Tivoli® IBM Tivoli Composite Application Manager for Application Diagnostics
Version 7.1.0.1

Planning an Installation

IBM

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> **Note**
>
> Before using this information and the product it supports, read the information in "Notices" on page 37.

Contents

About this publication

This publication provides instructions for planning an installation of IBM® Tivoli®
Composite Application Manager for Application Diagnostics.

Intended audience

This publication is intended for administrators who want to install ITCAM for
Application Diagnostics.

Publications

This section describes how to access Tivoli publications online and how to order
Tivoli publications.

ITCAM for Application Diagnostics Library

The following publications are included in the ITCAM for Application Diagnostics
library, available at ITCAM for Application Diagnostics Information Center:

* *IBM Tivoli Composite Application Manager for Application Diagnostics: Prerequisites*

  Provides the hardware and software requirements for installing ITCAM for
  Application Diagnostics components.

* *IBM Tivoli Composite Application Manager for Application Diagnostics: User's Guide*

  Provides the user overview, user scenarios, and Helps for every ITCAM for
  Application Diagnostics component.

* *IBM Tivoli Composite Application Manager for Application Diagnostics: Planning an
  Installation*

  Provides the first reference point for a new ITCAM for Application Diagnostics
  installation or upgrade.

* ITCAM Agent for WebSphere® Applications Installation and Configuration
  Guides:

  – *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications
    Installation and Configuration Guide*

  – *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications
    Installation and Configuration Guide for z/OS*

  – *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications Data
    Collector Installation and Configuration Guide for IBM i*

  Provide installation instructions for setting up and configuring ITCAM Agent for
  WebSphere Applications on distributed, z/OS®, and IBM i systems.

* ITCAM Agent for J2EE Applications Installation and Configuration Guides:

  – *IBM Tivoli Composite Application Manager: Agent for J2EE Data Collector
    Installation and Configuration Guide*

  – *IBM Tivoli Composite Application Manager: Agent for J2EE Monitoring Agent
    Installation and Configuration Guide*

  Provide installation instructions for setting up and configuring ITCAM Agent for
  J2EE.

* *IBM Tivoli Composite Application Manager: Agent for HTTP Servers Installation and
  Configuration Guide*

Provides installation instructions for setting up and configuring ITCAM Agent for HTTP Servers.

- *IBM Tivoli Composite Application Manager for Application Diagnostics Managing Server Installation Guide*

  Provides installation instructions for setting up and configuring ITCAM for Application Diagnostics Managing Server.

- *IBM Tivoli Composite Application Manager for Application Diagnostics: Troubleshooting Guide*

  Provides instructions on problem determination and troubleshooting for ITCAM for Application Diagnostics.

- *IBM Tivoli Composite Application Manager for Application Diagnostics: Messaging Guide*

  Provides information about system messages received when installing and using ITCAM for Application Diagnostics.

Accessing terminology online

The *Tivoli Software Glossary* includes definitions for many of the technical terms related to Tivoli software. The *Tivoli Software Glossary* is available at the following Tivoli software library Web site:

http://publib.boulder.ibm.com/tividd/glossary/tivoliglossarymst.htm

The IBM Terminology Web site consolidates the terminology from IBM product libraries in one convenient location. You can access the Terminology Web site at the following Web address:

http://www.ibm.com/software/globalization/terminology

Accessing publications online

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli software information center Web site. Access the Tivoli documentation center at the following Web address:

https://www.ibm.com/developerworks/wikis/display/tivolidoccentral/Home

Access the Tivoli Information Center for ITCAM for Application Diagnostics at the following Web address:

http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/topic/ com.ibm.itcamfad.doc_7101/ic-homepage.html

Note: If you print PDF documents on other than letter-sized paper, set the option in the **File → Print** window that allows Adobe® Reader to print letter-sized pages on your local paper.

Ordering publications

You can order many Tivoli publications online at the following Web site:

http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/ pbi.cgi

You can also order by telephone by calling one of these numbers:

- In the United States: 800-879-2755

- In Canada: 800-426-4968

In other countries, contact your software account representative to order Tivoli publications. To locate the telephone number of your local representative, perform the following steps:

1. Go to the following Web site:

   http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi

2. Select your country from the list and click **Go**.

3. Click **About this site** in the main panel to see an information page that includes the telephone number of your local representative.

Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate all features of the graphical user interface.

For additional information, see "Accessibility," on page 33.

Tivoli technical training

For Tivoli technical training information, refer to the following IBM Tivoli Education Web site:

http://www.ibm.com/software/tivoli/education/

Conventions used in this guide

This guide uses several conventions for special terms and actions, operating system-dependent commands and paths, and margin graphics.

Typeface conventions

This publication uses the following typeface conventions:

Bold

- Lowercase commands and mixed case commands that are otherwise difficult to distinguish from surrounding text
- Interface controls (check boxes, push buttons, radio buttons, spin buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, containers, menu choices, menu names, tabs, property sheets), labels (such as **Tip:**, and **Operating system considerations:**)
- Keywords and parameters in text

Italic

- Citations (examples: titles of publications, diskettes, and CDs
- Words defined in text (example: a nonswitched line is called a *point-to-point line*)
- Emphasis of words and letters (words as words example: "Use the word *that* to introduce a restrictive clause."; letters as letters example: "The LUN address must start with the letter *L*.")

- New terms in text (except in a definition list): a *view* is a frame in a workspace that contains data.
- Variables and values you must provide: ... where *myname* represents....

Monospace

- Examples and code examples
- File names, programming keywords, and other elements that are difficult to distinguish from surrounding text
- Message text and prompts addressed to the user
- Text that the user must type
- Values for arguments or command options

Chapter 1. Overview

IBM Tivoli Composite Application Manager (ITCAM) for Application Diagnostics provides real-time monitoring and diagnostics for application servers. It also provides server management functions, such as starting, stopping, and recycling application servers. It facilitates availability tracking, immediate problem determination, and performance analysis.

ITCAM for Application Diagnostics includes the following Agents:

- The ITCAM Agent for WebSphere Applications component provides monitoring, diagnostics, and server management for IBM WebSphere servers running on Windows®, UNIX®, Linux®, IBM i5/OS®, and IBM z/OS systems.
- The ITCAM Agent for J2EE Agent component provides monitoring, diagnostics, and server management for servers running any supported J2EE application server software (IBM WebSphere Community Edition, JBoss, Apache Tomcat, WebLogic, SAP NetWeaver, and Oracle Application Server) as well as J2SE programs. This agent supports Windows, Linux, and UNIX systems.
- The ITCAM for HTTP Servers component provides monitoring and server management for Apache, IBM HTTP Server, Microsoft® Internet Information Services, and Sun Java™ System Web Server (Sun ONE Web Server) servers on Windows, Linux, and UNIX systems.

ITCAM for Application Diagnostics can provide monitoring and diagnostics within two different infrastructures.

To provide monitoring and server management, ITCAM for Application Diagnostics uses IBM Tivoli Monitoring infrastructure. For an overview of IBM Tivoli Monitoring, see *IBM Tivoli Monitoring Installation and Setup Guide*. ITCAM for Application Diagnostics agents communicate with IBM Tivoli Monitoring Servers, and users can access and manage them through IBM Tivoli Enterprise Portal.

To provide detailed ("deep dive") diagnostic information, ITCAM for Application Diagnostics uses the Managing Server infrastructure. The user accesses this information through the Visualization Engine, a component of the Managing Server.

You can choose to install only the IBM Tivoli Monitoring infrastructure, only the Managing Server infrastructure ("deep dive diagnostics only" installation), or both infrastructures.

Application components

ITCAM for Application Diagnostics includes agents, support files for the agents, and the Managing Server.

- The *agents* are ITCAM Agent for WebSphere Applications component, ITCAM Agent for J2EE component, and ITCAM Agent for HTTP Servers component. They typically run on the monitored computers. The agents register within IBM Tivoli Monitoring, and supply monitoring information to the Tivoli Enterprise Monitoring Server. They also accept Take Action commands from the Tivoli Enterprise Monitoring Server. These commands are used for control of the monitoring process and for server management. Except for ITCAM Agent for HTTP Servers, the agents consist of two distinct components: the Data Collector

and the Monitoring Agent. The Data Collector can communicate with the Managing Server. ITCAM Agent for HTTP Servers consists only of a Monitoring Agent; it does not include a Data Collector and does not communicate with the Managing Server.

- The *support files* are installed on the hub Tivoli Enterprise Monitoring Server, on the Tivoli Enterprise Portal Server, and on the Tivoli Enterprise Portal Client. They enable IBM Tivoli Monitoring communication with the Monitoring Agent and provide the ITCAM for Application Diagnostics workspaces that display the monitoring information. A different set of support files is used for each agent.

- The *Managing Server* is an optional component of ITCAM for Application Diagnostics; it is not a part of any of the agents. The Managing Server communicates with the Data Collectors; its *Visualization Engine* provides a user interface for "deep dive" diagnostics information. The user can drill down from the Tivoli Enterprise Portal to the Visualization Engine when detailed information is required. The Visualization Engine can also be used as a stand-alone user interface; this user interface is a good solution for software developers and performance analysts.

Agents

Use the ITCAM Agent for WebSphere Applications component, ITCAM Agent for J2EE component, and Agent for HTTP Servers component to monitor servers of different types.

Agent for WebSphere Applications

The ITCAM Agent for WebSphere Applications component provides monitoring, diagnostics, and server management for IBM WebSphere servers running on Windows, UNIX, Linux, IBM i, and IBM z/OS systems. It supports WebSphere Base, Network Deployment, Extended Deployment, Portal, ESB, and Process servers.

Data Collector

The Data Collector runs on every monitored host (except the Deployment Manager in WebSphere Network Deployment or Extended Deployment). The Data Collector is configured for each instance of the application server.

The Data Collector collects monitoring and diagnostics information from the application server using the following methods:

- In *Byte Code Instrumentation (BCI)*, the Data Collector injects monitoring calls into the code that processes application requests. Data is collected on request processing time and on different types of J2EE API calls within each request. These requests are sometimes referred to as *nested requests*. BCI monitoring requirements can be different. On a production system request level monitoring might be sufficient; however, on a test or development system, or when a problem is being investigated, BCI can be used to instrument application method entry and exit, synchronized methods, and object allocation. BCI uses a certain amount of system resources, depending on the amount of injected calls. The level of detail, and thus the use of resources, is determined by the *monitoring level*, which can be set for every monitored application server. With IBM Tivoli Monitoring, levels L1 and L2 are supported; with ITCAM for Application Diagnostics Managing Server, the additional level L3 is available. The monitoring level can be set for each application server instance, independently for IBM Tivoli Monitoring and the Managing Server.

