IBM SmartCloud Application Performance Management UI
Version 7.7.0.1

User's Guide

SC22-5490-01

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Note
Before you use this information and the product it supports, read the information in "Notices" on page 12.

This edition applies to version 7.7.0.0.1 of the IBM SmartCloud Application Performance Management UI and to all subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. About this publication

Use this publication to learn more about IBM SmartCloud® Application Performance Management UI Version 7.7.0.0.1.

Intended audience

This publication is for administrators and system programmers who use IBM SmartCloud Application Performance Management UI.

Readers must be familiar with the following products:

- IBM® Tivoli® Monitoring
- IBM Tivoli Composite Application Manager for Applications
- IBM Tivoli Composite Application Manager for Microsoft Applications
- IBM Tivoli Composite Application Manager for Transactions

Publications

This section lists publications in the IBM SmartCloud Application Performance Management UI library and related documents. This section also describes how to access Tivoli publications online and how to order Tivoli publications.

IBM SmartCloud Application Performance Management UI library

The following documents are available in the IBM SmartCloud Application Performance Management UI library:

- *IBM SmartCloud Application Performance Management UI Version 7.7, User's Guide* SC22-5490

  Provides information about how to install, configure, and use the SmartCloud Application Performance Management UI component.

Related publications

The following documents also provide useful information:

- *IBM SmartCloud Application Performance Management, Standard Edition Offering Guide*, SC22-5488

  Provides general information about the component products of IBM SmartCloud Application Performance Management, Standard Edition.
- *IBM SmartCloud Application Performance Management, Standard Edition Quick Start Guide*, CF3YPML

  Provides information about typical installation of IBM SmartCloud Application Performance Management, Standard Edition.
- *IBM SmartCloud Application Performance Management, Entry Edition Offering Guide*, SC27-6201

  Provides general information about the component products of IBM SmartCloud Application Performance Management, Entry Edition.
- *IBM SmartCloud Application Performance Management, Entry Edition Quick Start Guide*, CF3YQML

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Provides information about typical installation of IBM SmartCloud Application Performance Management, Entry Edition.

- *IBM SmartCloud Application Performance Management Entry Edition - VM Image, Installation and Deployment Guide*, SC27-5334

  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.
- *IBM SmartCloud Application Performance Management Entry Edition - VM Image, Offering Guide*, SC22-5489

  Provides general information about the component products of IBM SmartCloud Application Performance Management Entry Edition - VM Image.
- *IBM SmartCloud Application Performance Management Entry Edition - VM Image, Quick Start Guide*, CF3P5ML

  Provides information about typical installation of IBM SmartCloud Application Performance Management Entry Edition - VM Image.

The following documents are available from the IBM SmartCloud Application Performance Management wiki (https://www.ibm.com/developerworks/community/groups/service/html/communityview?communityUuid=0587adbc-8477-431f-8c68-9226adea11ed#fullpageWidgetId=W42ce7c6afdb9_42c2_a9ea_e1ba310bea8c). You can also find these documents in the Files section of the Application Performance Management developerWorks® community (https://www.ibm.com/developerworks/community/groups/service/html/communityview?communityUuid=0587adbc-8477-431f-8c68-9226adea11ed#fullpageWidgetId=W42ce7c6afdb9_42c2_a9ea_e1ba310bea8c):

- *IBM SmartCloud Application Performance Management UI Troubleshooting Reference*, SC22-5490-01-T

  Provides general troubleshooting information for the IBM SmartCloud Application Performance Management UI component.
- *IBM SmartCloud Application Performance Management UI Reference*, SC22-5490-01-R

  Provides reference information for the IBM SmartCloud Application Performance Management UI component.
- *IBM SmartCloud Application Performance Management Entry Edition - VM Image Reference*, SC27-5334-01-R

  Provides reference information for the IBM SmartCloud Application Performance Management Entry Edition - VM Image product.

Accessing terminology online

The IBM Terminology website consolidates the terminology from IBM product libraries in one convenient location. You can access the Terminology website at http://www.ibm.com/software/globalization/terminology

Ordering publications

You can order many Tivoli publications online at http://www.elink.ibmlink.ibm.com/publications/servlet/pbi.wss.

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

- In the United States: 800-879-2755
- In Canada: 800-426-4968

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

1. Go to http://www.elink.ibmlink.ibm.com/publications/servlet/pbi.wss.
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 more information about accessibility, see the Accessibility Appendix and the accessibility section in the overview chapter of the*IBM SmartCloud Application Performance Management UI, User's Guide*.

Tivoli technical training

For Tivoli technical training information, see the following IBM Tivoli Education website at 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.

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

The following websites contain troubleshooting information:

- Go to the IBM Software Support website (http://www.ibm.com/support/entry/portal/software) and follow the instructions.
- Go to the IBM SmartCloud Application Performance Management wiki (https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM%20SmartCloud%20Application%20Performance%20Management). Feel free to contribute to this wiki.

IBM Support Assistant

The IBM Support Assistant (ISA) is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. The ISA provides quick access to support-related

information and serviceability tools for problem determination. To install the ISA software, go to the IBM Support Assistant website (http://www.ibm.com/software/support/isa).

Conventions used in this publication

Several conventions are used in this publication for special terms, actions, commands, and paths that depend 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, multicolumn lists, containers, menu choices, menu names, tabs, property sheets), labels (such as **Tip:**, and **Operating system considerations**:)
- Keywords and parameters in text

Italic

- Citations (examples: titles of publications, diskettes, and CDs
- Words that are defined in text (example: a nonswitched line is called a *point-to-point line*)
- Emphasis of words and letters (words as words example: "Use the word *that* to introduce a restrictive clause."; letters as letters example: "The LUN address must start with the letter *L*.")
- New terms in text (except in a definition list): a *view* is a frame in a workspace that contains data.
- Variables and values you must provide: ... where *myname* represents....

Monospace

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

Bold monospace

- Command names, and names of macros and utilities that you can type as commands
- Environment variable names in text
- Keywords
- Parameter names in text: API structure parameters, command parameters and arguments, and configuration parameters
- Process names
- Registry variable names in text
- Script names

Variables and paths that are dependent on your operating system

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

When you use 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 2. SmartCloud Application Performance Management UI overview

The IBM SmartCloud Application Performance Management UI Version 7.7 provides new, customizable dashboards for the SmartCloud Application Performance Management, IBM Tivoli Monitoring, and IBM Tivoli Composite Application Manager products.

The user interface (UI) includes predefined templates for simple Java™ EE, complex Java EE, Business Process Management, SAP, and Microsoft applications that are based on industry best practices. You can use these templates to build your own dashboards to monitor the resources of your IT environments. The UI also contains integrated views to monitor IBM Tivoli Monitoring situation-based events and transactions of your applications.

The UI is available in the IBM Integrated Service Management Library.

The IBM SmartCloud Application Performance Management UI provides an application-oriented view of the health of your environment. You can contextually obtain more detailed information. The purpose of the SmartCloud Application Performance Management UI is not to display every metric available. Instead, key performance metrics are provided for the application and its components to help optimize performance and to quickly diagnose problems. It provides a view of the overall health of critical applications. It also displays the overall health of a specific line of business when critical applications are grouped in the user interface. The UI also provides pointers to the diagnostic tools when problems are recognized. These pointers speed up problem analysis as you gain more familiarity with the subject matter expert tools. Launch-in-context to Tivoli Enterprise Portal is enabled with the Java Web Start client.

Benefits

- Provides predefined dashboards to improve the usability and time-to-value of application performance management
- Provides built-in group widgets for each domain application (DB2®, SAP, and others) based on industry best practices
- Provides application dashboards that can be customized to monitor business applications

Features

Characteristic features

- Highly responsive, intuitive navigation, context information
- High resolution on desktop and tablets
- Multicultural support

  Important: The data section of group widgets, which comes from the IBM Tivoli Monitoring data provider, is not translated in the SmartCloud Application Performance Management UI. For example, the column names in a Grid widget are translated, but the rows of data are not translated. The KPI labels in an HTML table gauge widget are translated, but the KPI values are not translated.

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Infrastructure supported

- SmartCloud Application Performance Management portfolio

Best practices that are supported for application performance management

- Predefined widgets and a dashboard for domain server health
- Templates for applications

Easy to build, configure, and customize for different applications

- Matches the dashboard to the application structure
- Templates are provided for common application patterns

Aligns business operation with IT operation

- Integrates a business view with the application dashboard for performance

New features in this release

- iPad support is available in SmartCloud Application Performance Management UI version 7.7.0.0.1
- IBM Tivoli Composite Application Manager for Microsoft Applications dashboards
  - Exchange 2013 Server
  - .NET Framework
- IBM Tivoli Composite Application Manager for Applications dashboard
  - DataPower®
- Back-End Transaction dashboards
- Real-User Transaction dashboards
- Deep dive application performance analysis
- Enhanced navigation and accessibility
- Search functionality enabled to expedite problem determination
- Works with fabric node to support the IBM Application Performance Diagnostics product
- Improved application construction and maintenance through Open Services for Lifecycle Collaboration (OSLC)
  - OSLC templates support registration of monitored resources. SmartCloud Application Performance Management UI supports OSLC integration with other products. OSLC templates are available from the Integrated Service Management (ISM) library at https://www-304.ibm.com/software/brandcatalog/ismlibrary/details?catalog.label=1TW10CA19#tab-overview.
  - Integration with resource and application structures or models that are provided by the Jazz™ for Service Management Registry and OSLC providers, such as IBM Tivoli Application Dependency Discovery Manager and IBM Tivoli Monitoring.
  - Integration with resource and application structures or models directly from ITCAM for Transactions.
  - Changes to application models are pushed to the SmartCloud Application Performance Management UI model providing more accurate and up-to-date application structures.
- Lightweight platform and updated infrastructure
  - IBM Tivoli Blaze
  - IBM WebSphere® Application Server Liberty Core

- Dojo 1.8
- IBM Tivoli Monitoring 6.3
- An application and resource repository component, referred to as the Service Component Repository (SCR), which facilitates application and resource model information between SmartCloud Application Performance Management UI and other components in the overall solution

User roles and security

The IBM SmartCloud Application Performance Management UI provides role-based access control of various operations. Users granted an administrator role can create or edit applications. Administrators can also control access to these applications by role selection. Non-administrators can view only the applications that are associated with their user roles.

SmartCloud Application Performance Management UI scenarios

The SmartCloud Application Performance Management UI can be used in different ways, depending on the goal of the user:

- Line of business (LOB) manager: The LOB manager works with the business team to mitigate performance issues in the application environment and works with the other roles to resolve the problems. The LOB manager focuses on the Application Performance Dashboard to understand the overall health of their applications. The LOB manager can access the navigator for more information about transaction response times and volumes to provide guidance to the business team.
- IT operations, system administrators, application administrators: This team of users often has the responsibility of initial problem diagnosis by using existing domain knowledge. When a trouble ticket is received or the application overview dashboard identifies an issue, there are several troubleshooting options available:
  1. When you select **All My Applications** in the navigator, the **Status Overview** tab displays the status of your applications. When you select the components of the application in the navigator, the **Status Overview** tab updates to show the dashboards for that component. The **Events** tab is filtered to displays events that are opened for the component.
  2. The IT operator knows the source of the failure and can resolve the issue or transfer the issue to the appropriate support engineer for further analysis.
  3. If the problem cannot be isolated to a particular resource, return to the **Status Overview** tab. Investigate another group or instance. The **Status Overview** tab provides key performance indicators for each of the components of the applications. This tab can be used to isolate the failing component. The issue can either be resolved or transferred to the appropriate support engineer for further analysis.
- Support engineer: The support engineer is a domain expert to whom a specific problem is transferred from the IT operations team. The goal of the support engineer is to resolve issues quickly. The support engineer can select **All My Applications** in the navigator. The **Status Overview** tab displays the status of all applications. From there, the support engineer can select the component in their domain for more details. The **Status Overview** tab updates to show the dashboards for that component. The **Events** tab is filtered to displays events that

are opened for the component. If more comprehensive analysis is necessary, the support engineer can use the Tivoli Enterprise Portal.

- Subject matter expert (SME): The SME uses expert knowledge to diagnose problems in a particular domain (for example, a WebSphere performance tuning expert). The SME uses the Tivoli Enterprise Portal or the IBM Tivoli Composite Application Manager for Application Diagnostics web UI to access complete details. They focus on deep diagnosis to determine the root cause and resolve the issue. Information for diagnosis can be obtained from the SmartCloud Application Performance Management UI. SMEs go to the **Application Dashboard** to identify the component in their domain (for example, WebSphere Application Server, DB2). SMEs then go to the **Status Overview** tab for that component.
- Developer: Developers need the ability to debug their programs as they develop them. Developers must understand what performance characteristics change when new or modified applications are put under a load test in a preproduction environment. It might be resource consumption, overall performance, or a number of other factors. The SmartCloud Application Performance Management UI is able to show when problems or changes of this type occur before implementation into a production environment. To identify the root cause, the developer must quickly get down to the code level details. These details can typically be found in the Tivoli Enterprise Portal or the IBM Tivoli Composite Application Manager for Application Diagnostics web UI. The method of finding details depends on which domain the Developer works on (for example, Java Platform, Enterprise Edition application on WebSphere Application Server). Developers can obtain information for diagnosis through the SmartCloud Application Performance Management UI. Developers go to the **Application Dashboard** to identify the component in their domain (for example, WebSphere Application Server, DB2). Developers can then go to the **Status Overview** tab for that component.

Accessibility

The UI provides many accessibility features to help users with physical disabilities.

Response time

Users can turn off, adjust, or extend all time limits that are not real-time, essential, or 20-hour exceptions.

IBM Dashboard Application Services Hub provides a session timeout time limit. Use the following command to extend or adjust the session timeout parameter:

Windows systems:

```
%TIPProfile_Home%\bin>configSesTimeOut.bat %TIPProfile_Home% isc
%time-out-minutes%
```

AIX® or Linux systems:

```
$TIPProfile_Home/bin>./configSesTimeOut.sh $TIPProfile_Home isc
$time-out-minutes
```

Restart the IBM Dashboard Application Services Hub server by using the following commands:

Windows systems:

```
server.bat start scrderby

server.bat start scr
```

```
server.bat start apmui
```

AIX or Linux systems:

```
server.sh start scrderby

server.sh start scr

server.sh start apmui
```

There is an edit lock timeout time limit in the UI. Users can continue to edit settings after the timeout time limit, but other users can occupy the edit lock after the timeout time limit.

Users can pause, stop, or hide information, unless it is an essential part of an activity. Users can pause, stop, or hide moving, flashing, scrolling, or auto-updating information. Data is auto-refreshed every 5 minutes in the UI. This activity is essential and cannot be paused, stopped, or hidden.

Browsing the interface with the keyboard

You can use the keyboard to access all functions of the interface in the following ways:

- You can press **Tab** or **Shift** + **Tab** to move forward or backward among elements on the page.
- To perform a clicking operation, put focus on the element that you want to click by pressing **Tab**, or **Shift** + **Tab**, then press **Space** or **Enter**.
- When you want to add an application, or edit an application, use the **Up arrow**, or **Down arrow** to navigate in the Application resource tree.
- When a tooltip with a **Close** button or an **X** icon is displayed, press **Tab** to put focus on the **Close** button or the **X** icon, then press **Space** or **Enter** to close the tooltip.
- When a tooltip or without a **Close** button or an **X** icon is displayed, press **Esc** to close the tooltip.

Flashing below threshold

Web pages do not contain anything that flashes more than three times in any 1-second period. Otherwise, the flash is below the general flash and red flash thresholds.

All UI pages are designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz.

Installer

When you use the product installation program, keyboard equivalents are provided for all actions:

- Use **Tab** to move focus and use **Space** or **Enter** to perform a click action.
- When the focus is on the object or control, use the **Up** arrow or **Down** arrow to perform a select action.
- Use **Alt** and hot keys (capital letter with underscore) at the same time to perform a button click action.

Keyboard access does not interfere with keyboard accessibility features built into the operating system:

- Sticky keys: Multiple key stroke sequences can be activated by pressing and releasing each key sequentially.
- Filter keys: Only one letter is displayed on the screen when you press and hold a key.
- Toggle keys: An audio tone sounds when you press the Caps Lock, Number Lock, and Scroll Lock keys.
- Mouse keys: The mouse pointer can be moved with the arrow keys.
- High contrast: The display is reformatted to the high contrast scheme.

Visual focus indicator

When you use the keyboard to move between objects and controls, a focus indicator is always visible.

Screen readers can follow the keyboard focus as you move between objects and controls in the current window.

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Application Performance Management community on Service Management Connect

Service Management Connect (SMC) is a repository of technical information that is organized by communities.

Access SMC at IBM Service Management Connect > Application Performance Management (https://www.ibm.com/developerworks/servicemanagement/apm).

Connect, learn, and share with Service Management professionals. Get access to developers and product support technical experts who provide their perspectives and expertise. You can use SMC for these purposes:

- Become involved with transparent development, an ongoing, open engagement between other users and IBM developers of monitoring 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 monitoring and the 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 3. Installing SmartCloud Application Performance Management UI

You can install the IBM SmartCloud Application Performance Management UI on Windows, AIX, or Linux systems.

Installing the DB2 schema configuration tool

If you choose to use DB2 as the data store for the application repository, you must install DB2 schema configuration tool before you install SmartCloud Application Performance Management UI. The DB2 schema configuration tool creates the files that are needed to configure the DB2 server database for the application repository. Optionally, the installer of the DB2 schema configuration tool can create the schema in DB2 for the application repository database. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Prerequisites

You need to run the DB2 schema configuration tool on the DB2 host where you want to install the application repository database. The application repository schema contains several user-defined functions (UDF's), and the JAR file that contains these functions must be on the DB2 host. You need to know the port for the DB2 instance.

The application repository requires DB2 9.7 Fix Pack 4 or higher. For more information about installing and using DB2, see the information center that is listed here for the version you are using:

http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/topic/com.ibm.db2.luw.common.doc/doc/t0021844.html

If you want to create the application repository database schema during the installation, you must be logged on to the DB2 host as a user who has permissions to create database tables (SYSADM or SYSCTRL). Optionally, the installer can create the configuration files, and the `tbsm_db` script can be run to create the tables after the installation.

On Windows, the installer must be run from a command window that is opened by the DB2 **db2cwadmin** script. This script opens a command window with the DB2 environment and Windows administrative authorization. There are cases where the database configuration installer does not recognize the DB2 command environment when **db2cmd** is run. In these cases, run **db2cwadmin** to resolve the problem.

The installer creates the log file `.../tbsmdb/logs/db2_stdout.log`. This log file contains the output from all of the SQL that was executed. If there are any issues, this log file is very helpful.

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Application repository database user

The user that application repository uses to connect to the DB2 database needs access to the application repository database. Although it can be the same user ID used to create the database setup, the primary requirement is to allow the runtime application repository administrator access to the application repository database. Application repository requires the ability to insert, update, and alter all application repository database objects and run administrative commands through its SQL connection.

As a best practice, the application repository administrator needs access to the DB2 database through a database query tool such as the DB2 Control Center or some other DB query tool that supports DB2. The Control Center or other tools are valuable for ongoing application repository database maintenance.

User name restriction: Ensure that the application repository database user name does not contain a hyphen.

Running simple DB2 schema configuration

In a simple installation, the DB2 schema configuration tool configures the DB2 schema for the application repository server databases in a single database. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Before you begin

Run the DB2 schema configuration tool on the DB2 host where you want to install the application repository database.

The DB2 schema configuration tool is `setup-dbconfig-`*`platform`*`_64.sh/exe` in the installation media of IBM SmartCloud Application Performance Management UI.

For example:

- On Windows, the command is `setup-dbconfig-windows_64.exe`
- On Linux systems, the command is `setup-dbconfig-linux_64.bin`

Install Folder

The folder where you want to store the DB2 schema configuration files. By default, it is set to the following locations:

```
/opt/IBM/tivoli/tbsmdb
C:\Program Files\IBM\tivoli\tbsmdb
```

Directory restrictions: The directory names have these restrictions:

- Do not specify an installation directory path that includes parenthesis, such as `c:\Program Files (x86)`. The installation might succeed with this path, but other utilities and components will fail when you attempt to run the application by using a path with parenthesis.
- Do not choose an installation directory name that contains an **accent** character (for example, **à, é, Ñ, ô**). Otherwise, the installation fails.

Database name

The database that is used for the application repository database.

Should the installer create the schema for this database?

Yes, create the schema, including the tables, table spaces, and views.
If you select this option, you must be logged in as a user that has permission to create and drop tables in the DB2 instance.

On Windows systems, you must also run the DB2 Schema utility from the **db2cwadmin** window:

1. Open a Windows command prompt.
2. Enter the command: **db2cwadmin** and a DB2 command window opens.
3. Run the Schema configuration utility from the DB2 command window:

   To run the schema configuration utility, run the command:

   ```
   setup-dbconfig-windows.exe
   ```

No, complete the installation and the schema will be created at a later time. This option creates all the configuration files that are needed to create the application repository database. When you select this option, you must use the **tbsm_db** command to create the application repository database after the schema configuration utility is completed.

.

Procedure

1. On Windows systems, you must run the DB2 Schema utility from the **db2cwadmin** window as described in Before you begin.
2. Run the DB2 schema configuration tool. The DB2 schema configuration tool is `setup-dbconfig-`*`platform`*`_64.sh/exe` in the installation media of IBM SmartCloud Application Performance Management UI.
3. Select the language that you want to use for the installation, and then click **OK**. Only the languages that are supported by your system appears in the list of available languages.

   UNIX double-byte language selection: If your server does not have the double-byte code pages installed, the double-byte languages (Simplified Chinese, Traditional Chinese, Korean, Japanese) are corrupted in the language selection list. It is a display problem on the selection list.
4. In the Welcome window, click **Next**.
5. In the Software License Agreement window, click **I accept both the IBM and non-IBM terms in the license agreement**, and then click **Next**.
6. In the Select Installation Directory window, specify the installation directory.
7. When you are prompted to select the product that will use this database, ensure that you select 1-IBM SmartCloud Application Performance Management (APM).
8. In the Installation Type window, click **Simple** and then click **Next**.
9. Specify the database name that you want.
10. Select whether you want to create the schema in the database instance or if you want to install only the configuration files on the host, and create the schema later. Click **Next**.
11. Provide the requested database information.
    - **Database name** is the name of the database.
    - **Database port** is the database port number for DB2.

- **Database user ID** is the database user ID for DB2. This user must have permission to add and drop database tables.
- **Database password** is the database user password. Confirm the password in the **Confirm password** field.
- **Database path** is the path that is used to create the database. The value `<default>` or a null value specifies the default database path that is specified by the database manager configuration. If you want to use multiple paths, the first path must contain the database, and the paths must be separated by commas.

12. Review the **Pre-Install Summary** and click **Install**.

Installing SmartCloud Application Performance Management UI by using Installation Manager

You can install SmartCloud Application Performance Management UI by using IBM Installation Manager.

Before you begin

If you are installing SmartCloud Application Performance Management UI on a Windows system, the user ID that you use for installation must have the authority to create a Windows service.

Keep record of the user ID that you use to install SmartCloud Application Performance Management UI. If it is necessary to stop, or start SmartCloud Application Performance Management UI services or components in the future, you must use the same user ID. If you use another user ID that has different permissions to stop, or start SmartCloud Application Performance Management UI, the permission level of some files in the installation directory is changed. As a result, the product function is affected.

Ensure that the Service Component Repository (SCR) of Tivoli Business Service Manager is not installed on the computer before you install SmartCloud Application Performance Management UI. Otherwise, the installation of SmartCloud Application Performance Management UI fails. To avoid conflicts with the SCR of Tivoli Business Service Manager, do not install SmartCloud Application Performance Management UI and Tivoli Business Service Manager on the same computer.

Do not install two copies of SmartCloud Application Performance Management UI V7.7 on the same computer.

Note: During the installation steps, you can choose to use Derby or DB2 as the database for application repository. If you select DB2 as the application repository database, you must create the application repository's schema into the database in DB2 instance before you start the installation. For information about DB2 schema installation, see “Installing the DB2 schema configuration tool” on page 17. Optionally, you can change the application repository to use a DB2 instance after an initial installation that uses Derby.

About this task

If no IBM Installation Manager is installed on your computer, follow the procedure to install IBM Installation Manager and SmartCloud Application Performance Management UI. If IBM Installation Manager is installed on your computer, you

can either follow the procedure to install SmartCloud Application Performance Management UI, or go to IBM Installation Manager interface to install SmartCloud Application Performance Management UI.

Procedure

1. Depending on your operating system, locate one of the following directories on the installation media for SmartCloud Application Performance Management UI.
   - Windows: `CIR57ML\installerWin`
   - Linux for System x: `CIR59ML/installerxLinux`
   - Linux on System z®: `CIR5AML/installerzLinux`
   - AIX: `CIR58ML/installerAIX`
2. Run one of the following files to start installation.
   - On Windows systems,
     - For administrators, run `install.exe` to start installation.
     - For non-administrative users, right-click `userinst.exe` and select **Run as administrator** to start installation.

       Note: After the installation, if it is necessary to stop, or start SmartCloud Application Performance Management UI services or components, you must use the same user to run commands and scripts in a command window that is opened with the **Run as administrator** option.
   - On Linux systems and AIX systems, run `install` for root, or `userinst` for non-root users.

   The Install Packages window is displayed. If no IBM Installation Manager is installed on your computer, both **IBM SmartCloud Application Performance Management** and **IBM Installation Manager** are displayed in the window. If IBM Installation Manager is installed already, only **IBM SmartCloud Application Performance Management** is displayed.
3. Select components to install.
   - If no IBM Installation Manager is installed on your computer, select both **IBM SmartCloud Application Performance Management** and **IBM Installation Manager**.
   - If IBM Installation Manager is installed already, select only **IBM SmartCloud Application Performance Management**.

   Click **Next**. The License Agreement page is displayed.
4. Select **I accept the terms in the license agreement** and click **Next**.
5. For the installation of IBM Installation Manager, specify the shared resource directory and installation directory, and click **Next**. The shared resource directory stores resources that can be shared by multiple packages. For best results, select the drive with the most available space because it must have adequate space for shared resources of future packages.
6. For the installation of SmartCloud Application Performance Management UI, select **Create a new package group**, specify the installation directory of SmartCloud Application Performance Management UI in the **Installation Directory** field, and click **Next**.
7. Select the features that are associated with SmartCloud Application Performance Management UI and click **Next**.
8. Provide the following configuration information and click **Next**:
   - Application Performance Management UI HTTP port number

- Application Performance Management UI HTTPS port number
- Application Repository HTTP port number
- Application Repository HTTPS port number

Attention: Ensure that the port numbers are unique and are not used by other programs.

Application repository is the service component repository in SmartCloud Application Performance Management UI, it is used for storing application structures of SmartCloud Application Performance Management and communicating with multiple sources, such as Jazz for Service Management and the monitoring agents of ITCAM for Transactions, to get discovered application structures.

9. Specify the password for the default administrative user of SmartCloud Application Performance Management UI and select the database type. By default, the installation uses Derby as the database. Select DB2 as the database if your system monitors more than 2000 components. Click **Next**.
   - If you select Derby as the database, you must specify the Derby port number.
   - If you select DB2 as the database, you must specify DB2 port number, DB2 host name, and DB2 user name and password.

   Important: Ensure that the Derby or DB2 port number is unique and is not used by other programs.
10. Review the summary information for installation and click **Install**. A progress indicator shows the percentage of the installation that is completed.

Results

When the installation process is completed, a message confirms the success of the installation. You can check logs to identify issues.

- To view installation logs, go to IBM Installation Manager and click **File** > **View log**. The installation logs and the location of the logs are displayed.
- To export the logs, go to IBM Installation Manager and click **Help** > **Export Data for Problem Analysis**. All information that is related to Installation Manager including the logs is exported to the selected directory in a compressed file.
- To check the logs for SCR, go to the user home directory for the following log files.
  - `IA_SCR_Install6.1.2-00.log`
  - `IA_SCR_Uninstall6.1.2-00.log`

Installing SmartCloud Application Performance Management UI in silent mode

You can use the silent mode installation method to install the SmartCloud Application Performance Management UI. In silent mode, the installation process obtains the installation settings from a predefined response file. This method does not prompt you for any information.

Before you begin

If you are installing SmartCloud Application Performance Management UI on a Windows system, the user ID that you use for installation must have the authority to create a Windows service.

Ensure that the Service Component Repository (SCR) of Tivoli Business Service Manager is not installed on the computer before you install SmartCloud Application Performance Management UI. Otherwise, the installation of SmartCloud Application Performance Management UI fails. To avoid conflicts with the SCR of Tivoli Business Service Manager, do not install SmartCloud Application Performance Management UI and Tivoli Business Service Manager on the same computer.

Do not install two copies of SmartCloud Application Performance Management UI V7.7 on the same computer.

You can choose to use Derby or DB2 as the database for application repository. If you select DB2 as the application repository database, you must create the application repository's schema into the database in DB2 instance before you start the installation. For information about DB2 schema installation, see "Installing the DB2 schema configuration tool" on page 17. Optionally, you can change the application repository to use a DB2 instance after an initial installation that uses Derby.

Important: Keep record of the user ID that you use to install SmartCloud Application Performance Management UI. If it is necessary to stop, or start SmartCloud Application Performance Management UI in the future, you must use the same user ID. If you use another user ID who has different permissions to stop, or start SmartCloud Application Performance Management UI, the permission level of some files in the installation directory is changed. As a result, the function of this product is affected.

Procedure

1. Find one of the following files in your installation media, depending on your operating system.
   - On Window systems, `CIR57ML\installerWin\install_response.xml`
   - On Linux for System x systems, `CIR59ML/installerxLinux/install_response.xml`
   - On Linux for System z systems, `CIR5AML/installerzLinux/install_response.xml`
   - On AIX systems, `CIR58ML/installerAIX/install_response.xml`
2. Copy the `install_response.xml` file to a temporary directory.
3. Edit the `install_response.xml` file to customize your installation settings.
   - Change `<repository location='.'/>` to `<repository location='`*`installer_dir`*`'/>`, where *installer_dir* is one of the following values.
     - `CIR57ML\installerWin` on Windows systems
     - `CIR59ML/installerxLinux` on Linux for System x systems
     - `CIR5AML/installerzLinux` on Linux for System z systems
     - `CIR58ML/installerAIX` on AIX systems
   - Change `<repository location='../`*`output_OS`*`'/>` to `<repository location='`*`output_dir`*`'/>`, where *output_dir* is one of the following values.

- `CIR57ML\output_win` on Windows systems
- `CIR59ML/output_xlinux` on Linux for System x systems
- `CIR5AML/output_zlinux` on Linux for System z systems
- `CIR58ML/output_aix` on AIX systems

- Uncomment the following line and then set the **installLocation** parameter in the profile tag to the directory where you want SmartCloud Application Performance Management UI to be installed:

```
<!-- profile id='IBM SmartCloud Application Performance Management UI
installLocation='<APMUI_HOME>'/-->
```

- Modify the following parameters according to your environment.

```
<data key='user.httpPortNumber' value='8080'/>
<data key='user.httpsPortNumber' value='9443'/>
<data key='user.httpPortNumberSCR' value='17310'/>
<data key='user.httpsPortNumberSCR' value='17311'/>
<data key='user.scrUserName' value='apmadmin'/>
<data key='user.scrPassword' value='apmpass'/>
<data key='user.scrPasswordConfirm' value='apmpass'/>
```

  Where,

  - **user.httpPortNumber** is the HTTP port for SmartCloud Application Performance Management UI.
  - **user.httpsPortNumber** is the HTTPS port for SmartCloud Application Performance Management UI.
  - **user.httpPortNumberSCR** is the HTTP port for the application repository.

    Application repository is the service component repository in SmartCloud Application Performance Management UI, it is used for storing application structures of SmartCloud Application Performance Management and communicating with multiple sources, such as Jazz for Service Management and the monitoring agents of ITCAM for Transactions, to get discovered application structures.
  - **user.httpsPortNumberSCR** is the HTTPS port for the application repository.
  - **user.scrUserName** is the user name for the application repository.
  - **user.scrPassword** is the password for the application repository user.
  - **user.scrPasswordConfirm** is the password confirmation.

  Attention: Ensure that the port numbers are unique and are not used by other programs.

- By default, the installation uses Derby as the database. If your system monitors more than 2000 components, use DB2 as the database. If you want to use DB2 as the database, follow the steps to change the `install_response.xml` file.

  a. Comment out the following lines.

```
<data key='user.RadioButtonUserData' value='derby'/>
<data key='user.enableImportFromJazzSM' value='true'/>
<data key='user.derbyPort' value='1527'/>
```

  b. Uncomment the following lines about DB2 and modify the values according to your environment.

```
<data key='user.dbport_db2' value='50000'/>
<data key='user.dbuserid' value='db2inst1'/>
<data key='user.dbpw' value='password'/>
<data key='user.dbpw2' value='password'/>
<data key='user.dbhost' value='localhost'/>
```

Attention: Ensure that the port number is unique and is not used by other programs.

c. Save your changes.

4. Go to one of the following directories, depending on your operating system:
   - On Window systems, `CIR57ML\installerWin`
   - On Linux for System x systems, `CIR59ML/installerxLinux`
   - On Linux for System z systems, `CIR5AML/installerzLinux`
   - On AIX systems, `CIR58ML/installerAIX`
5. Run one of the following commands to install SmartCloud Application Performance Management UI in silent mode.
   - On Windows systems

     ```
     (administrators)
     installc.exe input temp_dir\install_response.xml -acceptLicense
     (non-administrative users)
     userinstc.exe input temp_dir\install_response.xml
     -acceptLicense
     ```

     Note: If you use a non-administrative user for installation, you must run the command in a command window that is opened with the **Run as administrator** option. After installation, if it is necessary to stop, or start SmartCloud Application Performance Management UI services or components, you must use the same user to run commands and scripts in a command window that is opened with the **Run as administrator** option.
   - On Linux for System x systems

     ```
     (root)
     ./installc input temp_dir/install_response.xml -acceptLicense
     (non-root)
     ./userinstc input temp_dir/install_response.xml -acceptLicense
     ```
   - On Linux for System z systems

     ```
     (root)
     ./installc input temp_dir/install_response.xml -acceptLicense
     (non-root)
     ./userinstc input temp_dir/install_response.xml -acceptLicense
     ```
   - On AIX systems

     ```
     (root)
     ./installc input temp_dir/install_response.xml -acceptLicense
     (non-root)
     ./userinstc input temp_dir/install_response.xml -acceptLicense
     ```

   where *temp_dir* is the temporary directory where the `install_response.xml` file is stored.

Results

When the installation process is completed, a message similar to the following one is displayed:

```
Installed com.ibm.tivoli.apmui.offering_7.7.0._20130715 in the <APMUI_HOME>
directory.
```

You can check logs to identify issues.

- To view full installation logs, go to IBM Installation Manager and click **File** > **View log**. The installation logs and the location of the logs are displayed.
- To export the logs, go to IBM Installation Manager and click **Help** > **Export Data for Problem Analysis**. All information that is related to Installation Manager including the logs is exported to the selected directory in a compressed file.

- To check the logs for Service Component Repository, go to the user home directory for the following log files.
  - IA_SCR_Install6.1.2-00.log
  - IA_SCR_Uninstall6.1.2-00.log

Upgrading

You can upgrade SmartCloud Application Performance Management UI and migrate your data.

Upgrading SmartCloud Application Performance Management UI

SmartCloud Application Performance Management UI V7.7 does not support upgrade from a previous version by running the installation program. Instead, you must first install SmartCloud Application Performance Management UI V7.7 and then migrate data from the previous version.

About this task

To upgrade SmartCloud Application Performance Management UI to V7.7, complete the following steps:

1. Install SmartCloud Application Performance Management UI V7.7. See "Installing SmartCloud Application Performance Management UI by using Installation Manager" on page 20 or "Installing SmartCloud Application Performance Management UI in silent mode" on page 22.
2. Migrate data from the previous version to SmartCloud Application Performance Management UI V7.7. See "Migrating from SmartCloud Application Performance Management UI Version 7.5 to Version 7.7" or "Migrating from SmartCloud Application Performance Management UI Version 7.6.0.1 to Version 7.7" on page 30
3. To avoid overloading the data providers, uninstall the old version of SmartCloud Application Performance Management UI in your environment. To uninstall the old version, see the Uninstallation topic (http://publib.boulder.ibm.com/infocenter/tivihelp/v63r1/topic/com.ibm.apm.doc_7.7/apm_ui_docs/apmui_77/uninstall.html).

Migrating from SmartCloud Application Performance Management UI Version 7.5 to Version 7.7

You can migrate data from IBM SmartCloud Application Performance Management UI Version 7.5 to Version 7.7.

Before you begin

To protect the destination environment, backup the database of SmartCloud Application Performance Management UI Version 7.7 before the migration. If the migration process fails and the destination database is damaged, restore the destination database and do the migration again. For more information about backing up and restoring the SmartCloud Application Performance Management UI database, see "Backing up and restoring the databases of SmartCloud Application Performance Management UI" on page 353.

Note: There are limitations to the migration process.

- The data provider of SmartCloud Application Performance Management UI Version 7.7 is changed to the data provider of SmartCloud Application Performance Management UI Version 7.5 after the migration. The applications that are created in SmartCloud Application Performance Management UI Version 7.7 before the migration are deleted.
- The LDAP users and basic registry users are not migrated. If you need those users in SmartCloud Application Performance Management UI Version 7.7, you must configure LDAP users or basic registry users again. For more information, see "Configuring role-based authorization" on page 321.
- The customized setting in `apmui.cfg` file is not migrated to SmartCloud Application Performance Management UI Version 7.7. You must manually configure these settings again after migration.

About this task

Ensure that SmartCloud Application Performance Management UI Version 7.5 is up and running during the migration procedure.

Procedure

1. Copy the export script from SmartCloud Application Performance Management UI Version 7.7 image to the installation directory of SmartCloud Application Performance Management UI Version 7.5.
   - On Linux systems, copy the `export75` folder from SmartCloud Application Performance Management UI Version 7.7 image directory *APMUI77_image*`/migration`, to the installation directory of SmartCloud Application Performance Management UI Version 7.5, *APMUI75_home*`/profiles/TIPProfile/installedApps/TIPCell/isc.ear/apmTIP.war/customCfg`.
   - On Windows systems, copy the `export75` folder from SmartCloud Application Performance Management UI Version 7.7 image directory *APMUI77_image*`\migration`, to the installation directory of SmartCloud Application Performance Management UI Version 7.5, *APMUI75_home*`\profiles\TIPProfile\installedApps\TIPCell\isc.ear\apmTIP.war\customCfg`.

   Where,
   - *APMUI77_image* is the directory in which the installation files of SmartCloud Application Performance Management UI Version 7.7 are located.
   - *APMUI75_home* is the installation directory of SmartCloud Application Performance Management UI Version 7.5. By default, it is `/opt/IBM/tivoli/tipv2` for Linux systems, and `C:\program files\IBM\tivoli\tipv2` for Windows systems.
2. Run the export script in the `export75` folder to export SmartCloud Application Performance Management UI Version 7.5 data to a specific directory.
   - Linux systems:

     `export75.sh` *`APMUI75_port APMUI75_username APMUI75_password destination`*

     An example of the script is

     `export75.sh 16311 tipadmin tippass /tmpp`

     After the export is finished, you will see a message that indicates the data is successfully exported to `/tmpp/apmui75export`.
   - Windows systems:

```
export75.bat APMUI75_port APMUI75_username
APMUI75_password destination
```

An example of the script is

```
export75.bat 16311 tipadmin tippass C:\tmpp
```

After the export is finished, you will see a message that indicates the data is successfully exported to `C:\tmpp\apmui75export`.

Where,

- *APMUI75_port* is the port number of the SmartCloud Application Performance Management UI Version 7.5 server.
- *APMUI75_username* is the user name to access the server.
- *APMUI75_password* is the password.
- *destination* is the export destination directory. The export destination directory must be an existing directory.

Note: If SmartCloud Application Performance Management UI Version 7.7 is installed on a different server from SmartCloud Application Performance Management UI Version 7.5, you must copy the entire export data directory to the SmartCloud Application Performance Management UI Version 7.7 server. All messages that are displayed after you run this script are not translated into the local language. The messages are displayed in English.

3. On the server where SmartCloud Application Performance Management UI Version 7.7 is installed, run the following commands to stop application repository back-end process, SmartCloud Application Performance Management UI server, and application repository servlets.
   - On a Window system,

     ```
     scrstop
     cd APMUI77_home\bin
     server stop apmui
     server stop scr
     ```

   - On a Linux system,

     ```
     cd APMUI77_home/SCR/XMLtoolkit/bin
     scrstop.sh
     cd APMUI77_home
     ./server stop apmui
     ./server stop scr
     ```

   Where, *APMUI77_home* is the installation path of the SmartCloud Application Performance Management UI Version 7.7.
4. On the server where SmartCloud Application Performance Management UI Version 7.7 is installed, run one the following commands to clean the data in application repository.
   - On a Windows system,

     ```
     cd APMUI77_home\SCR\XMLtoolkit\bin
     setdbschema.bat –U DB_user –P DB_password –f a
     ```

   - On a Linux system,

     ```
     cd APMUI77_home/SCR/XMLtoolkit/bin
     ./setdbschema.sh –U DB_user –P DB_password –f a
     ```

     Where,

     – *APMUI77_home* is the installation path of the SmartCloud Application Performance Management UI Version 7.7.

– *DB_user* is the user name for the database. If you are using DB2 as the database, input the login user name. If you are using Derby as the database, although Derby database does not require a user, this command requires a value for this parameter to work properly. You can input a user name in the same format as the user of DB2.
– *DB_password* is the password for the user name. If you are using DB2 as the database, input the password for the DB2 login user. If you are using Derby as the database, although Derby database does not require a password, this command requires a value for this parameter to work properly. You can input a password in the same format as the password for DB2.

5. On the server where SmartCloud Application Performance Management UI Version 7.7 is installed, run the following commands to start application repository back-end process, SmartCloud Application Performance Management UI server, and application repository servlets.
   - On a Window system,

     ```
     scrstart
     cd APMUI77_home\bin
     server start apmui
     server start scr
     ```

   - On a Linux system,

     ```
     cd APMUI77_home/SCR/XMLtoolkit/bin
     scrstart.sh
     cd APMUI77_home
     ./server start apmui
     ./server start scr
     ```

   APMUI77_home is the installation path of the SmartCloud Application Performance Management UI Version 7.7.
6. Run the script under the SmartCloud Application Performance Management UI Version 7.7 image directory to migrate the data.
   - On Linux systems, switch to *APM77_image*/migration folder and run the migrate75.sh script.

     ```
     migrate75.sh APMUI77_port APMUI77_username
     APMUI77_password exportDataDir apmDir
     ```

     An example of the script is

     ```
     migrate75.sh 8080 apmadmin apmpass
     /tmpp/apmui75export /opt/IBM/APMUI
     ```

   - On Windows systems, switch to *APM77_image*/migration folder and run the migrate75.bat script.

     ```
     migrate75.bat APMUI77_port APMUI77_username
     APMUI77_password exportDataDir apmDir
     ```

     An example of the script is

     ```
     migrate75.bat 8080 apmadmin apmpass
     C:\tmpp\apmui75export "C:\program files\IBM\APMUI"
     ```

   Where,
   - *APMUI77_port* is the port number of the SmartCloud Application Performance Management UI Version 7.7 server.
   - *APMUI77_username* is the user name to access the server.
   - *APMUI77_password* is the password.
   - *exportDataDir* is the export data directory.

- *apmDir* is the SmartCloud Application Performance Management UI 7.7 installation directory.

Important: All the directory values in migration scripts must be absolute file paths.
Some messages that are displayed after you run this script are not translated into the local language. These messages are displayed in English.

Results

The data is migrated from SmartCloud Application Performance Management UI Version 7.5 to Version 7.7.

Migrating from SmartCloud Application Performance Management UI Version 7.6.0.1 to Version 7.7

You can migrate data from SmartCloud Application Performance Management UI Version 7.6.0.1 to Version 7.7.

Before you begin

To protect the destination environment, backup the database of SmartCloud Application Performance Management UI Version 7.7 before the migration. If the migration process fails and the destination database is damaged, restore the destination database and do the migration again. For more information about backing up and restoring the Derby database, see "Backing up and restoring the databases of SmartCloud Application Performance Management UI" on page 353.

Note: There are limitations to the migration process.

- The data provider of SmartCloud Application Performance Management UI Version 7.7 is changed to the data provider of SmartCloud Application Performance Management UI Version 7.6.0.1 after the migration. The applications that are created in SmartCloud Application Performance Management UI Version 7.7 before the migration are deleted.
- The LDAP users and basic registry users are not migrated. If you need those users in SmartCloud Application Performance Management UI Version 7.7, you must configure LDAP users or basic registry users again. For more information, see "Configuring role-based authorization" on page 321.
- The customized setting in `apmui.cfg` file is not migrated to SmartCloud Application Performance Management UI Version 7.7. You must manually configure these settings again after migration.

About this task

Ensure that SmartCloud Application Performance Management UI Version 7.6.0.1 is up and running during the migration procedure.

Procedure

1. Copy the export script from SmartCloud Application Performance Management UI Version 7.7 image to the installation directory of SmartCloud Application Performance Management UI Version 7.6.0.1.
   - On Linux systems, copy the `export7601` folder from SmartCloud Application Performance Management UI Version 7.7 image directory *APMUI77_image*`/migration`, to the installation directory of SmartCloud

Application Performance Management UI Version 7.6.0.1, *APMUI7601_home*/profiles/TIPProfile/installedApps/TIPCell/isc.ear/apmTIP.war/customCfg.

- On Windows systems, copy the export7601 folder from SmartCloud Application Performance Management UI Version 7.7 image directory *APMUI77_image*\migration, to the installation directory of SmartCloud Application Performance Management UI Version 7.6.0.1, *APMUI7601_home*\profiles\TIPProfile\installedApps\TIPCell\isc.ear\apmTIP.war\customCfg.

Where,

- *APMUI77_image* is the directory in which the installation files of SmartCloud Application Performance Management UI Version 7.7 are located.
- *APMUI7601_home* is the installation directory of SmartCloud Application Performance Management UI Version 7.6.0.1. By default, it is /opt/IBM/tivoli/tipv2 for Linux systems, and C:\program files\IBM\tivoli\tipv2 for Windows systems.

2. Run the export script in the export7601 folder to export SmartCloud Application Performance Management UI Version 7.6.0.1 data to a specific directory.
   - Linux systems:

     export7601.sh *APMUI7601_port APMUI7601_username APMUI7601_password destination*

     An example of the script is

     export7601.sh 16311 tipadmin tippass /tmpp

     After the export is finished, you will see a message that indicates the data is successfully exported to /tmpp/apmui7601export.
   - Windows systems:

     export7601.bat *APMUI7601_port APMUI7601_username APMUI7601_password destination*

     An example of the script is

     export7601.bat 16311 tipadmin tippass C:\tmpp

     After the export is finished, you will see a message that indicates the data is successfully exported to C:\tmpp\apmui7601export.

   Where,

   - *APMUI7601_port* is the port number of the IBM SmartCloud Application Performance Management UI Version 7.6.0.1 server.
   - *APMUI7601_username* is the user name to access the server.
   - *APMUI7601_password* is the password.
   - *destination* is the export destination directory. The export destination directory must be an existing directory.

Note: If SmartCloud Application Performance Management UI Version 7.7 is installed on a different server from SmartCloud Application Performance Management UI Version 7.6.0.1, you must copy the entire export data directory to the SmartCloud Application Performance Management UI Version 7.7 server. All messages that are displayed after you run this script are not translated into the local language. The messages are displayed in English.

3. On the server where SmartCloud Application Performance Management UI Version 7.7 is installed, run the following commands to stop application repository back-end process, SmartCloud Application Performance Management UI server, and application repository servlets.
   - On a Window system,

     ```
     scrstop
     cd APMUI77_home\bin
     server stop apmui
     server stop scr
     ```

   - On a Linux system,

     ```
     cd APMUI77_home/SCR/XMLtoolkit/bin
     scrstop.sh
     cd APMUI77_home
     ./server stop apmui
     ./server stop scr
     ```

   Where, *APMUI77_home* is the installation path of the SmartCloud Application Performance Management UI Version 7.7.
4. On the server where SmartCloud Application Performance Management UI Version 7.7 is installed, run one the following commands to clean the data in application repository.
   - On a Windows system,

     ```
     cd APMUI77_home\SCR\XMLtoolkit\bin
     setdbschema.bat –U DB_user –P DB_password –f a
     ```

   - On a Linux system,

     ```
     cd APMUI77_home/SCR/XMLtoolkit/bin
     ./setdbschema.sh –U DB_user –P DB_password –f a
     ```

     Where,
     - *APMUI77_home* is the installation path of the SmartCloud Application Performance Management UI Version 7.7.
     - *DB_user* is the user name for the database. If you are using DB2 as the database, input the login user name. If you are using Derby as the database, although Derby database does not require a user, this command requires a value for this parameter to work properly. You can input a user name in the same format as the user of DB2.
     - *DB_password* is the password for the user name. If you are using DB2 as the database, input the password for the DB2 login user. If you are using Derby as the database, although Derby database does not require a password, this command requires a value for this parameter to work properly. You can input a password in the same format as the password for DB2.
5. On the server where SmartCloud Application Performance Management UI Version 7.7 is installed, run the following commands to start application repository back-end process, SmartCloud Application Performance Management UI server, and application repository servlets.
   - On a Window system,

     ```
     scrstart
     cd APMUI77_home\bin
     server start apmui
     server start scr
     ```

   - On a Linux system,

```
cd APMUI77_home/SCR/XMLtoolkit/bin
scrstart.sh
cd APMUI77_home
./server start apmui
./server start scr
```

APMUI77_home is the installation path of the SmartCloud Application Performance Management UI Version 7.7.

6. Run the script under the SmartCloud Application Performance Management UI Version 7.7 image directory to migrate the data.
   - On Linux systems, switch to *APMUI77_image*/migration folder and run the migrate7601.sh script.

     ```
     migrate7601.sh APMUI77_port APMUI77_username
     APMUI77_password exportDataDir apmDir
     ```

     An example of the script is

     ```
     migrate7601.sh 8080 apmadmin apmpass
     /tmpp/apmui7601export /opt/IBM/APMUI
     ```

   - On Windows systems, switch to *APM77_image*/migration folder and run the migrate7601.bat script.

