IBM SmartCloud Application Performance Management
Entry Edition - VM Image
Version 7 Release 6

Installation and Deployment Guide

IBM
IBM SmartCloud Application Performance Management
Entry Edition - VM Image
Version 7 Release 6

Installation and Deployment Guide
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About this publication


Intended audience

This publication is for those who are responsible for installing and deploying SmartCloud Application Performance Management Entry Edition - VM Image. Readers might take on the following roles:

• System administrator
• Network administrator
• IBM Support
• Field system engineers

What this publication contains

This publication contains the following sections:

• Chapter 1, "Overview of IBM SmartCloud Application Performance Management Entry Edition - VM Image"
  Provides an overview of IBM SmartCloud Application Performance Management Entry Edition - VM Image and the components that it contains.

• Chapter 2, "Installation and deployment roadmap"
  Provides instructions on how to install and deploy SmartCloud Application Performance Management Entry Edition - VM Image in your environment. After you complete the installation and deployment, you can log on to the Tivoli® Enterprise Portal or IBM SmartCloud Application Performance Management UI to view the monitoring data. This chapter also provides an introduction of Launch Pad and how to use it to perform operational and administrative tasks.

• Chapter 3, "Viewing monitoring data"
  Provides instructions about how to use Tivoli Enterprise Portal or SmartCloud Application Performance Management UI to view collected data.

• Chapter 4, "Monitor resources"
  Provides the instructions on how to set up monitoring to monitor various resources in your environment.

• Chapter 5, "Monitoring virtual environments"
  Provides instructions about how to use the Tivoli Monitoring for Virtual Environments, a component of SmartCloud Application Performance Management Entry Edition - VM Image, to monitor your virtual environments.

• Chapter 6, "Managing historical data collection"
  Provides the instructions on how to enable historical data collection through the Tivoli Enterprise Portal.

• Chapter 7, "Tivoli Common Reporting reports"
Provides instructions on how to use Tivoli Common Reporting to view historical reports. Tivoli Common Reporting is a reporting tool that you can use across Tivoli products to view and administer historical reports.

### Publications

This section lists publications in the IBM SmartCloud Application Performance Management Entry Edition - VM Image library and related documents. The section also describes how to access Tivoli publications online and how to order Tivoli publications.

#### IBM SmartCloud Application Performance Management Entry Edition - VM Image library

The following documents are available in the IBM SmartCloud Application Performance Management Entry Edition - VM Image library:

  
  Provides information about how to install and deploy IBM SmartCloud Application Performance Management Entry Edition - VM Image, and how to use it to monitor your IBM business integration systems.

  

  

#### Related publications

The following documents also provide useful information:

- **IBM SmartCloud Application Performance Management Quick Start Guide**,
  
  Describes a quick and easy way to install the SmartCloud Application Performance Management product.

- **IBM SmartCloud Application Performance Management Offering Guide**, SC22-5488-00
  
  Provides information about the products and components available in the SmartCloud Application Performance Management product.

- **IBM SmartCloud Application Performance Management UI User’s Guide**, SC22-5490-00
  
  Provides information about how to install, configure, and use the SmartCloud Application Performance Management UI to monitor the resources of your IT environment.

### Accessing terminology online


### Accessing publications online

To access the publications using a web browser, go to the [IBM SmartCloud Application Performance Management Information Center](http://www.ibm.com/software/globalization/terminology).
IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli Documentation Central website at [http://www.ibm.com/tivoli/documentation](http://www.ibm.com/tivoli/documentation).

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

**Ordering publications**


You can 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:

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 the Accessibility Appendix in *IBM SmartCloud Application Performance Management Entry Edition - VM Image: Installation and Deployment Guide*.

**Tivoli technical training**

For Tivoli technical training information, see the following IBM Tivoli Education website at [http://www.ibm.com/software/tivoli/education](http://www.ibm.com/software/tivoli/education).

**Tivoli user groups**

Tivoli user groups are independent, user-run membership organizations that provide Tivoli users with information to assist them in the implementation of Tivoli Software solutions. Through these groups, members can share information and learn from the knowledge and experience of other Tivoli users. Tivoli user groups include the following members and groups:

- 23,000+ members
- 144+ groups

Access the link for the Tivoli Users Group at [www.tivoli-ug.org](http://www.tivoli-ug.org)
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**


**IBM Support Assistant**

The IBM Support Assistant is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. The Support Assistant provides quick access to support-related information and serviceability tools for problem determination. To install the Support Assistant software, go to [http://www.ibm.com/software/support/isa](http://www.ibm.com/software/support/isa).

**Troubleshooting chapter**

For information about how to resolve problems that you might encounter while using SmartCloud Application Performance Management Entry Edition - VM Image, see Chapter 9, “Troubleshooting,” on page 57.

Conventions used in this publication

Several conventions are used in this publication for special terms, actions, commands, and paths that are dependent on your operating system.

**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, multicolon 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
Variables and paths that are dependent on your operating system

This publication uses the UNIX convention for specifying environment variables and 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 in the Windows and UNIX environments. For example, %TEMP% in Windows environments is equivalent to $TMPDIR in UNIX environments.

Note: If you are using the bash shell on a Windows system, you can use the UNIX conventions.
Chapter 1. Overview of IBM SmartCloud Application Performance Management Entry Edition - VM Image

IBM SmartCloud Application Performance Management Entry Edition - VM Image intelligently manages your applications in cloud and hybrid environments.

The IBM SmartCloud Application Performance Management Entry Edition - VM Image solution monitors and manages systems, application servers, and database servers. It tracks availability and performance and provides reports in a browser-based graphical user interface, to track trends and troubleshoot problems. The user interface also offers expert advice on alerts and corrective actions.

SmartCloud Application Performance Management Entry Edition - VM Image manages your applications in cloud and hybrid environments by offering the following major functions:

• Offers the right visibility, control, and automation for critical applications
• Provides a single, integrated reporting analytics tool, which is based on Cognos®, makes reporting simple and easy to customize
• Avoids customer sat issues by providing visibility into the availability, performance, and content accuracy of your internet services
• Delivers breadth of domain coverage in combination with a single trusted source of information for more accurate and faster problem solving

IT operations and administrators can use the SmartCloud Application Performance Management Entry Edition - VM Image solution to maintain high performance and availability levels for their systems. By using the consolidated set of tools, IT organizations can optimize service levels and contain costs on critical application resources across the enterprise.

Contents of the offering

The SmartCloud Application Performance Management Entry Edition - VM Image is delivered as two virtual machine images and a package that contains the files for deploying monitoring agents. The two virtual machine images are named virtual machine image for Tivoli Data Warehouse and virtual machine image for IBM Tivoli Monitoring. You can obtain the contents of the offering from IBM Passport Advantage® or from the product DVDs.

Contents of the offering are divided into the following three categories:

• Components contained in the virtual machine image for Tivoli Data Warehouse
• Components contained in the virtual machine image for IBM Tivoli Monitoring
• Agent installation images contained in separate packages

Components contained in the virtual machine image for Tivoli Data Warehouse:

The virtual machine image for Tivoli Data Warehouse contains the following components:

IBM DB2® Workgroup Server Edition Version 9.7 Fix Pack 7
IBM DB2 Workgroup Server Edition is the scalable, full-fledged relational
database software for small to medium sized businesses. Workgroup Server Edition includes functions that reduce the overall costs of owning a database.

IBM Tivoli Monitoring Version 6.2.3 Fix Pack 2

Tivoli Data Warehouse
With Tivoli Data Warehouse, you can analyze historical trends from monitoring agents. The Tivoli Data Warehouse uses a DB2 for Linux, UNIX, and Windows, DB2 on z/OS®, Oracle, or Microsoft SQL Server database to store historical data collected across your environment. You can generate warehouse reports for short-term or long-term data through the Tivoli Enterprise Portal. Warehouse reports provide information about the availability and performance of your monitoring environment over a period of time. You can also use third-party warehouse reporting software, such as Crystal Reports or Brio, to generate reports.

Warehouse Proxy Agent
The Warehouse Proxy Agent receives data collected by monitoring agents and moves it to the Tivoli Data Warehouse database.

Summarization and Pruning Agent
The Summarization and Pruning Agent provides the ability to customize the length of time for which to save data (pruning) and how often to aggregate granular data (summarization) in the Tivoli Data Warehouse database.

Performance Analyzer
IBM Tivoli Performance Analyzer adds predictive capability to Tivoli Monitoring so you can monitor resource consumption trends, anticipate future performance issues, and avoid or resolve problems more quickly. For example, you can use Tivoli Performance Analyzer, which is fully automated, to predict application bottlenecks and create alerts for potential service threats.

Monitoring Agent for Linux OS
The Monitoring Agent for Linux OS is an intelligent, remote monitoring agent that resides on managed resources. It assists you in anticipating trouble and warns systems administrators when critical events take place on their systems. With the Monitoring Agent for Linux OS, systems administrators can set threshold levels and flags as desired to alert them when the system reaches these thresholds.

After you deploy the virtual machine image for Tivoli Data Warehouse, this agent is installed on the system where you deploy the virtual machine image and you can see the data collected by the agent.

Monitoring Agent for UNIX Logs
On a typical UNIX system, many log files are scattered throughout the file system. The kernel, various utilities, and user applications create these logs to alert an administrator to events such as security violations and software or hardware failures. The Monitoring Agent for UNIX Logs monitors and provides reports for the following types of logs, Syslogs, Utmp style logs, Errlogs (AIX® platforms only), and User-defined ASCII logs.
After you deploy the virtual machine image for Tivoli Data Warehouse, this agent is installed on the system where you deploy the virtual machine image and you can see the data collected by the agent.

**IBM Tivoli Composite Application Manager Agent for DB2 Version 7.1**

The DB2 agent provides intelligent monitoring and management of DB2 database servers. Views show key metrics that are unique to each application, including buffer hits, connections used, thread activity, deadlocks, and contention.

After you deploy the virtual machine image for Tivoli Data Warehouse, this agent is installed on the system where you deploy the virtual machine image and you can see the data collected by the agent.

**IBM Tivoli Common Reporting Version 2.1.1**

Tivoli Common Reporting provides an integrated reporting solution for the products in the Tivoli portfolio. You can link multiple reports across various IBM Tivoli products to simplify the report navigation and accelerate access to key reporting information.

**IBM SmartCloud Application Performance Management UI Version 7.6.0.1**

The IBM SmartCloud Application Performance Management UI provides new and customizable dashboards for IBM SmartCloud Application Performance Management, IBM Tivoli Monitoring, and IBM Tivoli Composite Application Manager products.

**IBM Tivoli Monitoring for Virtual Environments Version 7.1 Fix Pack 1:**

**Dashboard, Reporting, and Capacity Planning**

The three IBM Tivoli Monitoring for Virtual Environments components are supported through the Tivoli Integrated Portal. Tivoli Monitoring for Virtual Environments provides a comprehensive tool to monitor the availability and performance of virtual environments. In addition, Tivoli Monitoring for Virtual Environments provides performance and capacity reporting of virtual environments, and helps you with capacity planning activities to optimize, consolidate, and balance the overall capacity of the virtual environments.

**Language pack**

It provides the language packs for the components provided by the virtual machine image for Tivoli Data Warehouse. Different components might support different national languages. For more information about the supported languages, check the component specific documentation.

**Components contained in the virtual machine image for IBM Tivoli Monitoring:**

The virtual machine image for IBM Tivoli Monitoring contains the following components:

**IBM Tivoli Monitoring Version 6.2.3 Fix Pack 2**

IBM Tivoli Monitoring monitors and manages system and network applications on a variety of operating systems, tracks the availability and performance of your enterprise system, and provides reports to track trends and troubleshoot problems. The following IBM Tivoli Monitoring components are included:

**Tivoli Enterprise Monitoring Server**

The Tivoli Enterprise Monitoring Server (referred to as the monitoring server) is the collection and control point for performance and availability data and alerts received from
monitoring agents. It is also responsible for tracking the online or offline status of monitoring agents.

**Tivoli Enterprise Portal Server**

The Tivoli Enterprise Portal Server (referred to as the portal server) communicates with the hub monitoring server, which in turn controls the remote monitoring servers, as well as any monitoring agents that might be connected to the hub directly.

**Tivoli Enterprise Portal Browser Client**

The Tivoli Enterprise Portal browser client is automatically installed with Tivoli Enterprise Portal Server. The portal server manages data access through user workspace consoles (the portal clients). The portal server connects to a hub monitoring server; it retrieves data from the hub in response to user actions at a portal client, and sends the data back to the portal client for presentation. The portal server also provides presentation information to the portal client so that it can render the user interface views suitably. The browser client can be run using Microsoft Internet Explorer or Mozilla Firefox; it connects to a Web server running in the portal server.

**Monitoring Agent for Linux OS**

The Monitoring Agent for Linux OS is an intelligent, remote monitoring agent that resides on managed resources. It assists you in anticipating trouble and warns systems administrators when critical events take place on their systems. With the Monitoring Agent for Linux OS, systems administrators can set threshold levels and flags as desired to alert them when the system reaches these thresholds.

After you deploy the virtual machine image for IBM Tivoli Monitoring, this agent is installed on the system where you deploy the virtual machine image and you can see the data collected by the agent.

**Monitoring Agent for UNIX Logs**

On a typical UNIX system, many log files are scattered throughout the file system. The kernel, various utilities, and user applications create these logs to alert an administrator to events such as security violations and software or hardware failures. The Monitoring Agent for UNIX Logs monitors and provides reports for the following types of logs, Syslogs, Utmp style logs, Errlogs (AIX platforms only), and User-defined ASCII logs.

After you deploy the virtual machine image for IBM Tivoli Monitoring, this agent is installed on the system where you deploy the virtual machine image and you can see the data collected by the agent.

**Agent depot of Monitoring Agent for UNIX Logs**

The agent depot is provided for you to deploy the monitoring agent to a remote UNIX system, so that various logs can be monitored.

**Operating system agent depots**

Operating system (OS) agents monitor the availability and performance of the computers in your monitoring environment. An OS agent must reside on the computer that it is monitoring. The agent depot is an installation directory on the Tivoli Enterprise
Monitoring Server from which you deploy agents and maintenance packages across your environment. With the OS agent depots, you can deploy any OS agent to the operating system that you want to monitor from the monitoring server.

Log File agent depot
The Log File agent is an agent that provides a configurable log file monitoring capability that uses regular expressions. For compatibility, the agent can consume the configuration information and format strings previously used by the Tivoli Event Console Log File Adapter. These strings allow the agent to filter the log data according to patterns in the format file, and submit only the interesting data to an event consumer. The agent can send data both to a Tivoli Enterprise Monitoring Server or through the Event Integration Facility (EIF) to any EIF receiver, such as the OMNIbus EIF probe.

Universal Agent depot
The Tivoli Universal Agent is a generic agent of IBM Tivoli Monitoring. You can configure the Tivoli Universal Agent to monitor any data you collect. You can view the data in real-time and historical workspaces on the Tivoli Enterprise Portal and manage with Tivoli Enterprise Portal monitoring situations and automation policies, the same as data from other Tivoli Enterprise Monitoring Agents.

Agentless monitoring
An agentless monitor is a standard Tivoli Monitoring agent that can monitor multiple operating system nodes that do not have standard OS agents running on them. An agentless monitor obtains data from nodes it is monitoring via a remote application programming interface or API that is running on the node being monitored. Since these interfaces provide either operating system functions or base application functions, no IBM Tivoli Monitoring component need be installed or deployed on the monitored node.

IBM Tivoli Composite Application Manager for Transactions Version 7.3.0.1: Application Management Console
The Application Management Console agent provides an accurate snapshot of ITCAM for Transactions monitoring in near real time. It provides real-time aggregated and consolidated application and transaction availability and response time information for all applications monitored by Internet Services, Response Time, and Transaction Tracking monitoring agents. It collects data in real time at a configurable, constant interval instead of relying on the Tivoli Data Warehouse. Use the Application Management Console agent to see status summary and trend analysis information across managed resources and to perform problem determination. This information is displayed on the Tivoli Enterprise Portal.

After you deploy the virtual machine image for IBM Tivoli Monitoring, this agent is installed on the system where you deploy the virtual machine image and you can see the data collected by the agent.

IBM SmartCloud Application Performance Monitoring agent depots for remote deployment
Agent depots of the following components in IBM SmartCloud Application Performance Monitoring are provided for you to deploy to your environment from the monitoring server:
IBM Tivoli Composite Application Manager for Applications Version 7.1
The ITCAM for Applications offering is a package of component products that monitor and manage systems, application servers, and Database servers; track availability and performance; and provide reports, in a browser-based graphical user interface, to track trends and troubleshoot problems. The user interface also offers expert advice on alerts and corrective actions. The following ITCAM for Applications components are provided in the virtual machine image for IBM Tivoli Monitoring:

ITCAM Agent for DB2 Version 7.1
The DB2 agent provides intelligent monitoring and management of DB2 database servers. Views show key metrics that are unique to each application, including buffer hits, connections used, thread activity, deadlocks, and contention.

ITCAM Agent for HTTP Servers Version 7.1.0.3 Interim Fix 4
The HTTP Servers agent ensures the availability and performance of critical business applications and services by comprehensively monitoring the health and performance of the HTTP server. This agent alerts administrators of health and performance problems, provides real-time metrics for problem diagnosis, and collects historical metrics for reporting and capacity trending.

ITCAM Extended Agent for Oracle Database Version 6.3.1 Fix Pack 1
The Oracle agent provides intelligent monitoring and management of Oracle database servers, Oracle Real Application Clusters (RAC) database servers, Automated Storage Management (ASM) software, and Oracle Data Guard. Views display key metrics that are unique to each application, including buffer hits, connections used, thread activity, deadlocks, and contention.

IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1
The ITCAM for Microsoft Applications product monitors systems, applications, and transactions to speed problem determination and automate problem resolution in Microsoft environments to increase productivity while supporting cross-platform growth. The following ITCAM for Microsoft Applications components are provided in the virtual machine image for IBM Tivoli Monitoring:

Active Directory agent
The Microsoft Active Directory agent offers a central point of management for your Microsoft Active Directory service. This agent provides a comprehensive means for gathering exactly the information that you need to detect problems early and to prevent them. You can monitor many servers from a single workstation, and information is standardized across the system.

Cluster Server agent
The Microsoft Cluster Server agent monitors availability of cluster and cluster resources, provides the ability to generate reports for the metrics collected, provides availability monitoring for the cluster server's key
monitoring points (cluster level, cluster nodes, cluster resource groups, cluster resources and cluster networks), provides cluster resource usage across the nodes of the cluster, and reports threats in capacity availability of processor, memory, disk, and networks.

**Exchange Server agent**
The Microsoft Exchange Server agent offers a central point of management for your Microsoft Exchange Server product. This agent provides a comprehensive means for gathering exactly the information that you need to detect problems early and to prevent them. By using this agent, you can collect and analyze information related to the Microsoft Exchange Server.

**Hyper-V Server agent**
The Microsoft Hyper-V Server agent monitors Microsoft Hyper-V Server, and includes the following functions: availability monitoring for Hyper-V services, provides Hyper-V configuration and virtual machine configuration information, collects applicable performance attributes, providing situations where appropriate, displays the enterprise level information for all the Hyper-V systems, provides actions to start and stop the Hyper-V services and virtual machines, and monitors the availability of virtual machines.

**Internet Information Services agent**
The Microsoft Internet Information Services agent monitors internet information services and processes, indicating when they are down, monitors for errors and events affecting Microsoft IIS availability or performance, collects applicable performance attributes, providing situations where appropriate, provides actions to start and stop the website, FTP sites, and the several internet services, and provides the ability to generate reports for the attributes collected.

**.NET Framework agent**
The Microsoft .NET Framework agent collects performance attributes within the .NET Framework, providing situations where appropriate, monitors for errors and events affecting the .NET Framework, provides the ability to generate reports for the attributes collected, and provides support for 32 bit and 64 bit .NET applications.

**SharePoint Server agent**
The Microsoft SharePoint Server agent monitors SharePoint Server services, indicating when they are down, monitors for SharePoint event sources affecting SharePoint Server availability or performance, collects applicable performance attributes, providing situations where appropriate, provides start and stop functions for SharePoint services, and provides the ability to generate reports for the attributes collected.

**SQL Server agent**
The Microsoft SQL Server agent offers a central point of management for distributed databases. This agent provides
a comprehensive means for gathering the information that you need to detect problems early and prevent them. Information is standardized across all systems so you can monitor hundreds of servers from a single workstation. You can collect and then analyze specific information by using the Tivoli Enterprise Portal.

IBM Tivoli Composite Application Manager for Transactions Version 7.3.0.1 The ITCAM for Transactions product delivers a comprehensive, unified transaction tracking management system that runs on a single, consolidated infrastructure with a tightly integrated user interface. The following ITCAM for Transactions components are provided in the virtual machine image for IBM Tivoli Monitoring:

Internet Service Monitoring
The information gathered and processed by Internet Service Monitoring can be used to determine whether a particular service is performing adequately, identify problem areas, report service performance measured against Service Level Agreements (SLAs), and forward performance data to IBM Tivoli Monitoring, IBM Tivoli Composite Application Manager for Transactions, and other event management tools such as IBM Tivoli Netcool/OMNibus.

