- MWS_7.1.2_Fix24
- MWS_7.1.3_Fix16
- MWS_8.0_SP2_Fix15
- MWS_8.2_SP1_Fix8

The following description is provided for reference purposes only:

This option forces the use of non-distributed locks in a clustered environment. The option is:

```
-Dtask.lock.lightweight=true|false
```

The default value is false (that is, task locking is enabled). In this case, the Task Engine uses distributed database locking when updating task instances. This puts an additional load on the database but ensures that task updates are always serial.

For example, if two concurrent users are updating the same task instance, this ensures that a user is always updating an up-to-date task data and if not, a "Task Out of Date" error is raised. If you set this value to true, when the same task instance is being updated by two different users working on two separate cluster nodes, an optimistic lock for the task will not be enforced and only one user's changes are applied.

Task Lock Timeout Values

These options specify both the time that the Task Engine will wait to obtain a lock on a task instance, as well as the duration of the lock. When a task is updated from any

location (for example, from the My webMethods interface, from a task event, or from a remote service), the Task Engine applies a cluster-wide lock on the task instance prior to updating it to ensure all updates are serial.

- `-Dtask.lock.wait.timeout=<wait time in milliseconds>` Use this option to specify the amount of time that the Task Engine waits to obtain a lock on a task instance. The default value is 10000 milliseconds. The Task Engine will be unable to obtain a lock if a lock is already applied to the task instance by an update operation initiated in a separate thread or cluster node. If a lock cannot be obtained within this timeout period, the update operation fails.
- `-Dtask.lock.valid.time=<lock duration in milliseconds>` Use this option to specify the duration of the lock period. The default value is 60000 milliseconds.

Task Permission Checking Behavior

This option specifies how task viewing permissions are checked. The option is:

```
-Dtask.based.permission=true|false
```

The default is true. Prior to MWS_7.1.3_Fix9, the mechanism to determine if a user had permission to view a task verified only if the user held "view task data" permission. With the introduction of MWS_7.1.3_Fix9, an additional check occurs to determine if the user/role is also present in the "assigned to" or "delegated to" lists. Under these conditions, if the user holds only "view task data" permission, permission to view the task is denied and the following error occurs:

```
com.webmethods.portal.mech.access.PortalAccessException:
[POP.017.0007] You don't have permissions to view this task.
```

When this setting is true, the additional checks added with MWS_7.1.3_Fix9 are applied. If you change this value to false, the previous permission check ("view task data" permission only) is applied.

Important: This option also affects the behavior of task notifications. If you set this flag to false, users will receive notifications for all subscribed notifications rather than only those to which they are assigned or delegated.

Task Search Thread Count

This option specifies the maximum number of concurrent threads allowed to execute task searches. While the default value is generous, it is important to control this number to ensure that the maximum number of task search threads plus the maximum number of task update threads (default 30) is less than the maximum size of the My webMethods Server Data Source JDBC pool (default size is a maximum of 100 connections). Therefore, this value may need to be lowered in some circumstances (for example for large My webMethods Server clusters when there is a need to control the overall count of JDBC connections). The option is:

```
-Dtask.inbox.search.threads=<thread count>
```

The default value is 50.

Task Update Behavior

This option enables remote services to update tasks regardless of the task status. By default, task update services apply only to tasks with status Active, Error, and Suspended. Tasks with other statuses (for example Completed, Cancelled, or Expired) cannot be updated.

To enable remote services to update tasks regardless of the current task status, set the following option to `true`:

`-Dupdate.completed.task=true|false`

The default value is `false` - task updates apply only to task with status Active, Error, or Suspended. Tasks with status Error that belong to a process instance cannot be updated, regardless of Task Engine optional settings.

The option applies to the operation of the following Task Engine services:

- The built-in service pub.task.taskclient:updateTask
- The web service updateTask
- The REST service PUT Information in a Task Instance

For more information about the services, see *webMethods Task Engine API and Service Reference*.

Task Update Thread Count

This option specifies the maximum number of concurrent threads allowed to execute task updates. It is important to control this number to make sure that the maximum number of task search threads (default 50) plus the maximum number of task update threads is less than the maximum size of the My webMethods Server Data Source JDBC pool (default size is a maximum of 100 connections). Therefore, this value may need to be lowered in some circumstances (for example for large My webMethods Server clusters when there is a need to control the overall count of JDBC connections). The option is:

```
-Dtask.update.threads=<thread count>
```

The default value is 30.