- *Performance Monitoring Interface (PMI)* is an API provided by IBM WebSphere Application Server, supplying a number of performance metrics.
- *Garbage Collection logs* are written by IBM WebSphere Application Server and contain detailed information about the garbage collection process. This information can be useful for application monitoring and enhancement.

The Data Collector sends the information to the Monitoring Agent. It can also be configured to send it to the Managing Server.

Monitoring Agent

The Monitoring Agent runs on every monitored host (except IBM i servers and the Deployment Manager in WebSphere Network Deployment or Extended Deployment).

The Monitoring Agent collects information from the Data Collector, processes the information, and aggregates it for presentation to the user. It also parses application server logs.

In WebSphere Extended Deployment, if cell monitoring is configured, the Monitoring Agent communicates to the Deployment Manager over the network to retrieve configuration and performance information for the cell.

The Monitoring Agent sends monitoring information to the Tivoli Enterprise Monitoring Server. It also receives Take Action commands from the Tivoli Enterprise Monitoring Server. When these commands involve server management actions (starting, stopping, or restarting the application server), the Monitoring Agent performs these actions.

Attention: Server management actions are not available on z/OS and IBM i.

Agent for J2EE

The ITCAM Agent for J2EE component provides monitoring, diagnostics, and server management for servers running any supported J2EE application server software, including IBM WebSphere Community Edition, or J2SE programs. This agent supports Windows, Linux, and UNIX systems.

The following application servers are supported:
- IBM WebSphere Community Edition
- JBoss
- NetWeaver
- Oracle Application Server
- Sun Java System Application Server (JSAS)
- Tomcat
- WebLogic

Also, stand-alone J2SE programs can be monitored.

For the exact versions of the application servers supported by the ITCAM for Application Diagnostics J2EE Agent component, see *IBM Tivoli Composite Application Manager for Application Diagnostics: Prerequisites*.

Data Collector

The Data Collector runs on every monitored host, and is configured for each instance of the application server.

The Data Collector collects monitoring and diagnostics information from the application server using the following methods:

- In *Byte Code Instrumentation (BCI)*, the Data Collector injects monitoring calls into the Java code that processes application requests. Data is collected on request processing time and on different types of J2EE API calls within each request. These requests are sometimes referred to as *nested requests*. BCI monitoring requirements can be different. On a production system request level monitoring might be sufficient; however, on a test or development system, or when a problem is being investigated, BCI can be used to instrument application method entry and exit, synchronized methods, and object allocation. BCI uses a certain amount of system resources, depending on the amount of injected calls. The level of detail, and thus the use of resources, is determined by the *monitoring level*, which can be set for every monitored application server. With IBM Tivoli Monitoring, levels L1 and L2 are supported; with ITCAM for Application Diagnostics Managing Server, the additional level L3 is available. The monitoring level can be set for each application server instance, independently for IBM Tivoli Monitoring and the Managing Server.
- *Java Management Extension (JMX)* is used by most application servers to provide performance monitoring information.
- *Garbage Collection logs* are written by the application server and contain detailed information about the garbage collection process. Such information can be useful for application monitoring and enhancement. Some application servers provide these logs as files, while others use an API.

The Data Collector sends the information to the Monitoring Agent. It can also be configured to send it to the Managing Server.

Monitoring Agent

The Monitoring Agent runs on every monitored host.

The Monitoring Agent collects information from the Data Collector, processes the information, and aggregates it for presentation to the user. It also parses application server logs. For some application servers, the Monitoring Agent uses JMX to retrieve performance information; with other application servers, the Monitoring Agent relies on the Data Collector for this information.

The Monitoring Agent sends monitoring information to the Tivoli Enterprise Monitoring Server. It also receives Take Action commands from the Tivoli Enterprise Monitoring Server. When these commands involve server management actions (for example, starting, stopping, or restarting the application server), the Monitoring Agent performs these actions.

Agent for HTTP Servers

The ITCAM Agent for HTTP Servers provides monitoring and server management for Apache, IBM HTTP Server, Microsoft Internet Information Services, and Sun Java System Web Server (Sun ONE Web Server) servers on Windows, Linux, and UNIX systems.

The HTTP Servers Agent does not include a Data Collector. It can be installed on the same node as the WebSphere or J2EE Agent to monitor the HTTP server application.

The HTTP Servers Agent runs on every node where HTTP server monitoring is required. It collects performance data about the HTTP servers running on the node in the following ways:

- For Apache and IBM HTTP servers, the agent modifies the configuration files to include the monitoring module. This module is loaded dynamically during server startup. The module receives all HTTP requests and reports data to the agent. In addition, the HTTP Agent parses static information from the configuration file.
- For Sun Java System Web Server (Sun ONE Web Server), the agent retrieves configuration information from server configuration files, and polls the SNMP service for performance statistics.

The agent communicates monitoring information to the Tivoli Enterprise Monitoring Server. It also receives Take Action commands from the Tivoli Enterprise Monitoring Server. When these commands involve server management actions (for example, starting, stopping, or restarting the HTTP server), the agent performs these actions.

Managing Server

The Managing Server is a distinct component of ITCAM for Application Diagnostics. It communicates to the Data Collectors within the WebSphere and J2EE Agents, and provides detailed diagnostic information through its user interface. You can choose not to install the Managing Server.

The Managing Server consists of the following components:

- The *kernel* controls the Managing Server. The kernel registers components as they join the Managing Server, periodically renews connections and registrations with components and Data Collectors, and collects server and component availability information. There can be an additional copy of the kernel running on a Managing Server to facilitate load balancing, redundancy, and failover. The kernel includes the Watchdog, a lightweight component that manages a particular kernel and restarts it if it does not respond.
- The *Visualization Engine* provides the user interface. It can be accessed through Tivoli Enterprise Portal or used as a stand-alone option. The Visualization Engine requires IBM WebSphere Application Server (Base or Network Deployment, version 6.0.2 or above). It can be installed on the WebSphere Application Server instance that runs the Tivoli Enterprise Portal.
- The *Publish Server* receives data from the Data Collector and processes it for user display. For example, request data is aggregated, producing various statistics.
- The *Archive Agent* collects data from the Publish Server and archives it into the database for reporting.
- The *Message Dispatcher* sends out e-mails of performance reports and trap actions from the *Performance Analysis and Reporting* and *Trap and Alert Management* features.
- The *Global Publish Server* tracks Composite Requests as they move from one server to another. For example, if a request was initiated on one server, but its processing moves to another server through a Web Services call, the Global Publish Server ensures that the request is still tracked as a single entity.

The Managing Server also uses a database on IBM DB2® or Oracle (the default database ID is *octigate*).

Figure 1 shows the interaction between the Data Collector and components of the Managing Server.
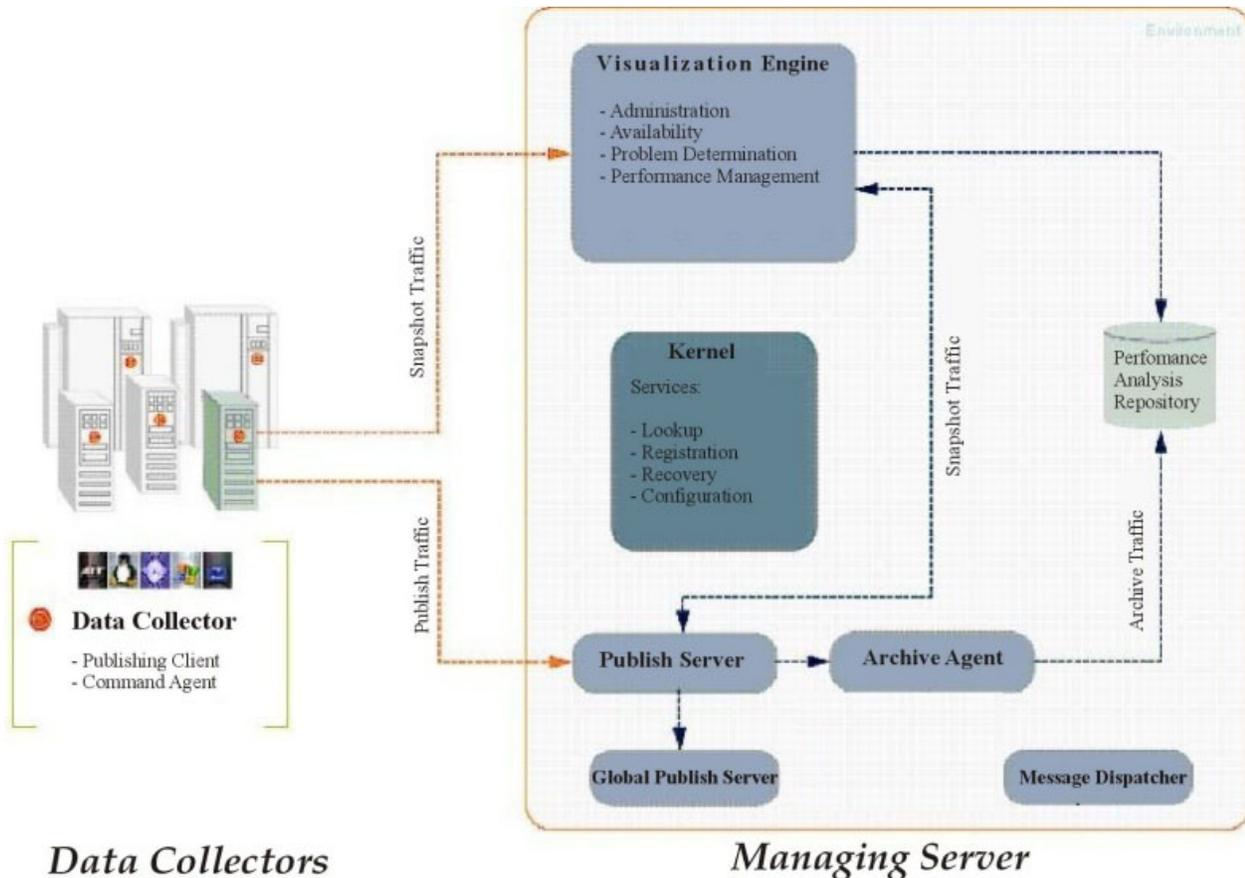
Figure 1. Interaction between the Data Collector and components of the Managing Server

The database that the Managing Server uses can be hosted on a dedicated database server or jointly with the Tivoli Monitoring database.