     ```
     migrate7601.bat APMUI77_port APMUI77_username
     APMUI77_password exportDataDir apmDir
     ```

     An example of the script is

     ```
     migrate7601.bat 8080 apmadmin apmpass
     C:\tmpp\apmui7601export "C:\program files\IBM\APMUI"
     ```

   Where,
   - *APMUI77_port* is the port number of the SmartCloud Application Performance Management UI Version 7.7 server.
   - *APMUI77_username* is the user name to access the server.
   - *APMUI77_password* is the password.
   - *exportDataDir* is the export data directory.
   - *apmDir* is the SmartCloud Application Performance Management UI Version 7.7 installation directory.

   Important: All the directory values in migration scripts must be absolute file paths.
   Some messages that are displayed after you run this script are not translated into the local language. These messages are displayed in English.

Results

The data from SmartCloud Application Performance Management UI Version 7.6.0.1 is migrated to Version 7.7.

Uninstalling SmartCloud Application Performance Management UI by using Installation Manager

You can uninstall SmartCloud Application Performance Management UI by using Installation Manager.

Procedure

1. Use one of the following ways to start Installation Manager, depending on your operating system:

- Windows: Log in with the user that you used to install SmartCloud Application Performance Management UI. Go to **Start** > **All Programs** > **IBM Installation Manager** > **IBM Installation Manager Start**. If you use a non-administrative user for uninstall, ensure that you start Installation Manager with the **Run as administrator** option.
- Linux or UNIX: Change to *installation_manager_directory*/eclipse and run IBMIM with the user that you used to install SmartCloud Application Performance Management UI, where *installation_manager_directory* is the installation directory of Installation Manager.

Installation Manager is started.

2. Click **Uninstall**. The Uninstall Packages window is displayed.
3. Select **IBM SmartCloud Application Performance Management** and click **Next**.
4. Review the summary information for uninstallation and then click **Uninstall**. A progress indicator shows the percentage of the uninstallation that is completed.

Results

When the uninstallation is completed, a message is displayed, stating that the packages for IBM SmartCloud Application Performance Management are uninstalled.

Uninstalling SmartCloud Application Performance Management UI in silent mode

You can use the silent mode uninstallation method to remove the IBM SmartCloud Application Performance Management UI. In silent mode, the uninstallation process obtains the uninstallation settings from a predefined response file. This method does not prompt you for any information.

Procedure

1. Open the uninstall_apmui_response.xml file. The file is in the *install_pkg_dir*/responsefiles/*OS* directory, where *install_pkg_dir* is the directory in which the installation package of SmartCloud Application Performance Management UI is located. *OS* can be Windows and Linux, depending on your operating system.
2. Set the **installLocation** parameter in the profile tag to the directory where SmartCloud Application Performance Management UI is installed, for example,

   ```
   <profile id='IBM SmartCloud Application Performance Management'
   installLocation='<APMUI_HOME>'/>
   ```

3. Set the value parameter in the preference tag to the shared resource directory of IBM Installation Manager, for example,

   ```
   <preference name='com.ibm.cic.common.core.preferences.eclipseCache'
    value='/opt/IBM/IMShared'/>
   ```

4. Change to the tools directory of IBM Installation Manager:

   ```
   (Windows) IM_install_dir\eclipse\tools
   (AIX, Linux, or UNIX) IM_install_dir/eclipse/tools
   ```

   Where *IM_install_dir* is the installation directory of IBM Installation Manager. The default on Windows systems is C:\Program Files\IBM\Installation Manager. The default on AIX, Linux, or UNIX systems is /opt/IBM/InstallationManager.
5. Run one of the following commands to uninstall SmartCloud Application Performance Management UI in silent mode:

Note: On Windows systems, If you use a non-administrative user for uninstall, ensure that you run the command in a command window that is opened with the **Run as administrator** option.

```
(Windows)
imcl.exe input install_pkg_dir\responsefiles\OS\uninstall_apmui_response.xml
-log log_dir\uninstall_log.xml
(AIX, Linux, or UNIX)
./imcl input install_pkg_dir/responsefiles/OS/uninstall_apmui_response.xml
-log log_dir/uninstall_log.xml
```

Where:

- *install_pkg_dir* is the directory in which the installation package of Application Performance Management UI is located.
- *OS* can be Windows and Linux, depending on your operating system.
- *log_dir* is the directory where you want the uninstallation log to be created.

Results

When the uninstallation process is completed, a message similar to the following one is displayed:

```
Uninstalled com.ibm.tivoli.apmui.offering_7.7.0._20130715 from the <APMUI_HOME>
directory.
```

Uninstalling the DB2 schema configuration tool

Procedure

1. Change to one of the following directories, depending on your operating system:
   - Windows systems: *DB2_config_tool*\tbsmdb_uninst
   - Linux or UNIX systems: *DB2_config_tool*/tbsmdb/_uninst

   Where *DB2_config_tool* is the directory where the DB2 schema configuration tool is installed.
2. Run one of the following commands, depending on your operating system:
   - Windows systems: uninstall.exe
   - Linux or UNIX systems: ./uninstall
3. Click **Uninstall** to start the uninstallation process.

   Important: Uninstalling the DB2 schema configuration tool does not drop any application repository databases that were created. To drop a DB2 database, do one of the following steps:
   - Windows systems: from a command prompt, run **db2cmdadmin**. A DB2 command window is displayed. Run the **db2 drop database** *database_name* command, where *database_name* is the name of the database that you want to drop.
   - Linux or UNIX systems: Log on as a user with DB2 authorities, then run the**db2 drop database** *database_name* command.

   To list the DB2 databases, do one of the following steps:
   - Windows systems: from a command prompt, run **db2cmdadmin**. A DB2 command window is displayed. Run the **db2 list database directory** command.
   - Linux or UNIX systems: Log on as a user with DB2 authorities, then run the**db2 list database directory** command.

Chapter 4. Postinstallation configuration tasks

After you install SmartCloud Application Performance Management UI, you must complete a few configuration tasks before you can start using SmartCloud Application Performance Management UI.

You must complete the following configuration tasks before you start using SmartCloud Application Performance Management UI:

- "Configuring Tivoli Enterprise Portal Server to work with SmartCloud Application Performance Management UI"
- "Configuring data provider connections" on page 39
- "Selecting data providers" on page 40

After you complete these configuration tasks, you can start SmartCloud Application Performance Management UI. See "Starting the SmartCloud Application Performance Management UI" on page 43.

Configuring Tivoli Enterprise Portal Server to work with SmartCloud Application Performance Management UI

You must configureTivoli Enterprise Portal Server before you start SmartCloud Application Performance Management UI.

Procedure

1. If you use IBM Tivoli Monitoring 6.2.3 Fixpack 1, IBM Tivoli Monitoring 6.2.3 Fixpack 2, IBM Tivoli Monitoring 6.2.3 Fixpack 3, or IBM Tivoli Monitoring 6.2.3 Fixpack 4, change the maximum heap size to no less than 1536 MB by setting the **maximumHeapSize** parameter to 1536 or higher in the `server.xml` file:
   - The `server.xml` file location for Windows systems: *ITM_home*`\CNPSJ\ITMProfiles\ITMProfile\config\cells\ITMCell\nodes\ITMNode\servers\ITMServer\`
   - The `server.xml` file location for AIX or Linux systems: *ITM_home*`/arch/iw/ITMProfiles/ITMProfile/config/cells/ITMCell/nodes/ITMNode/servers/ITMServer/`

   Where *ITM_home* is the installation directory of IBM Tivoli Monitoring and *arch* is the architecture code of the platform. If you use IBM Tivoli Monitoring 6.3 or later, you can ignore this step.
2. Enable the representational state transfer (REST) service. To check whether the REST service is enabled, open `http://`*hostname*`:15200/ITMRESTProvider/test.html` and click **Get**, where *hostname* is the host name of the computer on which the Tivoli Enterprise Portal Server is hosted. If data is returned, the REST service is enabled. To enable the REST service within the Tivoli Enterprise Portal Server, see "Configuring the IBM Tivoli Monitoring REST service on Linux or AIX systems" on page 38 and "Configuring the IBM Tivoli Monitoring REST service on Windows systems" on page 38.

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Configuring the IBM Tivoli Monitoring REST service on Linux or AIX systems

The IBM Tivoli Monitoring Representational State Transfer (REST) service is disabled by default. Before you use the UI, enable your IBM Tivoli Monitoring data provider.

About this task

Use the command line to configure the data provider for Linux or AIX systems.

Procedure

1. On the command line, enter the following command: *ITM_Install_Home*/bin/itmcmd config -A cq, where *ITM_Install_Home* is the installation directory of IBM Tivoli Monitoring. The agent configuration starts.
2. At the prompt, enter a value of 1 to enable the REST service.
   - For IBM Tivoli Monitoring version 6.2.3 Fix Pack 1, IBM Tivoli Monitoring version 6.2.3 Fix Pack 2, IBM Tivoli Monitoring version 6.2.3 Fix Pack 3, and IBM Tivoli Monitoring version 6.2.3 Fix Pack 4,

     ```
     Enable ITM REST service? (1=Yes, 2=No)(Default is: 2):1
     ```

   - For IBM Tivoli Monitoring version 6.3 or later,

     ```
     Enable the dashboard data provider? (1=Yes, 2=No)(Default is: 1):1
     ```

Configuring the IBM Tivoli Monitoring REST service on Windows systems

The IBM Tivoli Monitoring Representational State Transfer (REST) service is disabled by default. Before you use the IBM SmartCloud Application Performance Management UI, enable your IBM Tivoli Monitoring data provider.

About this task

To enable the REST service, use the Tivoli Monitoring product to configure the data provider for Windows systems. You can also set the KD8_REST_SERVICE_ENABLE=Y parameter to enable the REST service.

Procedure

1. Start the IBM Tivoli Monitoring product. The Manage Tivoli Enterprise Monitoring Services window is displayed.
2. Right-click **Tivoli Enterprise Portal Server**.
3. Click **Configure**.
4. Click **Yes** to accept the Start Configuration message.
5. Click **OK** to accept the details in the **ITM Connector** tab.
6. In the Configure Tivoli Enterprise Portal Server window, click the one of the following tabs according to your IBM Tivoli Monitoring version.
   - For IBM Tivoli Monitoring version 6.2.3 Fix Pack 1, IBM Tivoli Monitoring version 6.2.3 Fix Pack 2, IBM Tivoli Monitoring version 6.2.3 Fix Pack 3, and IBM Tivoli Monitoring version 6.2.3 Fix Pack 4, click the **ITM REST Service** tab.
   - For IBM Tivoli Monitoring version 6.3 or later, click the **Dashboard data provider** tab.
7. Select the one of the following options according to your IBM Tivoli Monitoring version.

- For IBM Tivoli Monitoring version 6.2.3 Fix Pack 1, IBM Tivoli Monitoring version 6.2.3 Fix Pack 2, IBM Tivoli Monitoring version 6.2.3 Fix Pack 3, and IBM Tivoli Monitoring version 6.2.3 Fix Pack 4, select the **Enable ITM REST service** option.
- For IBM Tivoli Monitoring version 6.3 or later, select the **Enable the dashboard data provider** option.

8. Click **Save**.
9. Click **Yes** to accept the distributed cluster configurations notice.
10. Click **Yes** to restart Tivoli Enterprise Portal Server.
11. Log in to the target server with your Tivoli Enterprise Portal Server user name and password.
12. Launch `http://<TEPS IP/HOSTNAME>:15200/ITMRESTProvider/test.html` to verify that the REST service is enabled, where `<TEPS IP/HOSTNAME>` is your Tivoli Enterprise Portal Server IP address or host name.
13. Enter your Tivoli Enterprise Portal Server user name and password and click **OK**.
14. Click **GET** to send a **GET** request for the provider information. If the data provider is enabled successfully, provider information is displayed in the text field.

Configuring data provider connections

Go to Configure Data Providers window to manage IBM Tivoli Monitoring data provider information in the IBM SmartCloud Application Performance Management UI.

Before you begin

You must be assigned the apmAdmin role for this task.

Procedure

1. Click the **System Configuration** icon in the upper-left corner and select **Configure Data Providers**. The Configure Data Providers window is displayed.
2. Add or delete data providers in the Configure Data Providers window.
   - To add a data provider connection, click the icon. The Add a new data provider window is displayed. Enter the following information.
     - **Name**: The name of this connection.
     - **Host name/IP**: The host name or IP address of the Tivoli Monitoring data provider.
     - **Port number**: The port number of the Tivoli Monitoring data provider.
     - **User name**: The user name of the Tivoli Monitoring data provider.
     - **Password**: The password that is associated with the user name.
     - **Description**: The description that you add to this connection.

     Click **OK** to save the connection.
   - To delete data provider connections, select one data provider connection or multiple data provider connections in the list and click the icon. A message window appears and asks for confirmation. Click **OK** to delete selected data provider connections.

Results

The Tivoli Monitoring data provider connection is configured. You must choose one or more of these data providers before you start using the UI. For more information about selecting the data providers, see "Selecting data providers."

Selecting data providers

Before you use the IBM SmartCloud Application Performance Management UI, you must select one or more data providers.

Before you begin

- You must be assigned the apmAdmin role for this task.
- You must have added one or more data providers to SmartCloud Application Performance Management UI. See "Configuring data provider connections" on page 39.

About this task

Several data providers can be configured for SmartCloud Application Performance Management UI. You must choose one or more of these data providers before you start using the UI. You can choose multiple data providers to decrease the workload on a single data provider. In IBM Tivoli Monitoring Infrastructure, SmartCloud Application Performance Management UI configures the data provider on the Tivoli Enterprise Portal Server, which is configured on the Tivoli Enterprise Monitoring Server. Tivoli Enterprise Monitoring Server is the actual data source, and the Tivoli Enterprise Portal Server provides the representational state transfer (REST) service to the UI. Multiple Tivoli Enterprise Portal Server that are configured on one Tivoli Enterprise Monitoring Server share data. Ensure that the data providers share data.

Procedure

1. Click the **System Configuration** icon in the upper-left corner and select **Configure Data Providers**. The Configure Data Providers window is displayed.
2. Select data providers from the list. You can select multiple data providers for workload balancing. Ensure that all selected data providers are configured to one data source with the same **TEMS ID**(Tivoli Enterprise Monitoring Server ID). Otherwise, the settings are not saved. For optimum performance, do not select more than three data providers.
3. Click **Save**.

Results

The data provider is selected. You are ready to add applications to your dashboard. If any data provider goes offline, it is marked as offline in the data provider list.

Important: When multiple data providers are set up for load balancing, use one Tivoli Enterprise Portal Server as the primary Tivoli Enterprise Portal Server. Use other Tivoli Enterprise Portal Server as secondary read-only servers. Complete operations on the primary Tivoli Enterprise Portal Server and replicate to other secondary servers.

Important: For Business Process Management (BPM) applications monitoring, the SOA Domain Management Server (SDMS) service is only enabled on the primary Tivoli Enterprise Portal Server. If a non-primary Tivoli Enterprise Portal Server stops, SmartCloud Application Performance Management UI can continue to work unless the primary server is down. For BPM context launching, if multiple data providers are selected, you must specify the primary Tivoli Enterprise Portal Server information where the SDMS service is enabled. If a non-primary data provider is selected, you must also specify the primary Tivoli Enterprise Portal Server information where the SDMS service is enabled. For more information about specifying the primary Tivoli Enterprise Portal Server, see Configuring context launching.

Configuring search provider connections

Go to the Configure Search Providers window to enable search function in the IBM SmartCloud Application Performance Management UI. You can use IBM SmartCloud Analytics - Log Analysis (SCALA) to search log files that are related to a specific component. The search function passes the current component context to SCALA, limiting the scope of the search to your selected component.

Before you begin

You must be assigned the apmAdmin role for this task. If the **Search** field is disabled and a message says that no search engines are configured, complete the following steps:

Procedure

1. Click the **System Configuration** icon in the upper-left corner and select **Configure Search Providers**. The Configure Search Providers window is displayed.
2. Add or delete search providers in the Configure Search Providers window.
   - To add a search provider connection, click the icon. The Add a new search provider connection window is displayed. Enter the following information.
     - **Host name/IP**: The host name or IP address of the IBM SmartCloud Analytics - Log Analysis (SCALA) server.
     - **Port number**: The port number of the search provider.
     - **Description**: The description that you add to this connection.

     Click **Save** to save the connection. Ensure that the list entry is checked.
   - To delete the search provider connection, select the search provider connection in the list and click the icon. A message window appears and asks for confirmation. Click **OK** to delete selected search provider connections.

Results

The search provider connection is configured. Visit the IBM SmartCloud Analytics - Log Analysis Community athttp://www.ibm.com/developerworks/servicemanagement/ioa/log/index.html for more information about SCALA.

What to do next

To verify connectivity, enter * in the search box and click the search icon. The SCALA interface should appear in a new browser tab or window.

If single sign-on is not configured, you are prompted for SCALA credentials the first time you initiate a search in a browser session.

Chapter 5. Using SmartCloud Application Performance Management UI

You can customize the interface to display the applications that you are interested in.

Starting the SmartCloud Application Performance Management UI

When the UI is installed and configured, go to the login page to start the SmartCloud Application Performance Management UI.

Procedure

1. To start the SmartCloud Application Performance Management UI, go to `https://`*`APMUI_host`*`:`*`APMUI_PORT`*`/`, where *APMUI_host* is the server where SmartCloud Application Performance Management UI is installed and *APMUI_PORT* is the HTTPS port number of the SmartCloud Application Performance Management UI.

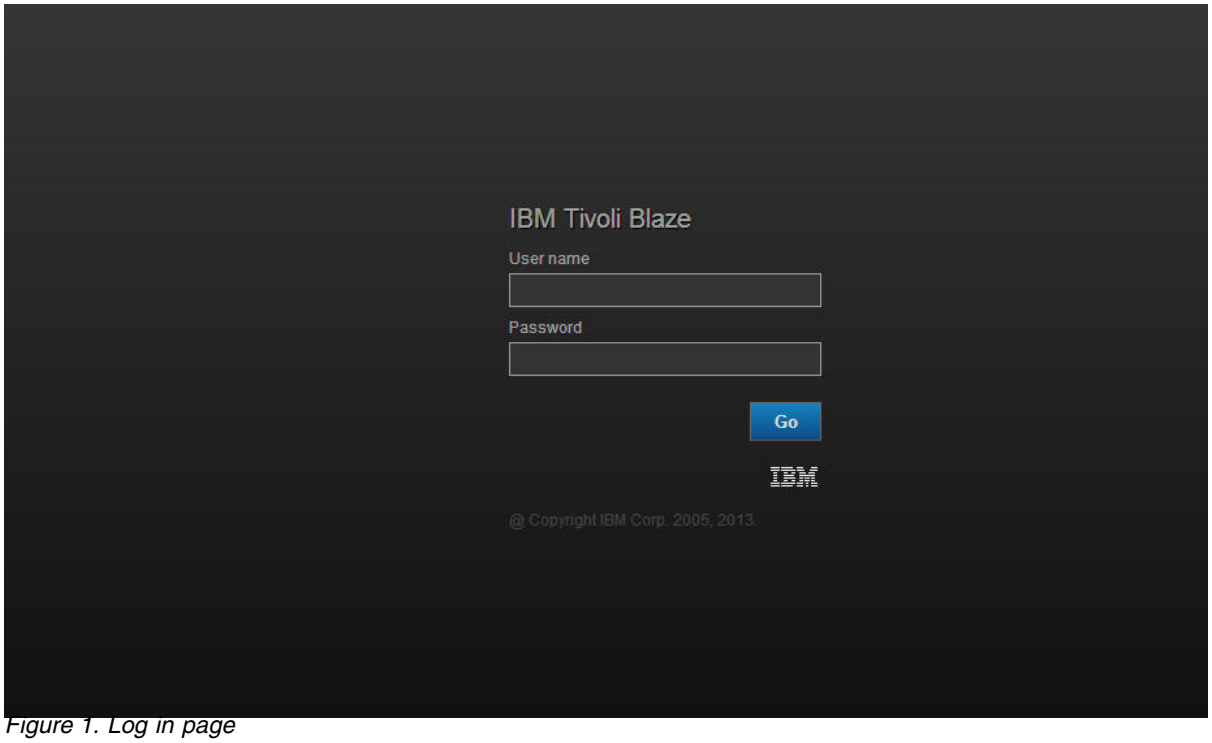

Figure 1. Log in page

2. Log in with the user name and password. The default user name is `apmadmin`. The password is the one that you entered during installation. The Getting Started page is displayed.
3. Click **View application status** > **Start Now**. The Application Dashboard is displayed.

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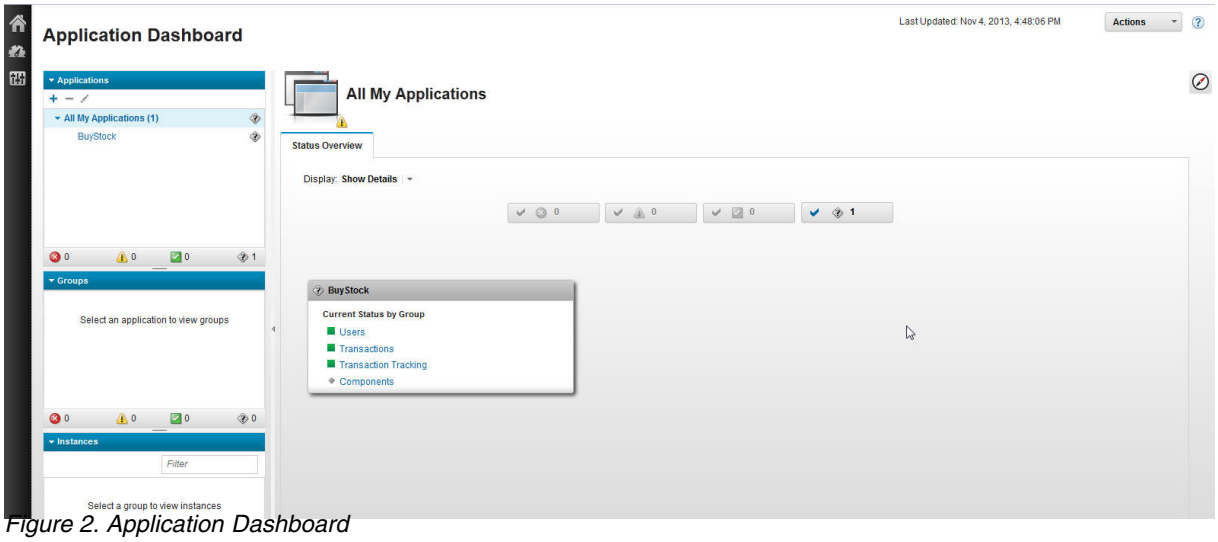


Figure 2. Application Dashboard

Results

You start the IBM SmartCloud Application Performance Management UI successfully.

Creating an application

You can use templates to customize your own dashboards to monitor the resources of your IT environments. You can add several applications to your Application Dashboard in the IBM SmartCloud Application Performance Management UI.

Before you begin

Before you create an application, you must select a data provider. For detailed information about how to select a data provider, see “Selecting data providers” on page 40.

About this task

To begin using the SmartCloud Application Performance Management UI, create an application for your Application Dashboard.

Procedure

1. Click the plus sign**(+)** at the upper left of Applications window to open the Add Application window. If no data provider is selected, a message is displayed to remind you to set the data provider. Click **OK** and ensure that the data provider is configured. The Add Application window is displayed:

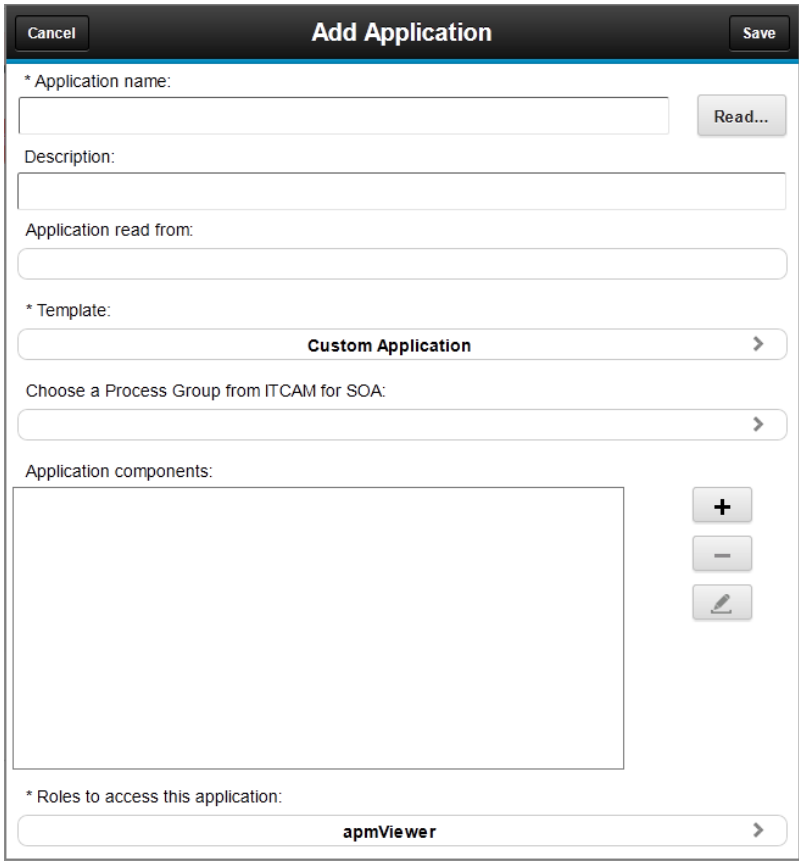


Figure 3. Add Application window

2. If you have applications that are registered in the application repository, or applications that are defined in the Application Management Console in ITCAM for Transactions, and you want to directly add the applications, see "Adding applications from the application repository" on page 46, starting from step 2 on page 48. Otherwise, specify an application name in the **Application name** field to start creating a new application.
3. Optional: Add a description of the application in the **Description** field.
4. Select a template from the list and click **Save**. The default template is Custom Application. If you select a template other than Custom Application, application resource types in the selected template are listed in the **Application components** list. If you select the Custom Application template, the **Application components** list remains empty. If you specify a template other than Custom Application, you cannot change the template type when you edit the application later.
5. If you have installed ITCAM for SOA SDMS agent in your environment, and you want to view the health status of business process groups, select a process group from the **Choose a Process Group from ITCAM for SOA** list. If you selected Custom Application as the template in the previous step, go to step 6 on page 46 to select Service Management Systems, WebSphere Process Server Cluster, and DB2 for your Business Process Management application, otherwise, go to step 7 on page 46 to select these components for your Business Process Management application. The process group option is available only when you select Custom Application or Business Process Management Application in the previous step.

6. If you selected Custom Application as the template, do the following steps to add application components, otherwise, skip this step and go on to the next step:
   a. Click the plus sign **(+)** on the right side of the **Application components** list. The Component Editor window is displayed.
   b. Select a component from the list. Instances of the component are displayed.
   c. Search and select one or more instances. You can also edit the component name. The component name is used as the display name in the navigator.
   d. Click **Add** on the upper right corner of the window.
   e. Click **Back** on the upper left corner of the window.
   f. If you want to add instances for other application components, repeat steps b, c, d, and e, otherwise, click **Close**.

   The Application components list is updated with the new component names. Numbers in parentheses after the names indicate how many instances are associated with the component.
7. If you selected a template other than Custom Application, do the following steps to add application components:
   a. Select an application resource type from the **Application components** list.
   b. Click **Edit**. Instances of the component are displayed.
   c. Search and select one or more instances. You can also edit the component name. The component name is used as the display name in the navigator.
   d. Click **Save**.
   e. Add instances for other application components as required by repeating steps a, b, c, and d.

   The Application components list is updated with the new component names. Numbers in parentheses after the names indicate how many instances are associated with the component.
8. Select one or more roles from the **Roles to access this application** list and click **Save**. Only users with the assigned roles can view the application data in the dashboard.
9. Click **Save** in the Add Application window.

Results

Your application is added to the Application Dashboard.

Adding applications from the application repository

If you have applications that are registered in the application repository, you can add these applications into SmartCloud Application Performance Management UI.

Before you begin

Application repository is the service component repository in SmartCloud Application Performance Management UI, it is used for storing application structures of SmartCloud Application Performance Management and communicating with multiple sources, such as Jazz for Service Management and the monitoring agents of ITCAM for Transactions, to get discovered application structures.

If you want to use application information from Jazz for Service Management, you must configure the connection between Jazz for Service Management and the

application repository of SmartCloud Application Performance Management UI before you add applications from the application repository. See “Configuring to use Jazz for Service Management” on page 318.

If you want to use application information from ITCAM for Transactions, you must configure the connection between ITCAM for Transactions and the application repository of SmartCloud Application Performance Management UI before you add applications from the application repository. See “Extracting Transaction Tracking data for SmartCloud Application Performance Management UI” on page 50.

Procedure

1. Click the plus sign**(+)** at the upper left of the Applications window to open the Add Application window. If no data provider is selected, a message is displayed to remind you to set the data provider. Click **OK** and ensure that the data provider is configured. The Add Application window is displayed.

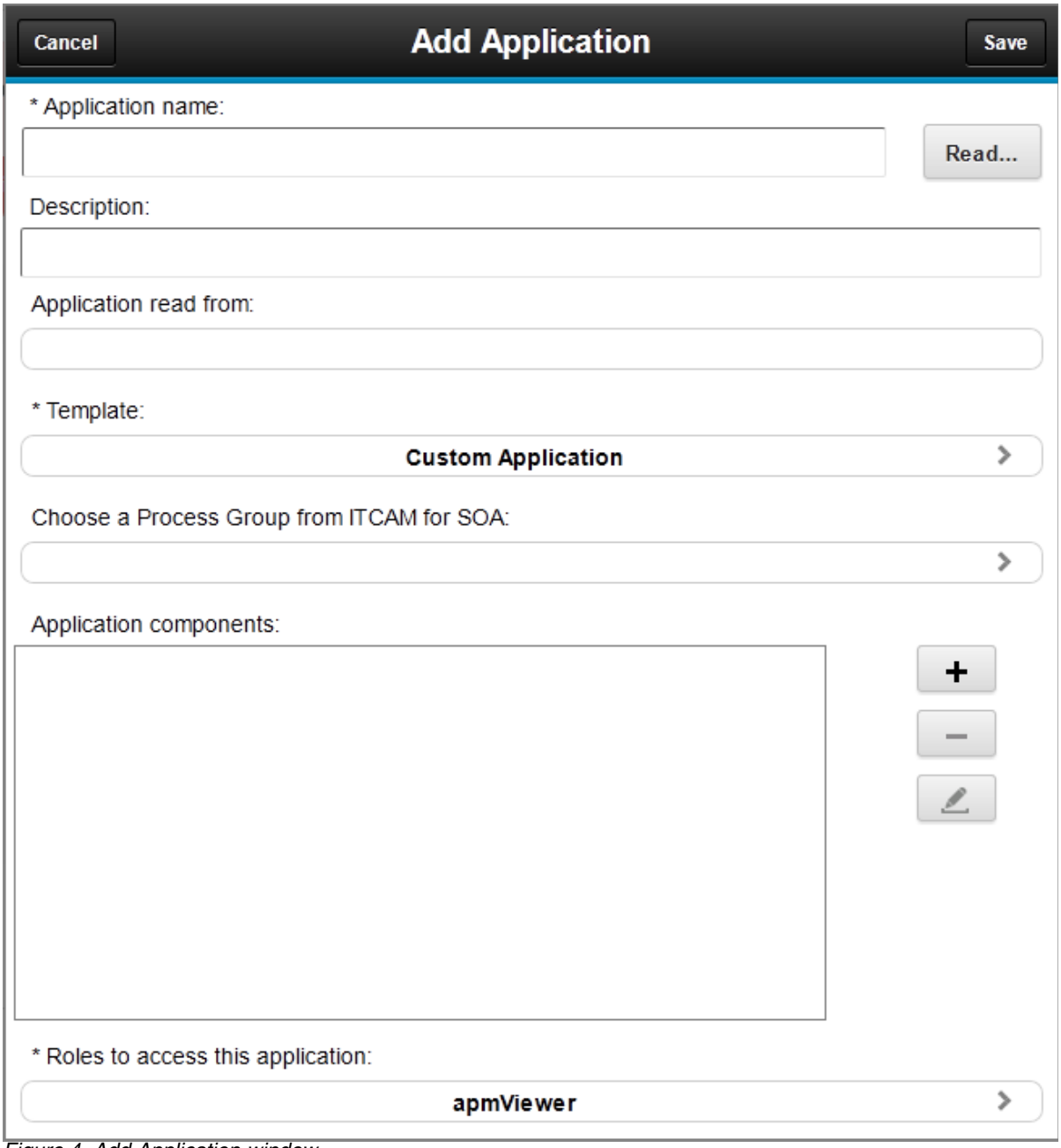


Figure 4. Add Application window

2. Click **Read** next to the **Application name** field. The Read Application window is displayed. The applications in the application repository are listed in this window. The application is read from one of the following sources:
   - If the application source is Application Management Console, the application is from Application Management Console agent and has data in the Clients and Transactions dashboard.
   - If the application source is Open Service Lifecycle Collaboration Data Providers, the application is from Open Service Lifecycle Collaboration Data Providers.
   - If the application source is IBM Tivoli Application Dependency Discovery Manager, the application is from IBM Tivoli Application Dependency Discovery Manager.

- If the application source is Transaction Tracking, the application is from ITCAM for Transactions: Transaction Reporter.
- If the application source is Response Time, the application is from ITCAM for Transactions: Web Response Time.

You can click **Detail** to view the structure of each application. The **Read** button is disabled after you read one application from the application repository.

3. Select one application and click **Save**. The Read Applications from Repository window is closed and the structure of the selected application is displayed in the **Application components** list. The **Application name** field is automatically populated with the name of the selected application. You can change the value in this field. The value of the **Application read from** field indicates the application type.
4. Refine the structure if necessary.
   - Refine the application structure with the plus sign**(+)**, minus sign**(-)**, and **Edit** button next to the **Application components** list.
   - You can change the Managed System Name of a component instance by using the **Edit** button.
     a. Select the component instance in the **Application components** list and click the icon. The Select Managed System Name window is displayed.
     b. Select the managed system name that you want and click **Save**. The Managed System Name is changed.
   - If some other instances are related to the existing components in **Application components** list, a blue button that shows the number of related instances is displayed beside the **Application components** list title. Do the following steps to add those related instances.
     a. Click the blue button, and the related instances are displayed in Select Related Nodes window.
     b. Select one or more instances to add into the **Application components** list.
     c. Click **Save** to add the components.
     d. The indicator that shows the related instances is updated. You can repeat step a, b, and c to add those related components.
5. Click **Save** on the upper right of Add Application panel to save the application.

Results

The application is created in SmartCloud Application Performance Management UI.

Displaying Transaction Tracking data in SmartCloud Application Performance Management UI

You can display Transaction Tracking data in SmartCloud Application Performance Management UI.

Transaction Tracking provides a tool to convert Transaction Tracking records into XML, then into resource shapes which are posted to Service Component Repository (SCR) for use by the SmartCloud Application Performance Management UI. The generated CRTV shapes conform to the Transaction Tracking TT vocabulary defined at TTVocabulary(https://jazz.net/wiki/bin/view/Main/TTVocabulary).

To display Transaction Tracking data in SmartCloud Application Performance Management UI, run the Transaction Tracking RDF tool. The Transaction Tracking RDF is included with the Transaction Reporter in ITCAM for Transactions V7.4 and later. If required, set up a task to automatically extract the data.

Note: Transaction Tracking topologies cannot be displayed in SmartCloud Application Performance Management UI.

Extracting Transaction Tracking data for SmartCloud Application Performance Management UI

To display Transaction Tracking data in IBM SmartCloud Application Performance Management UI, run the Transaction Tracking RDF tool.

Before you begin

You must configure the Application Management Configuration Editor of ITCAM for Transactions so that SmartCloud Application Performance Management UI can read the transaction data properly. For a sample video about configuring a data provider demo, see the SmartCloud Application Performance Management UI Media Gallery (https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM%20SmartCloud%20Application%20Performance%20Management/page/Media%20Gallery%20for%20SC%20APM%20UI).

About this task

The Transaction Tracking RDF tool extracts data in an XML format from the `todata` directory before converting the data to resource shapes.

Tip: To troubleshoot any problems, uncomment the `DEBUG_OPTIONS` flag in the script. You can also update the logging properties in the `logging.properties` file, and trace the conversion in an `rdf.log` file.

Restriction: While converting todata to CRTV shapes, the tool writes a `lastPersist.properties` file to keep track of the last persist time stamp. Do not modify this file. If this file does not exist, the tool attempts to persist all existing transaction track records in todata as new records to the SCR.

Procedure

To extract Transaction Tracking data for use in the SmartCloud Application Performance Management UI, complete the following steps:

1. Modify `itcamfttdla_config.properties` to configure the SCR connection details and credentials.

   This file can be found in the following locations:

   - On Linux and UNIX systems, `$CANDLE_HOME/`*`platform`*`/to/bin`
   - On Windows systems, `%CANDLE_HOME%\TMAITM6\tosupport`

   In a typical setup, you should need to specify only the following properties:

   - **`SCR_SERVER_ADDRESS`**
   - **`SCR_USERNAME`**
   - **`SCR_PASSWORD`**. Ensure that the password is base64 encoded. Do the following steps to encode the password:
     a. On Windows systems, navigate to the `%CANDLE_HOME%\TMAITM6\tosupport` directory. On Linux or UNIX systems, navigate to the `$CANDLE_HOME/`*`platform`*`/to/bin` directory.

b. On Windows systems, run the **run-rdf.bat -convertToBase64** *SCR_PASSWORD* command, where *SCR_PASSWORD* is the password that you want to encode. On Linux or UNIX systems, run the **run-rdf.sh -convertToBase64** *SCR_PASSWORD* command. The encoded password is displayed on the console.

2. Run the Transaction Tracking RDF tool:
   - On Linux and UNIX systems: `$CANDLE_HOME/platform/to/bin/run-rdf.sh`
   - On Windows systems: `%CANDLE_HOME%\TMAITM6\tosupport\run-rdf.bat`

Results

To view the generated CRTV shapes in a `todata.rdf` file, uncomment the `DEBUG_OPTIONS` flag in the `run-rdf.sh` or `run-rdf.bat` script. A typical output file might be:

```
<?xml version="1.0" encoding="UTF-8"?><rdf:RDF xmlns:rdf="http://www.w3.org/1999/
02/22-rdf-syntax-ns#" xmlns:crtv="http://open-services.net/ns/crtv#" xmlns:dcterms=
"http://purl.org/dc/terms/" xmlns:itm="http://jazz.net/ns/ism/perfmon/itm#" xmlns:
oslc="http://open-services.net/ns/core#" xmlns:oslc_auto="http://open-services.net/
ns/auto#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" xmlns:rr="http://jazz.
net/ns/ism/registry#" xmlns:tt="http://jazz.net/ns/ism/perfmon/tt#">
  <oslc_auto:AutomationRequest>
    <oslc_auto:executesAutomationPlan rdf:resource="http://jazz.net/ns/ism/registry
#CreateRegistrationRecords"/>
    <oslc_auto:inputParameter>
      <oslc_auto:ParameterInstance>
        <rdf:value>
          <rr:Records>
            <!--Agent-based Shapes-->
            <rdfs:member>
              <crtv:Application rdf:about="http://experimental/tt/testserver:TO/
Application/testtestapplication">
                <crtv:dependsOn rdf:resource="http://open-services.net/ns/crtv#
NULL"/>
                <crtv:name>testtestapplication</crtv:name>
                <rdf:type rdf:resource="http://open-services.net/ns/crtv#
ServiceInstance"/>
                <crtv:parentServiceInstance rdf:resource="http://open-services.net/
ns/crtv#NULL"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
              </crtv:Application>
            </rdfs:member>
            <rdfs:member>
              <crtv:Transaction rdf:about="http://experimental/tt/testserver:TO/
Transaction/testtest">
                <crtv:parentServiceInstance rdf:resource="http://experimental/tt/
testserver:TO/Application/testtestapplication"/>
                <rdfs:member rdf:resource="http://experimental/tt/testserver:TO/
Resource/server_a/MB_2/testtestapplication/transaction_a"/>
                <rdfs:member rdf:resource="http://experimental/tt/testserver:TO/
Resource/server_b/MB_3/testtestapplication/transaction_b"/>
                <rdfs:member rdf:resource="http://experimental/tt/testserver:TO/
Resource/server_1/MB_1/testtestapplication/transaction_1"/>
                <crtv:name>testtest</crtv:name>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
              </crtv:Transaction>
            </rdfs:member>
            <rdfs:member>
              <rdfs:Resource rdf:about="http://experimental/tt/testserver:TO/
Resource/server_a/MB_2/testtestapplication/transaction_a">
```

```
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:TO/
SoftwareServer/server_a/MB_2/testtestapplication"/>
                <crtv:name>transaction_a</crtv:name>
                <tt:id>0</tt:id>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <tt:applicationName>testtestapplication</tt:applicationName>
                <tt:transactionName>transaction_a</tt:transactionName>
              </rdfs:Resource>
            </rdfs:member>
            <rdfs:member>
              <crtv:SoftwareServer rdf:about="http://experimental/tt/testserver:TO/
SoftwareServer/server_a/MB_2/testtestapplication">
                <tt:component>MB_2</tt:component>
                <crtv:name>testtestapplication</crtv:name>
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:TO/
ComputerSystem/10.1.1.1"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
              </crtv:SoftwareServer>
            </rdfs:member>
            <rdfs:member>
              <crtv:ComputerSystem rdf:about="http://experimental/tt/testserver:TO/
ComputerSystem/10.1.1.1">
                <crtv:shortHostname>server_a</crtv:shortHostname>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
              </crtv:ComputerSystem>
            </rdfs:member>
            <rdfs:member>
              <rdfs:Resource rdf:about="http://experimental/tt/testserver:
TO/Resource/
was_server1/WebSphere:APPLICATION_SERVER/cell01/Process%20Request_1">
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:TO/
SoftwareServer/was_server1/WebSphere:APPLICATION_SERVER/cell01"/>
                <crtv:name>Process Request_1</crtv:name>
                <tt:id>1</tt:id>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <tt:applicationName>cell01</tt:applicationName>
                <tt:transactionName>Process Request_1</tt:transactionName>
              </rdfs:Resource>
            </rdfs:member>
            <rdfs:member>
              <crtv:SoftwareServer rdf:about="http://experimental/tt/
testserver:TO/
SoftwareServer/was_server1/WebSphere:APPLICATION_SERVER/cell01">
                <tt:component>WebSphere:APPLICATION_SERVER</tt:component>
                <rdf:type rdf:resource="http://open-services.net/ns/crtv#
WebSphereServer"/>
                <crtv:name>cell01</crtv:name>
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:TO/
ComputerSystem/10.1.1.1"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
              </crtv:SoftwareServer>
            </rdfs:member>
            <rdfs:member>
              <rdfs:Resource rdf:about="http://experimental/tt/testserver:
TO/Resource/
server_b/MB_3/testtestapplication/transaction_b">
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:
TO/SoftwareServer/server_b/MB_3/testtestapplication"/>
```

```
                <crtv:name>transaction_b</crtv:name>
                <tt:id>2</tt:id>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <tt:applicationName>testtestapplication</tt:applicationName>
                <tt:transactionName>transaction_b</tt:transactionName>
              </rdfs:Resource>
            </rdfs:member>
            <rdfs:member>
              <crtv:SoftwareServer rdf:about="http://experimental/tt/testserver:
TO/SoftwareServer/server_b/MB_3/testtestapplication">
                <tt:component>MB_3</tt:component>
                <crtv:name>testtestapplication</crtv:name>
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:
TO/ComputerSystem/10.1.1.1"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
              </crtv:SoftwareServer>
            </rdfs:member>
            <rdfs:member>
              <rdfs:Resource rdf:about="http://experimental/tt/testserver:
TO/Resource/was_server2/WebSphere:APPLICATION_SERVER/cell01/Process%20Request_2">
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:
TO/SoftwareServer/was_server2/WebSphere:APPLICATION_SERVER/cell01"/>
                <crtv:name>Process Request_2</crtv:name>
                <tt:id>3</tt:id>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <tt:applicationName>cell01</tt:applicationName>
                <tt:transactionName>Process Request_2</tt:transactionName>
              </rdfs:Resource>
            </rdfs:member>
            <rdfs:member>
              <crtv:SoftwareServer rdf:about="http://experimental/tt/testserver:
TO/SoftwareServer/was_server2/WebSphere:APPLICATION_SERVER/cell01">
                <tt:component>WebSphere:APPLICATION_SERVER</tt:component>
                <rdf:type rdf:resource="http://open-services.net/ns/crtv#
WebSphereServer"/>
                <crtv:name>cell01</crtv:name>
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:TO/
ComputerSystem/10.1.1.1"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
              </crtv:SoftwareServer>
            </rdfs:member>
            <rdfs:member>
              <rdfs:Resource rdf:about="http://experimental/tt/testserver:
TO/Resource/server_1/MB_1/testtestapplication/transaction_1">
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:
TO/SoftwareServer/server_1/MB_1/testtestapplication"/>
                <crtv:name>transaction_1</crtv:name>
                <tt:id>4</tt:id>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <tt:applicationName>testtestapplication</tt:applicationName>
                <tt:transactionName>transaction_1</tt:transactionName>
              </rdfs:Resource>
            </rdfs:member>
            <rdfs:member>
              <crtv:SoftwareServer rdf:about="http://experimental/tt/testserver:
TO/SoftwareServer/server_1/MB_1/testtestapplication">
```

```
                <tt:component>MB_1</tt:component>
                <crtv:name>testtestapplication</crtv:name>
                <crtv:runsOn rdf:resource="http://experimental/tt/testserver:
TO/ComputerSystem/10.1.1.1"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
              </crtv:SoftwareServer>
            </rdfs:member>
            <!--Agentless Shapes-->
            <!--Paths-->
            <rdfs:member>
              <crtv:Path rdf:about="http://experimental/tt/testserver:TO/1-0">
                <crtv:elementTo rdf:resource="http://experimental/tt/testserver:
TO/Resource/server_a/MB_2/testtestapplication/transaction_a"/>
                <crtv:elementFrom rdf:resource="http://experimental/tt/testserver:
TO/Resource/was_server1/WebSphere:APPLICATION_SERVER/cell01/Process%20Request_1"/>
                <crtv:occursBefore rdf:resource="http://open-services.net/ns/crtv#
NULL"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <tt:fromId>1</tt:fromId>
                <tt:toId>0</tt:toId>
              </crtv:Path>
            </rdfs:member>
            <rdfs:member>
              <crtv:Path rdf:about="http://experimental/tt/testserver:TO/2-1">
                <crtv:elementTo rdf:resource="http://experimental/tt/testserver:
TO/Resource/was_server1/WebSphere:APPLICATION_SERVER/cell01/Process%20Request_1"/>
                <crtv:elementFrom rdf:resource="http://experimental/tt/testserver:
TO/Resource/server_1/MB_1/testtestapplication/transaction_1"/>
                <crtv:occursBefore rdf:resource="http://open-services.net/ns/crtv
#NULL"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <tt:fromId>4</tt:fromId>
                <tt:toId>1</tt:toId>
              </crtv:Path>
            </rdfs:member>
            <rdfs:member>
              <crtv:Path rdf:about="http://experimental/tt/testserver:TO/3-4">
                <crtv:elementTo rdf:resource="http://experimental/tt/testserver:
TO/Resource/server_b/MB_3/testtestapplication/transaction_b"/>
                <crtv:elementFrom rdf:resource="http://experimental/tt/testserver:
TO/Resource/was_server2/WebSphere:APPLICATION_SERVER/cell01/Process%20Request_2"/>
                <crtv:occursBefore rdf:resource="http://open-services.net/ns/crtv#
NULL"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
testserver:TO"/>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <tt:fromId>3</tt:fromId>
                <tt:toId>2</tt:toId>
              </crtv:Path>
            </rdfs:member>
            <rdfs:member>
              <crtv:Path rdf:about="http://experimental/tt/testserver:TO/2-3">
                <crtv:elementTo rdf:resource="http://experimental/tt/testserver:
TO/Resource/was_server2/WebSphere:APPLICATION_SERVER/cell01/Process%20Request_2"/>
                <crtv:elementFrom rdf:resource="http://experimental/tt/testserver:
TO/Resource/server_1/MB_1/testtestapplication/transaction_1"/>
                <crtv:occursBefore rdf:resource="http://open-services.net/ns/crtv#
NULL"/>
                <oslc:serviceProvider rdf:resource="http://experimental/tt/
```

```
testserver:TO"/>
                <itm:managedSystemName>testserver:TO</itm:managedSystemName>
                <itm:managedSystemName>testserver:TU</itm:managedSystemName>
                <tt:fromId>4</tt:fromId>
                <tt:toId>3</tt:toId>
              </crtv:Path>
            </rdfs:member>
          </rr:Records>
        </rdf:value>
      </oslc_auto:ParameterInstance>
    </oslc_auto:inputParameter>
    <dcterms:identifier>RegistrationRecordCreateRequest
    </dcterms:identifier>
    <dcterms:title>Registration record creation request</dcterms:title>
  </oslc_auto:AutomationRequest>
</rdf:RDF>
```

If there are no records to persist, the output is similar to the following output:

```
SCR timestamp of last persisted record: 23/04/2013 09:20:10
Metadata file: C:\opt\IBM\ITM\TMAITM6\todata\topology\MetaData.xml
Processing RecordIdentity files [ 0 file(s) ]...OK
Processing Edge files...OK
Processing Vertical files...OK
Nothing to persist.
```

If there are new records to persist, the output is similar to the following output:

```
Metadata file: C:\opt\IBM\ITM\TMAITM6\todata\topology\MetaData.xml
Processing RecordIdentity files [ 62 file(s) ]...OK
Processing Edge files...OK
Processing Vertical files...OK
Persist RDF OK
```

Extracting Transaction Tracking data for SmartCloud Application Performance Management UI automatically

If you schedule a task to automatically extract Transaction Tracking data and persist it to SCR, the most recent data is always available to the IBM SmartCloud Application Performance Management UI.

Procedure

Complete one of the following steps, depending on your system.

- Windows systems: Run the following script to extract data every 5 minutes.

  ```
  schtasks /create /tn "Persist TT RDF" /tr
  C:\IBM\ITM\TMAITM6\tosupport\run-rdf.bat
   /sc MINUTE /mo 5
  ```

- AIX, Linux, and UNIX systems: Create a cron job. Set up of the cron job depends on your platform. For example:

  ```
  # .---------------- minute (0 - 59)
  # |  .------------- hour (0 - 23)
  # |  |  .---------- day of month (1 - 31)
  # |  |  |  .------- month (1 - 12)
  # |  |  |  |  .---- day of week (0 - 6)
  # |  |  |  |  |
  # *  *  *  *  * command to be executed
  # Run every 5 minutes
    */5  *  *  *  * /opt/IBM/ITM/aix536/to/bin/run-rdf.sh
  ```

Application Dashboard overview

The Application Dashboard displays information about monitored applications in your enterprise. The navigator is on the left. At the highest level, you can get a

high-level overview of the status of the monitored applications. From there, you can navigate to a specific application to view its detailed information.