Adjust for Network Latency in Service Call to Task Engine

This option enables you to adjust for any delay in the service call from the Process Engine or WmTaskClient to the Task Engine caused by the effects of network latency. You can use this setting to specify any additional delay in the service call when the Task Engine is under heavy load and the actual time it takes to create a task is longer than the socket timeout configured in WmTaskClient. In such conditions, even though a socket

timeout occurs, the Task Engine might still proceed with the task creation instead of deleting the task.

For example, suppose that the Process Engine invokes WmTaskClient to queue a task that is part of a process and the socket timeout is set at the default value of 60000 milliseconds. If the additional delay in network latency is 50 milliseconds, the total timeout (that is, from the time the Process Engine issued the task creation request to the response from the Task Engine) would be 60050 milliseconds. To account for this, you can set -DqueueTask_ws.delay.time to 50 milliseconds, which would adjust the Task Engine timeout to 59950 milliseconds, thus returning the total timeout to 60000 milliseconds.

```
-DqueueTask_ws.delay.time=<time in milliseconds>
```

The default value of -DqueueTask_ws.delay.time is 20 milliseconds. When setting the parameter, Software AG recommends specifying a value that is greater than the default value.

Turn on Oracle Database Hints

When set to true, this option enables Oracle hints that may significantly improve performance when querying for inbox results, assuming that the user inbox queues are not very large (for example, less than 1,000 tasks per role or user). For large queues this will not provide benefits and may possibly slow performance. This option is set to false (off) by default:

```
-Dtask.use.oracle.hint=true|false
```

7 Using Command Central to Manage Task Engine

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Administering Task Engine

About Administering Task Engine on My webMethods Server

Applies to Task Engine instances, installed as layered components on My webMethods Server. You use the Command Central web user interface and command line interface to manage the following operations for Task Engine:

- Monitor run-time statuses for a Task Engine instance.

  For information about the Task Engine run-time statuses, see "Run-Time Monitoring Statuses for Task Engine" on page 204.

- Configure an endpoint connection to webMethods Process Engine on Integration Server for a Task Engine instance. Task Engine is installed with pre-configured default values for the available fields of the Endpoints configuration. You can edit the fields to specify values other than the default ones.

  For more information about the fields and values to specify when configuring a Task Engine endpoint, see "Configuring Task Engine in My webMethods" on page 157.

  For information about the configuration commands that Task Engine supports, see "Commands that Task Engine Supports" on page 202.

Commands that Task Engine Supports

The following table lists the Platform Manager commands that Task Engine supports, and where to find additional information about each command.

Command	Additional information
`sagcc get configuration data`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that Task Engine supports, see "Configuration Types that Task Engine on My webMethods Server Supports" on page 204.
`sagcc update configuration data`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that Task Engine supports, see

Command	Additional information
	"Configuration Types that Task Engine on My webMethods Server Supports" on page 204.
`sagcc get configuration instances`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that Task Engine supports, see "Configuration Types that Task Engine on My webMethods Server Supports" on page 204.
`sagcc list configuration instances`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that Task Engine supports, see "Configuration Types that Task Engine on My webMethods Server Supports" on page 204.
`sagcc get configuration types`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that Task Engine supports, see "Configuration Types that Task Engine on My webMethods Server Supports" on page 204.
`sagcc list configuration types`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that Task Engine supports, see "Configuration Types that Task Engine on My webMethods Server Supports" on page 204.
`sagcc exec configuration validation update`	For general information about the command, see *Software AG Command Central Help*.

Command	Additional information
	For information about the configuration types that Task Engine supports, see "Configuration Types that Task Engine on My webMethods Server Supports" on page 204.
`sagcc get monitoring`	For general information about the command, see *Software AG Command Central Help*. For Task Engine-specific information about the command, see "Run-Time Monitoring Statuses for Task Engine" on page 204.

Configuration Types that Task Engine on My webMethods Server Supports

Applies to Task Engine instances, running on My webMethods Server. The following table lists the configuration types that the Task Engine run-time component supports.

Configuration Type	Description
COMMON-COMPONENT-ENDPOINTS	Configures a connection between Task Engine on My webMethods Server to webMethods Process Engine on Integration Server. For information about the fields and values to specify when configuring a Task Engine endpoint, see "Configuring Task Engine in My webMethods" on page 157.