For environments that include many servers or are distributed among several sites, you can deploy the Managing Server components across multiple hosts. You can also deploy multiple instances of the kernel, Publish Server, and Archive Agent.

Application support files

The application support files are installed on the hub Tivoli Enterprise Monitoring Server, on the Tivoli Enterprise Portal Server, and on the Tivoli Enterprise Portal Client. They are required for correct presentation of information from the agents in Tivoli Enterprise Portal.

The support files enable IBM Tivoli Monitoring communication with the agents.

On the Tivoli Enterprise Monitoring Server, support files provide the data tables and situations for ITCAM for Application Diagnostics.

On the Tivoli Enterprise Portal Server, support files provide the ITCAM for Application Diagnostics workspaces that display the monitoring information and include code that processes situation information for the Summary workspaces. Support files for the browser client, which provide the help information and language packs for the browser-based portal client, are also installed on the portal server.

On the Tivoli Enterprise Portal client, support files provide the ITCAM for Application Diagnostics help information and language packs.

The support files must be installed on all hub Tivoli Enterprise Monitoring Servers, all Tivoli Enterprise Portal Servers, and Tivoli Enterprise Portal clients except browser-based clients. A separate set of support files is used for each of the agents.

Chapter 2. Installation

To install ITCAM for Application Diagnostics, you need to install its components on various hosts. It is important to install them in proper order and to make correct infrastructure decisions.

Considerations for ITCAM Agent for WebSphere Applications

In most cases (except i5/OS and the Deployment Manager for Network Deployment and Extended Deployment), the Agent for WebSphere Applications component is installed on every computer where a monitored WebSphere Application Server is running.

Agent for WebSphere Applications on Windows, Linux, and UNIX systems

On a Windows, Linux, or UNIX host where a WebSphere node is running, you must install the ITCAM Agent for WebSphere Applications component.

You must install version 7.1 before installing the latest maintenance level, which is 7.1.0.1. (However, you do not need to configure version 7.1 to monitor any server instances; you can install the maintenance level immediately and then configure it).

After the initial installation, configure the Data Collector for every monitored instance of the application server. Also configure the Monitoring Agent to connect to the Tivoli Enterprise Monitoring Server.

Important: Do not configure the Data Collector to monitor an instance of WebSphere Application Server that hosts the Managing Server Visualization Engine. You can, however, use the Data Collector for monitoring any other WebSphere Application Server instances on the same node.

If the IBM Tivoli Monitoring Operating System Agent is running on a host, you can install and configure a ITCAM Agent for WebSphere Applications component on this host remotely from the Tivoli Enterprise Portal or, using the `tacmd` utility, from the Tivoli Enterprise Monitoring Server.

For more information on installing and configuring the ITCAM Agent for WebSphere Applications component on Windows, Linux, and UNIX systems, see *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications Installation and Configuration Guide*.

Agent for WebSphere Applications on z/OS systems

On every z/OS computer, install and configure the Data Collector and the Monitoring Agent. They are included as separate SMP/E packages. The IBM Tivoli Monitoring framework is a prerequisite. The installation and configuration must be carried out by a systems administrator.

An installation of each of the two packages can be shared between several z/OS system images. However, separate configuration of the Data Collector is required for every WebSphere Application Server instance. For the Monitoring Agent, you must configure a separate Runtime Environment for every z/OS system image.

More Runtime Environments may be needed, depending on the IBM Tivoli Monitoring framework and Data Collector configuration decisions.

For more information on installing and configuring ITCAM Agent for WebSphere Applications on z/OS systems, see *IBM Tivoli Composite Applications Manager: Agent for WebSphere Applications Installation and Configuration Guide for z/OS*.

Agent for WebSphere Applications on IBM i systems

On an IBM i host running a WebSphere node, install the Data Collector. Configure the Data Collector to communicate to a Monitoring Agent on a Windows, Linux, or UNIX host. The Monitoring Agent is not available on IBM i.

For the Monitoring Agent, select a host that has the best possible network connectivity with the IBM i host, does not have a high load, and does not run critical tasks. Install ITCAM Agent for WebSphere Applications on the host; the Monitoring Agent is installed as one of the components of this agent.

Application server log information is not reported on IBM i.

Tip: If the Monitoring Agent host runs WebSphere Application Server, you can choose to enable the Data Collector to monitor server instances on it. In this case, the Monitoring Agent communicates with the local Data Collector as well as the IBM i Data Collector. However, you are not required to do so.

For more information on installing and configuring ITCAM Agent for WebSphere Applications Data Collector IBM i systems, see *IBM Tivoli Composite Applications Manager: Agent for WebSphere Applications Data Collector Installation and Configuration Guide for IBM i*.

WebSphere Network Deployment

On every Network Deployment WebSphere node that you want to monitor, install the ITCAM Agent for WebSphere Applications component and configure the Data Collector for Network Deployment application server instances. You do not have to install the agent on a Deployment Manager node.

When the ITCAM Agent for WebSphere Applications component is configured for Network Deployment, it automatically retrieves configuration and availability information from the Deployment Manager when necessary.

For more information on configuring the ITCAM Agent for WebSphere Applications Data Collector for Network Deployment application server instances, see the sections describing configuring application server instances in *IBM Tivoli Composite Applications Manager: Agent for WebSphere Applications Installation and Configuration Guide*, *IBM Tivoli Composite Applications Manager: Agent for WebSphere Applications Installation and Configuration Guide*, *IBM Tivoli Composite Applications Manager: Agent for WebSphere Applications Installation and Configuration Guide for z/OS*, and *IBM Tivoli Composite Applications Manager: Agent for WebSphere Applications Data Collector Installation and Configuration Guide for IBM i*.

WebSphere Extended Deployment

In a WebSphere Extended Deployment (XD) environment, you must install the ITCAM Agent for WebSphere Applications component on one of the XD nodes in order to monitor Virtual Enterprise and Compute Grid performance. You can also deploy the ITCAM monitoring Extended Archive (EAR) to the Job Scheduler

deployment target to provide information about the running jobs. If detailed request and resource monitoring is necessary for a server in the XD environment, you must install the agent on the node and modify server or cluster configuration for it.

As the Deployment Manager is a sensitive part of XD, ITCAM for Application Diagnostics does not require you to install any code on the computer where it is running. Instead, the agent can be configured on any node in the Extended Deployment and will communicate with the Deployment Manager over the network.

To provide information about the running jobs, use the `itcam.cg.py` wsadmin script to install the ITCAM monitoring EAR on the deployment target (node or cluster) where the Job Scheduler is deployed.

ITCAM for Application Diagnostics can monitor every WebSphere server instance within the Extended Deployment, including instances that are created dynamically. For this monitoring, you must deploy the agent on every node and modify the server configuration that is stored on the Deployment Manager by using the `createItcamTemplate.py` script. The Data Collector is configured automatically for every dynamically created WebSphere server instance.

For more information on configuring ITCAM Agent for WebSphere Applications Data Collector for Extended Deployment, see *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications User Guide*.

Considerations for ITCAM Agent for J2EE

Install the Monitoring Agent and the Data Collector separately. You must install the Agent for J2EE on every node where you need to monitor a J2EE application server.

After the initial installation, configure the Data Collector for every monitored instance of the application server and every monitored J2SE application. Also configure the Monitoring Agent to connect to the Tivoli Enterprise Monitoring Server.

For more information on installing and configuring ITCAM Agent for J2EE Data Collector, see *IBM Tivoli Composite Application Manager Agent for J2EE Data Collector Installation and Configuration Guide*.

For more information on installing and configuring ITCAM Agent for J2EE Monitoring Agent, see *IBM Tivoli Composite Application Manager Agent for J2EE Monitoring Agent Installation and Configuration Guide*.

Considerations for ITCAM Agent for HTTP Servers

You must install the Agent for HTTP Servers on every node where you need to monitor a Web server. This node can be the same node where you install the Agent for WebSphere or J2EE; the Agent for HTTP Servers monitors the Web front end.

If the IBM Tivoli Monitoring Operating System Agent is running on a host, you can install and configure the Agent for HTTP Servers component on this host remotely from the Tivoli Enterprise Portal or, using the tacmd utilities, from the Tivoli Enterprise Monitoring Server.

For more information on installing and configuring ITCAM Agent for HTTP Servers, see *IBM Tivoli Composite Application Manager: Agent for HTTP Servers Installation and Configuration Guide*.

Considerations for the Managing Server

By default, all components of the Managing Server are deployed on the same host. However, to provide optimal data handling, it might be better to use a "split" installation, where different Managing Server components are installed on different hosts. You must also provide a database for the Managing Server, either a separate DB2 or Oracle server or one that is shared with the IBM Tivoli Monitoring database.

Important: Do not configure the ITCAM Agent for WebSphere Applications Data Collector to monitor an instance of WebSphere Application Server that hosts the Managing Server Visualization Engine. You can, however, use the Data Collector for monitoring any other WebSphere Application Server instances on the same node. All other components of the Managing Server do not affect operation of the Data Collector on the same host.

Tip: If you are planning to configure more than 100 Data Collectors, or if you intend to use high monitoring levels (L2/ L3) often (for example in a development or testing environment), use a split Managing Server installation for better scalability, performance, and reliability.

For more information about installing and configuring the Managing Server including split installation, see *IBM Tivoli Composite Application Manager for Application Diagnostics: Managing Server Installation and Configuration Guide*.

Managing server database

You must have a database server available for the Managing Server. The installation program can install a database server and create the database. Alternatively, you need to create a database named octigate on an existing IBM DB2 or Oracle database server. (You can change this database name).

You can use the IBM Tivoli Monitoring database server. However, you must ensure that it has enough spare capacity in both storage and load. On large installations, the database is likely to be used intensively, so it is best practice to use a separate host for it.

Hosts where the Visualization Engine, kernel, and Archive Agent are installed must have access to the database server.

For more information on setting up the database for the Managing Server, see *ITCAM for Application Diagnostics Managing Server Installation and Configuration Guide*.

Installing Managing Server components on multiple hosts

To optimize performance and reliability, it is often best practice to install Managing Server components on different hosts.

