IBM Tivoli Composite Application Manager
Version 6.2.0.5

Agent for J2EE Monitoring Agent Installation and Configuration Guide

SC27-2824-02

IBM Tivoli Composite Application Manager
Version 6.2.0.5

Agent for J2EE Monitoring Agent Installation and Configuration Guide

SC27-2824-02

Note:

Before using this information and the product it supports, read the information in “Notices” on page 91.

Contents

Figures

Tables

About this publication

This publication provides information about installing, customizing, starting, and maintaining ITCAM Agent for J2EE Monitoring Agent on Windows, Linux, and UNIX systems.

Important: The version of the Monitoring Agent is the same as was shipped with ITCAM for J2EE 6.2 fix pack 5. The product name "ITCAM for J2EE" is still used in the user interface and in this document.

Intended audience

This publication is for administrators or advanced users wanting to install or modify the configuration of ITCAM Agent for J2EE. The publication assumes that readers are familiar with maintaining operating systems, administering Web servers, maintaining databases, and general information technology (IT) procedures. Specifically, readers of this publication must have some knowledge of the following topics:

- Operating systems on which you intend to install product components
- Web servers, such as IBM® HTTP Server and Apache HTTP Server
- Application servers, such as WebLogic, NetWeaver, JBoss, Oracle, and Tomcat, and J2SE applications
- Internet protocols such as HTTP, HTTPS, TCP/IP, Secure Sockets Layer (SSL), and Transport Layer Security (TLS)
- Digital certificates for secure communication

Publications

This section lists publications in the product library and related documents. It also 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 http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/topic/com.ibm.itcamfad.doc_7101/ic-homepage.html:

- *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 user with a 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.

Related publications

The following documentation also provides useful information:

- IBM Tivoli Documentation Central:

  Information about IBM Tivoli Documentation is provided on the following Web site:

  https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Tivoli Documentation Central
- IBM DB2®:

  Information about IBM DB2 is provided on the following Web site:

  http://www.ibm.com/software/data/sw-library/
- IBM Tivoli Enterprise Console®:

  Information about IBM Tivoli Enterprise Console is provided on the following Web site:

  http://submit.boulder.ibm.com/tividd/td/EnterpriseConsole3.9.html
- IBM Tivoli Data Warehouse:

  Information about IBM Tivoli Data Warehouse is provided on the following Web site:

https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Tivoli%20Documentation%20Central/page/Tivoli%20Data%20Warehouse

- IBM Tivoli Change and Configuration Management Database:

  Information about IBM Tivoli Change and Configuration Management Database is provided on the following Web site:

  http://publib.boulder.ibm.com/infocenter/tivihelp/v10r1/index.jsp?toc=/com.ibm.ccmdb.doc/ccmdb_ic.xml

- IBM Support Assistant:

  Information about IBM Support Assistant is provided on the following Web site:

  http://www.ibm.com/software/support/isa/index.html?rcss=rtlrre

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

The documentation CD contains the publications that are in the product library. The format of the publications is PDF, HTML, or both.

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/community/wikis/home?lang=en#!/wiki/Tivoli%20Documentation%20Central

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

The IBM Software Support Web site provides the latest information about known product limitations and workarounds in the form of technotes for your product. You can view this information at the following Web site:

http://www.ibm.com/software/support

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 Appendix D, "Accessibility," on page 79.

Application Performance Management community on Service Management Connect

Connect, learn, and share with Service Management professionals: product support technical experts who provide their perspectives and expertise.

Access Service Management Connect at https://www.ibm.com/developerworks/servicemanagement/apm/index.html. Use Service Management Connect in the following ways:

- Become involved with transparent development, an ongoing, open engagement between other users and IBM developers of Tivoli products. You can access early designs, sprint demonstrations, product roadmaps, and prerelease code.
- Connect one-on-one with the experts to collaborate and network about Tivoli and the (enter your community name here) community.
- Read blogs to benefit from the expertise and experience of others.
- Use wikis and forums to collaborate with the broader user community.

Tivoli technical training

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

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

Support information

If you have a problem with your IBM software, you want to resolve it quickly. IBM provides the following ways for you to obtain the support you need:

Online

Go to the IBM Software Support at the following Web site:

http://www.ibm.com/software/support/

Follow the instructions.

IBM Support Assistant
The IBM Support Assistant (ISA) is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. The ISA provides quick access to support-related information and serviceability tools for problem determination. To install the ISA software, see the instructions for installing ISA in the Data Collector installation guide.

Troubleshooting Guide
For more information about resolving problems, see the corresponding part in *IBM Tivoli Composite Application Manager for Application Diagnostics: Troubleshooting Guide*.

Conventions used in this publication

This publication 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

Operating-system-dependent variables and paths

This document uses the UNIX convention for specifying environment variables and for directory notation.

When using the Windows command line, replace **$***variable* with **%***variable***%** for environment variables and replace each forward slash (**/**) with a backslash (\) in directory paths. The names of environment variables are not always the same on Windows and UNIX systems. For example, %TEMP% on Windows is equivalent to $tmp on UNIX systems.

Note: If you are using a UNIX shell on a Windows system, you can use the UNIX conventions.

Tivoli command syntax

The following special characters define Tivoli command syntax:

[ ] Identifies elements that are optional. Required elements do not have brackets around them.

... Indicates that you can specify multiple values for the previous element. Separate multiple values by a space, unless otherwise directed by command information.

If the ellipsis for an element follows a closing bracket, use the syntax within the brackets to specify multiple values. For example, to specify two administrators for the option [**–a** *admin*]..., use **–a admin1 –a admin2**.

If the ellipsis for an element is within the brackets, use the syntax of the last element to specify multiple values. For example, to specify two hosts for the option [**–h** *host*...], use **–h host1 host2**.

| Indicates mutually exclusive information. You can use the element on either the left or right of the vertical bar.

{ } Delimits a set of mutually exclusive elements when a command requires one of them. Brackets ([ ]) are around elements that are optional.

In addition to the special characters, Tivoli command syntax uses the typeface conventions described in "Typeface conventions" on page xiii. The following examples illustrate the typeface conventions used in Tivoli command syntax:

- **wcrtpr** [**–a** *admin*]... [**–s** *region*] [**–m** *resource*]... *name*

  The *name* argument is the only required element for the **wcrtpr** command. The brackets around the options indicate they are optional. The ellipses after the **–a** *admin resource* option means that you can specify multiple administrators multiple times. The ellipses after the **–m** *resource* option means that you can specify multiple resources multiple times.

- **wchkdb** [**–o** *outfile*] [**–u**] [**–x**] {**–f** *infile* | **–i** | *object*...}

  The **–f**, **–i**, and *object* elements are mutually exclusive. Braces that surround elements indicate that you are including a required element. If you specify the *object* argument, you can specify more than one object.

Chapter 1. IBM Tivoli Composite Application Manager Agent for J2EE

The Tivoli Enterprise Monitoring Agent provided for ITCAM Agent for J2EE can help you monitor and administer your systems that deploy the IBM J2EE Application Servers.

Important: The version of the Monitoring Agent is the same as was shipped with ITCAM for J2EE 6.2 fix pack 5. The product name "ITCAM for J2EE" is still used in the user interface and in this document.

Overview of the monitoring process

This agent works in the context of the IBM Tivoli Monitoring (ITM) family, a suite of products used to monitor a mixed systems environment. With ITM, you can:

- Establish your own performance thresholds
- Create situations, which are conditions you need to monitor
- Create and send commands to systems in your managed enterprise through the Take Action feature, with Take Action commands, you can, for instance, restart a process that is not functioning correctly or dynamically reconfigure your environment
- Create comprehensive reports about system conditions
- Monitor for alerts on the systems and platforms you are managing
- Trace the causes leading up to an alert
- Define your own queries, using the attributes provided with the ITCAM Agent for J2EE Monitoring Agent, to monitor conditions of particular interest to you

Figure 1 displays a basic overview of how the components for ITM and ITCAM for Web Resources interact.

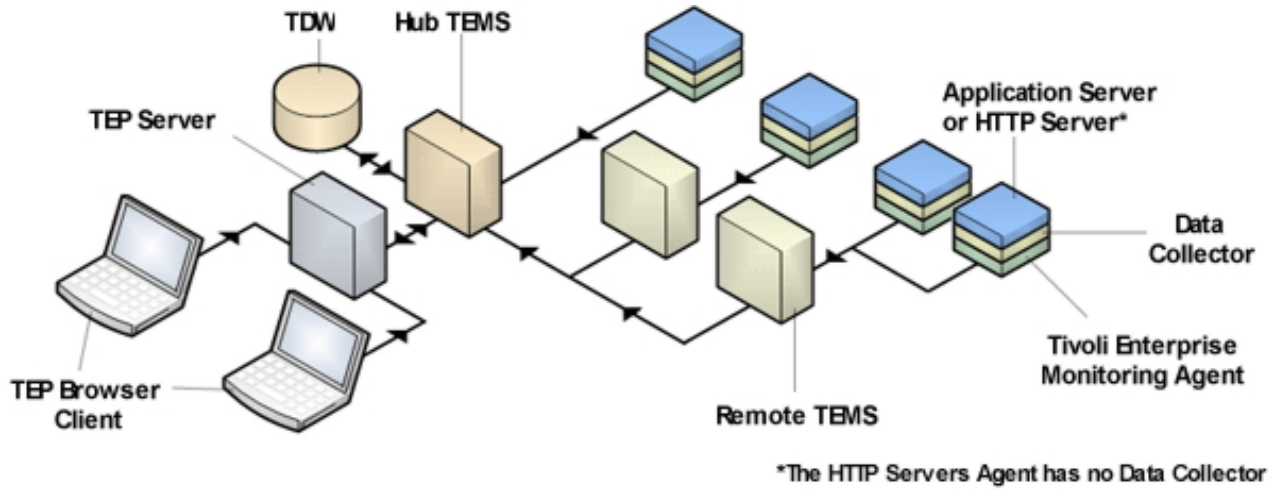

Figure 1. Product architecture

ITM components

ITM includes a number of key components, which run in a server/client/agent configuration:

TMS Tivoli Monitoring Services provides the software infrastructure upon which all other ITM components (the monitoring server, the server and clients, and all the TEMAs) are built.

TEP The Tivoli Enterprise Portal is the user interface for ITM agents. It provides the status of your enterprise and views of the data that the various Tivoli Enterprise Monitoring Agents collect. Portal also gives you access to Take Actions commands and situations that you can use to further customize data collection and reporting.

The comprises two pieces: the *Portal server*, which generally runs on a centrally located server, and the *Portal client*, which runs on your users' individual computers and with which they directly interact to query and control your enterprise's running systems. Two different portal clients are provided:

- The Tivoli Enterprise Portal workstation client (usually called the *desktop client*)
- The portal *browser client*, which runs within a Web browser

TEMS The Tivoli Enterprise Monitoring Server provides framework and database operations for the Tivoli Enterprise Server and the various agents. The agents pass data to the monitoring server, and then the portal server requests the data.

TEMAs
The Tivoli Enterprise Monitoring Agents collect performance data about monitored environments such as J2EE Application Server and carry out your users' Take Action commands entered through a portal client. A TEMA collects and distributes real-time and historical performance data as needed to a monitoring server.

MTMS
Manage Tivoli Enterprise Monitoring Services provides a full-screen Windows GUI that you can use to check the status of TMS processes such as the monitoring server, the portal server, and the TEMA, to stop or to recycle them, and to reconfigure them.

TEMA data collector
This component runs as part of the ITCAM Agent for J2EE Data Collector to retrieve monitoring data about a single J2EE application server and to ship that data to the ITCAM Agent for J2EE Monitoring Agent.

The Tivoli Enterprise Portal

The portal is the user interface into your site's ITM environment.

The portal provides a view of your enterprise from which you can drill down to examine components of your systems environment more closely. Its application window consists of a Navigator that shows all the systems in your enterprise where Tivoli Enterprise Monitoring Agents are installed and a workspace that includes table and chart views of system and application conditions.

The portal runs situations at regular intervals to verify that your applications and systems are running, and running well. A failed test results in event indicators displayed in the Navigator.

The portal offers two modes of client operation: desktop and browser. In desktop mode, the application software is installed on your local node. In browser mode, the system administrator installs the application on the portal server, and you start Tivoli Enterprise Portal from your Web browser; the application is then downloaded to your system the first time you log on to the browser client and thereafter only when there are software updates.

ITCAM Agent for J2EE Monitoring Agent

The Tivoli Enterprise Monitoring Agent collects performance data about the IBM J2EE Application Servers running on a single node.

Performance data is collected from three primary sources:

- Response time data for your applications' service requests from the ITCAM Agent for J2EE Data Collector
- J2EE Application Server log messages
- Garbage-collector activity recorded in the Java™ virtual machine's verboseGC trace

The TEMA accumulates data from all these sources. The Tivoli Enterprise Monitoring Server (monitoring server) then retrieves this data and merges it with monitoring data from other agents, including other ITCAM Agent for J2EE Monitoring Agents, and passes them on to the portal server for display on the various portal clients attached to it.

TEMA data collection

With Tivoli Enterprise Monitoring Agent provided for the IBM Tivoli Composite Application Manager Agent for J2EE, you can monitor the health and availability of your site's J2EE Application Server environment, and the performance of the applications deployed to those application servers.

In particular, you can use the ITCAM Agent for J2EE Monitoring Agent to do the following things:

- Track and report the status of the application of J2EE Application servers in your enterprise
- Centrally administer J2EE Application Servers in your enterprise, including starting and stopping servers and setting monitoring levels to control the collection of performance data
- Analyze your applications' service requests (that is, application transactions) running in an application server
- Collect and report traffic and resource use within each J2EE Application Server
- Report activity levels for the Enterprise Java Beans (EJB) module defined in each application server
- Report activity levels for the enterprise bean object pools associated with Enterprise beans
- Collect and report statistics about EJB transactions
- Report activity levels for individual enterprise beans, including method invocation data

- Collect and report usage and contention for the database connection pools associated with each application server
- Collect and report activity levels associated with each Web application running in each application server's servlet engine
- Report statistical information associated with each servlet or the Java Server Pages running in the application servers
- Report error and exception conditions for the application servers, as recorded in the each server's log file
- Examine the performance of your application servers' garbage-collection algorithm
- Identify performance problems
- Analyze data to determine whether the Java virtual machine (JVM), the application server, servlets, Enterprise beans or requests are consuming capacity beyond the limits of your hardware and software
- Start Take Action commands to avoid costly downtime and performance slowdowns

How the TEMA works

Each TEMA you install collects information from one ITCAM Agent for J2EE Data Collector running inside one J2EE server.

You can use portal interface to view the data and monitor the health and performance of your J2EE Application Server environment.

The TEMA performs the following types of monitoring functions.

- It obtains data from the data collectors running within a J2EE Application Server and uses the data to create various views that you can define. (Numerous views are already available in the predefined TEMA workspaces.) These graphic views and reports are useful for examining the performance of the J2EE Application Server system.
- It evaluates situations to detect when ITCAM Agent for J2EE attribute values exceed preset thresholds you have defined and makes this exception information available to you.

Monitoring for exceptions requires you to create situations that are meaningful to the J2EE Application Server conditions you are monitoring. Several predefined situations are provided with the TEMA.

The ITCAM Agent for J2EE portal workspaces

With the portal workspaces for the ITCAM Agent for J2EE Monitoring Agent, you can see into the data reported for J2EE Application Servers.

The workspaces provide you with status, definitions, and statistical information for your J2EE Application Server system. ITM provides two types of workspaces: *primary workspaces* are directly accessible through the Navigator, but you must drill down to *secondary workspaces* from the primary workspace that defines them.

The TEMA provides the following primary workspaces for managing your system.

- **J2EE Agent**: The J2EE Agent workspace displays system-wide status information that includes enterprise events, product events, and the current status of all the J2EE Application Servers installed on the node.

- **J2EE App Server**: The J2EE Application Server workspace displays server status and the event console for all server sessions across your J2EE environment.
- *servername*: The *servername* workspace displays server status and memory use for a particular server.
- **Application Health Status**: The Application Health Status workspace provides information about the real-time health status of applications monitored by the agent.
- **Application Registry**: The Application Registry workspace provides information about the server configuration for the application.
- **Request Analysis**: The Request Analysis workspace contains information about the user transactions that were monitored during the interval. A history view of this workspace is also supplied.
- **Garbage Collection Analysis**: The Garbage Collection Analysis workspace displays garbage collection information for each Java Virtual Machine (JVM) running an application server and graphic views of the number of garbage collections and percentage of CPU used. This workspace monitors the overhead associated with running the garbage collector. A history view of this workspace is also supplied.
- **Log Analysis**: The Log Analysis workspace reports application server error and exception conditions as recorded in the application server's log file.
- **Pool Analysis**: The Pool Analysis workspace displays information about the usage of several types of J2EE Application Server pools, including JCA connection, and database connection.
- **Datasources**: The Datasources workspace provides database usage information. A history view of this workspace is also supplied.
- **JMS Summary**: The JMS Summary workspace displays information about the queues being used by your applications via the JMS interface and about how J2EE Application Server applications are using J2EE MQ.
- **Web Applications**: The Web Applications workspace displays information for each Web application running in each application server, including graphic views of average servlet response times and servlet exception and request rates. A history view of this workspace is also supplied.
- **Web Container**: The Web Container workspace displays information about the Web applications about the Web applications running in J2EE application servers.
- **EJB Components**: The EJB Components workspace displays runtime information for an EJB component in the Oracle/BEA WebLogic Server.
- **EJB Modules**: The EJB Modules workspace displays aggregated bean performance data for all Enterprise beans deployed to an EJB module.
- **DB Connection Pools**: The DB Connection Pools workspace displays information about the database connection pools associated with SAP NetWeaver application server. A history view of this workspace is also supplied.
- **JCA Connection Pools**: The JCA Connection Pools workspace reports information about resource adapters and connectors that adhere to JCA, the J2EE Connector Architecture.
- **JMS Sessions**: The JMS Sessions workspace displays statistics for Java Message Services (JMS) Sessions.
- **JDBC Connection Pools**: The JDBC Connection Pools workspace provide usage information about the JDBC connections pools for a database in the Oracle/BEA WebLogic Server. A history view of this workspace is also supplied.

- **JTA Resources**: The JTA Resources workspace displays information about the Java Transaction API (JTA) resources.
- **JTA Summary**: This workspace displays the performance summary statistics information about transactions in SAP NetWeaver application server.

Situations for the Tivoli Enterprise Monitoring Agent

ITCAM Agent for J2EE provides predefined situations to monitor key J2EE attributes.

You can use these situations to:

- Immediately begin monitoring your J2EE application servers
- Monitor and manage, through localized automation, widely dispersed J2EE resources, including your site's own J2EE applications
- Create your own situations

The predefined situations issue a Critical alert whenever they are triggered. You can investigate an event by opening its workspace. See the online help provided for the TEMA for detailed information about these predefined situations.

How situations work

Situations are expressions of system conditions you want to monitor that are embedded in IF-TRUE statements.

If the specified condition exists, this situation is true. You can use situations to monitor particular conditions on managed systems. For example, you might want to monitor errors for a particular Web application. Situations can monitor conditions on one or more managed systems in your enterprise.

For more information about using predefined situations and creating your own situations, refer to the following product information:

- To find information about the predefined situations for provided with ITCAM Agent for J2EE, see the agent's online help.
- To create and use your own situations from the Tivoli Enterprise Portal, refer to the help for portal.

Take Action commands

You can use the Take Action commands to stop or start a process at any system in your network where one or more Tivoli Enterprise Monitoring Agents are installed.

You can invoke Take Action commands from a workspace, from a situation, in an ad hoc mode, or by recalling a saved Take Action command. See the Tivoli Enterprise Portal online help for general information about using Take Action commands.

Predefined Take Action commands provided with the ITCAM Agent for J2EE Monitoring Agent

ITCAM Agent for J2EE provides several predefined Take Action commands.

You can issue Take Action commands from the browser interface to:

- Stop, start, and recycle an application server

- Adjust the monitoring of various J2EE Application Server resources

Because of high overhead, some data is not automatically collected and reported in certain workspaces. Use the Take Action commands to set the monitoring level for certain attributes and to accumulate request, resource, and garbage-collection information.

Historical reporting

You can use the facilities of IBM Tivoli Monitoring's Historical Data Collection function to store and save the data being collected by your Tivoli Enterprise Monitoring Agents.

The Historical Data Collection function permits you to specify:

- The attribute group or groups for which data is to be collected
- The interval at which data is to be collected
- The interval at which data is to be warehoused to the Historical Data Collection database (if you choose to do so)
- The location (either at the agent or at the monitoring server) at which the collected historical data is to be stored

Historical data is written to the Tivoli Data Warehouse (TDW) on UNIX and Windows platforms.

Predefined historical views (that is, reports) of your ITCAM Agent for J2EE monitoring data are available from these Tivoli Enterprise Portal workspaces:

- Datasources
- DB Connection Pools
- Request Analysis

When workspaces allow collection and viewing of historical data, you can specify a time span over which to collect this data. The default is to collect history data every 15 minutes, but you can modify this setting to suit your needs. Historical data is available in the table, bar chart, pie chart, and plot chart views when historical collection has been configured and started for the TEMA.

To ensure that data samplings are saved to populate the predefined historical workspaces, you must first configure and start historical data collection. Perform the following steps:

1. In the portal interface, choose the **History Configuration** icon in the tool bar, or press Ctrl-H.
2. Complete the information in the History Collection Configuration window. See the portal online help for details.

Prerequisites to installation

You must meet the perquisites before installing the agent.

The instructions for installation assume:

- You have installed IBM Tivoli Monitoring (ITM) and all its components, including:
  - A Tivoli Enterprise Monitoring Server (monitoring server)
  - A Tivoli Enterprise Portal (portal) server

  - The Tivoli Enterprise Portal clients
  - The IBM Eclipse Help Server (this feature enables your portal users to search the provided help files for specific text strings).
- You are familiar with basic portal functions such as using the Navigator and accessing secondary workspaces and the definitions of terms like *managed object* and *subnode*.
- As part of installing the ITCAM Agent for J2EE Data Collector, you installed the data-collection support for the Tivoli Enterprise Monitoring Agent. See *IBM Tivoli Composite Application Manager for Web Resources: J2EE Data Collector Installation Guide* for details.

In addition to installing the TEMA itself, the installation described in this chapter updates all these components with the code necessary to support the ITCAM Agent for J2EE Monitoring Agent.

To obtain the most recent installation updates, review the Release Note information for this product. You can find this information online by viewing IBM technotes. To access the technotes, see the *IBM Tivoli Composite Application Manager Tivoli Enterprise Monitoring Agent Problem Determination Guide*.

System and software prerequisites

Review the software and hardware requirements before installing the ITCAM Agent for J2EE Monitoring Agent.

The software and hardware requirements for ITCAM Agent for J2EE Monitoring Agent are available from the software product compatibility reports website.

Where to begin

Begin at the road map for your Tivoli Enterprise Monitoring Agent installation.

Table 1. Road map for installing the TEMA

What to do	Where to find more information
Obtain the installation	You can get the installation files either by downloading from the Web or using a product CD.
Verify that your computer meets the system and software prerequisites	"System and software prerequisites" "UNIX and Linux requirements" on page 43
Install the Tivoli Enterprise Monitoring Agent	"Installing the Tivoli Enterprise Monitoring Agent on Windows" on page 11 "Installing the Tivoli Enterprise Monitoring Agent on UNIX and Linux" on page 44
Configure the Tivoli Enterprise Monitoring Agent	"Configuring the Tivoli Enterprise Monitoring Agent on Windows" on page 21 "Configuring the Tivoli Enterprise Monitoring Agent on UNIX and Linux" on page 47

Table 1. Road map for installing the TEMA (continued)

What to do	Where to find more information
Install application support files	"Adding application support on Windows" on page 32 "Installing application support on Linux and UNIX" on page 59
(Optional) Install and uninstall a language pack	"Installing and uninstalling a Language Pack on Windows" on page 39 "Installing and uninstalling a Language Pack on Linux and UNIX systems" on page 64
(Optional) Silent install the Tivoli Enterprise Monitoring Agent	"Performing a silent installation on Windows" on page 38 "Performing a silent installation on UNIX and Linux" on page 63
Uninstall the Tivoli Enterprise Monitoring Agent	"Uninstalling the Tivoli Enterprise Monitoring Agent on Windows" on page 39 "Uninstalling the Tivoli Enterprise Monitoring Agent on UNIX and Linux" on page 64

Chapter 2. Installing and configuring the Tivoli Enterprise Monitoring Agent on Windows

Instructions for installing, configuring, and uninstalling the ITCAM Agent for J2EE Monitoring Agent on Microsoft Windows platforms are provided in the next sections.

These sections also includes instructions for installing the application support files and the language packs for users of non-English languages.

Installing the Tivoli Enterprise Monitoring Agent on Windows

You can install the ITCAM Agent for J2EE using a graphical user interface.