On the right is a pane that contains two tabbed pages. The **Status Overview** tab presents an overview of each monitored application, or a specific application, depending on the item that you select in the navigator. The **Events** tab presents the events that are associated with the monitored applications.

The monitored applications are listed in the navigator with an icon that indicates the status of the application. An application has the following four status types. They are listed here in the order of severity:

- Critical, which is denoted by a red circle. It indicates that critical thresholds are exceeded.
- Warning, which is denoted by a yellow triangle. It indicates that warning thresholds are exceeded.
- Unknown, which is denoted by a gray diamond.
- Normal, which is denoted by a green square.

When you select **All My Applications** in the navigator, the status of each monitored application by group is presented on the **Status Overview** tab. The status information is divided into the following groups:

- **Users**
  - **Authenticated Users**
  - **Mobile Device Users**
  - **Client Groups**
- **Transactions**
  - **End User Transactions**
- **Transaction Tracking**
- **Components**

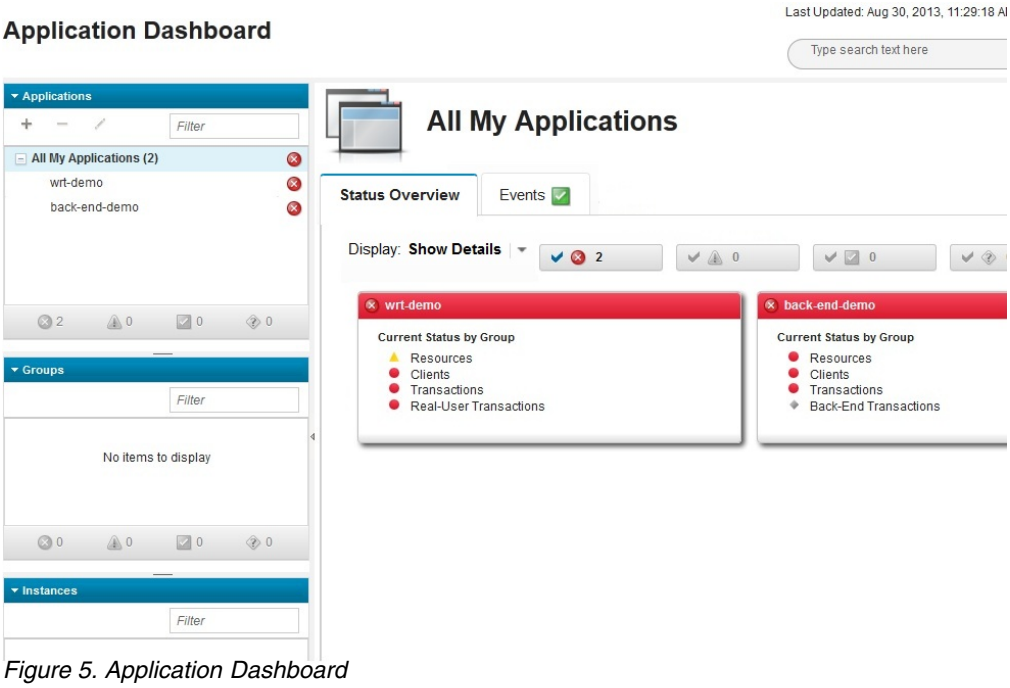


Figure 5. Application Dashboard

The overall status of a monitored application is determined by the highest status of the groups.

My Components

My Components is a predefined application that is designed for small-scale enterprises. It is available even before you manually add any applications to SmartCloud Application Performance Management UI. My Components is in the navigator in the Application Dashboard and shows all components that are stored in the application repository. If your enterprise has a large number of components, be aware that enabling My Components might have negative impact on the overall performance of SmartCloud Application Performance Management UI. You cannot modify or delete My Components. You can enable or disable it.

"Disabling My Components"
If you no longer need the My Components application, you can disable it. You cannot modify or delete My Components.

"Enabling My Components" on page 58
My Components is a predefined application that is designed for small-scale enterprises. It provides an overview of the components that are stored in the SmartCloud Application Performance Management UI.

Disabling My Components:

If you no longer need the My Components application, you can disable it. You cannot modify or delete My Components.

Procedure

1. Log on to the system on which the SmartCloud Application Performance Management UI server is running.
2. Go to the *apm_ui_install*`/user/servers/apmui/apps/customCfg` directory, where *apm_ui_install* is the installation directory of SmartCloud Application Performance Management UI.
3. Edit the `apmui.cfg` file to set ENABLE_MY_COMPONENTS to false.

4. Depending on your operating system, run one of the following commands for the changes to take effect:

```
(For Windows systems)
apmcfg.bat -o APM_UI_port -u APM_user -p APM_password
(For Linux or UNIX systems)
./apmcfg.sh -o APM_UI_port -u APM_user -p APM_password
```

   Where

   - *APM_UI_port* is the HTTPS port number of SmartCloud Application Performance Management UI.
   - *APM_user* is a user ID of SmartCloud Application Performance Management UI with administrative authorities.
   - *APM_password* is the password that is associated with the user ID.

Enabling My Components:

My Components is a predefined application that is designed for small-scale enterprises. It provides an overview of the components that are stored in the SmartCloud Application Performance Management UI.

Before you begin

If your enterprise has a large number of components, be aware that enabling My Components might have negative impact on the overall performance of SmartCloud Application Performance Management UI.

Procedure

1. Log on to the system on which the SmartCloud Application Performance Management UI server is running.
2. Go to the *apm_ui_install*`/user/servers/apmui/apps/customCfg` directory, where *apm_ui_install* is the installation directory of SmartCloud Application Performance Management UI.
3. Edit the `apmui.cfg` file to set ENABLE_MY_COMPONENTS to true.
4. Depending on your operating system, run one of the following commands for the changes to take effect:

```
(For Windows systems)
apmcfg.bat -o APM_UI_port -u APM_user -p APM_password
(For Linux or UNIX systems)
./apmcfg.sh -o APM_UI_port -u APM_user -p APM_password
```

   Where

   - *APM_UI_port* is the HTTPS port number of SmartCloud Application Performance Management UI.
   - *APM_user* is a user ID of SmartCloud Application Performance Management UI with administrative authorities.
   - *APM_password* is the password that is associated with the user ID.

Users

Specific dashboards are available to display Authenticated Users, Mobile Device Users, and Client Groups information.

Authenticated Users:

Click Authenticated Users in the navigator to display summary information for all authenticated users.

Authenticated Users is displayed when the following conditions are met:

- The mobile eba file (`com.ibm.apm.ui.kt5.dashboard.mobile`) is added to the `\usr\servers\apmui\dropins` directory.
- The Web Response Time agent is added to the application repository.

Mobile Device Users:

Click Mobile Device Users in the navigator to display summary information for all mobile device users.

Mobile Device Users is displayed when the following conditions are met:

- The mobile eba file (`com.ibm.apm.ui.kt5.dashboard.mobile`) is added to the `\usr\servers\apmui\dropins` directory.
- The Web Response Time agent is added to the application repository.

Client Groups:

Click Client Groups in the navigator to display summary information for all Client Groups. This dashboard is available only when an application is monitored by Response Time agents. Widgets use data from the Application Management Console, and Client Groups can be customized in the Application Management Configuration Editor.

The Client Groups dashboard displays the following widgets:

Client Status Summary group widget
The Client Status Summary group widget displays a bar graph with the state of the monitored clients.

Overall Volume group widget
The Overall Volume group widget displays a bar chart with the number of transactions over the last hour.

Overall Response Time group widget
The Overall Response Time group widget displays a line graph with the average response time of transactions over the last hour.

Clients - Top 10 group widget
The Clients - Top 10 group widget displays a table with the clients of most interest over the last period.

Status Displays the status of the client. Double-click the title of this column to reverse the display order of the clients.

Transaction Volume
Displays the number of transaction requests per period.

Failed
Displays the percentage of failed transactions in the current period.

Slow Transactions
Displays the percentage of slow transactions in the current period.

Response Time
Displays a summary line graph and the average response time of the transactions for a client during the current period.

Timestamp
Displays the time at which the summarized data was collected.

Transactions

Specific dashboards are available to display end user transactions.

End User Transactions dashboards:

To make the most of the End User Transactions dashboards, you must first optimize the monitoring environment.

The Transaction Tracking dashboard displays the Transaction Tracking Summary group widget, which contains the following information:

Response Time (ms)
The total amount of time for the Internet Services Monitoring attempt.

Transaction Volume (per second)
Number of transaction instances, not including failed transactions.

Slow (%)
The percentage of transactions whose requests were marked as slow.

Failed (%)
The percentage of transactions whose requests were marked as failed.

Instances
The Number of instances. If the failed count of instance is greater than 0, the instance is displayed as critical. If the slow count of instance is greater than 0, the instance is displayed as warning.

Transactions
The Number of transactions. If the failed count of transaction is greater than 0, the transaction is displayed as critical. If the slow count of transaction is greater than 0, then the transaction is displayed as warning.

Prerequisites

The SmartCloud Application Performance Management UI uses the following agents in the End User Transactions dashboards:

- Application Management Console
- Robotic Response Time
- Web Response Time

Important: You must be familiar with these agents and be able to use the Application Management Configuration Editor to customize data. For more information about the Application Management Configuration Editor, see Configuring your monitoring environment with the Application Management Configuration Editor in the *ITCAM for Transactions Administrator's Guide*.

Typical deployment for ITCAM for Transactions

Figure 6 on page 61 displays the supported ITCAM for Transactions agents.

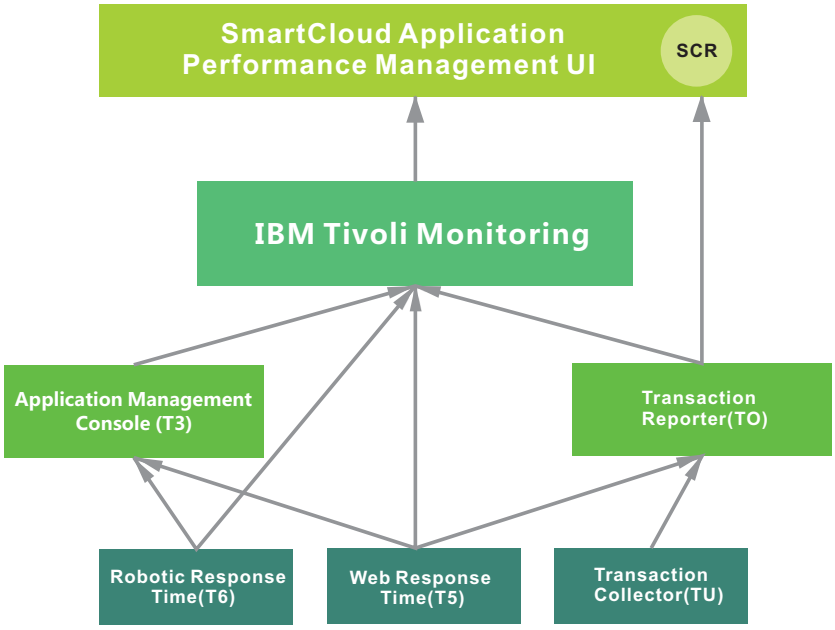
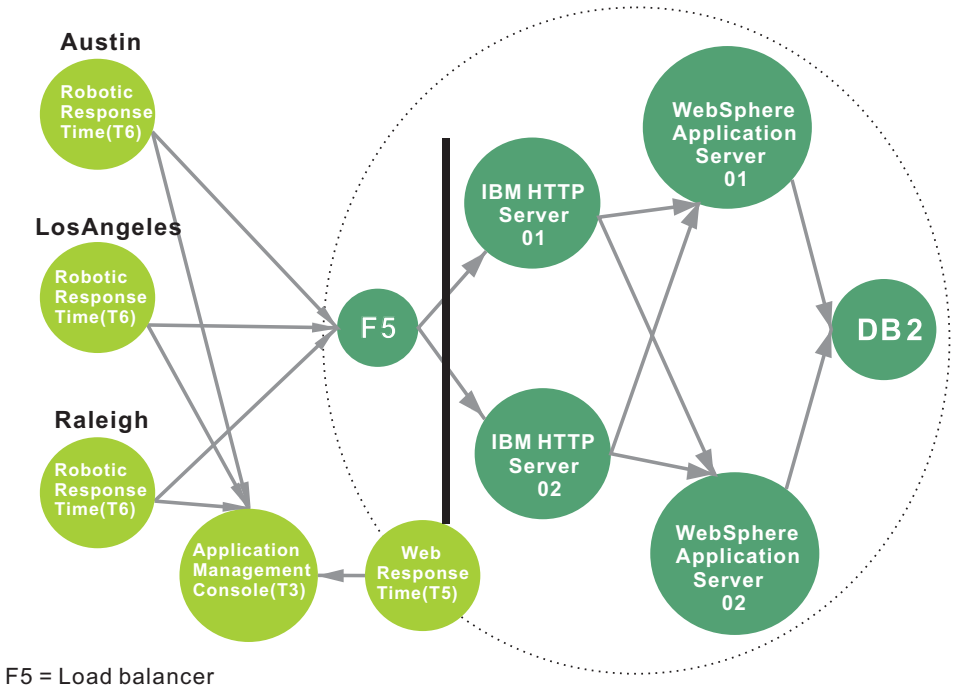


Figure 6. Supported ITCAM for Transactions agents

The Web Response Time agents are required. A deployment scenario is displayed in Figure 7 on page 62.



F5 = Load balancer

Figure 7. Deployment scenario that uses Web Response Time

Transaction Tracking

Specific dashboards are available to display transaction tracking information.

Transaction Tracking dashboard:

The Transaction Tracking dashboard displays the Transaction Tracking Summary group widget, which contains the following information:

Response Time (ms)
The total amount of time for the Internet Services Monitoring attempt.

Transaction Volume (per second)
Number of transaction instances, not including failed transactions.

Slow (%)
The percentage of transactions whose requests were marked as slow.

Failed (%)
The percentage of transactions whose requests were marked as failed.

Instances
The Number of instances. If the failed count of instance is greater than 0, the instance is displayed as critical. If the slow count of instance is greater than 0, the instance is displayed as warning.

Transactions
The Number of transactions. If the failed count of transaction is greater than 0, the transaction is displayed as critical. If the slow count of transaction is greater than 0, then the transaction is displayed as warning.

Components

The **Components** section of the navigator displays a list of application components.

Clicking a component displays group widgets with key performance indicators in the **Status Overview** tab for the selected component.

Clicking any key performance indicator displays detailed information that is based on key performance indicators of the corresponding instance.

Double-clicking any group widget with detailed information starts a new **Tivoli Enterprise Portal WebStart Client**, which provides more information on the corresponding key performance indicator.

Note: The **Tivoli Enterprise Portal WebStart Client** cannot be started on devices that are running iOS or Mac OS.

Events tab

The **Events** tab displays IBM Tivoli Monitoring situation events for all monitored applications, or a specific application, depending on the item that you select in the navigator.

The **Events** tab displays the following widgets:

Event Status group widget
The Event Status group widget displaysIBM Tivoli Monitoring situation events for the selected application. The Event Severity Summary displays the count and percentage of the events by severity. The Event Table displays situation events that are ordered by severity and time stamp. In both components, the data is based on the top 300 situation events

available from IBM Tivoli Monitoring. Click a situation event to view more details for the event, the Event Detail group widget opens.

The Event Table displays the following information about situation events:

Situation Name
The name of the IBM Tivoli Monitoring situation.

Status The event state.

Severity
Severity of the situation event. Possible values are normal, warning, and critical.

Display Item
Event display item, which highlights what this event is.

Source
The managed system on which the situation event is fired.

Description
The description of the event.

Event Detail group widget
The Event Detail group widget displays the details of a situation event that is selected in the event table. To open the Event Detail group widget, click a situation event in the Event Status group widget. This widget supports in-context navigation to a detailed view for the relevant resource.

Synchronizing applications with updates from Jazz for Service Management and Transaction Tracking

If you have established connections between the application repository of SmartCloud Application Performance Management UI and Jazz for Service Management, and between the application repository of SmartCloud Application Performance Management UI and Transaction Tracking, when applications are changed, the changes are detected by SmartCloud Application Performance Management UI and you can choose to accept these changes.

About this task

SmartCloud Application Performance Management UI detects application changes periodically. Update messages are displayed in the UI for applications in which a change was detected. If you add applications from the application repository, when these applications are changed in their definition source, for example, the IBM Tivoli Application Dependency Discovery Manager, these changes are detected by SmartCloud Application Performance Management UI. To synchronize an application, complete the following steps to accept the changes.

Note: Transaction Tracking is not able to detect component deletions. For those related applications, if any component is deleted from the source, it cannot be detected by Transaction Tracking.

Procedure

1. To accept the changes for an application, select the application that has updates and click the icon in the upper middle of the Applications window. The Edit Application window is displayed. A blue button that shows the number of updated application components is displayed on the right side of the **Application components** list title.

2. Click the blue button. The updated components are displayed in the Updated Details window.
3. Select the changes that you want to accept. The term **suggested components** refers to the downstream nodes of the existing application components.
   - **Suggested components from Transaction Tracking** lists the downstream nodes that are not added into the application when you edit the application last time. Each suggested component shows its related item from upstream. The data comes from Transaction Tracking.
   - **New suggested components from Transaction Tracking** lists the new downstream nodes that appear after you edit and save the application last time. Each suggested component shows its related item from upstream. The data comes from Transaction Tracking.
   - **Updated components from Jazz for Service Management** lists the existing application components that have updates. The data comes from Jazz for Service Management.
   - **New components** lists the components that are newly added to the application. The data comes from both Jazz for Service Management and Transaction Tracking.
   - **Deleted components** lists the components that are deleted from the application. The data comes from both Jazz for Service Management and Transaction Tracking.

   You can select one component, or multiple components. You can use the search function to search the components that you want.
4. Click **Save** to accept the changes. The application structure in the **Application components** list is updated to reflect these changes.
5. If another blue button is displayed on the right side of the **Application components** list title, repeat step 3 and 4 to accept the updates.
6. Click **Save** on the upper right of the Edit Application window to save the changes to the application.

Results

The application in SmartCloud Application Performance Management UI is now synchronized with its source.

Editing an application

You can edit the applications on your Application Dashboard in the IBM SmartCloud Application Performance Management UI.

About this task

To edit an application, complete the following steps:

Procedure

1. In the Applications window, select the application that you would like to edit.
2. Click the icon in the upper middle of the Applications window. The Edit Application window is displayed:

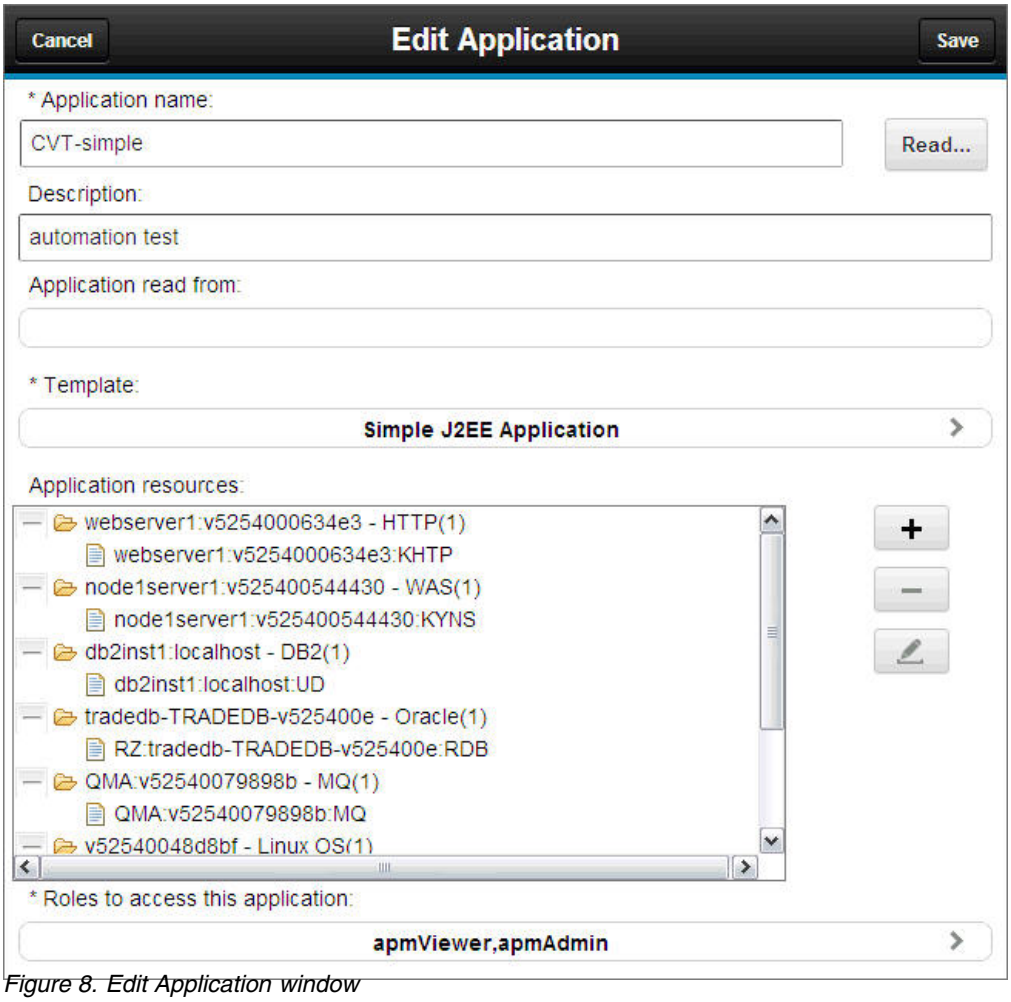


Figure 8. Edit Application window

3. Edit the application components and roles as necessary. Templates cannot be edited, unless you want to change the template to a custom application template.
   - Refine the application structure with the plus sign**(+)**, minus sign**(-)**, and **Edit** buttons next to the **Application components** list.
   - You can change the Managed System Name of a component instance by using the **Edit** button.
     a. Select the component instance in the **Application components** list and click the icon. The Select Managed System Name window is displayed.
     b. Select the managed system name that you want and click **Save**. The Managed System Name is changed.
   - If some other instances are related to the existing components in **Application components** list, a blue button that shows the number of related instances is displayed beside the **Application components** list title. Do the following steps to add those related instances.
     a. Click the blue button, and the related instances are displayed in Select Related Nodes window.
     b. Select one or more instances to add into the **Application components** list.
     c. Click **Save** to add the components.

d. The indicator that shows the related instances is updated. You can repeat step a, b, and c to add those related components.

4. Click **Save**.

Results

Your application is updated with new roles and application components.

Customizing the Component Dashboard

You can change the appearance of the UI.

About this task

You can customize the Component Dashboard by adding, removing, resizing a component group widget, or changing the settings of a component group widget in the Component Dashboard.

Editing group widget thresholds on the Component Dashboard

You can edit group widget thresholds on your Component dashboard in the IBM SmartCloud Application Performance Management UI.

About this task

You can edit a group widget on the Component Dashboard to change its thresholds.

Procedure

1. In the Applications window of the Application Dashboard, select an application to edit.
2. In the Groups window, click **Components** to enter the Components dashboard.
3. Click **Actions** in the upper-right corner and select **Edit** to enter the editing interface. This interface contains a number of widgets that you can edit.

   Note: The **Edit** option is available in the Components dashboard only.
4. Click **Edit** to enter the editing mode.
5. Click the wheel icon in the upper-right corner of the group widget to open the Settings window for that widget, as in the following figure.

6. In the Settings window, click **Component** to select the component that you want to display.
7. Click **Thresholds** to change the thresholds for critical, warning, and normal states.
8. If you want to include one or more attributes when you are determining component status, select the propagate check box for each attribute. For example, if the status of an attribute, which has the propagate check box selected, is critical, the component status is also critical.
9. Click **Done** to save your settings.

Results

Your Components dashboard is customized. Data is filtered by using the selected components and thresholds for each widget.

Resizing a group widget

You can edit a group widget by modifying its size.

Procedure

1. In the Applications window of the Application Dashboard, select an application to edit.
2. In the Groups window, click **Components** to enter the Components dashboard.
3. Click **Actions** in the upper-right corner and select **Edit** to enter the editing interface. This interface contains a number of widgets that you can edit.

   Note: The **Edit** option is available in the Components dashboard only.
4. Click **Edit** to enter the editing mode.
5. Drag the handle icon in the lower-right corner of any widget to resize that widget. Resizing a widget does not change the size of the text in that widget, or the height of the widget.
6. Click **Save** in the upper-right corner of the window.

Results

The size of the group widget in the Component Dashboard is changed.

Removing a group widget from the Component Dashboard

You can remove a group widget from the Component Dashboard if you are not interested in the data that it presents.

About this task

After you remove a group widget from the Component Dashboard, it is no longer displayed on the Component Dashboard. You can add it back later if you want to.

Procedure

1. In the Applications window of the Application Dashboard, select an application to edit.
2. In the Groups window, click **Components** to enter the Components dashboard.
3. Click **Actions** in the upper-right corner and select **Edit** to enter the editing interface. This interface contains a number of widgets that you can edit.

   Note: The **Edit** option is available in the Components dashboard only.
4. Click **Edit** to enter the editing mode.
5. Click the **X** icon in the upper-left corner of the group widget to remove that widget from view.
6. Click **Save** in the upper-right corner of the window.

Adding a group widget to the Component Dashboard

You can add a group widget to the Component Dashboard if you remove it from the Component Dashboard earlier.

Procedure

1. In the Applications window of the Application Dashboard, select an application to edit.
2. In the Groups window, click **Components** to enter the Components dashboard.
3. Click **Actions** in the upper-right corner and select **Edit** to enter the editing interface. This interface contains a number of widgets that you can edit.

   Note: The **Edit** option is available in the Components dashboard only.
4. Click **Edit** to enter the editing mode.
5. Do the following steps to add a component group widget:
   a. Click the plus sign (+) on the upper right corner of the window.
   b. Select a component type icon from the group of icons that are displayed on the top of the window. Only the group widgets that are available for this component type are displayed.
   c. Select a group widget for your component.
   d. Click **Add**. The current window is closed and the component group widget is added to the Component Dashboard.
   e. Click the wheel icon in the upper-right corner of the group widget to open the Settings window for that widget.
   f. Click **Component** to open the Component tab.

g. Select the component for which you want the group widget to display data.

6. Click **Save** to save your changes

Results

The group widget is added to the Component Dashboard.

Repositioning a group widget

You can change the position of a group widget by repositioning it.

Procedure

1. In the Applications window of the Application Dashboard, select an application to edit.
2. In the Groups window, click **Components** to enter the Components dashboard.
3. Click **Actions** in the upper-right corner and select **Edit** to enter the editing interface. This interface contains a number of widgets that you can edit.

   Note: The **Edit** option is available in the Components dashboard only.
4. Click **Edit** to enter the editing mode.
5. Drag the group widget to change its position.
6. Click **Save** in the upper-right corner of the window.

Results

The position of the group widget in the Component Dashboard is changed.

Search for related log files

You can launch-in-context to IBM SmartCloud Analytics - Log Analysis (SCALA). When you select a component in the navigator and enter a search term and time range, SCALA results that are specific to your selected component, are displayed in a new tab or window.

IBM SmartCloud Application Performance Management UI can be integrated with SCALA version 1.1.0.3 or later. After integration, you can initiate searches of log information that are indexed by SCALA from the SmartCloud Application Performance Management UI. You might use this capability to find the root cause of a problem that is experienced by users or a bad status indicator on your application. For more information about SCALA, see the SCALA information center at http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.iwa.doc_1.0/ic-homepage.html.

To use the search function, you need to identify the IBM SmartCloud Analytics - Log Analysis server whose indexes you want to search. The SCALA server must have data sources configured that take log data from one or more components that comprise the applications that you are monitoring. Data sources need to be created with the fully qualified host name of the host where the monitored resource resides.

The search function uses host name information that is derived from the monitoring agent managed system name. Each SmartCloud Application Performance Management UI component is correlated with the host that supports it. Data sources that are created with the IP address for the host name attribute are not included in the search.

The search function is disabled until you configure a search provider. For more information about configuring a search provider, see "Configuring search provider connections" on page 41.

SmartCloud Application Performance Management group widgets

The IBM SmartCloud Application Performance Management UI provides built-in component dashboards. Specific group widgets are available in these dashboards for each IBM Tivoli Composite Application Manager agent that is installed on your system.

The IBM SmartCloud Application Performance Management UI provides context launching. You can link from group widgets in component details dashboards to Tivoli Enterprise Portal workspaces. When you double-click a group widget in the component details dashboard, the group widget links to Tivoli Enterprise Portal and the WebStart client is displayed. Most component detail dashboards support context launching, except for Application Management Console component dashboards.

IBM Tivoli Composite Application Manager for Transactions group widgets

Specific group widgets are available for IBM Tivoli Composite Application Manager for Transactions agents. Use these group widgets with your IBM Tivoli Monitoring infrastructure to monitor activity and system status.

Client Status Summary group widget

The Client Status Summary group widget displays a bar graph with the state of the monitored clients.

The following table contains information about the KPIs in this group widget.

Table 1. KPIs in the Client Status Summary group widget

KPI	Description	Note
Clients	Proportion and number of clients in the normal, warning, or critical state. The status of individual client groups is also displayed.	T3SNCLIENT.STATUS

Overall Volume group widget

The Overall Volume group widget displays a bar chart with the number of transactions over the last hour.

The following table contains information about the KPIs in this group widget.

Table 2. KPIs in the Overall Volume group widget

KPI	Description	Note
Overall Volume	Number of good, slow, and failed transactions per period over the last hour	T3SNAPPL.GREQUESTS (Good), T3SNAPPL.SREQUESTS (Slow), T3SNAPPL.BREQUESTS (Failed)

Overall Response Time group widget

The Overall Response Time group widget displays a line graph with the average response time of transactions over the last hour.

The following table contains information about the KPIs in this group widget.

Table 3. KPIs in the Overall response Time group widget

KPI	Description	Note
Overall Response Time	Average response time of transactions, in seconds, per period over the last hour	T3SNAPPL.RESPTIME

Clients - Top 10 group widget

The Clients - Top 10 group widget displays a table with the clients of most interest over the last period.

The following table contains information about the KPIs in this group widget.

Table 4. KPIs in the Clients - Top 10 group widget

KPI	Description	Note
Client Group	Name of the client	T3SNCLIENT.CLIENT
Status	Overall status for all transactions of the client: either Good, Warning, or Critical derived from T3SNTRANS.STATUS	T3SNCLIENT.STATUS
Transaction Volume	Total number of transaction requests per period	T3SNCLIENT.TREQUESTS
Failed (%)	Percentage of failed transactions in the current period	T3SNCLIENT.PCFAIL
Slow (%)	Percentage of slow transactions in the current period	T3SNCLIENT.PCSLOW
Response Time (s)	Average response time, in seconds, of the transactions for the selected client in the current period	T3SNCLIENT.RESPTIME
Timestamp	Time of collection of the summarized data	T3SNCLIENT.TIMESTMP

Clients group widget

The Clients group widget provides a list of clients sorted by status.

The Clients group widget provides the information in the following table:

Table 5. Clients group widget

KPI	Description	Note
Critical		CLIENTSTATUSCOUNT.COUNT_CRITICAL + CLIENTSTATUSCOUNT.COUNT_FATAL
Warning		CLIENTSTATUSCOUNT.COUNT_WARNING

Table 5. Clients group widget (continued)

KPI	Description	Note
Normal		CLIENTSTATUSCOUNT.COUNT_NONE + CLIENTSTATUSCOUNT.COUNT_GOOD + CLIENTSTATUSCOUNT.COUNT_INFO + CLIENTSTATUSCOUNT.COUNT_HARMLESS + CLIENTSTATUSCOUNT.COUNT_MINOR
Client Group	Name of the selected client	T3SNCLIENT.CLIENT
Status	Proportion and number of clients in a normal, warning, or critical state	T3SNCLIENT.STATUS
Application	Application name (internal use only)	T3SNCLIENT.APPLICATIN

The Clients group widget references the key performance indicators (KPIs) in the following table:

Table 6. Clients group widget referenced KPIs

KPI	Description
CLIENTSTATUSCOUNT.COUNT_CRITICAL	
CLIENTSTATUSCOUNT.COUNT_FATAL	
CLIENTSTATUSCOUNT.COUNT_GOOD	
CLIENTSTATUSCOUNT.COUNT_HARMLESS	
CLIENTSTATUSCOUNT.COUNT_INFO	
CLIENTSTATUSCOUNT.COUNT_MINOR	
CLIENTSTATUSCOUNT.COUNT_NONE	
CLIENTSTATUSCOUNT.COUNT_WARNING	

Client Volume group widget

The Client Volume group widget displays a bar chart with the number of transactions for the selected client over the last hour.

The following table contains information about the KPIs in this group widget.

Table 7. KPIs in the Client Volume group widget

KPI	Description	Note
Client Volume	Number of good, slow, and failed transactions for the selected client, per period over the last hour	T3SNAPPL.GREQUESTS (Good), T3SNAPPL.SREQUESTS (Slow), T3SNAPPL.BREQUESTS (Failed)

Client Response Time group widget

The Client Response Time group widget displays a line graph with the average response time of transactions for the selected client over the last hour.

The following table contains information about the KPIs in this group widget.

Table 8. KPIs in the Client Response Time group widget

KPI	Description	Note
Client Response Time	Average response time of transactions for the selected client, in seconds, per period over the last hour	T3SNAPPL.RESPTIME

Top 5 Robotic Transactions Group Widget

List of transactions for the selected client. Sorted on the Failed (%) column by default.

The following table contains information about the KPIs in this group widget.

Table 9. KPIs in the Top 5 Robotic Transactions Group Widget

KPI	Description	Note
Transaction	Transaction name for the selected client	T6TXCS.TRANSACTN
Server	Server name for the selected client	T6TXCS.SERVER
Source	Source agent type	T6TXCS.DATCOLTYPE
Volume	Number of transactions per period for the selected client	T6TXCS.TOTREQ
Failed (%)	Percentage of failing transactions in the current period for the selected client	T6TXCS.PCFAIL
Slow (%)	Percentage of slow transactions in the current period for the selected client	T6TXCS.PCSLOW
Response Time(sec)	Average response time for the current period	T6TXCS.OATIME
Timestamp	Start time of the last period	T6TXCS.TIMESTAMP

Transactions - Top 5 group widget

The Transactions - Top 5 group widget displays a table with transaction details for the selected client.

The following table contains information about the KPIs in this group widget.

Table 10. KPIs in the Transactions - Top 5 group widget

KPI	Description	Note
Transactions	Name of transaction for the selected client	T5TXCS.TRANSACTN, T6TXCS.TRANSACTN
Server	IP address of the server for the selected client	T5TXCS.SERVER, T6TXCS.SERVER
Source	Source agent type of data, either WRM or Robotic	T5TXCS.DATCOLTYPE, T6TXCS.DATCOLTYPE
Volume	Total number of transaction requests per period for the selected client	T5TXCS.TOTREQ, T6TXCS.TOTREQ

Table 10. KPIs in the Transactions - Top 5 group widget (continued)

KPI	Description	Note
Failed (%)	Percentage of subtransactions that failed in the current period	T5TXCS.PCFAIL, T6TXCS.PCFAIL
Slow (%)	Percentage of subtransactions that were slow in the current period	T5TXCS.PCSLOW, T6TXCS.PCSLOW
Response Time (s)	Average response time of the transaction, in seconds, for the current period	T5TXCS.OATIME, T6TXCS.OATIME
time stamp	Start time of the last period	T5TXCS.TIMESTAMP, T6TXCS.TIMESTAMP

Transaction Status Summary group widget

The Transaction Status Summary group widget displays a bar graph with the state of the monitored transactions.

The following table contains information about the KPIs in this group widget.

Table 11. KPIs in the Transaction Status Summary group widget

KPI	Description	Note
Transaction Status Summary	Proportion and number of clients in the normal, warning, or critical state. Thresholds are defined in the Application Management Configuration Editor.	T3SNTRANS.STATUS

Overall Volume group widget

The Overall Volume group widget displays a bar chart with the number of transactions over the last hour.

The following table contains information about the KPIs in this group widget.

Table 12. KPIs in the Overall Volume group widget

KPI	Description	Note
Overall Volume	Number of good, slow, and failed transactions per period over the last hour	T3SNAPPL.GREQUESTS (Good), T3SNAPPL.SREQUESTS (Slow), T3SNAPPL.BREQUESTS (Failed)

Overall Response Time group widget

The Overall Response Time group widget displays a line graph with the average response time of transactions over the last hour.

The following table contains information about the KPIs in this group widget.

Table 13. KPIs in the Overall response Time group widget

KPI	Description	Note
Overall Response Time	Average response time of transactions, in seconds, per period over the last hour	T3SNAPPL.RESPTIME

Transactions - Top 10 group widget

The Transactions - Top 10 group widget displays a table with the transactions of most interest over the last period.

The following table contains information about the KPIs in this group widget.

Table 14. KPIs in the Transactions - Top 10 group widget

KPI	Description	Note
Transaction	Name of the transaction	T3SNTRANS.TRANSACTN
Status	Overall status for all subtransactions: good, warning, or critical	T3SNTRANS.STATUS
Type	Data collector type: client, real user, synthetic, or transaction tracking	T3SNTRANS.DATCOLTYPE
Transaction Volume	Total number of transaction requests per period	T3SNTRANS.TREQUESTS
Failed (%)	Percentage of failed transactions in the current period	T3SNTRANS.PCFAIL
Slow (%)	Percentage of slow transactions in the current period	T3SNTRANS.PCSLOW
Response Time (s)	Average response time, in seconds, of the transactions in the current period	T3SNTRANS.RESPTIME
Time Stamp	Time of collection of the summarized data	T3SNTRANS.TIMESTMP

Transactions group widget

The Transactions group widget displays a bar graph with the state of the monitored transactions.

The following table contains information about the KPIs in this group widget.

Table 15. KPIs in the Transactions group widget

KPI	Description	Note
Transaction Status Summary	Proportion and number of clients in the normal, warning, or critical state. The status of individual transactions is also displayed.	T3SNTRANS.STATUS

Transaction Volume group widget

The Transaction Volume group widget displays a bar chart with the number of subtransactions for the selected transaction over the last hour.

The following table contains information about the KPIs in this group widget.

Table 16. KPIs in the Transaction Volume group widget

KPI	Description	Note
Transaction Volume	Number of good, slow, and failed subtransactions for the selected transaction, per period over the last hour	T3SNAPPL.GREQUESTS (Good), T3SNAPPL.SREQUESTS (Slow), T3SNAPPL.BREQUESTS (Failed)

Transaction Response Time group widget

The Transaction Response Time group widget displays a line graph with the average response time of subtransactions for the selected transaction over the last hour.

The following table contains information about the KPIs in this group widget.

Table 17. KPIs in the Transaction Response Time group widget

KPI	Description	Note
Transaction Response Time	Average response time of subtransactions for the selected transaction, in seconds, per period over the last hour	T3SNAPPL.RESPTIME

Top 10 Robotic Transaction Clients/Servers Group Widget

List of clients associated with the selected transaction. Sorted on the Failed (%) column by default.

The following table contains information about the KPIs in this group widget.

Table 18. KPIs in the Top 10 Robotic Transaction Clients/Servers Group Widget

KPI	Description	Note
Client Group	Client group for the selected transaction	T6TXCS.CLIENT
Server	Server name for the selected transaction	T6TXCS.SERVER
Source	Source agent type	T6TXCS.DATCOLTYPE
Volume	Number of transactions per period for the selected transaction	T6TXCS.TOTREQ
Failed (%)	Current percentage of failed transactions for the period for the selected transaction	T6TXCS.PCFAIL
Slow (%)	Current percentage of slow transactions for the period for the selected transaction	T6TXCS.PCSLOW

Table 18. KPIs in the Top 10 Robotic Transaction Clients/Servers Group Widget (continued)

KPI	Description	Note
Response Time(sec)	Current average response time for the period for the selected transaction	T6TXCS.OATIME
Timestamp	Start time of the last period	T6TXCS.TIMESTAMP
Application	Application name (internal use only)	T6TXCS.APPLICATIN

Client Impact - Top 10 group widget

The Client Impact - Top 10 group widget displays a table with transaction details for the selected transaction.

The following table contains information about the KPIs in this group widget.

Table 19. KPIs in the Client Impact - Top 10 group widget

KPI	Description	Note
Client Group	Name of the client group for the selected transaction	T5TXCS.CLIENT, T6TXCS.CLIENT
Server	IP address of the server for the client for the selected transaction	T5TXCS.SERVER, T6TXCS.SERVER
Source	Source agent type of data, either WRM or Robotic	T5TXCS.DATCOLTYPE, T6TXCS.DATCOLTYPE
Volume	Total number of subtransaction requests per period for the selected transaction	T5TXCS.TOTREQ, T6TXCS.TOTREQ
Failed (%)	Percentage of subtransactions that failed in the current period for the selected transaction	T5TXCS.PCFAIL, T6TXCS.PCFAIL
Slow (%)	Percentage of subtransactions that were slow in the current period for the selected transaction	T5TXCS.PCSLOW, T6TXCS.PCSLOW
Response Time (s)	Average response time of the transaction, in seconds, for the current period	T5TXCS.OATIME, T6TXCS.OATIME
time stamp	Start time of the last period	T5TXCS.TIMESTAMP, T6TXCS.TIMESTAMP

Transaction Performance group widget

The Transaction Performance group widget displays a list with summary information for all Client Groups. The dashboard is available only when an application is monitored by Response Time agents. This widget uses data from the Application Management Console and you can customize Client Groups in the Application Management Configuration Editor.

The following table contains information about the KPIs in this group widget.

Table 20. KPIs in the Transaction Performance group widget

KPI	Description	Note
Response Time (s)	Average response time, in seconds, of the transactions for the selected application in the current period	T3SNAPPL.RESPTIME
Requests	Trend of the number of requests per period over the last hour, with the number of requests in the current period displayed	T3SNAPPL.TREQUEST
Percentage failed	Percentage of failed transactions in the current period	T3SNAPPL.PCFAIL
Percentage slow	Percentage of slow transactions in the current period	T3SNAPPL.PCSLOW
Transaction Status	Proportion and number of transactions in the good, warning, or critical state in the current period	T3SNTRANS.STATUS
Client Status	Proportion and number of clients in the good, warning, or critical state in the current period	T3SNCLIENT.STATUS

Agent-based Transaction Tracking group widget

The Agent-based Transaction Tracking group widget displays a table with the resource summary status. The resource has no associated monitoring agent deployed and all of the metrics are collected by agent-based transaction tracking.

The following table contains information about the KPIs in this group widget.

Table 21. KPIs in the Agent-based Transaction Tracking group widget

KPI	Description	Note
Response Time (ms)	The total amount of time for the Internet Services Monitoring attempt.	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'TotalTime'
Transaction Volume (per second)	Number of transaction instances, not including failed transactions.	SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'TransactionCount'
Slow (%)	The percentage of transactions whose requests were marked as slow.	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'SlowPercent'
Failed (%)	The percentage of transactions whose requests were marked as failed.	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'FailedPercent'

The Agent-based Transaction Tracking group widget references the KPIs in the following table:

Table 22. Agent-based Transaction Tracking group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPESTR = 'TotalTime'	The total amount of time for the Internet Services Monitoring attempt.
TOMETTYPE.TYPESTR = 'TransactionCount'	Number of transaction instances, not including failed transactions.
TOMETTYPE.TYPESTR = 'SlowPercent'	The percentage of transactions whose requests were marked as slow.
TOMETTYPE.TYPESTR = 'FailedPercent'	The percentage of transactions whose requests were marked as failed.

Agentless Transaction Tracking group widget

The Agentless Transaction Tracking group widget displays a table with the resource summary status. The resource has no associated monitoring agent deployed and all of the metrics are collected by agentless transaction tracking.

The following table contains information about the KPIs in this group widget.

Table 23. KPIs in the Agentless Transaction Tracking group widget

KPI	Description	Note
Response Time (ms)	Total Time can refer to the following circumstances: • Average total transaction time of the transactions that make up the aggregate • Total response time for this transaction instance	SUM(TOINTGMET.GAUGE * TOINTGMET.SCOUNT) / SUM(TOINTGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'ParentSubTransactionTime'
Transaction Volume (per second)	Number of transaction instances, not including failed transactions.	SUM(TOINTCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'TransactionCount'
Kilobyte In (KB)	The total number of kilobytes of data that is received by the server during the current aggregate interval.	SUM(TOINTCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'TransactionCount'
Kilobyte Out (KB)	The total number of kilobytes of data that is sent by the server during the current aggregate interval.	SUM(TOINTCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'TransactionCount'

The Agentless Transaction Tracking group widget references the KPIs in the following table:

Table 24. Agentless Transaction Tracking group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPESTR = 'ParentSubTransactionTime'	Total response time for this transaction instance.
TOMETTYPE.TYPESTR = 'TransactionCount'	Number of transaction instances, not including failed transactions.

Table 24. Agentless Transaction Tracking group widget referenced KPIs (continued)

KPI	Description
TOMETTYPE.TYPESTR = 'TotalBytesReceived'	The total number of kilobytes of data that is received by the server during the current aggregate interval.
TOMETTYPE.TYPESTR = 'TotalBytesSent'	The total number of kilobytes of data that is sent by the server during the current aggregate interval.

Back-End Transaction List group widget

The Back-End Transaction List group widget displays a table with the resource summary status.

The following table contains information about the KPIs in this group widget.

Table 25. KPIs in the Back-End Transaction List group widget

KPI	Description	Note
Transaction Name	The name of the transaction	The transaction name comes from SCR.
Status	The status of the transaction	The status is calculated by the metrics in the Transaction Reporter's normalized tables. If the failed count of transactions is greater than 0, the transaction is displayed as critical; if the slow count of transactions is greater than 0, the transaction is displayed as warning.

The Back-End Transaction List group widget references the KPIs in the following table:

Table 26. Back-End Transaction List group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPESTR = 'FailedCount'	Number of occurrences that failed.
TOMETTYPE.TYPESTR = 'SlowCount'	Number of occurrences with a slow response time.

Back-End Transaction Tracking Status group widget

The Back-End Transaction Tracking Status group widget displays a table with the summary status.

The following table contains information about the KPIs in this group widget.

Table 27. KPIs in the Back-End Transaction Tracking Status group widget

KPI	Description	Note
Response Time (ms)	The total amount of time for the Internet Services Monitoring attempt.	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'TotalTime'

Table 27. KPIs in the Back-End Transaction Tracking Status group widget (continued)

KPI	Description	Note
Transaction Volume (per second)	Number of transaction instances, not including failed transactions.	SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'TransactionCount'
Slow (%)	The percentage of transactions whose requests were marked as slow.	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'SlowPercent'
Failed (%)	The percentage of transactions whose requests were marked as failed.	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'FailedPercent'
Instances	The Number of instances. If the failed count of instance is greater than 0, the instance is displayed as critical; if the slow count of instance is greater than 0, the instance is displayed as warning.	The number of instances comes from SCR.
Transactions	The Number of transactions. If the failed count of transaction is greater than 0, the transaction is displayed as critical; if the slow count of transaction is greater than 0, then the transaction is displayed as warning.	The number of transactions comes from SCR.

The Back-End Transaction Tracking Status group widget references the KPIs in the following table:

Table 28. Back-End Transaction Tracking Status group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPESTR = 'TotalTime'	The total amount of time for the Internet Services Monitoring attempt.
TOMETTYPE.TYPESTR = 'TransactionCount'	Number of transaction instances, not including failed transactions.
TOMETTYPE.TYPESTR = 'SlowPercent'	The percentage of transactions whose requests were marked as slow.
TOMETTYPE.TYPESTR = 'FailedPercent'	The percentage of transactions whose requests were marked as failed.
TOMETTYPE.TYPESTR = 'FailedCount'	Number of occurrences that failed.
TOMETTYPE.TYPESTR = 'Slow Count'	Number of occurrences with a slow response time.

Back-End Transaction Tracking Response Time Component group widget

The Back-End Transaction Tracking Response Time Component group widget displays a chart with the response time of the component.

The following table contains information about the KPIs in this group widget.

Table 29. KPIs in the Back-End Transaction Tracking Response Time Component group widget

KPI	Description	Note
Response Time (ms)	Total time can refer to the following circumstances: • Average total transaction time of the transactions that make up the aggregate • Total response time for this transaction instance	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'TotalTime'

The Back-End Transaction Tracking Response Time Component group widget references the KPIs in the following table:

Table 30. Back-End Transaction Tracking Response Time Component group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPESTR = 'TotalTime'	The total amount of time for the Internet Services Monitoring attempt.

Back-End Transaction Tracking Runs On group widget

The Back-End Transaction Tracking Runs On group widget displays summary information in a table.

The following table contains information about the KPIs in this group widget.

Table 31. KPIs in the Back-End Transaction Tracking Runs On group widget

KPI	Description	Note
Status	Status of the current instance	Status of the current instance
Instance	Instance name that transaction runs on	Instance name that the transaction runs on
Volume	The total number of transaction instances	SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'TransactionCount'
Response Time (ms)	Average transaction time of transactions. The time is measured in milliseconds	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'TotalTime'

Back-End Transaction Tracking Transaction Volume Component group widget

The Back-End Transaction Tracking Transaction Volume Component group widget displays a chart with the transaction volume of the component.

The following table contains information about the KPIs in this group widget.

Table 32. KPIs in the Back-End Transaction Tracking Transaction Volume Component group widget

KPI	Description	Note
Transaction Volume (per second)	Number of transaction instances: • Failed count = critical • Slow count = warning • Good count = normal	SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'FailedCount'; SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'SlowCount'; SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'GoodCount'

The Back-End Transaction Tracking Transaction Volume Component group widget references the KPIs in the following table:

Table 33. Back-End Transaction Tracking Transaction Volume Component group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPESTR = 'FailedCount'	Number of occurrences that failed.
TOMETTYPE.TYPESTR = 'SlowCount'	Number of occurrences with a slow response time.
TOMETTYPE.TYPESTR = 'GoodCount'	Number of occurrences with a good response time.

Back-End Transaction Tracking Response Time Overall group widget

The Back-End Transaction Tracking Response Time Overall group widget displays a chart with the overall response time.

The following table contains information about the KPIs in this group widget.