By default, all components of the Managing Server are deployed on one host. The components are as follows:

- Kernel

- Visualization Engine
- Data Access Layer
- Problem Finder Engine
- Publish Server - two instances
- Archive Agent - two instances
- Message Dispatcher
- Global Publish Server

To provide load balancing and optimize resource use, you can install the Managing Server across up to four servers, using any combination of the following methods:

- You can run the Managing Server Visualization Engine (user interface component) on a separate server. In this case, only this host requires a full installation of IBM WebSphere Application Server. This solution improves performance and stability of the user interface. The Data Access Layer and Problem Finder Engine run on the same host as the Visualization Engine.
- You can use a separate server for the database management system (DB2 or Oracle).
- You can use a *split installation* to spread the backend Managing Server components (kernel, Publish Server, Archive Agent) among two hosts. This is especially useful if you are monitoring a large amount (100 or more) of application server instances, or if you intend to use high monitoring levels (L2/ L3) often, for example in a development or testing environment; in this case, you must also ensure good network connectivity between the hosts. Also, if your network spans multiple sites, you can configure the Managing Server to assign each Data Collector to the Publish Server located on the same site.

For more information on installing the Managing Server components on several hosts, see the section on split installation in *ITCAM for Application Diagnostics Managing Server Installation and Configuration Guide*.

Planning an upgrade installation

If you are using ITCAM for WebSphere 6.1, ITCAM for J2EE 6.1, or ITCAM for Web Resources 6.2, you can perform an upgrade to ITCAM for Application Diagnostics 7.1. The upgrade procedure preserves customized configuration. Upgrade the Monitoring Agents and Managing Servers first; the older Data Collectors will work with the new Managing Servers. If you installed Fix Pack 4 or later for these products, the older Data Collectors will also work with the new Monitoring Agents; otherwise, you must upgrade the Data Collectors to resume monitoring with IBM Tivoli Monitoring.

Upgrading from ITCAM for WebSphere 6.1 and ITCAM for J2EE 6.1 on Windows, Linux and UNIX systems

ITCAM for WebSphere 6.1 monitors WebSphere Application Servers. ITCAM for J2EE 6.1 monitors J2EE application servers. The Managing Server can be shared between the products. You can upgrade one or both of these products to ITCAM for Application Diagnostics 7.1.

An ITCAM for WebSphere 6.1 or ITCAM for J2EE 6.1 installation includes the following components:

- The Data Collector, installed on every monitored node and configured for every monitored application server instance. ITCAM for WebSphere 6.1 Data Collectors monitor WebSphere Application Servers. ITCAM for J2EE 6.1 Data Collectors monitors J2EE application servers.

- The Managing Server, which communicates with the Data Collectors and provides the Visualization Engine user interface. The Managing Server can be installed on one host, or its components can be "split" between several hosts. The same Managing Server can communicate with ITCAM for WebSphere Data Collectors and ITCAM for J2EE Data Collectors.
- **Optional:** Tivoli Enterprise Monitoring Agents, which provide monitoring with IBM Tivoli Monitoring. A Tivoli Enterprise Monitoring Agent communicates with Data Collectors on one or several hosts and with the Tivoli Enterprise Monitoring Server. ITCAM for WebSphere Tivoli Enterprise Monitoring Agent and ITCAM for J2EE Tivoli Enterprise Monitoring Agent are different. For each Tivoli Enterprise Monitoring Agent in use, support files must be installed on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients.

Note: If you are using ITCAM for J2EE 6.1, the Tivoli Enterprise Monitoring Agents and IBM Tivoli Monitoring support files were updated to 6.2 fix pack 5 (this fix pack is also used for version 6.1), and the Data Collectors were updated to 6.1 fix pack 4, you do not need to upgrade these components. The version that is part of ITCAM for Application Diagnostics 7.1 is the same.

To plan an upgrade from ITCAM for WebSphere 6.1 and ITCAM for J2EE 6.1 to ITCAM for Application Diagnostics 7.1 on Windows, Linux and UNIX systems, determine the following information:
- On which hosts the Managing Server is installed
- On which hosts the Data Collectors are installed and configured
- Which of the Data Collectors were updated to 6.1 fix pack 4 or later
- Whether Tivoli Enterprise Monitoring Agents are used; if so, on which hosts they are installed

You must perform the upgrade in the following order:
1. Upgrade all installations of all components of the Managing Server at the same time. During the upgrade, the Managing Server is not available, but it does not affect the performance of the application servers, or of monitoring with Tivoli Monitoring. The new Managing Server communicates with the older Data Collectors; therefore, monitoring can resume immediately after this step. See *ITCAM for Application Diagnostics Managing Server Installation and Configuration Guide*.
2. If ITCAM for WebSphere Tivoli Enterprise Monitoring Agents are used, upgrade IBM Tivoli Monitoring to version 6.2.2 or later. See *IBM Tivoli Monitoring: Installation and Setup Guide*.
3. If ITCAM for WebSphere Tivoli Enterprise Monitoring Agents are used, install new support files on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients. Monitoring with the older Tivoli Enterprise Monitoring Agents continues after this step.
4. On all hosts where the ITCAM for WebSphere Tivoli Enterprise Monitoring Agent is installed, install ITCAM Agent for WebSphere Applications 7.1, using the same installation directory as the older Tivoli Enterprise Monitoring Agent. After installing version 7.1, immediately install version 7.1.0.1. This installation upgrades the Monitoring Agent to the new version. It communicates with older Data Collectors if they were updated to 6.1 fix pack 4 or later; so, for such Data Collectors, monitoring is only interrupted briefly. However, for any Data Collectors that were not updated to 6.1 fix pack 4, Tivoli Monitoring stops at this point. Performance of the application servers is not affected. See *IBM Tivoli*

Composite Application Manager: Agent for WebSphere Applications Installation and Configuration Guide; follow the installation process described in the chapters on installing the agent on Windows or on Linux and UNIX systems, as appropriate.

5. On all hosts where the ITCAM for WebSphere Data Collector is installed, install ITCAM Agent for WebSphere Applications 7.1 (Do not install it a second time if you have already installed it on the same host in Step 4 on page 14). After installing version 7.1, immediately install version 7.1.0.1. This installation makes the new Data Collector available; however, all application server instances are still monitored by the older Data Collector at this point. If the IBM Tivoli Monitoring Infrastructure is used, configure the Agent communication to the Tivoli Enterprise Monitoring Server correctly on every host. See *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications Installation and Configuration Guide*; follow the installation process described in the chapters on installing the agent on Windows or on Linux and UNIX systems, as appropriate.

6. Using ITCAM Agent for WebSphere Applications 7.1.0.1 configuration, upgrade monitoring of each application server instance to the new Data Collector. For Data Collectors that were not updated to 6.1 fix pack 4, this step is required to reenable Tivoli Monitoring monitoring. For 6.1 fix pack 4 or later Data Collectors, monitoring is not interrupted, so you can perform the upgrade at a convenient time. The upgrade involves restarting the application server instance. See *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications Installation and Configuration Guide*; follow the upgrade procedure described in the chapters on configuring the Agent on Windows or Linux and UNIX systems, as appropriate.

   Important: After the upgrade, the Data Collector always communicates with the Monitoring Agent on the same host, even if the older Data Collector communicated with a Monitoring Agent on a different host. This is the standard configuration for the current version of the agent; it is best practice to keep this configuration. However, if you want to restore communication to a Monitoring Agent on a different host, you can edit the `DC_home`/runtime/ `appserver_version.node_name.server_name`/kwjdc.properties file for every application server instance. Set the host name and port for the Monitoring Agent in this file.

7. Update all ITCAM for J2EE Tivoli Enterprise Monitoring Servers, Tivoli Monitoring support files, and Data Collectors to the version that is part of ITCAM for Application Diagnostics 7.1. See *ITCAM Agent for J2EE Data Collector Installation and Configuration Guide* and *ITCAM Agent for J2EE Monitoring Agent Installation and Configuration Guide*.

   Important: If the Tivoli Enterprise Monitoring Agents and Tivoli Monitoring support files for J2EE support files are already updated to 6.2 fix pack 5 (this fix pack is also used for version 6.1) and the Data Collectors for J2EE are already updated to 6.1 fix pack 4, this step is not required because the version shipped with ITCAM for Application Diagnostics 7.1 is the same.

Upgrading from ITCAM for WebSphere 6.1 on z/OS

You can upgrade from ITCAM for WebSphere 6.1 to ITCAM for Application Diagnostics 7.1 on z/OS, preserving any customized configuration.

ITCAM for WebSphere 6.1 on z/OS includes the Data Collector and the Tivoli Enterprise Monitoring Agent.

The Data Collector communicates with the Managing Server that is installed on a Windows, Linux, or UNIX system. It can also communicate with the Monitoring Agent installed on the same z/OS system. It does not typically communicate with a Monitoring Agent installed elsewhere.

You must complete the upgrade in the following order:

1. Upgrade the Managing Server. See "Upgrading from ITCAM for WebSphere 6.1 and ITCAM for J2EE 6.1 on Windows, Linux and UNIX systems" on page 13.

2. If the Tivoli Enterprise Monitoring Agent is used, upgrade IBM Tivoli Monitoring to 6.2.2 or a later version.

3. If the Tivoli Enterprise Monitoring Agent is used, install new support files on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients. Monitoring with the older Tivoli Enterprise Monitoring Agent continues after this step.

4. If the Tivoli Enterprise Monitoring Agent is used, install the new Monitoring Agent. For Data Collectors that were not updated to 6.1 fix pack 4, Tivoli Monitoring *stops* at this point. Performance of the application servers is not affected.

5. Install the new Data Collector, and create new configuration home directories to match the existing ones. This installation makes the new Data Collector available; however, all application server instances are still monitored by the older Data Collector at this point.

6. Using new Data Collector configuration scripts, upgrade the monitoring of each application server instance to the new Data Collector. For Data Collectors that were not updated to 6.1 fix pack 4, this step is required to reenable Tivoli Monitoring monitoring. For 6.1 fix pack 4 or later Data Collectors, monitoring is not interrupted, so you can perform the upgrade at a convenient time. The upgrade involves restarting the application server instance.

For more information on upgrading ITCAM Agent for WebSphere Applications on z/OS systems, see *ITCAM Agent for WebSphere Applications Installation and Configuration Guide for z/OS*. The upgrade procedure is outlined in the Worksheets chapter.

Upgrading from ITCAM for WebSphere 6.1 on IBM i

You can upgrade from ITCAM for WebSphere 6.1 to ITCAM for Application Diagnostics 7.1 on an IBM i system (i5/OS), preserving any customized configuration. This requires an operating system upgrade to IBM i 5.4 or 6.1, as previous versions are not supported by ITCAM for Application Diagnostics 7.1.