Note: The installation can only be performed by a user with system Administrator access.

Follow these instructions to perform the installation:

Step 1: Invoke setup.exe

After loading the ITCAM Agent for J2EE Monitoring Agent CD, locate and double-click the setup.exe file within the WINDOWS directory. The initial InstallShield window opens:

Figure 2. Installation Welcome window

Click **Next**. The product prerequisites window opens:

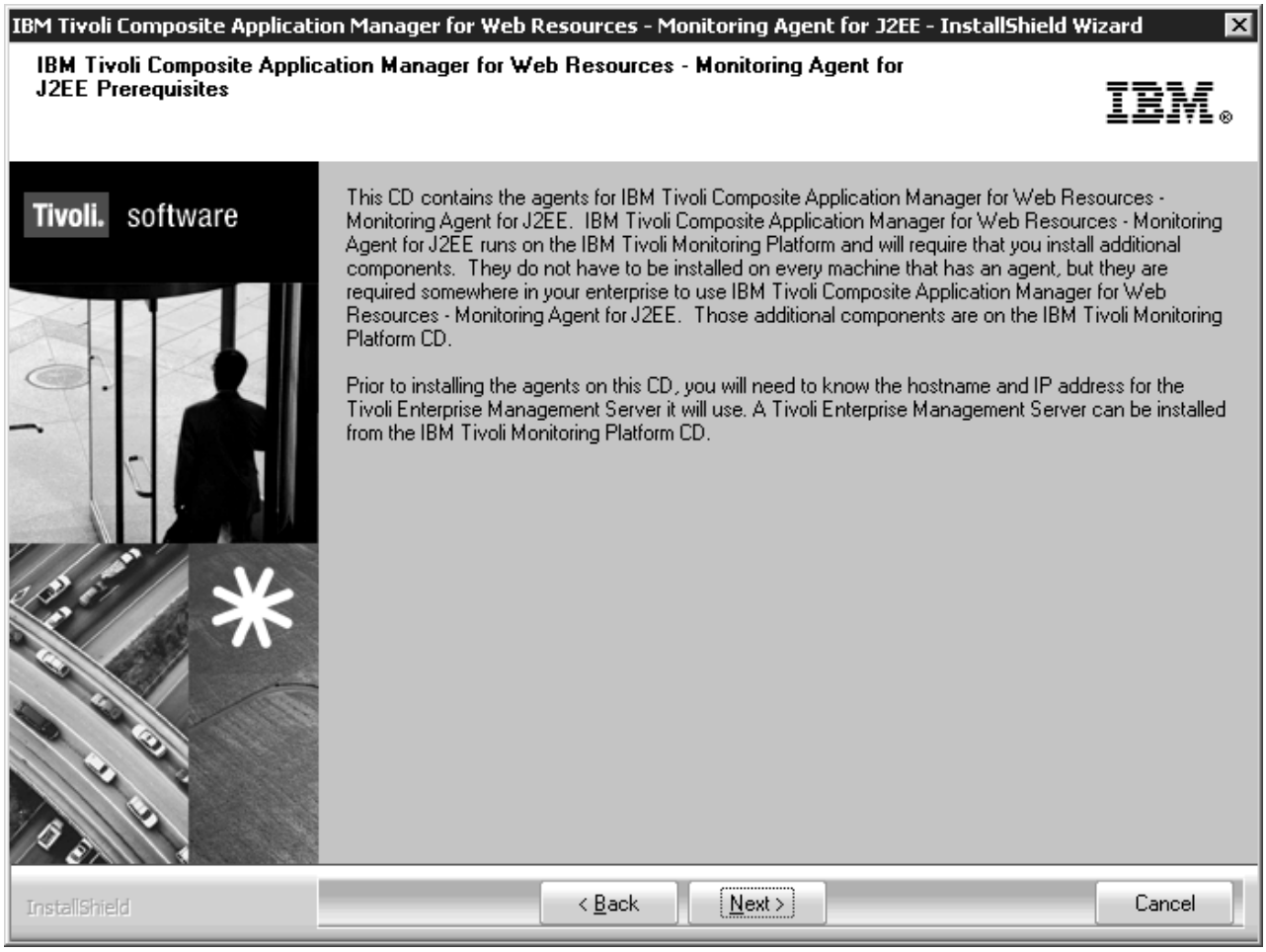

Figure 3. Prerequisites window

If the environment meets the prerequisites, click **Next**. Otherwise, cancel the installation and install the required components. After you meet the prerequisites, restart the installation from "Step 1: Invoke setup.exe" on page 11

The Monitoring Agent requires the following software as installation prerequisites. If your computer does not have the required software or version, specify the installation drive for the software and click **Next**. The InstallShield installs the required software.

- IBM Global Security ToolKit (GSKit) version 7.0.3.18 or above
- IBM Java Runtime Environment (JRE) version J2RE 1.4.2 IBM Windows 32 build cn142ifx-20060209 (SR4-1) or above

Figure 4. Install Prerequisites window

Step 2: Accept the product license

The product license agreement window opens. Click **Accept**.

Figure 5. Software License Agreement window

Step 3: Choose the destination folder for the installation files

You are prompted to choose the destination directory for the installation files:

Figure 6. Choose Destination Location window

If you want to choose a location other than the default location (C:\IBM\ITM), click **Browse** , and select that folder that you want to use. Click **Next** after you specified the folder. The User Data Encryption Key window opens.

Step 4: Define the node's security environment

You are prompted for the 32-character encryption key used to secure password transmission and other sensitive data across your site's ITM environment:

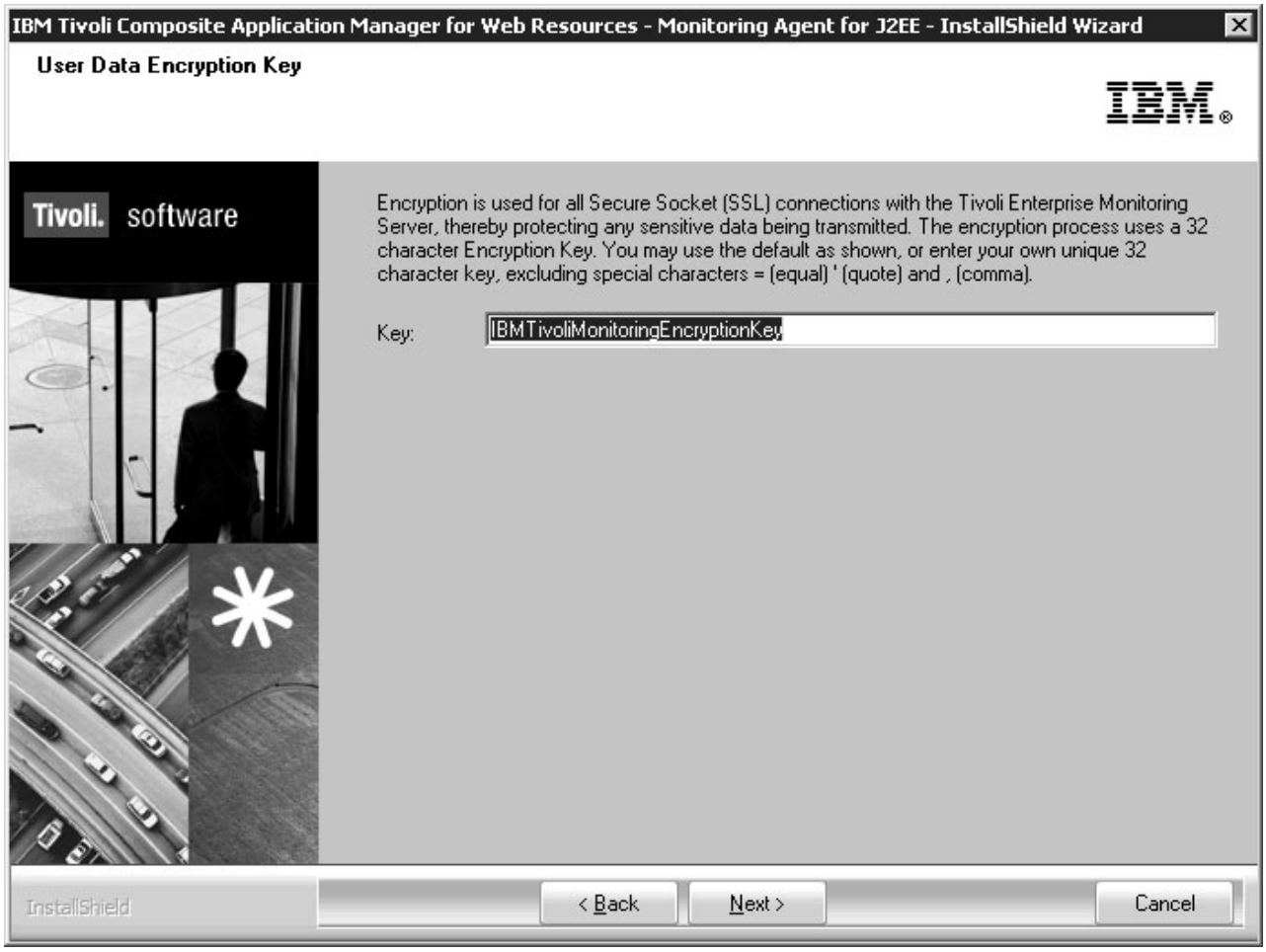

Figure 7. User Data Encryption Key window

See the *IBM Tivoli Monitoring: Installation and Setup Guide* for details about the encryption key. Click **Next** when you have specified the key.

Figure 8. Encryption Key confirmation window

Click **OK** to confirm the encryption key. The Select Features window opens.

Step 5: Select the product components you want to install

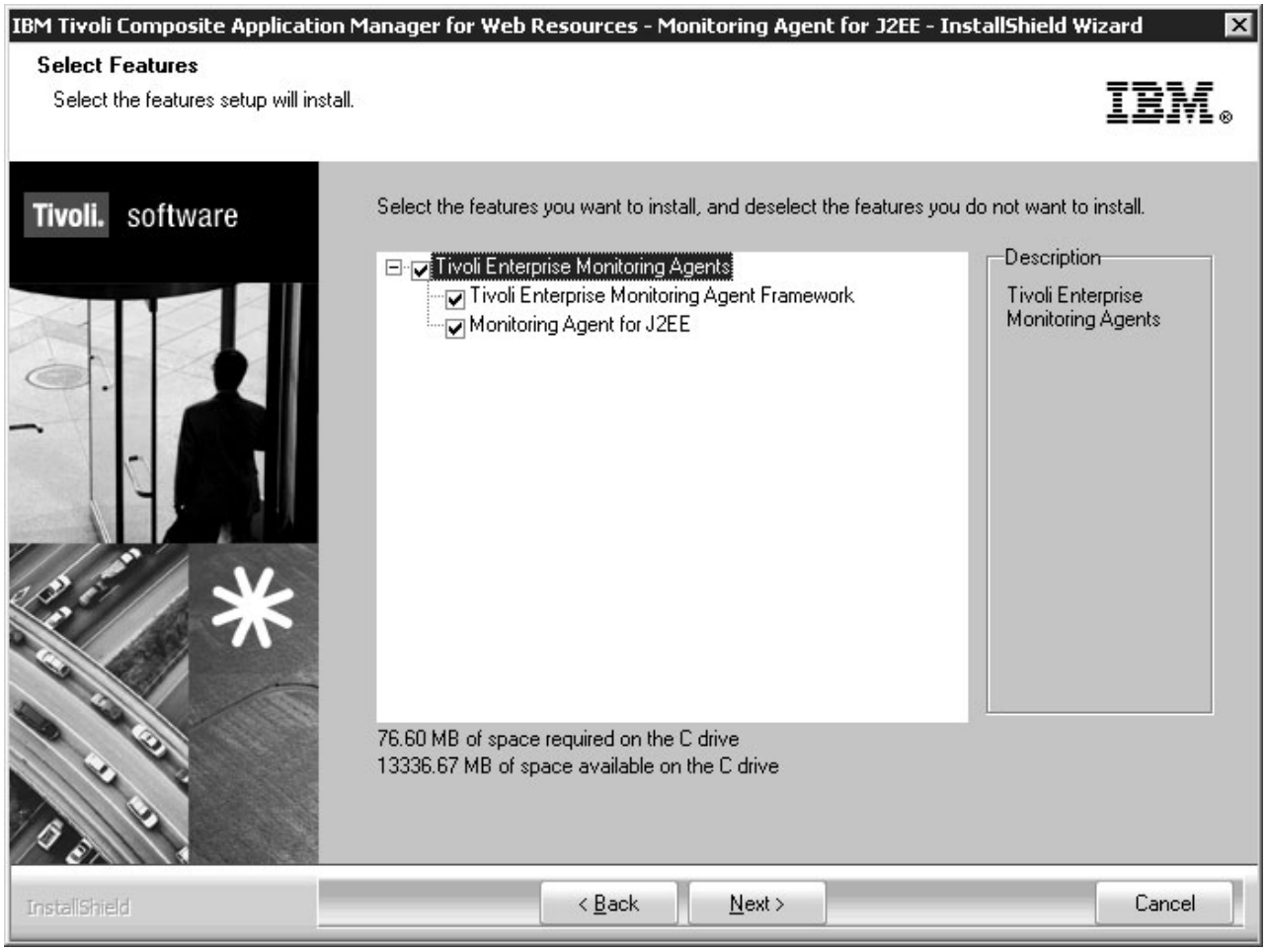

Figure 9. Select Features window

Select **Tivoli Enterprise Monitoring Agents**. This window might vary if the environment has ITM installed. Refer to "Adding application support on Windows" on page 32 for details. Click **Next** to display the Select Program Folder window.

Step 6: Select Windows program folder

InstallShield displays the Windows program folder it will create where ITM programs are made accessible:

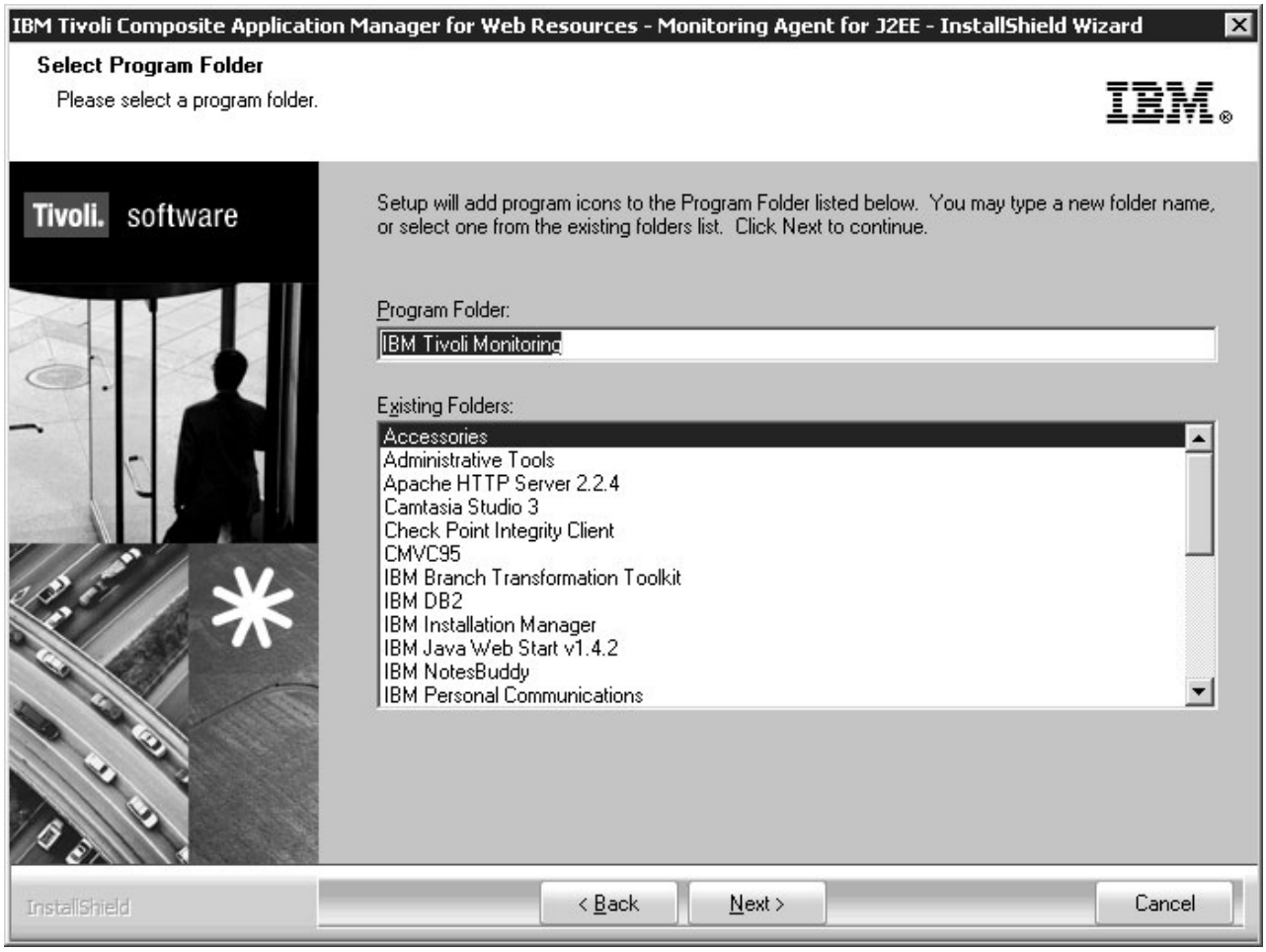

Figure 10. Select Program Folder window

Click **Next**. InstallShield displays the features you selected in the Start Copying Files window.

Step 7: Verify selected features

Figure 11. Selected features verification window

Verify that the features that you want to install are in the list. If you need to make changes, click **Back**. If the list is correct, click **Next**. The necessary installation files are copied to your hard drive.

Step 8: Select the items to configure

After the features you selected are installed, the Setup Type window prompts you to verify the list of components to be configured.

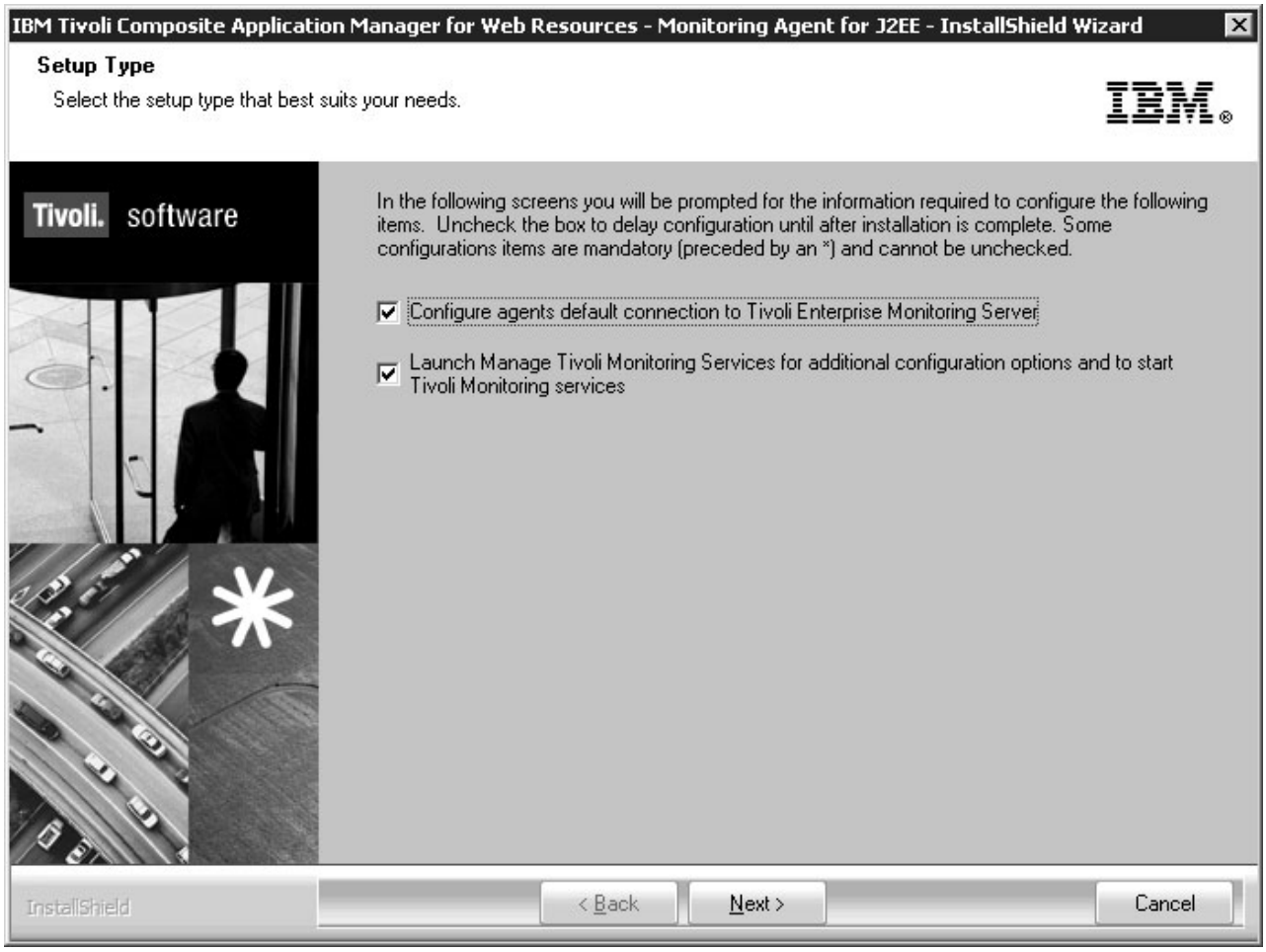

Figure 12. Setup Type window

By default, all the checkboxes are selected. Clear the checkboxes next to the features that you do not want to configure at this time, and click **Next** to finish the installation. If you have selected the checkbox for **Configure agents default connection to Tivoli Enterprise Monitoring Server**, the Configuration Defaults for Connecting to a monitoring server window opens. Go to "Configuring the Tivoli Enterprise Monitoring Agent on Windows" to complete the configuration.

Configuring the Tivoli Enterprise Monitoring Agent on Windows

Instructs you how to finish the configuration of the TEMA are provided in the next section.

Configuration step 1: Configure the Tivoli Enterprise Monitoring Agent's monitoring server connection

The first step involves configuring the connection to the monitoring server.

If you selected the checkboxes in "Step 8: Select the items to configure" on page 20, the first TEMA configuration window opens:

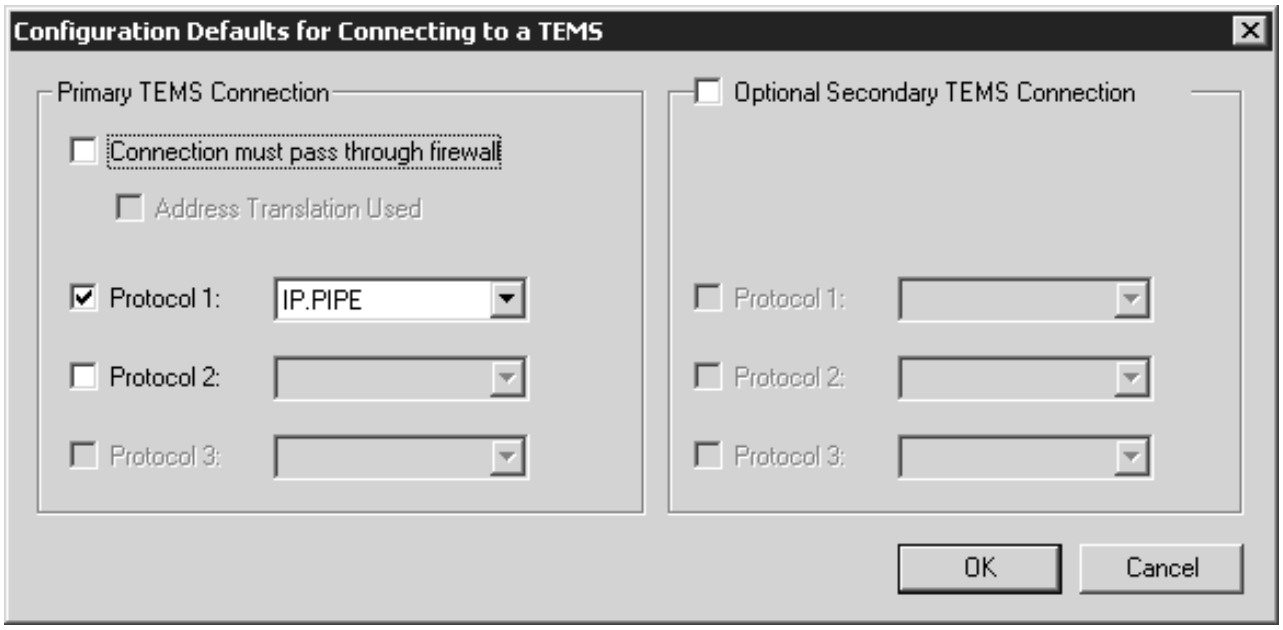

Figure 13. Configuring the TEMA's connection to the monitoring server, window 1

Specify these parameters as explained in the *IBM Tivoli Monitoring: Installation and Setup Guide*. In particular:

- If the TEMA must access the monitoring server across a firewall, select **Connection must pass through firewall**.
- Identify the protocol that the TEMA will use to communicate with the hub monitoring server. You have four choices: IP.UDP, IP.PIPE, IP.SPIPE, or SNA. The value specify here must match whatever you specified when installing the monitoring server.
- If your site has failover support for its ITM monitoring agents, select **Optional Secondary TEMS Connection**, and specify the same communication protocols you chose when installing the monitoring server.