Web Response Time agent
The Web Response Time agent provides real end-user monitoring of client web requests to server components. It can be installed locally on the server system, or on a separate system. The Web Response Time agent uses server-side monitoring to capture HTTP and HTTPS transaction data such as response time and status codes. You can use this agent to capture the performance and availability data of actual users for Service Level Agreement (SLA) reporting. Web Response Time also detects protocols and applications by monitoring TCP/IP network flows.

IBM Tivoli Monitoring for Virtual Environments Version 7.1
The IBM Tivoli Monitoring for Virtual Environments helps you identify and resolve virtual server availability and performance issues.

IBM Tivoli Monitoring for Virtual Environments Agent for Linux Kernel-based Virtual Machines
Remote performance and availability monitoring to visualize availability, performance, and capacity trends for Kernel-based Virtual Machines (KVM) and hosts. This agent remotely monitors KVM by connecting to each host.

IBM Tivoli Monitoring for Virtual Environments Agent for VMware VI
This VMware VI agent provides you with the capability to monitor a VMware environment and to provide basic actions with VMware Virtual Centers.

Network Devices agent
The Network Devices agent offers a central point of management for your network devices environment or
application. This agent provides a comprehensive means for gathering the information that you need to detect problems early and to prevent them. Information is standardized across the system. You can monitor multiple servers from a single workstation. By using the Network Devices agent, you can collect and analyze network devices-specific information.

Language pack
It provides the language packs for the components provided by the virtual machine image for IBM Tivoli Monitoring. Different components might support different national languages. For more information about the supported languages, check the component specific documentation.

Agent installation images contained in separate packages:

Some agent installation images are included in separate packages instead of the virtual machine images. If the agent supports remote deployment, its installation image for remote deployment is included in the package. If the agent does not support remote deployment, its full installation image is included.

Agent installation images for remote deployment
The following agents support remote deployment. Their installation images for remote deployment are included in separate packages. If you want to deploy these agents in your environment to monitor applications, you must first upload the agent installation images to the machine on which you deploy the virtual machine image for IBM Tivoli Monitoring. For detailed instructions about how to remotely deploy an agent, see the IBM SmartCloud Application Performance Management Entry Edition - VM Image: Installation and Deployment Guide

ITCAM Agent for Lotus® Domino® Version 6.2.1
The Lotus Domino agent provides secure monitoring and management of Lotus Domino servers, helping to optimize the performance of the Lotus Domino application. The provided function uses best practice models that focus on server availability, database management, mail routing, replication, server processes, and server health.

ITCAM Agent for Sybase ASE Version 6.2
The Sybase ASE agent provides intelligent monitoring and management of Sybase servers. Views display key metrics that are unique to each application, including buffer hits, connections used, thread activity, deadlocks, and contention.

IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3.0 Fix Pack 1: Microsoft BizTalk Server agent
The Microsoft BizTalk Server agent monitors and indicates when BizTalk services status is down, monitors for errors and events affecting BizTalk Server availability or performance, collects applicable performance attributes and provides situations where appropriate, provides actions to start and stop BizTalk services, and provides the ability to generate reports for the attributes collected.

IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3.0 Fix Pack 1: Microsoft Host Integration Server agent
The Microsoft Host Integration Server agent monitors and displays
information related to Microsoft Host Integration Servers and BizTalk Adapters for Host Systems.

**IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3.0 Fix Pack 1: Microsoft Lync Server agent**
Monitors Microsoft Lync Server 2007, 2007 R2, and 2010. This monitoring agent monitors functional components of the Microsoft Lync Server, such as instance messaging, text conferencing, audio and video conferencing, and web conferencing. It also generates situational alerts and provides suggestions for triggered situations.

**IBM Tivoli Monitoring for Virtual Environments Version 7.1: NetApp Storage Agent**
The NetApp Storage agent provides you with the capability to monitor NetApp and IBM N Series storage systems through NetApp DataFabric Manager (DFM). IBM Tivoli Monitoring is the base software for the NetApp Storage agent.

### Full installation images for the following components
The following components do not support remote deployment. If you want to deploy these agents in your environment to monitor applications, you must first upload the agent installation images to the managed system. For detailed instructions about how to upload the agent installation images to a managed system, see the *IBM SmartCloud Application Performance Management Entry Edition - VM Image: Installation and Deployment Guide*. The installation images for the following components are provided for you to install them locally on the managed systems.

**IBM Tivoli Monitoring Version 6.2.3 Fix Pack 2: Monitoring Agent for i5/OS™**
The Monitoring Agent for i5/OS offers a central point of management for i5/OS systems. It provides a comprehensive means for gathering exactly the information that you need to detect problems early and prevent them. Information is standardized across all distributed systems so you can monitor and manage hundreds of servers from a single workstation.

**IBM Tivoli Monitoring Version 6.2.3 Fix Pack 1: Agent Builder**
Tivoli Monitoring Agent Builder is a set of tools that are used for creating agents, installation packages for the created agents, and application support extensions for existing agents.

**IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: .NET Data Collector**
The .NET Data Collector can help you to track the transactions that occur in the .NET Framework application and the Internet Information Services (IIS) web applications.

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**SmartCloud 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.

- 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 SmartCloud Application Performance Management community.
- Read blogs to benefit from the expertise and experience of others.
- Use wikis and forums to collaborate with the broader user community.
Chapter 2. Installation and deployment roadmap

You must install and deploy SmartCloud Application Performance Management Entry Edition - VM Image in your environment before you can view performance and availability data for your systems.

About this task

**Fast path:** To get started with SmartCloud Application Performance Management Entry Edition - VM Image quickly, go through the checklists in Appendix B, “Planning and deployment checklists,” on page 65 and complete the tasks one by one.

Review the following procedures, which describe the general process of installing and deploying SmartCloud Application Performance Management Entry Edition - VM Image in your environment:

**Procedure**

1. Check the hardware and software requirements to ensure that your environment meets the minimum requirements:
   - “Hardware requirements” on page 14
   - “Software requirements” on page 15


3. Use the checklists at Appendix B, “Planning and deployment checklists,” on page 65 to record the information that you will use during the deployment.

4. Deploy the virtual machine image for Tivoli Data Warehouse. See “Deploying the virtual machine image for Tivoli Data Warehouse” on page 17.

5. Deploy the virtual machine image for IBM Tivoli Monitoring. See “Deploying the virtual machine image for IBM Tivoli Monitoring” on page 20.

6. Verify that the virtual machine images are deployed successfully. See “Verifying the deployments” on page 22.

7. Get familiar with the Launch Pad. Launch Pad is the first workspace that you see after you log on to Tivoli Enterprise Portal. See “Launch Pad” on page 23 for more information about what you can do with it.

8. Deploy an OS monitoring agent on the computer that hosts the application that you want to monitor. See “Deploying an OS monitoring agent” on page 25.

9. Deploy monitoring for applications that you want to monitor. See “Deploying monitoring for applications” on page 30.


11. If you change the Tivoli Enterprise Portal logon user ID and password after deployment, you must update the file that saves the logon credentials by...
using the Launch Pad. Otherwise, the deployment of OS monitoring agents will fail. For instructions, see Appendix F, “Updating Tivoli Enterprise Portal logon credentials,” on page 75.

Hardware requirements

Review the hardware requirements and ensure that your environment meets the minimum standards before you attempt to install SmartCloud Application Performance Management Entry Edition - VM Image.

SmartCloud Application Performance Management Entry Edition - VM Image requires two servers and one computer:
- A server that hosts the virtual machines
- A server that hosts VMware vCenter Server
- A computer that hosts VMware vSphere Client

Requirements for the server that hosts the virtual machines

VMware ESXi must be installed on the server that hosts the virtual machines. Because VMware ESXi supports only x86 architectures, the server must have AMD or Intel processors.

The following specification describes the minimum hardware required for the server to host the virtual machines:
- 64-bit Intel or AMD x86 CPU architecture
- Minimum of 4 cores for each hardware device
- Minimum of 20 GB of RAM for the hardware device that hosts the virtual machines
- Minimum of 250 GB of hard drive disk capacity for the hardware device that hosts the virtual machines

Table 1 shows the minimum hardware capacity that is required for each virtual machine image:

Table 1. Hardware resources required for each virtual machine image. The table describes the hardware resources that are required for each virtual machine image.

<table>
<thead>
<tr>
<th>Virtual machine image</th>
<th>Number of processors</th>
<th>Disk space</th>
<th>Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td>virtual machine image for Tivoli Data Warehouse</td>
<td>4 or more</td>
<td>250 GB</td>
<td>12 GB</td>
</tr>
<tr>
<td>virtual machine image for IBM Tivoli Monitoring</td>
<td>4 or more</td>
<td>250 GB</td>
<td>8 GB</td>
</tr>
</tbody>
</table>

Requirements for the server that hosts VMware vCenter Server

VMware vCenter Server can be installed on physical hardware that is running a Windows operating system that is supported by VMware vSphere. It can also be installed on a virtual machine that runs a Windows operating system that is supported by VMware vSphere as a guest.
For information about the system requirements for VMware vCenter Server, see the ESXi Installable and vCenter Server Setup Guide.

Requirements for the machine that hosts VMware vSphere client

VMware vSphere client must be installed on a machine that runs a Windows operating system. The Windows operating system must be supported by VMware vSphere client.

Software requirements

Review the software requirements and ensure that your environment meets the minimum standards before you attempt to install SmartCloud Application Performance Management Entry Edition - VM Image.

Table 2 summarizes the software requirements for SmartCloud Application Performance Management Entry Edition - VM Image.

Table 2. Software requirements

<table>
<thead>
<tr>
<th>Software required</th>
<th>Software version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtualization executive (hypervisor)</td>
<td>VMware vSphere 4.1, 5.0, or 5.1, VMware vCenter Server 4.1, 5.0, or 5.1</td>
</tr>
<tr>
<td>Internet browser</td>
<td>If you use Tivoli Enterprise Portal to view monitoring data, use one of the following internet browsers:</td>
</tr>
<tr>
<td></td>
<td>• Mozilla Firefox 3.5</td>
</tr>
<tr>
<td></td>
<td>• Microsoft Internet Explorer 6.0 through 9.0, with all critical Microsoft updates applied</td>
</tr>
<tr>
<td>Internet browser</td>
<td>If you use SmartCloud Application Performance Management UI to view monitoring data, use one of the following internet browsers:</td>
</tr>
<tr>
<td></td>
<td>• Internet Explorer 9</td>
</tr>
<tr>
<td></td>
<td>• Firefox 10 and Extended Support Release (ESR)</td>
</tr>
<tr>
<td>Operating system</td>
<td>Microsoft Windows. VMware vCenter Server and VMware vSphere client require a Windows operating system.</td>
</tr>
</tbody>
</table>

Operating systems

The server that hosts the VMware vCenter Server must use the Windows operating system that is supported by VMware vSphere 4.1, 5.0, or 5.1.

The workstation that hosts the VMware vSphere client must use the Windows operating system that is supported by VMware vSphere 4.1, 5.0, or 5.1.
Virtualization executive (hypervisor)

Because SmartCloud Application Performance Management Entry Edition - VM Image is delivered as virtual machine images, VMware vSphere is required to implement the solution.

VMware vSphere and associated tools must be installed and configured before you deploy the virtual machine images of SmartCloud Application Performance Management Entry Edition - VM Image. This tooling must include the following components:

- VMware vSphere
  VMware vSphere includes the VMware ESXi hypervisor that is required for deployment.

- VMware vCenter Server
  VMware vCenter Server is a required, separately licensed component of a VMware vSphere implementation. VMware vCenter Server can be installed on physical hardware that is running a Windows operating system that is supported by VMware vSphere. It can also be installed on a virtual machine that runs a Windows operating system that is supported by VMware vSphere as a guest. The virtual machine can run on one of the provisioned VMware ESXi hypervisors.

- VMware vSphere client
  The client is used to connect directly to a VMware ESXi host or to the central VMware vCenter Server installation and manage the virtual infrastructure. Install the client on a Windows workstation that is supported by VMware.

For information about the system requirements for VMware vCenter Server, see ESXi Installable and vCenter Server Setup Guide

Important: You must be familiar with the installation and configuration of virtual machines when you use the VMware ESXi hypervisor software.

Preparing the virtual machine images

Before you attempt to deploy the virtual machine images, you must first prepare the images for deployment.

Before you begin

The following procedure requires a VMware vSphere client on a Windows computer that can connect to VMware vCenter Server. You can use any Windows operating system that is supported by VMware vSphere client. The computer must have at least 70 GB of free disk space.

About this task

Before you deploy the virtual machine images on the target hypervisor, prepare the images that you obtain from the physical media or the Passport Advantage website.

Procedure

1. On the computer where the VMware vSphere client is installed, create a directory to receive the virtual machine image files. These files require 70 GB of free disk space.
2. Copy the following files from the product DVDs or download them from the Passport Advantage website into the directory that you created in the previous step.
   - SCAPM_EE_1of5_V760_Base_VMImage.part
   - SCAPM_EE_2of5_V760_Base_VMImage.part
   - SCAPM_EE_3of5_V760_Base_VMImage.part
   - SCAPM_EE_4of5_V760_Base_VMImage.part
   - SCAPM_EE_5of5_V760_Base_VMImage.part

3. Run the following command to merge the split files into the complete .zip file:
   - Windows systems: `copy /b f1.part+f2.part+f3.part+f4.part+f5.part SCAPM_EE_V760.zip`
     where f1, f2, and so on refer to the names of the files in the directory. Be sure to specify the file names in numeric order, so that they will be concatenated in the proper order.
   - Other platforms: `cat SCAPM*.part >> SCAPM_EE_V760.zip`

4. Confirm that the .zip file is assembled correctly by verifying its checksum values:
   a. Run the following command to generate the checksum values for the .zip file: `md5sum -b SCAPM_EE_V760.zip`
   b. Compare the generated checksum values with the values in the provided MD5SUMS text file.

5. Decompress the SCAPM_EE_V760.zip file.

**Results**

Two directories are created: SCAPM_EE_TDW and SCAPM_EE_ITM. The two OVF template files that you will use later for deployment of virtual machine images are included in these two directories.

**Deployment sequence**

When you deploy the virtual machine images of SmartCloud Application Performance Management Entry Edition - VM Image, follow the sequence described in this topic.

Because of the dependencies that exist between some components that are included in SmartCloud Application Performance Management Entry Edition - VM Image, the virtual machine images of SmartCloud Application Performance Management Entry Edition - VM Image must be deployed in a specific sequence.

The following deployment sequence is required for SmartCloud Application Performance Management Entry Edition - VM Image:

1. virtual machine image for Tivoli Data Warehouse
2. virtual machine image for IBM Tivoli Monitoring

**Deploying the virtual machine image for Tivoli Data Warehouse**

Deploying the virtual machine image for Tivoli Data Warehouse is a required step for installing SmartCloud Application Performance Management Entry Edition - VM Image.
About this task

You must deploy the virtual machine image for Tivoli Data Warehouse before you deploy the virtual machine image for IBM Tivoli Monitoring. Otherwise, some components might not function properly.

Procedure

1. Start the VMware vSphere Client and connect to the vSphere Server.
2. Click File > Deploy OVF Template. A deployment wizard is displayed.
3. In the Deploy from a file field, type the absolute path and file name of the OVF file for the virtual machine image for Tivoli Data Warehouse, and then click Next. You can also click Browse to locate the OVF file for the virtual machine image for Tivoli Data Warehouse. The OVF file for the virtual machine image for Tivoli Data Warehouse is SAPM_EE_TDW.ovf. Detailed information about the virtual machine image is displayed.
4. Verify the information about the virtual machine image and then click Next.
5. Click Accept to accept the license agreement and then click Next.
6. In the Name field, specify a name for the virtual machine that you create, in the Inventory Location field, select an inventory location, and then click Next.
7. Select the host or cluster on which you want the virtual machine to run and then click Next.
8. Select the datastore to which you want to store the virtual machine files and then click Next.
9. Select the disk format for the virtual disks that are created to store the virtual machine and then click Next.
10. Customize the software solution for this deployment. The following parameters are required:

Table 3. Parameters for deploying the virtual machine image for Tivoli Data Warehouse. The table lists the parameters for deploying the virtual machine image for Tivoli Data Warehouse and their descriptions.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default locale configuration</td>
<td>(*) Default locale</td>
<td>Default locale setting for the guest operating system that runs on the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>(*) Default country</td>
<td>Default country of the guest operating system that runs on the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>(*) Default encoding</td>
<td>Default encoding of the guest operating system that runs on the virtual machine.</td>
</tr>
</tbody>
</table>
Table 3. Parameters for deploying the virtual machine image for Tivoli Data Warehouse (continued). The table lists the parameters for deploying the virtual machine image for Tivoli Data Warehouse and their descriptions.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Network Configuration</td>
<td>(*) Hostname</td>
<td>Host name of the virtual machine. Do not use the fully qualified host name. For example, use myhost instead of myhost.example.com.</td>
</tr>
<tr>
<td></td>
<td>Domain</td>
<td>The fully-qualified domain name (FQDN) of the virtual machine, for example, for the virtual machine myhost.example.com, its domain name is example.com.</td>
</tr>
<tr>
<td></td>
<td>(*) IP address</td>
<td>IP address of the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>(*) Net Mask</td>
<td>Specify which portion of the IP address specifies the subnetwork number and which portion specifies the host. In most networks, the value is 255.255.255.0.</td>
</tr>
<tr>
<td></td>
<td>(*) Gateway</td>
<td>Gateway of the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>Primary DNS</td>
<td>Primary DNS for the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>Secondary DNS</td>
<td>Secondary DNS for the virtual machine.</td>
</tr>
<tr>
<td>Root Password Configuration</td>
<td>(*) Password (root)</td>
<td>Password for the root user ID.</td>
</tr>
<tr>
<td>Virtuser Password Configuration</td>
<td>(*) Password (virtuser)</td>
<td>Password for the system user ID virtuser.</td>
</tr>
<tr>
<td>Tivoli Data Warehouse Configuration</td>
<td>(*) IP Address of the IBM Tivoli Monitoring virtual machine</td>
<td>IP address of the virtual machine on which you plan to deploy the virtual machine image for IBM Tivoli Monitoring.</td>
</tr>
<tr>
<td>Tivoli Integrated Portal Configuration</td>
<td>(*) Password of sysadmin</td>
<td>Password of the sysadmin user ID. The sysadmin user ID and its password will be used later to configure Tivoli Integrated Portal data provider.</td>
</tr>
</tbody>
</table>

* denotes a required field.

11. Verify the information that you provided in the previous step and then click Finish to start the deployment.
Results

After the deployment is completed, a new entry for the Tivoli Data Warehouse virtual machine is displayed in the Hosts and Clusters view for the host that was selected.

What to do next

To turn on the virtual machine, right-click the new entry for the Tivoli Data Warehouse virtual machine and then click **Power > Power On**.

**Tip:** A best practice is to create a snapshot of the virtual machine regularly. Before you create a snapshot, you can use the provided scripts to stop all services. For detailed information about the provided scripts to stop or start all services, see Appendix G, “Starting and stopping components on the virtual machines,” on page 77.

Deploying the virtual machine image for IBM Tivoli Monitoring

Deploying the virtual machine image for IBM Tivoli Monitoring is a required step for installing SmartCloud Application Performance Management Entry Edition - VM Image.

Before you begin

You must deploy the virtual machine image for Tivoli Data Warehouse before you deploy the virtual machine image for IBM Tivoli Monitoring. Otherwise, some components might not function properly. See “Deploying the virtual machine image for Tivoli Data Warehouse” on page 17 for information about how to deploy the virtual machine image for Tivoli Data Warehouse.