Run-Time Monitoring Statuses for Task Engine

The following table lists the run-time statuses that the Task Engine run-time component can return in response to the `sagcc get monitoring runtimestatus` and `sagcc get monitoring state` commands, along with the meaning of each run-time status.

Run-time Status	Meaning
ONLINE	The Task Engine instance is running.
STOPPED	The Task Engine instance is stopped.

About Administering Task Client

You use the Command Central web user interface and command line interface to manage WmTaskClient. WmTaskClient is a layered product of webMethods Integration Server.

You can use Command Central to manage the following operations for WmTaskClient:

- Start and stop a WmTaskClient instance.

  For detailed information about changing the status of a product instance, see *Software AG Command Central Help*.

- Monitor run-time statuses for a WmTaskClient instance.

  For information about the WmTaskClient run-time statuses, see "Run-Time Monitoring Statuses for WmTaskClient" on page 208.

- Configure an endpoint connection to My webMethods Server for a WmTaskClient instance. WmTaskClient is installed with pre-configured default values for the available fields of the Endpoints configuration. You can edit the fields to specify values other than the default ones.

  For more information about the fields and values to specify when configuring a WmTaskClient endpoint, see "Configuring the WmTaskClient Package" on page 180.

  For information about the configuration commands that WmTaskClient supports, see "Commands that WmTaskClient Supports" on page 206.

About Administering Task Client

You use the Command Central web user interface and command line interface to manage WmTaskClient. WmTaskClient is a layered product of webMethods Integration Server.

You can use Command Central to manage the following operations for WmTaskClient:

- Start and stop a WmTaskClient instance.

  For detailed information about changing the status of a product instance, see *Software AG Command Central Help*.

- Monitor run-time statuses for a WmTaskClient instance.

  For information about the WmTaskClient run-time statuses, see "Run-Time Monitoring Statuses for WmTaskClient" on page 208.

- Configure an endpoint connection to My webMethods Server for a WmTaskClient instance. WmTaskClient is installed with pre-configured default values for the available fields of the Endpoints configuration. You can edit the fields to specify values other than the default ones.

For more information about the fields and values to specify when configuring a WmTaskClient endpoint, see "Configuring the WmTaskClient Package" on page 180.

For information about the configuration commands that WmTaskClient supports, see "Commands that WmTaskClient Supports" on page 206.

Commands that WmTaskClient Supports

The following table lists the Platform Manager commands that the the WmTaskClient supports , and where to find more information about each command.

Commands	Additional information
`sagcc get configuration data`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that WmTaskClient supports, see "Configuration Types that WmTaskClient Supports" on page 208.
`sagcc update configuration data`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that WmTaskClient supports, see "Configuration Types that WmTaskClient Supports" on page 208.
`sagcc get configuration instances`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that WmTaskClient supports, see "Configuration Types that WmTaskClient Supports" on page 208.
`sagcc list configuration instances`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that WmTaskClient supports, see "Configuration Types that WmTaskClient Supports" on page 208.

Commands	Additional information
`sagcc get configuration types`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that WmTaskClient supports, see "Configuration Types that WmTaskClient Supports" on page 208.
`sagcc list configuration types`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that WmTaskClient supports, see "Configuration Types that WmTaskClient Supports" on page 208.
`sagcc exec configuration validation update`	For general information about the command, see *Software AG Command Central Help*. For information about the configuration types that WmTaskClient supports, see "Configuration Types that WmTaskClient Supports" on page 208.
`sagcc exec lifecycle`	For general information about the command, see*Software AG Command Central Help*. For WmTaskClient-specific information about the command, see "Run-Time Monitoring Statuses for WmTaskClient" on page 208.
`sagcc get monitoring`	For general information about the command, see *Software AG Command Central Help*. For WmTaskClient-specific information about the command, see "Run-Time Monitoring Statuses for WmTaskClient" on page 208.

Configuration Types that WmTaskClient Supports

The following table lists the configuration types that the WmTaskClient run-time component supports.

Configuration Type	Description
COMMON-COMPONENT-ENDPOINTS	Configures a connection between WmTaskClient and My webMethods Server. For information about the fields and values to specify when configuring a WmTaskClient endpoint, see "Configuring the WmTaskClient Package" on page 180.

Run-Time Monitoring Statuses for WmTaskClient

The following table lists the run-time statuses that the WmTaskClient run-time component can return in response to the `sagcc get monitoring runtimestatus` and `sagcc get monitoring state` commands, along with the meaning of each run-time status.