Click **OK**. The second monitoring server configuration windowopens :

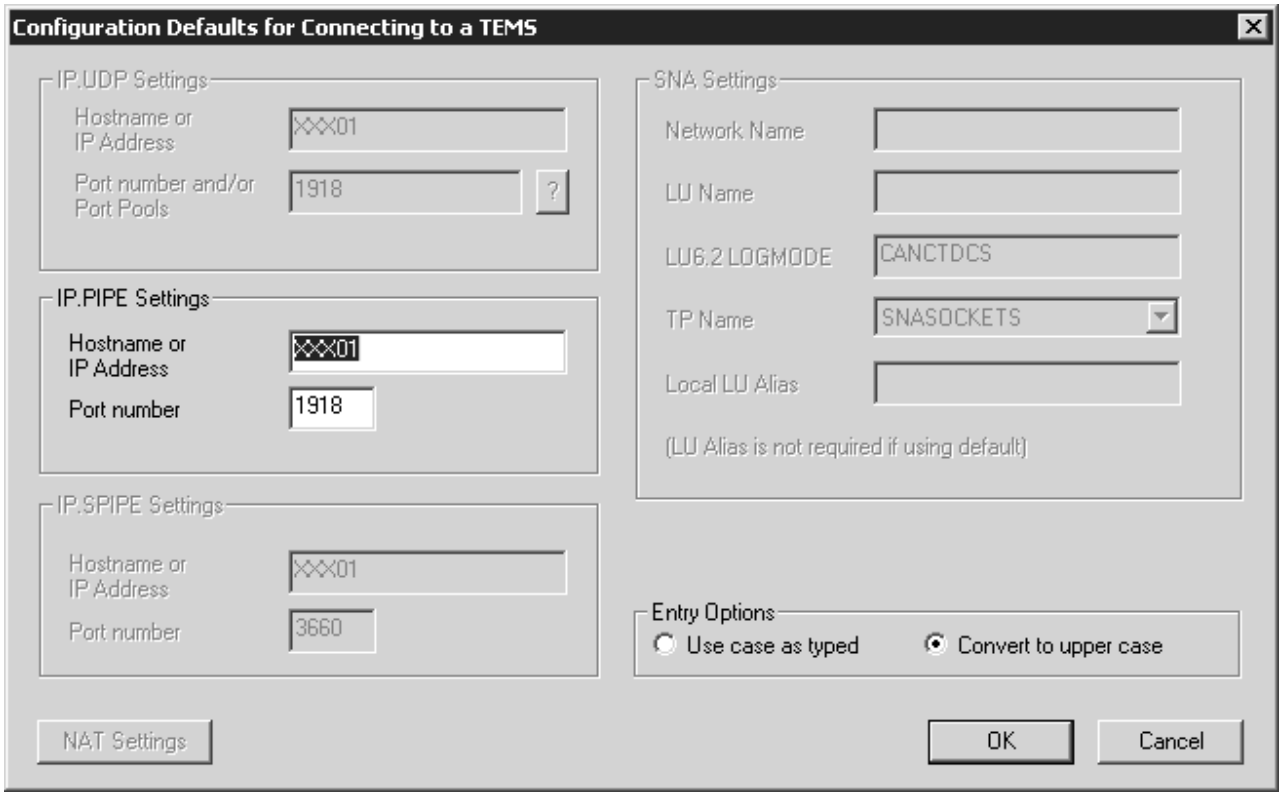

Figure 14. Configuring the TEMA's connection to the monitoring server, window 2

Specify these fields as explained in Table 2. Click **OK**.

Table 2. Communications protocol settings

Field	Description
IP.UDP Settings	
Hostname or IP Address	The host name or IP address for the hub monitoring server.
Port # and/or Port Pools	The listening port for the hub monitoring server.
IP.PIPE Settings	
Hostname or IP Address	The host name or IP address for the hub monitoring server.
Port Number	The listening port for the monitoring server. The default number is 1918.
IP.SPIPE Settings	
Hostname or IP Address	The host name or IP address for the hub monitoring server.
Port number	The listening port for the hub monitoring server. The default value is 3660.
SNA Settings	
Network Name	The SNA network identifier for your location.
LU Name	The LU name for the monitoring server. This LU name corresponds to the Local LU Alias in your SNA communications software.

Table 2. Communications protocol settings (continued)

Field	Description
LU 6.2 LOGMODE	The name of the LU6.2 LOGMODE. The default value is CANCTDCS.
TP Name	The transaction program name for the monitoring server.
Local LU Alias	The LU alias.

Configure the TEMA's connection to the Data Collector

You must configure the connection from the monitoring agent to the Data Collector.

Depending on whether you specified to configure the TEMA during installation in "Step 8: Select the items to configure" on page 20, perform one of the following actions:

- If you did not request that the TEMA be configured during installation, you must do so using the Manage Tivoli Enterprise Monitoring Services after the installation process is finished.
- If you requested that the TEMA be configured during installation, the TEMA configuration notebook opens.

The first page is the **Basic** tab. Refer to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71 to complete the settings.

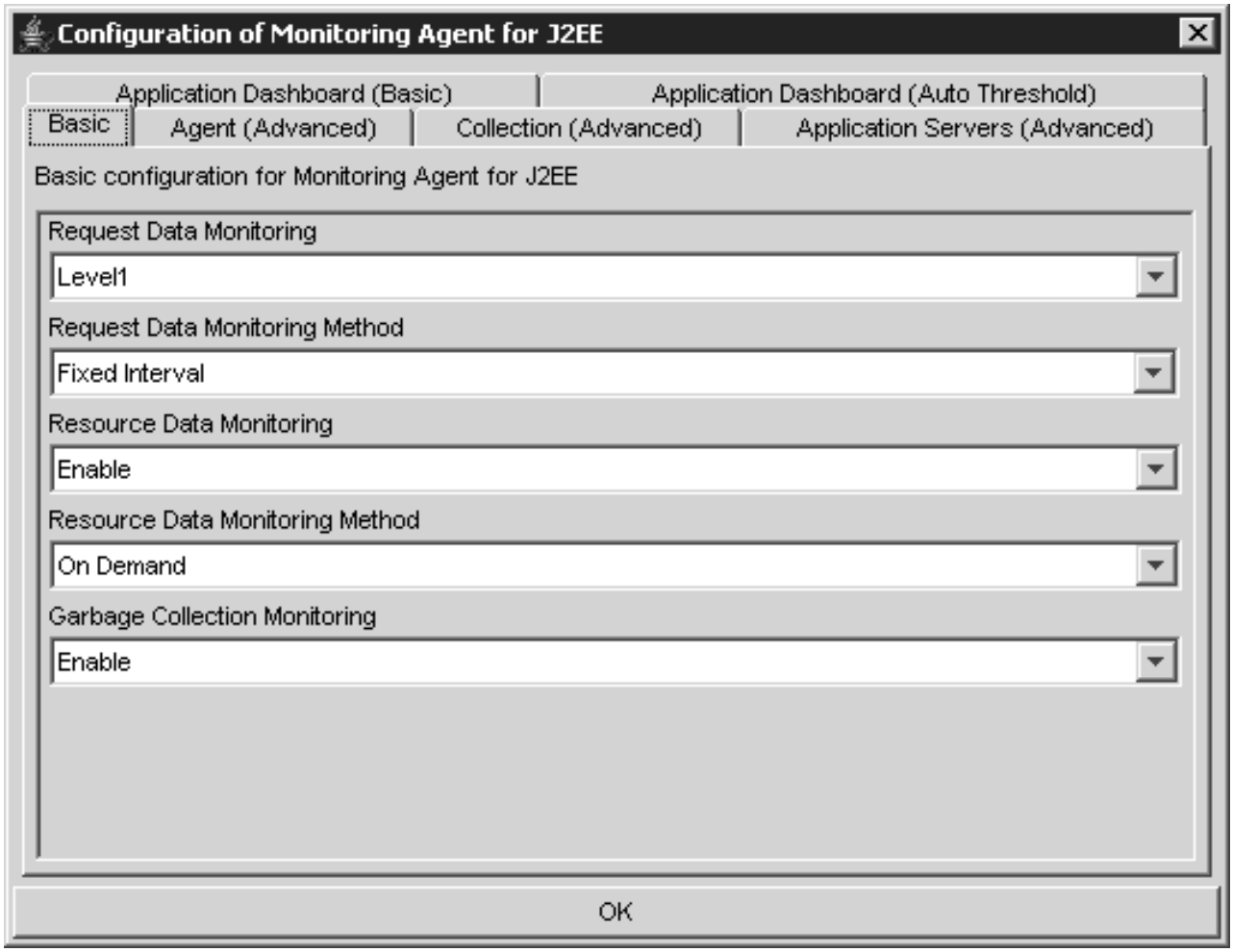

Figure 15. Configuration of Monitoring Agent for J2EE: Basic tab

After you have completed this page, click the **Agent (Advanced)** tab. Refer to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71 to complete the settings.

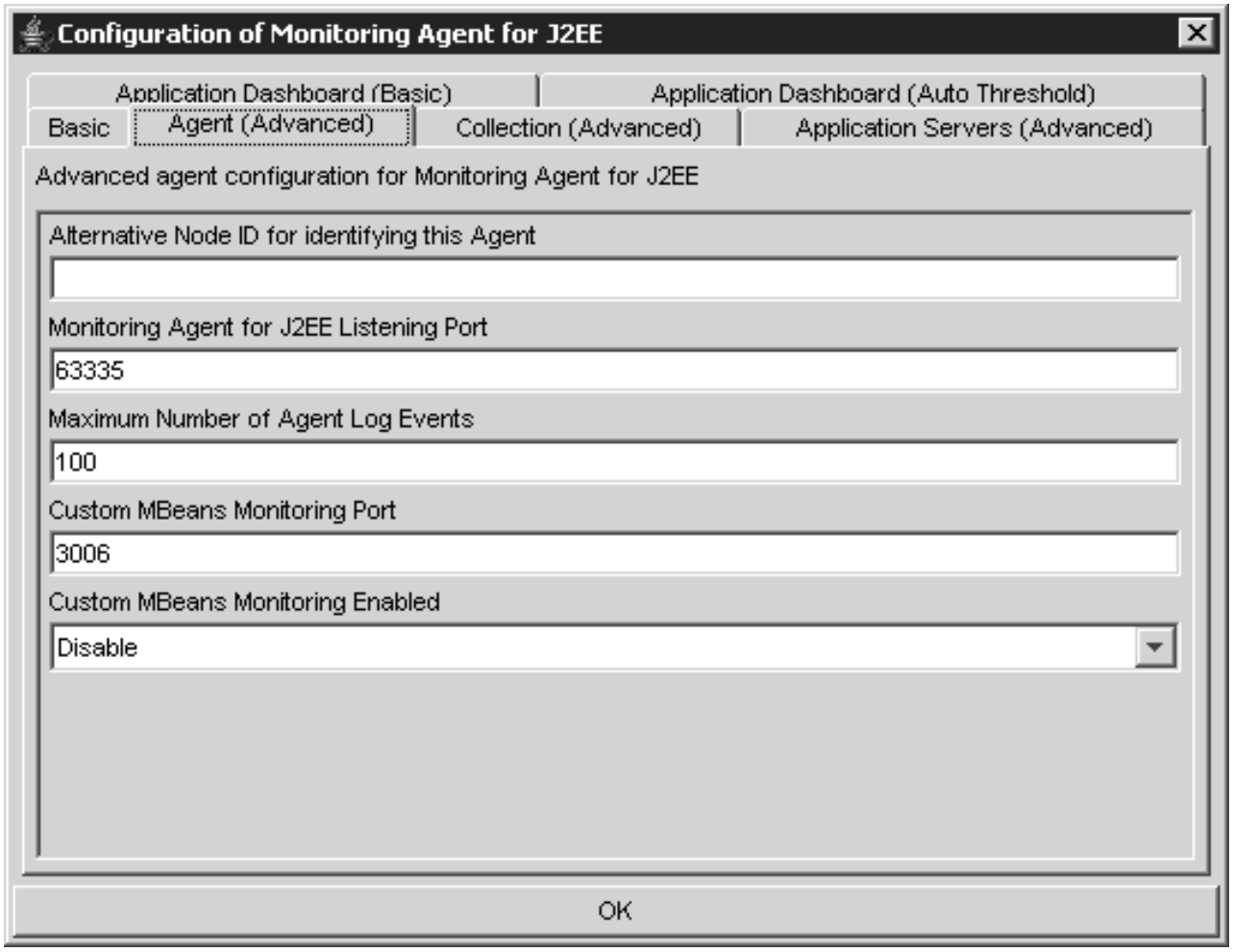

Figure 16. Configuration of Monitoring Agent for J2EE: Agent tab

After you have completed this page, click the **Collection (Advanced)** tab. Refer to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71 to complete the settings.

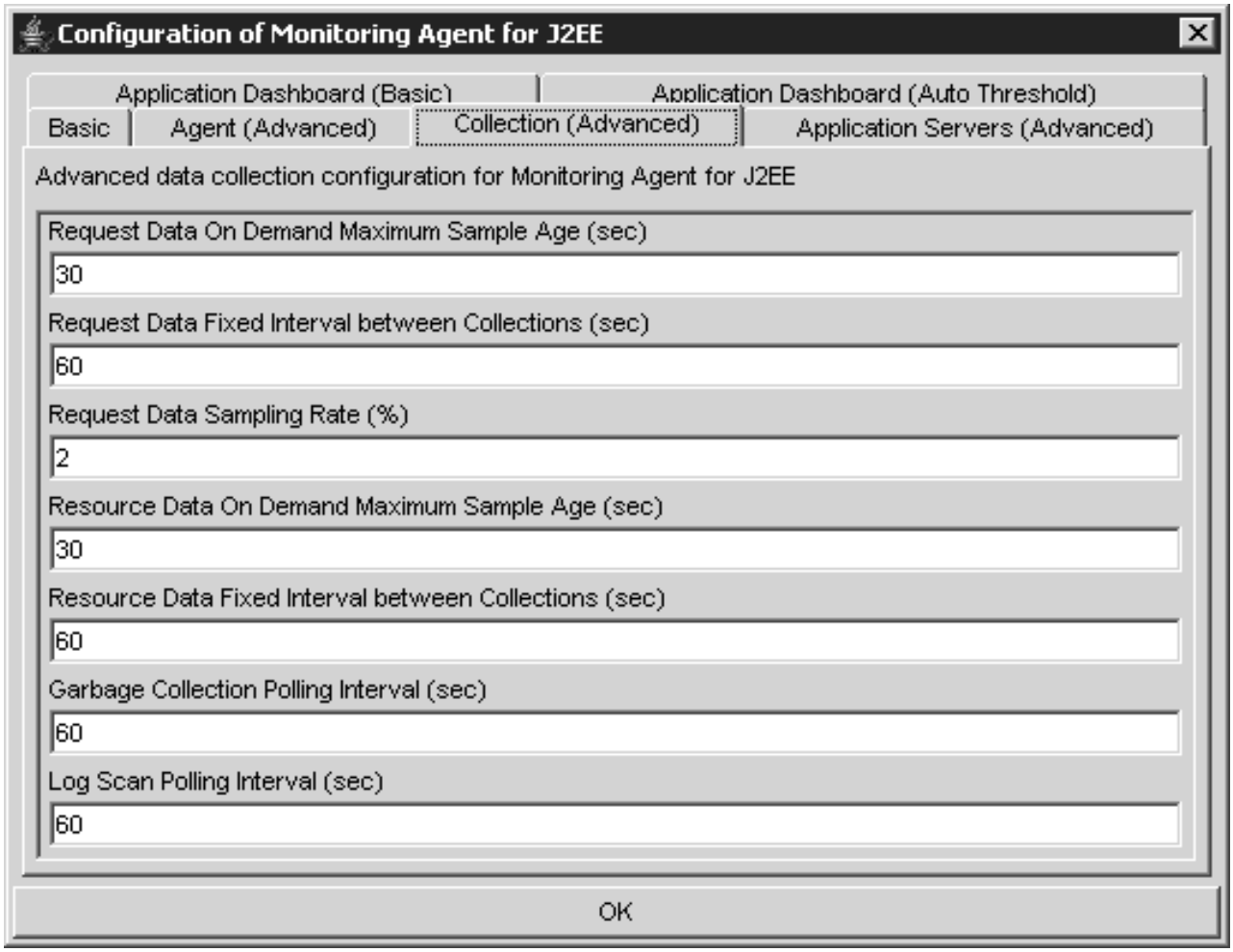

Figure 17. Configuration of Monitoring Agent for J2EE: Collection tab

(Optional) After you have completed this page, if the monitored J2EE server has a name longer than 32 characters, click the **Application Servers (Advanced)** tab. To specify an alternate server name of 32 characters or fewer, click **New** . Refer to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71 to complete the settings.

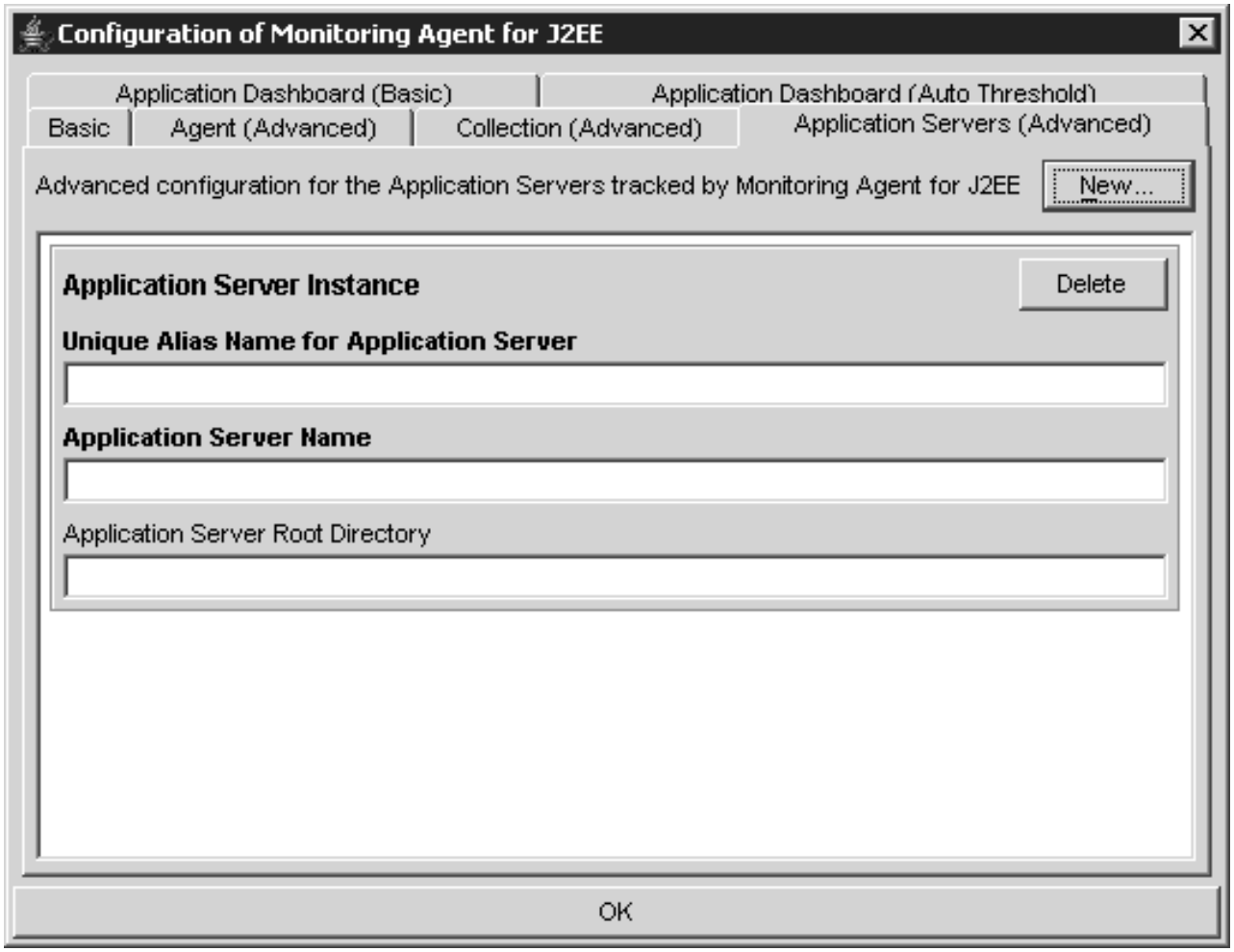

Figure 18. Configuration of Monitoring Agent for J2EE: Application Servers tab

If you do not need to define a server alias, Click **Delete**. After you have completed this page, click the **Application Dashboard (Basic)** tab. Refer to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71 to complete the settings.

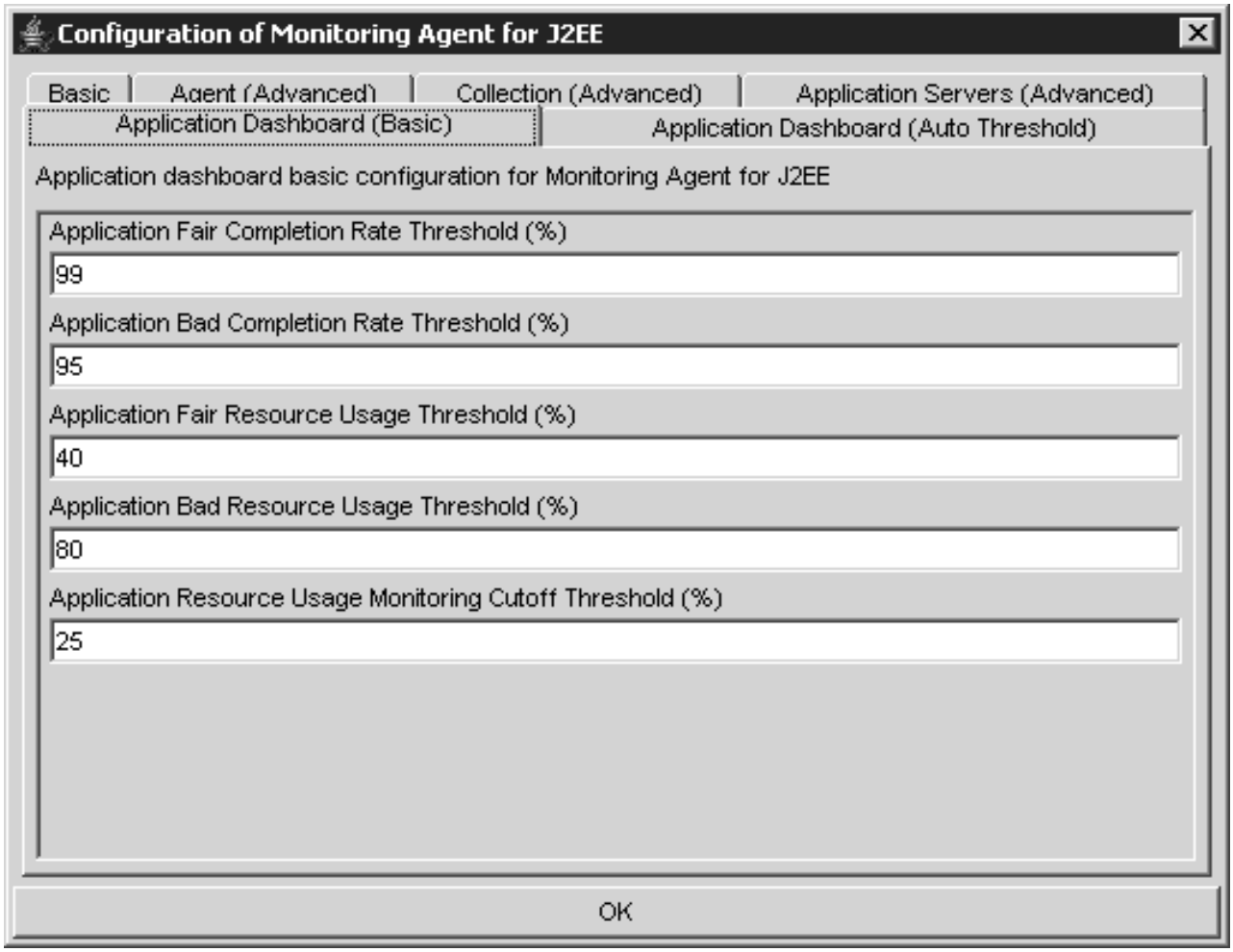

Figure 19. Configuration of Monitoring Agent for J2EE: Application Dashboard (Basic) tab

After you have completed this page, click the **Application Dashboard (Auto Threshold)** Tab. Refer to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71 to complete the settings.