Table 34. KPIs in the Back-End Transaction Tracking Response Time Overall group widget

KPI	Description	Note
Response Time (ms)	Total time can refer to the following circumstances: • Average total transaction time of the transactions that make up the aggregate • Total response time for this transaction instance	SUM(TOAGGGMET.GAUGE * TOAGGGMET.SCOUNT) / SUM(TOAGGGMET.SCOUNT) WHERE TOMETTYPE.TYPESTR = 'TotalTime'

The Back-End Transaction Tracking Response Time Overall group widget references the KPIs in the following table:

Table 35. Back-End Transaction Tracking Response Time Overall group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPESTR = 'TotalTime'	The total amount of time for the Internet Services Monitoring attempt.

Back-End Transaction Tracking Transaction Volume Overall group widget

The Back-End Transaction Tracking Transaction Volume Overall group widget displays a chart with the overall transaction volume.

The following table contains information about the KPIs in this group widget.

Table 36. KPIs in the Back-End Transaction Tracking Transaction Volume Overall group widget

KPI	Description	Note
Transaction Volume (per second)	Number of transaction instances: • Failed count = critical • Slow count = warning • Good count = normal	SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'FailedCount'; SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'SlowCount'; SUM(TOAGGCMET.COUNT) WHERE TOMETTYPE.TYPESTR = 'GoodCount'

The Back-End Transaction Tracking Transaction Volume Overall group widget references the KPIs in the following table:

Table 37. Back-End Transaction Tracking Transaction Volume Overall group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPESTR = 'FailedCount'	Number of occurrences that failed.
TOMETTYPE.TYPESTR = 'SlowCount'	Number of occurrences with a slow response time.
TOMETTYPE.TYPESTR = 'GoodCount'	Number of occurrences with a good response time.

Downstream Transaction Nodes group widget

The Downstream Transaction Nodes group widget displays summary information about downstream transaction nodes.

The following table contains information about the KPIs in this group widget.

Table 38. KPIs in the Downstream Transaction Nodes group widget

KPI	Description	Note
Status	The status of the transaction node	COUNT(TOINTCMET.COUNT) WHERE TYPESTR='FailedCount' , COUNT(TOINTCMET.COUNT) WHERE TYPESTR='SlowCount'
Transaction node	The downstream transaction node name for the current node	SCR query: /oslc/rr/collection?oslc.where=rdf:type= and RefBy_crtv:elementTo{rdf:type= and crtv:elementFrom=<__CURRENT_NODE__>} &oslc.select=*{*}
Response time (sec)	The amount of processing time for the transactions during the measurement interval	SUM(TOINTGMET.GAUGE * TOINTGMET.SCOUNT) /COUNT(TOINTGMET.SCOUNT) WHERE TYPESTR='ParentSubTransactionTime'

Table 38. KPIs in the Downstream Transaction Nodes group widget (continued)

KPI	Description	Note
Deviation (%)	The percentage of response time deviation from the determined baseline during the measurement interval.	SUM(TOINTGMET.GAUGE * TOINTGMET.SCOUNT) /COUNT(TOINTGMET.SCOUNT) WHERE TYPESTR='DeviationParentSubTransactionTime'
Volume	The total number of processed transactions during the measurement interval	COUNT(TOINTCMET.COUNT) WHERE TYPESTR='TransactionCount'
Failed (%)	The percentage of failed transactions during the measurement interval	SUM(TOINTGMET.GAUGE * TOINTGMET.SCOUNT) /COUNT(TOINTGMET.SCOUNT) WHERE TYPESTR='FailedPercent'

The Downstream Transaction Nodes group widget references the KPIs in the following table:

Table 39. Downstream Transaction Nodes group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPEID	Identifier of TO metric type
TOMETTYPE.TYPESTR	String representation of the TO metric type

Upstream Transaction Nodes group widget

The Upstream Transaction Nodes group widget displays summary information about upstream transaction nodes.

The following table contains information about the KPIs in this group widget.

Table 40. KPIs in the Upstream Transaction Nodes group widget

KPI	Description	Note
Status	The status of the transaction node	COUNT(TOINTCMET.COUNT) WHERE TYPESTR='FailedCount' , COUNT(TOINTCMET.COUNT) WHERE TYPESTR='SlowCount'
Transaction node	The upstream transaction node name for the current node	SCR query: /oslc/rr/collection?oslc.where=rdf:type= and RefBy_crtv:elementTo{rdf:type= and crtv:elementFrom=<__CURRENT_NODE__>} &oslc.select=*{*}
Response time (sec)	The amount of processing time for the transactions during the measurement interval	SUM(TOINTGMET.GAUGE * TOINTGMET.SCOUNT) /COUNT(TOINTGMET.SCOUNT) WHERE TYPESTR='ParentSubTransactionTime'

Table 40. KPIs in the Upstream Transaction Nodes group widget (continued)

KPI	Description	Note
Deviation (%)	The percentage of response time deviation from the determined baseline during the measurement interval.	SUM(TOINTGMET.GAUGE * TOINTGMET.SCOUNT) /COUNT(TOINTGMET.SCOUNT) WHERE TYPESTR='DeviationParentSubTransactionTime'
Volume	The total number of processed transactions during the measurement interval	COUNT(TOINTCMET.COUNT) WHERE TYPESTR='TransactionCount'
Failed (%)	The percentage of failed transactions during the measurement interval	SUM(TOINTGMET.GAUGE * TOINTGMET.SCOUNT) /COUNT(TOINTGMET.SCOUNT) WHERE TYPESTR='FailedPercent'

The Upstream Transaction Nodes group widget references the KPIs in the following table:

Table 41. Upstream Transaction Nodes group widget referenced KPIs

KPI	Description
TOMETTYPE.TYPEID	Identifier of TO metric type
TOMETTYPE.TYPESTR	String representation of the TO metric type

IBM Tivoli Composite Application Manager for Microsoft Applications: Active Directory Agent group widgets

Specific group widgets are available for the Monitoring agent for Microsoft Active Directory component. Use these group widgets to monitor activity and system status.

Active Directory group widget

The Active Directory group widget provides information about the health of the components that are included in the Microsoft Active Directory Dashboard.

The following table contains information about the components in this group widget.

Table 42. Components in the Active Directory group widget

Components	Description
Domain controller health	Provides an HTML table that contains information about the health of the domain controller. Includes the key performance indicators (KPIs) that are related to the domain controller health
FSMO Role availability	Provides an HTML table that contains information about the status of FSMO role availability. Includes the KPIs that are related to the FSMO role availability
Sysvol replication	Provides an HTML table that contains information about the status of sysvol replication status. Includes the KPIs that are related to sysvol replication

Table 42. Components in the Active Directory group widget (continued)

Components	Description
Domain controller time drift	Provides an HTML table that contains information about the status of domain controller time drift. Includes the KPIs that are related to the domain controller time drift
Trust status	Provides a status gauge that contains information about the trust status
Replication status	Provides a status gauge that contains information about the replication status
LDAP Performance	Provides a volume gauge that contains information about LDAP performance. Includes the KPIs that are related to LDAP performance

Cache Size (history) group widget

The Cache Size (history) group widget provides information about the cache size during a specified period. You must start historical data collection (HDC) to obtain the data for this group widget. To open the Cache Size (history) group widget, click a chart in the Cache Details (history) group widget.

The following table contains information about the KPIs in this widget:

Table 43. KPIs in the Cache Size (history) group widget

KPI	Description	Note
Cache Size	The size (in kilobytes) of the schema cache. The critical threshold is when the size of the schema cache is less than 2 KB.	K3ZNTDSDCP. DCPCASZ

Tip: Double-click anywhere in the Cache Size (history) group widget to open the Domain Controller Performance workspace in the Tivoli Enterprise Portal.

Cache Details (history) group widget

The Cache Details (history) group widget provides information about the cache details during a specified period. You must start historical data collection to obtain the data for this group widget. To open the Cache Size (history) group widget, click a chart in the Cache Details (history) group widget.

The following table contains information about the KPIs in this window:

Table 44. KPIs in the Cache Details (history) group widget

KPI	Description	Note
Page Faults Per Second	The rate of cache page faults per second. The critical threshold is when the rate of page faults per second is greater than 0.	K3ZNTDSDCP. DCPCAPF

Table 44. KPIs in the Cache Details (history) group widget (continued)

KPI	Description	Note
Page Fault Stalls Per Second	The number of page faults per second that cannot be serviced because pages are not available for allocation from the database cache. The critical threshold is when the number of page faults per second that cannot be serviced is greater than 30.	K3ZNTDSDCP. DCPCAPFS
Cache Hit (%)	The percentage of cache hits compared to the total cache requests. The warning threshold is when the percentage of cache hits compared to the total cache requests is less than 20%.	K3ZNTDSDCP. DCPCAHP

Active Directory Database Performance group widget

The Active Directory Database Performance group widget provides information about the log thread stalls in the Active Directory database.

The following table contains information about the KPIs in this window:

Table 45. KPIs in the Active Directory Database Performance group widget

KPI	Description	Note
Log threads Stalls	The rate of log record stalls per second. The group widget displays a warning status if the rate of log record stalls is greater than 0.	K3ZNTDSDCP. DCPLRS
Log threads Waiting	The number of log threads that are waiting for access to the log file. The group widget displays a warning status if the number of log threads that are waiting for access to the log file is greater than 300.	K3ZNTDSDCP. DCPLTW

Tip: Double-click anywhere in the Active Directory Database Performance group widget to open the Domain Controller Performance workspace in the Tivoli Enterprise Portal.

Active Directory Database Table Open Cache group widget

The Active Directory Database Table Open Cache group widget provides a line chart showing spikes. The line chart contains information about the database table open cache. You must start historical data collection (HDC) to obtain the data for this group widget.

The following table contains information about the KPIs in this group widget:

Table 46. KPIs in the Active Directory Database Table Open Cache group widget

KPI	Description	Note
Hits per second	The rate at which the database tables were opened by using the cached schema information	K3ZNTDSDCP. DCPTCAH
Misses per second	The rate at which the database tables were opened without using the cached schema information	K3ZNTDSDCP. DCPTCAM

Note: Double-click anywhere in the Active Directory Database Table Open Cache group widget to open the Domain Controller Performance workspace in the Tivoli Enterprise Portal.

Domain Controller Health group widget

The Domain Controller Health group widget provides a grid that contains information about the Active Directory database.

The following table contains information about the KPIs in this group widget:

Table 47. KPIs in the Domain Controller Health group widget

KPI	Description	Note
Database Path	The full directory path where the Microsoft Active Directory database is located	K3ZADDB. ADDBDFP
Database Log Path	The full directory path where the log files of the Microsoft Active Directory are located	K3ZADDB. ADDBDLFP
Database Disk Used	One hundred (100) minus the percentage of free space that is currently available on the hard disk drive where the Microsoft Active Directory database file is located. The warning threshold is when the database disk free space is less than 20% and more than or equal to 10%. The critical status is when the database disk free space is less than 10%.	100 - (K3ZADDB. ADDBPDSD)
Database Logs Disk Used	100 minus the percentage of free space that is currently available on the hard disk drive where the Microsoft Active Directory database log files are located. The warning threshold is when the database logs disk free space is less than 20% and more than or equal to 10%. The critical threshold is when the free space of the database logs disk is less than 10%.	100 - (K3ZADDB. ADDBPDSL)

Tip: Double-click the values in the table to open the Active Directory Database Information workspace in the Tivoli Enterprise Portal.

Domain Controller Time Drift group widget

The Domain Controller Time Drift group widget provides a grid that contains information about the time server that is used by the domain.

The following table contains information about the KPIs in this group widget:

Table 48. KPIs in the Domain Controller Time Drift group widget

KPI	Description	Note
Server Name	The name of the *good time* server or the preferred good time server. Good time server is the server on which the gtimeserv flag is set. The preferred good time server is the primary domain controller (PDC) of the domain.	K3ZNTDSDCA. DCARTS
Server Type	Specifies whether the type of time server is a good time server or a preferred good time server.	K3ZNTDSDCA. DCARTST
Time Drift (seconds)	The time on the domain controller where the agent is installed minus the time on the computer (in the same domain) where the gtimserv flag is set. If the domain controller cannot find the good time server in the domain, the time difference is calculated from the preferred good time server, which is the PDC of the root domain. The group widget displays a critical status if the time drift is other than 0 seconds.	K3ZNTDSDCA. DCATDMS

Tip: Double-click the values in the table to open the Domain Controller Availability workspace in the Tivoli Enterprise Portal.

Active Directory Event Logs group widget

The Active Directory Event Logs group widget provides information about the events that are written to the Active Directory event log.

The following table contains information about the KPIs in this group widget:

Table 49. KPIs in the Active Directory Event Logs group widget

KPI	Description	Note
Directory Services Error	The number of directory services error events that belong to one event source	Count (K3ZEVTLOG. EVTTYP & K3ZEVTLOG.EVTSRC)

Table 49. KPIs in the Active Directory Event Logs group widget (continued)

KPI	Description	Note
Directory Services Warning	The number of directory services warning events that belong to one event source	Count (K3ZEVTLOG. EVTTYP & K3ZEVTLOG.EVTSRC)
Directory Services Audit failure	The number of directory services audit failure events that belong to one event source	Count (K3ZEVTLOG. EVTTYP & K3ZEVTLOG.EVTSRC)
DNS Error	The number of domain name service (DNS) error events that belong to one event source	Count (K3ZEVTLOG. EVTTYP & K3ZEVTLOG.EVTSRC)
DNS Warning	The number of DNS warning events that belong to one event source	Count (K3ZEVTLOG. EVTTYP & K3ZEVTLOG.EVTSRC)
DNS Audit failure	The number of DNS audit failure events that belong to one event source	Count (K3ZEVTLOG. EVTTYP & K3ZEVTLOG.EVTSRC)

Tip: Double-click anywhere in the Active Directory Event Logs group widget to open the Event Logs workspace in the Tivoli Enterprise Portal.

Flexible Single Master Operation Role Bind Status group widget

The Flexible Single Master Operation Role Bind Status group widget provides an HTML table that contains information about the domain naming master bind, the relative ID (RID) master bind, the infrastructure master bind, the schema master bind, and the primary domain controller (PDC) master bind.

The following table contains information about the KPIs in this group widget:

Table 50. KPIs in the Flexible Single Master Operation Role Bind Status group widget

KPI	Description	Note
Domain Naming Master	The current bind status of the domain naming master. The bind status can be Success, Failure, or Not Available. The group widget displays a critical status if the domain naming master bind is Failed.	K3ZNTDSDCA. DCADNB
Schema Master	The current bind status of the schema master. The bind status can be Success, Failure, or Not Available. The group widget displays a critical status if the schema master bind is Failed.	K3ZNTDSDCA. DCASCHB

Table 50. KPIs in the Flexible Single Master Operation Role Bind Status group widget (continued)

KPI	Description	Note
RID Master	The current bind status of the relative ID (RID) master. The bind status can be Success, Failure, or Not Available. The group widget displays a critical status if the RID master bind is Failed.	K3ZNTDSDCA. DCARIDB
Infrastructure Master	The current bind status of the infrastructure master. The bind status can be Success, Failure, or Not Available. The group widget displays a critical status if the infrastructure master bind is Failed.	K3ZNTDSDCA. DCAINFB
PDC Master	The current bind status of the PDC master. The bind status can be Success, Failure, or Not Available. The group widget displays a critical status if the PDC master bind is Failed.	K3ZNTDSDCA. DCAPDCB

Tip: To open the Flexible Single Master Operation Role Ping Status window, click anywhere on the Flexible Single Master Operation Role Bind Status group widget.

LDAP Bind Time Performance (history) group widget

The LDAP Bind Time Performance (history) group widget provides a line chart that contains information about the LDAP bind time. You must start historical data collection to obtain the data for this group widget.

The following table contains information about the KPIs in this group widget:

Table 51. KPIs in the LDAP Bind Time Performance (history) group widget

KPI	Description	Note
LDAP bind time	The time (in milliseconds) that is taken for the last successful LDAP bind. The warning threshold is when the LDAP bind time is more than 5 seconds and less than or equal to 15 seconds. The critical threshold is when the LDAP bind time is more than 15 seconds.	K3ZNTDSLDP. LDAPBNDTM

Tip: Double-click anywhere in the LDAP Bind Time Performance (history) group widget to open the Lightweight Directory Access Protocol workspace in the Tivoli Enterprise Portal.

Flexible Single Master Operation Role Ping Status group widget

The Flexible Single Master Operation Role Ping Status group widget provides an HTML table that contains information about the domain naming master ping, the relative ID (RID) master ping, the infrastructure master ping, the schema master ping, and the primary domain controller (PDC) master ping.

The following table contains information about the KPIs in this group widget:

Table 52. KPIs in the Flexible Single Master Operation Role Ping Status group widget

KPI	Description	Note
Domain Naming Master Ping time	The ping time for the domain naming master. The group widget displays a critical status if the domain naming master ping is Undefined.	K3ZNTDSDCA. DCADNP
Schema Master Ping time	The ping time for the schema master. The group widget displays a critical status if the schema master ping is Undefined.	K3ZNTDSDCA. DCASCHP
RID Master Ping time	The ping time for the RID master. The group widget displays a critical status if the RID master ping is Undefined.	K3ZNTDSDCA. DCARIDP
Infrastructure Master Ping time	The ping time for the infrastructure master. The group widget displays a critical status if the infrastructure master ping is Undefined.	K3ZNTDSDCA. DCAINFP
PDC Master Ping time	The ping time for the PDC master. The group widget displays a critical status if the PDC master ping is Undefined.	K3ZNTDSDCA. DCAPDCP

Tip: To open the Flexible Single Master Operation Role Ping Status group widget, click anywhere on the Flexible Single Master Operation Role Bind Status group widget. Double-click anywhere in the Flexible Single Master Operation Role Ping Status group widget to open Domain Controller Availability workspace in the Tivoli Enterprise Portal.

Sysvol Replication Status group widget

The Sysvol Replication Status group widget provides a grid that contains information about the sysvol replication status.

The following table contains information about the KPIs in this group widget:

Table 53. KPIs in the Sysvol Replication Status group widget

KPI	Description	Note
Partner Name	The name of the replication partner	K3ZSYSRPL. SYSPN

Table 53. KPIs in the Sysvol Replication Status group widget (continued)

KPI	Description	Note
Status	The result of the sysvol replication test. The result can be Success or Failure. The group widget displays a critical status if the replication result is Failed.	K3ZSYSRPL. SYSRS

Tip: Double-click the values in the table to open the Sysvol Replication workspace in the Tivoli Enterprise Portal.

IBM Tivoli Composite Application Manager for Microsoft Applications: Microsoft Cluster Server Agent group widgets

Specific group widgets are available for the Microsoft Cluster Server agent component. Use these group widgets to monitor activity and system status.

Cluster Server Status group widget

The Cluster Server Status group widget provides three status summary widgets, a bullet widget, and an HTML table that contain information about the health of the Cluster Server, such as status of nodes, resource groups, shared disks, percentage of network usage, and quorum used.

The following table contains information about the Key Performance Indicators (KPI) in this group widget.

Table 54. KPIs in the Cluster Server Status group widget

KPI	Description	Note
Nodes	The current state of the nodes, such as Up or Down. The widget displays a warning status if the state is not equal to Up or Down. The widget displays a critical status if the state is Down.	KQ5D20NODE.STATE_RAW
Resource groups	The status of the resource groups. The widget displays a warning status for the following states: • Unknown • Offline • Partial Online • Pending The widget displays a critical status for the Failed state.	KQ5B10RG.STATE_RAW
Network usage (%)	The percentage of network usage of the cluster. The widget displays a warning status for the values 65% - 80%. The widget displays a critical status for a value greater than 80%.	KQ5CLUSUM.NETWKUD

Table 54. KPIs in the Cluster Server Status group widget (continued)

KPI	Description	Note
Shared disks	The current state of the shared disks that are used by the cluster. The widget displays a warning status if the state is not Online or Failed. The widget displays a critical status if the state is Failed.	KQ5CSVSUMM.SSS
Quorum used	The status of quorum disk usage. The widget displays a warning status for the values 75% - 95%. The widget displays a critical status for a value greater than 95%.	KQ5CLUSUM.QUOUDSZ

Resources group widget

The Resources group widget provides an HTML table that contains information about the resources that are configured in the cluster.

The following table contains information about the KPIs in this group widget.

Table 55. KPIs in the Resources group widget

KPI	Description	Note
Resource Name	The name of the cluster resource	KQ5B25LOGI.RN
State	The current state of the cluster resource. The widget displays a warning status for the following values: • Unknown • Offline • Partial Online • Pending The widget displays a critical status if the state is Failed.	KQ5B25LOGI.RS
Resource Group Name	The name of the resource group	KQ5B25LOGI.GROUP_ NAME

Dependent Resources group widget

The Dependent Resources group widget provides an HTML table that contains information about the resources that are dependent on the selected resource.

The following table contains information about the KPIs in this group widget.

Table 56. KPIs in the Dependent Resources group widget

KPI	Description	Note
Current Owner	The name of the current owner of the resources	KQ5B20LOGI.CRN
Dependent Resource Name	The name of the dependent resource	KQ5B25RTDR.DRN

Table 56. KPIs in the Dependent Resources group widget (continued)

KPI	Description	Note
Dependent Resource State	The current state of the dependent resource. The widget displays a warning status for the following states: • Online • Unknown • Pending • Partial Online The widget displays a critical status if the state is Failed.	KQ5B25RTDR.DRS

Tip: Double-click anywhere in the Dependent Resources group widget to open the Resources workspace in the Tivoli Enterprise Portal.

Cluster group widget

The Cluster group widget provides a bullet widget, a line chart, and an HTML table that contain information about the cluster, such as quorum used, quorum path, processor standard deviation, and the quorum host server.

Important: The processor standard deviation is displayed only when the historical data collection is configured for the Nodes State Rollup attribute group.

The following table contains information about the KPIs in this group widget.

Table 57. KPIs in the Cluster group widget

KPI	Description	Note
Cluster name	The name of the cluster	KQ5CLUSUM.CLUNAME
Quorum used (%)	The percentage of the quorum disk that is used by the cluster. The widget displays a warning status for the values 75% - 95%. The widget displays a critical status for a value greater than 95%.	KQ5CLUSUM.QUOUDSZ
Quorum path	The path of the quorum files	KQ5CLUSUM.QUOPATH
Quorum host server	The name of the node that is added in the cluster	KQ5CLUSUM.NODNAME
Processor standard deviation	The standard deviation of the node state. The widget displays a warning status if the percentage standard deviation is greater than 20%.	KQ5D30RLL.SD

Tip: Double-click anywhere in the Cluster group widget to open the Cluster Dashboard workspace in the Tivoli Enterprise Portal.

Networks group widget

The Networks group widget provides an HTML table that contains information about the health of the networks that are used by the Cluster Server.

The following table contains information about the KPIs in this group widget.

Table 58. KPIs in the Networks group widget

KPI	Description	Note
Name	The name of the cluster network	KQ5E20NET.NAME
State	The current state of the cluster network. The widget displays a critical status if the state is Down.	KQ5E20NET.STATE
Role	The communication role of the cluster network	KQ5E20NET.ROLE

Tip: Double-click anywhere in the Networks group widget to open the Networks workspace in the Tivoli Enterprise Portal.

Shared Disks group widget

The Shared Disks group widget provides an HTML table that contains information about the health of the shared disks that are used by the Cluster Server.

The following table contains information about the KPIs in this group widget.

Table 59. KPIs in the Shared Disks group widget

KPI	Description	Note
Shared Disk Name	The name of the shared disk	KQ5CSVSUMM.SHTPATH
State	The current state of the shared disk, such as Online or Failed. The widget displays a warning status if the state is not equal to Online or Failed. The widget displays a critical status if the state is Failed.	KQ5CSVSUMM.SSS
Owner	The name of the node that is the current owner of the cluster	KQ5CSVSUMM.NODNAME
Storage Used (%)	The percentage of the shared disks that are used in the cluster. The widget displays a warning for the values 75% - 95%. The widget displays a critical status for a value greater than 95%.	KQ5CSVSUMM.SHTUDSP

Tip: Double-click anywhere in the Shared Disks group widget to open the Cluster Dashboard workspace in the Tivoli Enterprise Portal.

Cluster Nodes group widget

The Cluster Nodes group widget provides an HTML table that contains information about the nodes in the cluster and the state of nodes.

The following table contains information about the KPIs in this group widget.

Table 60. KPIs in the Cluster Nodes group widget

KPI	Description	Note
Name	The name of the cluster node	KQ5D20NODE.NAME
State	The current state of the node, such as up or down. The widget displays a warning status if the state is not up or down. The widget displays a critical status if the state is down.	KQ5D20NODE.STATE_RAW

Resource Groups group widget

The Resource Groups group widget provides an HTML table that contains information about the resource groups of the nodes and the state of resource groups.

The following table contains information about the KPIs in this group widget.

Table 61. KPIs in the Resource Groups group widget

KPI	Description	Note
Name	The name of the resource group	KQ5B20LOGI.NOG
State	The current state of the resource group. The widget displays a warning status for the following states: • Unknown • Offline • Partial Online • Pending The widget displays a critical status if the state is Failed.	KQ5B20LOGI.SOG

Tip: Double-click anywhere in the Resource Groups group widget to open the Resource Groups workspace in the Tivoli Enterprise Portal.

Available Memory (history) group widget

The Available Memory (history) group widget provides a line chart that contains information about the amount of available memory in the specified period.

Important: The line chart is displayed only when the historical data collection is configured for the Memory attribute group.
The following table contains information about the KPIs in this group widget.

Table 62. KPIs in the Available Memory (history) group widget

KPI	Description	Note
Available Memory (history)	The amount of available memory (in MB)	KQ5D60MEM.AMM

Tip: Double-click anywhere in the Available Memory (history) group widget to open the Node Memory workspace in the Tivoli Enterprise Portal.

Processor Time group widget

The Processor Time group widget provides a status gauge that contains information about the processor time that is spent in processing a thread that is not idle.

The following table contains information about the KPIs in this group widget.

Table 63. KPIs in the Processor Time group widget

KPI	Description	Note
Processor time (%)	The percentage of time that the processor spent in processing a thread that is not idle. The widget displays a warning status for the values 60% - 90%. The widget displays a critical status for a value greater than 90%.	KQ5D40CPU.PPT

Tip: Double-click anywhere in the Processor Time group widget to open the Node CPU workspace in the Tivoli Enterprise Portal.

Cluster Node Detail group widget

The Cluster Node Detail group widget provides a table that contains information about the resource groups of the selected node, such as name and state. This group widget also provides a line chart that contains information about the available memory for the selected node for the specified period, and a bullet widget that provides information about the percentage of processor time that is used for the selected node.

Important: The line chart is displayed only when the historical data collection is configured for the Memory attribute group.

The following table contains information about the KPIs in this group widget.

Table 64. KPIs in the Cluster Node Detail group widget

KPI	Description	Note
Name	The name of the resource group	KQ5B20LOGI.NOG
State	The current state of the resource group. The widget displays a warning status for the following states: • Unknown • Offline • Partial Online • Pending The widget displays a critical status if the state is failed.	KQ5B20LOGI.SOG
Available Memory (history)	The amount of available memory (in MB)	KQ5D60MEM.AMM

Table 64. KPIs in the Cluster Node Detail group widget (continued)

KPI	Description	Note
Processor time (%)	The percentage of time that the processor spent in processing a non-idle thread. The widget displays a warning status for the values 60% - 90%. The widget displays a critical status for a value greater than 90%.	KQ5D40CPU.PPT

To navigate to the workspaces in the Tivoli Enterprise Portal:

- Double-click the values in the Resource Groups table to open the Resource Groups workspace.
- Double-click in the Processor time (%) bullet widget to open the Node CPU workspace.

Important: You cannot navigate to the Node Memory workspace when you double-click in the Available Memory line chart. You can navigate to the Node Memory workspace from the Available Memory (history) group widget, which is displayed when you open the Microsoft Cluster Server Dashboard page.

IBM Tivoli Composite Application Manager for Microsoft Applications: Microsoft Exchange Server Agent group widgets

Specific group widgets are available for the Microsoft Exchange Server agent component. Use these group widgets to monitor activity and system status.

Average Message Delivery Time (history) group widget

The Average Message Delivery Time (history) group widget provides a line chart that contains information about the message delivery time for the public folder store during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the Key Performance Indicators (KPI) in this group widget.

Table 65. KPIs in the Average Message Delivery Time (history) group widget

KPI	Description	Note
Average Message Delivery Time	The average time (in seconds) between the submission of a message to the public folder store and submission to other storage providers for the last 10 messages.	MSEISPUB.AVGTIMDE

Note: Double-click anywhere in the Average Message Delivery Time (history) group widget to open the Status workspace in the Tivoli Enterprise Portal.

Public Folder Database State group widget

The Public Folder Database State group widget provides an HTML table that contains information about the status of the public folder databases.

The following table contains information about the KPIs in this group widget.

Table 66. KPIs in the Public Folder Database State group widget

KPI	Description	Note
Database	The name of the public folder database	MSEISPUB.NAME
State	The status of the public folder database, such as mounted or unmounted. The widget displays a critical status if the public folder database is unmounted.	MSEISPUB.PUBSTSTATE
Space Utilization (%)	The percentage of total Information Store space that is used by the public folder database	MSEISPUB.PUBISDBPRC
Growth (%)	The percentage of increase in the amount of data that is stored in the public folder database since the last interval sample was taken	MSEISPUB.PUBISPRCGR
Size (MB)	The size (in megabytes) of the public Information Store, which includes the messaging databases that contain all server-based public folders	MSEISPUB.PUBISSIZE

Tip: Double-click anywhere in the Public Folder Database State group widget to open the IS Public workspace in the Tivoli Enterprise Portal.

I/O Log Operations (history) group widget

The I/O Log Operations (history) group widget provides line charts that contain information about the number of log file read and write operations that are completed per second during a specified period.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 67. KPIs in the I/O Log Operations (history) group widget

KPI	Description	Note
Writes Per Second	The number of log file write operations that are completed per second	MSEDBINS.IOLOGWRT

Table 67. KPIs in the I/O Log Operations (history) group widget (continued)

KPI	Description	Note
Reads Per Second	The number of log file read operations that are completed per second	MSEDBINS.IOLOGRD

Tip: Double-click anywhere in the I/O Log Operations (history) group widget to open the Database Log workspace in the Tivoli Enterprise Portal.

Information Store Client Status group widget

The Information Store Client Status group widget provides an HTML table that contains information about the status of the Information Store client.

The following table contains information about the KPIs in this group widget.

Table 68. KPIs in the Information Store Client Status group widget

KPI	Description	Note
Client	The name of the client instance	MSEISCLI.CLINAME
RPC Bytes Receive Rate	The amount of data (in bytes) that is received per second from the RPC clients	MSEISCLI.RPCBRPS
RPC Bytes Sent Rate	The amount of data (in bytes) that is sent per second to the RPC clients	MSEISCLI.RPCBSPS
RPC Latency (ms)	The average server RPC latency (in milliseconds) for the last 1024 packets. The widget displays a critical status if the RPC latency is 50 ms or greater.	MSEISCLI.RPCAVGLAT
RPC Operations Per Second	The number of RPC operations that are currently requested per second from the server	MSEISCLI.RPCOPS

Tip: Double-click anywhere in the Information Store Client Status group widget to open the IS Client workspace in the Tivoli Enterprise Portal.

Database Log Record Stalls Per Second (history) group widget

The Database Log Record Stalls Per Second (history) group widget provides a line chart that contains information about the number of database log records that are not added to the log buffers during a specified period..

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 69. KPIs in the Database Log Record Stalls Per Second (history) group widget

KPI	Description	Note
Database Log Record Stalls Per Second	The number of database log records that are not added to the log buffers per second because the log buffers are full.	MSEDBINS.LOGSTALL

Note: Double-click anywhere in the Database Log Record Stalls Per Second (history) group widget to open the Database Log workspace in the Tivoli Enterprise Portal.

Average Log Write Operations Completed Per Second (history) group widget

The Average Log Write Operations Completed Per Second (history) group widget provides a line chart that contains information about the number of log write operations that are completed per second during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 70. KPIs in the Average Log Write Operations Completed Per Second (history) group widget

KPI	Description	Note
Average Log Write Operations Completed Per Second	The average write operations that are completed per second on the log files.	MSEDBINS.LOGWRITE

Note: Double-click anywhere in the Average Log Write Operations Completed Per Second (history) group widget to open the Database Log workspace in the Tivoli Enterprise Portal.

Public Folder Details group widget

The Public Folder Details group widget provides an HTML table that contains information about the public folders.

The following table contains information about the KPIs in this group widget.

Table 71. KPIs in the Public Folder Details group widget

KPI	Description	Note
Name	The name of the public folder	MSEPFLDD.PFLDNAME
Messages	The total number of messages in the public folder	MSEPFLDD.NUMPFLDMSG
Folder Size (MB)	The size (in MB) of the public folder	MSEPFLDD.PFLDSIZE
Last Access Time	The last date and time when the user was logged in to the public folder	MSEPFLDD.PFLDLASTLG

Tip: Double-click anywhere in the Public Folder Details group widget to open the Public Folder Detail workspace in the Tivoli Enterprise Portal.

Information Store Public Replication Details group widget

The Information Store Public Replication Details group widget provides an HTML table that contains information about the replication activity on the public Information Store.

The following table contains information about the KPIs in this group widget.

Table 72. KPIs in the Information Store Public Replication Details group widget

KPI	Description	Note
Name	The name of the Microsoft Exchange Information Store public replication instance	MSEISPUR.NAME
Backfill Requests Received	The number of backfill request replication messages that were received from other servers since the server was started	MSEISPUR.RBKRQREC
Backfill Requests Sent	The number of backfill request replication messages that were sent to other servers since the server was started	MSEISPUR.RBKRQSNT
Messages Received	The number of replication messages that were received from other servers in response to backfill requests since the server was started	MSEISPUR.RBKDMREC
Messages Sent	The number of replication messages that were sent to other servers in response to the backfill requests since the server was started	MSEISPUR.RBKDMSNT
Status Messages Received	The number of replication status request or response messages that were received from the other servers since the server was started	MSEISPUR.RSTMGREC
Status Messages Sent	The number of replication status request or response messages that were sent to other servers since the server was started	MSEISPUR.RSTMGSNT

Tip: Double-click anywhere in the Information Store Public Replication Details group widget to open the Replication workspace in the Tivoli Enterprise Portal.

Queue Lengths - Top 5 group widget

The Queue Lengths - Top 5 group widget provides a volume gauge that contains information about the copy queue length and the replay queue length for the

storage groups. This widget displays the top 5 storage groups in the decreasing order of the copy queue and replay queue lengths. For more details about queue lengths, click in the group widget.

The following table contains information about the KPIs in this group widget.

Table 73. KPIs in the Queue Lengths - Top 5 group widget

KPI	Description	Note
Instance	The storage group instance name of the Microsoft Exchange Server.	MSEREPLI.MSERINSTN
Copy	The number of log files that are in a queue and waiting to be copied and inspected. The widget displays a critical status if the value of the copy queue length is one or greater.	MSEREPLI.RPLCQLEN
Replay	The number of log files that are waiting to be replayed.	MSEREPLI.RPLRQLEN

Replication Details group widget

The Replication Details group widget provides an HTML table that contains information about the replication activity of the storage groups.

The following table contains information about the KPIs in this group widget.

Table 74. KPIs in the Replication Details group widget

KPI	Description	Note
Name	The storage group instance name of the Microsoft Exchange Server	MSEREPLI.MSERINSTN
Status	The replication status of the storage group	MSEREPLI.REPLSTAT
Copy Notification Generation	The generation sequence number of the last log file that is known to the Microsoft Exchange Replication service	MSEREPLI.RPLCNGNUM
Copy Generation Number	The generation sequence number of the last log file that was copied	MSEREPLI.RPLCGNUM
Replay Generations Complete	The number of log files that were replayed in the current replay batch	MSEREPLI.RPLRGENCOM
Replay Generations Remaining	The number of log files that remain to be replayed in the current replay batch	MSEREPLI.RPLRGENREM

Tip: Double-click anywhere in the Replication Details group widget to open the Replication workspace in the Tivoli Enterprise Portal.

Queue Lengths group widget

The Queue Lengths group widget provides an HTML table that contains information about the copy and replay queue lengths for the storage groups.

The following table contains information about the KPIs in this group widget.

Table 75. KPIs in the Queue Lengths group widget

KPI	Description	Note
Instance	The storage group instance name of the Microsoft Exchange Server	MSEREPLI.MSERINSTN
Copy	The number of log files that are in a queue and waiting to be copied and inspected. The widget displays a critical status if the copy queue length is a non-zero integer.	MSEREPLI.RPLCQLEN
Replay	The number of log files that are waiting to be replayed.	MSEREPLI.RPLRQLEN

Tip: Double-click anywhere in the Queue Lengths group widget to open the Replication workspace in the Tivoli Enterprise Portal.

Information Store Clients RPC Status - Top 5 group widget

The Information Store Clients RPC Status - Top 5 group widget provides a volume gauge that contains information about the RPC status of the Information Store client, such as RPC latency and RPC operations per second. The widget displays the top 5 Information Store clients in the decreasing order of the RPC latency and the number of RPC operations per second. For more details about the RPC status of the Information Store client, click in the group widget.

The following table contains information about the Key Performance Indicators (KPI) in this group widget.

Table 76. KPIs in the Information Store Clients RPC Status - Top 5 group widget

KPI	Description	Notes
RPC Latency (ms)	The average server RPC latency (in milliseconds) for the last 1024 packets. The window displays a critical status if the RPC latency is 50 milliseconds or greater.	MSEISCLI.RPCAVGLAT
RPC Operations Per Second	The number of RPC operations that are currently requested per second from the server	MSEISCLI.RPCOPS

Information Store Client Status - Top 5 group widget

The Information Store Client Status - Top 5 group widget provides a bar chart that contains information about the status of the Information Store client, such as RPC bytes received rate and RPC bytes sent rate. For more details about the status of the Information Store client, click in the group widget.

The following table contains information about the Key Performance Indicators (KPI) in this group widget.

Table 77. KPIs in the Information Store Client Status - Top 5 group widget

KPI	Description	Notes
RPC Bytes Receive Rate	The amount of data (in bytes) that is received per second from the RPC clients	MSEISCLI.RPCBRPS
RPC Bytes Sent Rate	The amount of data (in bytes) that is sent per second to the RPC clients	MSEISCLI.RPCBSPS

Client Summary group widget

The Client Summary group widget provides an HTML table that contains information about the Information Store clients.

The following table contains information about the KPIs in this group widget.

Table 78. KPIs in the Client Summary group widget

KPI	Description	Note
Name	The name of the client instance	MSEISCLI.CLINAME
JET Log Records Per Second	The number of database log records that are generated while processing the client requests	MSEISCLI.JETLOGRC
JET Pages Reads Per Second	The number of database pages that are read from disk while completed the client requests	MSEISCLI.JETPGRD
LDAP Reads Per Second	The number of LDAP read operations that are completed per second while processing client requests	MSEISCLI.LRPS
LDAP Searches Per Second	The number of LDAP search operations that are completed per second while processing client requests	MSEISCLI.LSPS

Tip: Double-click anywhere in the Client Summary group widget to open the IS Client workspace in the Tivoli Enterprise Portal.

Threads Waiting for Log Update - Top 5 group widget

The Threads Waiting for Log Update - Top 5 group widget provides a volume gauge that contains information about the number of threads that are waiting to update the databases. The widget displays the top 5 databases that are arranged in decreasing order of the number of threads that are waiting to update the database.

The following table contains information about the KPIs in this group widget.

Table 79. KPIs in the Threads Waiting for Log Update - Top 5 group widget

KPI	Description	Note
Database Instance	The name of the database instance	MSEDBINS.DBNAME
Count	The number of threads that are waiting for the data to be written to the log to update database. The widget displays a warning status if the number of threads that are waiting are 25 or greater.	MSEDBINS.LOGWAIT

Tip: Double-click anywhere in the Threads Waiting for Log Update - Top 5 group widget to open the Database Log workspace in the Tivoli Enterprise Portal.

Transaction Log Summary group widget

The Transaction Log Summary group widget provides an HTML table that contains information about the details of the transaction logs.

The following table contains information about the KPIs in this group widget.

Table 80. KPIs in the Transaction Log Summary group widget

KPI	Description	Note
Database Instance	The name of the database instance	MSEDBINS.DBNAME
I/O Log Reads Per Second	The number of log file read operations that are completed per second	MSEDBINS.IOLOGRD
I/O Log Writes Per Second	The number of log file write operations that are completed per second	MSEDBINS.IOLOGWRT
I/O Log Write Average Latency	The average time (in milliseconds) that is spent to complete a log file write operation	MSEDBINS.IOLOGWALT

Transport Summary group widget

The Transport Summary group widget provides an HTML table that contains information about the Transport Server status such as, submission queue size, send queue size, replication receive queue size, and messages delivered per minute.

The following table contains information about the KPIs in this group widget.

Table 81. KPIs in the Transport Summary group widget

KPI	Description	Note
Submission Queue Size	The current number of submitted messages that are not processed by the Transport Server. The widget displays a critical status if the submission queue size is 20 or greater.	MSEISPUB.MSGQUFSUB

Table 81. KPIs in the Transport Summary group widget (continued)

KPI	Description	Note
Send Queue Size	The number of messages in the send queue of the public Information Store. The widget displays a warning status if the send queue size is greater than 1000.	MSEISPUB.SNDQSIZE
Replication Receive Queue Size	The number of copied messages that are waiting to be processed. The widget displays a warning status if the replication receive queue size is greater than 250.	MSEISPUB.RECQSIZE
Messages Delivered Per Minute	The number of messages that are delivered to all recipients per minute since the server was started.	MSEISPUB.MSGDELMN

Tip: Double-click anywhere in the Transport Summary group widget to open the Status workspace in the Tivoli Enterprise Portal.

User Mailbox Availability group widget

The User Mailbox Availability group widget provides an HTML Table that contains information about the reachability of the email address.

The following table contains information about the KPIs in this group widget.

Table 82. KPIs in the User Mailbox Availability group widget

KPI	Description	Note
Target Email Address	The target email address to which the test email is sent	MSEREACH.TRGEADDRS
Reachable	The reachability status of the email address, such as yes or no. A critical status is displayed if the email address cannot be reached.	MSEREACH.REACHABLE
Round Trip Response Time (ms)	The round trip response time (in milliseconds) of an email that is sent to the target Exchange Server. If the email address cannot be reached, value is zero.	MSEREACH.RESPTIME
Target Server	The name of the target Exchange Server to which the test email is sent	MSEREACH.TRGSERVER

Tip: Double-click anywhere in the User Mailbox Availability group widget to open the Reachability workspace in the Tivoli Enterprise Portal.

Messages Delivered Per Minute group widget

The Messages Delivered Per Minute group widget provides an HTML table that contains information about the status of the number of messages that are delivered per minute.

The following table contains information about the KPIs in this group widget.

Table 83. KPIs in the Messages Delivered Per Minute group widget

KPI	Description	Note
Mailbox Name	The name of the mailbox	MSEISPRI.MBNAME
Count	The number of messages that are delivered to all recipients per minute. The widget displays a critical status if the number of messages that are delivered per minute is greater than 3000. The widget displays a warning status if the number of messages that are delivered per minute is 1000 - 3000.	MSEISPRI.MSGSDELM

Tip: Double-click anywhere in the Messages Delivered Per Minute group widget to open the Status workspace in the Tivoli Enterprise Portal.

Messages Queued for Submission group widget

The Messages Queued for Submission group widget provides an HTML table that contains information about the status of the current number of messages that are queued for submission.

The following table contains information about the KPIs in this group widget.

Table 84. KPIs in the Messages Queued for Submission group widget

KPI	Description	Note
Mailbox Name	The name of the mailbox	MSEISPRI.MBNAME
Count	The current number of submitted messages that are not yet processed by the transport. The widget displays a critical status if the current number of submitted messages that are not yet processed are 50 or greater.	MSEISPRI.MSGQUFSUB

Tip: Double-click anywhere in the Messages Queued for Submission group widget to open the Status workspace in the Tivoli Enterprise Portal.

Active Directory Access Processes Details group widget

The Active Directory Access Processes Details group widget provides a table that contains the details for the process that you select in the LDAP Activities in Active Directory Access Processes group widget.

The following table contains information about the KPIs in this group widget.

Table 85. KPIs in the Active Directory Access Processes Details group widget

KPI	Description	Note
Process	The name of the process instance	MSEADACP.PROCNAME

Table 85. KPIs in the Active Directory Access Processes Details group widget (continued)

KPI	Description	Note
LDAP Read Time	The time (in milliseconds) that is spent in sending an LDAP read request and receiving a response. The widget displays a warning status for the values 50 - 100. The widget displays a critical status for a value greater than 100.	MSEADACP.LDAPRDTI
LDAP Search Time	The time (in milliseconds) that is spent in sending an LDAP search request and receiving a response. The widget displays a warning status for the values 50 - 100. The widget displays a critical status for a value greater than 100.	MSEADACP.LDAPSRHTI
Open Connections to Domain	The number of open connections to the domain controllers in the process	MSEADACP.OPENCONDC
Open Connections to Global Catalogs	The number of open connections to the global catalogs in the process	MSEADACP.OPENCONCT

Tip: Double-click anywhere in the Active Directory Access Processes Details group widget to open the Active Directory Activity workspace in the Tivoli Enterprise Portal.

Activities (history) group widget

The Activities (history) group widget provides a table and a line chart that contain information about the number of users who did some activity on the Information Store during a specified period.

The following table contains information about the KPIs in this group widget.

Table 86. KPIs in the Activities (history) group widget

KPI	Description	Note
User count	The number of users that are connected to the Information Store.	MSEIS.USERCONT
Active user count	The number of users who did some activity during a specified period.	MSEIS.ACTUSCNT
Connection count	The number of connections to the Information Store. A user can have multiple connections (sessions). For example, if the user accesses a database by using multiple protocols, a separate session for each protocol might be created.	MSEIS.CONNCONT

Table 86. KPIs in the Activities (history) group widget (continued)

KPI	Description	Note
Active connection count	The number of connections that showed some activity during a specified period.	MSEIS.ACTCNCNT

Active Sync Activities (history) group widget

The Active Sync Activities (history) group widget provides line charts showing spikes that contain information about the status of the mobile device integration activities of Exchange Server, such as the number of HTTP requests that are queued, and synchronous and ping commands that are pending.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 87. KPIs in the Active Sync Activities (history) group widget

KPI	Description	Note
Requests Queued	The number of HTTP requests that are waiting to be assigned to a thread.	MSEASYNC.REQQUEUED
Sync command pending	The number of synchronous commands that are currently waiting to be processed on the server.	MSEASYNC.SYNCMDPD
Ping command pending	The number of ping commands that are currently waiting to be processed on the server.	MSEASYNC.PINGCMDSP

Note: Double-click anywhere in the Active Sync Activities (history) group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Active Sync Status group widget

The Active Sync Status group widget provides an HTML table that contains information about the requests that are generated by the ASP.NET, such as the number of HTTP requests received, average request time, and requests received per second.

Note: This group widget does not display data for Exchange Server 2003, Service Pack 2.

The following table contains information about the KPIs in this group widget.

Table 88. KPIs in the Active Sync Status group widget

KPI	Description	Note
Current requests	The number of HTTP requests that are currently received from the ASP.NET.	MSEASYNC.REQCURR

Table 88. KPIs in the Active Sync Status group widget (continued)

KPI	Description	Note
Average request time (ms)	The average time (in milliseconds) that is taken to process a request.	MSEASYNC.REQAVGTIME
Requests per second	The number of HTTP requests that are received per second through ASP.NET.	MSEASYNC.REQPERSEC

Note: Double-click anywhere in the Active Sync Status group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

UM Auto Attendant Details group widget

The UM Auto Attendant Details group widget provides an HTML table that contains information about the activities of the Unified Messaging (UM) auto attendants.

The following table contains information about the KPIs in this group widget.

Table 89. KPIs in the UM Auto Attendant Details group widget

KPI	Description	Note
Auto Attendant	The name of the UM auto attendant	MSEUMAATTD.AUTOATTDNM
Successful Calls (%)	The percentage of total calls that were answered by the UM auto attendant	MSEUMAATTD.PCTSUCCCLS
Average Call Time (seconds)	The average call duration with the UM auto attendant	MSEUMAATTD. AVGCTIME
Business Hours Calls	The total number of calls that were answered by the UM auto attendant during business hours since the service was started	MSEUMAATTD.BUSSHCALLS

Tip: Double-click anywhere in the UM Auto Attendant Details group widget to open the Unified Messaging workspace in the Tivoli Enterprise Portal.

Unified Messaging Availability group widget

The Unified Messaging Availability group widget provides a volume gauge and a table that contain information about the availability of the Unified Messaging system.

The following table contains information about the KPIs in this group widget.

Table 90. KPIs in the Unified Messaging Availability group widget

KPI	Description	Note
Messages processed successfully (%)	The percentage of messages that were processed by the Microsoft Exchange Unified Messaging service in the last hour. The widget displays a critical status if the percentage of messages that are processed in the last hour is less than 95%.	MSEUMAVLBT.PCTMSPOTLH
Directory access failures	The total number of attempts that failed to access the Active Directory since the service was started. The widget displays a critical status if the number of attempts that failed to access the Active Directory is one.	MSEUMAVLBT.DIRAFAIRS
Mailbox server access failures	The total number of attempts that failed to access the Mailbox server since the service was started	MSEUMAVLBT.MAILSAFAIL
Hub Transport access failures	The total number of attempts that failed to access the Hub Transport server since the service was started	MSEUMAVLBT.HTRAFLRS

Tip: Double-click anywhere in the Unified Messaging Availability group widget to open the Unified Messaging workspace in the Tivoli Enterprise Portal.

Average Delivery Time (history) group widget

The Average Delivery Time (history) group widget provides a line chart that contains information about the average delivery time of the messages during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 91. KPIs in the Average Delivery Time (history) group widget

KPI	Description	Note
Average Delivery Time (history)	The average time (in milliseconds) between the submission of a message to the mailbox store and the delivery of the message to all the local recipients on the same server for the last 10 messages.	MSEISPRI.AVGDELTM

The line chart is changed when you click a mailbox in the Mailbox Database State group widget.

Note: Double-click anywhere in the Average Delivery Time (history) group widget to open the Status workspace in the Tivoli Enterprise Portal.

RPC Average Latency (history) group widget

The RPC Average Latency (history) group widget provides a line chart that contains information about the remote procedure call (RPC) average latency.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 92. KPIs in the RPC Average Latency (history) group widget

KPI	Description	Note
RPC Average Latency (history)	The average time (in milliseconds) of the database RPC latency for the last 1024 packets.	MSEISPRI.RPCAL

The line chart is changed when you click a mailbox in the Mailbox Database State group widget.