ITCAM for WebSphere 6.1 Data Collector on i5/OS communicates with the Managing Server and, optionally, with the Tivoli Enterprise Monitoring Agent, both of which are installed on Windows, Linux, or UNIX systems.

You must complete the upgrade in the following order:

1. Upgrade the operating system to IBM i 5.4 or 6.1.

2. Upgrade the Managing Server and, if applicable, the Tivoli Enterprise Monitoring Agent. See "Upgrading from ITCAM for WebSphere 6.1 and ITCAM for J2EE 6.1 on Windows, Linux and UNIX systems" on page 13. For any Data Collectors that were not updated to 6.1 fix pack 4, Tivoli Monitoring stops at this point.

3. Install the new Data Collector. This installation makes the new Data Collector available; however, all application server instances are still monitored by the older Data Collector at this point.

4. Using the new Data Collector configuration tool, upgrade the monitoring of each application server instance to the new Data Collector. For Data Collectors that were not updated to 6.1 fix pack 4, this step is required to reenable Tivoli Monitoring. For 6.1 fix pack 4 or later Data Collectors, monitoring is not interrupted, so you can perform the upgrade at a convenient time. The upgrade involves restarting the application server instance.

For more information on installing and configuring ITCAM Agent for WebSphere Applications Data Collector IBM i systems, see *ITCAM Agent for WebSphere Applications Data Collector Installation and Configuration Guide for IBM i*. Follow the procedure in the Silent installation chapter; when preparing a response file, use the instructions for upgrade installation of the Data Collector.

Upgrading from ITCAM for Web Resources 6.2

ITCAM for Web Resources 6.2 monitors WebSphere application servers,. J2EE application servers, and HTTP Servers using IBM Tivoli Monitoring. You can upgrade all configurations of this product to ITCAM for Application Diagnostics 7.1.

An ITCAM for Web Resources 6.2 installation can include any of the following components:

- The WebSphere Data Collector, installed on every monitored WebSphere node and configured for every monitored WebSphere application server instance.
- The WebSphere Tivoli Enterprise Monitoring Agent, which communicates with WebSphere Data Collectors on one or several hosts and with the Tivoli Enterprise Monitoring Server and provides Tivoli Monitoring. Support files for it must be installed on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients.
- The J2EE Data Collector, installed on every monitored J2EE node and configured for every monitored J2EE application server instance. The same Data Collector is used for IBM WebSphere Application Server Community Edition.
- The J2EE Tivoli Enterprise Monitoring Agent, which communicates with J2EE Data Collectors on one or several hosts and with the Tivoli Enterprise Monitoring Server and provides Tivoli Monitoring. Support files for it must be installed on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients.
- The Web Servers Tivoli Enterprise Monitoring Agent, monitoring Apache Web Servers, Sun Web Servers, and Microsoft Internet Information Services (IIS) servers. This agent communicates to the Tivoli Enterprise Monitoring Server and provides Tivoli Monitoring; there is no separate Data Collector component for Web Servers. Support files for it must be installed on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients.

To plan an upgrade from ITCAM for WebSphere 6.1 and ITCAM for J2EE 6.1 to ITCAM for Application Diagnostics 7.1 on Windows, Linux, and UNIX systems, determine the following information:

- On which hosts the WebSphere and J2EE Data Collectors are installed and configured.
- Which of the Data Collectors were updated to 6.1 fix pack 4 or later (also used for version 6.2).

- On which hosts the Tivoli Enterprise Monitoring Agents are installed.

You must upgrade all the components that you are using. Before upgrading any of the other components, you must upgrade IBM Tivoli Monitoring to version 6.2.2 or later.

To upgrade monitoring for WebSphere servers:

1. Upgrade IBM Tivoli Monitoring to version 6.2.2 or later. See *IBM Tivoli Monitoring: Installation and Setup Guide*.

2. Install new support files for ITCAM Agent for WebSphere Applications 7.1 on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients. Monitoring with the older Tivoli Enterprise Monitoring Agents continues after this step.

3. On all hosts where the WebSphere Tivoli Enterprise Monitoring Agent is installed, install ITCAM Agent for WebSphere Applications 7.1, using the same installation directory as the older Tivoli Enterprise Monitoring Agent. After installing version 7.1, immediately install version 7.1.0.1. This installation upgrades the Monitoring Agent to the new version. It communicates with the older Data Collectors if they were updated to 6.1 fix pack 4 or later; so, for such Data Collectors, monitoring is only interrupted briefly. However, for any Data Collectors that are not updated to 6.1 fix pack 4, Tivoli Monitoring stops at this point. Performance of the application servers is not affected. See *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications Installation and Configuration Guide*; follow the installation process described in the chapters on installing the agent on Windows or on Linux and UNIX systems, as appropriate.

4. On all hosts where the ITCAM for WebSphere Data Collector is installed, install ITCAM Agent for WebSphere Applications 7.1. (Do not install it a second time if you have already installed it on the same host in Step 3). After installing version 7.1, immediately install version 7.1.0.1. This installation makes the new Data Collector available; however, all application server instances are still monitored by the old Data Collector at this point. See "Agent for WebSphere Applications on Windows, Linux, and UNIX systems" on page 9; follow the installation process described in the chapters on installing the Agent on Windows or Linux and UNIX systems, as appropriate.

5. Using ITCAM Agent for WebSphere Applications 7.1.0.1 configuration, upgrade the monitoring of each application server instance to the new Data Collector. For Data Collectors that were not updated to version 6.1 fix pack 4, this step is required to reenable Tivoli Monitoring. For version 6.1 fix pack 4 or later Data Collectors, monitoring is not interrupted, so you can perform the upgrade at a convenient time. The upgrade involves restarting the application server instance. See *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications Installation and Configuration Guide*; follow the upgrade procedure described in the chapters on configuring the Agent on Windows or Linux and UNIX systems, as appropriate.

Important: z/OS WebSphere monitoring can also be a part of an ITCAM for Web Resources installation. For the upgrade process for it, see "Upgrading from ITCAM for WebSphere 6.1 on z/OS" on page 15.

To upgrade monitoring for J2EE servers, update all ITCAM for J2EE Tivoli Enterprise Monitoring Servers, Tivoli Monitoring support files, and Data Collectors to the version that is part of ITCAM for Application Diagnostics 7.1. See *ITCAM Agent for J2EE Data Collector Installation and Configuration Guide* and *ITCAM Agent for J2EE Monitoring Agent Installation and Configuration Guide*.

Important: If the Tivoli Enterprise Monitoring Agents and Tivoli Monitoring support files for J2EE support files are already updated to 6.2 fix pack 5 and the Data Collectors for J2EE are already updated to 6.1 fix pack 4 (also used for version 6.2), this step is not required because the version shipped with ITCAM for Application Diagnostics 7.1 is the same.

To upgrade monitoring for HTTP Servers (Web Servers):

1. Install new support files for ITCAM Agent for HTTP Servers 7.1 on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients. Monitoring with the old Tivoli Enterprise Monitoring Agents continues after this step.

2. On all hosts where the ITCAM for Web Resources Tivoli Enterprise Monitoring Agent for Web Servers is installed, install ITCAM Agent for HTTP Servers 7.1, using the same installation directory as the older Tivoli Enterprise Monitoring Agent. This installation upgrades the agent to the new version. You must restart the HTTP servers. Monitoring is not interrupted for any extended periods. See See *ITCAM Agent for HTTP Servers Installation and Configuration Guide*.

Important: ITCAM Agent for HTTP Servers 7.1 does not support Microsoft Internet Information Services (IIS). Do not upgrade any installations of ITCAM for Web Resources Tivoli Enterprise Monitoring Agent for Web Servers that monitor IIS. You can use these agents to monitor IIS and use ITCAM Agent for HTTP Servers 7.1 to monitor other HTTP servers in the same Tivoli Monitoring infrastructure, but typically not on the same host.

Planning a maintenance level update

If you are using ITCAM for Application Diagnostics version 7.1, you can update it to a new maintenance level (7.1.0.1). The update procedure preserves customized configuration.

You do not need to update Agent for J2EE as it is not changed from the version shipped with ITCAM for Application Diagnostics 7.1.

Before updating ITCAM Agent for WebSphere Applications and ITCAM Agent for HTTP Servers, install application support files for the new version on the hub Tivoli Enterprise Monitoring Servers, on all Tivoli Enterprise Portal Servers, and on all Tivoli Enterprise Portal desktop clients.

If you use the deep dive diagnostics infrastructure, you must update all installations of the Managing Server before updating ITCAM Agent for WebSphere Applications. See *IBM Tivoli Composite Application Manager for Application Diagnostics: Managing Server Installation and Configuration Guide*.

To update ITCAM Agent for WebSphere Applications on a Windows, Linux, or UNIX system, perform the following procedure:

1. Install ITCAM Agent for WebSphere Applications version 7.1.0.1 on the monitored host. It will immediately replace the Monitoring Agent with the new version. Monitoring of application servers will not be disrupted.

2. Using ITCAM Agent for WebSphere Applications 7.1.0.1 configuration, change the maintenance level for each monitored application server instance.

3. If required, use ITCAM Agent for WebSphere Applications 7.1.0.1 configuration to remove the old maintenance level. This is not mandatory.

For details, see *IBM Tivoli Composite Application Manager: Agent for WebSphere Applications Installation and Configuration Guide*.

To update ITCAM Agent for WebSphere Applications on z/OS to a new maintenance level, install the PTF packages for the Data Collector and Monitoring Agent using SMP/E, and follow the instructions supplied with the packages.

To update ITCAM Agent for WebSphere Applications Data Collector on an IBM i system, use the silent update installation program, which is located in the fix pack package. Then, use the configuration utility to update monitoring of application server instances and, if necessary, to remove the old maintenance level. For details, see *IBM Tivoli Composite Applications Manager: Agent for WebSphere Applications Data Collector Installation and Configuration Guide for IBM i*

To update ITCAM Agent for HTTP Servers, install the new version on the monitored host, using the same destination directory as the existing installation.

To update the Managing Server, use the update installer, which is located in the maintenance level installation package. See *ITCAM for Application Diagnostics: Managing Server Installation and Customization Guide*.

Chapter 3. Installation checklist

This chapter contains a list of practical items that you must check during an ITCAM for Application Diagnostics installation. By ensuring that each item is performed, you can avoid common problems and ensure a successful installation.

Before the installation

Check the following items before starting to install ITCAM for Application Diagnostics.

1. Ensure that you have installation media for the latest generally available version of ITCAM for Application Diagnostics. Each version carries more fixes, improvements, and optimization in terms of data collected and monitoring resource usage, and it is best to install the latest level to gain the most out of monitoring capabilities.