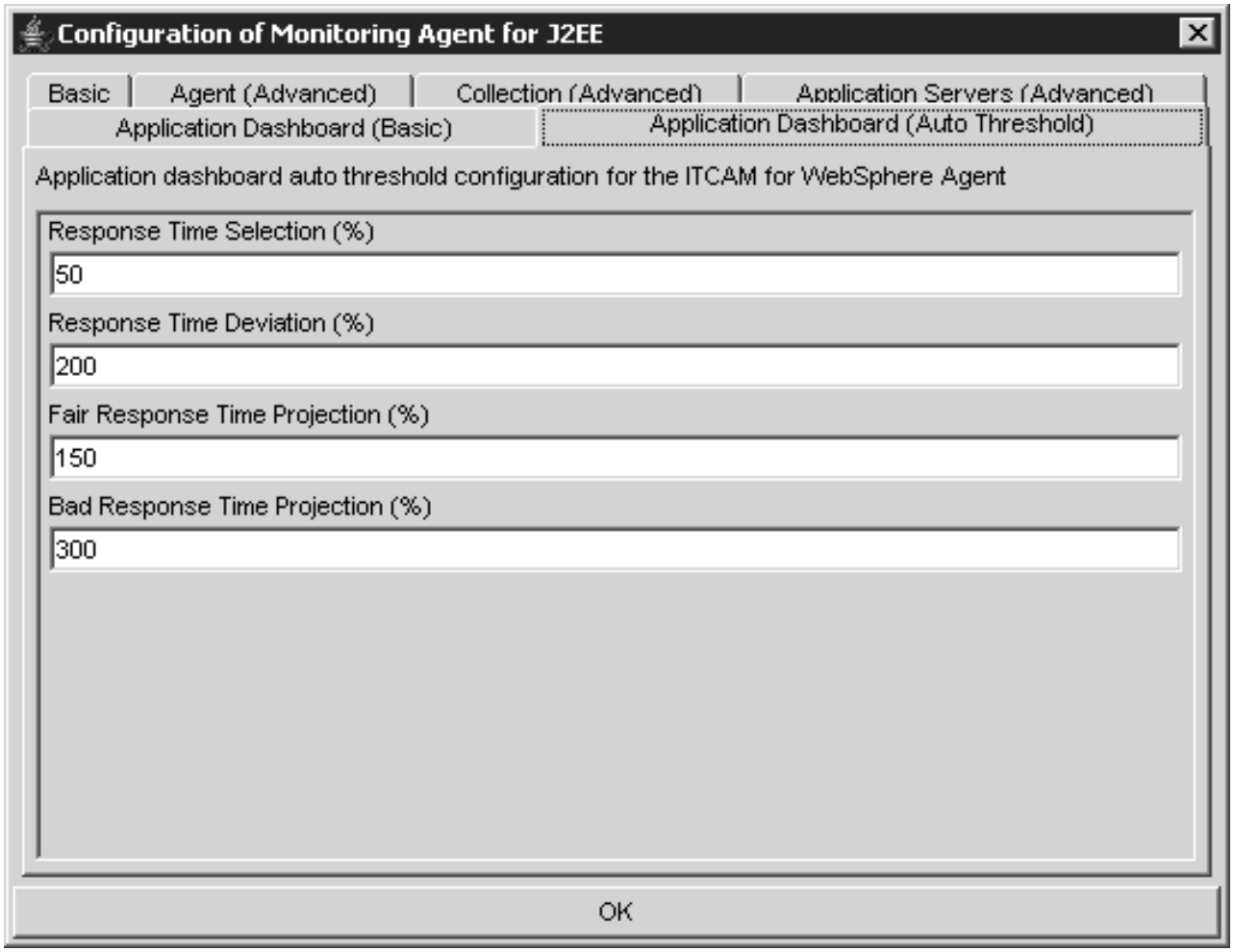

Figure 20. Configuration of Monitoring Agent for J2EE: Application Dashboard (Auto Threshold) tab

After you have completed all configuration pages, you have defined all TEMA configuration parameters; click **OK** to complete the configuration process.

Finalize the installation

After you have completed all configuration tasks, Tivoli Monitoring Services is started, and the InstallShield completion window opens.

Figure 21. Installation complete window

If you choose not to read the product README for last-minute product information, clear the check box. Click **Finish** to close the installer.

Note: If you did not request that the TEMA be configured during installation, you must do so later using Manage Tivoli Enterprise Monitoring Services. From the Manage Tivoli Enterprise Monitoring Services screen, right-click the TEMA and select **Reconfigure** from the pop-up menu.

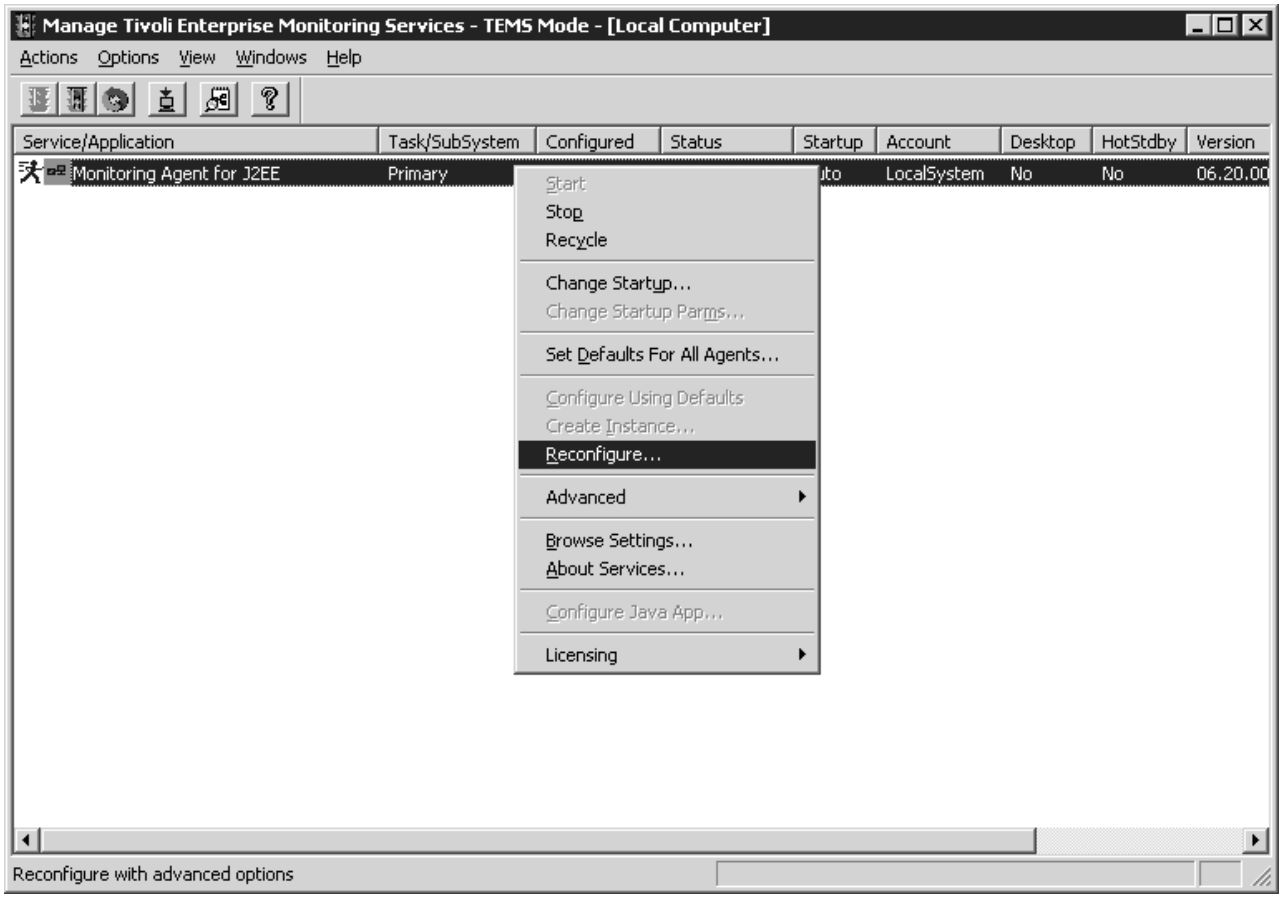

Figure 22. Manage Tivoli Enterprise Monitoring Services window

Complete the configuration panels as described from "Configuration step 1: Configure the Tivoli Enterprise Monitoring Agent's monitoring server connection" on page 21.

Adding application support on Windows

To add application support to the monitoring server, portal server, or portal, you must run setup.exe file in the computer where you have your monitoring server, portal server, or portal installed.

The steps are described in the following topics:

- Adding application support on the Tivoli Enterprise Monitoring Server
- Adding application support on the Tivoli Enterprise Portal Server
- Adding application support on the Tivoli Enterprise Portal desktop client

Install application support on the Tivoli Enterprise Monitoring Server.

Note: The monitoring server is stopped during this process.

1. Stop the Tivoli Enterprise Monitoring Server or the software automatically stops the Tivoli Enterprise Monitoring Server when it installs. Perform the following steps to stop the Tivoli Enterprise Monitoring Server manually:
   a. Click **Start → Programs → IBM Tivoli Monitoring → Manage Tivoli Monitoring Services**.

b. Right-click Tivoli Enterprise Monitoring Server.
c. In the pop-up menu, select **Stop**.

2. Access the `/WINDOWS` subdirectory on the agent installation media.
3. Double-click **`setup.exe`**.
4. Click **Next** on the Welcome window.

   Note: If you are installing the support separately from the agent itself and you have already installed an agent on this computer, you see the following window. Click **Modify** and skip to step 6.

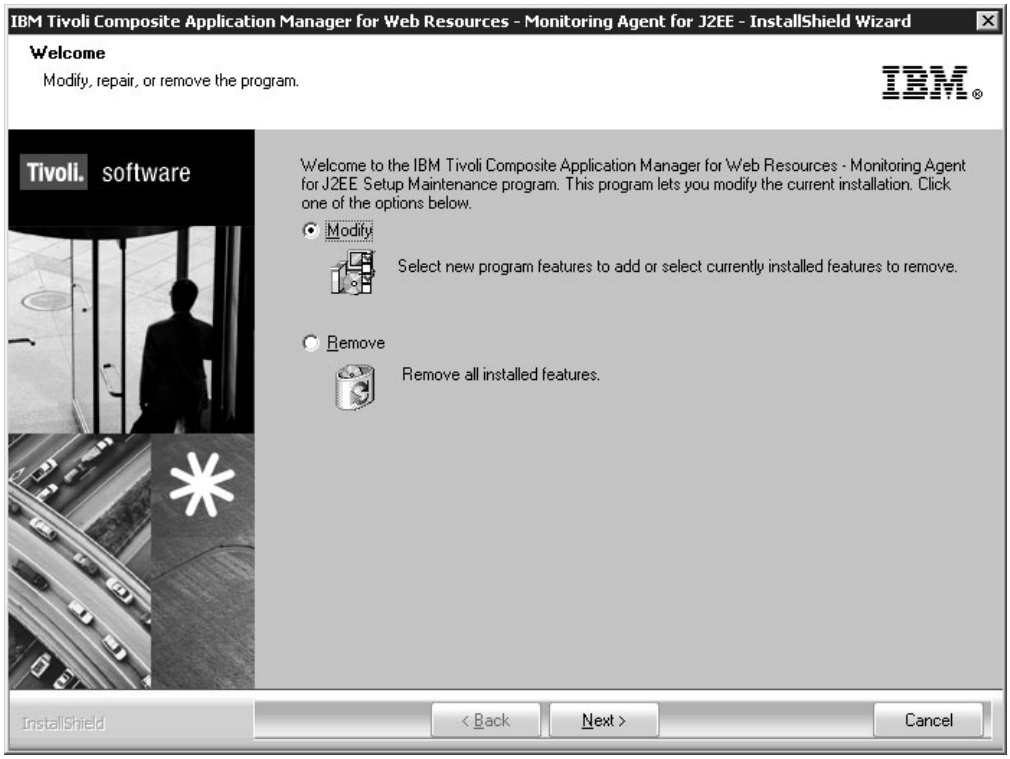

Figure 23. Installing application support

5. Click **Accept** on the software license.
6. If you see a message telling you the installed versions is newer than the agent installation, click **OK** to ignore this message.
7. Select **Tivoli Enterprise Monitoring Server** and click **Next**.

   Note: If you have other components installed on the same computer, such as the desktop client, also select those components to install the component-specific application support.
8. To add the agent to the deployment depot, select the agent and click **Next**.
9. Review the installation summary details. Click **Next** to start the installation.

   After installation is complete, a configuration window is displayed. By default, all the components you just installed are selected for configuration. Clear any components that you have already installed on this computer, such as the monitoring server.
10. Click **Next** on the configuration window.
11. Specify the default values for communication with the monitoring server and click **OK**.

12. Identify the default communications protocols for agents to use to connect to the monitoring server and click **OK** .
13. Specify the location of the monitoring server and click **OK**. Your choices are **This computer** or **On a different computer**.

    Note: Because the monitoring server is not currently running, it is started automatically before the process begins.
14. Click **OK**.
15. Select the data to add to the monitoring server and click **OK**. By default, all available application support is selected.
16. Click **Next** on the application support message.
17. Specify the default values for the agent to use when it communicates with the monitoring server and click **OK**.

    Note: You can specify three methods for communication to set up backup communication methods. If the method you have identified as Protocol 1 fails, Protocol 2 is used.
    a. If the agent must cross a firewall to access the monitoring server, select **Connection must pass through firewall**.
    b. Identify the type of protocol that the agent uses to communicate with the monitoring server. You have four choices: `IP.UDP`, `IP.PIPE`, `IP.SPIPE`, or `SNA`.
18. Define the communications between agents and the monitoring server. For details of the information, see Table 2 on page 23.
19. Click **Finish**.

Install application support on the Tivoli Enterprise Portal server.

1. Open **Manage Tivoli Enterprise Monitoring Services.**
2. Stop the portal server by right-clicking it and clicking **Stop**.
3. Access the `/WINDOWS` subdirectory on the agent installation media.
4. Double-click **`setup.exe`**.
5. Click **Next** on the Welcome window.

   Note: If you are installing the support separately from the agent itself and you have already installed an agent on this computer, you see the following window:

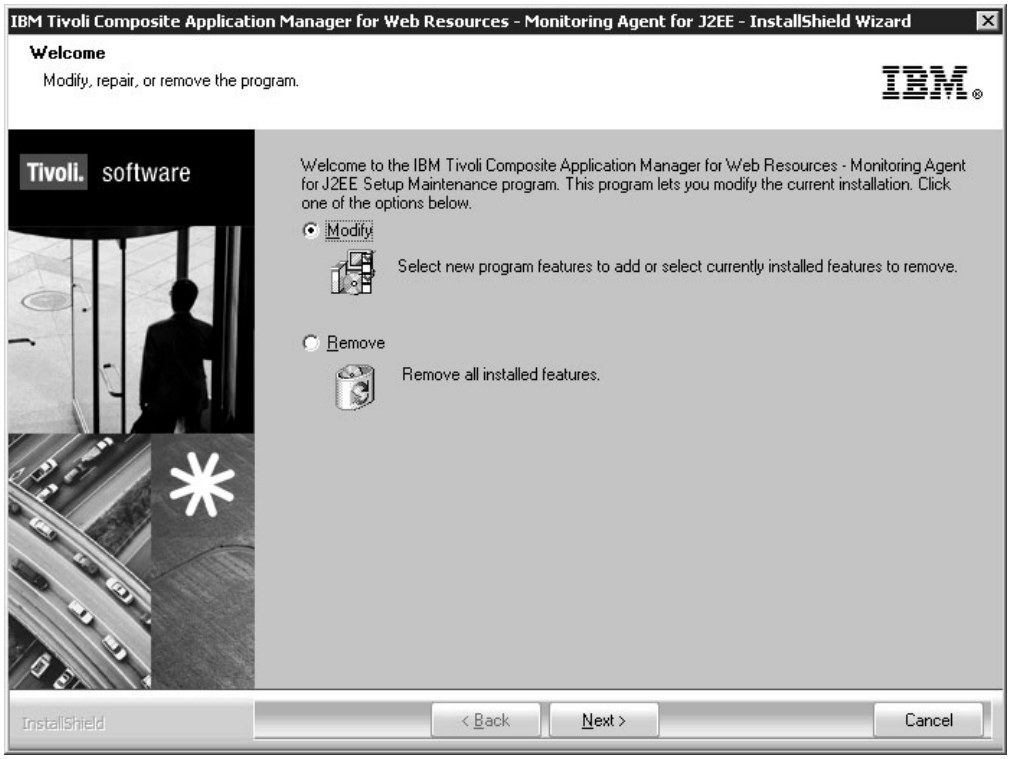

Figure 24. Installing application support

Click **Modify** and skip to step 7.

6. Click **Accept** on the software license.
7. If you see a message telling you the installed versions is newer than the agent installation, click **OK** to ignore this message.
8. Select **Tivoli Enterprise Portal Server** and click **Next**.

   Note: If you have other components installed on the same computer, such as the desktop client, also select those components to install the component-specific application support.
9. Click **Next** without selecting any agents.
10. Review the installation summary details and click **Next**.

    After installation is complete, a configuration window is displayed. By default, all the components you just installed are selected for configuration. Clear any components that you have already installed and configured on this computer.
11. Click **Next** on the configuration window.
12. Type the host name for the portal server and click **Next**.
13. Click **Finish**.
14. Restart the portal server.

Installing application support on the desktop client

1. Stop the desktop client before performing this procedure.
2. Access the `/WINDOWS` subdirectory on the agent installation media.
3. Double-click **`setup.exe`**.
4. Click **Next** on the Welcome window.

Note: If you are installing the support separately from the agent itself and you have already installed an agent on this computer, you see the following window:

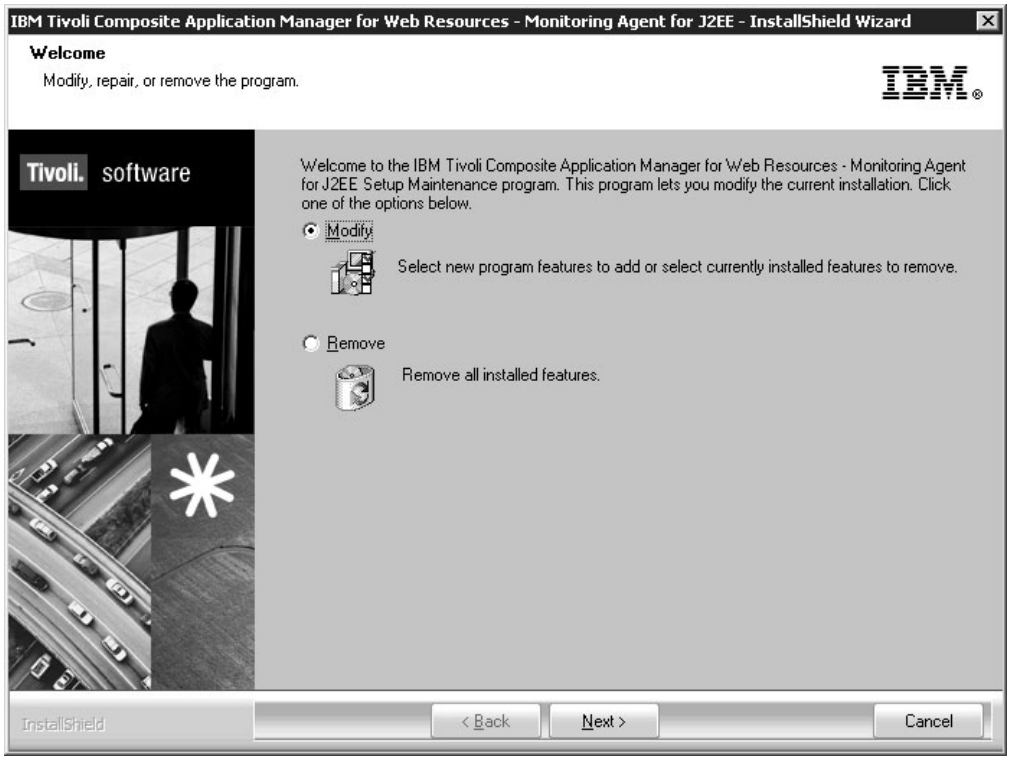

Figure 25. Installing application support

Click **Modify** and skip to step 6.

5. Click **Accept** on the software license.
6. If you see a message regarding installed versions being newer than the agent installation, click **OK** to ignore this message.
7. Select **Tivoli Enterprise Portal Desktop Client** and click **Next**.
8. Click **Next**. Do not select any agents.
9. Review the installation summary details. Click **Next** to start the installation.

   After installation is complete, a configuration window is displayed. By default, all the components you just installed are selected for configuration. Clear any components that you have already installed and configured on this computer.
10. Click **Next** on the configuration window.
11. Type the host name for the portal server and click **Next**.
12. Click **Finish** to complete the installation wizard.

Ensure that the Eclipse server has been configured

When the installation is complete, you must check the portal client's Eclipse help server to ensure that it has been configured.

Start Manage Tivoli Enterprise Monitoring Services (**Start** > **All Programs** > **IBM Tivoli Monitoring** > **Manage Tivoli Monitoring Services**), and ensure that the **Eclipse Help Server** entry indicates `Yes` in the Configured column. If it is not,

right-click the entry, and select **Configure Using Defaults** from the pop-up menu:

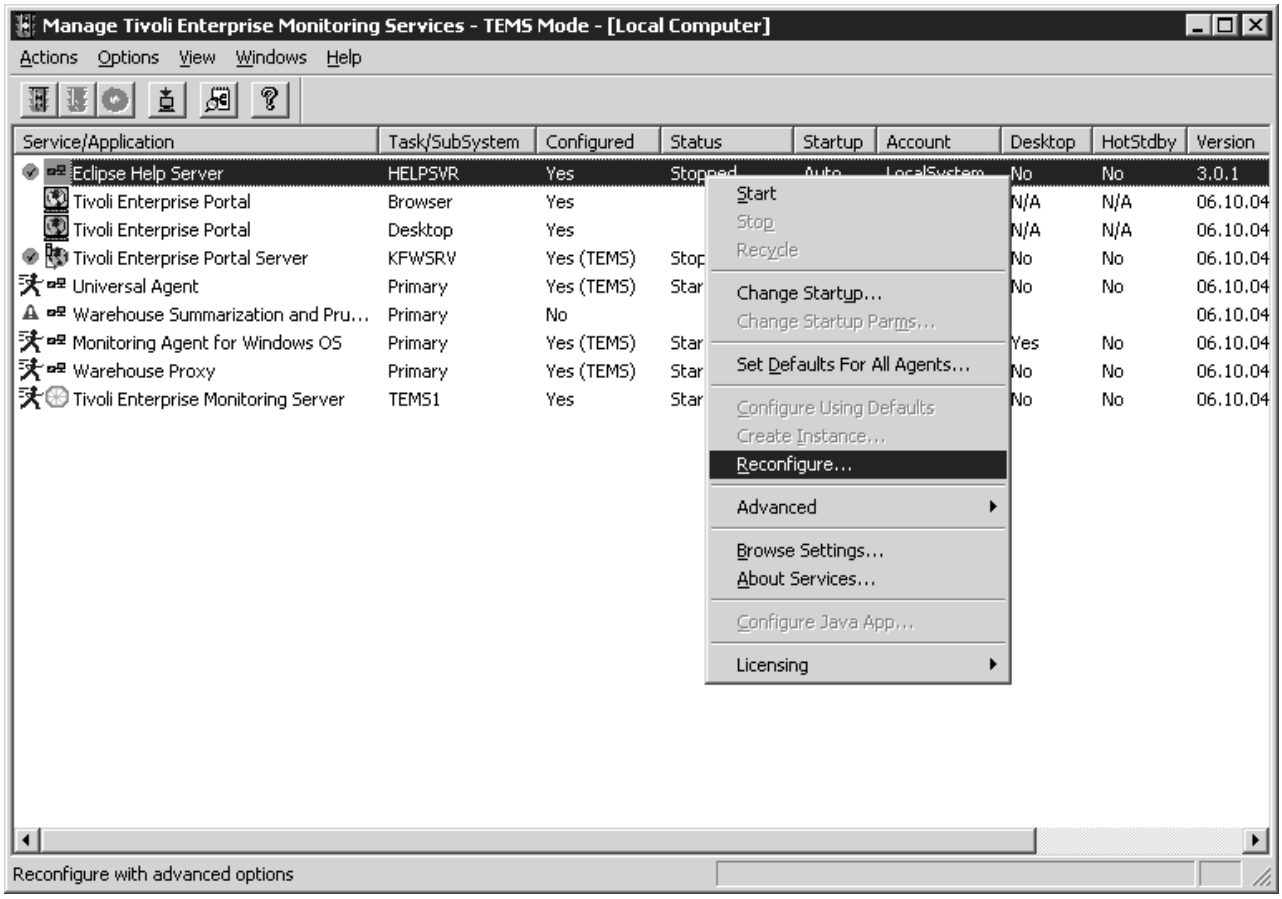

Figure 26. Configuring the Eclipse server

You are prompted for the port number that the Eclipse Help Server should use:

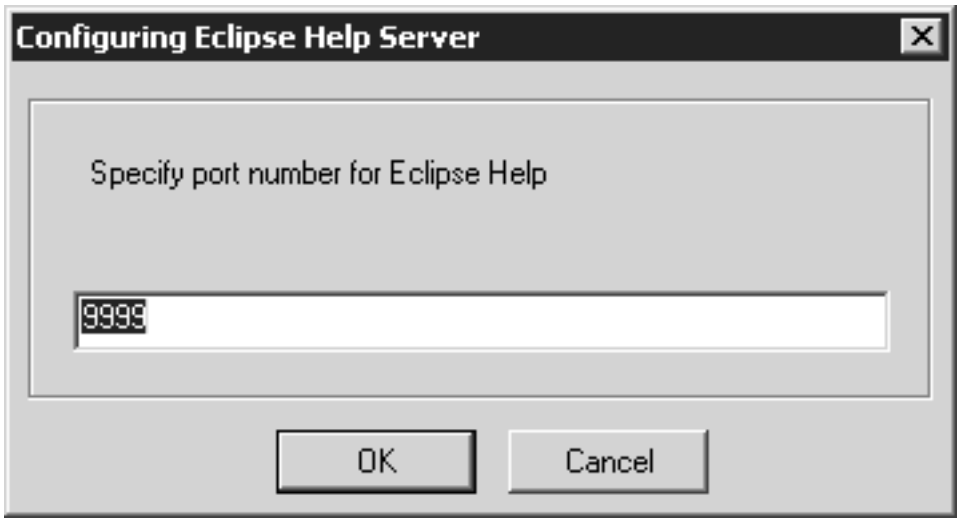

Figure 27. Defining the port number for the Eclipse Help Server

Ensure that this value is set to the same port number that you specified when installing ITM, and click **OK**.