Note: Double-click anywhere in the RPC Average Latency (history) group widget to open the IS Private workspace in the Tivoli Enterprise Portal.

Database Cache group widget

The Database Cache group widget provides a grid widget and a bar chart that contain information about the Exchange database cache.

The following table contains information about the KPIs in this group widget.

Table 93. KPIs in the Database Cache group widget

KPI	Description	Note
Cache Hit Per Database (%)	The percentage of database file page requests that were processed by the database cache without causing a file operation. The widget displays a warning status if the percentage of database file page requests that are processed is in the range 80 - 90. The widget displays a critical status if the percentage of database file page requests that are processed is 90 or greater.	MSEDB.CACHEHIT
Cache Size (MB)	The amount of system memory (in MB) that is used by the database cache manager to store information that is commonly used in the database files to prevent file operations.	MSEDB.CAHSIZEMB

Note: When you click a database name in the grid widget, the Page Faults (history) and Page Fault Stalls (history) group widgets show the line charts for the database.

Client Access group widget

The Client Access group widget provides a status gauge that contains information about the status of the Exchange Server integrated support for mobile devices and the Outlook Web Access (OWA) activities.

The following table contains information about the KPIs in this group widget.

Table 94. KPIs in the Client Access group widget

KPI	Description	Note
OWA response	The status of the OWA activities. The widget displays a critical status if any of the following conditions is true: • The Average Response attribute of the Outlook Web Access Activities (history) group widget constantly displays a value that is less than 100 milliseconds. • The Average Search Time (in ms) attribute of the Outlook Web Access Activities (history) group widget displays a value that is greater than or equal to 5000 milliseconds.	
ActiveSync response	The status of the integration support for mobile devices. The widget displays a warning status if the Requests Queued attribute of the Active Sync Activities (history) group widget displays a value in the range 95 - 100. The widget displays a critical status if the Requests Queued attribute of the Active Sync Activities (history) group widget displays a value 100 or greater.	

Client Request History group widget

The Client Request History group widget provides a line chart that contains information about the client requests that were processed by the Information Store during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 95. KPIs in the Client Request History group widget

KPI	Description	Note
RPC Request	The number of client requests that are currently processed by the Information Store.	MSEIS.RPCREQTS

Component Status group widget

The Component Status group widget provides an HTML table that contains the overall status of components in the Information Store.

The following table contains information about the KPIs in this group widget.

Table 96. KPIs in the Component Status group widget

KPI	Description	Note
Storage	The status of the storage groups	
Client	The status of the Information Store clients	

Database Availability Group Information group widget

The Database Availability Group Information group widget provides a status gauge that contains information about the Database Availability Group (DAG), such as DAG name, witness server name, file share witness directory, and member count.

The following table contains information about the KPIs in this group widget.

Table 97. KPIs in the Database Availability Group Information group widget

KPI	Description	Note
DAG Name	The name of the DAG	MSEDAG.DAGNAME
Witness server name	The name of the witness server in a DAG setup	MSEDAG.WITSERNAME
File share witness directory	The name of the directory that is used to store file share witness data. This directory is on a server that is not a member of the DAG.	MSEDAG.FILESHWTD
Member count	The number of nodes that are members of a DAG setup	MSEDAG.MEMCOUNT

Tip: Double-click anywhere in the Database Availability Group Information group widget to open the Database Availability Group workspace in the Tivoli Enterprise Portal.

Database Copy Status group widget

The Database Copy Status group widget provides an HTML table that contains information about the Database Availability Group (DAG) status. For more information about DAG, click in the group widget area to open the Database Availability Group Information group widget.

The following table contains information about the KPIs in this group widget.

Table 98. KPIs in the Database Copy Status group widget

KPI	Description	Note
Mailbox	The number of mailbox database copies that are available on the monitored node of the DAG setup	MSEDAG.MBDBCOPIES
Status	The status of mailbox databases copies that are available on the monitored node of the DAG setup	MSEDAG.DBCPSTATUS
Activation Preference	A numeric value that is used to break ties during database activation when multiple database copies meet the same criteria for activation	MSEDAG.ACTPREF
Replay Lag Time (minutes)	The amount of time (in minutes) to delay the log replay for the database copy	MSEDAG.REPLAYLT
Truncation Lag Time (minutes)	The amount of time (in minutes) to delay the truncation of log files that were replayed into the database copy since the replication service was started	MSEDAG.TRNLAYLT

Mailbox Database State group widget

The Mailbox Database State group widget provides an HTML table widget that contains information about the state of the mailbox database.

The following table contains information about the KPIs in this group widget.

Table 99. KPIs in the Mailbox Database State group widget

KPI	Description	Note
Mailbox	The name of the mailbox	MSEISPRI.MBNAME
State	The status of the mailbox store, such as mounted or dismounted. The widget displays a critical status if the mailbox store is dismounted.	MSEISPRI.MAILSTSTAT
Space Utilization (%)	The percentage of the total space that is used by the mailbox database	MSEISPRI.MAILISDBPR
Growth (%)	The growth in percent of the mailbox information store since the last query was processed	MSEISPRI.MAILISPRGR
Size (MB)	The size (in MB) of the mailbox information store	MSEISPRI.MAILISSIZE

Table 99. KPIs in the Mailbox Database State group widget (continued)

KPI	Description	Note
Slow Findrow Rate	The rate at which the slower findrow is used in the mailbox store. The widget displays a critical status if the findrow rate is greater than 10.	MSEISPRI.SLFRRATE
Search Task Rate	The number of search tasks that are created per second. The widget displays a critical status if the number of search tasks that are created per second is 10 or greater.	MSEISPRI.SRCHTSKR

Tip: When you click a mailbox name in the table, the Average Delivery Time and RPC Average Latency group widgets show the line charts for the mailbox.

Information Store Details group widget

The Information Store Details group widget provides a table that contains the details of activities that are related to the virtual memory in the Information Store.

The following table contains information about the KPIs in this group widget.

Table 100. KPIs in the Information Store Details group widget

KPI	Description	Note
RPC Operations Failed	The number of RPC operations that failed because the server was too busy since the mailbox store was started	MSEIS.SERBSY
Slow Search Threads	The number of search threads that currently run queries, which are not optimized.	MSEIS.SLST
VM Largest Block Size (MB)	The size (in megabytes) of the largest available block of virtual memory	MSEIS.VMLRGBLS
VM Free Blocks (>=16 MB)	The total number of free virtual memory blocks that are greater than or equal to 16 MB	MSEIS.VMTOTMFB
VM Free Blocks	The total number of free virtual memory blocks	MSEIS.VMTOTFBL
VM Large Free Block Bytes (MB)	The total size (in megabytes) of the free virtual memory blocks that are greater than or equal to 16 MB	MSEIS.VMTOTLFB

Disk Space Used (history) group widget

The Disk Space Used (history) group widget provides a line chart that contains information about the disk space usage of the storage group. This group widget displays data only for Exchange Server 2003 and 2007.

Important: The line chart is displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 101. KPIs in the Disk Space Used (history) group widget

KPI	Description	Notes
Disk Space Used (history)	The size (in MB) of the storage group.	MSESGRPD.SGSIZE

Note: Double-click anywhere in the Disk Space Used (history) group widget to open the Storage Group Detail workspace in the Tivoli Enterprise Portal.

Domain Controller Connectivity (history) group widget

The Domain Controller Connectivity (history) group widget provides line charts that contain information about the processing time for LDAP requests during a specified period.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 102. KPIs in the Domain Controller Connectivity (history) group widget

KPI	Description	Note
Average Time To Complete LDAP Request	The time (in milliseconds) that is spent in sending an LDAP read request and receiving a response	MSEADDC.LDAPRDTM
Long Running LDAP Operations Per Minute	The number of LDAP operations per minute that run longer than the specified threshold on the domain controller	MSEADDC.LRLDPOPM

The line charts are changed when you click a domain controller in the LDAP Activities in Domain Controller group widget.

Tip: Double-click anywhere in the Domain Controller Connectivity (history) group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Exchange Events group widget

The Exchange Events group widget provides a table that contains the details of events that are triggered on the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 103. KPIs in the Exchange Events group widget

KPI	Description	Note
Time stamp	The time when the data was collected.	MSEEVNTD.TIMESTAMP
Type	The type of event, such as an error or a warning. The widget displays a warning status if the value is two. The widget displays a critical status if the value is one or three.	MSEEVNTD.EVENTTYP
ID	The ID of the triggered event.	MSEEVNTD.ERRORID
Source	The name of the event source.	MSEEVNTD.EVENTSRC
User	The name of the user who was logged on when the event occurred.	MSEEVNTD.EVENTUSR
Description	The description in the event log.	MSEEVNTD.EVENTTXT

Note: Double-click anywhere in the Exchange Events group widget to open the Event Logs workspace in the Tivoli Enterprise Portal.

Exchange Events group widget

The Exchange Events group widget provides a status gauge that contains information about the status of events that are triggered on the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 104. KPIs in the Exchange Events group widget

KPI	Description	Note
Exchange events	The type of event, such as error, warning, or failure audit. The widget displays a warning status if the value is two. The widget displays a critical status if the value is one or three.	MSEEVNTD.EVENTTYP

Extensibility Agents group widget

The Extensibility Agents group widget provides an HTML table that contains information about the activities of transport agents and the time that is taken by each agent to process email messages.

The following table contains information about the KPIs in this group widget.

Table 105. KPIs in the Extensibility Agents group widget

KPI	Description	Notes
Instance	The name of the extensibility agent	MSEXTAGT.EXAGTNM

Table 105. KPIs in the Extensibility Agents group widget (continued)

KPI	Description	Notes
Average Processing Time (in seconds)	The average processing time (in seconds) of the agent per event. The widget displays a critical status if the average processing time of the agent is 20 seconds or greater.	MSEXTAGT.AAPTS
Invocations	The total number of agent invocations that occurred since the agent was started	MSEXTAGT.TAGTINV

Tip: Double-click anywhere in the Extensibility Agents group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Extensibility Agents - Top 5 group widget

The Extensibility Agents - Top 5 group widget provides a volume gauge and a bar chart that contain information about the activities of transport agents and the time that is taken by each agent to process email messages, such as agent processing time and agent invocations. For more details about the extensibility agents, click in the group widget.

The following table contains information about the KPIs in this group widget.

Table 106. KPIs in the Extensibility Agents - Top 5 group widget

KPI	Description	Notes
Instance	The name of the extensibility agent	MSEXTAGT.EXAGTNM
Average Processing Time (seconds)	The average processing time (in seconds) of the agent per event. The widget displays a critical status if the average processing time is 20 seconds or greater.	MSEXTAGT.AAPTS
Invocations	The total number of agent invocations that occurred since the agent was started	MSEXTAGT.TAGTINV

Transactions Per Second group widget

The Transactions Per Second group widget provides an HTML table that contains information about the I/O operations in the Exchange databases.

The following table contains information about the KPIs in this group widget.

Table 107. KPIs in the Transactions Per Second group widget

KPI	Description	Note
Database	The name of the transport queue database	MSEDBINS.DBNAME
I/O Database Reads	The number of database read operations that are completed per second	MSEDBINS.IODBRPS

Table 107. KPIs in the Transactions Per Second group widget (continued)

KPI	Description	Note
I/O Database Writes	The number of database write operations that are completed per second	MSEDBINS.IODBWPS
Table Open Cache Hits	The number of database tables that are opened per second by using cached schema information	MSEDBINS.TABLEOCH
Table Open Cache Misses	The number of database tables that are opened per second without using cached schema information	MSEDBINS.TABLEOCM
Table Opens Per Second	The number of database tables that are opened per second	MSEDBINS.TABLOPEN
Version Buckets Allocated	The total number of version buckets that are allocated	MSEDBINS.VERSBUCK

LDAP Activities in Domain Controller group widget

The LDAP Activities in Domain Controller group widget provides an HTML table that contains information about the LDAP activities in the domain controllers.

The following table contains information about the KPIs in this group widget.

Table 108. KPIs in the LDAP Activities in Domain Controller group widget

KPI	Description	Note
Domain Controller	The name of the domain controller that hosts the Exchange Server	MSEADDC.DCCTRLN
Searches Timed Out per Minute	The number of LDAP search requests that were timed out per minute. The widget displays a critical status for the value 10 or greater.	MSEADDC.LDPSTOPM
Pages	The number of extra pages that are retrieved from the domain controller per second	MSEADDC.LDAPPGPS
Read Calls	The number of LDAP read calls that occurred per second	MSEADDC.LDAPRCPS
Search Calls	The number of Depth 1 or 2 LDAP search calls that are made per second	MSEADDC.LDAPSCPS

Note: When you click a domain controller name in the table, the Domain Controller Connectivity (history) group widget shows the line charts for the domain controller.

Mailbox Databases group widget

The Mailbox Databases group widget provides an HTML table that contains information about the mailbox databases.

The following table contains information about the KPIs in this group widget.

Table 109. KPIs in the Mailbox Databases group widget

KPI	Description	Note
Name	The name that was assigned to the mailbox by the Exchange Server during the mailbox account creation	MSEMBXD.MBXNAME
Messages	The total number of messages present in the mailbox	MSEMBXD.NUMMBXMSGS
Size (MB)	The size (in MB) of the mailbox during the sample time	MSEMBXD.MBXSIZE
Max Size (MB)	The maximum size (in MB) that the mailbox can reach	MSEMBXD.MBXMAXSIZE
Email Address	The email address in Active Directory naming format that is suitable for representation and identification in the Exchange Server	MSEMBXD.EMAILADDRS

Tip: Double-click anywhere in the Mailbox Databases group widget to open the Mailbox Detail workspace in the Tivoli Enterprise Portal.

Mailbox Details group widget

The Mailbox Details group widget provides a bullet widget that contains information about the mailbox, such as name of the mailbox, total number of messages, mailbox size, last login date and time, and email address. For more information about the mailbox, click in the group widget area to open the Mailbox Databases group widget.

The following table contains information about the KPIs in this group widget.

Table 110. KPIs in the Mailbox Details group widget

KPI	Description	Note
Name	The name that was assigned to the mailbox by the Exchange Server during the mailbox account creation	MSEMBXD.MBXNAME
Messages	The total number of messages present in the mailbox	MSEMBXD.NUMMBXMSGS
Size (MB)	The size (in MB) of the mailbox during the sample time	MSEMBXD.MBXSIZE
Last Logon	The last date and time when the user logged in to the mailbox	MSEMBXD.MBXLASTLGN
Email Address	The email address in Active Directory naming format that is suitable for representation and identification in the Exchange Server	MSEMBXD.EMAILADDRS

Messages Delivered Per Minute - Top 5 group widget

The Messages Delivered Per Minute - Top 5 group widget provides a bullet chart that contains information about the number of messages that are delivered per minute.

The following table contains information about the KPIs in this group widget.

Table 111. KPIs in the Messages Delivered Per Minute - Top 5 group widget

KPI	Description	Note
Mailbox Name	The name of the mailbox	MSEISPRI.MBNAME
Count	The number of messages that are delivered to all recipients per minute. The widget displays a critical status if the number of messages that are delivered per minute is greater than 3000. The widget displays a warning status if the number of messages that are delivered per minute is 1000 - 3000.	MSEISPRI.MSGSDELM

Messages Queued for Submission - Top 5 group widget

The Messages Queued for Submission - Top 5 group widget provides a volume gauge that contains information about the current number of messages that are queued for submission.

The following table contains information about the KPIs in this group widget.

Table 112. KPIs in the Messages Queued for Submission - Top 5 group widget

KPI	Description	Note
Mailbox name	The name of the mailbox	MSEISPRI.MBNAME
Count	The current number of submitted messages that are not yet processed by the transport. The widget displays a critical status if the current number of submitted messages that are not yet processed are 50 or greater.	MSEISPRI.MSGQUFSUB

Outlook Web Access Activities (history) group widget

The Outlook Web Access Activities (history) group widget provides line charts that contain information about the activities of the Outlook Web Access (OWA) client, such as average response time, average search time, and requests per second.

This group widget displays data for Exchange Server 2007, or later.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 113. KPIs in the Outlook Web Access Activities (history) group widget

KPI	Description	Note
Average Response Time (in ms)	The average time (in milliseconds) that is elapsed between sending an OEH or an Active Server Pages Extended (ASPX) request and receiving a response from the server.	MSEOWA.AVGRT
Average Search Time (in ms)	The average time (in milliseconds) that is taken to complete the search.	MSEOWA.AVGST
Request Per Second	The number of requests that are processed per second by the OWA.	MSEOWA.REQPS

Note: Double-click anywhere in the Outlook Web Access Activities (history) group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Outlook Web Access Status group widget

The Outlook Web Access Status group widget provides an HTML table that contains information about the status of Outlook Web Client (OWA) activities, such as number of current users, messages sent, and requests failed.

Note: This group widget displays data for Exchange Server 2007, or later.

The following table contains information about the KPIs in this group widget.

Table 114. KPIs in the Outlook Web Access Status group widget

KPI	Description	Note
Current unique users	The number of unique users that are currently logged on to OWA.	MSEOWA.CURUNQUSR
Message sent since process restart	The number of messages that are sent by users since the service was started.	MSEOWA.MSGSSENT
Requests failed since process restart	The number of requests that failed since the process was started.	MSEOWA.REQFLD
Searches since process restart	The number of searches that were processed since the process was started.	MSEOWA.SRCH

Note: Double-click anywhere in the Outlook Web Access Status group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Pages Faults (history) group widget

The Pages Faults (history) group widget provides a line chart that contains information about the database page faults that occurred per second in the information store during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 115. KPIs in the Pages Faults (history) group widget

KPI	Description	Note
Page Faults Per Second	The number of database page requests per second that require the database cache manager to allocate a new page from the database cache.	MSEDB.CACHFAULT

Note: The line chart is changed when you click a database in the Database Cache group widget.

Pages Fault Stalls (history) group widget

The Pages Fault Stalls (history) group widget provides a line chart that contains information about the database page faults that occurred in the information store that are not serviced during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 116. KPIs in the Pages Fault Stalls (history) group widget

KPI	Description	Note
Page Fault Stalls Per Second	The number of page faults per second that cannot be serviced because no pages are available for allocation from the database cache.	MSEDB.CACHSTALL

Note: The line chart is changed when you click a database in the Database Cache group widget.

LDAP Activities in Active Directory Access Processes group widget

The LDAP Activities in Active Directory Access Processes group widget provides a table that contains the details of LDAP activities that are used in processes to access the Active Directory. Click a process instance to view more details for the process.

The following table contains information about the KPIs in this group widget.

Table 117. KPIs in the LDAP Activities in Active Directory Access Processes group widget

KPI	Description	Note
Process	The name of the process instance	MSEADACP.PROCNAME
Timeout Errors	The number of LDAP operations in the process that failed per second because of an exceeded timeout	MSEADACP.LDAPTOS
Read Calls	The number of Depth 0 LDAP read calls that are requested by the process per second	MSEADACP.LDAPRDCS
Search Calls	The number of Depth 1 or 2 LDAP search calls that are requested by the process per second	MSEADACP.LDAPSRHCS
Write Calls	The number of LDAP write requests that are requested by the process per second	MSEADACP.LDAPWRTCS

Active Directory Access Processes - Top 5 group widget

The Active Directory Access Processes - Top 5 group widget provides bullet charts that contain information about the first five processes that are arranged in the descending order of LDAP read and search times with highest times at the top.

The following table contains information about the KPIs in this group widget.

Table 118. KPIs in the Active Directory Access Processes - Top 5 group widget

KPI	Description	Note
Processes	The name of the process instance.	MSEADACP.PROCNAME
LDAP Read Time (ms)	The time (in milliseconds) that is spent in sending an LDAP read request and receiving a response. The widget displays a warning status if the time that is spent is in the range 50 - 100 milliseconds. The widget displays a critical status if the time that is spent is 100 milliseconds or greater.	MSEADACP.LDAPRDTI
LDAP Search Time (ms)	The time (in milliseconds) that is spent in sending an LDAP search request and receiving a response. The widget displays a warning status if the time that is spent is in the range 50 - 100 milliseconds. The widget displays a critical status if the time that is spent is 100 milliseconds or greater.	MSEADACP.LDAPSRHTI

Transport SMTP Receive group widget

The Transport SMTP Receive group widget provides a bar chart that contains information about the SMTP Receive service.

The following table contains information about the KPIs in this group widget.

Table 119. KPIs in the Transport SMTP Receive group widget

KPI	Description	Note
Average Bytes Per Second	The amount of data (in bytes) that is received per second by the SMTP Receive Service	MSESMTPR.BYTESRSEC
Messages Per Second	The number of messages that are received per second by the SMTP Receive Service since the server was started	MSESMTPR.MSGRECSEC

Tip: Double-click anywhere in the Transport SMTP Receive group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Remote Procedure Call History group widget

The Remote Procedure Call History group widget provides line charts that contain information about the RPC operations that were processed during a specified period.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 120. KPIs in the Remote Procedure Call History group widget

KPI	Description	Note
Average Delay in RPC Requests	The average latency of RPC requests (in milliseconds) for the last 1024 packets.	MSEIS.RPCAVGLA
RPC Operations Per Second	The number of RPC operations that currently occur per second.	MSEIS.RPCOPSEC

Transport SMTP Send group widget

The Transport SMTP Send group widget provides a bar chart that contains information about the SMTP Send service.

The following table contains information about the KPIs in this group widget.

Table 121. KPIs in the Transport SMTP Send group widget

KPI	Description	Note
Average Bytes Per Second	The amount of data (in bytes) that is sent per second by the SMTP Send service since the server was started	MSESMTPS.BYTESSSEC

Table 121. KPIs in the Transport SMTP Send group widget (continued)

KPI	Description	Note
Messages Per Second	The number of times the messages are sent per second by the SMTP Send service since the server was started	MSESMTPS.MSGSNTSEC

Tip: Double-click anywhere in the Transport SMTP Send group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Server Health group widget

The Server Health group widget provides a status gauge that contains information about the overall health and status of the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 122. KPIs in the Server Health group widget

KPI	Description	Note
Exchange services	The status of all the Exchange services that are currently available. An Exchange service can be one of the following status: • Running • Paused • Stopped • ContinuePending • PausePending • StartPending • StopPending • Unknown For more information about the status of Exchange services, click the widget to view the Exchange Events and Services page.	MSESRVCD.SRVCSTATE
Active Directory access	The status of activities between the Exchange Server components and the Active Directory. For more information about the status of Active Directory access, click the widget to view the Active Directory Access page.	

Table 122. KPIs in the Server Health group widget (continued)

KPI	Description	Note
Application space utilization (%)	The percentage of used space on the logical drive where the Exchange Server is installed. The widget displays a critical status if the percentage of application space usage is 90% or greater. The widget displays a warning status if the percentage of application space usage is 80% - 90%.	MSESERVR.APPPCTFREE
Log space utilization (%)	The percentage of used space for the log data between the current sample and previous sample. The widget displays a critical status if the percentage of log space usage is 10% or less. The widget displays a warning status if the percentage of the log space usage is 10% - 20%.	MSESERVR.LOGPCTFREE

Exchange Server group widget

The Exchange Server group widget provides a status gauge that contains the name and version of the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 123. KPIs in the Exchange Server group widget

KPI	Description	Note
Server name	The name of the Exchange Server	MSESERVR.ORIGINNODE
Exchange version	The version of the Exchange Server	MSESERVR.VERSION

Exchange Server Roles group widget

The Exchange Server Roles group widget provides a status gauge that contains information about the roles of the Exchange Server, such as Edge Transport, Hub Transport, Client Access, Mailbox, and Unified Messaging.

The following table contains information about the KPIs in this group widget.

Table 124. KPIs in the Exchange Server Roles group widget

KPI	Description	Note
Edge transport	The availability status of the Edge Transport Server in the network, such as Yes or No.	MSESERVR.EDGETRANS
Mailbox server	The availability status of the Mailbox Server in the network, such as Yes or No.	MSESERVR.MAILSRVR

Table 124. KPIs in the Exchange Server Roles group widget (continued)

KPI	Description	Note
Client access	The availability status of the Client Access Server in the network, such as Yes or No.	MSESERVR.CLIENTACC
Unified messaging	The availability status of the Unified Messaging Server in the network, such as Yes or No.	MSESERVR.UNIFIEDMSG
Hub Transport	The availability status of the Hub Transport Server in the network, such as Yes or No.	MSESERVR.HUBTRANS

Tip: Double-click anywhere in the Exchange Server Roles group widget to open the Server Information workspace in the Tivoli Enterprise Portal.

Service Details group widget

The Service Details group widget provides a table that contains the details of services that are available on the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 125. KPIs in the Service Details group widget

KPI	Description	Note
Name	The name of the service.	MSESRVCD.SRVCNAME
State	The current state of the service, such as stopped, start pending, stop pending, running, continue pending, pause pending, paused, and unknown. The widget displays a critical status if the value for the service state is zero.	MSESRVCD.SRVCSTATE
Start Mode	The start mode that is defined for the service, such as automatic, manual, disabled, unknown, and delayed.	MSESRVCD.STARTMODE

Note: Double-click anywhere in the Service Details group widget to open the Services Detail workspace in the Tivoli Enterprise Portal.

Exchange Server Status group widget

The Exchange Server Status group widget provides a bullet widget that contains information about the state of Exchange services. This group widget also provides an HTML table that contains information about the status of Active Directory access, disk utilization, Information Store, and client access.

Note: This dashboard is used to monitor Exchange Server 2007 and 2010. If you want to monitor Exchange Server 2013, select the MSEXCH2013 component on the Component page and add it to your application.

Note: This dashboard is displayed when you click an Exchange Server group or application. The context drill down widget is not displayed when you navigate to the Exchange Server dashboard from an instance.

The following table contains information about the KPIs in this group widget.

Table 126. KPIs in the Exchange Server Status group widget

KPI	Description	Note
Exchange services	The current state of the Exchange services	MSESRVCD.SRVCSTATE
Active Directory access	The status of interaction between the Exchange components and the Active Directory	
Disk utilization	The status of disk usage in the Exchange Server	
Store status	The status of activities in the Information Store, such as remote procedure calls, search threads, and user counts	
Client access	The status of client activities, such as Outlook web access and synchronous commands	

Status Summary group widget

The Status Summary group widget provides a status gauge that contains information about the status of Exchange databases, such as transaction logs, mailbox databases, public folder databases, and high availability.

The following table contains information about the KPIs in this group widget.

Table 127. KPIs in the Status Summary group widget

KPI	Description	Note
Transaction logs	The status of transaction logs. The widget status is an overview of the Transaction Details page.	
Mailbox databases	The status of mailbox databases. The widget status is an overview of the Mailbox Database Detail page.	
Public folder databases	The status of public folder databases. The widget status is an overview of the Public Folder Database Detail page.	
High availability	The current replication status of the storage group. The widget status is an overview of the Exchange Replication Detail page.	

Storage Group Summary group widget

The Storage Group Summary group widget provides an HTML table that contains information about the status of storage groups that are available on the Exchange Server.

Note: This group widget displays data only for Exchange Server 2003 and 2007. The following table contains information about the KPIs in this group widget.

Table 128. KPIs in the Storage Group Summary group widget

KPI	Description	Note
Name	The name of the storage group.	MSESGRPD.SGNAME
Free Space (%)	The percentage of free space that is available on the logical drive where the Exchange Server is installed. The widget displays a warning status if the percentage of free space is in the range 10 - 20. The widget displays a critical status if the percentage of free space is less than 10.	MSESGRPD.SGPCTFREE
Growth (%)	The growth in percent of the storage group size between the current sample and previous sample.	MSESGRPD.SGPCTGRWTH
Storage Group Size (MB)	The size (in megabytes) of the storage group.	MSESGRPD.SGSIZE
Number of Mailboxes Per Storage Group	The number of mailboxes in the storage group.	MSESGRPD.NUMMBX

Store Status group widget

The Store Status group widget provides a status gauge that contains the overall status of the Information Store and databases.

The following table contains information about the KPIs in this group widget.

Table 129. KPIs in the Store Status group widget

KPI	Description	Note
Information Store	The status of the Exchange Information Store. For more details about the Information Store, click the widget to view the Information Store page.	
Database	The status of the Exchange databases. For more details about the database, click the widget to view the Database Detail page.	

Transport Summary group widget

The Transport Summary group widget provides status gauges that contain the overall status of the SMTP send and receive services of the mailbox.

The following table contains information about the KPIs in this group widget.

Table 130. KPIs in the Transport Summary group widget

KPI	Description	Note
Active mailbox delivery queue length	The number of messages that are queued for delivery to an active mailbox. The widget displays a critical status if the number of messages that are queued for delivery are 250 or greater.	MSETRQUE.AMDQUELNG
Active non-SMTP delivery queue length	The number of messages that are queued for delivery to a non-SMTP transport. The widget displays a critical status if the number of messages that are queued for delivery are 250 or greater.	MSETRQUE.ANDQUELNG
Active remote delivery queue length	The number of messages that are queued for remote delivery. The widget displays a critical status if the number of messages that are queued for delivery are 250 or greater.	MSETRQUE.ARDQUELNG
Retry mailbox delivery queue length	The number of messages that are queued for retrying delivery to an active mailbox. The widget displays a critical status if the number of messages that are queued for delivery are 100 or greater.	MSETRQUE.RMDQUELNG
Retry non-SMTP delivery queue length	The number of messages that are queued for retrying delivery to a non-SMTP transport. The widget displays a critical status if the number of messages that are queued for delivery are greater than 100.	MSETRQUE.RNDQUELNG
Retry remote delivery queue length	The number of messages that are queued for retrying remote delivery. The widget displays a critical status if the number of messages that are queued for delivery are greater than 100.	MSETRQUE.REDQUELNG

Unified Messaging Service group widget

The Unified Messaging Service group widget provides line charts and an HTML table that contain information about the performance of the Unified Messaging system.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 131. KPIs in the Unified Messaging Service group widget

KPI	Description	Note
Current auto attendant calls	The number of auto attendant calls that are currently connected to the Unified Messaging Server since the service was started	MSEUMGEN.CAUTATCLS
Current fax calls	The number of fax calls that are currently connected to the Unified Messaging Server since the service was started	MSEUMGEN.CURFAXCLS
Current voice mail calls	The number of voice mail calls that are currently connected to the Unified Messaging Server since the service was started	MSEUMGEN.CVMCALLS
Average MWI Latency	The average time (in milliseconds) elapsed between the delivery of the voice mail and the receipt of the confirmation by the Unified Messaging Server	MSEUMGEN.AVGMWIL
User Response Latency	The average response time (in milliseconds) for the system to respond to a user request	MSEUMGEN.URESPLAT

Tip: Double-click anywhere in the Unified Messaging Service group widget to open the Unified Messaging workspace in the Tivoli Enterprise Portal.

Unified Messaging Availability group widget

The Unified Messaging Availability group widget provides a volume gauge that contains information about the connection status of the Hub Transport Server and the Mailbox Server.

The following table contains information about the KPIs in this group widget.

Table 132. KPIs in the Unified Messaging Availability group widget

KPI	Description	Note
Hub Transport access failures (%)	The percentage of attempts that failed to access the Hub Transport server since the service was started. The widget displays a critical status if the percentage of failed attempts is 5% or greater.	MSEUMAVLBT.HTRAFLRS
Mailbox connection failures (%)	The percentage of attempts that failed to connect to the Mailbox server. The widget displays a critical status if the percentage of failed attempts is 5% or greater.	MSEUMAVLBT.FMCAPCTG

Transport Connections group widget

The Transport Connections group widget provides line charts showing spikes that contain information about the number of inbound and outbound SMTP connections.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 133. KPIs in the Transport Connections group widget

KPI	Description	Note
Inbound connections	The number of current connections to the SMTP Send service	MSESMTPS.NUMCURCON
Outbound connections	The number of current connections to the SMTP Receive service	MSESMTPR.NUMCURCON

Tip: Double-click anywhere in the Transport Connections group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Exchange Server Properties group widget

The Exchange Server Properties group widget provides a table that contains information about the domain names of the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 134. KPIs in the Exchange Server Properties group widget

KPI	Description	Note
Domain	The Active Directory domain name of Exchange Server	MSESERVR.SRVRADDN
FQDN	The fully qualified domain name of the Exchange Server	MSESERVR.SRVRADDN

Tip: Double-click anywhere in the Exchange Server Properties group widget to open the Server Information workspace in the Tivoli Enterprise Portal.

IBM Tivoli Composite Application Manager for Microsoft Applications: Microsoft Exchange Server Agent 2013 group widgets

Specific group widgets are available for the Microsoft Exchange Server agent component. Use these group widgets to monitor activity and system status.

Client Access group widget

The Client Access group widget provides a status gauge that contains information about the status of the Exchange Server integrated support for mobile devices and the Outlook Web Access (OWA) activities.

The following table contains information about the KPIs in this group widget.

Table 135. KPIs in the Client Access group widget

KPI	Description	Note
OWA response	The status of the OWA activities. The widget displays a critical status if any of the following conditions is true: • The Average Response attribute of the Outlook Web Access Activities (history) group widget constantly displays a value that is less than 100 milliseconds. • The Average Search Time (in ms) attribute of the Outlook Web Access Activities (history) group widget displays a value that is greater than or equal to 5000 milliseconds.	
ActiveSync response	The status of the integration support for mobile devices. The widget displays a warning status if the Current Requests attribute of the Active Sync Activities (history) group widget displays a value in the range 50 - 100. The widget displays a critical status if the Current Requests attribute of the Active Sync Activities (history) group widget displays a value 100 or greater.	

Exchange Events group widget

The Exchange Events group widget provides a status gauge that contains information about the status of events that are triggered on the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 136. KPIs in the Exchange Events group widget

KPI	Description	Note
Exchange events	The type of event, such as error, warning, or failure audit. The widget displays a warning status if the value is two. The widget displays a critical status if the value is one or three.	MSEEVNTD.EVENTTYP

Server Health group widget

The Server Health group widget provides a status gauge that contains information about the overall health and status of the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 137. KPIs in the Server Health group widget

KPI	Description	Note
Exchange services	The status of all the Exchange services that are currently available. The status of an Exchange service can be: • Running • Paused • Stopped • ContinuePending • PausePending • StartPending • StopPending • Unknown For more information about the status of Exchange services, click the widget to view the Exchange Events and Services page.	MSESRVCD.SRVCSTATE
Active Directory access	The status of activities between the Exchange Server components and the Active Directory. For more information about the status of Active Directory access, click the widget to view the Active Directory Access page.	

Table 137. KPIs in the Server Health group widget (continued)

KPI	Description	Note
Application space utilization (%)	The percentage of used space on the logical drive where the Exchange Server is installed. The widget displays a critical status if the percentage of application space usage is 90 or greater. The widget displays a warning status if the percentage of application space usage is 80 - 90.	MSESERVR.APPPCTFREE
Log space utilization (%)	The percentage of used space for the log data between the current sample and previous sample. The widget displays a critical status if the percentage of log space usage is 10 or lesser. The widget displays a warning status if the percentage of the log space usage is 10 - 20.	MSESERVR.LOGPCTFREE

Exchange Server group widget

The Exchange Server group widget provides a status gauge that contains the name and version of the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 138. KPIs in the Exchange Server group widget

KPI	Description	Note
Server name	The name of the Exchange Server.	MSESERVR.ORIGINNODE
Exchange version	The version of the Exchange Server.	MSESERVR.VERSION

Exchange Server Status group widget

The Exchange Server Status group widget provides a bullet widget that contains information about the state of Exchange services. This group widget also provides an HTML table that contains information about the status of Active Directory access, disk utilization, Information Store, and client access.

Note: This dashboard is used to monitor Exchange Server 2013. If you use this dashboard to monitor Exchange Server 2003, 2007, or 2010, no data is displayed in the group widgets that are specific to Exchange Server 2013. To monitor Exchange Server 2003, 2007, or 2010, select the MSEXCH component on the Component page and add it to your application.

Note: This dashboard is displayed when you click an Exchange Server group or application. The context drill down widget is not displayed when you navigate to the Exchange Server dashboard from an instance.

The following table contains information about the KPIs in this group widget.

Table 139. KPIs in the Exchange Server Status group widget

KPI	Description	Note
Exchange services	The current state of the Exchange services.	MSESRVCD.SRVCSTATE
Active Directory access	The status of interaction between the Exchange components and the Active Directory.	
Disk utilization	The status of disk usage in the Exchange Server.	
Store status	The status of activities in the Information Store, such as remote procedure calls, search threads, user counts.	
Client access	The status of client activities, such as Outlook web access and synchronous commands.	

Store Status group widget

The Store Status group widget provides a status gauge that contains the overall status of the IS Client and databases.

The following table contains information about the KPIs in this group widget.

Table 140. KPIs in the Store Status group widget

KPI	Description	Note
IS Client Status	The status of the IS Client. For more details about the IS Client, click the widget to view the IS Client Status page. This KPI displays data only for Exchange Server 2013.	
Database	The status of the Exchange databases. For more details about the database, click the widget to view the Database Detail page.	

Transport Summary group widget

The Transport Summary group widget provides status gauges that contain the overall status of the SMTP send and receive services of the mailbox.

The following table contains information about the KPIs in this group widget.

Table 141. KPIs in the Transport Summary group widget

KPI	Description	Note
Active mailbox delivery queue length	The number of messages that are queued for delivery to an active mailbox. The widget displays a critical status if the number of messages that are queued for delivery are 250 or greater.	MSETRQUE.AMDQUELNG
Retry mailbox delivery queue length	The number of messages that are queued for retrying delivery to an active mailbox. The widget displays a critical status if the number of messages that are queued for delivery are 100 or greater.	MSETRQUE.RMDQUELNG
Active non-SMTP delivery queue length	The number of messages that are queued for delivery to a Non-SMTP transport. The widget displays a critical status if the number of messages that are queued for delivery are 250 or greater.	MSETRQUE.ANDQUELNG
Retry non-SMTP delivery queue length	The number of messages that are queued for retrying delivery to a non-SMTP transport. The widget displays a critical status if the number of messages that are queued for delivery are greater than 100.	MSETRQUE.RNDQUELNG
Active remote delivery queue length	The number of messages that are queued for remote delivery. The widget displays a critical status if the number of messages that are queued for delivery are 250 or greater.	MSETRQUE.ARDQUELNG
Retry remote delivery queue length	The number of messages that are queued for retrying remote delivery. The widget displays a critical status if the number of messages that are queued for delivery are greater than 100.	MSETRQUE.REDQUELNG

Exchange Events group widget

The Exchange Events group widget provides a table that contains the details of events that are triggered on the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 142. KPIs in the Exchange Events group widget

KPI	Description	Note
Time stamp	The time when the data was collected.	MSEEVNTD.TIMESTAMP
Type	The type of event, such as error or warning. The widget displays a warning status if the value is two. The widget displays a critical status is value is one or three.	MSEEVNTD.EVENTTYP
ID	The ID of the triggered event.	MSEEVNTD.ERRORID
Source	The name of the event source.	MSEEVNTD.EVENTSRC
User	The name of the user who was logged on when the event occurred.	MSEEVNTD.EVENTUSR
Description	The description in the event log.	MSEEVNTD.EVENTTXT

Note: Double-click anywhere in the Exchange Events group widget to open the Event Logs workspace in the Tivoli Enterprise Portal.

Service Details group widget

The Service Details group widget provides a table that contains the details of services that are available on the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 143. KPIs in the Service Details group widget

KPI	Description	Note
Name	The name of the service.	MSESRVCD.SRVCNAME
State	The current state of the service, such as stopped, start pending, stop pending, running, continue pending, pause pending, paused, and unknown. The widget displays a critical status if the value for the service state is zero.	MSESRVCD.SRVCSTATE
Start Mode	The start mode that is defined for the service, such as automatic, manual, disabled, unknown, and delayed.	MSESRVCD.STARTMODE

Note: Double-click anywhere in the Service Details group widget to open the Services Detail workspace in the Tivoli Enterprise Portal.

LDAP Activities in Domain Controller group widget

The LDAP Activities in Domain Controller group widget provides an HTML table that contains information about the LDAP activities in the domain controllers.

The following table contains information about the KPIs in this group widget.

Table 144. KPIs in the LDAP Activities in Domain Controller group widget

KPI	Description	Note
Domain Controller	The name of the domain controller that hosts the Exchange Server.	MSEADDC.DCCTRLN
Searches Timed Out per Minute	The number of LDAP search requests that were timed out per minute. The widget displays a critical status for the value 10 or greater.	MSEADDC.LDPSTOPM
Pages	The number of extra pages that are retrieved from the domain controller per second.	MSEADDC.LDAPPGPS
Read Calls	The number of LDAP read calls that occurred per second.	MSEADDC.LDAPRCPS
Search Calls	The number of Depth 1 or 2 LDAP search calls that are made per second.	MSEADDC.LDAPSCPS

Note: When you click a domain controller name in the table, the Domain Controller Connectivity (history) group widget shows the line charts for the domain controller.

Active Directory Access Processes - Top 5 group widget

The Active Directory Access Processes - Top 5 group widget provides bullet charts that contain information about the first five processes that are arranged in the descending order of LDAP read and search times with highest times at the top.

The following table contains information about the KPIs in this group widget.

Table 145. KPIs in the Active Directory Access Processes - Top 5 group widget

KPI	Description	Note
Processes	The name of the process instance.	MSEADACP.PROCNAME
LDAP Read Time (ms)	The time (in milliseconds) that is spent in sending an LDAP read request and receiving a response. The widget displays a warning status if the time that is spent is in the range 50 - 100 milliseconds. The widget displays a critical status if the time that is spent is 100 milliseconds or greater.	MSEADACP.LDAPRDTI

Table 145. KPIs in the Active Directory Access Processes - Top 5 group widget (continued)

KPI	Description	Note
LDAP Search Time (ms)	The time (in milliseconds) that is spent in sending an LDAP search request and receiving a response. The widget displays a warning status if the time that is spent is in the range 50 - 100 milliseconds. The widget displays a critical status if the time that is spent is 100 milliseconds or greater.	MSEADACP.LDAPSRHTI

Domain Controller Connectivity (history) group widget

The Domain Controller Connectivity (history) group widget provides line charts that contain information about the processing time for LDAP requests during a specified period.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 146. KPIs in the Domain Controller Connectivity (history) group widget

KPI	Description	Note
Average Time To Complete LDAP Request	The time (in milliseconds) that is spent in sending an LDAP read request and receiving a response.	MSEADDC.LDAPRDTM
Long Running LDAP Operations Per Minute	The number of LDAP operations per minute that run longer than the specified threshold on the domain controller.	MSEADDC.LRLDPOPM

The line charts are changed when you click a domain controller in the LDAP Activities in Domain Controller group widget.

Note: Double-click anywhere in the Domain Controller Connectivity (history) group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

LDAP Activities in Active Directory Access Processes group widget

The LDAP Activities in Active Directory Access Processes group widget provides a table that contains the details of LDAP activities that are used in processes to access the Active Directory. Click a process instance to view more details for the process.

The following table contains information about the KPIs in this group widget.

Table 147. KPIs in the LDAP Activities in Active Directory Access Processes group widget

KPI	Description	Note
Process	The name of the process instance.	MSEADACP.PROCNAME
Timeout Errors	The number of LDAP operations in the process that failed per second because of exceeded timeout.	MSEADACP.LDAPTOS
Read Calls	The number of Depth 0 LDAP read calls that are requested by the process per second.	MSEADACP.LDAPRDCS
Search Calls	The number of Depth 1 or 2 LDAP search calls that are requested by the process per second.	MSEADACP.LDAPSRHCS
Write Calls	The number of LDAP write requests that are requested by the process per second.	MSEADACP.LDAPWRTCS

Active Directory Access Processes Details group widget

The Active Directory Access Processes Details group widget provides a table that contains the details for the process that you select in the LDAP Activities in Active Directory Access Processes group widget.

The following table contains information about the KPIs in this group widget.

Table 148. KPIs in the Active Directory Access Processes Details group widget

KPI	Description	Note
Process	The name of the process instance.	MSEADACP.PROCNAME
LDAP Read Time	The time (in milliseconds) that is spent in sending an LDAP read request and receiving a response. The widget displays a warning status for the values 50 - 100. The widget displays a critical status for a value greater than 100.	MSEADACP.LDAPRDTI
LDAP Search Time	The time (in milliseconds) that is spent in sending an LDAP search request and receiving a response. The widget displays a warning status for the values 50 - 100. The widget displays a critical status for a value greater than 100.	MSEADACP.LDAPSRHTI
Open Connections to Domain	The number of open connections to the domain controllers in the process.	MSEADACP.OPENCONDC

Table 148. KPIs in the Active Directory Access Processes Details group widget (continued)

KPI	Description	Note
Open Connections to Global Catalogs	The number of open connections to the global catalogs in the process.	MSEADACP.OPENCONCT

Note: Double-click anywhere in the Active Directory Access Processes Details group widget to open the Active Directory Activity workspace in the Tivoli Enterprise Portal.

Information Store Client Status - Top 5 group widget

The Information Store Client Status - Top 5 group widget provides a bar chart that contains information about the status of the Information Store client, such as RPC bytes received rate and RPC bytes sent rate. For more details about the status of the Information Store client, click in the group widget.

The following table contains information about the Key Performance Indicators (KPI) in this group widget.

Table 149. KPIs in the Information Store Client Status - Top 5 group widget

KPI	Description	Notes
RPC Bytes Receive Rate	The amount of data (in bytes) that is received per second from the RPC clients.	MSEISCLI.RPCBRPS
RPC Bytes Sent Rate	The amount of data (in bytes) that is sent per second to the RPC clients.	MSEISCLI.RPCBSPS

Information Store Clients RPC Status - Top 5 group widget

The Information Store Clients RPC Status - Top 5 group widget provides a volume gauge that contains information about the RPC status of the Information Store client, such as RPC latency and RPC operations per second. The widget displays the top 5 Information Store clients in the decreasing order of the RPC latency and the number of RPC operations per second. For more details about the RPC status of the Information Store client, click in the group widget.

The following table contains information about the Key Performance Indicators (KPI) in this group widget.

Table 150. KPIs in the Information Store Clients RPC Status - Top 5 group widget

KPI	Description	Notes
RPC Latency (ms)	The average server RPC latency (in milliseconds) for the last 1024 packets. The window displays a critical status if the RPC latency is 50 milliseconds or greater.	MSEISCLI.RPCAVGLAT
RPC Operations Per Second	The number of RPC operations that are currently requested per second from the server.	MSEISCLI.RPCOPS

Client Summary group widget

The Client Summary group widget provides an HTML table that contains information about the Information Store clients.

The following table contains information about the KPIs in this group widget.

Table 151. KPIs in the Client Summary group widget

KPI	Description	Note
Name	The name of the client instance.	MSEISCLI.CLINAME
JET Log Records Per Second	The number of database log records that are generated while processing the client requests.	MSEISCLI.JETLOGRC
JET Pages Reads Per Second	The number of database pages that are read from disk while completed the client requests.	MSEISCLI.JETPGRD
LDAP Reads Per Second	The number of LDAP read operations that are completed per second while processing client requests.	MSEISCLI.LRPS
LDAP Searches Per Second	The number of LDAP search operations that are completed per second while processing client requests.	MSEISCLI.LSPS

Note: Double-click anywhere in the Client Summary group widget to open the IS Client workspace in the Tivoli Enterprise Portal.

Information Store Client Status group widget

The Information Store Client Status group widget provides an HTML table that contains information about the status of the Information Store client.

The following table contains information about the KPIs in this group widget.

Table 152. KPIs in the Information Store Client Status group widget

KPI	Description	Note
Client	The name of the client instance.	MSEISCLI.CLINAME
RPC Bytes Receive Rate	The amount of data (in bytes) that is received per second from the RPC clients.	MSEISCLI.RPCBRPS
RPC Bytes Sent Rate	The amount of data (in bytes) that is sent per second to the RPC clients.	MSEISCLI.RPCBSPS
RPC Latency (ms)	The average server RPC latency (in milliseconds) for the last 1024 packets. The widget displays a critical status if the RPC latency is 50 ms or greater.	MSEISCLI.RPCAVGLAT

Table 152. KPIs in the Information Store Client Status group widget (continued)

KPI	Description	Note
RPC Operations Per Second	The number of RPC operations that are currently requested per second from the server.	MSEISCLI.RPCOPS

Note: Double-click anywhere in the Information Store Client Status group widget to open the IS Client workspace in the Tivoli Enterprise Portal.

Transport SMTP Receive group widget

The Transport SMTP Receive group widget provides a bar chart that contains information about the SMTP Receive service.

The following table contains information about the KPIs in this group widget.

Table 153. KPIs in the Transport SMTP Receive group widget

KPI	Description	Note
Average Bytes Per Second	The amount of data (in bytes) that is received per second by the SMTP Receive Service.	MSESMTPR.BYTESRSEC
Messages Per Second	The number of messages that are received per second by the SMTP Receive Service since the server was started.	MSESMTPR.MSGRECSEC

Note: Double-click anywhere in the Transport SMTP Receive group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Transport SMTP Send group widget

The Transport SMTP Send group widget provides a bar chart that contains information about the SMTP Send service.

The following table contains information about the KPIs in this group widget.

Table 154. KPIs in the Transport SMTP Send group widget

KPI	Description	Note
Average Bytes Per Second	The amount of data (in bytes) that is sent per second by the SMTP Send service since the server was started.	MSESMTPS.BYTESSSEC
Messages Per Second	The number of times the messages are sent per second by the SMTP Send service since the server was started.	MSESMTPS.MSGSNTSEC

Note: Double-click anywhere in the Transport SMTP Send group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Transport Connections group widget

The Transport Connections group widget provides line charts showing spikes that contain information about the number of inbound and outbound SMTP connections.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 155. KPIs in the Transport Connections group widget

KPI	Description	Note
Inbound connections	The number of current connections to the SMTP Receive service.	MSESMTPR.NUMCURCON
Outbound connections	The number of current connections to the SMTP Send service.	MSESMTPS.NUMCURCON

Note: Double-click anywhere in the Transport Connections group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Extensibility Agents - Top 5 group widget

The Extensibility Agents - Top 5 group widget provides a volume gauge and a bar chart that contain information about the activities of transport agents and the time that is taken by each agent to process email messages, such as agent processing time and agent invocations. For more details about the extensibility agents, click in the group widget.

The following table contains information about the KPIs in this group widget.

Table 156. KPIs in the Extensibility Agents - Top 5 group widget

KPI	Description	Notes
Instance	The name of the extensibility agent.	MSEXTAGT.EXAGTNM
Average Processing Time (seconds)	The average processing time (in seconds) of the agent per event. The widget displays a critical status if the average processing time is 20 seconds or greater.	MSEXTAGT.AAPTS
Invocations	The total number of agent invocations that occurred since the agent was started.	MSEXTAGT.TAGTINV

Extensibility Agents group widget

The Extensibility Agents group widget provides an HTML table that contains information about the activities of transport agents and the time that is taken by each agent to process email messages.