Run-time Status	Meaning
ONLINE	The WmTaskClient instance is running.
STOPPED	The WmTaskClient instance is stopped.

Administering Task Engine on Integration Server

About Administering Task Engine on Integration Server

Applies to Task Engine instances, installed as layered components on webMethods Integration Server. You use the Command Central web user interface and command line interface to manage the following operations for Task Engine.

- Start and stop a Task Engine instance, running on Integration Server. For more information about changing the status of a product instance, see *Software AG Command Central Help*.
- Monitor run-time statuses for a Task Engine instance, running on Integration Server. For information about the Task Engine run-time statuses, see "Run-Time Monitoring Statuses for Task Engine on Integration Server" on page 210.

- Configure an endpoint connection to a Task Engine cluster configuration endpoint. The cluster configuration endpoint is the URL to the JMS provider which Task Engine uses to communicate to My webMethods Server.
- Configure Task Engine system properties as custom JVM properties to modify the runtime behavior of a Task Engine instance.

For information about the configuration commands that Task Engine supports, see "Commands that Task Engine on Integration Server Supports" on page 209.

For information about the configuration types that Task Engine supports and the values to specify when configuring those types, see "Configuration Types that Task Engine on Integration Server Supports" on page 209.

Commands that Task Engine on Integration Server Supports

Task Engine instances, running on Integration Server support the following Platform Manager commands:

- `sagcc get configuration data`
- `sagcc update configuration data`
- `sagcc get configuration instances`
- `sagcc list configuration instances`
- `sagcc get configuration types`
- `sagcc list configuration types`
- `sagcc exec configuration validation update`
- `sagcc exec lifecycle`
- `sagcc get monitoring`

For general information about the commands, see *Software AG Command Central Help*.

For Task Engine-specific information about the commands, see "Configuration Types that Task Engine on Integration Server Supports" on page 209.

For information about the monitoring statuses that Task Engine supports, see "Run-Time Monitoring Statuses for Task Engine on Integration Server" on page 210.

Configuration Types that Task Engine on Integration Server Supports

Applies to Task Engine instances, running on Integration Server. The following table lists the configuration types that the Task Engine run-time component supports.

Configuration Type	Description
TASKENGINE-SYSPROPS	Configures custom JVM properties for Task Engine. For information about the fields and values to specify when configuring Task Engine system properties, see "About Task Engine Optional Settings" on page 186.
COMMON-LOGGERS	Configures the logging levels for Task Engine loggers and log facilities. For information about the fields and values to specify when configuring Task Engine logging, see "Configure Logging for Task Engine on Integration Server" on page 186.
COMMON-COMPONENT-ENDPOINTS	Configures a cluster configuration endpoint for connection between Task Engine and the JMS server that Task Engine uses to communicate to My webMethods Server. For information about the fields and values to specify when configuring a Task Engine cluster configuration endpoint, see "Adding a Cluster Configuration Endpoint for Task Engine on Integration Server" on page 211.

Run-Time Monitoring Statuses for Task Engine on Integration Server

Applies to Task Engine instances, running on Integration Server. The following table lists the run-time statuses that the Task Engine run-time component can return in response to the `sagcc get monitoring runtimestatus` and `sagcc get monitoring state` commands, and the meaning of each run-time status.

Run-time Status	Meaning
ONLINE	The Task Engine instance is running.
STOPPED	The Task Engine instance is stopped.

Adding a Cluster Configuration Endpoint for Task Engine on Integration Server

The cluster configuration endpoint is the URL to the JMS server that a Task Engine instance, running on Integration Server uses to communicate with the My webMethods Server that hosts Business Console and the task administration user interfaces. Specify the fully-qualified URL to the Universal Messaging server, configured on the Cluster Administration page in My webMethods.

To modify the cluster endpoint configuration for Task Engine in Command Central

1. On the Command Central home screen, select an environment and click the **Installations** tab.
2. Click the name of an installation, and then go the **Instances** tab for the installation.
3. Click the name of the Integration Server, that hosts Task Engine and then click the Task Engine run-time component.
4. On the **Configuration** tab for the instance, select **Endpoints** from the drop-down menu, and then click **JMS**.
5. On the **Settings** screen, click **Edit** and enter the fully-qualified URL to the Universal Messaging server.

   For example, `nsp://localhost:9000`.
6. Click **Save**.

Configuring System Properties for Task Engine on Integration Server

You use the system properties of a Task Engine instance, running onIntegration Server to modify the runtime behavior of the instance. System properties are applied as custom JVM properties in the custom_wrapper.conf file for Integration Server, or using the Command Central web user interface.