If you want the Eclipse help server to start automatically whenever this node is started, right-click the **Eclipse Help Server** entry, and select **Change Startup** from the pop-up menu. The Eclipse server's startup parameters are displayed:

Figure 28. Specifying Eclipse help server startup type

Select **Automatic** in the **startup type** field, and click **OK**.

Performing a silent installation on Windows

The ITM installer supports a silent mode in which your predefined values are used to install the ITCAM Agent for J2EE Monitoring Agent without the user interface.

Silent mode relies on an information file, silent.txt, provided on the ITCAM Agent for J2EE installation CD, in which you specify necessary installation parameters. To perform a silent installation, perform the following steps:

1. Locate the silent.txt file on the product installation CD, and copy this file to a work directory on your Windows node.
2. Edit your copy of the silent.txt file, and change the parameters as appropriate for your environment and as described in this chapter. The silent.txt file includes all installation parameters and provides directions for updating them.

   You must fill in all input records in this file. Each line of the file must be either a comment (containing a semi-colon in column one) or a meaningful statement that starts in column one.

   Note: Do not modify any other files that come with the installation, for example: SETUP.ISS.
3. After customizing this driver file, save your updates, and invoke the silent install using one of the following methods:

a. Direct invocation:
   1) Open a command prompt, and change to the directory that contains installation files setup.exe and setup.ins.
   2) Invoke setup using the following command (in a single command, on 1 line). Specify the parameters in the order listed.

      ```
      start /wait setup /z"/sfC:\temp\SILENT.TXT"
      /s /f2"C:\temp\silent_setup.log"
      ```

      where/z"/sf" specifies the name and location of the installation driver that you customized for your site (in this example, file SILENT.TXT in the C:\temp directory). This is a required parameter. This file must exist.

      /s specifies that this is a silent install; if you specify this option, nothing is displayed during installation.

      /f2 specifies the name of the InstallShield log file. If you do not specify this parameter, the Setup.log file is created by default in the same location as setup.iss. This log is the InstallShield log but not the installation log. The installation log can be found in the installation target directory. The default directory is C:\IBM\Omegamon sub-directory, and if the installation aborts before the installation location has been identified, the directory is on the Windows Boot drive root directory. In either case, the Setup program must be able to create and write to this file.

b. SMS invocation:
   1) Copy all the installation files to a LAN-based disk that SMS will mount on the designated computers.
   2) Replace the original SILENT.TXT file on the LAN disk with your modified version.
   3) Edit the PDF file located with setup.exe and change the Setup invocation as follows:

      ```
      Setup /z"/sfC:\temp\SILENT.TXT" /s /f2"C:\temp\silent_setup.log"
      ```

You can find complete information about silent ITM installation in *IBM Tivoli Monitoring: Installation and Setup Guide*.

Uninstalling the Tivoli Enterprise Monitoring Agent on Windows

You can uninstall the monitoring agent using the following procedure on Windows systems.

1. From the desktop, click **Start → Settings → Control Panel** (for Windows 2000) or **Start → Control Panel** (for Windows 2003).
2. Click **Add or Remove Programs**.
3. Select the agent you want to uninstall.
4. Click **Change/Remove**.
5. Select **Remove** and click **Next**.
6. Click **OK** to confirm the uninstallation.
7. Click **Finish** to complete the uninstallation.

Installing and uninstalling a Language Pack on Windows

A Language Pack enables user interaction with the Monitoring Agent in a language other than English. For example, when a Spanish language pack is installed, the Tivoli Enterprise Portal workspaces and the internal messages of the Agent are displayed in Spanish.

To enable full support for a language, you must install the Language Pack on the Monitoring Agent host and all hosts where the Agent ITM support files are installed (hub Tivoli Enterprise Monitoring Servers, all Tivoli Enterprise Portal Servers, and all Tivoli Enterprise Portal desktop clients).

If you no longer want to use a language, uninstall the language pack for it.

Before installing or uninstalling a language pack, ensure that:

- The Agent and the TEP Support Files are installed.
- The Java runtime environment (JRE) is available on every host where you are planning to install the Language Pack. (The JRE is required by ITM).

Installing a Language Pack on Windows

To install a Language Pack on Windows you need to use the installer on the Language Pack DVD. The procedure is the same on the Agent host, hub Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, and Tivoli Enterprise Portal desktop client.

Perform the following procedure:

1. Start `lpinstaller.exe` from the Language Pack DVD.
2. Select the language of the installer and click OK.

   Note: In this step, you select the language for the installer user interface, not the language pack that will be installed.
3. Click **Next** on the Introduction window.
4. Select **Add/Update** and click **Next**.
5. Select the folder where the National Language Support package (NLSPackage) files are located. This is the `nlspackage` folder on the Language Pack DVD.
6. Select **ITCAM Agent for J2EE**.
7. Select the languages to install and click **Next**.

   Note: You can hold down the **Ctrl** key for multiple selections.
8. Examine the installation summary page and click **Next** to begin installation.
9. Click **Next**.
10. Click **Finish** to exit the installer.
11. If you are installing the Language Pack on a Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, or Tivoli Enterprise Portal desktop client, start the **Manage Tivoli Monitoring Services** utility, and use it to restart the server or client. If the Eclipse Help Server is running, restart it as well.

Uninstalling a Language Pack on Windows

To uninstall a Language Pack on Windows you need to use the installer on the Language Pack DVD. The procedure is the same on the Agent host, hub Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, and Tivoli Enterprise Portal desktop client.

Perform the following procedure:

1. Start `lpinstaller.exe` from the Language Pack DVD.
2. Select the language of the installer and click OK.

Note: In this step, you select the language for the installer user interface, not the language pack that will be installed.

3. Click **Next** on the Introduction window.
4. Select **Remove** and click **Next**.
5. Select **ITCAM Agent for J2EE**.
6. Select the languages to uninstall and click **Next**.

   Note: You can hold down the **Ctrl** key for multiple selections.
7. Examine the installation summary page and click **Next** to begin installation.
8. Click **Next**.
9. Click **Finish** to exit the installer.
10. If you are installing the Language Pack on a Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, or Tivoli Enterprise Portal desktop client, start the **Manage Tivoli Monitoring Services** utility, and use it to restart the server or client. If the Eclipse Help Server is running, restart it as well.

Chapter 3. Installing and configuring the Tivoli Enterprise Monitoring Agent on UNIX and Linux

This chapter provides complete instructions for installing, configuring, and uninstalling the ITCAM Agent for J2EE Monitoring Agent on UNIX and Linux platforms. It also includes instructions for installing the application support files and the language packs for users of non-English languages.

UNIX and Linux requirements

The Tivoli Enterprise Monitoring Agent for ITCAM Agent for J2EE can run with or without root authority on UNIX and Linux platforms. You can start the agent with the same user ID used to start J2EE, because it must be able to stop or start a J2EE server using the standard stopServer.sh and startServer.sh scripts.

Note: Certain features of this installation *require* that you supply a superuser password to complete; therefore your installation user ID must have root authority.

Prerequisite APAR for AIX sites

If your J2EE environment is running under AIX® Version 5.3, you must install APAR IY65196 before installing the monitoring agent.

Historical data collection in Linux

If your site uses Linux as its operating environment, you need to synchronize historical data collection at the agent with the time zone of the Tivoli Enterprise Portal client. To do this, set a time zone variable in the Linux /etc/profile file. For example, to set the Linux time zone to the U.S. Pacific time zone:

1. Perform one of the following actions:

   For Red Hat Linux, set:

   ```
   ZONE="US/Pacific"
   export ZONE
   ```

   For SuSE/Novell Linux, set:

   ```
   TIMEZONE="US/Pacific"
   export TIMEZONE
   ```

2. Reboot your Linux computer.

Installing the Tivoli Enterprise Monitoring Agent on UNIX and Linux

This section will guide you through the installation process of ITCAM Agent for J2EE on UNIX and Linux. Follow the proceeding instructions to perform the installation.

Step 1: Invoke the installer

After loading the ITCAM Agent for J2EE Monitoring Agent CD and changing to its root directory, locate the installation script, install.sh, and invoke it:

```
./install.sh
```

Step 2: Supply the name of the installation directory

The install script prompts you for the name of the installation directory where the ITCAM Agent for J2EE Monitoring Agent should be installed:

```
Enter the name of the IBM Tivoli Monitoring directory
[ default = /opt/IBM/ITM ]:
```

Respond with the absolute or relative directory name, or press Enter to accept the default. The installer looks for the directory name you specified and, if it does not exist, prompts with the following message:

```
"/opt/IBM/ITM" does not exist
Try to create it [ y or n; "y" is default ]?
```

Press Enter or Specify y.

Step 3: Download the monitoring agent files

The installer next displays background information about installation requirements, searches the CD for the ITM pieces available for installation, and prompts you for information about how you want those pieces installed:

```
Select one of the following:
1) Install products to the local host.
2) Install products to depot for remote deployment (requires TEMS).
3) Exit install.
Please enter a valid number:
```

Enter 1. The installer responds with status messages about the installation's progress.

Note: Option 2 applies to remote agent deployment. If you want to add this agent's installation files to your site's deployment depot, return to install.sh, and invoke this option.

Step 4: Accept the product license agreement

The installer next displays the product license so you can accept or decline it:

```
Software Licensing Agreement
Press Enter to display the license agreement on your
screen. Please read the agreement carefully before
installing the Program. After reading the agreement, you
will be given the opportunity to accept it or decline it.
If you choose to decline the agreement, installation will
not be completed and you will not be able to use the
Program.
```

Press Enter; the International License Agreement is displayed:

```
International License Agreement
Part 1 - General Terms
BY DOWNLOADING, INSTALLING, COPYING, ACCESSING, OR USING
THE PROGRAM YOU AGREE TO THE TERMS OF THIS AGREEMENT. IF
YOU ARE ACCEPTING THESE TERMS ON BEHALF OF ANOTHER PERSON
OR A COMPANY OR OTHER LEGAL ENTITY, YOU REPRESENT AND
WARRANT THAT YOU HAVE FULL AUTHORITY TO BIND THAT PERSON,
COMPANY, OR LEGAL ENTITY TO THESE TERMS. IF YOU DO NOT
AGREE TO THESE TERMS  .
   .
-DO NOT DOWNLOAD, INSTALL, COPY, ACCESS, OR USE THE
PROGRAM; AND

-PROMPTLY RETURN THE PROGRAM AND PROOF OF ENTITLEMENT TO

Press Enter to continue viewing the license agreement, or
enter "1" to accept the agreement, "2" to decline it, "3"
to print it, "4" to read non-IBM terms, or "99" to go back
to the previous screen.
```

If you accept the license agreement, enter 1.

Step 5: Provide an encryption key

You are prompted to provide a 32-character encryption key to secure password transmission and other sensitive data across your ITM environment:

```
Enter a 32-character encryption key, or press Enter to use the default
        Default = IBMTivoliMonitoringEncryptionKey
....+....1....+....2....+....3..
```

Supply the 32-character key, or accept the default. The key information is displayed:

```
GSkit encryption key has been set.
Key File directory: /opt/IBM/ITM/keyfiles
```

Step 6: Identify the version of the operating system you are installing on

You must specify the version of the operating system (Linux, AIX, HP-UX, or Solaris) you are installing on. This example assumes that you are installing on Linux:

```
Product packages are available in /root/unix

Product packages are available for the following operating systems and
component support categories:

1) Linux AMD64 R2.6 (64 bit)
2) Linux Intel R2.4 (32 bit)
3) Linux Intel R2.4 (64 bit)
```

```
4) Linux Intel R2.4 GCC 2.9.5 (64 bit)
5) Linux Intel R2.6 (32 bit)
6) Linux Intel R2.6 (64 bit)
7) Linux Intel R2.6 GCC 2.9.5 (32 bit)
8) Linux Intel R2.6 GCC 2.9.5 (64 bit)
9) Linux S390 R2.4 (32 bit)
10) Linux S390 R2.4 (64 bit)
11) Linux S390 R2.6 (32 bit)
12) Linux S390 R2.6 (64 bit)
13) Linux S390 R2.6 GCC 2.9.5 (64 bit)
14) Linux ppc R2.6 (32 bit)
15) Linux ppc R2.6 (64 bit)
16) Tivoli Enterprise Portal Browser Client support
17) Tivoli Enterprise Portal Desktop Client support
18) Tivoli Enterprise Portal Server support
19) Tivoli Enterprise Monitoring Server support

Type the number for the OS or component support category you want,
or type "q" to quit selection
[ number "5" or "Linux Intel R2.6 (32 bit)" is default ]:
```

Supply the number that corresponds to the version this node is running.

The installer repeats the selection you made and prompts you to verify that this choice is correct:

```
You selected number "5" or "Linux Intel R2.6 (32 bit)"

Is the operating system or component support correct [y or n; "y" is default]?
```

Reply y if the listed selection is correct.

Step 7: Install the product software

The installer prompts you to specify which pieces of code that you want to install from the product CD:

```
The following products are available for installation:

1) IBM Tivoli Composite Application Manager for J2EE V06.20.04.00
2) Tivoli Enterprise Services User Interface V06.10.07.03
3) all of the above
Type the numbers for the products you want to install,or type "q" to
quit selection.
If you enter more than one number, separate the numbers by a comma
or a space.

Type your selections here:
```

Specify one of the following options:

1 You are installing the agent to run alongside an ITCAM Agent for J2EE Data Collector previously installed on this node.

2 You are installing this agent's portal support (in other words, you're installing the pieces necessary to integrate this monitoring agent's data and a portal client also running on this node).

3 Both 1 and 2 are true (in other words, this node runs one or more J2EE servers *and* a portal client).

The installer responds with a list of the pieces to be installed and prompts you to verify that the list is correct:

```
The following products will be installed:

IBM Tivoli Composite Application Manager for J2EE V06.20.04.00
Tivoli Enterprise Services User Interface V06.10.07.03
Are your selections correct [ y or n; "y" is default ]?
```

Specify y. The installer responds with several status messages as the product files are installed. When that installation completes, you are prompted for whether you want to install again for a different operating system:

```
Do you want to install additional products or product support packages
[ y or n; "n" is default ]?
```

Press y or n, as appropriate. The installer completes the installation postprocessing.

Step 8: Configure the Tivoli Enterprise Monitoring Server

The installer prompts you to add the ITCAM Agent for J2EE Monitoring Agent's application data to the Tivoli Enterprise Monitoring Server's database.

```
As a reminder, you should install product support on each of your
TEM servers for any agents you have just installed. This is done via the
"[ITM home]/bin/itmcmd support" command on your TEM servers.
```

Go to "Configuring the Tivoli Enterprise Monitoring Agent on UNIX and Linux" to complete the configuration. For information about integrating the agent's application support with the monitoring server, see "Installing application support on Linux and UNIX" on page 59

Configuring the Tivoli Enterprise Monitoring Agent on UNIX and Linux

This section instructs you how to configure the monitoring agent. On UNIX and Linux platforms, the software provides two methods for configuring the monitoring agent.

- Command line configuration
- GUI configuration

Configuring the monitoring agent using command line

Before terminating, the installer prompts you to invoke the **itmcmd** command with the **config** operand to configure this agent:

```
You may now configure any locally installed IBM Tivoli Monitoring product
via the "[ITM home]/bin/itmcmd config" command.
```

Change to the ITM directory's bin subdirectory, and invoke **itmcmd**:

```
./itmcmd config -A yj
```

where `yj` is the 2-character product code for the ITCAM Agent for J2EE Monitoring Agent.

Note: For summary information about the invocation sequence for the configuration tool, enter **itmcmd** without parameters.

The configuration tool begins collecting configuration information specific to the ITCAM Agent for J2EE Monitoring Agent:

```
Edit 'Basic' settings? (default is: Yes):
```

Press Enter to update the monitoring agent's basic data-collection parameters. Specify these parameters with reference to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71.

```
Request Data Monitoring
        Type number of item from the below list
        1. Disable
        2. Level1
        3. Level2
         (default is: LEVEL1): 2
Request Data Monitoring Method
        Type number of item from the below list
        1. Fixed Interval
        2. On Demand
         (default is: FIXEDINTERVAL): 2
Resource Data Monitoring
        Type number of item from the below list
        1. Disable
        2. Enable
         (default is: ENABLE):
Resource Data Monitoring Method
        Type number of item from the below list
        1. Fixed Interval
        2. On Demand
         (default is: ONDEMAND):
Garbage Collection Monitoring
        Type number of item from the below list
        1. Enable
        2. Disable
         (default is: ENABLE):
```

Once you have defined the Basic monitoring agent parameters, you are prompted for whether you want to edit the Agent parameters:

```
Edit 'Agent (Advanced)' settings? (default is: Yes):
```

If you press Enter (or reply YES), you are prompted for the Agent parameter values. Specify these parameters with reference to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71.

Attention: If you install more than one copy of the Monitoring Agent on a single host, you must set the Alternative Node ID parameter to different values for each of the copies. Otherwise, the multiple copies of the Monitoring Agent will not work correctly with Tivoli Monitoring.

```
Alternative Node ID for identifying this Agent (default is: ):
ITCAM for J2EE Agent Listening Port (default is: 63335):
Maximum Number of Agent Log Events (default is: 100):
Cascading Listening Port (default is: 3006):
Using Cascading
         Type number of item from the below list
         1. Disable
         2. Enable
          (default is: DISABLE):
```

After you have defined the Agent parameters, you are prompted for whether you want to edit the Collection parameters:

```
Edit 'Collection (Advanced)' settings? (default is: Yes):
```

If you press Enter (or reply YES), you are prompted for the Collection parameter values. Specify these parameters with reference to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71.

```
Request Data On Demand Maximum Sample Age (sec) (default is: 30):
Request Data Fixed Interval between Collections (sec) (default is: 60):
Request Data Sampling Rate (%) (default is: 2):
Resource Data On Demand Maximum Sample Age (sec) (default is: 30):
Resource Data Fixed Interval between Collections (sec) (default is: 60):
Garbage Collection Polling Interval (sec) (default is: 60):
Log Scan Polling Interval (sec) (default is: 60):
```

After you have defined the Collection parameters, you are prompted for whether you want to edit the Application Dashboard (Basic) parameters:

```
Edit 'Application Dashboard (Basic)' settings? (default is: Yes):
```

If you press Enter (or reply YES), you are prompted for the Application Dashboard (Basic) parameter values. Specify these parameters with reference to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71.

```
Application Fair Completion Rate Threshold (%) (default is: 99):
Application Bad Completion Rate Threshold (%) (default is: 95):
Application Fair Resource Usage Threshold (%) (default is: 40):
Application Bad Resource Usage Threshold (%) (default is: 80):
Application Resource Usage Monitoring Cutoff Threshold (%) (default is: 25):
```

After you have defined the Application Dashboard (Basic) parameters, you are prompted for whether you want to edit the Application Dashboard (Auto Threshold) parameters:

```
Edit 'Application Dashboard (Auto Threshold)' settings? (default is: Yes):
```

If you press Enter (or reply YES), you are prompted for the Application Dashboard (Auto Threshold) parameter values. Specify these parameters with reference to Appendix B, "Configuration parameters for ITCAM Agent for J2EE Monitoring Agent," on page 71.

```
Response Time Selection (%) (default is: 50):
Response Time Deviation (%) (default is: 200):
Fair Response Time Projection (%) (default is: 150):
Bad Response Time Projection (%) (default is: 300):
```

The configuration tool next begins to configure the Tivoli Enterprise Monitoring Agent:

```
Will this agent connect to a TEMS? [YES or NO] (Default is: YES):
```

Accept the default (YES). The agent prompts for the location of the monitoring server this agent is to communicate with:

```
TEMS Host Name (Default is: localhost):
```

If the monitoring server resides on this node, press Enter to accept the default; otherwise supply the host name.

You are asked for the network protocol used for your ITM environment:

```
Network Protocol [ip, sna, ip.pipe or ip.spipe] (Default is: ip.pipe):
```

Specify the primary communications protocol for communication with the monitoring server that will communicate with this agent: IP.UDP, IP.PIPE, IP.SPIPE, or SNA.

You are prompted for your secondary network protocol. You can specify up to three communication methods; this enables backup communication methods so that, if protocol 1 fails, protocol 2 is used and then protocol 3.

```
Now choose the next protocol from one of these:
     - ip
     - sna
     - ip.spipe
     - none
Network Protocol 2 (Default is: none):
IP.PIPE Port Number (Default is: 1918):
```

You are prompted for whether if you want to change the name of the KDC_PARTITION.

```
Enter name of KDC_PARTITION (Default is: null):
```

Press Enter; do not specify a name for this partition. Finally, you are asked if you need to configure this agent for connection to a secondary (hot standby) monitoring server:

```
Configure connection for a secondary TEMS? [YES or NO] (Default is: NO):
Enter Optional Primary Network Name or "none" (Default is: none):
```

Press Enter for both prompts.

After you have completed all questions, the following text is displayed:

```
Agent configuration completed...
```

Note: When you have configured the monitoring agent, you must run the following commands to reconfigure the monitoring server, portal server, and portal client:

1. On the portal server, run the following command: `itmcmd config -A cq`
2. On all portal client systems, run the following command: `itmcmd config -A cj`
3. On the monitoring server, run the following command:`itmcmd config -S -t <tems_name>`

Configuring the monitoring agent using GUI

You can also configure the monitoring agent from the GUI.

Change to the ITM directory's bin subdirectory, and invoke **itmcmd**:

```
./itmcmd manage
```

The Manage Tivoli Enterprise Monitoring Services utility opens.