Procedure

1. Start the VMware vSphere Client and connect to the vSphere Server.
2. Click **File > Deploy OVF Template**. A deployment wizard is displayed.
3. In the **Deploy from a file** field, type the absolute path and file name of the OVF file for the virtual machine image for IBM Tivoli Monitoring and then click **Next**. You can also click **Browse** to locate the OVF file. The OVF file for the virtual machine image for IBM Tivoli Monitoring is **SAPM_EE_ITM.ovf**. Detailed information about the virtual machine image for IBM Tivoli Monitoring is displayed.
4. Verify the information about the virtual machine image for IBM Tivoli Monitoring and then click **Next**.
5. Click **Accept** to accept the license agreement and then click **Next**.
6. In the **Name** field, specify a name for the virtual machine that you are creating, in the **Inventory Location** field, specify an inventory location, and then click **Next**.
7. Select the host or cluster on which you want the virtual machine to run and then click **Next**.
8. Select the datastore to which you want to store the virtual machine files and then click **Next**.
9. Select the disk format for the virtual disks that are created to store the virtual machine and then click **Next**.
10. Customize the software solution for this deployment. The following parameters are required:

Table 4. Parameters for deploying the virtual machine image for IBM Tivoli Monitoring. The table lists the parameters for deploying the virtual machine image for IBM Tivoli Monitoring and their descriptions.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default locale configuration</td>
<td>(*) Default locale</td>
<td>Default locale setting for the guest operating system that runs on the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>(*) Default country</td>
<td>Default country of the guest operating system that runs on the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>(*) Default encoding</td>
<td>Default encoding of the guest operating system that runs on the virtual machine.</td>
</tr>
<tr>
<td>System Network Configuration</td>
<td>(*) Hostname</td>
<td>Host name of the virtual machine. Do not use the fully qualified host name. For example, use myhost instead of myhost.example.com.</td>
</tr>
<tr>
<td></td>
<td>Domain</td>
<td>The fully-qualified domain name (FQDN) of the virtual machine, for example, for the virtual machine myhost.example.com, its domain name is example.com.</td>
</tr>
<tr>
<td></td>
<td>(*) IP address</td>
<td>IP address of the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>(*) Net Mask</td>
<td>Specify which portion of the IP address specifies the subnetwork number and which portion specifies the host. In most networks, the value is 255.255.255.0.</td>
</tr>
<tr>
<td></td>
<td>(*) Gateway</td>
<td>Gateway of the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>Primary DNS</td>
<td>Primary DNS for the virtual machine.</td>
</tr>
<tr>
<td></td>
<td>Secondary DNS</td>
<td>Secondary DNS for the virtual machine.</td>
</tr>
<tr>
<td>Root Password Configuration</td>
<td>(*) Password (root)</td>
<td>Password for the root user ID.</td>
</tr>
<tr>
<td>Virtuser Password Configuration</td>
<td>(*) Password (virtuser)</td>
<td>Password for the system user ID virtuser.</td>
</tr>
</tbody>
</table>
Table 4. Parameters for deploying the virtual machine image for IBM Tivoli Monitoring (continued). The table lists the parameters for deploying the virtual machine image for IBM Tivoli Monitoring and their descriptions.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Tivoli Monitoring</td>
<td>(*) IP address of the Tivoli Data Warehouse</td>
<td>IP address of the virtual machine on which you deploy the virtual machine image for Tivoli Data Warehouse.</td>
</tr>
<tr>
<td>Configuration</td>
<td>virtual machine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Password of sysadmin</td>
<td>Password of the sysadmin user ID. You will later use the sysadmin user ID to access the user interface of SmartCloud Application Performance Management Entry Edition - VM Image and view the performance and availability data of your environment.</td>
</tr>
</tbody>
</table>

* denotes a required field.

**Important:** Ensure that you can access the virtual machine by the host name that you specify in the **IP address** field. Otherwise, you might have problems with the Launch Pad because it is bound with the host.

11. Verify the information that you provided in the previous step and then click **Finish** to start the deployment.

**Results**

After the deployment is complete, a new entry for the IBM Tivoli Monitoring virtual machine is displayed in the Hosts and Clusters view for the host that was selected.

**What to do next**

Ensure that the virtual machine for Tivoli Data Warehouse is powered on. Then right-click the new entry for the IBM Tivoli Monitoring virtual machine and click **Power > Power On** to power on the virtual machine for IBM Tivoli Monitoring.

**Tip:** A best practice is to create a snapshot of the virtual machine regularly. Before you create a snapshot, you can use the provided scripts to stop all services. For detailed information about the provided scripts to stop or start all services, see Appendix G, “Starting and stopping components on the virtual machines,” on page 77.

**Verifying the deployments**

After you deploy the virtual machine images and power on the virtual machines, verify their deployments to ensure that the components contained in the virtual machine images function properly.
Before you begin

Wait for about 10 minutes after you power on the virtual machine for IBM Tivoli Monitoring, because the power on process might take 10 minutes.

Procedure

1. Open a web browser and go to http://itm_vm_hostname:1920, where itm_vm_hostname is the fully qualified host name or IP address of the virtual machine to which the virtual machine image for IBM Tivoli Monitoring is deployed.
2. Click IBM Tivoli Enterprise Portal Web Client.
3. Use sysadmin as the user ID and its associated password to log on to Tivoli Enterprise Portal.

Results

The Launch Pad is displayed.

Launch Pad

Launch Pad is the first workspace that you see after you log on to Tivoli Enterprise Portal. From the Launch Pad, you can access multiple workspaces to do different operational tasks or administrative tasks.

The Launch Pad serves as the starting point for performing operational and administrative tasks. From the Launch Pad, you can access multiple workspaces, from which you monitor resources and view collected real-time and historical data. Links in the Launch Pad are organized by tasks. You can select Operational Tasks or Administrative Tasks.

Manage Events

The views in this workspace present an overview of the situation events in your monitored environment and the situation status. Also, the Situation Event Console view lists the open events and the event severity.

View System Availability and Performance

This workspace lists the monitored operating systems in your network grouped by platform and shows the status of each operating system. To get the detailed performance data for that system, click the link indicator next to an online system.

View Application Availability and Performance

This workspace contains tables that list the monitored applications grouped by platform. Clicking the link indicator next to an application takes you to a set of workspaces that provide detailed performance data for that application.
View and Manage Report, Dashboard and APM UI
This workspace provides the access to the Tivoli Integrated Portal interface. From there, you can do the following tasks:

- Visit the IBM SmartCloud Application Performance Management UI, which provides attractive, out of box, fast-response dashboards for managing performance and availability of business applications.
- Run and schedule historical reports on the data collected from your monitored resources and the data stored in the Tivoli Data Warehouse.
- View IBM Tivoli Monitoring for Virtual Environments: Dashboard, Reporting, and Capacity Planning.

Manage Situations
In this workspace, you can see the status and descriptions of all the monitoring situations that are included with the SmartCloud Application Performance Management Entry Edition - VM Image.

Maintain Appliance
From this workspace, you can upgrade a component of SmartCloud Application Performance Management Entry Edition - VM Image, collect log files of IBM Tivoli Monitoring, and get support information. See “Roadmap for upgrading a monitoring agent” on page 51 for information about how to upgrade a component.

Monitor Warehouse Agent Configuration
From this workspace, you can access information about the connectivity and configuration of the Warehouse Proxy Agent. The Warehouse Proxy Agent transfers data that is collected by monitoring agents to the Tivoli Data Warehouse, and the Summarization and Pruning Agent. The Summarization and Pruning Agent manages the data that is stored in the warehouse.

Deploy Application Monitoring
This workspace lists all the computers on which an OS monitoring agent is deployed. Clicking the link indicator next to a computer name displays the navigator entry for that computer in the Physical Navigator view. You can then click the entry and select Add Managed System to select an application monitoring agent to deploy.

Discover Systems and Deploy OS Monitoring
From this workspace, you can start the discovery process of computers in your environment and deploy OS monitoring to the operating systems.
Deploying an OS monitoring agent

If you want to monitor an application, you must first deploy an OS monitoring agent on the computer that hosts the application. In addition to monitoring base OS performance, the OS agent also installs the required infrastructure for remote deployment and maintenance.

Procedure

1. Check the prerequisites and make sure that all the requirements are met in the environment. For detailed information, see "Prerequisites."
2. Discover the computers and operating systems in your environment. For instructions, see "Discovering systems" on page 27.
3. Deploy the OS agent on the target system that hosts the application to be monitored. For instructions, see "Deploying an OS monitoring agent from the Launch Pad" on page 29.

Prerequisites

Some specific requirements must be met before the Launch Pad can deploy an OS agent, especially on Windows target systems. Go through the following requirements carefully and make sure that those items that are specific to your environment are met.

- Any computer to which you want to deploy the OS agent must have a supported protocol installed. The supported protocols include SMB, SSH, REXEC, and RSH.
- Security in your environment must be configured to permit IBM Tivoli Monitoring server deployment command to pass through the firewall.
- On Windows computers, the following requirements must be met:
  - The user ID that you specify must have administrator privileges on the target computer.
  - SMB requires that the default, hidden, and administrative shares be available on the drive that is being accessed and on the drive that hosts the system temporary directory.
  - SMB signing is not supported when connecting using SMB. The computer to which you are deploying an OS agent cannot require SMB signing.
  - For all Windows computers, enable remote registry administration. (This is enabled by default.)
  - For Windows XP, disable Simple File Sharing. Simple File Sharing requires that all users authenticate with guest privileges, which the tacmd createNode command does not support. To disable Simple File Sharing, perform the following steps:
    1. Open the Windows Explorer.
    2. Click Tools > Folder Options.
    3. Click the View tab.
    4. Scroll through the list of settings to Use Simple File Sharing.
    5. Clear the check box next to Use Simple File Sharing and click OK.
  - For Windows XP computers with Service Pack 2, disable the Internet Connection Firewall.
  - For Windows XP computers, set Network Access Sharing and Security to "Classic - local users authenticate as themselves". Use the following steps:
    1. From the Control Panel, double-click Administrative Tools.
2. Double-click **Local Security Policy**.
3. Expand **Local Policies** and click **Security Options**.
4. Right-click **Network access: Sharing and security for local accounts** and click **Properties**.
5. Select **Classic - local users authenticate as themselves** from the list and click **OK**.

   - Some Remote Execution and Access (RXA) operations rely on VBScript and Windows Management Instrumentation (WMI) calls to run scripts on Windows targets. If the Windows Scripting Host (WSH) or the WMI service is disabled on the target, or if VBScript is otherwise disabled, some Windows protocol methods will not work.

   - For Windows targets, IBM Tivoli Monitoring usually uses the SMB protocol over NetBIOS, so the port 139 must not be blocked by firewalls or IP security policies. The Enable NetBIOS over TCP/IP must also be selected in the Control Panel settings for the machine's network connections properties (Control Panel > Network and Dial-Up Connections > <some connections> > Properties > Internet Protocol (TCP/IP) > Advanced > WINS > Enable NetBIOS over TCP/IP). Consult the documentation for your firewall to determine that these ports are not blocked for inbound requests.

   To determine whether security policies are blocking these ports, click **Start > Settings > Control Panel > Administrative Tools**. Depending on whether your policies are stored locally or in Active Directory, the next steps are as follows:


  Examine the IP security policies and edit or remove filters that block the ports that are listed above. **Table 5** lists the ports reserved for NetBIOS. Ensure that all ports currently used by RXA are not blocked.

  **Table 5. NetBIOS Reserved Ports**
<table>
<thead>
<tr>
<th>Port number</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>135</td>
<td>NetBIOS Remote procedure call. Currently, RXA does not use this port.</td>
</tr>
<tr>
<td>137</td>
<td>NetBIOS name service.</td>
</tr>
<tr>
<td>138</td>
<td>NetBIOS datagram. Currently, RXA does not use this port.</td>
</tr>
<tr>
<td>139</td>
<td>NetBIOS session (file/print sharing).</td>
</tr>
<tr>
<td>445</td>
<td>CIFS (On XP and Win2K).</td>
</tr>
</tbody>
</table>

   - The target machine must have the Remote Registry service started (which is the default configuration) in order for RXA to connect to the target machine.

   - RXA requires access to the hidden remote administrative disk share for access to the system %TEMP% and other directories. Access to the Interprocess Communications share (IPC$) is also required for RXA to access remote registries. Before you access the Interprocess Communications share (IPC$), make sure the Server service is started (Control Panel > Administrative Tools > Services > Server).

   - On UNIX and Linux computers, the following requirements must be met:
       - You must specify the root user ID to deploy and OS agent.
- If you are deploying the OS agent to a UNIX or Linux computer, that computer must have the ksh shell. Only the Korn shell is supported for the execution of the installation and runtime scripts.

- If you are using SSH V2, configure SSH on the target computers to permit the use of password authentication. To permit this, do the following steps:
  1. Open the /etc/ss/sshd_config file on the target computer.
  2. Locate the line and change no to yes.
     PasswordAuthentication no
  3. Save the file and restart the daemon.

  **Exception:** If you are using private key authentication in your environment, you do not need to set SSH to permit password authentication.

  For more detailed information and explanations, reference Appendix H, “Requirements for deploying OS agents,” on page 79.

**Discovering systems**

Use the discovery process to identify computers, operating systems, and network devices so that the appliance administrator can deploy the appropriate operating systems to these systems. You must run the discovery process before you can deploy monitoring for operating systems.

**About this task**

The discovery process can take anywhere from seconds to hours, depending on the range of IP addresses that you specify. For the discovery process to be more efficient, you can divide the IP address range into multiple segments and run the discovery process multiple times. You can continue to use the appliance while discovery is in progress and then return to the Deploy Monitoring workspace to begin deployment.

**Important:** Only one discovery can be running at a time. When a discovery is launched, the discovery button is disabled and the discovery status icon is changed from the triangle icon to the two vertical bars icon for all users until after the initial discovery finishes.

**Procedure**

1. On the Launch Pad, click Discover Systems and Deploy OS Monitoring. The Deploy Monitoring workspace is displayed.

2. In the IP addresses to scan field, enter a range of IP addresses for the computers that you want to discover, in the form of n.n.n.n-n, where n is a 1-3 digit number, for example, 192.168.1.1-23. You can also use a mask, in the form of n.n.n.n/x, where x is the mask.

3. Click Discover. The Deploy Agents workspace is displayed. You can continue to use the appliance when the discovery is in progress.

**Results**

After the discovery process is completed, the results are displayed in the Discovered Systems table. For more information to interpret the table, see “Discovery results” on page 28.
What to do next

For the discovered operating systems of the following types, you can use this discovery workspace to deploy monitoring:

- Windows
- Linux
- UNIX
- HP_UX
- AIX
- Solaris

For other operating systems, you must install the specific monitoring agent manually on the target system.

Discovery results

By default, the list of discovered resources displays all computers and devices. You can filter the results by using the radio buttons above the table to limit the list to a particular type of operating system type or to only network devices. You can also sort the results on any of the columns by clicking the corresponding column heading.

The discovery result table as shown in Figure 1 provides the following information for each discovered resources:

- The name of the target host computer
- The IP address of the host
- The type and version of operating system on the host

The discovery process might return several possibilities of operating system type and version for a target system. The most possible OS type and version is displayed.

Various operating system types are displayed, but you use the discovery workspace to deploy monitoring to the target systems of the following types only.
To deploy monitoring to the operating systems of other types, such as Tru64, i5_OS, and z_OS, you must install the specific monitoring agent manually on the target system.

- Windows
- Linux
- UNIX
- HP_UX
- AIX
- Solaris

The OS type of Unknown is returned when the discovery process cannot determine whether a target system is one of the previously mentioned OS types. A target system might be a valid OS type but be returned as Unknown. For example, a target system with most of the network ports closed might be reported as Unknown.

The possibility of OS version that is discovered is in the range of 0 - 100%. When the possibility is less than 100%, confirm the operating system version before you deploy monitoring.

If the system is a network device or if the host on which OS monitoring is deployed does not have a host name that is known to the discovery process (that is, an IP address is shown as the host name), N/A is displayed in the Managed status column.

To cancel the discovery, click Cancel Discovery under the Discovered Systems table. The discovery process is stopped, the screen is refreshed, and the discovery process indicator indicates that the process is idle.

**Deploying an OS monitoring agent from the Launch Pad**

After the target system is discovered and all the prerequisites are met, you can deploy the OS agent from the Launch Pad.

**Procedure**

1. On the Launch Pad, click Discover Systems and Deploy OS Monitoring. The Deploy Monitoring workspace is displayed.
2. In the Deploy section, select the computer to which you want to deploy an OS agent from the list of discovered systems and then click Deploy OS agent. The Deploy Base Agent window is displayed.
3. Enter the following information in the Deploy Base Agent window and then click OK.
   - **User ID**
     The user ID must have administrative authorities on the target system (for example, Administrator on a Windows system, or root on a Linux or UNIX system).
   - **Password**
     The password that is associated with the user ID.
   - **Install path**
     The directory where you want to install the OS monitoring agent.
Results

The deployment takes approximately 10 minutes. After the deployment is completed, the value in the Managed column for the selected operating system is changed to Yes. When the deployment is in progress, you can click Deployment Status to monitor the progress of the deployment in the Deploy Status Summary workspace.

Deploying monitoring for applications

You must deploy monitoring for applications before you can view monitoring data for them.

Before you begin

You must first deploy an OS monitoring agent on the computer that hosts the application you want to monitor. See "Deploying an OS monitoring agent" on page 25 for information about how to deploy an OS monitoring agent.

About this task

You can deploy monitoring for the following applications:

- Databases: DB2, Oracle, Sybase ASE, SQL Server,
- Email servers: Lotus Domino
- Web servers: Internet Information Services, HTTP Server
- Virtual Environment: VMware Virtual Center, Network Device, Linux Kernel-based Virtual Machines, NetApp Storage
- Transactions: Web Response Time, Internet Service Monitoring
- Log files

Procedure

1. Check Table 11 on page 69 to see if the agent you want to deploy is listed in the table and the machine to which you will deploy the agent runs one of the supported operating systems.
   - If the agent is listed in the table and the operating system is supported, deploy the agent. See "Deploying a monitoring agent remotely" on page 33 for information about how to deploy an agent.
   - If the agent is listed in the table, but the operating system is not supported, go to step 2.
   - If the agent is not listed in the table, go to step 2.

2. Check Table 12 on page 71 to see if the agent you want to deploy is listed in the table and the machine to which you will deploy the agents runs one of the supported operating systems.
   - If the agent is listed in the table and the operating system is supported, do the following tasks:
     - Prepare agent installation images. If you have done this before, you can skip this step. See "Preparing agent installation images" on page 31 for instructions about how to prepare agent installation images.
– Upload the agent installation images to the machine on which the virtual machine image for IBM Tivoli Monitoring is deployed. If you have done this before, you can skip this step. See “Uploading agent installation images” on page 32 for information about how to upload agent installation images.

– Deploy the agent. See “Deploying a monitoring agent remotely” on page 33.

• If the agent is listed in the table, but the operating system is not supported, SmartCloud Application Performance Management Entry Edition - VM Image does not support monitoring of the application on the operating system yet.

• If the agent is not listed in the table, go to step 3.

3. Check Table 13 on page 72 to see if the agent you want to deploy is listed in the table:

• If the agent is listed in the table, do the following steps:
  a. Follow the instructions at “Preparing agent installation images” to obtain the installation images for these components.
  b. Follow the instructions of their specific user’s guide for installation.
     – i5/OS Agent User’s Guide
     – Agent Builder User’s Guide
     – .NET Data Collector User’s Guide

• If the agent is not listed there, SmartCloud Application Performance Management Entry Edition - VM Image does not support monitoring of the application yet.

Preparing agent installation images

This task is required only when the installation image of the agent that you want to deploy is not included in the virtual machine image for IBM Tivoli Monitoring.

Before you begin

The following procedure requires a computer that has at least 24GB of free disk space.

About this task

If the agent that you want to deploy is listed in Table 12 on page 71, prepare the agent installation images before you deploy the agent.

Procedure

1. On the computer with the required free disk space, create a directory to receive the agent installation image files. These files require 24GB of free disk space.

2. Copy the following files from the product DVDs or download them from the Passport Advantage website into the directory that you created in the previous step.

   • SCAPM_EE_1of3_V760_Extended_Images.part
   • SCAPM_EE_2of3_V760_Extended_Images.part
   • SCAPM_EE_3of3_V760_Extended_Images.part

3. Run the following command to merge the split files into the complete .zip file:

   • Windows systems: copy /b f1.part+f2.part+f3.part SCAPM_EE_V760_Extended.zip, where f1, f2, and f3 refer to the names of the
files in the directory. Be sure to specify the file names in numeric order, so that they will be concatenated in the proper order.

- Other platforms: `cat SCAPM*.part >> SCAPM_EE_V760_EXTENDED_IMAGES.zip`

4. Confirm that the .zip file is assembled correctly by verifying its checksum values:
   a. Run the following command to generate the checksum values for the .zip file: `md5sum -b SCAPM_EE_V760_EXTENDED_IMAGES.zip`
   b. Compare the generated checksum values with the values in the provided MD5SUMS text file.

5. Decompress the SCAPM_EE_V760_EXTENDED_IMAGES.zip file.

Results

The following files are created:

- `a4520cma.sav`, which contains full installation image for the Monitoring Agent for i5/OS.
- `ITM_V6.2.3_FIXPACK_1_AB_EN_MP.tar`, which contains full installation image for the Agent Builder.
- `ITM_V6.2.3_FIXPACK_1_ABLS_ML_MP.tar`, which contains language packs for the Agent Builder.
- `QAV6301_DVD_201302230816.tar.gz`, which contains full installation image for the .NET Data Collector.
- `SCAPM_EE_V760_depot.tar`, which contains agent installation images for the agents in Table 12 on page 71. You will use the SCAPM_EE_V760_depot.tar file later to deploy an agent in Table 12 on page 71 remotely.

What to do next

"Uploading agent installation images"

Uploading agent installation images

If the installation image of an agent is not included in the virtual machine image for IBM Tivoli Monitoring, you must upload its installation image to the machine on which the virtual machine image for IBM Tivoli Monitoring is deployed before you can deploy the agent.

Before you begin

Prepare the agent installation images. The required SCAPM_EE_V760_depot.tar file is created during this process. See "Preparing agent installation images" on page 31 for instructions about how to prepare the agent installation images.