2. Visit the ITCAM Wiki to access valuable information about the latest offerings, best practices, configuration options, and troubleshooting tips. The Wiki is at: http://www.ibm.com/developerworks/wikis/display/tivolimonitoring/Home.

3. Ensure that the IBM Tivoli Monitoring Infrastructure, including Tivoli Enterprise Portal and Tivoli Enterprise Monitoring Servers, is installed and operating.

IBM Tivoli Monitoring support files

Check the following items when installing ITCAM for Application Diagnostics support files for IBM Tivoli Monitoring.

1. Make sure to install the support files for every agent that is in use or can in the future be used in your environment (Agent for WebSphere Applications component, Agent for J2EE component, and Agent for HTTP Servers component) on the following hosts:

   a. Hub Tivoli Enterprise Monitoring Servers.

   b. All Tivoli Enterprise Portal Servers. Both Tivoli Enterprise Portal Server support files and Tivoli Enterprise Portal browser client support files must be installed.

   c. All hosts where the Tivoli Enterprise Portal Client is installed.

   You do not need to install support files on hosts using a Web browser to access Tivoli Enterprise Portal.

2. Reconfigure the Tivoli Enterprise Portal Server after the application files have been installed, in order to regenerate the kyn_resources.xml file that is required for the Java WebStart client.

Managing Server checklist

Check the following items if you are installing the Managing Server.

1. Install the ITCAM for Application Diagnostics Managing Server first before installing the agents. If the Managing Server function is required, the server must be operational before you configure the Data Collector components of the agents.

2. Install the Visualization Engine component of the Managing Server, which relies on WebSphere Application Server, on a separate host for better

performance. The Visualization Engine can run on the same system if the number of events that are received by the Publish Server are low and the number of users is minimal.

Agent for WebSphere Applications

Check the following items when installing ITCAM Agent for WebSphere Applications on any host.

Before installing the Agent

1. If running WebSphere version 6.1 or higher (with IBM Developer Kit for the Java platform version 1.5.0), consider using the Generational Garbage Collection policy. This policy can reduce the Garbage Collection (GC) pauses and lower CPU use in many cases, resulting in better application response times. This policy can be set by using the –Xgcpolicy:gencon policy in the Java Virtual Machine parameters.

2. Create a user account for the agent, and ensure the following permissions for it:
   a. Read permission to the WebSphere logs (the SystemOut.log and SystemErr.log). The agent parses these logs to display data in the Log Analysis workspace.
   b. WebSphere server start/stop privileges, if the Start/Stop Application Servers Take Action commands are needed. Verify the privileges by logging in as the user and issuing the startServer and stopServer scripts for all WebSphere server instances.

3. Ensure that the user who completes the configuration of the agent has the following permissions:
   - Read permissions for *AppServer_home*/properties and all directories and files under it.
   - Read permissions for *AppServer_profile_home*/properties and all directories and files under it.
   - Read permissions for *AppServer_profile_home*/config and all directories and files under it.
   - Read and write permissions for *AppServer_profile_home*/logs and all directories and files under it.
   - Execute permission for *AppServer_home*/wsadmin.sh

4. If you want to monitor performance overhead that is introduced by the agent, complete the following steps:
   a. Prepare a baseline performance metric of the system from the operating system without the agent. The metrics include CPU use, memory use, disk paging, and other metrics that you consider important. You can use operating system tools like NMON, TOP, and Task Manager to observe and record these metrics.
   b. Evaluate baseline GC activity by turning on the verbose GC option in the WebSphere Java Virtual Machine. This option helps in the comparison of GC performance and helps you decide whether to increase the heap size. If the free heap space after GC activity is near the maximum heap size, then you increase the heap size when you configure it with the Data Collector. Use the Data Collector configuration process to add 128 MB of heap space, if necessary.

Before configuring the Monitoring Agent

1. Verify that the correct application support files are installed in the Tivoli Enterprise Monitoring Servers (remote and hub) and Tivoli Enterprise Portal. You can check for the installed version using the `cinfo` command on UNIX systems and the `KinCInfo` command on Windows systems and checking the version for the `yn` component.

2. Analyze the product-provided situations and determine which ones fit your monitoring needs. If many situations that are of little value are enabled, IBM Tivoli Monitoring makes many queries. The number of queries can impact the performance of the IBM Tivoli Monitoring Infrastructure (including the agent) and possibly of WebSphere Application Server. This impact can become critical when a single Monitoring Agent is connected to many Data Collectors.

3. Carefully evaluate the tables (workspaces) for which you want to collect historical data. Collecting unwanted data can have the following effects:
   - Effects the performance of the Agent and the WebSphere server due to periodic queries. The effect can become critical when the Monitoring Agent is connected to many Data Collectors.
   - Database storage issues, both short-term history in files and long-term history in Tivoli Data Warehouse.

4. There is a 32-character IBM Tivoli Monitoring limitation on managed system names. This limitation affects both the agent name and the WebSphere server names. For the agent name, the default name is `node_ID:host_name:`KYNA. If node_ID is not supplied during agent configuration, then it defaults to "Primary." Make sure that the combined length of *node_ID* and *host_name*does not exceed 26 characters. If it does, you must provide the appropriate shortened names. The *node_ID* is supplied in the **Alternate Node ID** field during the Advanced Monitoring Agent configuration. The *host_name* variable can be changed with the CTIRA_HOSTNAME variable in the `TEMA_HOME`/config/yn.ini file for UNIX systems, and the `TEMA_HOME`/TMAITM6/kynenv file for Windows systems.

5. The 32-character IBM Tivoli Monitoring limitation also applies to the WebSphere server names. The default name for WebSphere server managed system node is `profile_name$server_name:host_name:`KYNS. The two colons (:) and KYNS are required entries. If the other parts of the names add up to more than 26 characters, then the server names are truncated. If you want to display proper names, consider creating server aliases by providing proper short names for the servers. The server aliases can be assigned by configuring the Monitoring Agent or by editing the `TEMA_HOME`/config/<host_name>_yn.cfg file.

6. Ensure that the Warehouse proxy is set up and the short-term history data is transferred to the Warehouse periodically. Large short-term history files impact Tivoli Enterprise Portal workspace response times if a workspace contains tables that display short-term history. These files are not indexed and searches must be done by scanning sequentially from the beginning of the file. For more information about short-term history files, see *IBM Tivoli Monitoring Administrator Guide*, chapter *Collecting historical data*.

Before configuring the Data Collector

1. If the Data Collector connects to a Managing Server, ensure the kernel and Publish Server components of the Managing Server are up and running.

2. Analyze the ports that are required to connect to the Managing Server. If there are multiple Data Collectors on the same host, consider enabling the Port consolidator to reduce the number of open ports, especially if there is a firewall between the Data Collector and Managing Server. For more information about

the Managing Server ports that are to be opened and about the Port Consolidator see *IBM Tivoli Composite Application Manager for Application Diagnostics: Managing Server Installation and Configuration Guide*.

3. When starting the configuration, complete the following checks:
   - For WebSphere Application Server Base Edition, ensure that the application server instance is running.
   - For Network Deployment and Extended Deployment, ensure that the Node Agent and Deployment manager are running.

After configuring the Data Collector

1. Verify that the user account that runs the WebSphere process has read and write permission on the `DC_home`/runtime directory. On some systems, it is also necessary to give this permission for all the parent directories. One way to verify permissions is to use the WebSphere user to create a dummy file in the `DC_home`/runtime directory.

2. Make sure the user account that starts the WebSphere process has read permission on all the agent install directories.

3. Perform the following steps to check the Java Virtual Machine parameters, either through the WebSphere administrative console or by reading the `server.xml` file:

   a. Add the following distributed garbage collection parameters to the Java Virtual Machine parameters if they have not been already added:

   ```
   –Dsun.rmi.dgc.client.gcInterval=3600000
   –Dsun.rmi.dgc.server.gcInterval=3600000
   ```

   If these parameters are not present, add them to the Java Virtual Machine parameter list. Without these parameters, explicit garbage collection starts every minute. The parameters set the interval to 1 hour, allowing typical allocation failures to trigger garbage collection as needed.

   b. Verify that the `–Xnoclassgc` parameter is not present in the Java Virtual Machine parameters. This parameter can cause more memory use, because the classes are not garbage collected. This issue becomes worse when dynamic classes are generated (for example, when using Java reflection).

   c. Verify that the maximum heap size, set in the WebSphere administrative console or in the `–Xmx` Java Virtual Machine parameter, has an adequate value for the agent memory use. To check if the value is adequate, examine the verbose garbage collection log file without the agent. If the free heap space after garbage collection is always close to the current maximum heap size, you must add at least 128 MB for agent memory use. However, if the free heap space is high (50-60% of maximum heap space) after each garbage collection, then the current heap sizing can be sufficient. Use proper judgment to plan for adequate memory use, so that the Java Virtual Machine does not produce Out Of Memory errors or engage in increased garbage collection activity impacting CPU use.

   d. On Sun HotSpot Java Virtual Machines (Solaris and HP-UX), make sure the `–XX:MaxPermSize` parameter is present in the Java Virtual Machine parameters with adequate size. All the Java class objects and "interned" String objects (`String` literals and `String.intern()` objects) are kept in this area. Set this size to at least 128 MB if it was not present. If the size was set before the Data Collector configuration, set the size as (1.2MPS + 20) MB, where MPS is the original MaxPermSize; for Sun HotSpot JVM version 1.6, set it to (1.2MPS + 80) MB.

4. If necessary, change the location for the Data Collector trace files. The default locations are as follows:
   - On Windows systems: `c:\IBM\ITM\TMAITM6\wasdc\7.1\logs\CYN\logs\`*server*.
   - On Linux and UNIX systems: `/opt/ibm/ITM/`*architecture_code*`/yn/wasdc/ 7.1/logs/CYN/logs/`*server*.

   On Linux and UNIX systems, the trace file locations are typically on a different mount. In this way, Data Collector trace and First Failure Data Collection (FFDC) files do not consume hard disk space on the mount where the WebSphere server is installed. To change the location of the trace files, set the new location in the following properties:
   - In *DC_home*`/runtime/`*server* `/dc.java.properties:` `jlog.common.dir`, `ibm.common.log.dir`
   - In *DC_home*`/runtime/`*server*`/dc.env.properties` (`trace-dc-native.log` and `msg-dc-native.log`): `CCLOG_COMMON_DIR`

5. If the agent is used for the first time in the environment or with a new application, initially do not enable entry/exit, memory leak, and lock analysis instrumentation. First use regular L1 monitoring, and then start adding features. This approach helps users to understand the WebSphere environment, the applications, and the optimal usage of the various monitoring features. Also, enabling all the features simultaneously might lead to server instability.