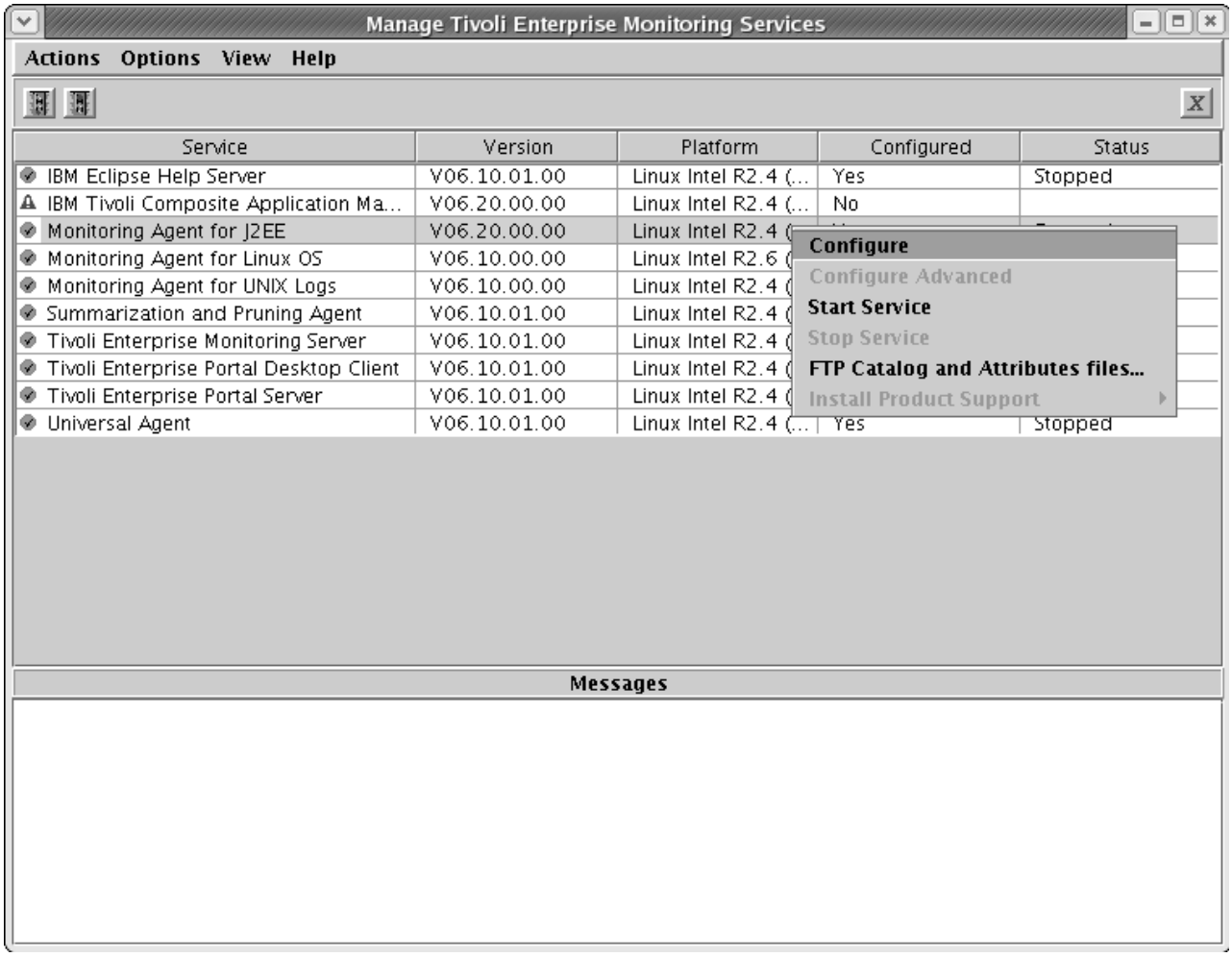

Figure 29. Manage Tivoli Enterprise Monitoring Services window on UNIX and Linux

Select the **Monitoring Agent for J2EE** and right click the row. In the pop-up menu, click **Configure**.

The Configuration of Monitoring Agent for J2EE notebook opens. Specify the parameters with reference to Appendix B, “Configuration parameters for ITCAM Agent for J2EE Monitoring Agent,” on page 71.

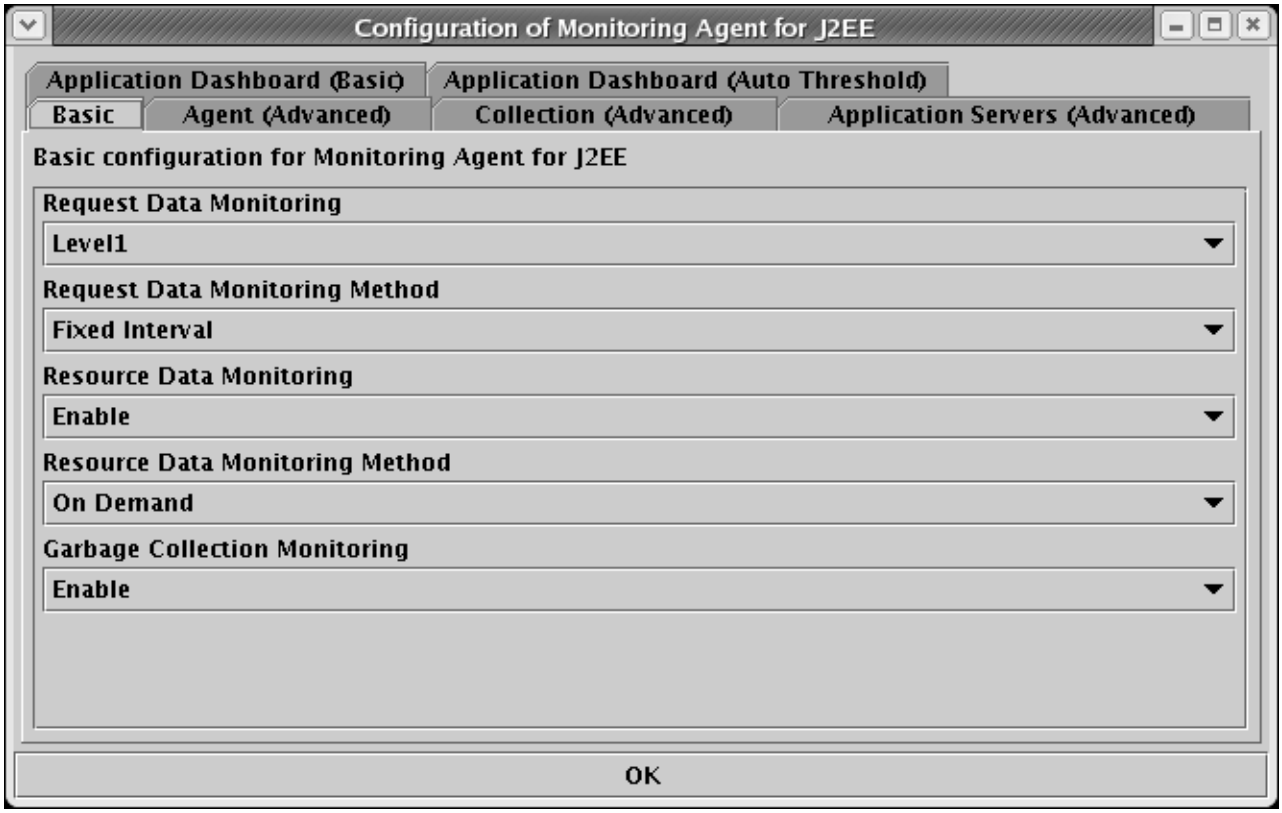

Figure 30. Configuration of Monitoring Agent for J2EE notebook: Basic tab on UNIX and Linux

After you have defined the Basic parameters, click the **Agent (Advanced)** tab.

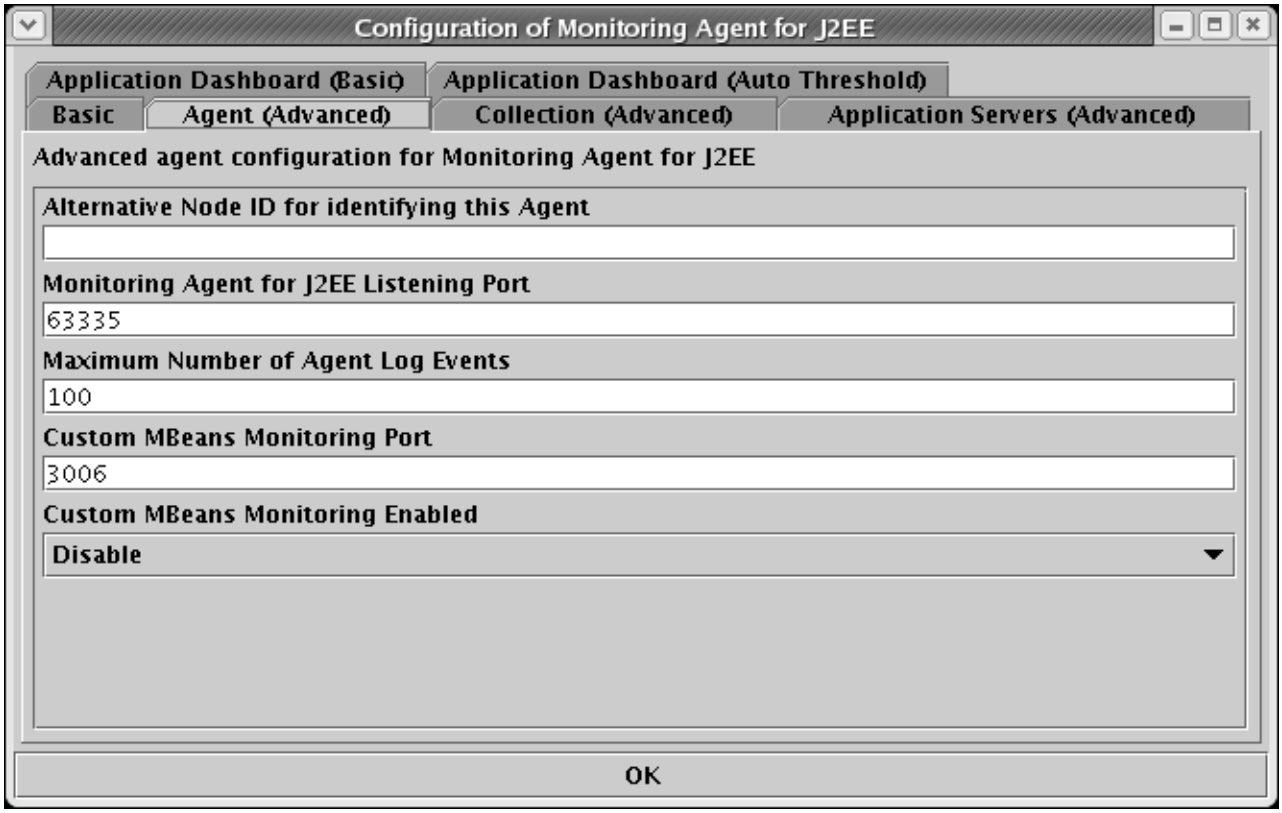

Figure 31. Configuration of Monitoring Agent for J2EE notebook: Agent tab on UNIX and Linux

Attention: If you install more than one copy of the Monitoring Agent on a single host, you must set the Alternative Node ID parameter to different values for each of the copies. Otherwise, the multiple copies of the Monitoring Agent will not work correctly with Tivoli Monitoring.

After you have defined the parameters in the Agent tab, click the **Collection (Advanced)** tab.

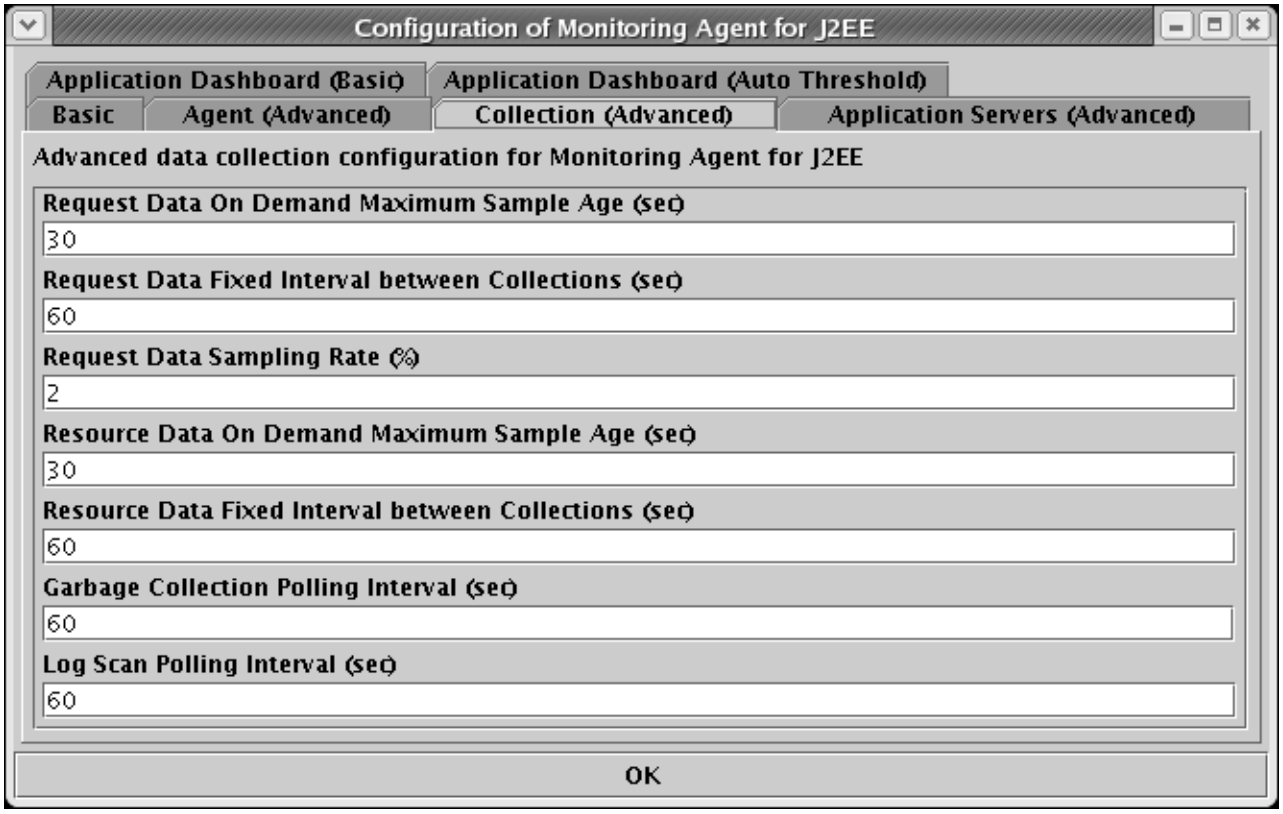

Figure 32. Configuration of Monitoring Agent for J2EE notebook: Collection tab on UNIX and Linux

(Optional) After you have defined the parameters, if the monitored J2EE server has a name longer than 32 characters, click the **Application Servers (Advanced)** tab. To specify an alternate server name of 32 characters or fewer, click **New** .

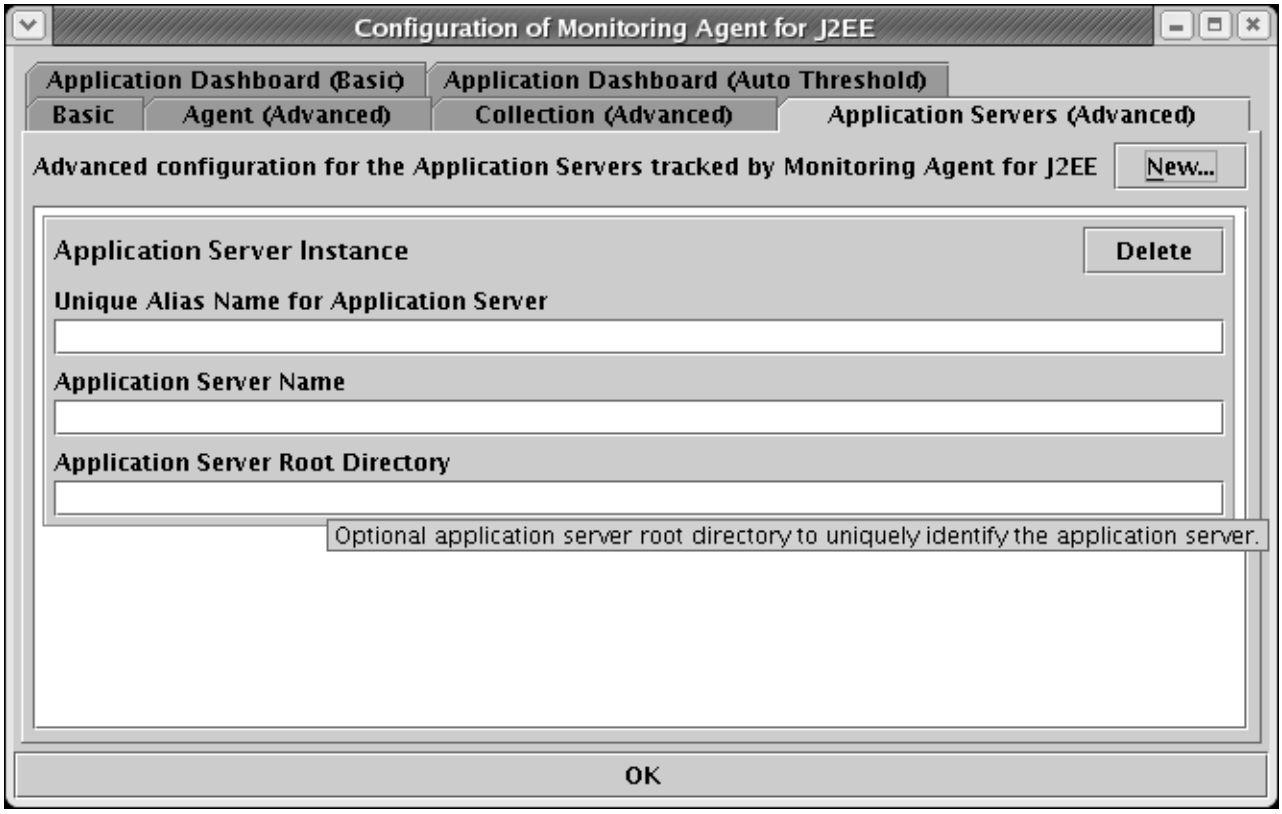

Figure 33. Configuration of Monitoring Agent for J2EE notebook: Application Servers tab on UNIX and Linux

After you have defined the parameters, click the **Application Dashboard (Basic)** tab.

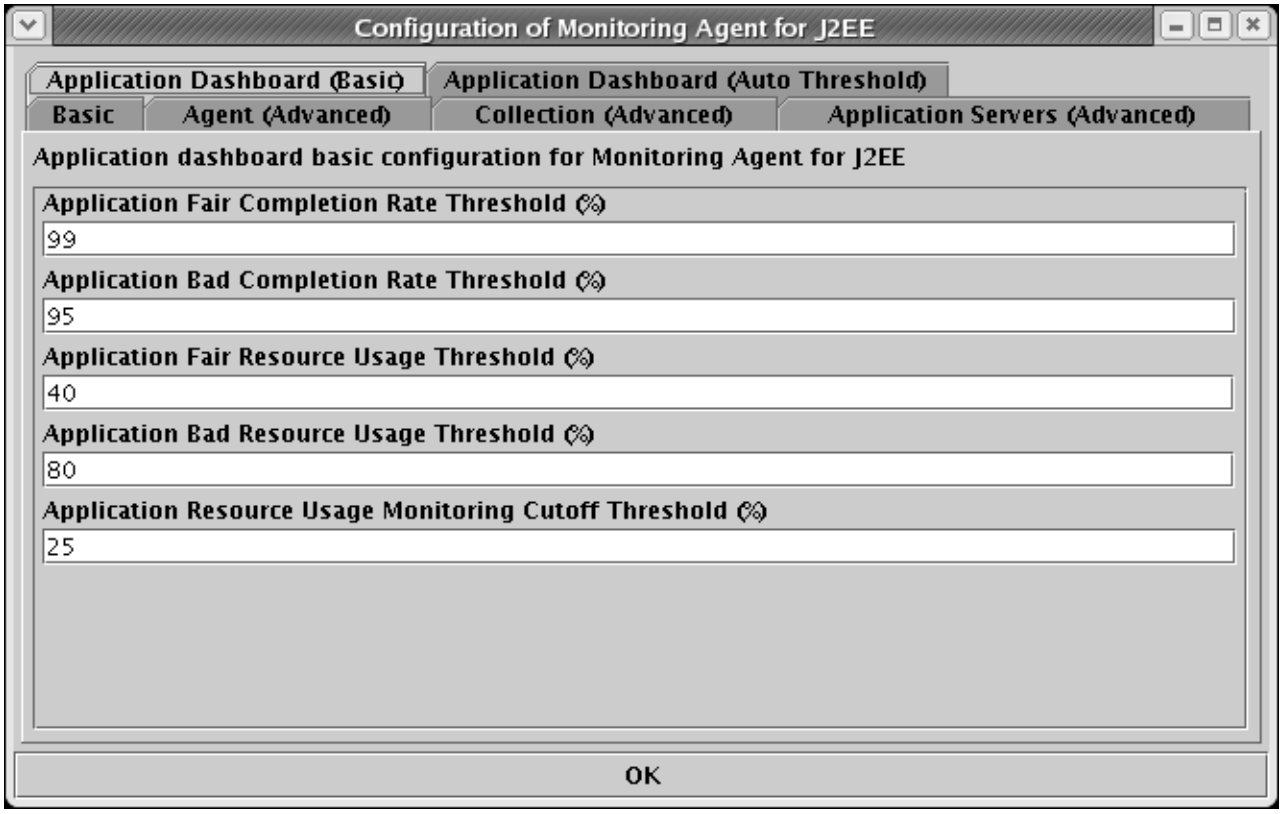

Figure 34. Configuration of Monitoring Agent for J2EE notebook: Application Dashboard (Basic) tab on UNIX and Linux

After you have defined these parameters, click the **Application Dashboard (Auto Threshold)** tab.

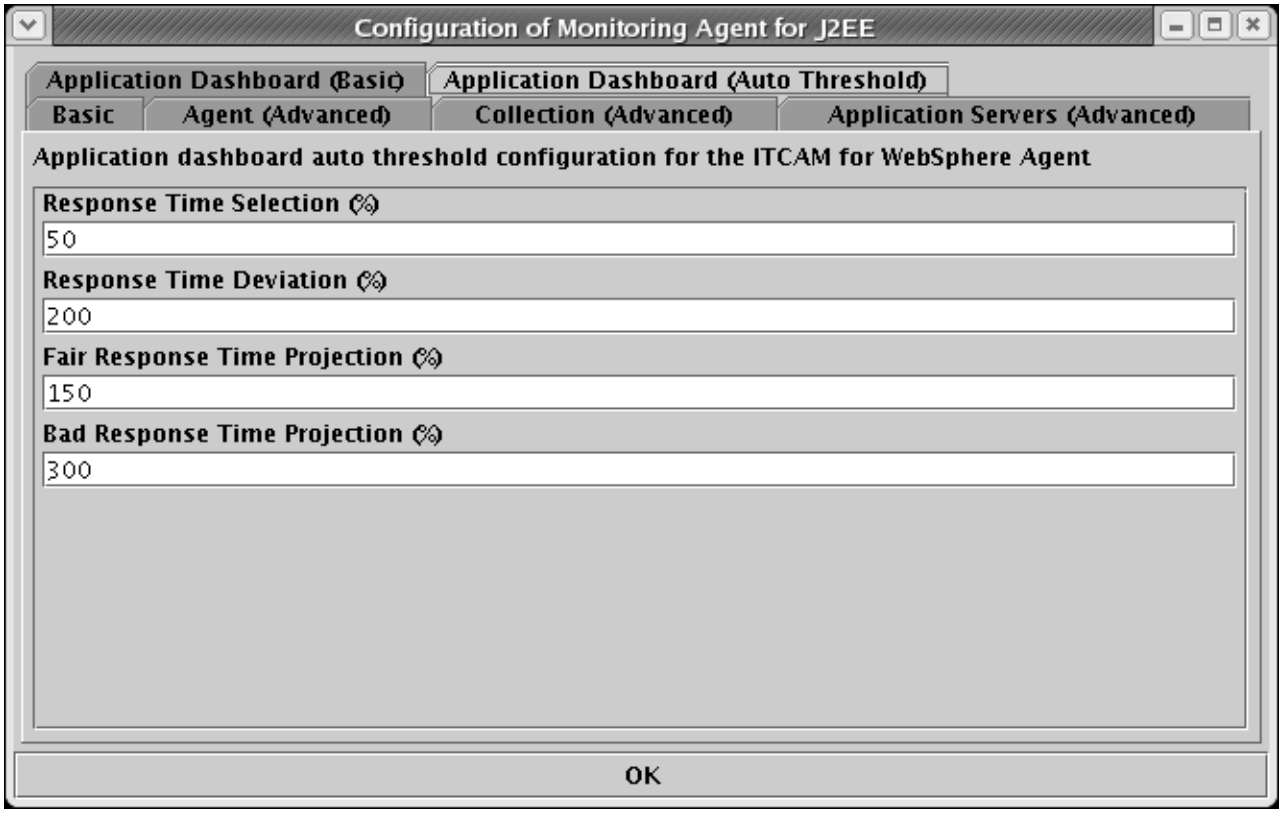

Figure 35. Configuration of Monitoring Agent for J2EE notebook: Application Dashboard (Auto Threshold) tab on UNIX and Linux

After you specified all parameter values, click **OK** to configure the monitoring server connection.