For information about custom JVM properties that Task Engine supports, see "About Task Engine Optional Settings" on page 186.

To configure system properties for Task Engine using the Command Central web user interface

1. On the Command Central home screen, select an environment and click the **Installations** tab.
2. Click the name of an installation, and then go the **Instances** tab for the installation.
3. Click the name of the Integration Server that hosts Task Engine and then click the Task Engine run-time component.
4. On the **Configuration** tab for the instance, select **General Properties** from the drop-down menu, and then click **Task Engine System Properties**.

5. On the **Task Engine System Properties Screen**, click **Edit** and then click + to add a new system property.
6. Select the property to add from the drop-down list, and enter a custom value in the **Value** field.
7. Click **Save**.

8 Task Expression Reference

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- Understanding Task Expressions 214
- About Global Rule Expressions 218

About Task Expressions

The task expression language used within task type rules is proprietary and is essentially simplistic in nature. However, it does offer binding capability to a wide range of data within the task environment.

Task expressions are created primarily with the task editor interface in Software AG Designer. The simple condition editor, for example, enables you to select various condition parameters in plain English, and then creates a task expression automatically. With this functionality, you are able to create conditions and actions without learning the task expression language.

For those users who would like to learn more about the task expression language, and possibly construct custom expressions, the material in this appendix provides an overview of the task expression language.

Understanding Task Expressions

You can use task type rule expressions to define a condition that must be matched for the rule to be enforced, and to define a result that will be applied when the rule is enforced. In addition, you can define variables that can be used within a task expression, and attributes that apply to how or when a rule is evaluated. You can also create bindings from expression terms to run-time data associated with the task instance.

For conditions, a basic expression statement consists of the following:

[A data field] [An operator] [A data field]

For example:

```
#{currentTask.taskInfo.status} == "active"
```

This condition determines if the current task status is "active." When this condition is matched, any actions specified in the results expression will be applied.

Task type rules are configured as task assignments and task events in Software AG Designer. My webMethods provides read-only view for task type rule expressions. You can view available task type rules by clicking the appropriate rule type icon for a task type on the Task Engine Administration page. You can create global task rules in My webMethods. For specific instructions how to create global task rules, see "Working with Global Task Rules" on page 120.

When you create global task rules in My webMethods, you enter expression terms by typing, and by clicking the **Add Operator** button next to the expression field. You can then select an operator from the resulting display. Various operators such as AND and OR enable you to combine data tests in a single condition.

You can view the available operators by clicking the **Add Operator** button on the Global [RuleType] Rules page for each rule type. The available data fields vary depending on the rule type you are creating.

All expressions are checked for validity and syntax errors are displayed. Select a field or operator and click **OK** to add it to the expression field.

For more information about task rule expressions, see:

- "About Condition Expressions" on page 215
- "About Filter Rule Expressions" on page 216
- "About Results Expressions" on page 216
- "About Expression Operators" on page 216
- "About Date/Time Values in Rule Expressions" on page 218

You can also read about task expressions in *webMethods BPM Task Development Help*.

About Condition Expressions

Condition expressions test for a wide range of task characteristics, including:

- Current status or previous status
- Priority
- Input and output values
- Escalation
- Dates and times associated with the task
- Current user

For example, this simple condition expression tests for a task status of active:

```
#{currentTask.taskInfo.status} == "active"
```

- The `#{currentTask.taskInfo.status}` portion was selected from the Add Field display.
- The "equals" operator == was selected from the Add Operator display.
- The status "active" was selected from the Add Field display.

This more complex statement tests for the expiration of an active task:

```
#{currentTask.taskInfo.status} == "active" &&
(#{System.currentDateTime} + (ExpirationThresholdDays * 86400000)) >
#{currentTask.taskInfo.expireDate}
```

About Filter Rule Expressions

Filter rules contain condition expressions only. These rules filter certain tasks from the task inbox of a user or role as follows:

- For the Filter Inbox - Accepted Tasks action, the following expression is used:

  ```
  (isEmpty #{currentTask.taskInfo.acceptedByList}) ||
  (#{currentTask.taskInfo.acceptedByList} contains
  #{currentUser.principalID})
  ```

  This condition allows a user to see only tasks that have not yet been accepted, or tasks accepted by the user. This effectively filters out tasks accepted by other users.