Procedure

1. Upload the SCAPM_EE_V760_depot.tar file to the `/opt/ibm/sapm` directory on the machine where the virtual machine image for IBM Tivoli Monitoring is deployed. SSH services are available on that machine to do the upload.
2. Run the following command to decompress the SCAPM_EE_V760_depot.tar file and copy the generated files to the agent depot directory:
   
   `/opt/ibm/ae/AS/import_depot.sh /opt/ibm/sapm/SCAPM_EE_V760_depot.tar`
What to do next

Now you can deploy the agent to the machine that hosts the application you want to monitor. See “Deploying a monitoring agent remotely” for information about how to deploy an agent remotely.

Deploying a monitoring agent remotely

To monitor an application, you must deploy a monitoring agent to collect monitoring data for it.

Before you begin

Deploy an OS monitoring agent to the computer that hosts the application that you want to monitor. See “Deploying an OS monitoring agent” on page 25 for information about how to deploy an OS monitoring agent.

Procedure

1. On the Launch Pad, click Deploy Application Monitoring. The Deploy Application Monitoring window is displayed.
2. Check the Deploy Application Monitoring Agent for System table to see if the computer on which you want to deploy application monitoring is listed. This table lists the computers on which an OS monitoring agent is deployed. If the computer is listed in the table, go to the next step. If the computer is not listed, you must deploy an OS monitoring agent to that computer before you continue with the process. See “Deploying an OS monitoring agent” on page 25 for information about how to deploy an OS monitoring agent.
3. Right-click the link icon beside the name of the target computer and then click Deploy Application on Windows or Deploy Application on Linux or UNIX, as appropriate. The default workspace for that computer is displayed, with entry for the selected computer that is highlighted in the Physical Navigator view.
4. Right-click the entry in the Physical Navigator view and then click Add Managed System from the menu. The Select a Monitoring Agent window is displayed with a list of agents that can be deployed on the system.
5. Select the type of agent that you want to deploy and click OK.
6. Complete the configuration fields that are required for the agent. For detailed information about agent configuration parameters, see Appendix I, “Agent configuration information for remote deployment,” on page 81.
7. Click Finish. You can check the status of the deployment in the Deployment Status Summary workspace. To open the Deployment Status Summary workspace, right-click Enterprise in the Physical Navigator view and then click Workspaces > Deployment Status Summary.

Results

After you deploy an application agent, entries for the agent and its predefined workspaces are displayed in the Physical Navigator view. The agent is also listed in the Application Agents Currently Deployed table.
Recovering the deployment and reconfiguration

If you enter incorrect parameter values or if a required parameter is not specified during the deployment of the two virtual machine images, the deployment will fail. The components cannot be started when the deployment is not successful or when the network is not started. A script is provided for you to recover the configuration. If the virtual machine network is updated with new IP address or host name, you can also use this script to reconfigure the components that are running on the two virtual machines.

Procedure

1. Make sure that the network is correctly configured and started.
2. Log on the virtual machine on which the virtual machine image for IBM Tivoli Monitoring is deployed.
3. Run the following command:
   ```sh
   /opt/ibm/ae/AS/Config.sh -sysadminPWD <sysadmin_psw> -tdwIP <tdw_vm_ip>
   ```

   where `<sysadmin_psw>` is the password of the sysadmin, which is the default user of IBM Tivoli Monitoring; `<tdw_vm_ip>` is the IP address of the virtual machine that hosts the virtual machine image for Tivoli Data Warehouse.

Related tasks:

[Appendix K, “Configuring the network of the virtual machines,” on page 85](#) There are two ways that you can configure or re-configure the virtual machine network. You can either use the YaST tool or use the provided `ConfigNET.sh` script to configure the network parameters.
Chapter 3. Viewing monitoring data

SmartCloud Application Performance Management Entry Edition - VM Image provides two ways for you to view the performance and availability data that is collected by the monitoring agents:

About this task

SmartCloud Application Performance Management Entry Edition - VM Image provides the following two ways for you to view the performance and availability data that is collected by the monitoring agents:

- “Viewing monitoring data in Tivoli Enterprise Portal”
- “Viewing monitoring data in IBM SmartCloud Application Performance Management UI”

Viewing monitoring data in Tivoli Enterprise Portal

You can view performance and availability data regarding your resources in Tivoli Enterprise Portal.

Before you begin


Procedure

1. Open a web browser and go to the address: http://itm_vm_hostname:1920, where *itm_vm_hostname* is the fully qualified host name or IP address of the virtual machine to which the virtual machine image for IBM Tivoli Monitoring is deployed.
2. Click IBM Tivoli Enterprise Portal Web Client.
3. Use sysadmin as the user ID and its associated password to log on to Tivoli Enterprise Portal.
4. Close the Launch Pad.
5. Use the Navigator on the left side to navigate to specific monitored resources.

Results

The monitoring data for specific monitored resources is displayed in the views of the workspace.

Viewing monitoring data in IBM SmartCloud Application Performance Management UI

IBM SmartCloud Application Performance Management UI presents monitoring data from the perspective of an application.
About this task

SmartCloud Application Performance Management UI presents the performance and availability data from the perspective of an application. Before you view data in SmartCloud Application Performance Management UI, ensure that you have deployed monitoring for the application and you have created the application in SmartCloud Application Performance Management UI. See “Deploying monitoring for applications” on page 30 for information about how to deploy monitoring for an application. See “Creating an application” for information about how to create an application in SmartCloud Application Performance Management UI.

Procedure

1. Open a web browser and go to the address: https://tdw_vm_host:16311/ibm/console, where tdw_vm_host is the fully qualified host name or IP address of the virtual machine to which the virtual machine image for Tivoli Data Warehouse is deployed.

2. Log on to Tivoli Integrated Portal, using the tipadmin user ID and its associated password. If it is the first time you log on to Tivoli Integrated Portal, the default password for tipadmin is helloibm. The welcome page is displayed.

3. Click **Launch** to start SmartCloud Application Performance Management UI. The dashboard for SmartCloud Application Performance Management UI is displayed.

**SmartCloud Application Performance Management UI**

SmartCloud Application Performance Management UI provides new, well-designed, customizable dashboards for monitoring applications in your IT environment.

SmartCloud Application Performance Management UI greatly improves the usability and time-to-value of application performance management by providing predefined dashboards. It adds value by providing the built-in group widgets for each domain application based on industry best practices. It fulfills the customers' needs to monitor business applications by providing customized application dashboards with a few clicks.
Chapter 4. Monitoring resources

Use the Launch Pad as the starting point to view real-time and historical availability and performance data for monitored resources. For data to be available, you must deploy monitoring agents.

More information about the workspaces, attributes, and situations that are provided by the included monitoring agents can be found in the user’s guides in the ITCAM for applications information center (http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/topic/com.ibm.itcama.doc_7.2/welcome_itcamfapps72.html).

Monitoring operating systems

You can view availability and performance data for monitored operating systems.

About this task

Availability and performance data for monitored operating systems is provided in workspaces. The level of detail depends on whether monitoring is agent-based or agentless.

Procedure

1. On the Launch Pad, click View System Availability and Performance. The System Availability and Performance workspace is displayed. This workspace lists the monitored operating systems in your network by platform and the status of each system (online or offline).
2. Click the link icon beside an online system to access detailed performance data. The default workspace for the selected operating system is displayed.
3. Click the plus icon (+) to view the available workspaces.
4. Click the name of the workspace that you want to view.

Results

In the workspaces, views that are enabled for historical reporting have a Time Span icon in the view toolbar. Historical data collection must be enabled and started for historical data to be available. By default, historical data collection is enabled.

For more information about the information available in each workspace, select the help for the appropriate operating system agent.

Monitoring applications

You can view availability and performance data for monitored applications.

Before you begin

You must first deploy monitoring for applications before you can view monitoring data for them. See “Deploying monitoring for applications” on page 30 for information about how to deploy monitoring for applications.
About this task

Availability and performance data for monitored applications is provided in workspaces.

Procedure

1. On the Launch Pad, click View Application Availability and Performance. The Application Availability and Performance workspace is displayed. This workspace shows the monitored applications by operating system.
2. Click the link icon beside an application to access detailed performance data. The default workspace for the selected application is displayed.
3. Click the plus icon (+) to view the available workspaces.
4. Click the name of the workspace that you want to view.

Results

In the workspaces, views that are enabled for historical reporting have a Time Span icon in the view toolbar. Historical data collection must be enabled and started for historical data to be available. By default, historical data collection is enabled.

For more information about each workspace, select the help for the appropriate application monitoring agent from the Navigator.

Monitoring events

The views in the Enterprise Status workspace give an overview and status of situation events in your monitored environment.

About this task

The Enterprise Status workspace is the initial default workspace in the physical navigator view. The views in this workspace give an overview and status of situation events in your monitored environment. The Situation Event Console view lists the open events and their severities.

You can access the Enterprise Status workspace from the Launch Pad by clicking Manage Events.

If an event indicator is displayed on a Navigator item, you can move the mouse pointer over the item to open a list of open situation events with summary information. When you move up the Navigator hierarchy, multiple events are consolidated to show only the indicator of the highest severity. Each situation in the list has a link to the event results workspace for that situation.

The event results workspace shows the values of the attributes at the time the situation was evaluated as true and their current values. It shows any expert advice that the situation author might have written and any hypertext links to go to for more information. Use the Take Action view to select or define a command to be run at the managed system.

Responding to events

When an event occurs, you have multiple ways to respond to it.
About this task

The menu for the event flyover list has options for working with the situation and event:

- Edit the situation
- Start the situation
- Stop the situation
- Quick acknowledge the event
- Acknowledge the event
- Close the event

To display the menu, right-click an event.

If multiple users are monitoring the network for events, one of them can acknowledge an event to indicate that it has been seen and the problem is being worked on. Acknowledging an event changes the event status from Open to Acknowledged until the acknowledgement expires or until the situation is no longer true. You can add notes to an acknowledgement and attach files that are pertinent to the event.

The My Acknowledged Events table in the Enterprise Status workspace shows the events that are assigned to the current user. This view shows both open and closed events. Closed events are displayed so you can access the notes and actions that are taken against them. For each event record listed, to open the Event Details workspace with similar events based on the situation name, click the link indicator at the beginning of the event row. To see the other Event Details workspaces, right-click the link indicator. The Event Details workspace shows any notes and attachments for the acknowledged event, along with other related events and a link to the IBM Tivoli Open Process Automation Library where you can find analytical tools for situations.

Only pure events can be closed. Pure events reflect conditions that do not alter over time without intervention, such as a printer that is out of paper. Such events are not closed automatically if the conditions change.

For more information about monitoring and responding to events, see the section on [Responding to events](#) in the IBM Tivoli Monitoring: Tivoli Enterprise Portal User’s Guide.
Chapter 5. Monitoring virtual environments

Follow the instructions to monitor your virtual environments.

About this task

Tivoli Monitoring for Virtual Environments, which is included in the virtual machine image for IBM Tivoli Monitoring, provides a comprehensive tool to monitor the performance and availability of virtual environments. In addition, Tivoli Monitoring for Virtual Environments provides performance and capacity reporting of virtual environments, and help you with capacity planning activities to optimize, consolidate, and balance the overall capacity of the virtual environments.

To use Tivoli Monitoring for Virtual Environments to monitor your virtual environments, do the following steps:

Procedure

1. Deploy monitoring for your virtual environments. See "Deploying monitoring for applications" on page 30 for information about how to deploy monitoring for virtual environments.

2. Configure the connection to the Virtual Environments Dashboard. See Configuring the connection to the Virtual Environments Dashboard. When you are prompted to enter configuration parameters, note that for TEPS Hostname, enter the host name or IP address of the machine on which the virtual machine image for IBM Tivoli Monitoring is deployed. TEPS Password is the password for the sysadmin user ID. You can ignore all the parameters that start with the string TADDM.

3. If you want to use the Virtual Environments Dashboard, you must configure Capacity Planner federation. See Configuring Capacity Planner federation for information about how to configure Capacity Planner federation.

Results

Now you can view the monitoring data for your virtual environments. For more information about Tivoli Monitoring for Virtual Environments, see IBM Tivoli Monitoring for Virtual Environments information center.
Chapter 6. Managing historical data collection

Historical data collection is an optional feature that you can enable through the Tivoli Enterprise Portal. The collected data can be displayed in workspaces in the Tivoli Enterprise Portal, warehoused analyses, and long-term data reports. It can also be exported to third-party tools for reporting and analysis.

Historical data collection must be configured and started for historical data to be available. You configure and start historical data collection by using the History Collection Configuration window. In this window, you specify the product and attribute groups for which you want data to be collected, the interval for data collection, the location where you want the collected data to be stored (at the monitoring server or at the agent), and whether you want the data to be stored in the Tivoli Data Warehouse. By default, historical data collection is configured and started for the attribute groups that are required for the Tivoli Common Reporting best practices reports. Summarization and pruning is configured for those groups.

Remember:
• Historical data collection requires additional disk space. You must ensure that there is enough space on the system when configuring historical data collection. For information that you need to estimate the required disk space, see Appendix L, “Disk capacity planning for historical data,” on page 87.
• Historical data is required by Tivoli Performance Analyzer, which is provided in the virtual machine image for Tivoli Data Warehouse by SmartCloud Application Performance Management Entry Edition - VM Image. Tivoli Performance Analyzer adds predictive capability to Tivoli Monitoring so you can monitor resource consumption trends, anticipate future performance issues, and avoid or resolve problems more quickly. For example, you can use Tivoli Performance Analyzer, which is fully automated, to predict application bottlenecks and create alerts for potential service threats. To use Tivoli Performance Analyzer, you must enable historical data collection first. For detailed information about how to use Tivoli Performance Analyzer, see the IBM Tivoli Performance Analyzer Information Center.

Configuring historical data collection

For historical data to be available for reporting in workspace views, historical data collection for the appropriate products and attribute groups must be configured and started. Historical data collection is configured and started using the History Collection Configuration window.

To configure historical data collection, do the following steps:
1. Open a web browser and go to the address: http://itm_vm_hostname:1920, where itm_vm_hostname is the fully qualified host name or IP address of the virtual machine to which the virtual machine image for IBM Tivoli Monitoring is deployed.
2. Click IBM Tivoli Enterprise Portal Web Client.
3. Use sysadmin as the user ID and its associated password to log on to Tivoli Enterprise Portal.
4. Close the Launch Pad.
5. Click **Edit > History Configuration**. The History Collection Configuration window is displayed.

See

By using the Historical Collection Configuration window, you can:
- Turn on or off historical collection for individual attribute groups.
- Save the history data at the Tivoli Enterprise Monitoring Server or at the agent.
- Turn on and off data warehousing and specify the interval that is used to save data into the warehouse.
- Define how you want to summarize the warehoused data.
- Define how and when you want to prune the warehoused data and how long you want it to be kept.

For more information about how to use the Historical Collection Configuration window to achieve the tasks that are mentioned previously, see **Historical collection configuration**.

The configurations that are required for reporting are turned on by default.

Some attributes groups, such as Situation Status and Windows Event Log, are historical in nature and show all their entries without you specifying a time span. You do not have to configure historical collection for these attribute groups unless you want to roll off the data to a data warehouse or limit the reported data.


## Managing collected data

After data collection is started, historical data is collected in binary files at either the monitoring agent or the monitoring server for the short term. The data is stored in tables, with one table for each attribute group for which data is being collected. You can roll off the data to the Tivoli Data Warehouse for longer term storage.

If you upload data to the data warehouse, the data at the collection locations is automatically deleted after the upload. If you choose not to warehouse your data, you must institute roll-off jobs to regularly convert and empty out the history data files. Tivoli Management Services provides roll-off programs for all platforms. These programs are described in the *IBM Tivoli Monitoring Administrator’s Guide* available on the ITCAM for applications information center [http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/topic/com.ibm.itcama.doc_7.2/welcome_itcamapps72.html]. In addition to trimming the binary history data files, these scripts produce flat files that can be used with third-party vendor tools to produce trend analysis reports and graphics. The *IBM Tivoli Monitoring Administrator’s Guide* also provides more information about managing the collected data, performance considerations, data management options, and so on.
Data that is stored in the Tivoli Data Warehouse is managed by summarizing and pruning, which is configured through the History Collection Configuration window.

### Monitoring the warehouse agents

#### About this task

There are two special agents that are associated with the Tivoli Data Warehouse. The Warehouse Proxy Agent collects data from monitoring agents and passes it to the warehouse. The Summarization and Pruning Agent periodically aggregates and prunes the data in the warehouse. These agents are configured and started by default so that historical data can be collected for the Tivoli Common Reporting reports.

The warehouse agents are self-monitoring. To view configuration and status information for these agents, complete the following steps:

#### Procedure

1. On the Launch Pad, click **Monitor Warehouse Agent Configuration**. The Data Warehouse workspace is displayed.
2. Click the link icon next to the name of the agent in the Data Warehouse Items table. The default workspace for the selected agent is displayed.
3. Expand the navigation tree for the Summarization and Pruning Agent to see its Configuration and Statistics workspaces.

#### Results

For descriptions of the Warehouse Proxy and Summarization and Pruning agents workspaces, see the Tivoli Enterprise Portal online help.

### Viewing historical data

In the Tivoli Enterprise Portal workspaces, views for which historical reporting is enabled display the Time Span tool icon in the view toolbar.

To see historical data in a history-enabled view, you must specify the time span for which you want to see data. To return to viewing current data, you must discontinue the reporting of historical data. Historical data collection must be enabled and started for historical data to be available. For instructions, see [Setting a time span to display](#) and [Discontinuing historical reporting](#) in the *IBM Tivoli Monitoring Tivoli Enterprise Portal User’s Guide*.

Data for up to 24 hours is taken from the local data store. Data for more than 24 hours is taken from the data warehouse.
Chapter 7. Tivoli Common Reporting historical reports

Tivoli Common Reporting is a reporting tool that you can use across Tivoli products. Tivoli Common Reporting provides a consistent approach to viewing and administering historical reports.

Before you can view the reports in Tivoli Common Reporting, ensure that you have deployed monitoring agents to the applications and historical data already exists in the data warehouse.

The configurations that are required for the best practice reports are enabled by default.

When you log in to Tivoli Common Reporting, your reports are organized under the following groups:

- IBM Tivoli Capacity Analytics Reports
- IBM Tivoli Composite Application Manager Agent for DB2
- IBM Tivoli Monitoring for Virtual Environments Reports
- IBM Tivoli Monitoring OS Agents Reports
- ITCAM for Transactions (Analysis)
- ITCAM for Transactions (Query)
- ITCAMMA Active Directory Cognos Reports
- ITCAMMA BizTalk Server Cognos Reports
- ITCAMMA Cluster Server Cognos Reports
- ITCAMMA DotNet Cognos Reports
- ITCAMMA Exchange Server Cognos Reports
- ITCAMMA HIS Cognos Reports
- ITCAMMA Hyper-V Server Cognos Reports
- ITCAMMA IIS Cognos Reports
- ITCAMMA LyncServer Cognos Reports
- ITCAMMA SharePoint Cognos Reports
- ITCAMMA SQL Server Cognos Reports

Reports are run against long-term historical data that is stored in the Tivoli Data Warehouse. Using the provided templates, you can generate reports in any of the following formats: HTML (the default), PDF, Microsoft Excel, or Adobe PostScript. You can manually run reports on demand, or schedule them to run automatically. Reports can help you monitor the performance and availability of your managed resources over time.

For descriptions of data model and reports provided by the monitoring agent, see Appendix J, “Tivoli Common Reporting information for the monitoring agent,” on page 83.

Tivoli Common Reporting uses the Tivoli Integrated Portal. The SmartCloud Application Performance Management Entry Edition - VM Image provides a predefined Tivoli Integrated Portal administrative user ID and password. To change the administrative password, or to add more Tivoli Integrated Portal users,
Creating and populating the resource dimension table

If you want to generate reports for IBM Tivoli Monitoring OS Agents, you must create and populate the resource dimension table.

About this task

If you want to generate reports for IBM Tivoli Monitoring OS Agents, you must create and populate the resource dimension table. Each time you deploy one or more OS monitoring agents, you must do this task to update the resource dimension table.

Important: The following scripts use hardcoded user schemas. If you use a different schema, you must replace every instance of the hardcoded schema with the user you specified.

Procedure

1. On the machine where the virtual machine image for Tivoli Data Warehouse is deployed, log in as db2inst1. The db2inst1 user ID is a predefined user ID. If you have not modified its password, its default password is helloibm.

2. Connect to the database that you want to create the resource dimension table for. This is your Tivoli Data Warehouse.
   db2 connect to WAREHOUS

3. If you specified a different user from the default of ITMUSER for connecting to the warehouse, customizing the provided scripts gen_resources.db2, populate_resources.db2, replacing every instance of the hardcoded schema "ITMUSER" with the user you specified.

4. Call the following procedure to populate the ManagedSystem table:
   db2 "call ITMUSER.POPULATE_OSAGENTS()"

   Attention: If you specified a different user from the default, replace ITMUSER with the user specified during your warehouse configuration.

Results

The resource dimension table is complete.

Generating reports

You can generate Tivoli Common Reporting reports manually to view them on demand.

Procedure

1. From the Launch Pad, select View Historical Reports. The Tivoli Common Reporting workspace is displayed. The workspace contains the logon panel for the Tivoli Integrated Portal, which is used as the interface to select, run, and schedule Tivoli Common Reporting reports.