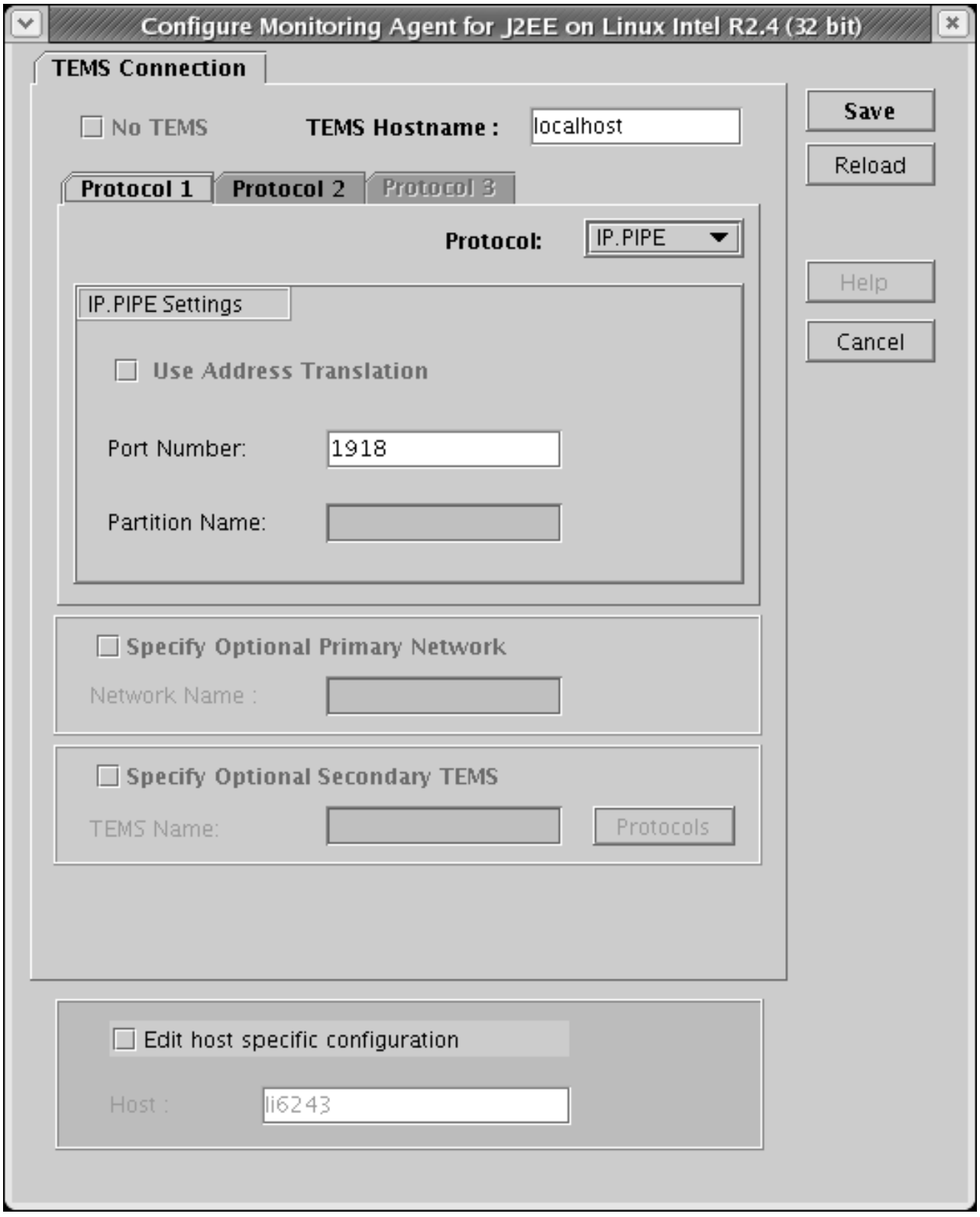

Figure 36. Defining monitoring server Connection on UNIX and Linux

Specify these fields and click **Save** to complete the GUI configuration.

Note: When you have configured the monitoring agent, you must run the following commands to reconfigure the monitoring server, portal server, and portal client:

1. On the portal server, run the following command: `itmcmd config -A cq`
2. On all portal client systems, run the following command: `itmcmd config -A cj`
3. On the monitoring server, run the following command:`itmcmd config -S -t <tems_name>`

Ensure that the Eclipse server has been configured

After the installation has completed, you must check the portal client's Eclipse help server to ensure that it has been configured.

1. Start Manage Tivoli Enterprise Monitoring Services:

   ```
   ./itmcmd manage
   ```

   The Manage Tivoli Enterprise Monitoring Services screen is displayed.
2. Ensure that the Eclipse Help Server entry indicates `Yes` in the Configured column. If it does not, right-click the entry, and select Configure from the pop-up menu.
3. You are prompted for the port number the Eclipse Help Server should use. Ensure that this value is set to the same port number that you specified when installing ITM, and press OK.

Start the Tivoli Enterprise Monitoring Agent

To start the monitoring agent so it can pass J2EE monitoring data to your site's monitoring server, invoke this command on the computer running the ITCAM for J2EE Data Collector:

```
./itmcmd agent start yj
```

where `yj` is the 2-character product code for the ITCAM Agent for J2EE Monitoring Agent.

Then it displays:

```
Staring agent...
Agent Started...
```

Installing application support on Linux and UNIX

This procedure has three parts:

- Installing application support on the Tivoli Enterprise Monitoring Server
- Installing application support on the Tivoli Enterprise Portal server
- Installing application support on the Tivoli Enterprise Portal desktop client

Install application support on the Tivoli Enterprise Monitoring Server.

1. Stop the monitoring server by running the following command:

   ```
   ./itmcmd server stop tems_name
   ```
2. Run **./install.sh** from the installation media
3. Press **Enter** to accept the default directory (`/opt/IBM/ITM`) or type the full path to the installation directory you used when the software asks for the IBM Tivoli Monitoring home directory.

   The software displays the following prompt:

```
Select one of the following:
1) Install products to the local host.
2) Install products to depot for remote deployment (requires TEMS).
3) Exit install.

Please enter a valid number:
```

4. Type **1** and press **Enter**.
5. Type the number that corresponds to the language in which you want to display the software license agreement and press **Enter**.
6. Press **Enter** to display the agreement.
7. Type *1* to accept the agreement and press **Enter**.
8. Type the 32 character encryption key that was specified during the installation of the monitoring server and press **Enter**.

   Note: If you have already installed another IBM Tivoli Monitoring component on this computer or you are installing support for an agent from an agent installation image, this step does not occur.

   A numbered list of available operating systems and installation components is displayed.
9. Type the number that corresponds to `Tivoli Enterprise Monitoring Server support` and press **Enter**.
10. Type **y** to confirm and press **Enter**.

    A list of the components to install is displayed.
11. Type the number that corresponds to `all of the above` and press **Enter**.
12. Type **y** to start the installation.
13. After all of the components are installed, the system asks if you want to install components for a different operating system. Type **n** and press **Enter**.
14. Start the monitoring server by running the following command:

    ./itmcmd server start *tems_name*
15. Run the following command to activate the application support on the monitoring server:

    ./itmcmd support -t *tems_name pc*

    where *tems_name* is the name of the monitoring server and *pc* is the product code for the agent.

    To view the product code for the application support you just installed, run the following command:

    ./cinfo

    Type 1 when prompted to display the product codes for the components installed on this computer.

    Add only the support for the agent you installed. For example, if you installed the support for the DB2 agent, run the following command:

    ```
    ./itmcmd support -t hub_itmdev17 ud
    ```

    `ud` is the product code for the DB2 agent.
16. Stop the monitoring server by running the following command:

    `./itmcmd server stop` *tems_name*
17. Run the following command to restart the monitoring server:

    `./itmcmd server start` *tems_name*

Install application support on the Tivoli Enterprise Portal Server.

Note: Stop the portal server before performing this procedure.

1. Run **./install.sh** from the installation media:
2. When prompted for the IBM Tivoli Monitoring home directory, press Enter to accept the default (/opt/IBM/ITM) or type the full path to the installation directory you used.
3. The following prompt is displayed:

   ```
   Select one of the following:
   1) Install products to the local host.
   2) Install products to depot for remote deployment (requires TEMS).
   3) Exit install.

   Please enter a valid number:
   ```

   Type 1 to start the installation and press Enter.
4. Type the number that corresponds to the language in which you want to display the software license agreement in and press Enter.
5. Press Enter to display the agreement.
6. Type 1 to accept the agreement and press Enter.
7. Type a 32 character encryption key and press Enter. This key should be the same as the key that was used during the installation of the monitoring server.

   Note: If you have already installed another IBM Tivoli Monitoring component on this computer or you are installing support for an agent from an agent installation image, this step does not occur.

   A numbered list of available operating systems and installation components is displayed.
8. Type the number that corresponds to "Tivoli Enterprise Portal Browser Client support" and press Enter.
9. Type `y` to confirm and press Enter.

   A list of the components to install is displayed.
10. Type the number that corresponds to "all of the above" and press Enter.
11. Type `y` to confirm the installation.

    The installation begins.
12. When you are asked whether you want to install components for a different operating system, type `y` and press Enter.
13. Type the number that corresponds to "Tivoli Enterprise Portal Server support" and press Enter.
14. Type `y` to confirm and press Enter.

    A list of the components to install is displayed.
15. Type the number that corresponds to "all of the above" and press Enter.
16. Type `y` to confirm the installation.

    The installation begins.
17. After all of the components are installed, you are asked whether you want to install components for a different operating system. Type `n` and press Enter.
18. Stop the portal server by running the following command:

    ```
    ./itmcmd agent stop cq
    ```

19. Run the following command to configure the portal server with the new agent information:

    ```
    ./itmcmd config -A cq
    ```

    Complete the configuration as prompted.
20. Restart the portal server by running the following command:

    ```
    ./itmcmd agent start cq
    ```

Installing application support on the desktop client

Note: Stop the desktop client before performing this procedure.

1. Run the following command from the installation media:

   ```
   ./install.sh
   ```
2. When prompted for the IBM Tivoli Monitoring home directory, press Enter to accept the default (/opt/IBM/ITM) or type the full path to the installation directory you used.
3. The following prompt is displayed:

   ```
   Select one of the following:
   1) Install products to the local host.
   2) Install products to depot for remote deployment (requires TEMS).
   3) Exit install.

   Please enter a valid number:
   ```

   Type 1 to start the installation and press Enter.
4. Type the number that corresponds to the language in which you want to display the software license agreement in and press Enter.
5. Press Enter to display the agreement.
6. Type 1 to accept the agreement and press Enter.
7. Type a 32 character encryption key and press Enter. This key should be the same as the key that was used during the installation of the monitoring server.

   Note: If you have already installed another IBM Tivoli Monitoring component on this computer or you are installing support for an agent from an agent installation image, this step does not occur.

   A numbered list of available operating systems and installation components is displayed.
8. Type the number that corresponds to "Tivoli Enterprise Portal Desktop Client support" and press Enter.
9. Type `y` to confirm and press Enter.

   A list of the components to install is displayed.
10. Type the number that corresponds to "all of the above" and press Enter.
11. Type `y` to confirm the installation.

    The installation begins.
12. After all of the components are installed, you are asked whether you want to install components for a different operating system. Type `n` and press Enter.
13. Run the following command to configure the portal client with the new agent information:

    ```
    ./itmcmd config -A cj
    ```

    Complete the configuration as prompted.

Performing a silent installation on UNIX and Linux

The ITM installer and configurator support a silent mode in which your predefined values are used to avoid interactions through the user interface. On UNIX and Linux, silent installation is, like the standard verbose procedures, a 2-phase process in which you first install the components and then configure them.

Installation relies on an information file, silent_install.txt, supplied on the ITCAM Agent for J2EE installation CD, in which you supply necessary installation parameters. Silent configuration requires a similar file, yj_silent_config.txt. Both these files are automatically updated with the parameters you supply whenever you install or configure the product.

Before invoking the silent installation or configuration, you must edit these files to ensure that their parameter settings contain values that are appropriate for your site.

When editing silent_install.txt or yj_silent_config.txt, remember these points:

- The comments explain the parameters required and valid values. Comment lines begin with a number sign (#).
- Blank lines are ignored.
- Parameter lines take the form PARAMETER=value. Do not insert a space before the parameter; you can, however, use a space before or after the equal sign (=).
- Remember that the product code for the ITCAM Agent for J2EE Monitoring Agent is **yj**.
- Do not use any of the following characters in any parameter value:
  - Dollar sign ($)
  - Equal sign (=)
  - Pipe sign (|)

You can find complete information about silent ITM installation in the *IBM Tivoli Monitoring: Installation and Setup Guide*.

Silent installation

To start a silent installation, invoke install.sh:

```
./install.sh -q -h<candlehome> -p <silent_response_file>
```

The `<candlehome>` parameter specifies the directory where monitoring agent runtime will be installed. By default it's `/opt/IBM/ITM`.

The `<silent_response_file>` value identifies the response file that you edited to specify installation parameters, usually silent_install.txt. Specify the absolute path to this file.

Silent configuration

To start a silent configuration, invoke **itmcmd** with the **config** option:

```
./itmcmd config -A -p <response_file> yj
```

where `<response_file>` identifies the response file that you edited to specify configuration parameters, usually yj_silent_config.txt. Specify the absolute path to this file.

`yj` is the product code for the ITCAM Agent for J2EE Monitoring Agent.

Uninstalling the Tivoli Enterprise Monitoring Agent on UNIX and Linux

Use the following steps to remove an agent on a UNIX or Linux computer.

1. From a command prompt, run the following command to change to the appropriate /bin directory:

   ```
   cd install_dir/bin
   ```

   where *install_dir* is the path for the home directory for the agent.
2. Run the following command:

   ```
   ./uninstall.sh
   ```

   A numbered list of product codes, architecture codes, version and release numbers, and product titles is displayed for all installed products.
3. Type the number for the monitoring agent. Repeat this step for each additional installed product you want to uninstall.

Installing and uninstalling a Language Pack on Linux and UNIX systems

A Language Pack enables user interaction with the Monitoring Agent in a language other than English. For example, when a Spanish language pack is installed, the Tivoli Enterprise Portal workspaces and the internal messages of the Agent are displayed in Spanish.

To enable full support for a language, you must install the Language Pack on the Monitoring Agent host and all hosts where the Agent ITM support files are installed (hub Tivoli Enterprise Monitoring Servers, all Tivoli Enterprise Portal Servers, and all Tivoli Enterprise Portal desktop clients).

If you no longer want to use a language, uninstall the language pack for it.

Before installing or uninstalling a language pack, ensure that:

- The Agent and the TEP Support Files are installed.
- The Java runtime environment (JRE) is available on every host where you are planning to install the Language Pack. (The JRE is required by ITM).
- You know the installation directories (ITM_home) for the Agent and all other ITM components on which you are planning to install the Agent. The default installation directory is `/opt/IBM/ITM`.

Installing a Language Pack on Linux and UNIX systems

To install a Language Pack on Linux and UNIX systems you need to use the installer on the Language Pack DVD. The procedure is the same on the Agent host, hub Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, and Tivoli Enterprise Portal desktop client.

Perform the following procedure:

1. Mount the Language Pack DVD. Make sure the full path to the mount directory does not include spaces.
2. Use the following commands to start the installer from the Language Pack DVD:

   ```
   cd dir_name
   ./lpinstaller.sh -c ITM_home
   ```
3. Select the language of the installer and click OK.

Note: In this step, you select the language for the installer user interface, not the language pack that will be installed.

4. Click **Next** on the Introduction window.
5. Select **Add/Update** and click **Next**.
6. Select the directory where the the National Language Support package (NLSPackage) files are located. This is the `nlspackage` directory on the Language Pack DVD.
7. Select **ITCAM Agent for J2EE**.
8. Select the languages to install and click **Next**.

   Note: You can hold down the **Ctrl** key for multiple selections.
9. Examine the installation summary page and click **Next** to begin installation.
10. Click **Next**.
11. Click **Finish** to exit the installer.
12. If you are installing the Language Pack on a Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, or Tivoli Enterprise Portal desktop client, start the **Manage Tivoli Monitoring Services** utility, and use it to restart the server or client. If the Eclipse Help Server is running, restart it as well.

Uninstalling a Language Pack on Linux and UNIX systems

To uninstall a Language Pack on Linux and UNIX systems you need to use the installer on the Language Pack DVD. The procedure is the same on the Agent host, hub Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, and Tivoli Enterprise Portal desktop client.

Perform the following procedure:

1. Mount the Language Pack DVD. Make sure the full path to the mount directory does not include spaces.
2. Use the following commands to start the installer from the Language Pack DVD:

   ```
   cd dir_name
   ./lpinstaller.sh -c ITM_home
   ```
3. Select the language of the installer and click OK.

   Note: In this step, you select the language for the installer user interface, not the language pack that will be installed.
4. Click **Next** on the Introduction window.
5. Select **Remove** and click **Next**.
6. Select **ITCAM Agent for J2EE**.
7. Select the languages to uninstall and click **Next**.

   Note: You can hold down the **Ctrl** key for multiple selections.
8. Examine the installation summary page and click **Next** to begin installation.
9. Click **Next**.
10. Click **Finish** to exit the installer.
11. If you are installing the Language Pack on a Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, or Tivoli Enterprise Portal desktop

client, start the **Manage Tivoli Monitoring Services** utility, and use it to restart the server or client. If the Eclipse Help Server is running, restart it as well.

Appendix A. Attribute Groups and sizing information for historical warehousing

You can find the record size and recording frequency information for ITCAM Agent for J2EE Monitoring Agent in Table 3. This information helps you size the amount of disk space needed for any historical logging.

Table 3. Information for historical warehousing

Table Name	Object Name	Record size	Recording Frequency
KYJAPHLTH	Application Health Status	1008	1 record per interval per application for each application server
KYJAPMONCF	Application Monitoring Configuration	n/a	not historical table
KYJAPSRV	Application Server – J2EE	764	1 record per interval per application server. In XEWAS this approximates app server instance kwwappsv
KYJAPSST	Application Server Status – J2EE	968	1 record per interval per server instance
KYJBASELN	Baseline	n/a	not historical table
KYJDATAS	Datasources – J2EE	1284	1 record per interval per data source in each application server
KYJDCMSG	DC Message – J2EE	1388	1 record per each entry written into DC log message file.
KYJEJB	Enterprise Java Bean Modules – J2EE	1020	1 record per JSR77 EJB module per interval plus 1 record per app server
KYJGCACT	Garbage Collection Analysis – J2EE	736	1 record per interval per application server. In XEWAS this approximates kwwgc.
KYJGCAF	Allocation Failure – J2EE	744	1 record per interval for each allocation failure block. In XEWAS this approximates kwwafb.
KYJGCCYC	Garbage Collection Cycle – J2EE	784	1 record per garbage-collection cycle per interval
KYJJCACP	JCA Connection Pools – J2EE	1016	1 record per JSR77 JCA resource per interval plus 1 record per app server
KYJJDKJVM	JDK - JVM	1732	1 record per interval for each application server
KYJJDKMEM	JDK - Memory	724	1 record per interval for each application server
KYJJDKOS	JDK - Operation System	1484	1 record per interval for each application server
KYJJDKTHR	JDK - Threading	1224	1 record per interval for each application server
KYJJMSSUM	JMS Summary – J2EE	960	1 record per interval per MQ queue in each application server

Table 3. Information for historical warehousing (continued)

Table Name	Object Name	Record size	Recording Frequency
KYJJTARES	JTA Resources – J2EE	960	1 record per JSR 77 JTA Resource per interval plus 1 record per app server.
KYJLOGANAL	Log Analysis – J2EE	1068	1 record per interval for each entry written into the application server log stream or file. This table is renamed from the XEWAS KWWERRLG
KYJPREV	J2EE Agent Events	704	1 record for each product event. These records are written when problems occur.
KYJREQHIS	Request Times and Rates – J2EE	976	1 record per interval per WAS. This table is not in the prior XEWAS product.
KYJREQSEL	Selected Request – J2EE	1368	1 record per interval for each workload degradation in each application server. This table is renamed from XEWAS KWWWKLDD
KYJREQUEST	Request Analysis – J2EE	1184	1 record per interval for each workload in each application server. This table is renamed from XEWAS KWWWLDS2
KYJRQMONCF	Requests Monitoring Configuration	n/a	not historical table
KYJSDBCON	DB Connection Pools - NetWeaver	972	1 record per DB connection pool per interval plus 1 record per app server.
KYJSEJB	Enterprise Java Bean Service - NetWeaver	1152	1 record per EJB per interval plus 1 record per app server.
KYJSERVLT	Servlets JSPs – J2EE	972	1 record per interval per servlet
KYJSJTASUM	JTA Summary - NetWeaver	708	1 record per app server per interval
KYJSWEBCNT	Web Container - NetWeaver	716	1 record per app server per interval
KYJWEBAPP	Web Applications – J2EE	836	1 record per interval per Web application
KYJWLCCPL	J2EE Connector Connection Pools – WebLogic	884	1 record per J2C connection pool per interval plus 1 record per app server.
KYJWLDBCON	JDBC Connection Pools - WebLogic	900	1 record per JDBC connection pool per interval plus 1 record per app server.
KYJWLEJB	Enterprise Java Beans - WebLogic	1176	1 record per EJB per interval plus 1 record per EJB component plus 1 record per app server.
KYJWLEJBC	Enterprise Java Bean Components - WebLogic	968	1 record per EJB component per interval plus 1 record per app server.

Table 3. Information for historical warehousing (continued)

Table Name	Object Name	Record size	Recording Frequency
KYJWLJMSS	JMS Sessions - WebLogic	1088	1 record per JMS session per interval plus 1 record per app server.
KYJWLJTA	Java Transaction Service - WebLogic	900	1 record per app server per interval.
KYJWLSRVLT	Servlets and JSPs – WebLogic	1628	1 record per Servlet/JSP per interval plus 1 record per Web Application plus 1 record per app server.
KYJWLWEBAP	Web Applications - WebLogic	1296	1 record per Web Application per interval plus 1 record per app server.

Appendix B. Configuration parameters for ITCAM Agent for J2EE Monitoring Agent

This appendix lists the configuration parameters for ITCAM Agent for J2EE Monitoring Agent.

Table 4. Configuration parameters

Parameter	What you should specify
Basic settings	
Request Data Monitoring	This parameter sets the monitoring level for request data stored by the Data Collector: Select **Level1** to collect data only about edge requests, such as servlets and JSPs. You specify the collection percentage on the **Collection** tab. Select **Level2** to collect data about both edge requests and subsidiary requests, such as JDBC and JMS requests. If you select **Level2**, all subsidiary requests for the selected edge requests are monitored. Select **Disable** to disable collection of request data.
Request Data Monitoring Method	This parameter controls how frequently data is collected on service requests made by your site's J2EE applications: Select **Fixed Interval** to collect request data at a fixed interval that you specify on the **Collection** tab. Select **On Demand** to collect request data only when the portal user requests it.
Resource Data Monitoring	This parameter sets the monitoring level for resource (that is, PMI) data stored by the Data Collector: Select **Enable** to enable collection of resource data. Select **Disable** to disable collection of resource data.
Resource Data Monitoring Method	This parameter controls how frequently resource (that is, PMI) data is collected about your site's J2EE applications: Select **Fixed Interval** to collect resource data at a fixed interval that you specify on the **Collection** tab. Select **On Demand** to collect resource data only when the portal user requests it.

Table 4. Configuration parameters (continued)

Parameter	What you should specify
Garbage Collection Monitoring	This parameter controls whether statistics are collected about the Java virtual machine's invocation of its garbage-collection algorithm. Select either **Enable** or **Disable**.
Agent (Advanced) settings	
Alternative Node ID for identifying this Agent	This parameter specifies an alias by which this copy of the TEMA is identified within portal. **Attention:** On Linux and UNIX systems, you can install more than one copy of the Monitoring Agent on a single host. In this case, you must set this parameter to different values for each of the copies. Otherwise, the multiple copies of the Monitoring Agent will not work correctly with Tivoli Monitoring.
Monitoring Agent for J2EE Listening Port	Specify the port number the TEMA should use to retrieve monitoring data from the ITCAM Agent for J2EE Data Collector.
Maximum Number of Agent Log Events	This parameter controls the maximum number of J2EE Application Server log messages the monitoring agent can store before overwriting them.
Custom MBeans Monitoring Port	Specify the port number the monitoring agent should use for MBeans Monitoring.
Custom MBeans Monitoring Enabled	This parameter controls whether MBeans Monitoring is enabled. Select either Enable or Disable.
Collection (Advanced) settings	
Request Data On Demand Maximum Sample Age (sec)	Specifies the maximum length of time, in seconds, for which on-demand request data should be collected.
Request Data Fixed Interval between Collections (sec)	Specifies the amount of time, in seconds, that elapses between request data collections (when data is being collected at fixed intervals).
Request Data Sampling Rate (%)	This parameter specifies the percentage of all edge (Level1) requests that should be monitored. This value must be in the range 1 - 100.
Resource Data On Demand Maximum Sample Age (sec)	Specifies the maximum length of time, in seconds, for which on-demand resource (PMI) data should be collected.
Resource Data Fixed Interval between Collections (sec)	Specifies the amount of time, in seconds, that elapses between resource data collections (when data is being collected at fixed intervals).
Garbage Collection Polling Interval (sec)	Specifies the length of time that lapses between scans of the verboseGC logs for garbage collection statistics.