- For the Filter Inbox - User Activity action, the following expression is used:

  ```
  (#{fieldExpr} doesNotContain #{currentUser.principalID} &&
  #{fieldExpr} doesNotContain #{currentUser.principalURI} &&
  #{fieldExpr} doesNotContain #{currentUser.principalDN})
  ```

  This condition filters out tasks that the current user has already worked on. It requires you to select a custom business data field or service that returns a list of the users that have worked on the task. You must also configure the custom field or service to be updated by the Task Details portlet or by another event action.

About Results Expressions

Results expression apply to Assignment, Change, and Schedule rules. Filter rules do not contain a results expression. The following actions are available:

- Complete task
- Suspend task
- Resume task
- Update task
- Cancel task
- Delete task

For example, this simple rule expression completes a task:

```
#{currentTask.completeTask}
```

For more information, see *webMethods BPM Task Development Help*.

About Expression Operators

You can view the available expression operators by clicking the **Add Operator** button on the Global [Rule Type] Rule page.

The following table lists the available expression operators:

Operator	Definition
`+`	Add
`-`	Subtract
`*`	Multiply
`/`	Divide
`%`	Modulus
`^`	Exclusive OR
`>`	Greater than
`<`	Less than
`==`	Equals
`=`	Assignment (sets a value)
`!=`	Does not equal
`>=`	Greater than or equal
`<=`	Less than or equal
`&&`	Logical AND
`||`	Logical OR)
`!`	Logical NOT
`Contains`	The preceding string, collection, or object array contains the following string
`Does Not Contain`	The preceding string, collection, or object array does not contain the following string

Operator	Definition
`Is Empty`	The preceding collection, string object, or object array is empty
`Not Empty`	The preceding collection, string object, or object array is not empty
`Matches`	The preceding sting matches the following regular expression
`Starts With`	The preceding string starts with the following string
`Ends With`	The preceding string ends with the following string
`Semi-colon`	Statement separator

About Date/Time Values in Rule Expressions

Some rule expressions contain date and time values, for example:

```
#{System.currentDateTime}
```

or

```
#{currentTask.taskInfo.expireDate}
```

These date and time values are evaluated as follows:

If a given data element within a rule expression is a java.util.Date type, it is automatically converted into epoch time in milliseconds as a java.lang.Long type. Therefore, all arithmetic and comparison operators can be applied to that value, as it now exists as a long number.

About Global Rule Expressions

You can create and apply global rules that apply to all tasks (for more information, see "Working with Global Task Rules" on page 120. If you create additional global rules, you must create a condition expression and a result expression for each new rule.

Expressions for Default Global Rules

The following expressions are used in global rules that are installed with the Task Engine:

Infinite Loop Rule

This rule places a task in Error status when the one-hundredth version of the task is created. You can edit the expression for this rule to specify a different number. For more information, see "Working with Global Task Rules" on page 120.

Condition Expression:

```
#{oldTask.taskInfo.taskVersionNumber} == 99 &&
#{newTask.taskInfo.taskVersionNumber} == 100
```

Result Expression:

```
#{currentTask.taskInfo.status} = "error";
#{currentTask.taskInfo.errorCode} = "task.error.infinite.loop";
#{currentTask.taskInfo.errorMessage} = "Task has
reached maximum number of modifications";  #{currentTask.applyChanges}
```

Delete a Task Rule

This rule deletes a task in Completed, Cancelled, Expired, or Error status after a specified period of time defined by the keepDays parameter. The rule evaluates the keepDays value based on the time since the task was last modified. This rule is evaluated once per day. The default value for keepDays is 30.

The condition `#{currentTaskExtended.processArchived}` specifies that the task is allowed to be deleted if the business process owning a task is archived. This condition checks the Process Audit database schema for the presence of the process that owns the task.

Condition expression:

```
(["completed", "cancelled", "expired", "error"] contains
#{currentTask.taskInfo.status}) && (#{currentTaskExtended.processArchived})
&& keepDays
```

Result expression:

```
#{currentTask.deleteTask}
```

Example Global Rule - Expire Task

This example rule places a task in Expired status when the task's expiration date and time are reached (if specified). You can specify a rule attribute to define how often the rule is evaluated, for example, once an hour.

Condition expression:

```
#{currentTask.taskInfo.status} == "active" &&
#{currentTask.taskInfo.expireDate} > #{System.currentDateTime}
```

Result expression:

```
#{currentTask.taskInfo.status} = "expired";  #{currentTask.applyChanges}
```