6. On HotSpot Java Virtual Machines (Solaris and HP-UX), heap analysis and heap dump features consume significant memory and have a potential memory leak in the JRE functionality that produces the heap dump. Do not use these features in these Java Virtual Machines, especially in the production environment, because it can destabilize the WebSphere Java Virtual Machines.

7. Before using the agent, restart all WebSphere Application Server instances where the Data Collector was configured.

After starting the Monitoring Agent

Verify that the new node displays in the Tivoli Enterprise Portal console. If the node does not display, first check whether the agent has connected to the Tivoli Enterprise Monitoring Server. Complete the following checks:

1. Ensure that there are no errors in the *TEMA_HOME*`/logs/`*hostname*`_yn_`*timestamp*`.log` log file. This log also provides the following information about the configuration settings that the agent is using.
   - `CT_CMSLIST`: The location of the Tivoli Enterprise Monitoring Server.
   - `CTIRA_HIST_DIR`: The location of short-term history files.
   - `KWJ_JAVA_HOME`: The location of JRE that is used by the Monitoring Agent for its embedded Java Virtual Machine. The WebSphere and J2EE Monitoring Agents have a Java Virtual Machine that is run within the Monitoring Agent process, known as the embedded Java Virtual Machine.

2. In the *ITM_HOME*`/logs/`*hostname*`_yn_`*timestamp*`.log` log, verify that the selected history collection has started. Entries on starting *agent_id*`:`*hostname*`:KYNA.LG0. UADVISOR_KYN_*` must be present. There must also be a `Connecting to CMS TEMS` entry. If the Tivoli Enterprise Monitoring Server connection is not made, the history entries are not in the log.

3. Check that the following entries are in the *ITM_HOME*`/logs/kyntema- msg.log` log on Windows systems, or in the *ITM_HOME*`/`*OS_DIR*`/logs/kyn-tema-msg.log` log on Linux and UNIX systems:

   ```
   KYNA0001I ITCAM for WebSphere Monitoring Agent start-up complete.
   KYNA0009I Listening for incoming data collector connections on port 63335.
   ```

4. Decide which PMI attributes you want to monitor. When servers have many resources such as JDBC, J2C, and Servlets, the performance cost for collecting attributes for these resources can be high. The required PMI attributes can be selected in the `datacollector.properties` file. If you prefer to set these attributes through the WebSphere Application Server configuration and prevent the agent from changing them, set the `am.pmi.settings.nochange=true` property.

After starting the Data Collector

1. Check whether the server instance shows up in the Tivoli Enterprise Portal console. If not, check the Monitoring Agent log file `kyn-tema-msg.log` for the following entry: KYNA0011I Application server connected: *server-name*.

2. If the Data Collector is used with the Managing Server, check for the following entries in `SystemOut.log`:

   ```
   <PPECONTROLLER, ...> Successfully joined Kernel <MS_host>:<port>
   <PPEPROBE, ....> Successfully joined Kernel <MS_host>:<port>
   ```

3. Make sure that the monitoring level is set to L1. The L2 monitoring level consumes more system resources (depending on the number of J2EE calls that are made by the application). L3 can consume significant system resources based on the application methods instrumented and the load on the system.

4. Make sure that the load and application types that are exercised on the system are comparable to the baseline that was obtained before configuration. Then, check the system health. Monitor the increase in the CPU, memory (both physical and virtual), and disk paging rates. Compare it against the baseline statistics that were collected before configuration. If these system metrics are too high, begin to troubleshoot by checking the following items:

   a. Check the WebSphere logs for any new log messages, errors, or exceptions. If any error message is not obvious (for example disk space running low), contact IBM software support; to do this, access the Web site http://www14.software.ibm.com/webapp/set2/sas/f/handbook/ home.html and click Contacts.

   b. Check the WebSphere FFDC directory for any new files that are generated. If any files are not obvious and can be attributed to the introduction of the agent, contact IBM Software Support; to do this, access the Web site http://www14.software.ibm.com/webapp/set2/sas/f/handbook/ home.html and click Contacts.

   c. On WebSphere systems using IBM Developer Kit for the Java platform (AIX®, Linux, Windows systems), check for any Java core or heap dump files that are created after the ITCAM Data Collector was introduced.

   d. If possible, check the verbose Garbage Collection file (the default is `native_stderr.log` on IBM Developer Kit for the Java platform and `native_stdout.log` on HotSpot) for increased garbage collection activity. You can use the verbose garbage collection log analyzer tool to provide vital statistics such as "percent of time spent on GC", any Out Of Memory errors, and heap fragmentation.

   e. Check the Data Collector trace logs for any repeated trace messages. Repeated messages also become evident if the trace files are large and are rolling over rapidly. If errors or repeated messages are observed, contact IBM software support; to do this, access the Web site http:// www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html and click Contacts. The ITCAM trace files are: `trace-dc-native.log`, `trace-dc-bcm.log`, and `trace-dc-ParentLast.log`. The default location:

/opt/ibm/ITM/*architecture_code*/yn/wasdc/7.1/logs/CYN/logs/*server* on
Linux and UNIX systems, and C:\IBM\ITM\TMAITM6\wasdc\7.1\logs\CYN\
logs*server* on Windows.

Agent for J2EE

Check the following items when deploying the J2EE Agent on any host.

Before installing the agent

1. Create a user account for the agent, and ensure that it has the following
   permissions:
   a. Read permission to the J2EE Application Server logs. The agent parses these
      logs to display data in the Log Analysis workspace.
   b. Application server start/stop privileges, if the Start/Stop Application
      Servers Take Action commands are needed. This permission can be verified
      by logging on as the user and starting/stopping all the application server
      instances.
2. To monitor performance overhead introduced by the agent:
   a. Prepare a baseline performance metric of the system from the operating
      system without the agent. The metrics include CPU use, memory use, disk
      paging, and other metrics that you consider important. You can use
      operating system tools like NMON, TOP, and Task Manager to observe and
      record these metrics.
   b. Evaluate baseline GC activity by turning on the verbose GC option in the
      WebSphere Java Virtual Machine. Doing this not only helps in the
      comparison with the GC performance with the agent, but also helps you
      decide whether to increase the heap size with the agent installed. If the free
      heap space after GC is near the maximum heap size, you must increase the
      heap size.
3. Make sure to run both the Data Collector and the Monitoring Agent installation
   programs.

Before configuring the monitoring agent

1. Verify that the correct application support files are installed in the Tivoli
   Enterprise Monitoring Servers (remote and hub) and Tivoli Enterprise Portal.
   You can check for the installed version using the `cinfo -i` command on Linux
   and UNIX systems and the `KinCInfo -i` command on Windows systems and
   checking the version for the `yj` component.
2. Analyze the product-provided situations and determine which ones fit your
   monitoring needs. If many situations that are of little value are enabled, IBM
   Tivoli Monitoring makes many queries. The number of queries can impact the
   performance of the IBM Tivoli Monitoring Infrastructure (including the agent)
   and possibly of WebSphere Application Server. This impact can become critical
   when a single Monitoring Agent is connected to many Data Collectors.
3. Carefully evaluate the tables (workspaces) for which you must collect historical
   data. Collecting unwanted data can result in the following effects:
   - Performance effect on the agent and application server due to periodic
     queries. This issue becomes critical when the Monitoring Agent is connected
     to many Data Collectors.
   - Database storage issues, both short-term history in files and long-term
     history in Tivoli Data Warehouse (TDW).
4. There is a 32-character IBM Tivoli Monitoring limitation on managed system
   names. This issue affects both the agent name and the application server

names. For the agent name, the default name is *node_ID:host_name*:KYJA. If *node_ID* is not supplied during Agent configuration, then it defaults to "Primary." Make sure that the combine length of the *node_ID* and the *host_name* does not exceed 26 characters. If it does, you must provide the appropriate shortened names. The *node_ID* is supplied in the **Alternate Node ID** field during the Advanced Monitoring Agent configuration. The *host_name* can be changed with the CTIRA_HOSTNAME variable in the *TEMA_HOME*/config/ yj.ini file for UNIX systems, and *TEMA_HOME*/TMAITM6/kyjenv file for Windows systems.

5. The 32- character IBM Tivoli Monitoring limitation also applies to the application server names. If you want to display different names, consider creating server aliases by providing proper short names for the servers. The server aliases can be assigned by configuring the Monitoring Agent or by editing the *TEMA_HOME*/config/<host_name>_yj.cfg file.

6. Make sure that the Warehouse proxy is set up and the short-term history data is transferred to the Warehouse periodically. Having large short-term history files impacts Tivoli Enterprise Portal workspace response times if a workspace contains tables that display short-term history. These files are not indexed and searches must be done by scanning sequentially from the beginning of the file. For more information about short-term history files, see *IBM Tivoli Monitoring Administrator Guide*, chapter *Collecting historical data*.

Before configuring the Data Collector

1. If your Data Collector connects to a Managing Server, make sure that the kernel and Publish Server components of the Managing Server are up and running.

2. Analyze the ports that are required to connect to the Managing Server. If there are multiple Data Collectors on the same host, consider enabling the port consolidator to reduce the number of ports that are opened to the Managing Server. This issue is especially important if there is a firewall between the Data Collector and Managing Server. For more information about the Managing Server ports that are to be opened and about the Port Consolidator see *IBM Tivoli Composite Application Manager for Application Diagnostics: Managing Server Installation and Configuration Guide*.

3. When starting the configuration, ensure that the application server is up and running.

After configuring the Data Collector

1. Verify the user account running the application server process has read and write permission on the *DC_home*/runtime directory. On some systems, it is also necessary to give this permission for all the parent directories. One way to verify that the application is running is to use the application server user to create a dummy file in the *DC_home*/runtime directory.

2. Make sure the user account running the application server process has read permission on all the agent install directories.