2. If it is the first time you log on to Tivoli Integrated Portal, use the default user ID (tipadmin) and password. On subsequent logons, you can use any valid Tivoli Integrated Portal user ID and password that have been created.

3. Select the Navigation tab.
4. Locate the report that you want to run using the **Navigation** or **Search** tab.

5. In the Reports table, right-click the table row for the report that you want to run, and select one of the following report formats: HTML (the default), PDF, Microsoft Excel, or Adobe PostScript.

6. Click the icon beside a report name to produce a report in the selected format. The OnDemand Report Parameters window is displayed. The title of this window indicates the type of report that is generated.

7. Click **Run** to generate a report that matches your parameter definitions. An hourglass is displayed while Tivoli Common Reporting gathers report data and creates formatted output.

**Results**

After processing finishes, the report viewer opens in a new browser tab or instance, displaying the formatted report. You can view the report in your browser or save the formatted output.

If you are viewing an HTML or PDF report, you can also click any embedded links to open drill-through reports. Clicking a drill-through embedded link causes the report to link back to itself with the newly passed parameters or to a secondary (drill-down or summarized) report. Examples of links that you can drill down through include clicking a bar or line chart or on a table heading.


**Scheduling reports**

You can schedule a report snapshot in the Create Report Schedule window.

**Procedure**

1. Locate the report that you want to run in the **Navigation** or **Search** tab.

2. In the **Reports** table, right-click the table row for the report and select **Schedules** from the menu. The Report Schedules window opens.

3. Click **Schedule Snapshot**. The Create Report Schedule window opens.

4. On the **Report Parameters** tab, specify the parameter values that you want to use or accept the default values. The parameters for a report are defined by the report design. For more information about the parameters of the report you are running, see the documentation that is provided with the report.

5. On the **Schedule** tab, specify the scheduling rule that defines when the snapshot runs. The scheduling rule specifies the start and end times for the schedule, the type of repeat schedule to use, and other options that affect when the report snapshot runs. For more information about these options, see the online help for the Create Report Schedule window.

6. When you finish specifying report parameters and the scheduling rule, click **OK** to create the schedule.

**Results**

The new schedule is displayed in the Report Schedules window.
What to do next

To see a menu of options for managing reports, right-click any listed report schedule. You can use this menu to cancel, suspend, resume, or delete a schedule.
Chapter 8. Upgrade overview

When a new version of a component in SmartCloud Application Performance Management Entry Edition - VM Image is released, you can upgrade the component to the new version.

SmartCloud Application Performance Management Entry Edition - VM Image V7.6 is the first release, so upgrading from a previous release is not required. However, patches will be provided to upgrade IBM Tivoli Monitoring servers and monitoring agents.

Attention: Do not upgrade SmartCloud Application Performance Management Entry Edition - VM Image unless critical function failure occurs or security vulnerability exists.

Roadmap for upgrading a monitoring agent

When a new version of a component in SmartCloud Application Performance Management Entry Edition - VM Image is released, you can upgrade the component to the new version.

About this task

If the component that you want to upgrade is a monitoring agent, follow the instructions to upgrade the agent.

Procedure

1. Download the upgrade image from the support website of IBM.
2. Upload the upgrade image. See “Uploading the upgrade image” on page 52 for information about how to upload the upgrade image.
3. Update the agent installation files. See “Updating agent installation files” on page 52.
4. Do one of the following steps to upgrade the agent:
   - “Updating an agent through Tivoli Enterprise Portal” on page 53
   - “Updating an agent through the command-line interface” on page 54

Roadmap for upgrading an IBM Tivoli Monitoring server

About this task

If the component that you want to upgrade is a Tivoli Enterprise Monitoring Server, or a Tivoli Enterprise Portal Server, follow the instructions to upgrade it:

Procedure

1. Download the upgrade image from the support website of IBM.
2. Upload the upgrade image to a temporary directory on the virtual machine where the server you want to upgrade is deployed. SSH service is available on the virtual machine for you to do the upload.
3. Upgrade the server. See “Upgrading IBM Tivoli Monitoring server components” on page 54
4. Run the following command to check the version of IBM Tivoli Monitoring to verify the upgrade.
   
   `cinfo --t`

---

### Roadmap for upgrading other components

**About this task**

If the component that you want to upgrade is not a monitoring agent, a monitoring server, or a portal server, following the instructions to upgrade the component:

**Procedure**

1. Download the upgrade image from the support website of IBM.
2. Upload the upgrade image to the virtual machine on which the component you want to upgrade is deployed.
3. Follow the instructions in the documentation of that component to upgrade it.

---

### Uploading the upgrade image

**About this task**

If the upgrade image size is smaller than 2 GB, you can use the following process to upload it to the virtual machine on which the virtual machine image for IBM Tivoli Monitoring is deployed. If the image size is greater than 2 GB, use a file transfer tool other than the following process to upload the image to the `/opt/ibm/sapm/fixpack_images` directory on that virtual machine.

**Procedure**

1. Do the following steps to open the Launch Pad:
   a. Open a web browser and go to the address: `http://itm_vm_hostname:1920` , where `itm_vm_hostname` is the fully qualified host name or IP address of the virtual machine to which the virtual machine image for IBM Tivoli Monitoring is deployed.
   b. Click IBM Tivoli Enterprise Portal Web Client.
   c. Log on to Tivoli Enterprise Portal. The Launch Pad is displayed.
2. Click Maintain Appliance.
3. Select Upgrade Components and then click Next.
4. Select the component that you want to upgrade, click Browse to locate the upgrade image that you want to upload, and then click Next. The image will be uploaded to the `/opt/ibm/sapm/fixpack_images` directory. If the upgrade image is for the IBM SmartCloud Application Performance Management UI, it will be transferred to the virtual machine on which the virtual machine image for Tivoli Data Warehouse is deployed.

---

### Updating agent installation files

**Procedure**

1. In the Target VM field, select the virtual machine on which the component you want to upgrade is deployed.
2. Extract the archive file with the `tar` or `unzip` command. Refer to the following example:
   ```bash
tar -xf /opt/ibm/sapm/fixpack_images/6.2.2.1-TIV-ITM_DB2-LA0051.tar -C /opt/ibm/sapm/fixpack_images/6.2.2.1-TIV-ITM_DB2-LA0051
   ```
3. Add the agent fix bundles into the remote deployment depot with the `tacmd addBundles` command. Use the `-i` option to specify the directory that contains the deployment bundles to be added to the depot as shown in the following example. For more information about the `tacmd addBundles` command, see the IBM Tivoli Monitoring Administrator’s Guide.
   ```bash
   /opt/IBM/ITM/bin/tacmd addBundles -f -i /opt/ibm/sapm/fixpack_images/<your_extracted_image_directory>
   ```

What to do next

“Updating an agent through Tivoli Enterprise Portal” or “Updating an agent through the command-line interface” on page 54

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**Updating an agent through Tivoli Enterprise Portal**

When a new version of a distributed monitoring agent is released, you can apply the new version locally or remotely to one managed system at a time, or to many simultaneously.

**Before you begin**

Use the Configure Managed System window in the Tivoli Enterprise Portal client to apply a patch for a monitoring agent.

**Procedure**

1. Do the following steps to log on to the Tivoli Enterprise Portal:
   a. Open a web browser and go to the address: `http://itm_vm_hostname:1920`, where `itm_vm_hostname` is the fully qualified host name or IP address of the virtual machine to which the virtual machine image for IBM Tivoli Monitoring is deployed.
   b. Click IBM Tivoli Enterprise Portal Web Client.
   c. Log on to Tivoli Enterprise Portal.
2. Right-click the Navigator item for the agent that you want to upgrade.
3. Click Configure to open the Configure Managed System window.
4. Click the Agent tab.
5. Compare the installed version of the monitoring agent with any available product updates, then highlight the row of the agent to update and click Install Updates.

**Results**

Installation of the updates begins and might take several minutes to complete. The list that displays reflects the contents of the deployment depot. If Install Updates is disabled, one or more of the following conditions exist:

- The depot entry does not match the product type.
- The VVRR fields for the agent and the depot entry are the same, where VV is the version number and RR is the revision number. For example, an entry of 0610 prevents you from applying a fix pack that is intended for a version 6.2 agent.
- The depot entry is at an older version than the agent.
- The host version field of the depot entry does not contain the host platform for the agent.
- The prereq field of the depot entry does not contain an agent of the same type as the agent itself. For example, if 6.1 UD (DB2 monitoring) is the selected agent, the prereq field in the depot entry must contain a deployment bundle notation such as ud:061000000, which is one way to denote a patch deployment bundle.

**Updating an agent through the command-line interface**

Updating agents involves stopping any that are running, applying the changes, and restarting them. After you have determined the specifics about monitoring agents that you want to update, including the type and version, run the `tacmd updateAgent` command from the command-line interface. If a version is not specified, the agent is updated to the latest version.

**About this task**

Complete the following steps at a command-line interface. For reference information about this command and related commands, see the IBM Tivoli Monitoring Command Reference [topic](http://pic.dhe.ibm.com/infocenter/tivihelp/v30r1/topic/com.ibm.itm.doc_6.2.2fp2/itm_cmdref.htm).

**Procedure**

1. Use the `tacmd login` command to log in to a Tivoli Enterprise Monitoring Server.
   ```
tacmd login {-s|--server} {([https|http]://)HOST[:PORT]}  
([u--username] USERNAME)  
([p--password] PASSWORD)  
([t--timeout] TIMEOUT) [-t TIMEOUT]
   ```
   For example, to log in to the system ms.austin.ibm.com with the user name Admin and the password log1n, run this command:
   ```
tacmd login -s ms.austin.ibm.com -u Admin -p log1n
   ```
2. After you log in, issue the `tacmd updateAgent` command to install an agent update to a specified node.
   ```
tacmd updateAgent {-t|--type} TYPE {-n|--node} MANAGED-OS  
([-v|--version] VERSION) [-f|--force]
   ```
   For example, the following command updates a UNIX agent (type UX) on the server named itmserver:
   ```
tacmd updateagent -t UX -n itmserver:KUX -v 6111
   ```

**Upgrading IBM Tivoli Monitoring server components**

**About this task**

Use one of the following instructions to upgrade IBM Tivoli Monitoring server components:

- If you want to upgrade the server components to a fix pack level, see “Upgrading IBM Tivoli Monitoring server components to a fix pack” on page 55.
- If you want to upgrade the server components to a patch level, see “Upgrading IBM Tivoli Monitoring server components to a patch” on page 55.
Upgrading IBM Tivoli Monitoring server components to a fix pack

Procedure
1. Download the upgrade image from the IBM support website.
2. Read the related installation guide for the fix pack and create a silent response file.
3. Upload the installation image and the response file to /opt/ibm/sapm/fixpack_images directory on the virtual machine of IBM Tivoli Monitoring or Tivoli Data Warehouse, depending on where the component you want to upgrade is deployed.
4. Run one of the following commands to install the patch, depending on the type of the patch:
   • If the patch is a fix pack, run the following command:
     
     /opt/ibm/ae/AS/InstallITMFP.sh -image fix_pack_path
     -response_file response_file_path

     where fix_pack_path is the full path of the fix pack file and response_file_path is the full path of the response file. If no response file is specified, the default response file in the fix pack image is used. For example,


   • If the patch is an interim fix, provisional fix, or other patches, run the following command:

     /opt/ibm/ae/AS/InstallITMPatch.sh -image patch_path -patch.arg patch_argument

     where patch_path is the full path of the patch file and patch_argument is the argument required by the patch. For example,

     /opt/ibm/ae/AS/InstallITMPatch.sh -image /opt/ibm/sapm/fixpack_images/6.2.3-TIV-ITM-FP0002-IV29900.tar -patch_arg /opt/ibm/sapm/fixpack_images/6.2.3-TIV-ITM-FP0002-IV29900

Remember: The installation scripts will extract the compressed installation image file to the /opt/ibm/sapm/fixpack_images directory and stop the related components before the upgrade. The components that are stopped will be started automatically after the upgrade is complete.

Upgrading IBM Tivoli Monitoring server components to a patch

Procedure
1. Download the patch image from the IBM support website.
2. Read the related installation guide or readme file for the patch.
3. Upload the installation image to /opt/ibm/sapm/fixpack_images directory on the virtual machine of IBM Tivoli Monitoring or Tivoli Data Warehouse, depending on where the component you want to upgrade is deployed.
4. Decompress the patch image to a temporary directory.
5. Stop the IBM Tivoli Monitoring components that are running on the virtual machine with following command:

     /etc/init.d/ITMAgents1 stop

6. Install the patch using the itmpatch command. For example,
where TEMP_dir is the temporary directory where you save the patch image,  
patch_dir is the directory that is created when the patch image is decompressed,  
and ITM_HOME is the directory where IBM Tivoli Monitoring is installed.

7. Start the components that you stopped in step 5 with following command:
   /etc/init.d/ITMAgents1 start
Chapter 9. Troubleshooting

When you encounter a problem with SmartCloud Application Performance Management Entry Edition - VM Image, you must first determine where the problem originated. Usually you start with a symptom, or set of symptoms, and trace them back to their cause. This process is called troubleshooting. Troubleshooting is not the same as problem solving, although during the process of troubleshooting, you can obtain enough information to solve a problem. The following situations are some examples of situations where this can happen:

- User errors
- Application programming errors
- System programming errors, such as in resource definitions

You might not always be able to solve a problem yourself after determining its cause. For example, a performance problem might be caused by a limitation of hardware. If you cannot solve a problem on your own, contact IBM Software Support for a solution.

IBM Tivoli Monitoring

The IBM Tivoli Monitoring Troubleshooting Guide provides you with troubleshooting information for various components in IBM Tivoli Monitoring. The IBM Tivoli Monitoring Troubleshooting Guide is available at the ITCAM for Applications information center. The following areas are covered:

- Tivoli Enterprise Portal
- Tivoli Enterprise Portal Server
- Tivoli Enterprise Monitoring Server

Monitoring agents

Each monitoring agent provides agent-specific troubleshooting information in the respective user’s guide:

- For troubleshooting information about the HTTP Servers agent, see the IBM Tivoli Composite Application Manager Agent for HTTP Servers [http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/topic/com.ibm.itcamfad.doc_7.1/ABD0001/about%20this%20book/kyj6ig03.html].
Collecting logs

The Launch Pad provides a pdcollect tool to collect the most commonly used information from a system. The pdcollect tool is used to gather log files, configuration information, version information, and other information to help solve a problem. Technicians in IBM Software Support use this information to investigate a problem.

About this task

You can also use the tool to manage the size of trace data repositories. The pdcollect tool is run from the tacmd pdcollect command. To use this tool, complete the following steps:

Procedure

1. On the Launch Pad, click Maintain Appliance.
2. Click Download in the Download ITM Log field. The collecting process begins and might take a few minutes. After the process is complete, a compressed log file is created.
3. Choose the local folder to which you want to save the log file.

Agent remote deployment fails

Various reasons can cause the failure of agent remote deployment. Use one of the following solutions that best suits your situation to solve the problem.

Windows OS agent

Problem: The Windows OS agent fails to start after remote deployment. The KCICFS100E error message is displayed. In the trace log file of the agent, the following message might be recorded:

No perfmon counters found, exiting agent

Solution: Complete the following steps to repair the pointers in the registry:
1. On the Windows system, click Start.
2. In the Search programs and files field, type cmd.
3. In the search results, right-click cmd.exe and click Run as administrator.
4. In the command prompt, type lodctr /R and press Enter.

Linux OS agent

The following reasons might cause the failure of Linux OS agent installation.

Missing 32-bit library on a 64-bit system

Problem: The OS agent cannot be installed on a 64-bit Linux system with errors that are similar to the following ones:

runGSkit: ----- Running command: /opt/IBM/ITM/116243/gs/bin/private_verifyinstall ----- /opt/IBM/ITM/116243/gs/bin/gsk7ver: error while loading shared libraries: libstdc++.so.5: cannot open shared object file: No such file or directory

Error: Verify Failed Expected Details of gskit in /opt/IBM/ITM/116243/gs
Got
r Guskit: return code from command is 99
runGuskit: ----- End of running command ----- 
r Guskit: error Return error code: 99
runGuskit: error Guskit check failure, script: /opt/IBM/ITM/li6243/gs/bin
/private_verifyinstall
runGuskit: error li6243 - Guskit check error, verifyInstall test failed
runGuskit: Backup failed Guskit installation into /opt/IBM/ITM/tmp/badGuskit
_keep.tar

Solution: IBM Tivoli Monitoring requires both the 32-bit and 64-bit
compat-libstdc++ libraries that are installed on a 64-bit system. This
problem occurs because of the missing 32-bit libstdc++.so.5 library. Use the
following command to verify that both the 32-bit and 64-bit versions of the
libraries are installed. The expected results are also shown following the
command. If any entries in the /usr/lib64 directory are missing from the
/usr/lib directory, you must locate and install the 32-bit version of the
compat-libstdc++-33 package.

# rpm -q --filesbypkg compat-libstdc++-33
compat-libstdc++-33 /usr/lib64/libstdc++.so.5
compat-libstdc++-33 /usr/lib64/libstdc++.so.5.0.7
compat-libstdc++-33 /usr/lib/libstdc++.so.5
compat-libstdc++-33 /usr/lib/libstdc++.so.5.0.7

# rpm -q --qf "%(NAME)-%(VERSION)-%(RELEASE)-%(ARCH)\n" compat-libstdc++-33
compat-libstdc++-33 compat-libstdc++-33-3.2.3-61.i386
compat-libstdc++-33 compat-libstdc++-33-3.2.3-61.1386

Inappropriate SElinux settings

Problem: The OS agent deployment fails because SElinux is set to
permissive or enforcing. SElinux is a set of extra security restrictions on
top of the normal Linux security tools. The permissive or enforcing
SElinux setting is too restrictive for agent installation.

Solution: To solve this problem, disable SElinux, run the prelink -a
command, and deploy the OS agent again. To disable SElinux, complete
the following steps:
1. Open the /etc/selinux/config file.
2. Set the SELINUX parameter to disabled.
3. Restart the system.

Missing Secure Shell

Problem: The OS agent deployment fails because Secure Shell is not
installed on the system.

Solution: Install Secure Shell on the target Linux system and deploy the
OS agent again.

Missing Korn shell

Problem: The OS agent deployment fails because Korn shell is not installed
on the system.

Solution: IBM Tivoli Monitoring requires ksh to run the installation
program. To solve this problem, install ksh on the target system and
deploy the OS agent again.
UNIX OS agent

The following reasons might cause the failure of UNIX OS agent installation.

**Missing Secure Shell**

**Problem:** The OS agent deployment fails because Secure Shell is not installed on the system.

**Solution:** Install Secure Shell on the target UNIX system and deploy the OS agent again.

**Missing Korn shell**

**Problem:** The OS agent deployment fails because Korn shell is not installed on the system.

**Solution:** IBM Tivoli Monitoring requires ksh to run the installation program. To solve this problem, install ksh on the target system and deploy the OS agent again.

**Unknown host name issue**

**Problem:** Remote agent deployment fails because of the unknown host name of the monitoring server.

**Solution:** Agent cannot connect to the monitoring server by using the host name. Use IP address of the computer on which the monitoring server is running.

---

**Fails to log on to Tivoli Enterprise Portal**

**Problem:** Click IBM Tivoli Enterprise Portal Web Client to log on, however, the browser hangs and gives no response.

**Solution:** To resolve this problem, take one of the following actions:

- Click IBM Tivoli Enterprise Portal Webstart Client to log on.
- Remove the files in the C:\Documents and Settings\Administrator\Application Data\IBM\Java\Development\cache directory and then log on.

---

**Cannot access Tivoli Enterprise Portal Web client**

When you want to access the Tivoli Enterprise Portal Web client, the operation fails with the KFWITM474E error message displayed. To solve the problem, allocate enough memory for the Java™ applet, which is required for the client to connect to the portal server.

**Problem:** When you use the Web client to visit Tivoli Enterprise Portal, the operation fails and the KFWITM474E error message is displayed.

**Solution:** When the browser client connects to the Tivoli Enterprise Portal Server, it downloads a Java applet. Allocate enough memory for the applet to avoid out-of-memory problems. The instructions are available in the IBM Tivoli Monitoring Administrator's Guide (See http://pic.dhe.ibm.com/infocenter/tivihelp/v63r1/topic/com.ibm.itm.doc_6.2.3fp1/adminuse/clientbrowser_javamemory_itm.htm).
Section names in English

**Problem:** During the deployment procedure, the section names on the window for configuring parameters are displayed in English for a non-English version.

**Solution:** No solution.
Appendix A. Accessibility

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

The major accessibility features in this product enable users in the following ways:

• Use assistive technologies, such as screen-reader software and digital speech synthesizer, to hear what is displayed on the screen. Consult the product documentation of the assistive technology for details on using those technologies with this product.
• Operate specific or equivalent features using only the keyboard.
• Magnify what is displayed on the screen.

In addition, the product documentation was modified to include the following features to aid accessibility:

• All documentation is available in both HTML and convertible PDF formats to give the maximum opportunity for users to apply screen-reader software.
• All images in the documentation are provided with alternative text so that users with vision impairments can understand the contents of the images.