The following table contains information about the KPIs in this group widget.

Table 157. KPIs in the Extensibility Agents group widget

KPI	Description	Notes
Instance	The name of the extensibility agent.	MSEXTAGT.EXAGTNM
Average Processing Time (in seconds)	The average processing time (in seconds) of the agent per event. The widget displays a critical status if the average processing time of the agent is 20 seconds or greater.	MSEXTAGT.AAPTS
Invocations	The total number of agent invocations that occurred since the agent was started.	MSEXTAGT.TAGTINV

Note: Double-click anywhere in the Extensibility Agents group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Active Sync Activities (history) group widget

The Active Sync Activities (history) group widget provides line charts showing spikes that contain information about the status of the mobile device integration activities of Exchange Server, such as pending synchronous and ping commands.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 158. KPIs in the Active Sync Activities (history) group widget

KPI	Description	Note
Current requests	The number of HTTP requests that are received from the ASP.NET.	MSEASYNC.REQCURR
Sync command pending	The number of synchronous commands that are currently waiting to be processed on the server.	MSEASYNC.SYNCMDPD
Ping command pending	The number of ping commands that are currently waiting to be processed on the server.	MSEASYNC.PINGCMDSP

Note: Double-click anywhere in the Active Sync Activities (history) group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Active Sync Status group widget

The Active Sync Status group widget provides an HTML table that contains information about the requests that are generated by the ASP.NET, such as the number of HTTP requests received, average request time, and requests received per second.

The following table contains information about the KPIs in this group widget.

Table 159. KPIs in the Active Sync Status group widget

KPI	Description	Note
Current requests	The number of HTTP requests that are currently received from the ASP.NET.	MSEASYNC.REQCURR
Average request time (ms)	The average time (in milliseconds) that is taken to process a request.	MSEASYNC.REQAVGTIME
Requests per second	The number of HTTP requests that are received per second through ASP.NET.	MSEASYNC.REQPERSEC

Note: Double-click anywhere in the Active Sync Status group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Outlook Web Access Status group widget

The Outlook Web Access Status group widget provides an HTML table that contains information about the status of Outlook Web Client (OWA) activities, such as number of current users, messages sent, and requests failed.

The following table contains information about the KPIs in this group widget.

Table 160. KPIs in the Outlook Web Access Status group widget

KPI	Description	Note
Current unique users	The number of unique users that are currently logged on to OWA.	MSEOWA.CURUNQUSR
Message sent since process restart	The number of messages that are sent by users since the service was started.	MSEOWA.MSGSSENT
Requests failed since process restart	The number of requests that failed since the process was started.	MSEOWA.REQFLD
Searches since process restart	The number of searches that were processed since the process was started.	MSEOWA.SRCH

Note: Double-click anywhere in the Outlook Web Access Status group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Outlook Web Access Activities (history) group widget

The Outlook Web Access Activities (history) widget provides line charts that contain information about the activities of the Outlook Web Access (OWA) client, such as average response time, average search time, and requests per second.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 161. KPIs in the Outlook Web Access Activities (history) group widget

KPI	Description	Note
Average Response Time (in ms)	The average time (in milliseconds) that is elapsed between sending an OEH or an Active Server Pages Extended (ASPX) request and receiving a response from the server.	MSEOWA.AVGRT
Average Search Time (in ms)	The average time (in milliseconds) that is taken to complete the search.	MSEOWA.AVGST
Request Per Second	The number of requests that are processed per second by the OWA.	MSEOWA.REQPS

Note: Double-click anywhere in the Outlook Web Access Activities (history) group widget to open the Microsoft Exchange Server workspace in the Tivoli Enterprise Portal.

Exchange Server Roles group widget

The Exchange Server Roles group widget provides a status gauge that contains information about the roles of the Exchange Server, such as Edge Transport, Hub Transport, Client Access, Mailbox, and Unified Messaging.

The following table contains information about the KPIs in this group widget.

Table 162. KPIs in the Exchange Server Roles group widget

KPI	Description	Note
Edge transport	The availability status of the Edge Transport Server in the network, such as Yes or No.	MSESERVR.EDGETRANS
Mailbox server	The availability status of the Mailbox Server in the network, such as Yes or No.	MSESERVR.MAILSRVR
Client access	The availability status of the Client Access Server in the network, such as Yes or No.	MSESERVR.CLIENTACC
Unified messaging	The availability status of the Unified Messaging Server in the network, such as Yes or No.	MSESERVR.UNIFIEDMSG
Hub Transport	The availability status of the Hub Transport Server in the network, such as Yes or No.	MSESERVR.HUBTRANS

Note: Double-click anywhere in the Exchange Server Roles group widget to open the Server Information workspace in the Tivoli Enterprise Portal.

Exchange Server Properties group widget

The Exchange Server Properties group widget provides a table that contains information about the domain names of the Exchange Server.

The following table contains information about the KPIs in this group widget.

Table 163. KPIs in the Exchange Server Properties group widget

KPI	Description	Note
Domain	The Active Directory domain name of Exchange Server.	MSESERVR.SRVRADDN
FQDN	The fully qualified domain name of the Exchange Server.	MSESERVR.SRVRADDN

Note: Double-click anywhere in the Exchange Server Properties group widget to open the Server Information workspace in the Tivoli Enterprise Portal.

Unified Messaging Availability group widget

The Unified Messaging Availability group widget provides a volume gauge that contains information about the connection status of the Hub Transport Server and the Mailbox Server.

The following table contains information about the KPIs in this group widget.

Table 164. KPIs in the Unified Messaging Availability group widget

KPI	Description	Note
Hub Transport access failures (%)	The percentage of attempts that failed to access the Hub Transport server since the service was started. The widget displays a critical status if the percentage of failed attempts is 5 or greater.	MSEUMAVLBT.HTRAFLRS
Mailbox connection failures (%)	The percentage of attempts that failed to connect to the Mailbox server. The widget displays a critical status if the percentage of failed attempts is 5 or greater.	MSEUMAVLBT.FMCAPCTG

Note: Double-click anywhere in the Unified Messaging Availability group widget to open the Reachability workspace in the Tivoli Enterprise Portal.

User Mailbox Availability group widget

The User Mailbox Availability group widget provides an HTML Table that contains information about the reachability of the email address.

The following table contains information about the KPIs in this group widget.

Table 165. KPIs in the User Mailbox Availability group widget

KPI	Description	Note
Target Email Address	The target email address to which the test email is sent.	MSEREACH.TRGEADDRS
Reachable	The reachability status of the email address, such as yes or no. A critical status is displayed if the email address is not reachable.	MSEREACH.REACHABLE

Table 165. KPIs in the User Mailbox Availability group widget (continued)

KPI	Description	Note
Round Trip Response Time (ms)	The round trip response time (in milliseconds) of an email that is sent to the target Exchange Server. If the email address is not reachable, value is zero.	MSEREACH.RESPTIME
Target Server	The name of the target Exchange Server to which the test email is sent.	MSEREACH.TRGSERVER

Note: Double-click anywhere in the User Mailbox Availability group widget to open the Reachability workspace in the Tivoli Enterprise Portal.

Unified Messaging Availability group widget

The Unified Messaging Availability group widget provides a volume gauge and a table that contain information about the availability of the Unified Messaging system.

The following table contains information about the KPIs in this group widget.

Table 166. KPIs in the Unified Messaging Availability group widget

KPI	Description	Note
Messages processed successfully (%)	The percentage of messages that were processed by the Microsoft Exchange Unified Messaging service in the last hour. The widget displays a critical status if the percentage of messages that are processed in the last hour is less than 95.	MSEUMAVLBT.PCTMSPOTLH
Directory access failures	The total number of attempts that failed to access the Active Directory since the service was started. The widget displays a critical status if the number of attempts that failed to access the Active Directory is one.	MSEUMAVLBT.DIRAFAIRS
Mailbox server access failures	The total number of attempts that failed to access the Mailbox server since the service was started.	MSEUMAVLBT.MAILSAFAIL
Hub Transport access failures	The total number of attempts that failed to access the Hub Transport server since the service was started.	MSEUMAVLBT.HTRAFLRS

Note: Double-click anywhere in the Unified Messaging Availability group widget to open the Unified Messaging workspace in the Tivoli Enterprise Portal.

UM Auto Attendant Details group widget

The UM Auto Attendant Details group widget provides an HTML table that contains information about the activities of the Unified Messaging (UM) auto attendants.

The following table contains information about the KPIs in this group widget.

Table 167. KPIs in the UM Auto Attendant Details group widget

KPI	Description	Note
Auto Attendant	The name of the UM auto attendant.	MSEUMAATTD.AUTOATTDNM
Successful Calls (%)	The percentage of total calls that were answered by the UM auto attendant.	MSEUMAATTD.PCTSUCCCLS
Average Call Time (seconds)	The average call duration with the UM auto attendant.	MSEUMAATTD. AVGCTIME
Business Hours Calls	The total number of calls that were answered by the UM auto attendant during business hours since the service was started.	MSEUMAATTD.BUSSHCALLS

Note: Double-click anywhere in the UM Auto Attendant Details group widget to open the Unified Messaging workspace in the Tivoli Enterprise Portal.

Unified Messaging Service group widget

The Unified Messaging Service group widget provides line charts and an HTML table that contain information about the performance of the Unified Messaging system.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 168. KPIs in the Unified Messaging Service group widget

KPI	Description	Note
Current auto attendant calls	The number of auto attendant calls that are currently connected to the Unified Messaging Server since the service was started.	MSEUMGEN.CAUTATCLS
Current fax calls	The number of fax calls that are currently connected to the Unified Messaging Server since the service was started.	MSEUMGEN.CURFAXCLS
Current voice mail calls	The number of voice mail calls that are currently connected to the Unified Messaging Server since the service was started.	MSEUMGEN.CVMCALLS

Table 168. KPIs in the Unified Messaging Service group widget (continued)

KPI	Description	Note
Average MWI Latency	The average time (in milliseconds) elapsed between the delivery of the voice mail and the receipt of the confirmation by the Unified Messaging Server.	MSEUMGEN.AVGMWIL
User Response Latency	The average response time (in milliseconds) for the system to respond to a user request.	MSEUMGEN.URESPLAT

Note: Double-click anywhere in the Unified Messaging Service group widget to open the Unified Messaging workspace in the Tivoli Enterprise Portal.

Status Summary group widget

The Status Summary group widget provides a status gauge that contains information about the status of Exchange databases, such as transaction logs, mailbox databases, and high availability.

The following table contains information about the KPIs in this group widget.

Table 169. KPIs in the Status Summary group widget

KPI	Description	Note
Transaction logs	The status of transaction logs. The widget status is an overview of the Transaction Details page.	
Mailbox databases	The status of mailbox databases. The widget status is an overview of the Mailbox Database Detail page.	
High availability	The current replication status of the storage group. The widget status is an overview of the Exchange Replication Detail page.	

Database Cache group widget

The Database Cache group widget provides a grid widget and a bar chart that contain information about the Exchange database cache.

The following table contains information about the KPIs in this group widget.

Table 170. KPIs in the Database Cache group widget

KPI	Description	Note
Cache Hit Per Database (%)	The percentage of database file page requests that were processed by the database cache without causing a file operation. The widget displays a warning status if the percentage of database file page requests that are processed is in the range 80 - 90. The widget displays a critical status if the percentage of database file page requests that are processed is 90 or greater.	MSEDB.CACHEHIT
Cache Size (MB)	The amount of system memory (in MB) that is used by the database cache manager to store information that is commonly used in the database files to prevent file operations.	MSEDB.CAHSIZEMB

Note: When you click a database name in the grid widget, the Page Faults (history) and Page Fault Stalls (history) group widgets show the line charts for the database.

Transactions Per Second group widget

The Transactions Per Second group widget provides an HTML table that contains information about the I/O operations in the Exchange databases.

The following table contains information about the KPIs in this group widget.

Table 171. KPIs in the Transactions Per Second group widget

KPI	Description	Note
Database	The name of the transport queue database.	MSEDBINS.DBNAME
I/O Database Reads	The number of database read operations that are completed per second.	MSEDBINS.IODBRPS
I/O Database Writes	The number of database write operations that are completed per second.	MSEDBINS.IODBWPS
Table Open Cache Hits	The number of database tables that are opened per second by using cached schema information.	MSEDBINS.TABLEOCH
Table Open Cache Misses	The number of database tables that are opened per second without using cached schema information.	MSEDBINS.TABLEOCM

Table 171. KPIs in the Transactions Per Second group widget (continued)

KPI	Description	Note
Table Opens Per Second	The number of database tables that are opened per second.	MSEDBINS.TABLOPEN
Version Buckets Allocated	The total number of version buckets that are allocated.	MSEDBINS.VERSBUCK

Pages Faults (history) group widget

The Pages Faults (history) group widget provides a line chart that contains information about the database page faults that occurred per second in the information store during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 172. KPIs in the Pages Faults (history) group widget

KPI	Description	Note
Page Faults Per Second	The number of database page requests per second that require the database cache manager to allocate a new page from the database cache.	MSEDB.CACHFAULT

Note: The line chart is changed when you click a database in the Database Cache group widget.

Pages Fault Stalls (history) group widget

The Pages Fault Stalls (history) group widget provides a line chart that contains information about the database page faults in the information store that are not serviced during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 173. KPIs in the Pages Fault Stalls (history) group widget

KPI	Description	Note
Page Fault Stalls Per Second	The number of page faults per second that cannot be serviced because no pages are available for allocation from the database cache.	MSEDB.CACHSTALL

Note: The line chart is changed when you click a database in the Database Cache group widget.

Mailbox Database State group widget

The Mailbox Database State group widget provides an HTML table that contains information about the state of the mailbox database.

The following table contains information about the KPIs in this group widget.

Table 174. KPIs in the Mailbox Database State group widget

KPI	Description	Note
Mailbox	The name of the mailbox database.	MSEISSTR.MBXDBNAME
State	The status of the mailbox store, such as mounted or dismounted. The widget displays a critical status if the mailbox store is dismounted.	MSEISSTR.MAILSTSTAT
Space Utilization (%)	The percentage of the total Information Store space that is used by the mailbox database.	MSEISSTR.MAILISDBPR
Growth (%)	The growth percentage of the Information Store since the last query was processed.	MSEISSTR.MAILISPRGR
Size (MB)	The size (in MB) of the mailbox databases in the Information Store.	MSEISSTR.MAILISSIZE
RPC Operations Per Second	The number of RPC operations that are processed per second.	MSEISSTR.RPCOPR
RPC Requests	The number of MAPI RPC requests that are currently running.	MSEISSTR.RPCREQS

Note: Click a database name in the table to open the Mailbox Detail page that shows details of the database.

Messages Delivered Per Second - Top 5 group widget

The Messages Delivered Per Second - Top 5 group widget provides a bullet chart that contains information about the number of messages that are delivered per second to the databases. The group widget shows data for the top five databases that are arranged in the descending order of the message delivery rate. The database that received the highest messages per second is placed at the top.

The following table contains information about the KPIs in this group widget.

Table 175. KPIs in the Messages Delivered Per Second - Top 5 group widget

KPI	Description	Note
Mailbox Name	The name of the mailbox database.	MSEISSTR.MBXDBNAME

Table 175. KPIs in the Messages Delivered Per Second - Top 5 group widget (continued)

KPI	Description	Note
Count	The number of messages that are delivered per second to the database.	MSEISSTR.MSGDLV

Database Copy Status group widget

The Database Copy Status group widget provides an HTML table that contains information about the Database Availability Group (DAG) status. For more information about DAG, click in the group widget area to open the Database Availability Group Information group widget.

The following table contains information about the KPIs in this group widget.

Table 176. KPIs in the Database Copy Status group widget

KPI	Description	Note
Mailbox	The number of mailbox database copies that are available on the monitored node of the DAG setup.	MSEDAG.MBDBCOPIES
Status	The status of mailbox databases copies that are available on the monitored node of the DAG setup.	MSEDAG.DBCPSTATUS
Activation Preference	A numeric value that is used to break ties during database activation when multiple database copies meet the same criteria for activation.	MSEDAG.ACTPREF
Replay Lag Time (minutes)	The amount of time (in minutes) to delay the log replay for the database copy.	MSEDAG.REPLAYLT
Truncation Lag Time (minutes)	The amount of time (in minutes) to delay the truncation of log files that were replayed into the database copy since the replication service was started.	MSEDAG.TRNLAYLT

Messages Submitted Per Second - Top 5 group widget

The Messages Submitted Per Second - Top 5 group widget provides a volume gauge that contains information about the number of messages that are submitted per second from the databases. The group widget shows data for the top five databases that are arranged in the descending order of the message submission rate. The database with the highest message submission rate is placed at the top.

The following table contains information about the KPIs in this group widget.

Table 177. KPIs in the Messages Submitted Per Second - Top 5 group widget

KPI	Description	Note
Mailbox name	The name of the mailbox database.	MSEISSTR.MBXDBNAME

Table 177. KPIs in the Messages Submitted Per Second - Top 5 group widget (continued)

KPI	Description	Note
Count	The number of messages that are currently submitted per second from the database.	MSEISSTR.MSGSUB

Average Delivery Time (history) group widget

The Average Delivery Time (history) group widget provides a line chart that contains information about the average delivery time of messages during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 178. KPIs in the Average Delivery Time (history) group widget

KPI	Description	Note
Average Delivery Time (history)	The average time (in milliseconds) between the submission of a message to the mailbox store and the delivery of the message to all the local recipients on the same server for the last 10 messages. The widget displays a warning status if the average delivery time is greater than 3000 ms.	MSEISPRI.AVGDELTM

The line chart is changed when you click a mailbox in the Mailbox Database State group widget.

Note: Double-click anywhere in the Average Delivery Time (history) group widget to open the Status workspace in the Tivoli Enterprise Portal.

RPC Average Latency (history) group widget

The RPC Average Latency (history) group widget provides a line chart that contains information about the average latency of MAPI remote procedure calls (RPC) that occurred during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 179. KPIs in the RPC Average Latency (history) group widget

KPI	Description	Note
RPC Average Latency (history)	The average time (in milliseconds) of the MAPI RPC latency.	MSEISSTR.RPCAL

Note: Double-click anywhere in the RPC Average Latency (history) group widget to open the IS Store workspace in the Tivoli Enterprise Portal.

Mailbox Details group widget

The Mailbox Details group widget provides a bullet widget that contains information about the mailbox, such as name of the mailbox, total number of messages, mailbox size, last login date and time, and email address. For more information about the mailbox, click in the group widget area to open the Mailbox Databases group widget.

The following table contains information about the KPIs in this group widget.

Table 180. KPIs in the Mailbox Details group widget

KPI	Description	Note
Name	The name that was assigned to the mailbox by the Exchange Server during the mailbox account creation.	MSEMBXD.MBXNAME
Messages	The total number of messages present in the mailbox.	MSEMBXD.NUMMBXMSGS
Size (MB)	The size (in MB) of the mailbox during the sample time.	MSEMBXD.MBXSIZE
Last Logon	The last date and time when the user logged in to the mailbox.	MSEMBXD.MBXLASTLGN
Email Address	The email address in Active Directory naming format that is suitable for representation and identification in the Exchange Server.	MSEMBXD.EMAILADDRS

Note: Double-click anywhere in the Mailbox Details group widget to open the Mailbox Detail workspace in the Tivoli Enterprise Portal.

Database Availability Group Information group widget

The Database Availability Group Information group widget provides a status gauge that contains information about the Database Availability Group (DAG), such as DAG name, witness server name, file share witness directory, and member count.

The following table contains information about the KPIs in this group widget.

Table 181. KPIs in the Database Availability Group Information group widget

KPI	Description	Note
DAG Name	The name of the DAG.	MSEDAG.DAGNAME
Witness server name	The name of the witness server in a DAG setup.	MSEDAG.WITSERNAME
File share witness directory	The name of the directory that is used to store file share witness data. This directory is on a server that is not a member of the DAG.	MSEDAG.FILESHWTD

Table 181. KPIs in the Database Availability Group Information group widget (continued)

KPI	Description	Note
Member count	The number of nodes that are members of a DAG setup.	MSEDAG.MEMCOUNT

Note: Double-click anywhere in the Database Availability Group Information group widget to open the Database Availability Group workspace in the Tivoli Enterprise Portal.

Mailbox Databases group widget

The Mailbox Databases group widget provides an HTML table that contains information about the mailbox databases.

The following table contains information about the KPIs in this group widget.

Table 182. KPIs in the Mailbox Databases group widget

KPI	Description	Note
Name	The name that was assigned to the mailbox by the Exchange Server during the mailbox account creation.	MSEMBXD.MBXNAME
Messages	The total number of messages present in the mailbox	MSEMBXD.NUMMBXMSGS
Size (MB)	The size (in MB) of the mailbox during the sample time.	MSEMBXD.MBXSIZE
Max Size (MB)	The maximum size (in MB) that the mailbox can reach.	MSEMBXD.MBXMAXSIZE
Email Address	The email address in Active Directory naming format that is suitable for representation and identification in the Exchange Server.	MSEMBXD.EMAILADDRS

Note: Double-click anywhere in the Mailbox Databases group widget to open the Mailbox Detail workspace in the Tivoli Enterprise Portal.

Messages Delivered Per Second group widget

The Messages Delivered Per Second group widget provides an HTML table that contains information about the number of messages that are delivered per second to all the mailbox databases.

The following table contains information about the KPIs in this group widget.

Table 183. KPIs in the Messages Delivered Per Second group widget

KPI	Description	Note
Mailbox Name	The name of the mailbox database.	MSEISSTR.MBXDBNAME

Table 183. KPIs in the Messages Delivered Per Second group widget (continued)

KPI	Description	Note
Count	The number of messages that are delivered per second to the database.	MSEISSTR.MSGDLV

Note: Double-click anywhere in the Messages Delivered Per Second group widget to open the IS Store workspace in the Tivoli Enterprise Portal.

Messages Submitted Per Second group widget

The Messages Submitted Per Second group widget provides an HTML table that contains information about the number of messages that are submitted per second from the databases.

The following table contains information about the KPIs in this group widget.

Table 184. KPIs in the Messages Submitted Per Second group widget

KPI	Description	Note
Mailbox Name	The name of the mailbox database.	MSEISSTR.MBXDBNAME
Count	The number of messages that are currently submitted per second from the database.	MSEISSTR.MSGSUB

Note: Double-click anywhere in the Messages Submitted Per Second group widget to open the IS Store workspace in the Tivoli Enterprise Portal.

Replication Details group widget

The Replication Details group widget provides an HTML table that contains information about the replication activity of the storage groups.

The following table contains information about the KPIs in this group widget.

Table 185. KPIs in the Replication Details group widget

KPI	Description	Note
Name	The storage group instance name of the Microsoft Exchange Server.	MSEREPLI.MSERINSTN
Status	The replication status of the storage group.	MSEREPLI.REPLSTAT
Copy Notification Generation	The generation sequence number of the last log file that is known to the Microsoft Exchange Replication service.	MSEREPLI.RPLCNGNUM
Copy Generation Number	The generation sequence number of the last log file that was copied.	MSEREPLI.RPLCGNUM
Replay Generations Complete	The number of log files that were replayed in the current replay batch.	MSEREPLI.RPLRGENCOM

Table 185. KPIs in the Replication Details group widget (continued)

KPI	Description	Note
Replay Generations Remaining	The number of log files that remain to be replayed in the current replay batch.	MSEREPLI.RPLRGENREM

Note: Double-click anywhere in the Replication Details group widget to open the Replication workspace in the Tivoli Enterprise Portal.

Information Store Public Replication Details group widget

The Information Store Public Replication Details group widget provides an HTML table that contains information about the replication activity on the public Information Store.

The following table contains information about the KPIs in this group widget.

Table 186. KPIs in the Information Store Public Replication Details group widget

KPI	Description	Note
Name	The name of the Microsoft Exchange Information Store public replication instance.	MSEISPUR.NAME
Backfill Requests Received	The number of backfill request replication messages that were received from other servers since the server was started.	MSEISPUR.RBKRQREC
Backfill Requests Sent	The number of backfill request replication messages that were sent to other servers since the server was started.	MSEISPUR.RBKRQSNT
Messages Received	The number of replication messages that were received from other servers in response to backfill requests since the server was started.	MSEISPUR.RBKDMREC
Messages Sent	The number of replication messages that were sent to other servers in response to the backfill requests since the server was started.	MSEISPUR.RBKDMSNT
Status Messages Received	The number of replication status request or response messages that were received from the other servers since the server was started.	MSEISPUR.RSTMGREC
Status Messages Sent	The number of replication status request or response messages that were sent to other servers since the server was started.	MSEISPUR.RSTMGSNT

Note: Double-click anywhere in the Information Store Public Replication Details group widget to open the Replication workspace in the Tivoli Enterprise Portal.

Queue Lengths - Top 5 group widget

The Queue Lengths - Top 5 group widget provides a volume gauge that contains information about the copy queue length and the replay queue length for the storage groups. This widget displays the top 5 storage groups in the decreasing order of the copy queue and replay queue lengths. For more details about queue lengths, click in the group widget.

The following table contains information about the KPIs in this group widget.

Table 187. KPIs in the Queue Lengths - Top 5 group widget

KPI	Description	Note
Instance	The storage group instance name of the Microsoft Exchange Server.	MSEREPLI.MSERINSTN
Copy	The number of log files that are waiting to be copied and inspected in a queue. The widget displays a critical status if the value of the copy queue length is one or greater.	MSEREPLI.RPLCQLEN
Replay	The number of log files that are waiting to be replayed.	MSEREPLI.RPLRQLEN

Note: Double-click anywhere in the Queue Lengths - Top 5 group widget to open the Replication workspace in the Tivoli Enterprise Portal.

Queue Lengths group widget

The Queue Lengths group widget provides an HTML table that contains information about the copy and replay queue lengths for the storage groups.

The following table contains information about the KPIs in this group widget.

Table 188. KPIs in the Queue Lengths group widget

KPI	Description	Note
Instance	The storage group instance name of the Microsoft Exchange Server.	MSEREPLI.MSERINSTN
Copy	The number of log files that are waiting to be copied and inspected in a queue. The widget displays a critical status if the copy queue length is a non-zero integer.	MSEREPLI.RPLCQLEN
Replay	The number of log files that are waiting to be replayed.	MSEREPLI.RPLRQLEN

Note: Double-click anywhere in the Queue Lengths group widget to open the Replication workspace in the Tivoli Enterprise Portal.

Transaction Log Summary group widget

The Transaction Log Summary group widget provides an HTML table that contains information about the details of the transaction logs.

The following table contains information about the KPIs in this group widget.

Table 189. KPIs in the Transaction Log Summary group widget

KPI	Description	Note
Database Instance	The name of the database instance.	MSEDBINS.DBNAME
I/O Log Reads Per Second	The number of log file read operations that are completed per second.	MSEDBINS.IOLOGRD
I/O Log Writes Per Second	The number of log file write operations that are completed per second.	MSEDBINS.IOLOGWRT
I/O Log Write Average Latency	The average time (in milliseconds) that is spent to complete a log file write operation.	MSEDBINS.IOLOGWALT

I/O Log Operations (history) group widget

The I/O Log Operations (history) group widget provides line charts that contain information about the number of log file read and write operations that are completed per second during a specified period.

Important: The line charts are displayed only when the historical data collection is configured for the attribute groups. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 190. KPIs in the I/O Log Operations (history) group widget

KPI	Description	Note
Writes Per Second	The number of log file write operations that are completed per second.	MSEDBINS.IOLOGWRT
Reads Per Second	The number of log file read operations that are completed per second.	MSEDBINS.IOLOGRD

Note: Double-click anywhere in the I/O Log Operations (history) group widget to open the Database Log workspace in the Tivoli Enterprise Portal.

Average Log Write Operations Completed Per Second (history) group widget

The Average Log Write Operations Completed Per Second (history) group widget provides a line chart that contains information about the number of log write operations that are completed per second during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 191. KPIs in the Average Log Write Operations Completed Per Second (history) group widget

KPI	Description	Note
Average Log Write Operations Completed Per Second	The average write operations that are completed per second on the log files.	MSEDBINS.LOGWRITE

Note: Double-click anywhere in the Average Log Write Operations Completed Per Second (history) group widget to open the Database Log workspace in the Tivoli Enterprise Portal.

Database Log Record Stalls Per Second (history) group widget

The Database Log Record Stalls Per Second (history) group widget provides a line chart that contains information about the number of database log records that are not added to the log buffers during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the attribute group. The Warehouse Proxy and the Summarization and Pruning agents must be stopped when you configure the historical data collection.

The following table contains information about the KPIs in this group widget.

Table 192. KPIs in the Database Log Record Stalls Per Second (history) group widget

KPI	Description	Note
Database Log Record Stalls Per Second	The number of database log records that are not added to the log buffers per second because the log buffers are full.	MSEDBINS.LOGSTALL

Note: Double-click anywhere in the Database Log Record Stalls Per Second (history) group widget to open the Database Log workspace in the Tivoli Enterprise Portal.

Threads Waiting for Log Update - Top 5 group widget

The Threads Waiting for Log Update - Top 5 group widget provides a volume gauge that contains information about the number of threads that are waiting to update the databases. The widget displays the top 5 databases that are arranged in decreasing order of the number of threads that are waiting to update the database.

The following table contains information about the KPIs in this group widget.

Table 193. KPIs in the Threads Waiting for Log Update - Top 5 group widget

KPI	Description	Note
Database Instance	The name of the database instance.	MSEDBINS.DBNAME

Table 193. KPIs in the Threads Waiting for Log Update - Top 5 group widget (continued)

KPI	Description	Note
Count	The number of threads that are waiting for the data to be written to the log to update database. The widget displays a warning status if the number of threads that are waiting are 25 or greater.	MSEDBINS.LOGWAIT

Note: Double-click anywhere in the Threads Waiting for Log Update - Top 5 group widget to open the Database Log workspace in the Tivoli Enterprise Portal.

Mailbox Details group widget

The Mailbox Details group widget provides an HTML table that contains information about the details of user mailboxes, such as mailbox name, size, type, and number of available messages in mailboxes.

The following table contains information about the KPIs in this group widget.

Table 194. KPIs in the Mailbox Details group widget

KPI	Description	Note
Mailbox Name	The name that is assigned to the mailbox by the Exchange Server when the mailbox was created.	MSEMBXD.MBXNAME
Last Logon	The last date and time when the user was logged in to the mailbox.	MSEMBXD.MBXLASTLGN
Mailbox Size	The size (in MB) of the mailbox. The widget displays a warning status if the mailbox size equals or exceeds the maximum mailbox size limit. The widget displays a critical status if the mailbox size equals or exceeds the prohibit send and receive quota.	MSEMBXD.MBXSIZE
Mailbox Max Size	The maximum size (in MB) that the mailbox can reach.	MSEMBXD.MBXMAXSIZE
Prohibit Send Receive Quota	The maximum size (in MB) of the mailbox at which messages cannot be sent or received by the mailbox.	MSEMBXD.MAXSRSIZE
Issue Warning Quota	The size (in MB) of the mailbox that triggers a warning message when the mailbox size reaches or exceeds the specified maximum limit.	MSEMBXD.ISSWRNQTA
Mailbox Type	The type of mailbox, such as public or private.	MSEMBXD.MBXTYPE

Table 194. KPIs in the Mailbox Details group widget (continued)

KPI	Description	Note
Number of Messages	The total number of messages that are available in the mailbox since the server was started.	MSEMBXD.NUMMBXMSGS
Email Addresses	The email addresses in the Active Directory naming format that is used for representation and identification in Exchange Server.	MSEMBXD.EMAILADDRS

Note: Double-click anywhere in the Mailbox Details group widget to open the Mailbox Detail workspace in the Tivoli Enterprise Portal.

Public Folder Details group widget

The Public Folder Details group widget provides an HTML table that contains information about the public folders.

The following table contains information about the KPIs in this group widget.

Table 195. KPIs in the Public Folder Details group widget

KPI	Description	Note
Name	The name of the public folder.	MSEPFLDD.PFLDNAME
Messages	The total number of messages in the public folder.	MSEPFLDD.NUMPFLDMSG
Folder Size (MB)	The size (in MB) of the public folder.	MSEPFLDD.PFLDSIZE
Last Access Time	The last date and time when the user was logged in to the public folder.	MSEPFLDD.PFLDLASTLG

Note: Double-click anywhere in the Public Folder Details group widget to open the Public Folder Detail workspace in the Tivoli Enterprise Portal.

IBM Tivoli Composite Application Manager for Microsoft Applications: Microsoft Internet Information Services Agent group widgets

Specific group widgets are available for the Monitoring agent for Microsoft Internet Information Services component. Use these group widgets to monitor activity and system status.

Internet Information Services Status group widget

The Internet Information Services Status group widget provides a summary of the status of the web server and the FTP server.

The following table contains information about the key performance indicators (KPIs) in this group widget:

Table 196. KPIs in the Internet Information Services Status group widget

KPI	Description	Note
Web server status	The current state of the IIS web server. The group widget displays a critical status if the state of the IIS web server is either Stopped or Paused.	KQ7IISWEB1. SERVER_ST
FTP server status	The status of the FTP publishing service or the Microsoft FTP service. The group widget displays a critical status if one of the following states exists for the FTP publishing service or the Microsoft FTP service: • DOWN • WARNING • PAUSED • FAILED • PROCESS_DATA_NOT_AVAILABLE The group widget displays a normal status and `Service not installed` message when the FTP publishing service or the Microsoft FTP service is not installed.	KQ7AVAIL. STATUS

The following table contains information about the components in this group widget.

Table 197. Components in the Internet Information Services Status group widget

Components	Description
Websites	Displays the status of the websites that are hosted on the IIS server. Includes the KPIs that are related to websites.
Application pools	Displays the status of application pools. Includes the KPIs that are related to application pools.
FTP sites	Displays the status of the FTP sites that are hosted on the IIS server. Includes the KPIs that are related to FTP sites.
ISAPI extension requests per sec	Displays the number of Internet Server Application Programming Interface (ISAPI) requests on the IIS server per second. Includes the KPIs that are related to the ISAP requests per second.

Application Pool Details group widget

The Application Pool Details group widget provides a table that contains the name and the status of the application pool. To open the Worker Processes (history) group widget, click an application pool name in the Application Pool Details group widget.

The following table contains information about the KPIs in this group widget:

Table 198. KPIs in the Application Pool Details group widget

KPI	Description	Note
Name	Name of the application pool	KQ7IISAPPL. NAME

Table 198. KPIs in the Application Pool Details group widget (continued)

KPI	Description	Note
Status	Status of the application pool. The group widget displays an information message if the status of the application pool is STARTED. The group widget displays a critical status if the status of the application pool is not STARTED.	KQ7IISAPPL. APPPOOLSTA

ASP.NET Cache Used (history) group widget

The ASP.NET Cache Used (history) group widget provides a line chart that contains data of the ASP.NET cache used during a specified period. This group widget provides information about .Net Framework version 4.

The following table contains information about the KPIs in this group widget:

Table 199. KPIs in the ASP.NET Cache Used (history) group widget

KPI	Description	Note
Machine	The amount of physical memory that is used by the computer divided by the physical memory limit for the cache, as a percentage	KQ7ASPNETF. CACHE_MACH
Process	The value of private bytes for the worker process divided by the private bytes memory limit for the cache, as a percentage	KQ7ASPNETF. CACHE_PROC

Tip: Double-click anywhere in the ASP.NET Cache Used (history) group widget to open the ASP .NET Application Statistics workspace in the Tivoli Enterprise Portal.

Connections (history) group widget for FTP sites

The Connections (history) group widget provides a line chart that contains information about the current number of connections that were established with the FTP service. To open the Connections (history) group widget, select an FTP site name in the FTP Sites Details group widget. The Connections (history) group widget is applicable for IIS 7.5 and later.

The following table contains information about the KPIs in this group widget:

Table 200. KPIs in the Connections (history) group widget

KPI	Description	Note
Connections	The current number of connections that were established with the FTP service	KQ7FTPSERV. CURRENT_CO

Tip: Double-click anywhere in the Connections (history) group widget to open the Data and File Traffic Statistics workspace in the Tivoli Enterprise Portal.

Connections (history) group widget for websites

The Connections (history) group widget displays a line chart that provides information about the connection details for a website during a specified period. To open the Connections (history) group widget, click a website name in the Website Details group widget.

The following table contains information about the KPIs in this group widget:

Table 201. KPIs in the Connections (history) group widget

KPI	Description	Note
Connections	The number of connections to the WWW service that are currently active	KQ7WEBSERV. CURRENT_CO

Tip: Double-click anywhere in the Connections (history) group widget to open the Connection and Logon Attempt Statistics workspace in the Tivoli Enterprise Portal.

FTP Sites Details group widget

The FTP Sites Details group widget displays a table that provides information about the FTP site, such as the FTP site name and status. To open the Connections group widget, select an FTP site name in the FTP Sites Details group widget.

The following table contains information about the KPIs in this group widget:

Table 202. KPIs in the FTP Sites Details group widget

KPI	Description	Note
Name	The FTP site name	KQ7FSITDTL. SITE_NAME
Status	The state of the FTP site. One of the following values can be the state of the FTP site: • Starting • Started • Stopping • Stopped • Pausing • Paused • Continuing The group widget displays an information message if the status of the FTP site is Started. The group widget displays a critical status if the status of the FTP site is not Started.	KQ7FSITDTL. STATE

Service Details (history) group widget

The Service Details (history) group widget provides information about the thread count, the virtual size, and the page fault per second of a service during a specified period. To open the Service Details (history) group widget, select a service or a process in the Services Summary group widget.

The following table contains information about the KPIs in this group widget:

Table 203. KPIs in the Service Details (history) group widget

KPI	Description	Note
Thread count	The number of threads that are currently allocated by a service or a process	KQ7AVAIL. THREADS
Virtual size (MB)	The virtual size (in MB) of a service or a process	KQ7AVAIL. VIRTSIZE
Page fault per second	The rate at which page faults occur for a service or a process	KQ7AVAIL. PAGEFAULTS

Tip: Double-click anywhere in the Service Details (history) group widget to open the Availability workspace in the Tivoli Enterprise Portal.

Services Summary group widget

The Services Summary group widget provides a table that contains the summary of services and processes. To open the Service Details group widget, select a service or a process in the Services Summary group widget.

The following table contains information about the KPIs in this group widget:

Table 204. KPIs in the Services Summary group widget

KPI	Description	Note
Name	The name of the service or process	KQ7AVAIL. COMPONENT
Status	The status of the service or process. One of the following values can be the status of the service or process site: • DOWN • UP • WARNING • UNKNOWN • PASSED • FAILED • PROCESS DATA NOT AVAILABLE The group widget displays an information message if the status of the service or process is Up. The group widget displays a critical status if the status of the service or process is Down.	KQ7AVAIL. STATUS
CPU Utilization (%)	The percentage of the elapsed time that is used by a process to run instructions	KQ7AVAIL. PERCPROC

Websites Details group widget

The Websites Details group widget provides a table that contains information about the details of the websites that are hosted on the IIS Server. The information in the table is sorted according to the status of the websites. To view the connection details for a specified period, click a website name in the Websites Details group widget.

The following table contains information about the KPIs in this group widget:

Table 205. KPIs in the Websites Details group widget

KPI	Description	Note
Name	The name of the website that is hosted on the IIS Server	KQ7WSITDTL. NAME
Status	The status of the website that is hosted on the IIS Server. The following information is displayed on the Websites Details group widget: • An information message if the status of the website is Started • A warning status if the status of the website is Paused • A critical status if the status of the website is not Started	KQ7WSITDTL. STATE

Web Service Cache Hits (history) group widget

The Web Service Cache Hits (history) group widget provides a line chart that contains information about the web service cache hits during a specified period.

The following table contains information about the KPIs in this group widget:

Table 206. KPIs in the Web Service Cache Hits (history) group widget

KPI	Description	Note
File	The ratio of file cache hits to the total number of cache requests	KQ7WEBSER1. FILE_CACH1
Metadata	The ratio of the user-mode metadata cache hits to total cache requests since the service started	KQ7WEBSER1. METADATA_1

Tip: Double-click anywhere in the Web Service Cache Hits (history) group widget to open the Web Server Cache Statistics workspace in the Tivoli Enterprise Portal.

Web Service Data Sent and Received Per Second (history) group widget

The Web Service Data Sent and Received Per Second (history) group widget provides a line chart that contains information about the rate of the data that is sent and received (in KB per second) by the web service during a specified period.

The following table contains information about the KPIs in this group widget:

Table 207. KPIs in the Web Service Data Sent and Received Per Second (history) group widget

KPI	Description	Note
Sent	The rate (in kilobytes per second) at which data is sent by the web service	KQ7WEBSERV. KB_SENT_RT
Received	The rate (in kilobytes per second) at which data is received by the web service	KQ7WEBSERV. KB_RECE_RT

Tip: Double-click anywhere in the Web Service Data Sent and Received Per Second (history) group widget to open the Data and File Transfer Statistics workspace in the Tivoli Enterprise Portal.

Web Service Error Statistics (history) group widget

The Web Service Error Statistics (history) group widget displays a line chart that provides statistical information about the errors that occur when a request is sent to the web service during a specified period.

The following table contains information about the KPIs in this group widget:

Table 208. KPIs in the Web Service Error Statistics (history) group widget

KPI	Description	Note
Page not found errors	The rate that requests were not completed by the web service because the document was not found	KQ7WEBSERV. NOT_FOUND_
Locked errors	The rate that requests were not completed by the web service because the document was locked	KQ7WEBSERV. LOCKED_ERR

Tip: Double-click anywhere in the Web Service Error Statistics (history) group widget to open the Error Statistics workspace in the Tivoli Enterprise Portal.

Worker Processes (history) group widget

The Worker Processes (history) group widget displays a line chart that provides information about the worker process during a specified period. This group widget is applicable to IIS version 7.5 and later. The line chart is displayed if a worker process is running for the application pool.

The following table contains information about the KPIs in this group widget:

Table 209. KPIs in the Worker Process (history) group widget

KPI	Description	Note
Worker Processes	The current number of worker processes that are running in the application pool	KQ7APPLWAS. CURRENTWPS

Tip: Double-click anywhere in the Worker Processes (history) group widget to open the Identity and Recycling Application Pool Setting workspace in the Tivoli Enterprise Portal.

IBM Tivoli Composite Application Manager for Microsoft Applications: Microsoft SharePoint Server Agent group widgets

Specific group widgets are available for the Microsoft SharePoint Server agent component. Use these group widgets to monitor activity and system status.

SharePoint Server Status group widget

The SharePoint Server Status group widget provides a status gauge that contains information about the overall health of the SharePoint Server.

The following table contains information about the key performance indicators (KPIs) in this group widget.

Table 210. KPIs in the SharePoint Server Status group widget

KPI	Description	Note
Server status	The status of the application components such as processes, services, functionality tests. The widget displays a critical status if the server status is not Up.	KQPAVAIL.STATUS
Database connection status	The status of database connection such as connected or not connected. The widget displays a critical status if the database connection status is Disconnected.	KQPDBCNSTA.STATUS
Availability of services	The number of services and their status. The widget displays a warning status if the service status is Down.	KQPAVAIL.STATUS
Crawl state	The ratio (as a percentage) of documents that failed to index to the sum of documents that failed to index and the documents that is successfully indexed. The widget displays a critical status if the percentage ratio is 50% or greater. The widget displays a warning status if the percentage ratio is 30% - 50%.	KQPCRWLLST. ERRPERCENT

Last Crawls Statistics Details group widget

The Last Crawls Statistics Details group widget provides an HTML table that contains details of the crawl that you select on the Last Crawl Statistics group widget.

The following table contains information about the KPIs in this group widget.

Table 211. KPIs in the Last Crawls Statistics Details group widget

KPI	Description	Note
Service Application Name	The name of the SSP for SharePoint Server 2007 or the name of the Search service application for SharePoint 2010.	KQPCRWLLST.NAME
Items Indexed	The number of documents that are currently available in the index.	KQPCRWLLST.ITEMININDX
Error Count	The number of errors that occurred during the last crawl.	KQPCRWLLST.ERRORCOUNT
Start Time	The date and start time of the crawl.	KQPCRWLLST.STARTTIMI
Finish Time	The date and end time of the crawl.	KQPCRWLLST.FINISHTIMI

Tip: Double-click anywhere in the Last Crawls Statistics Details group widget to open the Office Search Crawl Details workspace in the Tivoli Enterprise Portal.

Last Crawls Statistics group widget

The Last Crawls Statistics group widget provides an HTML table that contains the statistics of the last crawls, such as the source, status, type, and duration of the last crawl.

The following table contains information about the KPIs in this group widget.

Table 212. KPIs in the Last Crawls Statistics group widget

KPI	Description	Note
Content Source	The name of the content source that is defined for the crawl.	KQPCRWLLST.CONTENTSRC
Crawl Status	The status of the crawl. The widget displays a critical status if the crawl status is Stopped.	KQPCRWLLST.CRAWLSTATU
Crawl Type	The type of the crawl.	KQPCRWLLST.CRAWLTYPE
Error Percentage	The ratio (as a percentage) of documents that failed to index to the sum of documents that failed to index and the documents that successfully indexed. The widget displays a critical status if the error percentage is 50% or greater. The widget displays a warning status if the error percentage is 30% - 50%.	KQPCRWLLST.ERRPERCENT
Duration	The duration of the crawl. The format is HH:MM:SS, representing hour, minute, and second in 2 digits.	KQPCRWLLST.DURATION

Active Crawls Statistics group widget

The Active Crawls Statistics group widget provides a status gauge and line charts that contain information about the active crawls statistics, such as the crawl count, number of threads that access the network, and the documents filtering rate.

Important: The line charts are displayed only when the historical data collection is configured for the Office Search Gatherer Filter attribute group.
The following table contains information about the KPIs in this group widget.

Table 213. KPIs in the Active Crawls Statistics group widget

KPI	Description	Note
Active Crawls	The name of the Shared Services Provider (SSP) for SharePoint Server 2007 or the name of the Search service application for SharePoint 2010.	KQPCRWLACT.NAME
Threads Accessing Network (history)	The current number of threads that are waiting for a response from the filter process.	KQPOFSRGFL.THREADS_AC
Documents Successfully Filtered Rate Per Second (history)	The number of documents that are indexed completely per second.	KQPOFSRGFL.DOCUMENTS3

Crawls Statistics Details group widget

The Crawls Statistics Details group widget provides an HTML table that contains information about the crawl statistics.

The following table contains information about the KPIs in this group widget.

Table 214. KPIs in the Crawls Statistics Details group widget

KPI	Description	Note
System IO traffic rate per second (MB)	The rate (in megabytes per second) of system input or output traffic.	KQPOFSRGFL.SYSTEM_IO
Threads in plugins	The current number of threads that are waiting for the plug-ins to complete an operation.	KQPOFSRGFL.THREADS_IN
Filtering threads	The current number of filtering threads in the system.	KQPOFSRGFL.FILTERING_
Documents filtered	The total number of documents that the gatherer attempted to filter since the gatherer service started.	KQPOFSRGFL.DOCUMENTS0
Documents filtered unsuccessfully per second (%)	The percentage of total documents that returned errors during a filtering process.	KQPOFSRGFL.PERCENT_FA

Tip: Double-click anywhere in the Crawls Statistics Details group widget to open the Office Search Gatherer Details workspace in the Tivoli Enterprise Portal.

Health Alert Details group widget

The Health Alert Details group widget provides an HTML table that contains the details of the health alerts that are summarized in the Health Alert group widget.

The following table contains information about the KPIs in this group widget.

Table 215. KPIs in the Health Alert Details group widget

KPI	Description	Note
Title	The title of the event.	KQPHLTHANA.TITLE
Severity	The severity of the event. The widget displays a critical status if the event severity value is Error. The widget displays a warning status if the event severity value is Warning.	KQPHLTHANA.SEVERITY
Service	The name of the service for which the event occurred.	KQPHLTHANA.SERVICE
Time Generated	The time when the event was generated.	KQPHLTHANA. TIMEGENER
Category	The category of the event, such as Configuration, Security, Performance, Availability, or any other category that is defined by the user.	KQPHLTHANA.CATEGORY

Tip: Double-click anywhere in the Health Alert Details group widget to open the Analytics workspace in the Tivoli Enterprise Portal.

Health Alerts group widget

The Health Alerts group widget provides a status gauge that contains the health alert information as a percentage summary of the informational, warning, and error alerts that are generated by the SharePoint Server. To view more details of the health alerts, click in the group widget.

Important: This group widget displays data only for SharePoint 2010.
The following table contains information about the KPIs in this group widget.

Table 216. KPIs in the Health Alerts group widget

KPI	Description	Note
Health Alerts	A percentage summary of the event severity that includes the following information: • Total number of events with severity value Error • Total number of events with severity value Warning • Total number of events with severity value Information	KQPHLTHANA.SEVERITY

Servers in Farm group widget

The Servers in Farm group widget provides an HTML table that contains the list of servers in the SharePoint farm and the number of services that are running on the servers.

The following table contains information about the KPIs in this group widget.

Table 217. KPIs in the Servers in Farm group widget

KPI	Description	Note
Name	The name of the server that is configured in the SharePoint farm.	KQPFARMSVR.SERVER
Services	The count of the services that are running on the SharePoint server.	KQPFARMSVR.SERVICE

Service Details group widget

The Service Details group widget provides an HTML table that contains the details of the service that you select on the Service Status group widget.

The following table contains information about the KPIs in this group widget.

Table 218. KPIs in the Service Details group widget

KPI	Description	Note
Page Faults (per second)	The number of page faults per second.	KQPAVAIL.PAGEFAULTS
Thread Count	The number of threads that are currently allocated by the process.	KQPAVAIL.THREADS

Tip: Double-click anywhere in the Service Details group widget to open the Availability workspace in the Tivoli Enterprise Portal.

Services on Server group widget

The Services on Server group widget provides an HTML table that contains details of the services that are configured on the server that you select on the Servers in Farm group widget.

The following table contains information about the KPIs in this group widget.

Table 219. KPIs in the Services on Server group widget

KPI	Description	Note
Service	The name of the service that is running on the SharePoint Server.	KQPFARMSVR.SERVICE
Status	The status of the service that is running on the SharePoint Server. The widget displays a critical status if the service status is Stopped.	KQPFARMSVR.STATUS

Tip: Double-click anywhere in the Services on Server group widget to open the SharePoint Topology workspace in the Tivoli Enterprise Portal.

Service Status group widget

The Service Status group widget provides an HTML table that contains information about all the services that are configured on SharePoint Server. For more details about a service, click the service row.

The following table contains information about the KPIs in this group widget.