3. Perform the following steps to check the Java Virtual Machine parameters:

   a. Verify that the following distributed garbage collection parameters have been added to the Java Virtual Machine parameters:

   ```
   –Dsun.rmi.dgc.client.gcInterval=3600000
   –Dsun.rmi.dgc.server.gcInterval=3600000
   ```

   If these parameters are not present, add them to the Java Virtual Machine parameter list. Without these parameters, explicit garbage collection starts every minute. The parameters set the interval to 1 hour, allowing standard allocation failures to trigger the garbage collection as needed.

b. Verify that the –Xnoclassgc parameter is not present in the Java Virtual Machine parameters. This parameter can cause more memory use, because the classes are not garbage collected. This issue becomes worse when dynamic classes are generated (for example, when using Java reflection).

c. Verify that the –Xmx parameter has an adequate value for the agent overhead. Verify this value by examining the verbose garbage collection log file without the agent. If the free heap space after garbage collection is always close to the current maximum heap size, you must add at least 128 MB for agent overhead. If the free heap space is high (50-60% of maximum heap space) after each garbage collection, then the current heap sizing is sufficient. Use proper judgment to plan for adequate memory use, so that the Java Virtual Machine does not produce Out Of Memory errors or engage in increased garbage collection activity that has an impact on CPU use.

d. On Sun HotSpot Java Virtual Machines (Solaris and HP-UX), make sure that the –XX:MaxPermSize parameter is present in the Java Virtual Machine parameters with adequate size. All the Java class objects and "interned" String objects (String literals and String.intern() objects) are kept in this area. Set this size to at least 128 MB if it was not present. If the size was set before the Data Collector configuration, set the size to (1.2MPS + 20) MB, where MPS is the original MaxPermSize; for Sun HotSpot JVM version 1.6, set it to (1.2MPS + 80) MB.

4. If necessary, change the location for the Data Collector trace files. The default locations are as follows:

   - On Windows systems: C:\Program Files\ibm\tivoli\common\CYJ\logs.
   - On Linux and UNIX systems: /var/ibm/Tivoli/common/CYJ/logs.

   On UNIX systems, the trace file locations are typically on a different mount. In this way, Data Collector trace and First Failure Data Collection (FFDC) files do not consume hard disk space on the mount where the WebSphere server is installed. To change the location of the trace files, set the new location in the following properties:

   - In *DC_home*/runtime/*server*/dc.java.properties: jlog.common.dir, ibm.common.log.dir
   - In *DC_home*/runtime/*server*/dc.env.properties (trace-dc-native.log and msg-dc-native.log): CCLOG_COMMON_DIR

5. If the agent is used for the first time in the environment or with a new application, initially do not enable entry/exit, memory leak, and lock analysis instrumentation. First use regular L1 monitoring, and then start adding features. This approach helps users to understand the WebSphere environment, the applications, and the optimal usage of the various monitoring features. Also, enabling all the features simultaneously might lead to server instability.

6. On HotSpot Java Virtual Machines (Solaris and HP-UX), heap analysis and heap dump features consume much memory and have a potential memory leak in the JRE functionality that produces the heap dump. Do not use these features in these Java Virtual Machines, especially in the production environment, since it can destabilize the Java Virtual Machine. If you still need to enable the heap dump on these systems, add the following property in datacollector_custom.properties:

   internal.doheapdump=true

7. Before using the agent, restart all application server instances where the Data Collector was configured.

After starting the Monitoring Agent

Verify that the new node appears in the Tivoli Enterprise Portal console. If the node does not display, first check whether the agent has connected to the Tivoli Enterprise Monitoring Server. Complete the following checks:

1. Make sure there are no errors in the `TEMA_HOME`/logs/ `hostname`_yj_`timestamp`.log log file. This log also provides the following information about the configuration settings the agent is using:
   - `CT_CMSLIST`: The location of the Tivoli Enterprise Monitoring Server.
   - `CTIRA_HIST_DIR`: The location of short-term history files.
   - `KWJ_JAVA_HOME`: The location of JRE that is used by the Monitoring Agent for its embedded Java Virtual Machine.

2. In the `TEMA_HOME`/logs/`hostname`_yj_`timestamp`.log log file, verify that the selected history collection has started. Entries on starting the agent `agent_id`:`hostname`:KYJA.LG0. UADVISOR_KYJ_* must be present. There must also be a `Connecting to CMS TEMS` entry. If the Tivoli Enterprise Monitoring Server connection is not made, the history entries are not seen.

3. Check that the following entries display in the `TEMA_HOME`/`OS_DIR`/logs/kyj-tema-msg.log log file:

   ```
   KYJA0001I ITCAM for J2EE Monitoring Agent start-up complete.
   KYJA0009I Listening for incoming data collector connections on port 63335.
   ```

After starting the Data Collector

1. Check whether the server instance displays in the Tivoli Enterprise Portal console. If the server instance does not display, check the Monitoring Agent `kyj-tema-msg.log` log file for the following entry: KYJA0011I Application server connected: `server-name`.

2. If the Data Collector is used with the Managing Server, check for the following entries in `SystemOut.log` log file:

   ```
   <PPECONTROLLER, ...> Successfully joined Kernel <MS_host>:<port>
   <PPEPROBE, ....> Successfully joined Kernel <MS_host>:<port>
   ```

3. Ensure that the monitoring level is set to L1. The L2 monitoring level consumes more system resources (depending on the number of J2EE calls that are made by the application). L3 can consume significant system resources based on the application methods instrumented and the load on the system.

4. Make sure that the load and application types that are exercised on the system are comparable to the baseline obtained before configuration. Then, check the system health. Monitor the increases in the CPU, memory (both physical and virtual), and disk paging rates. Compare it against the baseline statistics that were collected before configuration. If these system metrics are too high, begin to troubleshoot by checking the following items:

   a. Check the application server logs for any new log messages, errors, or exceptions. If these log entries are not obvious (for example, disk space running low), contact IBM software support ; to do this, access the Web site http://www14.software.ibm.com/webapp/set2/sas/f/handbook/ home.html and click Contacts.

   b. Check the Data Collector trace logs for any repeated trace messages. This issue becomes evident if the trace files are large and are rolling over rapidly. If errors or repeated messages are observed, contact IBM software support; to do this, access the Web site http://www14.software.ibm.com/webapp/ set2/sas/f/handbook/home.html and click Contacts. The ITCAM trace files are: `trace-dc-native.log`, `trace-dc-bcm.log`, and `trace-dc-ParentLast.log`. The default location is the `/var/ibm/Tivoli/common/CYN/logs/`server`

directory on Linux and UNIX systems, and the `C:\Program Files\ibm\tivoli\common\CYN\logs\`*server* directory on Windows systems.

Agent for HTTP Servers

Check the following items when installing the Agent for HTTP Servers on any host.

Before installing the agent

1. Create a user account for the agent, and ensure that the following permissions are assigned to the user account:

   a. Read permission to the HTTP Server logs. The agent parses these logs to display data in the Log Analysis workspace.

   b. HTTP server start/stop privileges, if the Start/Stop HTTP Servers Take Action commands are needed. This permission can be verified by logging in as the user and starting and stopping all the HTTP server instances.

2. If you want to monitor the performance overhead introduced by the agent, prepare a baseline performance metric of the system from the operating system without the agent. The metrics include CPU use, memory use, disk paging, and other metrics that you consider important. You can use operating system tools like NMON, TOP, and Task Manager to observe and record these metrics.

Before configuring the monitoring agent

1. Verify that the correct application support files are installed in the Tivoli Enterprise Monitoring Servers (remote and hub) and Tivoli Enterprise Portal. You can check for the installed version using the `cinfo –i` command on UNIX systems and the `KinCInfo –i` command on Windows systems and checking the version for the `ht` component.

2. Analyze the product-provided situations and determine which ones fit your monitoring needs. Having many situations that are of little value might impact the performance of the IBM Tivoli Monitoring Infrastructure (including the agent) and possibly of the HTTP server, as many queries have to be made.

3. Carefully evaluate the tables (workspaces) for which you must collect historical data. Collecting unwanted data can have the following effects:

   • Performance effect on the agent and HTTP server due to periodic queries.

   • Database storage issues, both short-term history in files and long-term history in Tivoli Data Warehouse (TDW).

4. There is a 32-character IBM Tivoli Monitoring limitation on managed system names. This issue affects both the agent name and the HTTP server names. For the agent name, the default name is *node_ID*:*host_name*:KHTA. If *node_ID* is not supplied during agent configuration, then it defaults to "Primary." Make sure the combined length of the *node_ID* and the *host_name* does not exceed 26 characters. If it does, you must provide the appropriate shortened names. The *node_ID* is supplied in the **Alternate Node ID** field during the Advanced Monitoring Agent configuration. The *host_name* variable can be changed with the CTIRA_HOSTNAME variable in the *TEMA_HOME*/config/ht.ini file for UNIX systems, and the *TEMA_HOME*/TMAITM6/khtenv file for Windows systems.

5. The 32-character IBM Tivoli Monitoring limitation also applies to the HTTP server names. If you want different names to display, consider creating server aliases by providing proper short names for the servers. The server aliases can be assigned by configuring the Monitoring Agent or by editing the *TEMA_HOME*/config/<host_name>_ht.cfg file.

6. Make sure that the Warehouse proxy is set up and the short-term history data is transferred to the Warehouse periodically. Having large short-term history files impacts Tivoli Enterprise Portal workspace response times if a workspace contains tables that display short-term history. These files are not indexed and searches must be done by scanning sequentially from the beginning of the file. For more information about short-term history files, see *IBM Tivoli Monitoring Administrator Guide*, chapter *Collecting historical data*.

After starting the monitoring agent

Verify that the new node displays in the Tivoli Enterprise Portal console. If the node does not display, first check whether the agent has connected to the Tivoli Enterprise Monitoring Server. Complete the following checks:

1. Make sure there are no errors in the `TEMA_HOME`/logs/ `hostname_ht_timestamp`.log log file. This log also provides the following information about the configuration settings the agent is using:
   - `CT_CMSLIST`: The location of the Tivoli Enterprise Monitoring Server.
   - `CTIRA_HIST_DIR`: The location of short-term history files.
   - `KWJ_JAVA_HOME`: The location of JRE that is used by the Monitoring Agent for its embedded Java Virtual Machine.

2. In the `TEMA_HOME`/logs/`hostname_ht_timestamp`.log file, verify that the selected history collection has started. Entries on starting the agent `agent_id`:`hostname`:KHTA.LG0. UADVISOR_KHT_* must be present. There must also be a `Connecting to CMS TEMS` entry. If the Tivoli Enterprise Monitoring Server connection is not made, the history entries do not display.

Appendix. Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully. These are the major accessibility features you can use with ITCAM for Application Diagnostics when accessing it via the *IBM Personal Communications* terminal emulator:

- You can operate all features using the keyboard instead of the mouse.
- You can read text through interaction with assistive technology.
- You can use system settings for font, size, and color for all user interface controls.
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