Navigating the interface using the keyboard

Standard shortcut and accelerator keys are used by the product and are documented by the operating system. See the documentation provided by your operating system for more information.

Magnifying what is displayed on the screen

You can enlarge information in the product windows using facilities provided by the operating systems on which the product is run. For example, in a Microsoft Windows environment, you can lower the resolution of the screen to enlarge the font sizes of the text on the screen. See the documentation provided by your operating system for more information.
Appendix B. Planning and deployment checklists

The planning and deployment checklists can help you correctly plan the installation and set up the monitoring environment quickly. Tasks in the checklists are necessary and required for you to set up the environment and get started with SmartCloud Application Performance Management Entry Edition - VM Image. Print the checklists and complete the tasks one after another.

Table 6. Planning activities checklist

<table>
<thead>
<tr>
<th>What to do</th>
<th>Comments</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Collect VMware hypervisor information that is required for deploying virtual machines.</td>
<td>Example: Collect ESX and storage information of the virtual machines on which the virtual machine images will be deployed from the VMware administrator.</td>
<td>Example: Complete</td>
</tr>
<tr>
<td>2. Determine the hardware that is required for virtual machine deployment.  (See the “Hardware requirements” on page 14 section)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Determine the software that is required for deploying the 2 virtual machine images.  (See the “Software requirements” on page 15 section)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Discuss with network administrators to determine the network configuration parameters for the two virtual machines. Gather the required configuration information and complete the worksheets in Table 7 and Table 8 on page 66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7. Worksheet of configuration parameters for virtual machine image for Tivoli Data Warehouse. The table lists the configuration parameters that are required for deploying virtual machine image for Tivoli Data Warehouse.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default locale configuration</td>
<td>(*) Language</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Territory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Encoding</td>
<td></td>
</tr>
<tr>
<td>System Network Configuration</td>
<td>(*) Hostname</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Optional) Domain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) IP address</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Netmask</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Gateway</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Optional) Primary DNS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Optional) Secondary DNS</td>
<td></td>
</tr>
</tbody>
</table>
Table 7. Worksheet of configuration parameters for virtual machine image for Tivoli Data Warehouse (continued). The table lists the configuration parameters that are required for deploying virtual machine image for Tivoli Data Warehouse.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root Password Configuration</td>
<td>(*) Password (root)</td>
<td></td>
</tr>
<tr>
<td>Virtuser Password Configuration</td>
<td>(*) Password (virtuser)</td>
<td></td>
</tr>
<tr>
<td>Tivoli Data Warehouse Configuration</td>
<td>(*) IP Address of the IBM Tivoli Monitoring virtual machine</td>
<td></td>
</tr>
<tr>
<td>Tivoli Integrated Portal Configuration</td>
<td>(*) Password of sysadmin</td>
<td></td>
</tr>
</tbody>
</table>

* denotes a required field. For descriptions of each configuration parameter, see Table 3 on page 18.

Table 8. Worksheet of configuration parameters for virtual machine image for IBM Tivoli Monitoring. The table lists the configuration parameters that are required for deploying virtual machine image for IBM Tivoli Monitoring.

<table>
<thead>
<tr>
<th>Section</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default locale configuration</td>
<td>(*) Language</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Territory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Encoding</td>
<td></td>
</tr>
<tr>
<td>System Network Configuration</td>
<td>(*) Hostname</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Optional) Domain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) IP address</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Netmask</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Gateway</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Optional) Primary DNS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Optional) Secondary DNS</td>
<td></td>
</tr>
<tr>
<td>Root Password Configuration</td>
<td>(*) Password (root)</td>
<td></td>
</tr>
<tr>
<td>Virtuser Password Configuration</td>
<td>(*) Password (virtuser)</td>
<td></td>
</tr>
<tr>
<td>IBM Tivoli Monitoring Configuration</td>
<td>(*) IP address of the Tivoli Data Warehouse virtual machine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(*) Password of sysadmin</td>
<td></td>
</tr>
</tbody>
</table>

* denotes a required field. For descriptions of each configuration parameter, see Table 4 on page 21.

Table 9. Deployment activities checklist

<table>
<thead>
<tr>
<th>What to do</th>
<th>Comments</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Deploy the virtual machine image for Tivoli Data Warehouse. (See &quot;Deploying the virtual machine image for Tivoli Data Warehouse&quot; on page 17)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9. Deployment activities checklist (continued)

<table>
<thead>
<tr>
<th>What to do</th>
<th>Comments</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Power on the virtual machine image for Tivoli Data Warehouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Deploy the virtual machine image for IBM Tivoli Monitoring (See “Deploying the virtual machine image for IBM Tivoli Monitoring” on page 20)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Power on the virtual machine image for IBM Tivoli Monitoring</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 5. Wait for at least 10 minutes after the first time you power on the two virtual machines. Open the Launch Pad by using one of the following addresses:  
  • Tivoli Enterprise Portal Web Start client:  
    http://itm_vm_hostname:1920///cnp/kdh/lib/tep.jnlp  
  • Tivoli Enterprise Portal Web client:  
  where *itm_vm_hostname* is the fully qualified host name or IP address of the virtual machine to which the virtual machine image for IBM Tivoli Monitoring is deployed.  
**Tip:** You can create a shortcut for the Web Start client by following the instructions in the *IBM Tivoli Monitoring Installation and Setup Guide* (See Manually creating a shortcut for the Web Start client).  
6. If you cannot access the Tivoli Enterprise Portal Web Start client or Web client after 15 minutes, check whether the host is available. Errors that occur during the configuration might cause this failure. To recover the configuration during deployment, see “Recovering the deployment and reconfiguration” on page 34. |          |        |

Table 10. Agent deployment activities checklist

<table>
<thead>
<tr>
<th>What to do</th>
<th>Comments</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Deploy the OS agent on the target system that hosts the application to be monitored. See “Deploying an OS monitoring agent” on page 25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Identify the applications that you want to monitor. It determines which monitoring agent you must deploy on the system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Prepare the configuration information that is required by the agent remote deployment. See Appendix I, “Agent configuration information for remote deployment,” on page 81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Table 10. Agent deployment activities checklist (continued)**

<table>
<thead>
<tr>
<th>What to do</th>
<th>Comments</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Deploy the application monitoring agent by using the Launch Pad. See &quot;Deploying monitoring for applications&quot; on page 30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix C. Agent installation images contained in the virtual machine image for IBM Tivoli Monitoring

The installation images of the following agents are included in the virtual machine image for IBM Tivoli Monitoring. If you want to deploy them to a machine to monitor an application, you can do it from the Launch Pad.

Table 11. Agent installation images contained in the virtual machine image for IBM Tivoli Monitoring

<table>
<thead>
<tr>
<th>Agent name</th>
<th>Supported operating systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITCAM Agent for DB2 Version 7.1</td>
<td>Windows 64, AIX 64, Linux Intel, Linux x86-64, Solaris 64</td>
</tr>
<tr>
<td>ITCAM Agent for HTTP Servers Version 7.1.0.3 Interim Fix 4</td>
<td>Windows 64, Linux Intel, Linux x86-64</td>
</tr>
<tr>
<td>ITCAM Extended Agent for Oracle Database Version 6.3.1 Fix Pack 1</td>
<td>Windows 64, AIX 64, Linux Intel, Linux x86-64, Solaris 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Active Directory agent</td>
<td>Windows 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Cluster Server agent</td>
<td>Windows 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Exchange Server agent</td>
<td>Windows 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Hyper-V Server agent</td>
<td>Windows 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Internet Information Services agent</td>
<td>Windows 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: .NET Framework agent</td>
<td>Windows 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: SharePoint Server agent</td>
<td>Windows 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: SQL Server agent</td>
<td>Windows 64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Transactions Version 7.3.0.1: Internet Service Monitoring</td>
<td>Windows, Linux Intel, Linux x86-64</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Transactions Version 7.3.0.1: Web Response Time agent</td>
<td>Windows, AIX64, Linux Intel, Linux x86-64</td>
</tr>
<tr>
<td>IBM Tivoli Monitoring for Virtual Environments Version 7.1 Agent for Linux Kernel-based Virtual Machines</td>
<td>Linux Intel, Linux x86-64</td>
</tr>
<tr>
<td>Agent name</td>
<td>Supported operating systems</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>IBM Tivoli Monitoring for Virtual Environments Version 7.1 Agent for VMware VI</td>
<td>Windows 64, Linux Intel, Linux x86-64</td>
</tr>
<tr>
<td>IBM Tivoli Monitoring for Virtual Environments Version 7.1 Network Devices agent</td>
<td>Windows, Linux Intel, Linux x86-64</td>
</tr>
</tbody>
</table>
Appendix D. Agent installation images contained in separate packages

The installation images of the following agents for remote deployment are included in separate packages. If you want to deploy them to a machine to monitor an application, you must first upload the agent installation images to the machine on which the virtual machine image for IBM Tivoli Monitoring is deployed. Then you can deploy the agents from the Launch Pad.

Table 12. Agent installation images for remote deployment contained in separate packages

<table>
<thead>
<tr>
<th>Agent name</th>
<th>Supported operating systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITCAM Agent for DB2 Version 7.1</td>
<td>HP, zLinux, Linux ia64, AIX 32, Solaris 32</td>
</tr>
<tr>
<td>ITCAM Agent for HTTP Servers Version 7.1.0.3 Interim Fix 4</td>
<td>HP, zLinux, Linux ppc, AIX 32, Solaris 32</td>
</tr>
<tr>
<td>ITCAM Extended Agent for Oracle Database Version 6.3.1 Fix Pack 1</td>
<td>HP, zLinux, Linux ia64, Linux ppc, AIX 32, Solaris 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Active Directory agent</td>
<td>Windows 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Cluster Server agent</td>
<td>Windows 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Exchange Server agent</td>
<td>Windows 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Hyper-V Server agent</td>
<td>Windows 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: Internet Information Services agent</td>
<td>Windows 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: .NET Framework agent</td>
<td>Windows 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: SharePoint Server agent</td>
<td>Windows 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3 Fix Pack 1: SQL Server agent</td>
<td>Windows 32</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Transactions Version 7.3.0.1: Internet Service Monitoring</td>
<td>AIX, zLinux, Solaris</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Transactions Version 7.3.0.1: Web Response Time agent</td>
<td>AIX 32, zLinux, HP, Solaris 32</td>
</tr>
<tr>
<td>IBM Tivoli Monitoring for Virtual Environments Version 7.1 Agent for VMware VI</td>
<td>Windows 32, zLinux</td>
</tr>
</tbody>
</table>
Table 12. Agent installation images for remote deployment contained in separate packages (continued)

<table>
<thead>
<tr>
<th>Agent name</th>
<th>Supported operating systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITCAM Agent for Lotus Domino Version 6.2.1</td>
<td>All platforms</td>
</tr>
<tr>
<td>ITCAM Agent for Sybase ASE Version 6.2</td>
<td>All platforms</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3.0 Fix Pack 1: Microsoft BizTalk Server agent</td>
<td>Windows</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3.0 Fix Pack 1: Microsoft Host Integration Server agent</td>
<td>Windows</td>
</tr>
<tr>
<td>IBM Tivoli Composite Application Manager for Microsoft Applications Version 6.3.0 Fix Pack 1: Microsoft Lync Server agent</td>
<td>Windows</td>
</tr>
<tr>
<td>IBM Tivoli Monitoring for Virtual Environments Version 7.1: NetApp Storage Agent</td>
<td>Windows, Linux</td>
</tr>
</tbody>
</table>

Full installation images for the components listed in Table 13 are included in the packages. If you want to deploy them to a computer, follow the instructions at “Preparing agent installation images” on page 31 to obtain the installation images and then install the component. See the following user's guide of the component for installation instructions:

Table 13. Components for which full installation images are contained in separate packages

<table>
<thead>
<tr>
<th>Agent name</th>
<th>Link to user's guide</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Tivoli Monitoring Version 6.2.3 Fix Pack 1: Agent Builder</td>
<td><code>Agent Builder User's Guide</code></td>
</tr>
</tbody>
</table>
Appendix E. Supplied user names and passwords

SmartCloud Application Performance Management Entry Edition - VM Image includes the user names and passwords that you can use directly. You can also change the default passwords when you deploy the virtual machine images or with operating system administration afterwards. After you change some of default passwords, the associated components must be reconfigured.

Table 14. Supplied user names and passwords

<table>
<thead>
<tr>
<th>User name</th>
<th>Description</th>
<th>Predefined password</th>
<th>What to do after password change</th>
</tr>
</thead>
<tbody>
<tr>
<td>db2inst1</td>
<td>DB2 instance user. It is used to start and stop DB2 instance and DB2 agent.</td>
<td>helloibm</td>
<td>Reconfigure the Tivoli Enterprise Portal Server</td>
</tr>
</tbody>
</table>
| itmuser   | Tivoli Data Warehouse schema user. It is used to access Tivoli Data Warehouse. | helloibm             | Reconfigure the following components:  
- Tivoli Enterprise Portal Server  
- Warehouse Proxy Agent  
- Summarizing and Pruning Agent  
- Performance Analyzer Agent  
- Tivoli Common Reporting data source |
| root      | Root user. You can change its password during deployment. | helloibm             |                                    |
| sysadmin  | IBM Tivoli Monitoring user. It is used to log on to Tivoli Enterprise Portal and Launchpad, and set IBM Tivoli Monitoring for Virtual Environments Dashboard and set IBM SmartCloud Application Performance Management UI data providers. You can change its password during deployment. | helloibm             | Update the Tivoli Enterprise Portal logon credentials. For instruction, see Appendix F, "Updating Tivoli Enterprise Portal logon credentials," on page 75. |
| tipadmin  | Tivoli Integrated Portal user. It is used to log on to SmartCloud Application Performance Management UI, Tivoli Common Reporting, and IBM Tivoli Monitoring for Virtual Environments Dashboard. The user name and password are also required when stopping Tivoli Common Reporting or Tivoli Integrated Portal. | helloibm             | Update the following files with the new password. These files are in the /opt/ibm/ae/AS directory on the Tivoli Data Warehouse virtual machine.  
- ConfigTCR.sh  
- Config.sh  
- auto_config_apmwl.sh |
<table>
<thead>
<tr>
<th>User name</th>
<th>Description</th>
<th>Predefined password</th>
<th>What to do after password change</th>
</tr>
</thead>
<tbody>
<tr>
<td>virtuser</td>
<td>Non-root user. You can change the password during deployment.</td>
<td>helloibm</td>
<td></td>
</tr>
</tbody>
</table>
Appendix F. Updating Tivoli Enterprise Portal logon credentials

The Tivoli Enterprise Portal logon user ID and password are save in a file, which is used for internal communications between IBM Tivoli Monitoring components. When you change the Tivoli Enterprise Portal logon user ID and password, you must update this file with the new logon credentials by using the Launch Pad. Otherwise the deployment of OS agents will fail.

Procedure
1. On the Launch Pad, click Maintain Appliance.
2. On the Select Actions page, click Next in the Update ITM Credential field.
3. Enter the Tivoli Enterprise Portal logon credentials, which include the user ID and password that you have changed, and click Submit. You must enter the password twice.
4. After the update process is complete, click OK to close the prompt window.
5. To return to the Select Actions page, click Complete.
Appendix G. Starting and stopping components on the virtual machines

If you want to maintain a virtual machine, you must first stop the components on the virtual machine.

Before you maintain a virtual machine, use one of the following commands to stop the components on the virtual machine:

- If the virtual machine you want to maintain is the one on which the virtual machine image for IBM Tivoli Monitoring is deployed, run the following command to stop the components on the virtual machine:
  
  ```
  /opt/ibm/ae/AS/StopAll.sh
  ```

- If the virtual machine you want to maintain is the one on which the virtual machine image for Tivoli Data Warehouse is deployed, run the following command to stop the components on the virtual machine:

  ```
  /opt/ibm/ae/AS/StopAll.sh tipadmin_password
  ```

  where `tipadmin_password` is the password for the tipadmin user ID.

After you finish maintaining the virtual machine, use the following command to start the components on the virtual machine:

```
/opt/ibm/ae/AS/StartAll.sh
```
Appendix H. Requirements for deploying OS agents

The Launch Pad requires some specific conditions to be met before an OS agent can be deployed. Reference the following information to figure out these requirements for OS agent deployment.

- The Launch Pad uses the `tacmd createNode` command to deploy OS agents. Make sure that the requirements that listed in the Requirements for the `tacmd createNode` command section of the IBM Tivoli Monitoring Installation and Setup Guide are met.

- Remote Execution and Access (RXA) is used to establish a connection with a remote computer. RXA is an IBM developer toolkit that provides classes and methods to create an application that can establish a connection with a remote computer, log on to a remote computer, run commands and scripts on a remote computer (including installation and uninstallation), and manipulate the remote computer's files and directories. If you want to deploy an OS agent on a Windows system, first read the Windows targets and Disabling user account control to facilitate RXA in the IBM Tivoli Monitoring Installation and Setup Guide and make sure that the Windows system meets the specific requirements.
Appendix I. Agent configuration information for remote deployment

When you remotely deploy an agent, you might have to provide agent-specific configuration parameters. Detailed information about the configuration parameters that are required by remote deployment is available in the agent user’s guide.

Use the following web pages to get detailed descriptions of remote configuration parameters for your concerned agent.

Table 15. Location of agent configuration information for remote deployment in the product information center

<table>
<thead>
<tr>
<th>Component</th>
<th>Configuration parameters for remote deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITCAM Agent for DB2</td>
<td>Basic installation and configuration</td>
</tr>
<tr>
<td>ITCAM Agent for HTTP Servers</td>
<td>Configure ITCAM Agent for HTTP Servers</td>
</tr>
<tr>
<td>ITCAM Agent for Lotus Domino</td>
<td>Configuring the monitoring agent after installation</td>
</tr>
<tr>
<td>ITCAM Agent for Sybase ASE</td>
<td>Configuration settings</td>
</tr>
<tr>
<td>ITCAM Extended Agent for Oracle Database</td>
<td>Configuring the agent through the Manage Tivoli Monitoring Services tool</td>
</tr>
<tr>
<td>ITCAM for Microsoft Active Directory Agent</td>
<td>Agent-specific installation and configuration</td>
</tr>
<tr>
<td>ITCAM for Microsoft BizTalk Server Agent</td>
<td>Configuration values</td>
</tr>
<tr>
<td>ITCAM for Microsoft Cluster Server Agent</td>
<td>Configuration values</td>
</tr>
<tr>
<td>ITCAM for Microsoft Exchange Server Agent</td>
<td>Configuring the agent through the Manage Tivoli Monitoring Services tool</td>
</tr>
<tr>
<td>ITCAM for Microsoft Host Integration Server Agent</td>
<td>N/A</td>
</tr>
<tr>
<td>ITCAM for Microsoft Hyper-V Server Agent</td>
<td>Configuration values</td>
</tr>
<tr>
<td>ITCAM for Microsoft Internet Information Server Agent</td>
<td>Configuration values</td>
</tr>
<tr>
<td>ITCAM for Microsoft Lync Server Agent</td>
<td>N/A</td>
</tr>
<tr>
<td>ITCAM for Microsoft .NET Framework Agent</td>
<td>No specific information is required.</td>
</tr>
<tr>
<td>ITCAM for Microsoft SharePoint Server Agent</td>
<td>Configuration values</td>
</tr>
<tr>
<td>ITCAM for Microsoft SQL Server Agent</td>
<td>Configuration values</td>
</tr>
<tr>
<td>ITCAM Agent for Transactions: Web Response Time Agent</td>
<td>Configuring Web Response Time</td>
</tr>
<tr>
<td>ITCAM Agent for Transactions: Internet Service Monitoring</td>
<td>Configuring Internet Service Monitoring</td>
</tr>
<tr>
<td>IBM Tivoli Monitoring Agent for Network Devices</td>
<td>Configuration values</td>
</tr>
<tr>
<td>IBM Tivoli Monitoring for Virtual Environments Agent for Linux Kernel-based Virtual Machines</td>
<td>Configuration values</td>
</tr>
</tbody>
</table>
Table 15. Location of agent configuration information for remote deployment in the product information center (continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>Configuration parameters for remote deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM Tivoli Monitoring for Virtual Environments Agent for NetApp Storage</td>
<td>Configuration values</td>
</tr>
<tr>
<td>IBM Tivoli Monitoring for Virtual Environments Agent for VMware VI</td>
<td>Configuration values</td>
</tr>
</tbody>
</table>
Historical reports that are generated by Tivoli Common Reporting for each monitoring agent include summarized data that is collected in the Tivoli Data Warehouse. For descriptions of the agent historical reports and associated attribute groups, see the agent-specific documentation.

Use the following web pages to get detailed information of historical reports for your concerned agent.