Table 220. KPIs in the Service Status group widget

KPI	Description	Note
Name	The name of the service.	KQPAVAIL.NAME
Status	The status of the service. The widget displays a critical status if the service status is Down.	KQPAVAIL.STATUS
CPU Used(%)	The percentage of processor time that is used by the process to execute instructions. The widget displays a critical status if the CPU used value is 90% or greater.	KQPAVAIL.PERCPROC

IBM Tivoli Composite Application Manager for Microsoft Applications: Microsoft SQL Server Agent group widgets

Specific group widgets are available for the Microsoft SQL Server. Use these group widgets to monitor activity and system status.

SQL Status group widget

The SQL Status group widget provides an HTML table that summarizes the overall health of the SQL server.

The following table contains information about the key performance indicators (KPIs) in this group widget.

Table 221. KPIs in the SQL Status group widget

KPI	Description	Note
Server status	Indicates the status of the SQL server. The widget displays a warning status if the value is equal to Unknown. The widget displays a critical status if the value is equal to Inactive.	KOQSRVS.SRVSTATUS
Collector status	Indicates the status of the data collector on a remote node. The widget displays a warning status if the value is equal to Unknown. The widget displays a critical status if the value is equal to Inactive.	KOQSRVS.COLLSTATUS

Table 221. KPIs in the SQL Status group widget (continued)

KPI	Description	Note
Active transactions	The number of transaction enlistments; local, Distributed Transaction Coordinator (DTC), and bound, which are currently active. **Important:** The line chart is displayed only when the historical data collection is configured for the MS SQL Server Transaction Summary attribute group.	KOQSTRNS.TACTTRN
Server errors	The number of error messages with a severity level of 17 or higher that occurred since the SQL server was started. The widget displays a critical status if the value is greater than or equal to 1.	KOQPROBS.NUMSEVG17
Databases	The total space that is used by the databases (in percentage). The widget displays any one of the following states for the databases: • Critical • Warning • Normal	KOQDBD.PCTLOGUSED + KOQDBD.PCTDBUSE + KOQDBD.DBSTAT + KOQDBD.DBSTATE + KOQDBD.OLDOPTRAN + KOQDBD.ERRSTATUS
Jobs	Status of the job. The widget displays any one of the following states for the jobs: • Critical • Warning • Normal	KOQJOBD.JOBSTATNUM + KOQSRVS.SQLFAILJ
Processes Blocked (%)	The percentage of processes that are being blocked. The widget displays a warning status if the value is greater than or equal to 50%.	KOQPRCS.PCTBLOCK

Databases group widget

The Databases group widget provides a Status Summary widget that summarizes the percentage of the space that is used by the databases.

The following table contains information about the KPIs in this group widget.

Table 222. KPIs in the Databases group widget

KPI	Description	Note
Databases	The total space that is used by the databases (as a percentage). The widget displays a warning status if one of the following values are true: • Log space value is greater than 70% and less than or equal to 90% • Database space value is greater than 70% and less than or equal to 90% • Database state is equal to RESTORING, RECOVERING, RECOVERY_PENDING, or SUSPECT • Oldest open transaction is greater than 5 and less than or equal to 15 The widget displays a critical status if one of the following values are true: • Log space value is greater than 90% • Database space value is greater than 90% • Database status is equal to 1 • Database state is equal to OFFLINE or EMERGENCY, • Error status is equal to Yes • Oldest open transaction is greater than 15	KOQDBD.PCTLOGUSED + KOQDBD.PCTDBUSE + KOQDBD.DBSTAT + KOQDBD.DBSTATE + KOQDBD.OLDOPTRAN + KOQDBD.ERRSTATUS

Log Used (history) group widget

To see a line graph in the Log Used (history) group widget, click the Log Used column of the Database Status group widget. The Log Used (history) group widget summarizes the percentage of space that is used by the transaction log during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Database Detail attribute group.
The following table contains information about the KPIs in this group widget.

Table 223. KPIs in the Log Used (history) group widget

KPI	Description	Note
Log	The percentage of the transaction log that is full.	KOQDBD.PCTLOGUSED

Database in Errors (history) group widget

The Database in Errors (history) group widget provides a line graph that summarizes the total number of databases and the number of databases in error during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Database Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 224. KPIs in the Database in Errors (history) group widget

KPI	Description	Note
Databases	The total number of databases present on the SQL server	KOQDBS.NUMDBS
Databases in error	The number of databases with an error status. A database with an error status is a database with a status of suspect, crashed, or recovery.	KOQDBS.NUMERRST

Database Used - Top 5 group widget

The Database Used - Top 5 group widget provides a grid widget that contains the top five database used in percentage.

The following table contains information about the KPIs in this group widget.

Table 225. KPIs in the Database Used - Top 5 group widget

KPI	Description	Note
Name	The name of the database	KOQDBD.DBNAME
Database Used (%)	The amount of space (in megabytes) used in the database as a percentage of total space allowed. The widget displays a warning status if the value is greater than 70% and less than or equal to 90%. The widget displays a critical status if the value is greater than 90%.	KOQDBD.PCTDBUSE

Database Status group widget

The Database Status group widget provides a grid widget that summarizes the status of the database.

The following table contains information about the KPIs in this group widget.

Table 226. KPIs in the Database Status group widget

KPI	Description	Note
Name	The name of the database	KOQDBD.DBNAME

Table 226. KPIs in the Database Status group widget (continued)

KPI	Description	Note
Status	The status of the database. If the database is offline, the status is equal to unavailable, and if the database is online, the status is Available. The widget displays a critical status if the value is equal to Not available.	KOQDBD.DBSTAT
State	Reports the database state. The widget displays a warning status if the value is Recovery_Pending, Recovering, Suspect, or Restoring. The widget displays a critical status if the value is Offline or Emergency.	KOQDBD.DBSTATE
Database Used	The amount of space (in megabytes) used in the database as a percentage of total space allowed. The widget displays a warning status if the value is greater than 70% and less than or equal to 90%. The widget displays a critical status if the value is greater than 90%.	KOQDBD.PCTDBUSE
Log Used	The percentage of the transaction log that is full. The widget displays a warning status if the value is greater than 70% and less than or equal to 90%. The widget displays a critical status if the value is greater than 90%.	KOQDBD.PCTLOGUSED
Error Status	Indicates whether the database has an error status. A database with an error status has a status of suspect, crashed, or recovery. The widget displays a critical status when the value is Yes.	KOQDBD.ERRSTATUS

Table 226. KPIs in the Database Status group widget (continued)

KPI	Description	Note
Oldest open transaction (minutes)	The age (in minutes) of the oldest open transaction in the database transaction log. The widget displays a warning status if the value is greater than or equal to 6 *and* less than 16. The widget displays a critical status if the value is greater than or equal to 16.	KOQDBD.OLDOPTRAN
Transactions per second	The number of transactions that are started for the database per second for the current interval	KOQDBD.TRANSSEC
Active Transaction	The number of active transactions for the database	KOQDBD.ACTIVTRANS
Replication Latency (ms)	The number of milliseconds between the time a transaction marked for replication is entered into the publication database transaction log and the time it is read out of the log and delivered to the distribution database.	KOQDBD.REPTLAT
Replicated Transaction	The number of transactions in the publication database transaction log that are marked for replication but are not yet delivered to the distribution database.	KOQDBD.REPTRANS

Databases Configuration Summary group widget

The Databases Configuration Summary group widget provides an HTML table that summarizes the configuration details.

The following table contains information about the KPIs in this group widget.

Table 227. KPIs in the Databases Configuration Summary group widget

KPI	Description	Note
Read only	The number of databases with a status of read only	KOQDBS.NUMRO
Single user	The number of databases with a status of single user. A database with a status of single user can be accessed by only one user at a time.	KOQDBS.NUMSING
No free space accounting	The number of databases that have the free space accounting option disabled	KOQDBS.NUMNOFRSP

Table 227. KPIs in the Databases Configuration Summary group widget (continued)

KPI	Description	Note
Database owner only	The number of databases with a status of DBO only. A database with a status of database owner can be accessed only by users with DBO authority.	KOQDBS.NUMDBO

Database Used (history) group widget

To open the Database Used (history) group widget, click the Database Used column of the Database Status group widget. The Database Used (history) group widget summarizes the percentage of space that is used by a database during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Database Detail attribute group.
The following table contains information about the KPIs in this group widget.

Table 228. KPIs in the Database Used (history) group widget

KPI	Description	Note
Data	The amount of space (in megabytes) used in the database as a percentage of total space allowed. The widget displays a warning status if the value is greater than 70% and less than or equal to 90%. The widget displays a critical status if the value is greater than 90%.	KOQDBD.PCTDBUSE

Device Status group widget

The Device Status group widget provides a grid widget that summarizes the status of devices.

The following table contains information about the KPIs in this group widget.

Table 229. KPIs in the Device Status group widget

KPI	Description	Note
Name	The name of the device that is allocated for the database	KOQDEVD.DEVICE
Type	Indicates the type of device that is allocated for the database	KOQDEVD.DVTYPE
Auto growth	Indicates whether the autogrowth feature is enabled for a device. If the autogrowth feature is enabled, the maximum file size is displayed as restricted or unrestricted.	KOQDEVD.ATOGROWT

Table 229. KPIs in the Device Status group widget (continued)

KPI	Description	Note
Auto growth value	Indicates the growth value of a file	KOQDEVD.ATOGRVAL
Auto growth unit	Indicates the unit of file growth. If the autogrowth feature is enabled for a device, the file growth value is displayed either in a percentage or megabytes.	KOQDEVD.ATOGRUNT
Capacity Utilization (%)	The percentage of space that is used on the device. The widget displays a warning status if the value is greater than or equal to 90%.	KOQDEVD.PCTDVFREE
Capacity (MB)	The number of megabytes on the device	KOQDEVD.DVSIZE
Freespace (MB)	The number of megabytes of free space on a device	KOQDEVD.DVFREE
File Name	The name of the physical device	KOQDEVD.UPHYNAME

Device Details group widget

The Device Details group widget is a window that provides an HTML table with more information about a device.

The following table contains information about the KPIs in this group widget.

Table 230. KPIs in the Device Details group widget

KPI	Description	Note
Physical device name	The name of the physical device that is allocated for the database	KOQDEVD.PHYNAME
Mirror device name	The name of the mirror device for the database	KOQDEVD.MIRROR

Tip: Double-click anywhere in the Device Details group widget to open the Device Details workspace in the Tivoli Enterprise Portal

Databases group widget

The Databases group widget provides a grid widget table that lists the database names.

The following table contains information about the KPIs in this group widget.

Table 231. KPIs in the Databases group widget

KPI	Description	Note
Name	The name of the databases	KOQDBD.DBNAME

Jobs group widget

The Jobs group widget provides a status summary widget that summarizes the status of the jobs and a status gauge that displays the status of the failed jobs.

The following table contains information about the KPIs in this group widget.

Table 232. KPIs in the Jobs group widget

KPI	Description	Note
Jobs	Status of the job The widget displays a warning status if one of the following values for Job Status is true: • Retry • Canceled • Unknown The widget displays a critical status if the value for Job Status is equal to Failed.	KOQJOBD.JOBSTATNUM
Failed	Reports any jobs that are run by the SQL Server and failed in the last monitoring interval. The widget displays a critical status if the value is greater than or equal to 1.	KOQSRVS.SQLFAILJ

Jobs Failed (history) group widget

The Jobs Failed (history) group widget provides a line graph that contains the number of jobs that failed during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Job Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 233. KPIs in the Jobs Failed (history) group widget

KPI	Description	Note
Jobs Failed (Last two Hours)	The number of failed jobs over the last 2 hours	KOQJOBS.NUMJBADTOT

Tip: Double-click anywhere in the Jobs Failed (history) group widget to open the Job summary workspace in the Tivoli Enterprise Portal.

Retry Attempts (history) group widget

To open the Retry Attempts (history) group widget, click the Retry Attempts column of the Jobs Status group widget. The Retry Attempts (history) group widget provides a line graph that contains the number of retry attempts during a specified period.

The following table contains information about the KPIs in this group widget.

Table 234. KPIs in the Retry Attempts (history) group widget

KPI	Description	Note
Retry Attempts Popup (Last 2 Hours)	The current number of retry attempts that are done on a step of a running job	KOQJOBD.CURRETAT

Tip: Double-click anywhere in the Retry Attempts (history) group widget to open the Job Detail workspace in the Tivoli Enterprise Portal

Jobs Since Server Startup group widget

The Jobs Since Server Startup group widget provides an HTML table that summarizes the status of jobs.

The following table contains information about the KPIs in this group widget.

Table 235. KPIs in the Jobs Since Server Startup group widget

KPI	Description	Note
Successful	The number of successful jobs since the SQL server started	KOQJOBS.SUCCJOBS
Failed	The number of failed jobs since the SQL Server started	KOQJOBS.FAILJOBS
Active	The number of active jobs since the SQL server started	KOQJOBS.ACTJOBS
Queued	The number of jobs in a queue since the SQL server started	KOQJOBS.QJOBS

Tip: Double-click anywhere in the group Jobs Since Server Startup widget to open the Job summary workspace in the Tivoli Enterprise Portal

Job Count group widget

The Job Count group widget provides a grid widget that lists the job owners and the number of jobs that are started by the respective owners.

The following table contains information about the KPIs in this group widget.

Table 236. KPIs in the Job Count group widget

KPI	Description	Note
Owner	The name of the job owner	KOQJOBD.JOBOWNER
Count	The total number of jobs that are started by the owner	KOQJOBD.JOBOWNER

Jobs Status group widget

The Jobs Status group widget provides a grid widget that gives information about the status of jobs. Click the job name in the Name column to view additional information about a job.

The following table contains information about the KPIs in this group widget.

Table 237. KPIs in the Jobs Status group widget

KPI	Description	Note
Name	The SQL Server job name.	KOQJOBD.JOBNAME
Status	Status of the job. The widget displays a warning status if one of the following values for Job Status is true: • Retry • Canceled • Unknown The widget displays a critical status if the value for Job Status is equal to Failed.	KOQJOBD.JOBSTATNUM
Retry Attempts	The current number of retry attempts that are done on a step of a running job	KOQJOBD.CURRETAT
Completion Duration	The amount of time it took for the job to complete (in seconds)	KOQJOBD.JOBDUR
Enable	Whether the job is enabled to run	KOQJOBD.
Error Code	The error code for the last completion of the job	KOQJOBD.JOBERRCODE
Last Run Outcome	The last job execution status. The widget displays a warning status if the value is Unknown or Canceled. The widget displays a critical status if the value is Failed.	KOQJOBD.LSTRUNSTAT
Last Run time stamp	The time stamp of last job execution	KOQJOBD.LSTRUNTIME

apm_ui_docs/apmui_77fp1/ibm_mssql_additional_job_help

Jobs Success Rate (history) group widget

The Jobs Success Rate (history) group widget provides a line graph that summarizes the success rate of the jobs during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Job Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 238. KPIs in the Jobs Success Rate (history) group widget

KPI	Description	Note
Jobs Success Rate	The number of successful jobs over the last 2 hours	KOQJOBS.JOBSUCRATE

Tip: Double-click anywhere in the Jobs Success Rate (history) group widget to open the Job Summary workspace in the Tivoli Enterprise Portal

Locks group widget

The Locks group widget provides an HTML table that contains the status of the locks. For more details about the locks, click in the group widget area to open the Additional Locks Details group widget.

The following table contains information about the KPIs in this group widget.

Table 239. KPIs in the Locks group widget

KPI	Description	Note
Current locks	The number of current locks for the SQL server	KOQSRVD.CURLOCKS
Blocking lock requests	The total number of current locks that are blocking other processes	KOQSRVS.BLKLCKREQ
Locks remaining	The total number of locks that can still be taken out. The maximum number of locks is configurable.	KOQSRVS.LOCKSREM
Max locks allowed	The maximum number of allowed locks	KOQSRVD.MAXLOCKS

Lock Conflict Details group widget

The Lock Conflict Details group widget provides a grid widget that contains detailed information about a selected lock conflict.

The following table contains information about the KPIs in this group widget.

Table 240. KPIs in the Lock Conflict Details group widget

KPI	Description	Note
Blocking Process ID	The identifier for the process that is blocking a request for a lock	KOQLOCK.BLOCKID
Requester Process ID	The process that is requesting the lock	KOQLOCK.PROCESSID
Database Name	The name of the database	KOQLOCK.DBNAME
Client User ID	The ID of the user who executed the command	KOQLOCK.CLNTUSER
Client Group ID	The group ID of the user that is executing the process	KOQLOCK.SRVGROUP

Tip: Double-click anywhere in the Lock Conflict Details group widget to open the Server Locking workspace in the Tivoli Enterprise Portal

Locks Details group widget

The Locks Details group widget provides a grid widget that summarizes the details of the locks.

The following table contains information about the KPIs in this group widget.

Table 241. KPIs in the Locks Details group widget

KPI	Description	Note
Database Name	The name of the database that is locked	KOQLOCKS.DBNAME
Lock Resource Type	Enumeration that identifies the Lock Resource Type	KOQLOCKS.LCKRSCTYPE
Lock Request Status	Enumeration that identifies the Lock Request Status. The widget displays a warning status if the value is equal to Converting or Waiting.	KOQLOCKS.LCKRQSTATE
Lock Type	Indicates the type of lock on the resource that is being requested	KOQLOCKS.LOCKTYPE
Process Holding Lock	The ID of the process that is holding the lock	KOQLOCKS.PIDHOLD
Table Name	The name of the table that is being locked	KOQLOCKS.TBNAME
Page Number	The page number of the table that is being locked	KOQLOCKS.PAGE
Database ID	The ID of the database that is locked	KOQLOCKS.DBID

Tip: Double-click anywhere in the Locks Details group widget to open the Server Locking workspace in the Tivoli Enterprise Portal

Lock Resource Type Summary group widget

The Lock Resource Type Summary group widget provides a grid widget that contains the details of the Lock Resource Type.

The following table contains information about the KPIs in this group widget.

Table 242. KPIs in the Lock Resource Type Summary group widget

KPI	Description	Note
Lock Resource Type	An enumeration of the resources that the SQL Server can lock	KOQLRTS.LOCKRSCTYP
Lock Requests Per Second	The number of new locks and lock conversions per second requested from the lock manager	KOQLRTS.LCKREQSEC
Lock Timeouts Per Second	The number of lock requests per second that timed out, including requests for NOWAIT locks	KOQLRTS.LCKTOSEC
Lock Wait Time (ms)	The total wait time (in milliseconds) for locks in the last second	KOQLRTS.LCKWAITTM

Table 242. KPIs in the Lock Resource Type Summary group widget (continued)

KPI	Description	Note
Number Of Deadlocks Per Second	The number of Deadlocks per second for the current sample interval	KOQLRTS.LCKDDLKSEC

Tip: Double-click anywhere in the Lock Resource Type Summary group widget to open the Lock Resource Type Summary workspace in the Tivoli Enterprise Portal.

Locks group widget

The Locks group widget provides a volume gauge that summarizes the details of the Locks.

The following table contains information about the KPIs in this group widget.

Table 243. KPIs in the Locks group widget

KPI	Description	Note
Locks Used (%)	The percentage of locks on resources of the maximum number of locks that are allowed by the SQL server. The widget displays a warning status if the value is greater than or equal to 65%. The widget displays a critical status if the value is greater than or equal to 95%.	KOQSRVS.PCTLOCKS

Additional Locks Details group widget

The Additional Locks Details group widget provides an HTML table that summarizes the details of the locks.

The following table contains information about the KPIs in this group widget.

Table 244. KPIs in the Additional Locks Details group widget

KPI	Description	Note
Locks	The total number of locks for the server. The widget displays a warning status if the value is greater than or equal to 200 and less than 4000. The widget displays a critical status if the value is greater than or equal to 4000.	KOQSRVRE.NUMLOCKS
Lock conflicts	The total number of processes that are involved in lock conflicts.	KOQSRVRE.NUMCONFL
Database having maximum locks	The name of the database with largest number of locks.	KOQSRVRE.MAXLOCK
Table having maximum locks	The name of the table with largest number of locks.	KOQSRVRE.TBMXLOCK

Table 244. KPIs in the Additional Locks Details group widget (continued)

KPI	Description	Note
Database having maximum blocks	The name of the database that is blocking the largest number of processes.	KOQSRVRE.MAXBLOCK

Note: Double-click anywhere in the Additional Locks Details group widget to open the Server Locking workspace in the Tivoli Enterprise Portal.

Granted Lock Summary group widget

The Granted Lock Summary group widget provides an HTML table that contains a list of types of locks.

The following table contains information about the KPIs in this group widget.

Table 245. KPIs in the Granted Lock Summary group widget

KPI	Description	Note
Intent locks	The number of granted Intent locks	KOQLOKSU.TOTINTLOK
Page locks	The number of granted Page locks	KOQLOKSU.TOTPAGLOK
Table locks	The number of granted Table locks	KOQLOKSU.TOTTBLLOK
Exclusive locks	The number of granted Exclusive locks	KOQLOKSU.EXCLOK
Shared locks	The number of granted Shared locks	KOQLOKSU.SHRLOK

Tip: Double-click anywhere in the Granted Lock Summary group widget to open the Server Locking workspace in the Tivoli Enterprise Portal

Server Services Detail group widget

The Server Services Detail group widget provides a grid widget, which contains detailed information about the services.

The following table contains information about the KPIs in this group widget.

Table 246. KPIs in the Server Services Detail group widget

KPI	Description	Note
Name	The service name for the SQL Server	KOQSRVCD.SRVCNAME
State	The current service state. The widget displays a warning state if the value is equal to Start Pending, Stop Pending, Continue Pending, Pause Pending, Paused, or Unknown. The widget displays a critical state if the value is equal to Stopped.	KOQSRVCD.SRVCSTATE

Table 246. KPIs in the Server Services Detail group widget (continued)

KPI	Description	Note
Status	The current service status. The widget displays a warning state if the value is equal to Degraded, Unknown, Pred Fail, Stopping, or Service. The widget displays a critical state if the value is equal to Error.	KOQSRVCD.SRVCSTATUS
Start Mode	Defined start mode for the service	KOQSRVCD.STARTMODE
Type	The service type for this service to the Microsoft SQL Server	KOQSRVCD.SRVCTYPE

Tip: Double-click anywhere in the Server Services Detail group widget to open the Services Detail workspace in the Tivoli Enterprise Portal.

Server Statistics group widget

The Server Statistics group widget provides an HTML table that summarizes the statistics of the server.

The following table contains information about the KPIs in this group widget.

Table 247. KPIs in the Server Statistics group widget

KPI	Description	Note
Server collation	The name of the default collation for the server	KOQSVRPR.COLLATION
Edition	The installed product edition of this instance of the SQL Server	KOQSVRPR.EDITION
Engine edition	The database engine edition of the instance of the SQL Server that is installed	KOQSVRPR.ENGEDITION
Is clustered	Indicates whether the SQL Server instance is configured in the Windows Server Failover Clustering (WSFC) cluster	KOQSVRPR.ISCLUST
Is integrated security only	The server is in the integrated security mode	KOQSVRPR.ISINTSEC
Is single user	The server is in the single-user mode, in which only a single user can connect to the server	KOQSVRPR.ISSINUSER
Licence type	The mode of this instance of the SQL Server	KOQSVRPR.LICTYPE

Table 247. KPIs in the Server Statistics group widget (continued)

KPI	Description	Note
Number of licences	The number of client licenses that are currently registered for this instance of the SQL Server if the SQL Server is in the per-seat mode	KOQSVRPR.NUMLIC
Product level	The level of the version of this instance of the SQL Server, for example, the original release version and the service pack version	KOQSVRPR.PRODLEVEL
Qualified server name	The name of the qualified SQL Server instance in the format host name:SQL server instance	KOQSVRPR.QUALISERV
Physical netBIOS name	The NetBIOS name of the machine where this instance of the SQL	KOQSVRPR.NETBIONAME
Filestream share name	The Windows share name where the FileStream data is stored	KOQSVRPR.FILSTRSHNM
Filestream level	The current level of FileStream support that is enabled for the SQL Server instance	KOQSVRPR.FILSTRLVL
Time since startup (minutes)	The number of minutes that elapsed since the SQL server started	KOQSRVS.SRVAGE

Tip: Double-click anywhere in the Server Statistics group widget to open the Server Summary workspace in the Tivoli Enterprise Portal.

Addition Server Properties group widget

The Addition Server Properties group widget provides an HTML table that contains additional properties for the server.

The following table contains information about the KPIs in this group widget.

Table 248. KPIs in the Addition Server Properties group widget

KPI	Description	Note
Current locks	The number of current locks for the SQL server	KOQSRVD.CURLOCKS
Maximum locks	The maximum number of allowed locks	KOQSRVD.MAXLOCKS
Data cache size (KB)	The number of KB allocated for the data cache memory	KOQSRVD.DATACSZ
Procedure cache size (KB)	The number of KB allocated for the procedure cache	KOQSRVD.PROCCSZ
Error log size (bytes)	The number of bytes in the error log file	KOQSRVD.ERRLOGSZ

Tip: Double-click anywhere in the Addition Server Properties group widget to open the Server Detail workspace in the Tivoli Enterprise Portal.

Server Properties group widget

The Server Properties group widget provides an HTML table that summarizes the properties of the server. For more details about the server, click in the group widget area to open the Server Statistics group widget.

The following table contains information about the KPIs in this group widget.

Table 249. KPIs in the Server Properties group widget

KPI	Description	Note
Name	The name of the SQL server	KOQSRVS.SERVERID
Version	The version of the SQL Server	KOQSRVS.SQLVER
Startup time	The time stamp that indicates the date and time that the SQL server was started	KOQSRVD.SRVSTARTT
Operating system type	The operating system for the SQL server	KOQSRVD.OSTYPE
Operating system version	The version of the operating system for the SQL server	KOQSRVD.OSVERSN

Procedure Buffer and Cache group widget

The Procedure Buffer and Cache group widget provides a group of volume gauges that summarizes the details of the buffer and cache size of the procedure.

The following table contains information about the KPIs in this group widget.

Table 250. KPIs in the Procedure Buffer and Cache group widget

KPI	Description	Note
Cache active (%)	The total size of the procedure cache in pages. The widget displays a warning status if the value is greater than or equal to 75% and less than 95%. The widget displays a critical status if the value is greater than or equal to 0% and less than 75%.	KOQSRVD.PCTPROCCA

Table 250. KPIs in the Procedure Buffer and Cache group widget (continued)

KPI	Description	Note
Cache used (%)	The percentage of the procedure cache that has procedures in it. The widget displays a warning status if the value is greater than or equal to 75% and less than 95%. The widget displays a critical status if the value is greater than or equal to 0% and less than 75%.	KOQSRVD.PCTPROCCU
Buffer Active (%)	The percentage of slots with a procedure that is executing. The widget displays a warning status if the value is greater than or equal to 75% and less than 95%. The widget displays a critical status if the value is greater than or equal to 0% and less than 75%.	KOQSRVD.PCTPROCBA
Buffer Used (%)	The percentage of slots that has a procedure in them. The widget displays a warning status if the value is greater than or equal to 75% and less than 95%. The widget displays a critical status if the value is greater than or equal to 0% and less than 75%.	KOQSRVD.PCTPROCBU

Tip: Double-click anywhere in the Procedure Buffer and Cache group widget to open the Server Detail workspace in the Tivoli Enterprise Portal.

Server Statistics Since Startup group widget

The Server Statistics Since Startup group widget provides a grid widget that summarizes the statistics of the server since start up.

The following table contains information about the KPIs in this group widget.

Table 251. KPIs in the Server Statistics Since Startup group widget

KPI	Description	Note
Statistics Name	The name of the statistic	KOQSTATD.STATNAME
Average Per Second	The average value per second for the statistic since the SQL server was started	KOQSTATD.STATAVGS

Table 251. KPIs in the Server Statistics Since Startup group widget (continued)

KPI	Description	Note
Maximum Seen	The greatest value per second for the statistic since the SQL server was started	KOQSTATD.STATMAX
Minimum Seen	The smallest value per second for the statistic since the SQL server was stated	KOQSTATD.STATMIN

Tip: Double-click anywhere in the Server Statistics Since Startup group widget to open the Server Statistics workspace in the Tivoli Enterprise Portal.

Server Performance group widget

The Server Performance group widget provides a group of volume gauges and HTML table that summarizes the details of the server performance.

The following table contains information about the KPIs in this group widget.

Table 252. KPIs in the Server Performance group widget

KPI	Description	Note
Active connections	The number of active connections	KOQSTATS.LOGONCURR
Page life expectancy	The duration (in seconds) for which an SQL Server block or page is stored in the memory	KOQSRVS.PGLFEXPECT
Logins per second	The number of login operations that started per second in the current interval	KOQSTATS.LOGINPSEC
Logouts per second	Total number of logout operations started per second	KOQSTATS.LOGOUTPSEC
Cache hit ratio (%)	The current ratio of data cache hits to total requests. The widget displays a warning status when the value is less than 90% and greater than or equal to 70%. The widget displays a critical status when the value is less than 70% and greater than or equal to 0%.	KOQSRVS.CACHHITR
CPU utilization (%)	The percentage of CPU time the SQL server process is using on the host. The widget displays a critical status when the value is greater than or equal to 90%.	KOQSRVS.PCTCPU

Table 252. KPIs in the Server Performance group widget (continued)

KPI	Description	Note
Maximum logons active	The percentage of active connections of the maximum number of active connections that are allowed for the SQL server. The widget displays a critical status when the value is greater than 90%.	KOQSTATS.LOGONPCT

Cache Hit Ratio (history) group widget

The Cache Hit Ratio (history) group widget provides a line graph that gives the details of the cache hit ratio during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Server Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 253. KPIs in the Cache Hit Ratio (history) group widget

KPI	Description	Note
Cache Hit Ratio (%)	The current ratio of data cache hits to total requests. The widget displays a warning status when the value is less than 90% and greater than or equal to 70%. The widget displays a critical status when the value is less than 70% and greater than or equal to 0%.	KOQSRVS.CACHHITR

Tip: Double-click anywhere in the Cache Hit Ratio (history) group widget to open the Server Summary workspace in the Tivoli Enterprise Portal.

Cache Used (history) group widget

The Cache Used (history) group widget provides a line graph that gives details of the cache used during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Server Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 254. KPIs in the Cache Used (history) group widget

KPI	Description	Note
Data	The number of kilobytes (KB) allocated for the data cache memory	KOQSRVS.DATACHSZ
Procedure	The number of kilobytes (KB) allocated for the procedure cache	KOQSRVS.PROCCHSZ

Tip: Double-click anywhere in the Cache Used (history) group widget to open the Server Summary workspace in the Tivoli Enterprise Portal.

Memory Used (history) group widget

The Memory Used (history) group widget provides a line graph that gives the details of the memory used during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Server Summary attribute group.

The following table contains information about the KPIs in this group widget.

Table 255. KPIs in the Memory Used (history) group widget

KPI	Description	Note
Memory used (%)	The total amount of dynamic memory that the server is using currently	KOQSRVS.TOTSVRMEM

Tip: Double-click anywhere in the Memory Used group (history) widget to open the Server Summary workspace in the Tivoli Enterprise Portal.

Memory Used By Server Components group widget

The Memory Used By Server Components group widget provides an HTML table that gives details of the memory used by server components.

The following table contains information about the KPIs in this group widget.

Table 256. KPIs in the Memory Used By Server Components group widget

KPI	Description	Note
Target server (MB)	The total amount of dynamic memory that the server is consuming in megabytes	KOQMEMGR.TARGMEM
SQL cache (MB)	The total amount of dynamic memory that the server is using for the dynamic SQL cache in megabytes	KOQMEMGR.SQLCAMEM
Connection (MB)	The total amount of dynamic memory the server is using for maintaining connections in megabytes	KOQMEMGR.CONMEM
Optimizer (MB)	The total amount of dynamic memory the server is using for query optimization in megabytes	KOQMEMGR.OMEMKB
Lock memory (MB)	The total amount of dynamic memory the server is using for locks in megabytes	KOQMEMGR.LKMEMKB

Tip: Double-click anywhere in the Memory Used By Server Components group widget to open the Server Summary workspace in the Tivoli Enterprise Portal.

Connection Activity (history) group widget

The Connection Activity (history) group widget provides a line graph that gives details of the connection activity during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Statistics Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 257. KPIs in the Connection Activity (history) group widget

KPI	Description	Note
Current	The number of active connections	KOQSTATS.LOGONCURR
Maximum	The maximum number of active connections that are allowed for the SQL server	KOQSTATS.LOGONMAX

Tip: Double-click anywhere in the Connection Activity (history) group widget to open the Server Statistics workspace in the Tivoli Enterprise Portal.

Network Reads And Writes Per Second (history) group widget

The Network Reads And Writes Per Second (history) group widget provides a line graph that gives details of the network reads and writes per second during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Statistics Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 258. KPIs in the Network Reads And Writes Per Second (history) group widget

KPI	Description	Note
Write	The rate at which tabular data stream (TDS) packets are written to the network, in packets per second	KOQSTATS.NTWKWRRATE
Read	The rate at which tabular data stream (TDS) packets are read from the network, in packets per second	KOQSTATS.NTWKRDRATE

Tip: Double-click anywhere in the Network Reads And Writes Per Second (history) group widget to open the Server Statistics workspace in the Tivoli Enterprise Portal.

Physical Reads And Writes Per Second (history) group widget

The Physical Reads And Writes Per Second (history) group widget provides a line graph that gives details of the physical reads and writes per second during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Statistics Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 259. KPIs in the Physical Reads And Writes Per Second (history) group widget

KPI	Description	Note
Write	The average number of physical writes per second during the current interval	KOQSTATS.PHYWRPSEC

Table 259. KPIs in the Physical Reads And Writes Per Second (history) group widget (continued)

KPI	Description	Note
Read	The average number of physical reads per second during the current interval	KOQSTATS.PHYRDPSEC

Tip: Double-click anywhere in the Physical Reads And Writes Per Second (history) group widget to open the Server Statistics workspace in the Tivoli Enterprise Portal.

CPU Used group widget

The CPU Used group widget provides a volume gauge that gives details of the CPU use.

The following table contains information about the KPIs in this group widget.

Table 260. KPIs in the CPU Used group widget

KPI	Description	Note
Operating system	The percentage of CPU time that is used by all processes on the host. The widget displays a warning status if the value is greater than or equal to 80% and less than 90%. The widget displays a critical status when the value is greater than or equal to 90%.	KOQSRVS.PCTOSCPU
Application processes	The percentage of CPU time the SQL server application processes are using on the host.	KOQPRCS.APPCPUPCT
System processes	The percentage of CPU time the SQL server processes are using on the host.	KOQPRCS.SRVCPUPCT
IO operations	The percentage of time that is used for I/O operations during the current monitoring interval.	KOQSRVS.PCTCPUIO

Tip: Double-click anywhere in the CPU Used group widget to open the Server Summary workspace in the Tivoli Enterprise Portal.

Databases group widget

The Databases group widget provides a grid widget that lists the database names.

The following table contains information about the KPIs in this group widget.

Table 261. KPIs in the Databases group widget

KPI	Description	Note
Database name	The Database name	'KOQDBD.DBNAME

Database Properties group widget

The Database Properties group widget provides an HTML table that gives information about the database accessibility.

The following table contains information about the KPIs in this group widget.

Table 262. KPIs in the Database Properties group widget

KPI	Description	Note
Database owner	The SQL server-assigned user ID for the owner of the database	KOQDBD.OWNER
Database owner only access	Indicates whether the database has a status of DBO only	KOQDBD.DBOONLY
Single user access	Indicates whether the database has a status of single user	KOQDBD.SINGUSER
Read only access	Indicates whether the database has a status of read only	KOQDBD.READONLY
Access validation	Access validation of the database	KOQDBD.ACSVAL
Free space accounting suppressed	Indicates whether the free space accounting option is enabled for the database	KOQDBD.NOFREESPA

Tip: Double-click anywhere in the Database Properties group widget to open the Database Information workspace in the Tivoli Enterprise Portal.

Database Transaction group widget

The Database Transaction group widget provides an HTML table that gives information about the database transactions.

The following table contains information about the KPIs in this group widget.

Table 263. KPIs in the Database Transaction group widget

KPI	Description	Note
Long running transaction name	The long running transaction name	KOQDBD.LRTNAME
Long running transaction time (seconds)	The time for which the longest running transaction is active (in seconds)	KOQDBD.LRTTPS
Long running transaction process ID	The longest running transaction. The Long running transactions are transactions that are open for longer than the LongRunningTransColl standard collector parameter.	KOQDBD.LRTPID

Table 263. KPIs in the Database Transaction group widget (continued)

KPI	Description	Note
Write transaction per second	The number of transactions that are written to the database and committed in the last second. **Important:** The line chart is displayed only when the historical data collection is configured for the MS SQL Database Detail attribute group.	KOQDBD.WRTRANSEC

Tip: Double-click anywhere in the Database Transaction group widget to open the Database Information workspace in the Tivoli Enterprise Portal.

Database Used group widget

The Database Used group widget provides an HTML table that summarizes the status of the database space use.

The following table contains information about the KPIs in this group widget.

Table 264. KPIs in the Database Used group widget

KPI	Description	Note
Data size (MB)	The number of megabytes allocated for the data only segments of the database	KOQDBD.DBSIZE
Aggregate data free space (MB)	The number of megabytes of free space for the database	KOQDBD.DBFREE
Database growth (%)	The percentage of growth for the database from the last sample to the current sample	KOQDBD.DBGRWTHPCT
Data maximum growth (MB)	The maximum size to which the database can grow in megabytes	KOQDBD.DBMAXGRSZ

Tip: Double-click anywhere in the Database Used group widget to open the Database Information workspace in the Tivoli Enterprise Portal.

Log Used group widget

The Log Used group widget provides a grid widget that summarizes the status of the log space use.

The following table contains information about the KPIs in this group widget.

Table 265. KPIs in the Log Used group widget

KPI	Description	Note
Log size (MB)	The number of megabytes allocated for the transaction log for the database	KOQDBD.LOGSIZE
Log free space (MB)	The number of megabytes of free space in the transaction log for the database	KOQDBD.LOGFREE

Table 265. KPIs in the Log Used group widget (continued)

KPI	Description	Note
Log growths	The total number of times that the database transaction logs expanded since the SQL Server was started	KOQDBD.LOGGRTH
Log maximum growths (MB)	The maximum size to which the log can grow in megabytes	KOQDBD.LOGMAXGRSZ

Tip: Double-click anywhere in the Log Used group widget to open the Database Information workspace in the Tivoli Enterprise Portal.

Processes group widget

The Processes group widget provides an HTML table that summarizes the details of the server processes.

The following table contains information about the KPIs in this group widget.

Table 266. KPIs in the Processes group widget

KPI	Description	Note
Processes	The number of processes	KOQPRCS.NUMPROCESS
Log suspended	The number of processes with a status of log suspend. The widget displays a warning status if the value is greater than or equal to 1.	KOQPRCS.NUMLOGSUS

Database Recovery group widget

The Database Recovery group widget provides an HTML table that gives information about the recovery methods.

The following table contains information about the KPIs in this group widget.

Table 267. KPIs in the Database Recovery group widget

KPI	Description	Note
Page verify	The option that identifies and notifies incomplete I/O transactions that occurred because of disk I/O errors. The possible values are None, TornPageDetection, and Checksum.	KOQDBD.PAGEVERIFY
Recovery model	The method that is used to maintain the transaction log. The three types of recovery models include Simple, Full, and Bulk-logged.	KOQDBD.RECOVMODEL

Tip: Double-click anywhere in the Database Recovery group widget to open the Database Information workspace in the Tivoli Enterprise Portal.

Database Resources group widget

The Database Resources group widget provides an HTML table that gives information about the database resources.

The following table contains information about the KPIs in this group widget.

Table 268. KPIs in the Database Resources group widget

KPI	Description	Note
Device count	The number of devices that are allocated for the database	KOQDBD.NUMDEVICES
Table count	The number of tables that exist in the database	KOQDBD.TABLECNT

Tip: Double-click anywhere in the Database Resources group widget to open the Database Information workspace in the Tivoli Enterprise Portal.

Server Details group widget

The Server Details group widget provides a group of HTML table and volume gauge that summarizes the details of the server.

The following table contains information about the KPIs in this group widget.

Table 269. KPIs in the Server Details group widget

KPI	Description	Note
Procedure buffer and cache	The procedure and buffer cache. The widget displays a warning status if one of the following values are true: • Procedure Cache Percent Active is greater than or equal to 75% and less than 95%. • Procedure Cache Percent Used is greater than or equal to 75% and less than 95%. • Procedure Buffers Percent Active is greater than or equal to 75% and less than 95%. • Procedure Buffers Percent Used is greater than or equal to 75% and less than 95%. The widget displays a critical status if one of the following values are true: • Procedure Cache Percent Active is greater than or equal to 0.00% and less than 75%. • Procedure Cache Percent Used is greater than or equal to 0.00% and less than 75%. • Procedure Buffers Percent Active is greater than or equal to 0.00% and less than 75%. • Procedure Buffers Percent Used is greater than or equal to 0.00% and less than 75%.	KOQSRVD.PCTPROCCA + KOQSRVD.PCTPROCBU + KOQSRVD.PCTPROCCU + KOQSRVD.PCTPROCBA

Table 269. KPIs in the Server Details group widget (continued)

KPI	Description	Note
Cache average free scan	The average number of buffers that are scanned by the LazyWriter when the LazyWriter searches the data cache for an unused buffer to replenish the free buffer pool. The widget displays a warning status if the value is greater than 10 and less than 15. The widget displays a critical status if the value is greater than or equal to 15.	KOQSRVS.CACHAVGFCN
Cache maximum free page scan	The maximum value for the number of buffers that are scanned by the LazyWriter when the LazyWriter searches the data cache for an unused buffer to replenish the free buffer pool. The widget displays a warning status if the value is greater than 5 and less than 15. The widget displays a critical status if the value is greater than or equal to 15.	KOQSRVS.CACHMAXFP
Client count used (%)	The number of client workstations that are currently connected to the database server and returns the ratio percentage of the number of possible connections. The widget displays a warning status if the value is greater than 70% and less than or equal to 90%. The widget displays a critical status if the value is greater than 90%.	KOQSTATS..CLNTPCT

Tables group widget

The Tables group widget provides a status summary widget that gives information about the table statuses.

The following table contains information about the KPIs in this group widget.

Table 270. KPIs in the Tables group widget

KPI	Description	Note
Tables	The status of the tables. The widget displays a warning status if one of the following values are true: • Fragmentation is greater than 30 and less than or equal to 80. • Optimizer Statistics Age is greater than 180 and less than or equal to 1440. The widget displays a critical status if one of the values are true: • Fragmentation is greater than 80. • Optimizer Statistics Age is greater than 1440.	KOQTBLD.PCTFRAG + KOQTBLD.OPTSTATAGE

Table Status group widget

The Table Status group widget provides a grid widget that gives information about the table status.

The following table contains information about the KPIs in this group widget.

Table 271. KPIs in the Table Status group widget

KPI	Description	Note
Name	The table name.	KOQTBLD.UTBLNAME
Index Name	The table index name.	KOQTBLD.UIDXNAME
Index ID	The ID number of this table index.	KOQTBLD.IDXID
Row Count	The number of rows that are present in a database table.	KOQTBLD.NUMROWS
Fragmentation (%)	The degree of fragmentation for the table. The widget displays a warning status if the value is greater than 30% and less than or equal to 80%. The widget displays a critical status if the value is greater than 80%.	KOQTBLD.PCTFRAG
Space Used (MB)	The amount of space (in megabytes) used by the specified table.	KOQTBLD.SPCUSED

Table 271. KPIs in the Table Status group widget (continued)

KPI	Description	Note
Optimized Age (minutes)	The time (in minutes) since statistics were updated for the table. The widget displays a warning status if the value is greater than 180 and less than or equal to 1440. The widget displays a critical status if the value is greater than 1440.	KOQTBLD.OPTSTATAGE
File Table	Indicates whether the current table is a FileTable.	KOQTBLD.ISFILTBL

Fragmentation Trend (history) group widget

The Fragmentation Trend (history) group widget provides a line graph that displays the fragmentation trend of the tables during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Table Detail attribute group.
The following table contains information about the KPIs in this group widget.

Table 272. KPIs in the Fragmentation Trend (history) group widget

KPI	Description	Note
Fragmentation (%)	The degree of fragmentation for the table. The widget displays a warning status if the value is greater than 30% and less than or equal to 80%. The widget displays a critical status if the value is greater than 80%.	KOQTBLD.PCTFRAG

Tip: Double-click anywhere in the Fragmentation Trend (history) group widget to open the Table Detail workspace in the Tivoli Enterprise Portal.

Optimized Age Tables - Top 5 group widget

The Optimized Age Tables - Top 5 group widget provides a grid widget that gives statistics about optimization.

The following table contains information about the KPIs in this group widget.

Table 273. KPIs in the Optimized Age Tables - Top 5 group widget

KPI	Description	Note
Name	The table name	KOQTBLD.UTBLNAME

Table 273. KPIs in the Optimized Age Tables - Top 5 group widget (continued)

KPI	Description	Note
Optimized Age (minutes)	The time (in minutes) since statistics were updated for the table. The widget displays a warning status if the value is greater than 180 and less than or equal to 1440. The widget displays a critical status if the value is greater than 1440.	KOQTBLD.OPTSTATAGE
Database name	The Database name	KOQTBLD.UDBNAME

Tip: Double-click anywhere in the Optimized Age Tables - Top 5 group widget to open the Table Detail workspace in the Tivoli Enterprise Portal.

Fragmented Tables - Top 5 group widget

The Fragmented Tables - Top 5 group widget provides a grid widget that gives information about the fragmentation details.

The following table contains information about the KPIs in this group widget.

Table 274. KPIs in the Fragmented Tables - Top 5 group widget

KPI	Description	Note
Name	The table name.	KOQTBLD.UTBLNAME
Fragmentation (%)	The degree of fragmentation for the table. The widget displays a warning status if the value is greater than 30% and less than or equal to 80%. The widget displays a critical status if the value is greater than 80%.	KOQTBLD.PCTFRAG
Database name	The Database name.	KOQTBLD.UDBNAME

Tip: Double-click anywhere in the Fragmented Tables - Top 5 group widget to open the Table Detail workspace in the Tivoli Enterprise Portal.

Availability group widget

The Availability group widget provides an HTML table that summarizes the details of the availability of the groups.

The following table contains information about the KPIs in this group widget.

Table 275. KPIs in the Availability group widget

KPI	Description	Note
Total groups	The total number of availability groups that are available on the SQL Server instance in the current interval	KOQGRPSM.TOTGRP
Non healthy groups	The total number of availability groups that are currently not healthy in the current interval. The widget displays a critical status if the value is greater than or equal to 1	KOQGRPSM.TOTNHGRP
Non healthy replicas	The total number of non-healthy replicas in all the availability groups that are hosted on the local server instance. The widget displays a critical status if the value is greater than or equal to 1	'KOQAVRSU.TOTNHLRP
Non healthy databases	The total number of the availability databases that are non-healthy since the server startup. The widget displays a critical status if the value is greater than or equal to 1	KOQADBSU.TONHLDB

Errorlog Alert group widget

The Errorlog Alert group widget provides an HTML table that summarizes the details of the error logs.

The following table contains information about the KPIs in this group widget.

Table 276. KPIs in the Errorlog Alert group widget

KPI	Description	Note
Error log size (bytes)	The number of bytes in the error log file. The widget displays a warning status if the value is greater than or equal to 10000.	KOQPROBS.ERRLOGSZ
Highest severity level	The error message of the highest severity level that is encountered during the current interval	KOQPROBS.MAXSEVCURR

Availability Databases Status group widget

The Availability Databases Status group widget provides a grid widget that gives the status of the availability databases.

The following table contains information about the KPIs in this group widget.

Table 277. KPIs in the Availability Databases Status group widget

KPI	Description	Note
Name	The name of the availability database that is hosted by the SQL Server instance. The widget displays a warning status if the Database Status has one of the following values as true: • RESTORING • RECOVERING • RECOVERY_PENDING • SUSPECT The widget displays a critical status if the Database Status has one of the following values as true: • OFFLINE • EMERGENCY	KOQAVDBD.UDBNAME
State	Indicates the current state of the availability database	KOQAVDBD.DBSTAT
Group Name	The name of the availability group to which the availability database belongs	KOQAVDBD.GRPNAME
Local	Indicates whether the availability replica is hosted by the local SQL Server instance	KOQAVDBD.LOCAL
Role	Indicates whether the availability database is a primary or a secondary database. The widget displays a warning status if the value for Role is Resolving The widget displays a critical status if the value for Role is Invalid.	KOQAVDBD.ROLE
Synchronization State	The current synchronization state of the availability database replica. The widget displays a warning status if the value for Synchronization State is Synchronizing The widget displays a critical status if the value for Synchronization State is Not Synchronizing.	KOQAVDBD.SYNSTATE

Table 277. KPIs in the Availability Databases Status group widget (continued)

KPI	Description	Note
Synchronized Commit	Indicates whether the transaction commit is synchronized with the database replica. The widget displays a critical status if the value for Synchronized Commit is Not Synchronized.	KOQAVDBD.SYNCCOM

Tip: Double-click anywhere in the Availability Databases Status group widget to open the Availability Database Information workspace in the Tivoli Enterprise Portal.

Availability Groups group widget

The Availability Groups group widget provides a grid widget that gives details of the availability groups.

The following table contains information about the KPIs in this group widget.

Table 278. KPIs in the Availability Groups group widget

KPI	Description	Note
Name	The name of the availability group to which the replica belongs	KOQGRPDT.GRPNAME
Status	A summary about the synchronization health of all the replicas in the availability group	KOQGRPDT.SYNHEAL

Alert Details group widget

The Alert Details group widget provides a grid widget that gives the details of the alerts.

The following table contains information about the KPIs in this group widget.

Table 279. KPIs in the Alert Details group widget.

This table contains 3 columns, one for the KPI, one for the description, and one for the note.

KPI	Description	Note
Error ID	The ID of the error message	KOQPROBD.ERRORID
Error SPID	The ID of the session on which the event occurred	KOQPROBD.ERRSPID
Severity Level	Indicates the severity level of the error. The widget displays a critical status if the value is greater than 16.	KOQPROBD.SEVERITY
Message Text	The message text	KOQPROBD.UMSGTEXT

Table 279. KPIs in the Alert Details group widget (continued).

This table contains 3 columns, one for the KPI, one for the description, and one for the note.

KPI	Description	Note
Message Age (minutes)	The number of minutes that elapsed since the error occurred	KOQPROBD.MSGAGE
SQL State Code	The SQL state value for the error message	KOQPROBD.SQLSTATE
Message Time Stamp	The time stamp that indicates the date and time the error occurred	KOQPROBD.MSGTIME

Tip: Double-click anywhere in the Alert Details group widget to open the Errorlog Alerts workspace in the Tivoli Enterprise Portal.