Table 4. Configuration parameters (continued)

Parameter	What you should specify
Log Scan Polling Interval (sec)	Specifies the length of time that lapses between scans of the J2EE Application Server message logs for key events.
Application Servers (Advanced) settings	
Unique Alias Name for Application Server	Specifies a server alias that is 32 characters or fewer in length. The server will be represented by this name in the Tivoli Enterprise Portal.
Application Server Name	Specifies the true name of the J2EE server.
Application Server Root Directory	Specifies the full path name of the directory that defines this application server.
Application Dashboard (Basic) settings	
Application Fair Completion Rate Threshold (%)	Specifies the default completion percentage for application fair availability threshold.
Application Bad Completion Rate Threshold (%)	Specifies the default completion percentage for application bad availability threshold.
Application Fair Resource Usage Threshold (%)	Specifies the threshold percentage for fair usage level of an application resource.
Application Bad Resource Usage Threshold (%)	Specifies the threshold percentage for bad usage level of an application resource.
Application Resource Usage Monitoring Cutoff Threshold (%)	Specifies the cutoff threshold percentage for application resources usage monitoring.
Application Dashboard (Auto Threshold) settings	
Response Time Selection (%)	Specifies the percentage from baseline to be used for response time auto-thresholding.
Response Time Deviation (%)	Specifies the deviation for baseline selection to be used for response time auto-thresholding.
Fair Response Time Projection (%)	Specifies the percentage to derive the fair response time threshold from the baseline selection.
Bad Response Time Projection (%)	Specifies the percentage to derive the bad response time threshold from the baseline selection.

Appendix C. Support information

This section describes the following options for obtaining support for IBM products.

Finding Release Notes

You can find Release Note information online by viewing IBM Technotes. Technotes replace the Release Notes® manual for ITCAM Agent for J2EE Monitoring Agent. *Technotes* are short documents that cover a single topic. You can search the Technote collection for common problems and solutions, as well as known limitations and workarounds. Technotes are continuously updated to provide current product information.

The following two procedures describe how to view Technotes and subscribe to have future Technotes e-mailed to you. Alternatively, you can watch demonstrations of these procedures at the following Web site:

http://www-306.ibm.com/software/support/sitetours.html

Viewing Technotes

Perform the following actions to access Technotes for ITCAM Agent for J2EE Monitoring Agent:

1. Launch the IBM Software Support Web site: http://www.ibm.com/software/support
2. In the **Products A - Z** field, select the product name to open the product-specific support site.

   For this product, select **I** > **ITCAM for J2EE**.
3. In the **Self help** field, click **Technotes**.
4. Scroll through the Technotes, or you can optionally type a search term to refine the displayed data.

   For tips on refining your search, click **Search tips**.

Creating an e-mail subscription to Technotes

You can subscribe to receive e-mail notification about product tips and newly published fixes through My support, a personalized portal that enables you to:

- Specify the products for which you want to receive notifications
- Choose from flashes, downloads, and Technotes
- Receive an e-mail update in your inbox

Perform the following steps to subscribe to My support e-mails:

1. Launch an IBM support Web site such as the following site: http://www.ibm.com/support/us/
2. Click **My support** in the upper-right corner of the page.

3. If you have not yet registered, click **register** in the upper-right corner of the support page to create your user ID and password.
4. Sign in to **My support**.
5. On the My support page, click **Edit profile**.
6. Select a product family and continue setting your preferences to specify the information you want in your e-mails.
7. Click **Submit**.

Tivoli Support Technical Exchange

You can become a participant in the new Tivoli Support Technical Exchange, where you can expand your technical understanding of your current Tivoli products in a convenient format hosted by Tivoli support engineers. This program provides support discussions about product information, troubleshooting tips, common issues, problem solving resources and other topics. As Exchange leaders, Tivoli engineers provide subject matter expert direction and value. Participating in the Exchange helps you manage your Tivoli products with increased effectiveness.

What do you do to participate? Review the schedule of Exchange sessions. Find a topic of interest and select **register**. Provide your name, phone number, company name, number of attendees, the Exchange Topic and IBM Customer number. You will be invited to attend a 1-hour to 2-hour conference call where the information is presented. The new Tivoli Support Technical Exchange can help with the following areas:

- Increased product knowledge
- Ways to avoid common pitfalls
- Support recommendations
- Proactive customer support
- Helpful hints and tips
- Knowledge transfer
- Expansion of your knowledge base

For more information or to suggest a future Exchange session, contact Support Technical Exchange (xchange@us.ibm.com). To learn more, visit the following Web site: http://www.ibm.com/software/sysmgmt/products/support/supp_tech_exch.html

Searching knowledge bases

If you have a problem with your IBM software, you want it resolved quickly. Begin by searching the available knowledge bases to determine whether the resolution to your problem is already documented.

Search the information center on your local system or network

IBM provides extensive documentation that can be installed on your local computer or on an intranet server. You can use the search function of ITCAM for J2EE monitoring agent to query conceptual information, instructions for completing tasks, reference information, and support documents.

Search the Internet

If you cannot find an answer to your question in the information center, search the Internet for the latest, most complete information that might help you resolve your problem. To search multiple Internet resources for your product, expand the product folder in the navigation frame in the information center and select **Web search**. From this topic, you can search a variety of resources including:

- IBM Technotes
- IBM Downloads
- IBM Redbooks®
- IBM DeveloperWorks
- Forums and Newsgroups
- Google

Contacting IBM Software Support

IBM Software Support provides assistance with product defects.

Before contacting IBM Software Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. The type of software maintenance contract that you need depends on the type of product you have:

- For IBM-distributed software products (including, but not limited to, Tivoli, Lotus®, and Rational® products, as well as DB2 and WebSphere products that run on Windows or UNIX operating systems), enroll in Passport Advantage® in one of the following ways:
  - **Online**: Go to the Passport Advantage Web page (http://www.lotus.com/services/passport.nsf/WebDocs/ Passport_Advantage_Home) and click **How to Enroll**
  - **By phone**: For the phone number to call in your country, go to the IBM Software Support Web site(http://www14.software.ibm.com/webapp/set2/sas/f/handbook/home.html) and click **Contacts**.
- For IBM eServer™ software products (including, but not limited to, DB2 and WebSphere products that run in zSeries, pSeries, and iSeries® environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage Web page (http://www.ibm.com/servers/eserver/techsupport.html).

If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States or, from other countries, go to the contacts page of the IBM Software Support Handbook on the Web (http://techsupport.services.ibm.com/guides/contacts.html) and click the name of your geographic region for phone numbers of people who provide support for your location.

Follow the steps in this topic to contact IBM Software Support:

1. Determine the business impact of your problem.
2. Describe your problem and gather background information.
3. Submit your problem to IBM Software Support.

Determine the business impact of your problem

When you report a problem to IBM, you are asked to supply a severity level. Therefore, you need to understand and assess the business impact of the problem you are reporting. Use the following criteria:

Table 5. Severity level table

Severity level	Business impact of the problem
Severity 1	**Critical** business impact: You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.
Severity 2	**Significant** business impact: The program is usable but is severely limited.
Severity 3	**Some** business impact: The program is usable with less significant features (not critical to operations) unavailable.
Severity 4	**Minimal** business impact: The problem causes little impact on operations, or a reasonable circumvention to the problem has been implemented.

Describe your problem and gather background information

When explaining a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently. To save time, know the answers to these questions:

- What software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
- Can the problem be re-created? If so, what steps led to the failure?
- Have any changes been made to the system? (For example, hardware, operating system, networking software, and so on.)
- Are you currently using a workaround for this problem? If so, be prepared to explain it when you report the problem.

Submit your problem to IBM Software Support

You can submit your problem in one of two ways:

- **Online**: Go to the "Submit and track problems" page on the IBM Software Support site (http://www.ibm.com/software/support/probsub.html). Enter your information into the appropriate problem submission tool.
- **By phone**: For the phone number to call in your country, go to the contacts page of the *IBM Software Support Handbook* at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Software Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Software Support provides a workaround for you to implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the IBM product support Web pages daily, so that other users who experience the same problem can benefit from the same resolutions.

Appendix D. Accessibility

Accessibility features help users with physical disabilities, such as restricted mobility or limited vision, to use software products successfully.

The accessibility features in the product enable users to:

- Use assistive technologies, such as screen reader software and digital speech synthesizers, to hear what is displayed on the screen. Consult the product documentation of the assistive technology for details on using the technology with this product.
- Perform tasks with the software using only the keyboard.

General Navigation

Each page has four main sections:

- Headerbar
- Toolbar
- Main tabs
- Content

Each page has navigation points for screen readers. The following navigation points are all H1:

- Title bar
- Main tabs
- Main form
- Section labels
- Table labels

Menu Navigation

You use the Go To menu at the top of the screen to navigate to any of the applications that you have access to. The Go To menu is a cascading menu that is three levels deep at its deepest point. The following instructions describe how to get started with JAWS:

1. To get to the Go To menu press Alt+G.
2. When you open the menu, JAWS reads the first application in the menu. If JAWS does not begin to read the entry, restart the screen reader.
3. Navigate the list of applications in the menus by using the arrow keys.
4. JAWS indicates if a menu item has submenus. To get to a submenu, press the right arrow or enter.
5. Press the left arrow to move up a level in the hierarchy. If you press the left arrow at the highest level of the Go To menu, you leave the menu completely.
6. Press the Enter key to enter an application.

Accessibility help

The Accessibility Help panels provide details on general navigation, menu navigation, and hot keys. Click **Accessibility Help** from the toolbar of the product to access the help panels.

Screen reader setting

The product contains a screen reader flag. When you turn on the screen reader flag, the user interface is optimized to work with JAWS for Windows®. You use the **User** tab in the Users application to turn on the screen reader flag.

Keyboard shortcuts

You can navigate within the applications by using a combination of keys.

Accessible reports

To use the accessibility tools to read reports, you must access the reports in Microsoft Excel. In the reports applications, select the **Run Reports** option in the **Select Action** menu. With this option, you can email an .xls file version of a report to yourself at a scheduled time.

IBM and accessibility

For more information about the commitment that IBM has to accessibility, see the IBM Human Ability and Accessibility Center. The IBM Human Ability and Accessibility Center is at the following web address: http://www.ibm.com/able

Appendix E. Glossary

CICS® Transaction Gateway. CTG integrates your site's J2EE Application Server applications with key mature business systems running on CICS servers. CTG integrates middle-tier application servers with CICS by providing a multiuser gateway that supports Web applications written in Java and other languages, including C/C++, Visual Basic, and COBOL. The Gateway process communicates with CICS applications after receiving requests from:

class file
A file containing Java object code for a single Java class of objects.

class loader
A Java component that loads Java object classes into the **heap**.

CGI Common Gateway Interface. The standard way for a Web server to pass a Web user's request to an application program and to receive data back to forward to the user. When the user supplies information on a Web page, it usually needs to be processed by an application program. The Web server typically passes the form information to a small application program that processes the data and may send back a confirmation message. This method or convention for passing data back and forth between the server and the application is called the Common Gateway Interface (CGI). It is part of the Web's Hypertext Transfer Protocol (HTTP).

component
In object-oriented programming environments like Java, a component is a reusable program building block that can be combined with other components running on the same or different computers in a distributed network to form an application. Examples of a component include a single button in a graphical user interface, an interface to a database manager, and an **EJB**. A component runs within a **container**.

container
In the Enterprise JavaBeans (**EJB**) architecture, a container is an application program that executes the program building block known as a **component** (that is, a JavaBean). You write a Java container (such as a GUI button or a database requester) that runs both prewritten and site-developed JavaBeans. Examples of containers include pages on a Web site as well as the Web browsers themselves.

CPU Central Processing Unit. The part of the computer that interprets and executes instructions.

CTG

- Java programs such as applets and servlets.
- Special Java classes such as the class JavaGateway, which establishes communication with the CTG process.
- Native code that handles the communication from the Gateway daemon to the CICS server.

CTG supports these programming interfaces:

- the External Call Interface (**ECI**), used when calling COMMAREA-based CICS applications
- the External Presentation Interface (**EPI**), used for communicating with 3270-based transactions

- the External Security Interface (**ESI**), used for exchanging userid/password information with CICS

The latest version of CTG implements the J2EE Connector Architecture (**JCA**), which allows enterprise Java technology to exploit CICS applications.

datasources
Data pertaining to **J2EE** data sources, which are logical connections to database subsystems.

DCE Distributed Computing Environment. A specification from the Open Software Foundation (OSF) that supports remote function execution across a network. J2EE Application Server uses DCE to provide certain types of security, for example, authentication of tokens, tickets, or credentials in an untrusted network.

delay A measurable factor that contributes to the response time of a **workload** (or **transaction**), for example, connecting to a JDBC database, reading a row from an SQL database, committing a transaction, or calling a user-defined method. Workloads themselves can be delays to other workloads, for example, a **servlet** invoking an **EJB** method.

design patterns
Written narratives that define a recurring problem, outline a solution, and describe the tradeoffs involved in implementing that solution. In object-oriented programming environments like Java, a design pattern also describes certain objects and object classes to be used when architecting such a solution.

DHCP Dynamic Host Configuration Protocol. A communications protocol that lets network administrators centrally manage the assignment of Internet Protocol (IP) addresses across an organization's network. Without DHCP, each computer's IP address must be entered manually at each computer and, if computers move to another location in another part of the network, a new IP address must be chosen. DHCP lets a network administrator supervise and distribute IP addresses from a central point and automatically sends a new IP address when a computer is plugged into a different network location.

EJB Enterprise JavaBean. A component-based application programming interface that implements component architecture for multitier client/server systems written in Java. *See also* **JavaBean** and **container**.

garbage collection
A facility of the **JVM** that deallocates and frees up memory lost when objects are created and later destroyed. Garbage collection usually occurs when insufficient **heap** space is available for allocating new objects, although you can trigger it manually by invoking the System.gc method.

Garbage collection can be expensive since it involves identifying all the unreferenced objects, removing them from the heap, and then possibly compacting the heap.

heap A memory storage area known as the System Resources Area that stores system information about running applications. The main storage area used for allocating Java classes and object instances, as well as executable code. The allocation of objects on the heap creates a live or active object, which exists as long as the **JVM** maintains a pointer to it; when all references to an object cease to exist, it is subject to **garbage collection**.

HTTP Hypertext Transfer Protocol. A suite of protocols for the Internet that transfer and display hypertext documents.

HTTP sessions
Data related to sessions of specific World Wide Web browsers.

IIOP Internet Inter-ORB Protocol. A protocol that distributed programs written in different programming languages can use to communicate over the Internet. IIOP, a part of the Common Object Request Broker Architecture (**CORBA**), is based on the client/server computing model, in which a client program makes requests of a server program that waits to respond to a client's requests. With IIOP, you can write client programs that communicate with your site's existing server programs wherever they are located and without having to understand anything about the server other than the service it performs and its address (called the Interoperable Object Reference, IOR, which comprises the server's port number and IP address).

instrumentation
The process of modifying program code so the time it takes the code to run, along with other statistics, can be measured. These modifications insert hooks into these Java methods so that the real time and CPU time spent executing the methods can be measured. Instrumentation is key to ITCAM for J2EE monitoring agent's workload analysis feature.

J2C J2EE Application Server's implementation of the connection-management and pool-management components of **JCA**. Applications needing a backend resource reference a connection factory suitable for use with that resource; the connection factory in turn calls J2EE Application Server's DB2 Relational Resource Adapter, DB2 RRA (which, despite its name, also supports Oracle, SQL Server, and other database management systems). The DB2 RRA passes the connection request to a J2C connection manager, which tries to provide an available connection from a predefined pool. But when all connections are in use, the J2C connection manager calls back to the DB2 RRA to obtain a new connection from the backend system; once this connection is returned, the connection manager adds it to the connection pool for future reuse.

J2C container
The third type of container within J2EE Application Server (EJB containers and Web containers are the other two types). A J2C container contains connection factories that represent backend resources; it also manages access to these resources through a connection manager associated with each connection factory.

J2EE Java 2 Platform, Enterprise Edition. An environment for developing and deploying multitier enterprise applications. J2EE simplifies development of enterprise applications by basing them on standard, modular components; it comprises a set of services, application programming interfaces (APIs), and protocols that provide the necessary functions for developing multitiered, Web-based applications.

JAR file
A Java archive file, which is a ZIP file containing many class files along with their directory structure.

JavaBean
The Java implementation of component-based software architecture, which defines how small, tested software entities called **components** can be integrated to build complete software solutions called **containers**.

JCA J2EE Connector Architecture. A template for writing your own **connectors**, which is a binding between a J2EE application server and a backend enterprise information system (EIS) or data repository such as IMS™ or DB2.

JDBC Java Database Connectivity. An application programming interface (API) for connecting Java programs to the data in a relational database. With this API, you can encode data requests in Structured Query Language (SQL) that JDBC then passes to the database manager for interpretation and processing.

JMS Java Message Service. A programming interface that connects Java programs to middleware messaging applications, for example, J2EE MQ.

JMS summary data
Data regarding the use of J2EE MQ by J2EE Application Server applications.

JMX Java Management Extensions. A standard technology for management and monitoring that defines architecture, application programming interfaces (APIs), and services for application and network management in Java. JMX provides tools for building distributed, Web-based solutions for managing and monitoring Java devices and applications.

A JMX agent is an **Mbean container**.

JNDI Java Naming and Directory Interface. An application programming interface (API) that connects Java applications to naming and directory servers such as **LDAP**.

JSP Java server page. A Web page that specifies one or more **servlets** whose execution on the Web server modifies the page's content or appearance before it is presented to the user.

JTA Java Transaction API. An application programming interface developed by Sun Microsystems that specifies standard Java interfaces between a transaction manager (such as Tuxedo) and other players in a distributed transaction system: the resource manager, the application server, the transactional applications, and often the database manager as well.

JVM Java virtual machine. A software implementation of a central processing unit (**CPU**) that runs Java applets and applications. The JVM provides a software execution engine that safely and compatibly executes the byte codes in Java **class files** on various microprocessors, whether embedded in a computer or in another electronic device.

Kerberos
A security system from the Massachusetts Institute of Technology that provides security services for networking.

LDAP Lightweight Directory Access Protocol. A protocol that uses TCP/IP to access directory databases where applications can store and retrieve common naming and location data. For example, applications can use LDAP to access such information as email addresses, service configuration parameters, and public keys.

lock A semaphore created through the use of the Java *synchronized* keyword that prevents simultaneous access to a Java object or section of code.

longest-running workloads
Data related to individual **transactions** (executions of a workload) that exceed user-defined response-time criteria.

MBeans
Managed Beans. A set of standard **instrumentation** methods for use in Java programs and by Java management applications like ITCAM for J2EE monitoring agent that allows monitoring and management of Java-based applications. An Mbean is a **JavaBean** that represents a **JMX**-manageable resource.

monitor
1) A transaction environment for maintaining large quantities of data in a consistent state and that controls which users and clients can access data through authorized servers. 2) A programming primitive created so that multiple program threads can share the same resource (such as an object). A program creates a monitor for a given resource by requesting it from the system; the system returns a unique ID for that monitor. After that, any thread needing the resource must use the monitor to **lock** the resource while the thread is using it. If the monitor is already locked, a thread requesting the resource is queued by the system and then given control when the monitor becomes unlocked. Also called a mutex.

MVC The Model/View/Controller **design pattern** is based on the separation of an application into three objects: the user interface (“view”), the logical structure of the data the application requires (“model”), and the user commands that change the view or the model (“controller”).

node Any managed system, such as a **J2EE** server, that Tivoli Enterprise Portal is monitoring. A node can also be a managed system of subnodes, all of which are being managed as components of the primary node.

OLT Object Level Trace. A tool for testing distributed applications that includes a graphical trace facility and a remote debugger.

PMI Performance Monitoring Infrastructure. The application programming interface (API) that IBM provides for extracting J2EE Application Server performance data on UNIX and Windows platforms. PMI must be enabled and the appropriate instrumentation levels set for the OMEGAMON® XE agent to extract PMI data and populate certain workspaces.

Under J2EE Application Server V5.0, PMI runs as an interface to **JMX**.

RMI Remote Method Invocation. A Java standard from Sun Microsystems that performs a remote procedure call (RPC) to allow Java objects stored in the network to be accessed remotely in a client/server environment.

RPC Remote Procedure Call. A protocol based on the Open Software Foundation's Distributed Computing Environment (**DCE**) that allows one program to request services from a program running on another computer in a network. (A procedure call is also known as a function call or a subroutine call.) RPC uses the client/server model: the requesting program is the client, and the responding program is the server. As with a local procedure call, an RPC is a synchronous operation: the requesting program is suspended until the remote procedure returns its results.

servlet
A Java application that runs in an application server or Web server, and that provides server-side processing.

signature
The name of an operation or method and its parameters.

SSL Secure Sockets Layer. A security protocol for communication privacy that provides secure client/server conversations.

struts A widely used framework for developing servlet- or JSP-based Web applications that is distributed as open source by the Apache Jakarta Project. Struts encourages application architectures based on the Model 2 approach, a variation of the Model/View/Controller (**MVC**) design paradigm.

thread A dispatchable unit of work.

TMS Tivoli Monitoring Services. The software foundation that supports the development and operations of Tivoli Enterprise Portal (), the Tivoli Enterprise Monitoring Server (monitoring server), and its Tivoli Enterprise Monitoring Agents (monitoring agents).

transaction
A single execution of a **workload**.

URL Universal Resource Locator. The unique address for a file that is accessible on the Internet. A common way to get to a Web site is to enter the URL of its home page in your Web browser's address line. However, any file within that Web site can also be specified as the URL. Such a file might be any Web (HTML) page other than the home page, an image file, or a program such as a **Common Gateway Interface** application or Java applet. The URL contains the name of the protocol used to process the file, a domain name that identifies the specific computer on the Internet, and a pathname to the file on that computer.

Web container
A special J2EE **container** that manages Web applications in a **J2EE** architecture. A Web container specifies a runtime environment for Web components, including security, concurrency, life-cycle management, **transaction**, deployment, and other services; it also enables a Web application to access external resources such as relational databases (through **JDBC**) and **Enterprise Java Beans**. A Web container provides the same services as a JSP container and provides support for managing **Java Server Pages**.

Every J2EE server contains at least one Web container.

workload
The entry point into an application whose processing or response time directly affects the response time the end user perceives. In ITCAM for J2EE monitoring agent, the workload is a servlet, JSP, or EJB method. Sometimes called a **transaction.** *See also* **delay**.

Index

T

U

V

W

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at www.ibm.com/legal/copytrade.shtml.

Adobe is either a registered trademark or a trademark of Adobe Systems Incorporated in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft and Windows are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Java and all Java-based trademarks are trademarks or registered trademarks of Oracle and/or its affiliates.

Other company, product, and service names may be trademarks or service marks of others.

Notices

This information was developed for products and services offered in the U.S.A. IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785 U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan, Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement might not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Corporation
2Z4A/101
11400 Burnet Road
Austin, TX 78758 U.S.A.

Such information may be available, subject to appropriate terms and conditions, including in some cases payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to

IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. You may copy, modify, and distribute these sample programs in any form without payment to IBM for the purposes of developing, using, marketing, or distributing application programs conforming to IBM's application programming interfaces.

Each copy or any portion of these sample programs or any derivative work, must include a copyright notice as follows:

© (your company name) (year). Portions of this code are derived from IBM Corp. Sample Programs. © Copyright IBM Corp. 2005. All rights reserved.

If you are viewing this information in softcopy form, the photographs and color illustrations might not display.

Privacy policy considerations

IBM Software products, including software as a service solutions, ("Software Offerings") may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user or for other purposes. In many cases no personally identifiable information is collected by the Software Offerings. Some of our Software Offerings can help enable you to collect personally identifiable information. If this Software Offering uses cookies to collect personally identifiable information, specific information about this offering's use of cookies is set forth below.

Depending upon the configurations deployed, this Software Offering may use session cookies that collect each user's user name for purposes of session management, authentication, and single sign-on configuration. These cookies cannot be disabled.

If the configurations deployed for this Software Offering provide you as customer the ability to collect personally identifiable information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for notice and consent.

For more information about the use of various technologies, including cookies, for these purposes, See IBM's Privacy Policy at http://www.ibm.com/privacy and IBM's Online Privacy Statement at http://www.ibm.com/privacy/details the section entitled "Cookies, Web Beacons and Other Technologies" and the "IBM Software Products and Software-as-a-Service Privacy Statement" at http://www.ibm.com/software/info/product-privacy.

Printed in USA

SC27-2824-02