Table 16. Tivoli Common Reporting information for the monitoring agent in the product information center

<table>
<thead>
<tr>
<th>Component</th>
<th>Report group in Tivoli Common Reporting</th>
<th>Descriptions of agent data model and reports</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITCAM Agent for DB2</td>
<td>IBM Tivoli Composite Application Manager Agent for DB2</td>
<td>ITCAM agent for DB2 data model and reports for Tivoli Common Reporting (Cognos)</td>
</tr>
<tr>
<td>ITCAM for Microsoft Active Directory Agent</td>
<td>ITCAMMA Active Directory Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft BizTalk Server Agent</td>
<td>ITCAMMA BizTalk Server Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft Cluster Server Agent</td>
<td>ITCAMMA Cluster Server Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft Exchange Server Agent</td>
<td>ITCAMMA Exchange Server Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft Host Integration Server Agent</td>
<td>ITCAMMA HIS Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft Hyper-V Server Agent</td>
<td>ITCAMMA Hyper-V Server Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft Internet Information Server Agent</td>
<td>ITCAMMA IIS Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft Lync Server Agent</td>
<td>ITCAMMA LyncServer Cognos Reports</td>
<td>N/A</td>
</tr>
<tr>
<td>ITCAM for Microsoft .NET Framework Agent</td>
<td>ITCAMMA DotNet Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft SharePoint Server Agent</td>
<td>ITCAMMA SharePoint Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Microsoft SQL Server Agent</td>
<td>ITCAMMA SQL Server Cognos Reports</td>
<td>Tivoli Common Reporting for the monitoring agent</td>
</tr>
<tr>
<td>ITCAM for Transactions: Web Response Time Agent</td>
<td>• ITCAM for Transactions (Analysis)</td>
<td>Viewing trends with reports</td>
</tr>
<tr>
<td></td>
<td>• ITCAM for Transactions (Query)</td>
<td></td>
</tr>
</tbody>
</table>
Table 16. Tivoli Common Reporting information for the monitoring agent in the product information center (continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>Report group in Tivoli Common Reporting</th>
<th>Descriptions of agent data model and reports</th>
</tr>
</thead>
</table>
| IBM Tivoli Monitoring for Virtual Environments Performance and Capacity Management Reports | • IBM Tivoli Capacity Analytics Reports  
• IBM Tivoli Monitoring for Virtual Environments Reports | IBM Tivoli Monitoring for Virtual Environments Performance and Capacity Management Reports |
| IBM Tivoli Monitoring: Monitoring Agent for Linux OS | IBM Tivoli Monitoring OS Agents Reports | Tivoli Common Reporting for the monitoring agent |
| IBM Tivoli Monitoring: Monitoring Agent for UNIX OS | IBM Tivoli Monitoring OS Agents Reports | Tivoli Common Reporting for the monitoring agent |
| IBM Tivoli Monitoring: Monitoring Agent for Windows OS | IBM Tivoli Monitoring OS Agents Reports | Tivoli Common Reporting for the monitoring agent |
Appendix K. Configuring the network of the virtual machines

There are two ways that you can configure or re-configure the virtual machine network. You can either use the YaST tool or use the provided ConfigNET.sh script to configure the network parameters.

Procedure

- Log on the virtual machine. Start YaST, and go to Network Devices > Network Settings. Set the network parameters that you want to configure.
- Log on the virtual machine and run the following command:

```
/opt/ibm/ae/AS/ConfigNET.sh -bootproto <boot_protocol> -hostname <host_name>
-domin <domain> -ipaddr <ip_address> -netmask <net_mask>
-gateway <gateway> -pri_dns <primary_dns> -sec_dns <secondary_dns>
```

where `<boot_protocol>` is the boot protocol. `<host_name>` is the host name. `<domain>` is the domain name. `<ip_address>` is the IP address. `<net_mask>` is the net mask. `<gateway>` is the gateway. `<primary_dns>` is the primary DNS server. `<secondary_dns>` is the secondary DNS server.

What to do next

After you change the network configuration of the virtual machine, you must reconfigure the components that are running on the virtual machine. For instructions, see “Recovering the deployment and reconfiguration” on page 34.
Appendix L. Disk capacity planning for historical data

Disk capacity planning for an agent is a prediction of the amount of disk space to be consumed for each attribute group whose historical data is being collected. Required disk storage is an important factor to consider when you are defining data collection rules and your strategy for historical data collection.

Historical data collection is enabled for some attribute groups of each agent by default. Use the following tables for disk capacity planning for the agent historical data. IBM SmartCloud Application Performance Management Entry Edition - VM Image provides 150 GB disk for Tivoli Data Warehouse to restore historical data by default. If more disk space is required, you can either allocate more disk space for Tivoli Data Warehouse or stop historical data collections for the undesired attribute groups.

The following information that is required to calculate disk space is provided for each agent:

- **Table**  
  Table is the table name that is displayed in the warehouse database.

- **Attribute group**  
  Attribute group is the name of the attribute group that is used to create the table in the warehouse database if the name is short enough to fit in the warehouse table naming constraints.

- **Bytes per instance (agent)**  
  Byte per instance (agent) is an estimate of the record length for each row or instance that is written to the agent disk for historical data collection. This estimate can be used for agent disk space planning purposes.

- **Database bytes per instance (warehouse)**  
  Database bytes per instance (warehouse) is an estimate of the record length for detailed records that are written to the warehouse database, if the attribute group is configured to be written to the warehouse. Detailed records are records that were uploaded from the agent for long-term historical data collection. This estimate can be used for warehouse disk-space planning purposes.

- **Aggregated bytes per instance (warehouse)**  
  Aggregated bytes per instance (warehouse) is an estimate of the record length for aggregate records that are written to the warehouse database, if the attribute group is configured to be written to the warehouse. Aggregate records are created by the Summarization agent for attribute groups that were configured for summarization. This estimate can be used for warehouse disk-space planning purposes.

- **Agent collection interval**  
  Agent collection interval indicates how often the agent collects historical data. For example, 5 minutes means that the agent collects historical data for the attribute group every 5 minutes.

- **Warehouse interval**  
  Warehouse interval indicates how often historical data that is collected by an agent is written to Tivoli Data Warehouse. For example, 1 hour means the agent historical data is written to the warehouse once an hour.
Raw data retention
Raw data retention indicates how long the original agent historical data that has not been pruned remains in Tivoli Data Warehouse.

Hourly data retention
Hourly data retention indicates how long the hourly data is retained in the warehouse. Hourly data is captured by pruning the raw data every hour.

Daily data retention
Daily data retention indicates how long the daily data is retained in the warehouse. Daily data is captured by pruning the raw data every day.

Weekly data retention
Weekly data retention indicates how long the weekly data is retained in the warehouse. Weekly data is captured by pruning the raw data every week.

Expected number of instances
Expected number of instances is a guideline that can be different for each attribute group, because it is the number of instances of data that the agent returns for a given attribute group, and depends upon the application environment that is being monitored. For example, if your attribute group is monitoring each processor on your workstation and you have a dual processor workstation, the number of instances is 2.

Linux OS agent

Table 17. Capacity planning for historical data logged by Linux OS agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
<th>Expected number of instances</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLZCPU</td>
<td>KLZ_CPU</td>
<td>140</td>
<td>228</td>
<td>622</td>
<td>Processor number</td>
</tr>
<tr>
<td>KLZDISK</td>
<td>KLZ_Disk</td>
<td>716</td>
<td>733</td>
<td>1098</td>
<td>N/A</td>
</tr>
<tr>
<td>LNXVM</td>
<td>Linux_VM_Stats</td>
<td>220</td>
<td>371</td>
<td>1152</td>
<td>N/A</td>
</tr>
<tr>
<td>KLZNET</td>
<td>KLZ_Network</td>
<td>385</td>
<td>411</td>
<td>1256</td>
<td>N/A</td>
</tr>
<tr>
<td>KLZSYS</td>
<td>KLZ_System_Statistics</td>
<td>264</td>
<td>361</td>
<td>1289</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 18. Capacity planning for historical data logged by Linux OS agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KLZCPU</td>
<td>5 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>3 months</td>
<td>N/A</td>
</tr>
<tr>
<td>KLZDISK</td>
<td>1 hour</td>
<td>1 hour</td>
<td>7 days</td>
<td>N/A</td>
<td>6 months</td>
</tr>
<tr>
<td>LNXVM</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>N/A</td>
<td>1 year</td>
</tr>
<tr>
<td>KLZNET</td>
<td>5 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>N/A</td>
<td>3 months</td>
</tr>
<tr>
<td>KLZSYS</td>
<td>5 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>3 months</td>
<td>1 year</td>
</tr>
</tbody>
</table>
## Windows OS agent

**Table 19. Capacity planning for historical data logged by Windows OS agent (Part 1)**

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
<th>Expected number of instances</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTMEMORY</td>
<td>NT_Memory_64</td>
<td>376</td>
<td>415</td>
<td>1966</td>
<td>N/A</td>
</tr>
<tr>
<td>WTLOGCLDSK</td>
<td>NT_Logical_Disk</td>
<td>408</td>
<td>327</td>
<td>1192</td>
<td>N/A</td>
</tr>
<tr>
<td>WTSYSTEM</td>
<td>NT_System</td>
<td>924</td>
<td>824</td>
<td>1788</td>
<td>N/A</td>
</tr>
<tr>
<td>NTPROCSSR</td>
<td>NT_Processor</td>
<td>220</td>
<td>219</td>
<td>646</td>
<td>Processor number</td>
</tr>
<tr>
<td>WTSERVER</td>
<td>NT_Server</td>
<td>392</td>
<td>285</td>
<td>1171</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Table 20. Capacity planning for historical data logged by Windows OS agent (Part 2)**

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>NTMEMORY</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>N/A</td>
<td>1 year</td>
<td>N/A</td>
</tr>
<tr>
<td>WTLOGCLDSK</td>
<td>1 hour</td>
<td>1 hour</td>
<td>7 days</td>
<td>N/A</td>
<td>6 months</td>
<td>N/A</td>
</tr>
<tr>
<td>WTSYSTEM</td>
<td>5 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>N/A</td>
<td>N/A</td>
<td>1 year</td>
</tr>
<tr>
<td>NTPROCSSR</td>
<td>5 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>3 months</td>
<td>1 year</td>
<td>N/A</td>
</tr>
<tr>
<td>WTSERVER</td>
<td>5 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>N/A</td>
<td>3 months</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## DB2 agent

**Table 21. Capacity planning for historical data logged by DB2 OS agent (Part 1)**

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
<th>Expected number of instances</th>
</tr>
</thead>
<tbody>
<tr>
<td>KUD4238000</td>
<td>System Overview</td>
<td>1590</td>
<td>1610</td>
<td>4270</td>
<td>1 instance per DB2 instance</td>
</tr>
<tr>
<td>KUDTABSPC</td>
<td>Table space</td>
<td>1754</td>
<td>1963</td>
<td>4726</td>
<td>Number of table spaces per database, default is 4</td>
</tr>
<tr>
<td>KUD3437500</td>
<td>Database00</td>
<td>1850</td>
<td>1870</td>
<td>4260</td>
<td>Number of databases per instance</td>
</tr>
<tr>
<td>KUDTABLE</td>
<td>Table</td>
<td>304</td>
<td>378</td>
<td>596</td>
<td>Number of tables per database</td>
</tr>
<tr>
<td>KUDAPPL00</td>
<td>Application00 (group 00)</td>
<td>3802</td>
<td>3957</td>
<td>6924</td>
<td>Number of applications using DB2 instance</td>
</tr>
</tbody>
</table>

Appendix L. Disk capacity planning for historical data
### Table 22. Capacity planning for historical data logged by DB2 OS agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KUD4238000</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KUDTABLESPC</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KUD3437500</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KUDTABLE</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KUDAPPL00</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
</tbody>
</table>

### Microsoft SQL Server agent

### Table 23. Capacity planning for historical data logged by Microsoft SQL Server agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
<th>Expected number of instances</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOQSRVS</td>
<td>MS_SQL_Server_Summary</td>
<td>1 row per monitored server instance</td>
</tr>
<tr>
<td>KOQJOBS</td>
<td>MS_SQL_Job_Summary</td>
<td>1 row per monitored server instance</td>
</tr>
<tr>
<td>KOQPRCS</td>
<td>MS_SQL_Process_Summary</td>
<td>1 row per monitored SQL Server instance</td>
</tr>
<tr>
<td>KOQPRCD</td>
<td>MS_SQL_Process_Detail</td>
<td>1 row for each database process in each monitored SQL Server instance</td>
</tr>
<tr>
<td>KOQDBD</td>
<td>MS_SQL_Database_Detail</td>
<td>1 row for each database in each monitored SQL Server instance</td>
</tr>
<tr>
<td>KOQDBS</td>
<td>MS_SQL_Database_Summary</td>
<td>1 row per monitored SQL Server instance</td>
</tr>
<tr>
<td>KOQLRTS</td>
<td>MS_SQL_Lock_Resource_Type_Summary</td>
<td>1 row for each database in each monitored SQL Server instance</td>
</tr>
</tbody>
</table>

### Table 24. Capacity planning for historical data logged by Microsoft SQL Server agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOQSRVS</td>
<td>450</td>
<td>712</td>
<td>2387</td>
</tr>
<tr>
<td>KOQJOBS</td>
<td>268</td>
<td>281</td>
<td>522</td>
</tr>
<tr>
<td>KOQPRCS</td>
<td>302</td>
<td>417</td>
<td>1225</td>
</tr>
<tr>
<td>KOQPRCD</td>
<td>934</td>
<td>975</td>
<td>1207</td>
</tr>
<tr>
<td>KOQDBD</td>
<td>2735</td>
<td>3028</td>
<td>4334</td>
</tr>
<tr>
<td>KOQDBS</td>
<td>266</td>
<td>288</td>
<td>559</td>
</tr>
<tr>
<td>KOQLRTS</td>
<td>244</td>
<td>285</td>
<td>529</td>
</tr>
</tbody>
</table>
Table 25. Capacity planning for historical data logged by Microsoft SQL Server agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KOQSRVS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KOQJOBS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KOQPRCS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KOQPRCD</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KOQDBD</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KOQDBS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KOQLRTS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
</tbody>
</table>

Microsoft SharePoint Server agent

Table 26. Capacity planning for historical data logged by Microsoft SharePoint Server agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
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<tbody>
<tr>
<td>KQPEXCELCA</td>
<td>KQP_EXCEL_CALCULATION_SERVICES</td>
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<td>KQPEXCELWE</td>
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<td>KQPDOCUMEN</td>
<td>KQP_DOCUMENT_CONVERSIONS</td>
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<tr>
<td>KQPSPPPVER</td>
<td>KQP_SHAREPOINT_COMPONENTS</td>
</tr>
<tr>
<td>KQPSHAREP0</td>
<td>KQP_SP_PUBLISHING_CACHE</td>
</tr>
<tr>
<td>KQPSPGSPFL</td>
<td>KQP_OFFICE_SEARCH_GATHERER_PROJECTS_FILTER</td>
</tr>
<tr>
<td>KQPSCHGPR2</td>
<td>KQP_SP_SEARCH_GATHERER_PROJECTS_FILTER</td>
</tr>
<tr>
<td>KQPSPSGFL</td>
<td>KQP_OFFICE_SEARCH_INDEXER_FILTER</td>
</tr>
<tr>
<td>KQPSPSRCG1</td>
<td>KQP_SP_SEARCH_ARCHIVAL_PLUGIN_FILTER</td>
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Table 27. Capacity planning for historical data logged by Microsoft SharePoint Server agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
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<tbody>
<tr>
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<td>KQPSPPPVER</td>
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<td>3296</td>
<td>3606</td>
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<tr>
<td>KQPAVAIL</td>
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Table 27. Capacity planning for historical data logged by Microsoft SharePoint Server agent (Part 2) (continued)

<table>
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<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
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<td>KQPOFSGPFL</td>
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<td>613</td>
<td>2810</td>
</tr>
<tr>
<td>KQPSCHGPR2</td>
<td>384</td>
<td>613</td>
<td>2810</td>
</tr>
<tr>
<td>KQPOFSRGFL</td>
<td>228</td>
<td>334</td>
<td>1814</td>
</tr>
<tr>
<td>KQPSPSRCG1</td>
<td>228</td>
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<td>1814</td>
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<tr>
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<td>432</td>
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<td>2978</td>
</tr>
<tr>
<td>KQPSRCHIP2</td>
<td>432</td>
<td>505</td>
<td>2978</td>
</tr>
<tr>
<td>KQPOSARPFL</td>
<td>232</td>
<td>243</td>
<td>802</td>
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<tr>
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<td>243</td>
<td>802</td>
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Table 28. Capacity planning for historical data logged by Microsoft SharePoint Server agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQPSEXCELCA</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPSEXCELWE</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPDOCUMEN</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPAAVAIL</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPSPPPER</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPSHAREP0</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPOFSGPFL</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPSCHGPR2</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPOFSRGFL</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPSPSRCG1</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPOSINPFL</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQPSRCHIP2</td>
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<td>7 days</td>
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<td>KQPOSARPFL</td>
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<td>7 days</td>
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<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
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</table>

Microsoft Internet Information Services agent

Table 29. Capacity planning for historical data logged by Microsoft Internet Information Services agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQ7WEBSERV</td>
<td>KQ7_WEB_SERVICE</td>
</tr>
<tr>
<td>KQ7ACTIVES</td>
<td>KQ7_ACTIVE_SERVER_PAGES</td>
</tr>
<tr>
<td>KQ7IISWEBS</td>
<td>KQ7_IIS_WEB_SERVER_SITE_STATUS</td>
</tr>
<tr>
<td>KQ7IISWEB1</td>
<td>KQ7_IIS_WEB_SERVER_STATUS</td>
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</table>
Table 30. Capacity planning for historical data logged by Microsoft Internet Information Services agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQ7WEBServ</td>
<td>392</td>
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<td>KQ7ACTIVES</td>
<td>192</td>
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<td>1337</td>
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<td>403</td>
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<td>KQ7IISWEB1</td>
<td>336</td>
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<td>374</td>
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Table 31. Capacity planning for historical data logged by Microsoft Internet Information Services agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ7ACTIVES</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ7IISWEBs</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ7IISWEB1</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
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</tbody>
</table>

Microsoft Hyper-V Server agent

Table 32. Capacity planning for historical data logged by Microsoft Hyper-V Server agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
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<tbody>
<tr>
<td>KHVAVAIL</td>
<td>KHV_AVAILABILITY</td>
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<tr>
<td>KHVGETPRO0</td>
<td>KHV_PROCESSOR</td>
</tr>
<tr>
<td>KHVHYPerv</td>
<td>KHV_HYPER_V_SUMMARY</td>
</tr>
<tr>
<td>KHVGETVIR0</td>
<td>KHV_VIRTUAL_MACHINE</td>
</tr>
<tr>
<td>KHVHYPervI</td>
<td>KHV_HYPERVERISOR</td>
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Table 33. Capacity planning for historical data logged by Microsoft Hyper-V Server agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
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<tbody>
<tr>
<td>KHVAVAIL</td>
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<td>3296</td>
<td>3606</td>
</tr>
<tr>
<td>KHVGETPRO0</td>
<td>236</td>
<td>242</td>
<td>396</td>
</tr>
<tr>
<td>KHVHYPerv</td>
<td>108</td>
<td>112</td>
<td>461</td>
</tr>
<tr>
<td>KHVGETVIR0</td>
<td>820</td>
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<td>1109</td>
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<td>KHVHYPervI</td>
<td>1186</td>
<td>1197</td>
<td>1234</td>
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Table 34. Capacity planning for historical data logged by Microsoft Hyper-V Server agent (Part 3)

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<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KHVAVAIL</td>
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<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KHVGETPRO0</td>
<td>15 minutes</td>
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<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KHVHYPERV</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KHVGETVIR0</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KHVHYPERVI</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
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</table>

Microsoft Exchange Server agent

Table 35. Capacity planning for historical data logged by Microsoft Exchange Server agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
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<tbody>
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<td>MS_Exchange_DB</td>
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<td>MSED5</td>
<td>MS_Exchange_DS</td>
</tr>
<tr>
<td>MSEISPRI</td>
<td>MS_Exchange_IS_Private</td>
</tr>
<tr>
<td>MSEISPB</td>
<td>MS_Exchange_IS_Public</td>
</tr>
<tr>
<td>MSEOWA</td>
<td>MS_Exchange_OWA</td>
</tr>
<tr>
<td>MSESERVR</td>
<td>MS_Exchange_Server</td>
</tr>
<tr>
<td>MSESGRPD</td>
<td>MS_Exchange_Storage_Group_Detail</td>
</tr>
<tr>
<td>MSESRCVD</td>
<td>MS_Exchange_Services_Detail</td>
</tr>
<tr>
<td>MSEMRSRM</td>
<td>MS_Exchange_Mailbox_Replication_Service_per_Mdb</td>
</tr>
</tbody>
</table>

Table 36. Capacity planning for historical data logged by Microsoft Exchange Server agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
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<tbody>
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<td>2173</td>
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<td>MSED5</td>
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<td>1197</td>
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<td>MSEISPRI</td>
<td>2868</td>
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<td>4672</td>
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<td>2864</td>
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<td>MSEOWA</td>
<td>204</td>
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<td>MSESERVR</td>
<td>771</td>
<td>803</td>
<td>942</td>
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<tr>
<td>MSESGRPD</td>
<td>2516</td>
<td>2554</td>
<td>2759</td>
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<td>MSESRCVD</td>
<td>512</td>
<td>508</td>
<td>545</td>
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<tr>
<td>MSEMRSRM</td>
<td>592</td>
<td>800</td>
<td>2362</td>
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Table 37. Capacity planning for historical data logged by Microsoft Exchange Server agent (Part 3)

<table>
<thead>
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<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSEDB</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>MSES</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>MSEISPRI</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>MSEISPB</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>MSEOWA</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
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<td>MSESERV</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>MSESGRP</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>MSESVC</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>MSEMRS</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
</tbody>
</table>

Microsoft Cluster Server agent

Table 38. Capacity planning for historical data logged by Microsoft Cluster Server agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
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</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>KQ5D60MEM</td>
<td>KQ5_MEMORY</td>
</tr>
<tr>
<td>KQ5D20NODE</td>
<td>KQ5_NODES</td>
</tr>
<tr>
<td>KQ5B20LOGI</td>
<td>KQ5_NODE_TO_ACTIVE_GROUP</td>
</tr>
<tr>
<td>KQ5D40CPU</td>
<td>KQ5_CPU_PER_NODE</td>
</tr>
<tr>
<td>KQ5F40NET</td>
<td>KQ5_NETWORK_PERFORMANCE</td>
</tr>
</tbody>
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Table 39. Capacity planning for historical data logged by Microsoft Cluster Server agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQ5D80HDD</td>
<td>328</td>
<td>339</td>
<td>883</td>
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<tr>
<td>KQ5D60MEM</td>
<td>256</td>
<td>270</td>
<td>931</td>
</tr>
<tr>
<td>KQ5D20NODE</td>
<td>784</td>
<td>789</td>
<td>826</td>
</tr>
<tr>
<td>KQ5B20LOGI</td>
<td>652</td>
<td>657</td>
<td>694</td>
</tr>
<tr>
<td>KQ5D40CPU</td>
<td>216</td>
<td>220</td>
<td>491</td>
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<td>KQ5F40NET</td>
<td>344</td>
<td>371</td>
<td>1083</td>
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Table 40. Capacity planning for historical data logged by Microsoft Cluster Server agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
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<tbody>
<tr>
<td>KQ5D80HDD</td>
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<tr>
<td>KQ5D60MEM</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
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</table>
### Table 40. Capacity planning for historical data logged by Microsoft Cluster Server agent (Part 3) (continued)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
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</thead>
<tbody>
<tr>
<td>KQ5D20NODE</td>
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<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ5B20LOGI</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ5D40CPU</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ5F40NET</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
</tbody>
</table>

### Microsoft BizTalk Server agent

### Table 41. Capacity planning for historical data logged by Microsoft BizTalk Server agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQBMSGBOXG</td>
<td>KQB_MESSAGE_BOX_GENERAL_COUNTERS</td>
</tr>
<tr>
<td>KQBMESSLAT</td>
<td>KQB_MESSAGING_LATENCY</td>
</tr>
<tr>
<td>KQBAVAIL</td>
<td>KQB_AVAILABILITY</td>
</tr>
<tr>
<td>KQBORCHEST</td>
<td>KQB_ORCHESTRATIONS</td>
</tr>
</tbody>
</table>

### Table 42. Capacity planning for historical data logged by Microsoft BizTalk Server agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQBMSGBOXG</td>
<td>216</td>
<td>223</td>
<td>650</td>
</tr>
<tr>
<td>KQBMESSLAT</td>
<td>192</td>
<td>241</td>
<td>482</td>
</tr>
<tr>
<td>KQBAVAIL</td>
<td>3272</td>
<td>3296</td>
<td>3606</td>
</tr>
<tr>
<td>KQBORCHEST</td>
<td>340</td>
<td>510</td>
<td>1990</td>
</tr>
</tbody>
</table>

### Microsoft Active Directory agent

### Table 43. Capacity planning for historical data logged by Microsoft BizTalk Server agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQ5D80HDD</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ5D60MEM</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ5D20NODE</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQ5B20LOGI</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
</tbody>
</table>

### Table 44. Capacity planning for historical data logged by Microsoft Active Directory agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
</tr>
</thead>
<tbody>
<tr>
<td>K3ZNTDSDNS</td>
<td>DNS</td>
</tr>
</tbody>
</table>
### Table 44. Capacity planning for historical data logged by Microsoft Active Directory agent (Part 1) (continued)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
</tr>
</thead>
<tbody>
<tr>
<td>K3ZNTDSLDP</td>
<td>LDAP</td>
</tr>
<tr>
<td>K3ZNTDSRPL</td>
<td>Replication_Partner</td>
</tr>
<tr>
<td>K3ZNTDSRLT</td>
<td>Replication_Partner_Latency</td>
</tr>
<tr>
<td>K3ZNTDSSVC</td>
<td>Services</td>
</tr>
<tr>
<td>K3ZNTDSTRS</td>
<td>Trust</td>
</tr>
<tr>
<td>K3ZNTDSNSP</td>
<td>Name_Service_Provider</td>
</tr>
<tr>
<td>K3ZNTDSKDC</td>
<td>Kerberos_Key_Distribution_Center</td>
</tr>
<tr>
<td>K3ZNTDSDCA</td>
<td>Domain_Controller_Availability</td>
</tr>
</tbody>
</table>

### Table 45. Capacity planning for historical data logged by Microsoft Active Directory agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K3ZNTDSDNS</td>
<td>612</td>
<td>549</td>
<td>3319</td>
</tr>
<tr>
<td>K3ZNTDSLDP</td>
<td>300</td>
<td>174</td>
<td>757</td>
</tr>
<tr>
<td>K3ZNTDSRPL</td>
<td>1272</td>
<td>1147</td>
<td>1199</td>
</tr>
<tr>
<td>K3ZNTDSRLT</td>
<td>704</td>
<td>575</td>
<td>729</td>
</tr>
<tr>
<td>K3ZNTDSSVC</td>
<td>1368</td>
<td>1246</td>
<td>1283</td>
</tr>
<tr>
<td>K3ZNTDSTRS</td>
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<td>486</td>
</tr>
<tr>
<td>K3ZNTDSNSP</td>
<td>260</td>
<td>124</td>
<td>317</td>
</tr>
<tr>
<td>K3ZNTDSKDC</td>
<td>256</td>
<td>119</td>
<td>273</td>
</tr>
<tr>
<td>K3ZNTDSDCA</td>
<td>1844</td>
<td>1770</td>
<td>2872</td>
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### Table 46. Capacity planning for historical data logged by Microsoft Active Directory agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>K3ZNTDSDNS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>K3ZNTDSLDP</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
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<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>K3ZNTDSRPL</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>K3ZNTDSRLT</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>K3ZNTDSSVC</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>K3ZNTDSTRS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>K3ZNTDSNSP</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>K3ZNTDSKDC</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>K3ZNTDSDCA</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
</tbody>
</table>
Microsoft Lync Server agent

Table 47. Capacity planning for historical data logged by Microsoft Lync Server agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQLAVAIL</td>
<td>KQL_AVAILABILITY</td>
</tr>
<tr>
<td>KQLIMC3PPZ</td>
<td>KQL_IM_CCCP_PROCESSING</td>
</tr>
<tr>
<td>KQLIMCONFZ</td>
<td>KQL_IM_CONFERENCING</td>
</tr>
<tr>
<td>KQLSIPPRLZ</td>
<td>KQL_SIP_PROTOCOLS</td>
</tr>
<tr>
<td>KQLUSRVLSZ</td>
<td>KQL_USER_SERVICES_MCU</td>
</tr>
<tr>
<td></td>
<td>_ALLOCATION_LATENCY</td>
</tr>
</tbody>
</table>

Table 48. Capacity planning for historical data logged by Microsoft Lync Server agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQLAVAIL</td>
<td>3272</td>
<td>3296</td>
<td>3606</td>
</tr>
<tr>
<td>KQLIMC3PPZ</td>
<td>220</td>
<td>306</td>
<td>1045</td>
</tr>
<tr>
<td>KQLIMCONFZ</td>
<td>124</td>
<td>142</td>
<td>421</td>
</tr>
<tr>
<td>KQLSIPPRLZ</td>
<td>148</td>
<td>193</td>
<td>609</td>
</tr>
<tr>
<td>KQLUSRVLSZ</td>
<td>132</td>
<td>175</td>
<td>521</td>
</tr>
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</table>

Table 49. Capacity planning for historical data logged by Microsoft Lync Server agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQLAVAIL</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQLIMC3PPZ</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQLIMCONFZ</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQLSIPPRLZ</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQLUSRVLSZ</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
</tbody>
</table>

Microsoft .NET Framework agent

Table 50. Capacity planning for historical data logged by Microsoft .NET Framework agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQFWIN32S2</td>
<td>KQF_SERVICE_MODEL_SERVICE</td>
</tr>
<tr>
<td>KQFNETCLRM</td>
<td>KQF_NET_CLR_MEMORY</td>
</tr>
<tr>
<td>KQFNETCLRS</td>
<td>KQF_NET_CLR_SECURITY</td>
</tr>
<tr>
<td>KQFNETCLRE</td>
<td>KQF_NET_CLR_EXCEPTIONS</td>
</tr>
<tr>
<td>KQFASPNET</td>
<td>KQF_ASP_NET</td>
</tr>
</tbody>
</table>
### Table 51. Capacity planning for historical data logged by Microsoft .NET Framework agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQFWIN32S2</td>
<td>540</td>
<td>808</td>
<td>2297</td>
</tr>
<tr>
<td>KQFNETCLRM</td>
<td>264</td>
<td>327</td>
<td>1502</td>
</tr>
<tr>
<td>KQFNETCLRS</td>
<td>160</td>
<td>174</td>
<td>370</td>
</tr>
<tr>
<td>KQFNETCLRE</td>
<td>160</td>
<td>210</td>
<td>466</td>
</tr>
<tr>
<td>KQFASPNET</td>
<td>156</td>
<td>172</td>
<td>710</td>
</tr>
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</table>

### Table 52. Capacity planning for historical data logged by Microsoft .NET Framework agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KQLAVAIL</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQLIMC3PPZ</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQLIMCONFZ</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQLSIPPRLZ</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KQLUSRVLSZ</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
</tbody>
</table>

**VMware VI agent**

### Table 53. Capacity planning for historical data logged by VMware VI agent (Part 1)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVMVM_CPU</td>
<td>KVM_VM_CPU</td>
</tr>
<tr>
<td>KVMVM_MEM</td>
<td>KVM_VM_MEMORY</td>
</tr>
<tr>
<td>KVMVM_PART</td>
<td>KVM_VM_PARTITION</td>
</tr>
<tr>
<td>KVMVMDSTUTL</td>
<td>KVM_VM_DATASTORE_UTILIZATION</td>
</tr>
<tr>
<td>KVMVM_DISK</td>
<td>KVM_VM_DISK</td>
</tr>
<tr>
<td>KVMVM_NET</td>
<td>KVM_VM_NETWORK</td>
</tr>
<tr>
<td>KVMDCSTORES</td>
<td>KVM_DATASTORES</td>
</tr>
<tr>
<td>KVMSERVERG</td>
<td>KVM_SERVER</td>
</tr>
<tr>
<td>KVMSERVERC</td>
<td>KVM_SERVER_CPU</td>
</tr>
<tr>
<td>KVMSRVHNAS</td>
<td>KVM_SERVER_HBA</td>
</tr>
<tr>
<td>KVMSERVERM</td>
<td>KVM_SERVER_MEMORY</td>
</tr>
<tr>
<td>KVMSERVERD</td>
<td>KVM_SERVER_DISK</td>
</tr>
<tr>
<td>KVMSERVERS</td>
<td>KVM_SERVER_DATASTORE</td>
</tr>
<tr>
<td>KVMDCNETS</td>
<td>KVM_NETWORKS</td>
</tr>
<tr>
<td>KVMNETSERV</td>
<td>KVM_NETWORKED_SERVERS</td>
</tr>
<tr>
<td>KVMNVSWITCH</td>
<td>KVM_NETWORKED_VIRTUAL_SWITCHES</td>
</tr>
<tr>
<td>KVMVSITCH</td>
<td>KVM_VIRTUAL_SWITCHES</td>
</tr>
</tbody>
</table>
Table 53. Capacity planning for historical data logged by VMware VI agent (Part 1) (continued)

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVMVM_GEN</td>
<td>KVM_VIRTUAL_MACHINES</td>
</tr>
<tr>
<td>KVMRSPOOLC</td>
<td>KVM_RESOURCE_POOL_CPU</td>
</tr>
<tr>
<td>KVMRSPOOLM</td>
<td>KVM_RESOURCE_POOL_MEMORY</td>
</tr>
<tr>
<td>KVMRSPOOLG</td>
<td>KVM_RESOURCE_POOL_GENERAL</td>
</tr>
<tr>
<td>KVMCLTRDST</td>
<td>KVM_CLUSTERED_DATASTORES</td>
</tr>
<tr>
<td>KVMCLTRSRV</td>
<td>KVM_CLUSTERED_SERVERS</td>
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<td>KVM_CLUSTERED_VIRTUAL_MACHINES</td>
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<td>KVMCLUSTRT</td>
<td>KVM_CLUSTERS</td>
</tr>
<tr>
<td>KVMCLTRRRPS</td>
<td>KVM_CLUSTERED_RESOURCE_POOLS</td>
</tr>
<tr>
<td>KVMSRVRVSWI</td>
<td>KVM_SERVER_VIRTUAL_SWITCHES</td>
</tr>
</tbody>
</table>

Table 54. Capacity planning for historical data logged by VMware VI agent (Part 2)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVMVM_CPU</td>
<td>612</td>
<td>622</td>
<td>971</td>
</tr>
<tr>
<td>KVMVM_MEM</td>
<td>624</td>
<td>637</td>
<td>1142</td>
</tr>
<tr>
<td>KVMVM_PART</td>
<td>600</td>
<td>607</td>
<td>878</td>
</tr>
<tr>
<td>KVMVMDSUTIL</td>
<td>508</td>
<td>576</td>
<td>985</td>
</tr>
<tr>
<td>KVMVM_DISK</td>
<td>988</td>
<td>996</td>
<td>1150</td>
</tr>
<tr>
<td>KVMVM_NET</td>
<td>1096</td>
<td>1107</td>
<td>1339</td>
</tr>
<tr>
<td>KVMDSSTORES</td>
<td>1168</td>
<td>1202</td>
<td>1797</td>
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<tr>
<td>KVMSERVERG</td>
<td>1738</td>
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<td>839</td>
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<td>709</td>
<td>980</td>
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<td>574</td>
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<td>696</td>
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<tr>
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<td>547</td>
<td>740</td>
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<td>KVMSWITCH</td>
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<td>446</td>
<td>639</td>
</tr>
<tr>
<td>KVMVM_GEN</td>
<td>1526</td>
<td>1566</td>
<td>2152</td>
</tr>
<tr>
<td>KVMRSPOOLC</td>
<td>624</td>
<td>637</td>
<td>1103</td>
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<tr>
<td>KVMRSPOOLM</td>
<td>624</td>
<td>637</td>
<td>1103</td>
</tr>
<tr>
<td>KVMRSPOOLG</td>
<td>596</td>
<td>602</td>
<td>834</td>
</tr>
<tr>
<td>KVMCLTRDST</td>
<td>878</td>
<td>888</td>
<td>1081</td>
</tr>
<tr>
<td>KVMCLTRSRV</td>
<td>616</td>
<td>628</td>
<td>1055</td>
</tr>
<tr>
<td>KVMCLTRVMS</td>
<td>584</td>
<td>588</td>
<td>703</td>
</tr>
</tbody>
</table>
Table 54. Capacity planning for historical data logged by VMware VI agent (Part 2) (continued)

<table>
<thead>
<tr>
<th>Table</th>
<th>Bytes per instance (agent)</th>
<th>Database bytes per instance (warehouse)</th>
<th>Aggregate bytes per instance (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVMCLUSTRT</td>
<td>752</td>
<td>894</td>
<td>2665</td>
</tr>
<tr>
<td>KVMCLTRRPS</td>
<td>550</td>
<td>557</td>
<td>828</td>
</tr>
<tr>
<td>KVMRSRVVSWI</td>
<td>492</td>
<td>496</td>
<td>689</td>
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</tbody>
</table>

Table 55. Capacity planning for historical data logged by VMware VI agent (Part 3)

<table>
<thead>
<tr>
<th>Table</th>
<th>Collection interval (agent)</th>
<th>Warehouse interval</th>
<th>Raw data retention</th>
<th>Hourly data retention</th>
<th>Daily data retention</th>
<th>Weekly data retention</th>
</tr>
</thead>
<tbody>
<tr>
<td>KVMVM_CPU</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMVM_MEM</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMVM_PART</td>
<td>1 hour</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KVMVMDSUTL</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMVM_DISK</td>
<td>1 hour</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMVM_NET</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMDSTORES</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMSERVERV</td>
<td>5 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMSERVERC</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMRSRVHBAS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMSERVERM</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMSERVERD</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMSERVERDS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KVMSERVERN</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>7 days</td>
<td>30 days</td>
<td>60 days</td>
<td>6 months</td>
</tr>
<tr>
<td>KVMDCNETS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMNETSERV</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMNVSWITCH</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMVSWITCH</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMVM_GEN</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>30 days</td>
<td>120 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMRSPOOLC</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMRSPOOLM</td>
<td>1 hour</td>
<td>1 hour</td>
<td>3 days</td>
<td>N/A</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMRSPOOLG</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMCLTRDST</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMCLTSRSRV</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMCLTRVMS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMCLUSTRT</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>7 days</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMCLTRRPS</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>N/A</td>
<td>60 days</td>
<td>N/A</td>
</tr>
<tr>
<td>KVMRSRVVSWI</td>
<td>15 minutes</td>
<td>1 hour</td>
<td>3 days</td>
<td>N/A</td>
<td>60 days</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Appendix L. Disk capacity planning for historical data
Glossary

This glossary includes terms and definitions for IBM SmartCloud Application Performance Management.

The following cross-references are used in this glossary:

- See refers you from a term to a preferred synonym, or from an acronym or abbreviation to the defined full form.
- See also refers you to a related or contrasting term.

To view glossaries for other IBM products, go to [www.ibm.com/software/globalization/terminology](http://www.ibm.com/software/globalization/terminology) (opens in new window).

A

agent  Software that is installed to monitor systems. An agent collects data about an operating system, a subsystem, or an application.

alert  A message or other indication that signals an event or an impending event that meets a set of specified criteria.

application  One or more computer programs or software components that provide a function in direct support of a specific business process or processes.

arithmetic expression  A statement that contains values joined together by one or more arithmetic operators and that is processed as a single numeric value. See also arithmetic operator

arithmetic operator  A symbol, such as + or –, that represents a fundamental mathematical operation. See also arithmetic expression

attribute group  A set of related attributes that can be combined in a view or a situation. See also view

C

capacity planning  The process of determining the hardware and software configuration that is required to accommodate the anticipated workload on a system.

D

database (DB)  A collection of interrelated or independent data items that are stored together to serve one or more applications.

data warehouse  A central repository for all or significant parts of the data that an organization’s business systems collect.

DB  See database
**E**

**event**  An occurrence of significance to a task or system. Events can include completion or failure of an operation, a user action, or the change in state of a process. See also alert.

**H**

**historical collection**  A definition that is used to collect and store data samples for historical reporting. The historical collection identifies the attribute group, any row filtering you have assigned, the managed system distribution, frequency of data collection, where to store it for the short term, and whether to save data long term.

**historical data management**  A set of procedures that are applied to short-term binary files that send historical data to either a data warehouse or to delimited text files. Entries in the short-term history file that are over 24 hours old are deleted, which makes room for new entries.

**I**

**interval**  The number of seconds that have elapsed between one sample and the next.

**M**

**managed system**  A particular operating system, subsystem, or application in an enterprise where a monitoring agent is installed and running.

**migrate**  To move data from one location to another.

**monitor**  An entity that performs measurements to collect data pertaining to the performance, availability, reliability, or other attributes of applications or the systems on which the applications rely. These measurements can be compared to predefined thresholds. If a threshold is exceeded, administrators can be notified, or predefined automated responses can be performed.

**monitoring agent**  See agent.

**monitor interval**  A specified time, scalable to seconds, minutes, hours, or days, for how often the monitoring server checks to see if a situation has become true. The minimum monitor interval is 30 seconds; the default value is 15 minutes.
P

parameter (parm)
A value or reference passed to a function, command, or program that serves as input or controls actions. The value is supplied by a user or by another program or process.

parm  See parameter

performance
A measure of a system's ability to perform its functions, including response time, throughput, and number of transactions per second.

S

sample
The data that the product collects for the server.

V

view  A window pane, or frame, in a workspace. It may contain data from an agent in a chart or table, or it may contain a terminal session or notepad, for example. A view can be split into two separate, autonomous views. See also attribute group.

virtual machine (VM)
A software implementation of a machine that executes programs like a real machine.

VM  See virtual machine

W

workspace
In Tivoli management applications, the working area of the user interface, excluding the Navigator pane, that displays one or more views pertaining to a particular activity. Predefined workspaces are provided with each Tivoli application, and systems administrators can create customized workspaces.
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