Alert Properties group widget

The Alert Properties group widget provides an HTML table that gives details of the alert properties.

The following table contains information about the KPIs in this group widget.

Table 280. KPIs in the Alert Properties group widget

KPI	Description	Note
Error messages in current interval	The number of error messages that occurred during the current interval	KOQPROBS.NUMCURR
Error messages since start up	The number of error messages that occurred since the SQL server was started	KOQPROBS.NUMERRORS
Low severity errors	The number of error messages with a severity level of less than 17 that occurred since the SQL server was started	KOQPROBS.NUMOTHER
Highest severity time stamp	The time stamp that indicates the date and time the error message with the highest severity level occurred	KOQPROBS.MAXSEVTIME
Age of last error (minutes)	The number of minutes that elapsed since the last error message occurred	KOQPROBS.LASTERRAGE

Tip: Double-click anywhere in the Alert Properties group widget to open the Errorlog Alerts workspace in the Tivoli Enterprise Portal.

Availability Replica Status group widget

The Availability Replica Status group widget provides a grid widget that gives the status of the availability replicas.

The following table contains information about the KPIs in this group widget.

Table 281. KPIs in the Availability Replica Status group widget

KPI	Description	Note
ID	The ID of the replica	KOQAVARS.GRPID
Synchronization Health	The synchronization state of all the databases that are connected to the availability group on the availability replica	KOQAVARS.SYNCHLTH
Local	Indicates whether the replica is hosted by the local instance	KOQAVARS.LOCAL
Role	Indicates whether the replica is a primary or a secondary replica	KOQAVARS.ROLE
Operational State	The current operational state of the availability replica	KOQAVARS.OPSTATE
Connection State	The current connection state of the availability replica	KOQAVARS.CONSTATE
Recovery Health	Indicates whether the databases that are connected to the availability group are online or are being recovered after a failover	KOQAVARS.RECHLTH
Database Count	The total number of databases that are hosted by the availability replica	KOQAVARS.TOTDBS

Tip: Double-click anywhere in the Availability Replica Status group widget to open the Availability Replica Status workspace in the Tivoli Enterprise Portal.

Errors In Current Interval (history) group widget

The Errors In Current Interval (history) group widget provides a line graph that gives the details of the alert errors during a specified period.

The following table contains information about the KPIs in this group widget.

Table 282. KPIs in the Errors In Current Interval (history) group widget

KPI	Description	Note
Alert Count	The number of error messages that occurred during the current interval. The widget displays a critical status if the value is greater than or equal to 1.	KOQPROBS.NUMCURR

Tip: Double-click anywhere in the Errors In Current Interval (history) group widget to open the Errorlog Alerts workspace in the Tivoli Enterprise Portal.

Processes Blocked (history) group widget

The Processes Blocked (history) group widget provides line graph that gives the details of the blocked processes during a specified period.

Important: The line chart is displayed only when the historical data collection is configured for the MS SQL Process Summary attribute group.
The following table contains information about the KPIs in this group widget.

Table 283. KPIs in the Processes Blocked (history) group widget

KPI	Description	Note
Total	The number of processes	KOQPRCS.NUMPROCESS
Blocked	The number of processes that are being blocked	KOQPRCS.NUMBLOCK

Tip: Double-click anywhere in the Processes Blocked (history) group widget to open the Process Information workspace in the Tivoli Enterprise Portal.

Process Details group widget

The Process Details group widget provides a grid widget that gives the status of the processes.

The following table contains information about the KPIs in this group widget.

Table 284. KPIs in the Process Details group widget

KPI	Description	Note
ID	The ID of the process	KOQPRCD.PROCESSID
Status	Indicates the status of the process	KOQPRCD.STATUS
Database Name	The name of the database	KOQPRCD.DBNAME
Total CPU Time (seconds)	The amount of CPU time, in seconds, the process that is used on the host since the process started	KOQPRCD.CPU
Disk IO	The number of accesses to hard disk since the process started	KOQPRCD.IO
Memory Allocated (KB)	The number of kilobytes allocated for this process, which is based on the number of pages in the procedure cache	KOQPRCD.MEMORY
Blocking Process ID	The identifier for the process that is blocking a request for a lock	KOQPRCD.BLOCKID
Server User ID	The SQL server-assigned ID for the user that is running the process	KOQPRCD.SRVUSER
Client User ID	The ID of the user that is running the process	KOQPRCD.CLNTUSER
Duration	How long, in seconds, the process is running	KOQPRCD.PROCDURSEC
Command	The name of the command being ran by the process	KOQPRCD.CMDNAME

Tip: Double-click anywhere in the Process Details group widget to open the Process Information workspace in the Tivoli Enterprise Portal.

Process Summary group widget

The Process Summary group widget provides a stacked bar that gives the details of the processes in percentage.

The following table contains information about the KPIs in this group widget.

Table 285. KPIs in the Process Summary group widget

KPI	Description	Note
Infected	The number of processes with a status of infected.	KOQPRCS.NUMINFECT
Bad	The number of processes with a status of bad.	KOQPRCS.NUMBAD
Stopped	The number of processes with a status of stopped.	KOQPRCS.NUMSTOPPED
Lock sleep	The number of processes with a status of locksleep.	KOQPRCS.NUMSLPLCK
Other sleep	The number of processes with a status of being othersleep.	KOQPRCS.NUMSLPOTH
Blocked	The number of processes with a status of being blocked.	KOQPRCS.NUMBLOCK

Tip: Double-click anywhere in the Process Summary group widget to open the Process Information workspace in the Tivoli Enterprise Portal.

Server Services group widget

The Server Services group widget provides a status summary widget that summarizes the status of the SQL server services.

The following table contains information about the KPIs in this group widget.

Table 286. KPIs in the Server Services group widget

KPI	Description	Note
Services	The current service status. The widget displays a warning state if the value is equal to Degraded, Unknown, Pred Fail, Stopping, or Service. The widget displays a critical state if the value is equal to Error.	KOQSRVCD.SRVCSTATUS

Tip: Double-click anywhere in the Server Services group widget to open the Services Detail workspace in the Tivoli Enterprise Portal

IBM Tivoli Composite Application Manager for Microsoft Applications: Microsoft .NET Framework agent group widgets

Specific group widgets are available for Microsoft .NET Framework agents. Use these group widgets to monitor activity and system status.

.NET Framework group widget

The .NET Framework group widget provides a group of HTML table and Status Summary widget that provides a consolidated view of the overall status of .NET Framework.

The following table contains information about the KPIs in this group widget.

Table 287. KPIs in the .NET Framework group widget

KPI	Description	Note
.NET process status	The total number of handles that are currently opened by this process.	KQFNETPROC.HANDLE_COU
Time in GC (%)	The percentage of time that is spent in garbage collection.	KQFNETCLRM.TIME_IN_GC
.NET CLR exception status	The number of exceptions that are currently thrown per second. This attribute displays a non-zero value when the number of exceptions thrown per second is greater than 100.	KQFNETCLRE.OF_EXCEPS0
WCF status	The number of calls that currently failed in the service per second.	KQFSERMSER.CALLSFAIL0
ASP.NET applications status	The number of requests that are rejected because the request queue is full.	KQFASPNETF.REQUESTS_R
Midlife crisis status	Indicates whether the application is in a critical status or not. The widget displays a critical status when the following conditions are met: 1. Number of generation 2 objects collected as garbage is greater than one-tenth of the value of the generation 1 objects collected as garbage. 2. The value of the change in the heap size of generation 2 objects is less than zero.	KQFNETCLRM.GEN_2_COLL, KQFNETCLRM.GEN1COLL10, KQFNETCLRM.X

.NET Component Details group widget

The .NET Component Details group widget provides an HTML table that displays information about .NET Framework components that are found on the managed node.

The following table contains information about the KPIs in this group widget.

Table 288. KPIs in the .NET component details group widget

KPI	Description	Note
Name	The name of the .NET Framework component.	KQFNETVER.NETCOMP

Tip: Double-click anywhere in the .NET Component Details group widget to open the NET Components workspace in the Tivoli® Enterprise Portal.

Memory Details - Time in GC - Top 5 group widget

The Memory Details - Time in GC - Top 5 group widget provides a Bar chart widget that displays the names of five .NET applications that are using maximum memory and their time that is spent in garbage collection.

The following table contains information about the KPIs in this group widget.

Table 289. KPIs in the Memory Details - Time in GC - Top 5 group widget

KPI	Description	Note
Name	The name of the application.	KQFNETCLRM.NAME
Time in GC(%)	The percentage of time that is spent in garbage collection. The widget displays a critical status when the value is greater than or equal to 5.	KQFNETCLRM.TIME_IN_GC

Note: Click anywhere in the Memory Details - Time in GC - Top 5 group widget to open the Number of Garbage Collected Objects (history) group widget pop-up window.

Note: The attributes in the widget are displayed for all instances except for "_Global_"instance.

Number of Garbage Collected Objects (history) group widget

The Number of Garbage Collected Objects (history) group widget provides a line chart that displays information about the objects that are collected as garbage values during a specified period.

The following table contains information about the KPIs in this group widget.

Table 290. KPIs in the Number of Garbage Collected Objects (history) group widget

KPI	Description	Note
Gen 0 Collections	The number of times the generation 0 objects are collected as garbage during a specified period.	KQFNETCLRM.GEN_0_COLL
Gen 1 Collections	The number of times the generation 1 objects are collected as garbage during a specified period.	KQFNETCLRM.GEN_1_COLL
Gen 2 Collections	The number of times the generation 2 objects are collected as garbage during a specified period.	KQFNETCLRM.GEN_2_COLL

Note: The attributes in the pop-up are displayed only for the "_Global_" instance.

Note: Double-click anywhere in the Number of Garbage Collected Objects (history) group widget to open the NET CLR Memory Details workspace in the Tivoli® Enterprise Portal.

Midlife Crisis Status group widget

The Midlife Crisis Status group widget provides a grid widget that displays the processes that are in a crisis status when the application is running.

The following table contains information about the KPIs in this group widget.

Table 291. KPIs in the Midlife Crisis status group widget

KPI	Description	Note
Process	The name of the .NET application.	KQFNETCLRM.NAME
Crisis Status	Indicates whether the application is in a critical status or not. The widget displays a critical status when the following conditions are met: 1. Number of generation 2 objects collected as garbage is lesser than one-tenth value of the generation 1 objects collected as garbage. 2. The value of the change in the heap size of generation 2 objects is greater than zero.	KQFNETCLRM.GEN_2_COLL +KQFNETCLRM.GEN1COLL10 +KQFNETCLRM.X
Gen 2 Collections	The number of times the generation 2 objects are collected as garbage from the start of the application.	KQFNETCLRM.GEN_2_COLL
Change in Gen 2 Heap Size	The change in the heap size of the generation 2 objects.	KQFNETCLRM.X

Note: This group-widget shows data for all NET application instances except for "_Total_" instance.

Note: Double-click anywhere in the Midlife Crisis Status group widget to open the NET CLR Memory Details workspace in the Tivoli® Enterprise Portal.

ASP.NET Requests group widget

The ASP.NET Requests group widget provides a grid widget that displays the number of requests that are rejected when the request queue of the application is full.

The following table contains information about the KPIs in this group widget.

Table 292. KPIs in the ASP .NET Requests group widget

KPI	Description	Note
Version	The version of the application.	KQFASPNFI.VERASP3
Rejected	The number of requests that are currently rejected because the request queue is full. The widget displays a critical status when the value is greater than 0.	KQFASPNFI.REQUESTS_R

Table 292. KPIs in the ASP .NET Requests group widget (continued)

KPI	Description	Note
Current	The number of requests that are currently handled by the ASP.NET application. These requests are queued, running, or waiting to be written to the client. The widget displays a critical status when the value is greater than 5000.	KQFASPNFI.REQUESTS_C
Queued	The number of requests that are currently in the queue. The widget displays a critical status when the value is greater than 5000.	KQFASPNFI.REQUESTS_Q

Note: This group-widget shows data for all ASP.NET applications instances except for the "_Total_" instance.

Note: Click anywhere on the ASP.NET Requests group widget to open the ASP.NET Applications page.

.NET Process Details - Top 5 group widget

The .NET Process Details - Top 5 group widget provides a grid that summarizes the details of the five processes that are using maximum memory.

The following table contains information about the KPIs in this group widget.

Table 293. KPIs in the .NET Process Details - Top 5 group widget

KPI	Description	Note
Name	The name of the process.	KQFNETPROC.NAME
Handle Count	The total number of handles that are currently opened by this process. The widget displays a warning status when the value is greater than or equal to 2000 and less than 10000. The widget displays a critical status when the value is greater than or equal to 10000.	KQFNETPROC.HANDLE_COU
Private Bytes (MB)	This attribute displays the number of private bytes in MB.	KQFNETPROC.PRIVATE_B1
Virtual Bytes (MB)	This attribute displays the number of virtual bytes in MB.	KQFNETPROC.VIRTUAL_B1

Note: Click anywhere in the .NET Process Details - Top 5 group widget to open the .NET Process Memory page.

.NET CLR Exception Details group widget

The .NET CLR Exception Details group widget provides a grid widget that summarizes the exceptions that are thrown by a .NET application.

The following table contains information about the KPIs in this group widget.

Table 294. KPIs in the .NET CLR Exception Details group widget

KPI	Description	Note
Name	The name of the application.	KQFNETCLRE.NAME
Number of Exceptions Thrown	The total number of exceptions that are thrown since the application was started.	KQFNETCLRE.OF_EXCEPS_
Number of Exceptions Thrown Per Second	The number of exceptions that are currently thrown per second. The widget displays a critical status when the value is greater than or equal to 5% of the requests that are received per second.	KQFNETCLRE.OF_EXCEPS0

Note: This group widget shows exceptions data only for the applications whose Name attribute contains w3wp.

Note: Double-click anywhere in the .NET CLR Exception Details group widget to open the NET CLR Exception Details workspace in the Tivoli Enterprise Portal.

WCF Calls Details (Per Second) group widget

The WCF Calls Details (Per Second) group widget provides a grid widget that summarizes the status of the Windows Communication Foundation (WCF) service calls that are made by the application.

The following table contains information about the KPIs in this group widget.

Table 295. KPIs in the WCF Calls Details (Per Second) group widget

KPI	Description	Note
Name	The concatenated name of the service and the service base address.	KQFSERMSER.NAME
Calls	The number of calls that are currently made to the service per second.	KQFSERMSER.CALLSPERSE
Calls Failed	The number of calls that currently failed in the service per second. The widget displays a critical status when the value is greater than 0.	KQFSERMSER.CALLSFAILO
Calls Faulted	The number of calls that are made to the service that currently returned fault messages per second.	KQFSERMSER.CALLSFAULO

Tip: Double-click anywhere in the WCF Calls Details (Per Second) group widget to open the Service Model Service workspace in the Tivoli Enterprise Portal.

Applications - Requests Rejected - Top 5 group widget

The Applications - Requests Rejected - Top 5 group widget provides a grid that displays the top 5 ASP.NET applications whose **`Requests Rejected`** attribute crosses the prescribed threshold.

The following table contains information about the KPIs in this group widget.

Table 296. KPIs in the Applications - Requests Rejected - Top 5 group widget

KPI	Description	Note
Name	The instance name of the ASP.NET application.	KQFASPNETF.NAME
Requests Rejected	This attribute displays the number of requests that are rejected (because the application request queue is full) since the application was started.	KQFASPNETF.REQUESTS_R

Tip: The Applications - Requests Rejected - Top 5 group widget provides list of all ASP.NET application instances except for "_Total_" instance.

Note: Double-click anywhere in the Applications - Requests Rejected - Top 5 group widget to open the ASP.NET Applications Requests Status workspace in the Tivoli Enterprise Portal.

Requests Per Second (history) group widget

The Requests Per Second (history) group widget provides a line chart of the number of requests that are run per second for each ASP.NET application during a specified period.

The following table contains information about the KPIs in this group widget.

Table 297. KPIs in the Requests Per Second (history) group widget

KPI	Description	Note
Requests Per Second (history)	The number of requests that are run per second.	KQFASPNETF.REQUESTS_S

Tip: Double-click anywhere in the Requests Per Second (history) group widget to open the ASP.NET Applications Requests Status workspace in the Tivoli Enterprise Portal.

Total Errors Per Second (history) group widget

The Total Errors Per Second (history) group widget provides line chart of the total number of errors that currently occurred per second for each ASP.NET application during a specified period.

The following table contains information about the KPIs in this group widget.

Table 298. KPIs in the Total Errors Per Second (history) group widget

KPI	Description	Note
Total Errors Per Second (history)	The total number of errors that currently occurred per second during preprocessing, parsing, compilation, and runtime processing of a request.	KQFASPNEF2.ERRORS_TO0

Tip: Double-click anywhere in the Total Errors Per Second (history) group widget to open the ASP.NET Applications workspace in the Tivoli Enterprise Portal.

Requests Status group widget

The Requests Status group widget provides a grid that displays information about all the ASP.NET applications that are found on the managed node.

The following table contains information about the KPIs in this group widget.

Table 299. KPIs in the Requests Status group widget

KPI	Description	Note
Application	The instance name of the ASP.NET application.	KQFASPNETF.NAME
ASP.NET Version	The ASP.NET version of the application.	KQFASPNETF.VERASP3
Rejected	The total number of requests that are rejected because the request queue is full.	KQFASPNETF.REQUESTS_R
In Application Queue	The number of requests that are currently in the application request queue.	KQFASPNETF.REQUESTS_I
Executing	The number of requests that are currently running.	KQFASPNETF.REQUESTS_E
Failed	The total number of failed requests since the application was started.	KQFASPNETF.REQUESTS_F
Timed Out	The number of requests that timed out since the application was started.	KQFASPNETF.REQUESTS_T
Disconnected	The number of requests that are disconnected either because of communication error or user termination requests since the application was started.	KQFASPNETF.REQUESTS_D
Total	The total number of requests since the application was started.	KQFASPNETF.REQUESTS_2

Tip: The Requests Status group widget provides the list of all ASP.NET application instances except for the "_Total_" instance.

Note: Each row of the Requests Status group widget has separate line charts in the Total Errors Per Second (history) and Requests Per Second (history) group widgets. To see the line charts, click the respective row.

.NET Processes group widget

The .NET Processes group widget provides an HTML table that displays the names of one or more .NET processes that are running on the monitored server.

The following table contains information about the KPIs in this group widget.

Table 300. KPIs in the .NET Processes group widget

KPI	Description	Note
Process Name	The name of the .NET process.	KQFNETPROC.NAME

Bytes in All Heaps (history) group widget

The Bytes in All Heaps (history) group widget provides a line chart that displays the number of bytes in all the heap size counters during a specified period.

The following table contains information about the KPIs in this group widget.

Table 301. KPIs in the Bytes in All Heaps (history) group widget

KPI	Description	Note
Bytes in All Heaps (history)	The number of bytes in all the heap size counters during a specified period.	KQFNETCLRM.TIMESTAMP, KQFNETCLRM.BYTES_IN_1

Tip: Double-click anywhere in the Bytes in All Heaps (history) group widget to open the NET CLR Memory Leaks and Fragmentation workspace in the Tivoli Enterprise Portal.

Private Bytes (history) group widget

The Private Bytes (history) group widget provides a line chart that displays the number of private bytes in the heap size counters during a specified period.

The following table contains information about the KPIs in this group widget.

Table 302. KPIs in the Private Bytes (history) group widget

KPI	Description	Note
Private Bytes (history)	The number of private bytes in all the heap size counters during a specified period.	KQFNETPROC.TIMESTAMP, KQFNETPROC.PRIVATE_B1

Tip: Double-click anywhere in the Private Bytes (history) group widget to open the .NET Process Details workspace in the Tivoli Enterprise Portal.

Virtual Bytes (history) group widget

The Virtual Bytes (history) group widget provides a line chart that displays the number of virtual bytes in the heap size counters during a specified period.

The following table contains information about the KPIs in this group widget.

Table 303. KPIs in the Virtual Bytes (history) group widget

KPI	Description	Note
Virtual Bytes (history)	The number of virtual bytes in all the heap size counters during a specified period.	KQFNETPROC.TIMESTAMP, KQFNETPROC.VIRTUAL_B1

Tip: Double-click anywhere in the Virtual Bytes (history) group widget to open the .NET Process Details workspace in the Tivoli Enterprise Portal.

Time Spent by Process in Processor (%) (history) group widget

The Time Spent by Process in Processor (%) (history) group widget provides a line chart that displays the percentage of processor time that is taken by all the process threads to execute an instruction during a specified period.

The following table contains information about the KPIs in this group widget.

Table 304. KPIs in the Time Spent by Process in Processor (%) (history) group widget

KPI	Description	Note
Time Spent by Process in Processor (%) (history)	The percentage of processor time that is taken by all the process threads to execute an instruction.	KQFNETPROC.TIMESTAMP, KQFNETPROC.PROCESSOR_

Tip: Double-click anywhere in the Time Spent by Process in Processor (%) (history) group widget to open the .NET Process Details workspace in the Tivoli Enterprise Portal.

IBM Tivoli Composite Application Manager Agent for DB2 group widgets

Specific group widgets are available for the DB2 agent. Use these group widgets to monitor activity and system status.

DB2 summary group widget

The DB2 summary group widget provides a group widget that displays various summary key performance indicators (KPIs).

The DB2 summary group widget provides the information in the following table:

Table 305. DB2 summary group widget

KPI	Description	Note
Instance Status	The instance status	KUDSYSINFO.DB2STAT
DB lowest BP hit ratio (%)	The lowest buffer pool hit ratio percentage	KUDDBASE00.PLHR
DB highest failed SQL stmts (%)	The highest failed SQL statements percentage	KUDDBASE00.STMFP
Sort heap used (%)	The sort heap usage percentage	KUDSYSINFO.SHPUP
DB highest sort overflows (%)	The highest sort overflow percentage	KUDDBASE00.SOFP
DB highest table space (%)	The highest table space usage percentage	KUDTBLSPC.SUDTBP

Table 305. DB2 summary group widget (continued)

KPI	Description	Note
Buffer used (%)	The buffer usage percentage	KUDSYSINFO.BUSDP
Instance status	The instance name	KUDDBASE00.DBSTAT

Lock List In Use group widget

The Lock List In Use group widget provides a bullet chart that displays the top 5 databases with the highest lock list in use percentages.

The Lock List In Use group widget provides the information in the following table:

Table 306. Lock List In Use group widget

KPI	Description	Note
DB name	The database name	KUDDBASE01.DBNM
Lock list in use (%)	The lock list in use percentage	KUDDBASE01.LKLUP

Log utilization group widget

The Log utilization group widget provides a grid that displays the log utilization of the database.

The Log utilization group widget provides the information in the following table:

Table 307. Log utilization group widget

KPI	Description	Note
DB name	The database name	KUDLOG.DBNM
Log utilization	The log utilization	KUDLOG.TOTLUPCT

Reorg Required Table group widget

The Reorg Required Table group widget provides a grid that displays the number of tables that require reorganization.

The Reorg Required Table group widget provides the information in the following table:

Table 308. Reorg Required Table group widget

KPI	Description	Note
DB name	The database name	MTABLETEMP.UDBNAME
Reorg required tables number	The number of the table, its index, or both requiring reorganization	TOP(MTABLETEMP.REORGCOUNT, DESC, 1000) WHERE MTABLETEMP.REORGCOUNT>0

The Reorg Required Table group widget references the KPIs in the following table:

Table 309. Reorg Required Table group widget referenced KPIs

KPI	Description
MTABLETEMP.REORGCOUNT	The number of the required Reorg.

Sort Overflows group widget

The Sort Overflows group widget provides a bullet chart widget that displays the Top 5 Sort Overflows Percentages.

The Sort Overflows group widget provides the information in the following table:

Table 310. Sort Overflows group widget

KPI	Description	Note
DB name	The databases with the top 5 sort overflow percentages	KUDDBASE00.DBNM
Sort overflows (%)	The sort overflows percentage	KUDDBASE00.SOFP

Buffer Pool group widget

The Buffer Pool group widget provides a bullet chart that displays the five instances with the lowest buffer pool hit ratio.

The Buffer Pool group widget provides the information in the following table:

Table 311. Buffer Pool group widget

KPI	Description	Note
Instance Status	The status of the instance	KUDDBASE00. DBSTAT
DB name	The database name	KUDDBASE00. DBNM
Buffer pool hit ratio (%)	The Buffer pool hit ratio percentage	KUDDBASE00. PLHR

TableSpace group widget

The TableSpace group widget provides a grid widget that displays the top five table space utilization.

The TableSpace group widget provides the information in the following table:

Table 312. TableSpace group widget

KPI	Description	Note
DB name	The database name	KUDTBLSPC.DBNM
Tablespace name	The table space name	KUDTBLSPC.DBNM
Tablespace used (%)	The table space usage percentage	KUDTBLSPC.SUDTBP

DB2 Cluster summary group widget

The DB2 Cluster summary group widget provides a combination of status summary widgets and grids that display a summary of KPIs.

The DB2 Cluster summary group widget provides the information in the following table:

Table 313. DB2 Cluster summary group widget

KPI	Description	Note
DB2 Instance name	The instance name	KUDSYSINFO.ORIGINNODE

Table 313. DB2 Cluster summary group widget (continued)

KPI	Description	Note
Buffer used (%)	The percentage of the buffer that is used	KUDSYSINFO.BUSDP
DB2 Instance status	The status of the DB2 instance	KUDSYSINFO.DB2STAT
DB BP hit ratio	The database buffer pool hit ratio	KUDDBASE00.PLHR
DB Failed SQL Stmts (%)	The percentage of failed SQL statements	KUDDBASE00.STMFP
DB Dead Lock	The number of database dead locks	KUDDBASE00.DDLK
Top 5 Sort Heap Used	The instances with the top five sort heap usage	KUDSYSINFO.SHPUP
Top 5 Connections	The instances with the top five application connections	KUDDBASE00.APCCN
Instance status	The instance status	KUDDBASE00.DB2STAT
Instance name	The instance name	KUDDBASE00.ORIGINNODE
DB name	The database name	KUDDBASE00.DBNM

DB2 Cluster instance group widget

The DB2 Cluster instance group widget provides a grid widget that displays information about the DB2 cluster.

The DB2 Cluster instance group widget provides the information in the following table:

Table 314. DB2 Cluster instance group widget

KPI	Description	Note
Instance status	The status of the instance	KUDSYSINFO.DB2STAT
Buffer used (%)	The buffer usage percentage	KUDSYSINFO.BUSDP
CE used (%)	The percentage of FCM connection entries that are used during processing within the partitioned database server	KUDSYSINFO.CEUSDP
Instance name	The instance name	KUDSYSINFO.ORIGINNODE

DB2 Cluster BP Hit ratio tooltip group widget

The DB2 Cluster BP Hit ratio tooltip group widget provides a grid that displays performance information for an instance that is sorted by buffer poll hit ratio.

The DB2 Cluster BP Hit ratio tooltip group widget provides the information in the following table:

Table 315. DB2 Cluster BP Hit ratio tooltip group widget

KPI	Description	Note
DB2 Instance status	Instance name	KUDSYSINFO.ORIGINNODE
DB name	The database name	KUDDBASE00.DBNM
BP hit ratio (%)	The percentage of buffer pool hit ratio	KUDDBASE00.PLHR

Table 315. DB2 Cluster BP Hit ratio tooltip group widget (continued)

KPI	Description	Note
DB Failed SQL Stmts (%)	The percentage of failed sql statements	KUDDBASE00.STMFP
Connections	The number of application connections	KUDDBASE00.APCCN
Deadlock	The number of database dead locks	KUDDBASE00.DDLK

DB2 Cluster Failed SQL Statements tooltip group widget

The DB2 Cluster Failed SQL Statements tooltip group widget provides a grid that displays performance information about an instance that is sorted by the percentage of failed sql statements.

The DB2 Cluster Failed SQL Statements tooltip group widget provides the information in the following table:

Table 316. DB2 Cluster Failed SQL Statements tooltip group widget

KPI	Description	Note
DB2 Instance status	Instance name	KUDSYSINFO.ORIGINNODE
DB name	The database name	KUDDBASE00.DBNM
BP hit ratio (%)	The percentage of buffer pool hit ratio	KUDDBASE00.PLHR
DB Failed SQL Stmts (%)	The percentage of failed sql statements	KUDDBASE00.STMFP
Connections	The number of application connections	KUDDBASE00.APCCN
Deadlock	The number of database dead locks	KUDDBASE00.DDLK

DB2 Cluster list tooltip group widget

The DB2 Cluster list tooltip group widget provides a grid that displays the buffer usage percentage and the sort heap usage percentage of an instance.

The DB2 Cluster list tooltip group widget provides the information in the following table:

Table 317. DB2 Cluster list tooltip group widget

KPI	Description	Note
Instance name	The instance name	KUDSYSINFO.ORIGINNODE
Instance status	The status of the instance	KUDSYSINFO.DB2STAT
Buffer used (%)	The buffer usage percentage	KUDSYSINFO.BUSDP
Sort heap used (%)	The heap usage percentage	KUDSYSINFO.SHPUP

DB2 Cluster Deadlock tooltip group widget

The DB2 Cluster Deadlock tooltip group widget provides a grid that displays performance information about an instance that is sorted by the number of database deadlocks.

The DB2 Cluster Deadlock tooltip group widget provides the information in the following table:

Table 318. DB2 Cluster Deadlock tooltip group widget

KPI	Description	Note
DB2 Instance status	Instance name	KUDSYSINFO.ORIGINNODE
DB name	The database name	KUDDBASE00.DBNM
BP hit ratio (%)	The percentage of buffer pool hit ratio	KUDDBASE00.PLHR
DB Failed SQL Stmts (%)	The percentage of failed SQL statements	KUDDBASE00.STMFP
Connections	The number of application connections	KUDDBASE00.APCCN
Deadlock	The number of database dead locks	KUDDBASE00.DDLK

IBM Tivoli Composite Application Manager Agent for HTTP Servers group widgets

Specific group widgets are available for the HTTP agent. Use these group widgets to monitor activity and system status.

HTTP Status group widget

The HTTP Status group widget provides selected status metrics that are based on key performance indicators (KPIs) for the selected HTTP server.

The HTTP Status group widget provides the information in the following table:

Table 319. HTTP Status group widget

KPI	Description	Note
Web server status	The status of the Apache HTTP server	KHTAWEBSR.STATUS
Web server name	The name of the web server	KHTAWEBSR.SERVER_NAM
Request rate (/sec)	The rate at which HTTP requests were made	KHTAWEBSR.RQST_RATE
Failed requests rate (/min)	The average number (per minute) of failed requests	KHTAWEBSR.FAILED_RR
Server failures rate (/min)	The average number of internal server errors	KHTAWEBSR.SERVF_RT
Failed login rate (/min)	The average number of failed logins that occurred, per minute	KHTAWEBSR.FLR

HTTP Cluster Instance group widget

The HTTP Cluster Instance group widget provides a summary status of each server in an HTTP cluster.

The HTTP Cluster Instance group widget provides the information in the following table:

Table 320. HTTP Cluster Instance group widget

KPI	Description	Note
Instance ID	The name of the server subnode	KHTAWEBSR.ORIGINNODE
Status	The status of the Apache HTTP server	KHTAWEBSR.STATUS

HTTP Cluster Status group widget

The HTTP Cluster Status group widget provides a detailed status of each server in an HTTP cluster.

The HTTP Cluster Status group widget provides the information in the following table:

Table 321. HTTP Cluster Status group widget

KPI	Description	Note
Server	The name of the server subnode	KHTAWEBSR.ORIGINNODE
Status	The status of the Apache HTTP server	KHTAWEBSR.STATUS
Failed requests rate	The average number (per minute) of failed requests	KHTAWEBSR.FAILED_RR
Server failures rate	The average number of internal server errors	KHTAWEBSR.SERVF_RT
Failed login rate	The average number of failed logins that occurred, per minute	KHTAWEBSR.FLR

HTTP Cluster group widget

The HTTP Cluster group widget provides summary status counts for selected metrics for each server in an HTTP cluster.

The HTTP Cluster group widget provides the information in the following table:

Table 322. HTTP Cluster group widget

KPI	Description	Note
Server status: Critical server	Count of servers that is not running	Calculated by the following logical expression: COUNT (KHTAWEBSR.SERVER_NAM) WHERE KHTAWEBSR.STATUS=2 OR KHTAWEBSR.STATUS=-1 OR KHTAWEBSR.STATUS=0
Server status: Normal server	Count of servers that is running	Calculated by the following logical expression: COUNT (KHTAWEBSR.SERVER_NAM) WHERE KHTAWEBSR.STATUS=1
Failed requests rate: Critical failed requests rate	Count of servers that has a high failed requests rate	Customize by changing value of "Critical: >=" in "Failed Requests Rate (per min) Summary" section under **Instance Thresholds** tab in the group widget setting.

Table 322. HTTP Cluster group widget (continued)

KPI	Description	Note
Failed requests rate: Warning failed requests rate	Count of servers that has moderate failed requests rate	The failed requests rate (per min) between "Critical: >=" and "Normal: <="Failed Requests Rate(per min) Summary" section under**Instance Thresholds** tab in the group widget setting.
Failed requests rate: Normal failed requests rate	Count of servers that has low failed requests rate	Customize by changing value of "Normal: <=" in "Failed Requests Rate(per min) Summary" section under **Instance Thresholds** tab in the group widget setting.
Server failures rate: Critical Server Failures Rate	Count of servers that has a high server failures rate	Customize by changing value of "Critical: >=" in "Server Failures Rate(per min) Summary" section under **Instance Thresholds** tab in the group widget setting.
Server failures rate: Warning Server Failures Rate	Count of servers that has a moderate server failures rate	The server failures rate (per min) between "Critical: >=" and "Normal: <="Server Failures Rate(per min) Summary" section under **Instance Thresholds** tab in the group widget setting.
Server failures rate: Normal Server Failures Rate	Count of servers that has a low server failures rate	Customize by changing value of "Normal: <=" in "Server Failures Rate(per min) Summary" section under **Instance Thresholds** tab in the group widget setting.
Failed login rate: Critical Failed Login Rate	Count of servers that has a high failed login rate	Customize by changing value of "Critical: >=" in "Failed Login Rate(per min) Summary" section under **Instance Thresholds** tab in the group widget setting.
Failed login rate: Warning Failed Login Rate	Count of servers that has a moderate failed login rate	The failed login rate (per min) between "Critical: >=" and "Normal: <="Failed Login Rate(per min) Summary" section under **Instance Thresholds** tab in the group widget setting.
Failed login rate: Normal Failed Login Rate	Count of servers that has a low failed login rate	Customize by changing value of "Normal: <=" in "Failed Login Rate(per min) Summary" section under **Instance Thresholds** tab in the group widget setting.

The HTTP Cluster group widget references the KPIs in the following table:

Table 323. HTTP Cluster group widget referenced KPIs

KPI	Description
KHTAWEBSR.FAILED_RR	The average number (per minute) of failed requests
KHTAWEBSR.FLR	The average number of failed logins that occurred, per minute
KHTAWEBSR.SERVER_NAM	The name of the web server

Table 323. HTTP Cluster group widget referenced KPIs (continued)

KPI	Description
KHTAWEBSR.SERVF_RT	The average number of internal server errors

Failed Logins Rate (per min) group widget

The Failed Logins Rate (per min) group widget provides the rate of failed logins per minute for the last hour for the selected HTTP server. Enable historical data collection to obtain data for this group widget.

The Failed Logins Rate (per min) group widget provides the information in the following table:

Table 324. Failed Logins Rate (per min) group widget

KPI	Description	Note
Interval time	The date and time the Tivoli Enterprise Management Agent collected the data.	KHTAWEBST.SDATE_TIME
Failed login rate	The average number of failed logins that occurred per minute.	KHTAWEBST.FAILED_LG

Pages Failed Rate (per min) group widget

The Pages Failed Rate (per min) group widget provides the rate of failed pages per minute for the last hour for the selected HTTP server. Enable historical data collection to obtain data for this group widget.

The Pages Failed Rate (per min) group widget provides the information in the following table:

Table 325. Pages Failed Rate (per min) group widget

KPI	Description	Note
Interval time	The date and time the Tivoli Enterprise Management Agent collected the data	KHTAWEBST.SDATE_TIME
Failed pages rate	The rate (per minute) of pages that are not found or forbidden	KHTAWEBST.FAILED_PG

Request Rate (per sec) group widget

The Request Rate (per sec) group widget provides the rate of requests per second for the last hour for the selected HTTP server. Enable historical data collection to obtain data for this group widget.

The Request Rate (per sec) group widget provides the information in the following table:

Table 326. Request Rate (per sec) group widget

KPI	Description	Note
Time	The date and time the Tivoli Enterprise Management Agent collected the data	KHTAWEBST.SDATE_TIME
Request rate	The rate at which HTTP requests were made	KHTAWEBST.RQST_RATE

Web Sites Status group widget

The Web Sites Status group widget provides the status of websites hosted on the selected HTTP server.

The Web Sites Status group widget provides the information in the following table:

Table 327. Web Sites Status group widget

KPI	Description	Note
Web site name	The name of the website	KHTAWEBST.WS_NAM
Status	The status of the Apache website	KHTAWEBST.STATUS
Request rate (/sec)	The rate at which HTTP requests were made	KHTAWEBST.RQST_RATE
Failed pages rate (/min)	The rate (per minute) of pages that are not found or forbidden	KHTAWEBST.FAILED_PG
Server failures rate (/min)	The rate (per minute) at which Apache web server failures occurred during the collection interval	KHTAWEBST.SERVER_FL
Failed logins rate (/min)	The average number of failed logins that occurred per minute	KHTAWEBST.FAILED_LG

Transfer Rate (per sec) group widget

The Transfer Rate (per sec) group widget provides the transfer rate (per second) for the last hour for the selected HTTP server. Enable historical data collection to obtain data for this group widget.

The Transfer Rate (per sec) group widget provides the information in the following table:

Table 328. Transfer Rate (per sec) group widget

KPI	Description	Note
Interval time	The date and time the Tivoli Enterprise Management Agent collected the data	KHTAWEBST.SDATE_TIME
Transfer rate	The rate (per second) that KB are sent and received	KHTAWEBST.KILOBYTES

IBM Tivoli Composite Application Manager Extended Agent for Oracle Database group widgets

Specific group widgets are available for the Oracle Database Extended agent. Use these group widgets to monitor activity and system status.

Oracle summary group widget

The Oracle summary group widget provides various widgets that display a summary of the Oracle database instance.

The Oracle summary group widget provides the information in the following table:

Table 329. Oracle summary group widget

KPI	Description	Note
Instance active ratio (%)	The instance active ratio percentage	KRZACTINSR.ACTRATIO
Lowest buffer cache hit (%)	The lowest buffer cash hit percentage	KRZBUFCART.HITRATIO
Lowest free SGA (%)	The lowest free SGA percentage	KRZSGAOVEW.TOTFPT
Lowest free shared pool (%)	The lowest free shared pool percentage	KRZSGAOVEW.TOTFSPPT
Lowest free table space (%)	The lowest free table space percentage	KRZTSNLUE.PCIFMAX
Highest processes utilization (%)	The highest process utilization percentage	KRZRESLIMN.CURRATIO
Highest sessions utilization (%)	The highest sessions utilization percentage	KRZRESLIMN.RESNAME

TableSpace group widget

The TableSpace group widget provides a grid that displays information about the lowest five databases with the least table space usage.

The TableSpace group widget provides the information in the following table:

Table 330. TableSpace group widget

KPI	Description	Note
Table Space Name	The table space name	KRZTSNLUE.TNAME
Free To Maximum (%)	The percentage free before the maximum amount is reached	KRZTSNLUE.PCIFREE
Free To Allocated (%)	The percentage free before the allocated amount is reached	KRZTSNLUE.PCIFMAX

Instance Active Ratio Trend group widget

The Instance Active Ratio Trend group widget provides a chart that displays the trend over the last 24 hours.

The Instance Active Ratio Trend group widget provides the information in the following table:

Table 331. Instance Active Ratio Trend group widget

KPI	Description	Note
Time	The time	KRZACTINSR.TIMESTAMP
Active ratio (%)	The active ratio percentage	KRZACTINSR.ACTRATIO

Instance details group widget

The Instance details group widget provides various widgets that display detailed information about database instances.

The Instance details group widget provides the information in the following table:

Table 332. Instance details group widget

KPI	Description	Note
ID	The unique identifier of the instance	KRZACTINS.INSTNUM
Name	The name of the instance	KRZACTINS.INSTNAME
Server Name	The server name of the instance	KRZACTINS.DBHOSTNAME
Status	The status of the instance	KRZACTINS.STATUS
Buffer Cache Hit (%)	The buffer cache hit percentage	KRZBUFCART.HITRATIO
Dictionary Cache Hit (%)	The dictionary cache hit percentage	KRZDICCART.HITRATIO
PIN Hits (%)	The PIN hits percentage	KRZLIBCART.HITRATIO
Free SGA (%)	The free SGA percentage	KRZSGAOVEW.TOTFPT
Free Shared Pool (%)	The free shared pool percentage	KRZSGAOVEW.TOTFSPPT
Processes Utilization (%)	The process utilization percentage	KRZRESLIMN.CURRATIO
Sessions Utilization (%)	The sessions utilization percentage	KRZRESLIMN.CURRATIO
Total Errors Since Startup	The total number of errors since startup	KRZRDBLOGS.TOTERR
Total Warnings Since Startup	The total number of warnings since startup	KRZRDBLOGS.TOTWARN

IBM Tivoli Composite Application Manager Agent for SAP Applications group widgets

Specific group widgets are available for the SAP agent. Use these group widgets to monitor activity and system status.

Alerts Count by Class - Top 5 group widget

The Alerts Count by Class - Top 5 group widget provides a list of the top five alert count group by alert class.

The Alerts Count by Class - Top 5 group widget provides the information in the following table:

Table 333. Alerts Count by Class - Top 5 group widget

KPI	Description	Note
Alert class	A category that is associated with an alert, as defined by SAP system	KSAALERTS.ALRCLASS
Alert count	Count of all alerts group by alert class	TOP(COUNT(KSAALERTS.ALRCLASS),DESC,5)

The Alerts Count by Class - Top 5 group widget references the KPIs in the following table:

Table 334. Alerts Count by Class - Top 5 group widget referenced KPIs

KPI	Description
TEMPCOUNT.TYPECOUNT	Count of the alerts by alert class

Average Response Time by Application - Top 5 group widget

The Average Response Time by Application - Top 5 group widget provides a list of the average response time by application.

The Average Response Time by Application - Top 5 group widget provides the information in the following table:

Table 335. Average Response Time by Application - Top 5 group widget

KPI	Description	Note
Application name	The name of the application name or subapplication name	KSATRANS.UAPPLIC
Average response time (ms)	The average response time, in milliseconds, elapsed to process this transaction	TOP(KSATRANS.AVGRESPTM,DESC,5)
Average wait time (ms)	The average waiting time, in milliseconds, that an unprocessed transaction waited in the queue for a free work process	KSATRANS.AVGWAIT
Average DB request time (ms)	The average DB request time, in milliseconds, that elapsed for the database to process this transaction	KSATRANS.AVGDBREQTM

The Average Response Time by Application - Top 5 group widget references the KPIs in the following table:

Table 336. Average Response Time by Application - Top 5 group widget referenced KPIs

KPI	Description
KSATRANS.AVGRESPTM	The average response time, in milliseconds, elapsed to process this transaction

Buffer Hit Ratio - Lowest 5 group widget

The Buffer Hit Ratio - Lowest 5 group widget provides a list of the lowest five buffer hit ratios.

The Buffer Hit Ratio - Lowest 5 group widget provides the information in the following table:

Table 337. Buffer Hit Ratio - Lowest 5 group widget

KPI	Description	Note
Buffer name	A text string identifier or name for the buffer or memory area	KSABUFFER.NAME
Hit ratio	An identifier, expressed as a percentage, indicating the percentage of requests that were satisfied from the buffer	TOP(KSABUFFER.RATIO,ASC,5)
DB access quality	An indicator, expressed as a percentage, indicating the percentage of the buffer DB access quality	KSABUFFER.DBACCQ

The Buffer Hit Ratio - Lowest 5 group widget references the KPIs in the following table:

Table 338. Buffer Hit Ratio - Lowest 5 group widget referenced KPIs

KPI	Description
KSABUFFER.RATIO	An identifier, expressed as a percentage, indicating the percentage of requests that were satisfied from the buffer

SAP Status group widget

The SAP Status group widget provides a summary status of the SAP instance.

The SAP Status group widget provides the information in the following table:

Table 339. SAP Status group widget

KPI	Description	Note
Running instances	The total number of instances that are running in this system	KSASYS.TOTRUN
Down instances	The total number of application instances that are down in this system	KSASYS.TOTDWN
Server status	The status of this application instance, either running or not running	KSASYS.SRVSTAT
Work process count	Count of work process	Calculated by the following logical expression: COUNT(KSAPROCESS.STATUS)
Critical alerts count	Count of alerts that are critical	Calculated by the following logical expression: COUNT(KSAALERTS.SEVERITY) WHERE KSAALERTS.SEVERITY=2
Average buffer hit ratio (%)	Average buffer hit ratio	Calculated by the following logical expression: AVG(KSABUFFER.RATIO)

The SAP Status group widget references the KPIs in the following table:

Table 340. SAP Status group widget referenced KPIs

KPI	Description
KSAALERTS.SEVERITY	A number that represents the level of severity used to identify or exclude a category of alert
KSABUFFER.RATIO	An identifier, expressed as a percentage, indicating the percentage of requests that were satisfied from the buffer
KSAPROCESS.STATUS	The current state of the work process

Average Response Time by Transaction - Top 5 group widget

The Average Response Time by Transaction - Top 5 group widget provides a list of the top five average response times by transaction.

The Average Response Time by Transaction - Top 5 group widget provides the information in the following table:

Table 341. Average Response Time by Transaction - Top 5 group widget

KPI	Description	Note
Transaction name	The unicode name of transaction code or program	KSATRANS.UTCODE
Average response time (ms)	The average response time, in milliseconds, elapsed to process this transaction	TOP(KSATRANS.AVGRESPTM,DESC,5)
Average wait time (ms)	The average waiting time, in milliseconds, an unprocessed transaction waited in the queue for a free work process	KSATRANS.AVGWAIT
Average DB request time (ms)	The average DB request time, in milliseconds, elapsed for the database to process this transaction	KSATRANS.AVGDBREQTM

The Average Response Time by Transaction - Top 5 group widget references the KPIs in the following table:

Table 342. Average Response Time by Transaction - Top 5 group widget referenced KPIs

KPI	Description
KSATRANS.AVGRESPTM	The average response time, in milliseconds, elapsed to process this transaction

Average Response Time by User - Top 5 group widget

The Average Response Time by User - Top 5 group widget provides a list of the top five average response times by user.

The Average Response Time by User - Top 5 group widget provides the information in the following table:

Table 343. Average Response Time by User - Top 5 group widget

KPI	Description	Note
User name	The name of the user that is performing the transaction code or program	KSATRANS.USERID
Average response time (ms)	The average response time, in milliseconds, elapsed to process this transaction	TOP(KSATRANS.AVGRESPTM,DESC,5)
Average wait time (ms)	The average waiting time, in milliseconds, an unprocessed transaction waited in the queue for a free work process	KSATRANS.AVGWAIT
Average DB request time (ms)	The average DB request time, in milliseconds, elapsed for the database to process this transaction	KSATRANS.AVGDBREQTM

The Average Response Time by User - Top 5 group widget references the KPIs in the following table:

Table 344. Average Response Time by User - Top 5 group widget referenced KPIs

KPI	Description
KSATRANS.AVGRESPTM	The average response time, in milliseconds, elapsed to process this transaction

Available Work Process Status group widget

The Available Work Process Status group widget provides a count of available work processes with a status of waiting, free, or running.

The Available Work Process Status group widget provides the information in the following table:

Table 345. Available Work Process Status group widget

KPI	Description	Note
SUMMARY: Waiting	Count of the work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.STATUS='2'
SUMMARY: Free	Count of the work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.STATUS='1'
SUMMARY: Running	Count of the work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.STATUS='4'
DIA: Waiting Count	Count of the DIA work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='1' AND KSAPROCESS.STATUS='2'
DIA: Free Count	Count of the DIA work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='1' AND KSAPROCESS.STATUS='1'
DIA: Running Count	Count of the DIA work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='1' AND KSAPROCESS.STATUS='4'

Table 345. Available Work Process Status group widget (continued)

KPI	Description	Note
NWP: Waiting Count	Count of the NWP work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='0' AND KSAPROCESS.STATUS='2'
NWP: Free Count	Count of the NWP work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='0' AND KSAPROCESS.STATUS='1'
NWP: Running Count	Count of the NWP work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='0' AND KSAPROCESS.STATUS='4'
UPD: Waiting Count	Count of the UPD work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='2' AND KSAPROCESS.STATUS='2'
UPD: Free Count	Count of the UPD work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='2' AND KSAPROCESS.STATUS='1'
UPD: Running Count	Count of the UPD work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='2' AND KSAPROCESS.STATUS='4'
ENQ: Waiting Count	Count of the ENQ work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='3' AND KSAPROCESS.STATUS='2'
ENQ: Free Count	Count of the ENQ work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='3' AND KSAPROCESS.STATUS='1'
ENQ: Running Count	Count of the ENQ work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='3' AND KSAPROCESS.STATUS='4'
BTC: Waiting Count	Count of the BTC work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='4' AND KSAPROCESS.STATUS='2'
BTC: Free Count	Count of the BTC work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='4' AND KSAPROCESS.STATUS='1'
BTC: Running Count	Count of the BTC work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='4' AND KSAPROCESS.STATUS='4'
SPO: Waiting Count	Count of the SPO work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='5' AND KSAPROCESS.STATUS='2'
SPO: Free Count	Count of the SPO work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='5' AND KSAPROCESS.STATUS='1'
SPO: Running Count	Count of the SPO work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='5' AND KSAPROCESS.STATUS='4'
UP2: Waiting Count	Count of the UP2 work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='6' AND KSAPROCESS.STATUS='2'

Table 345. Available Work Process Status group widget (continued)

KPI	Description	Note
UP2: Free Count	Count of the UP2 work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='6' AND KSAPROCESS.STATUS='1'
UP2: Running Count	Count of the UP2 work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='6' AND KSAPROCESS.STATUS='4'
UNKNOWN: Waiting Count	Count of the UNKNOWN work processes with a waiting status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='7' AND KSAPROCESS.STATUS='2'
UNKNOWN: Free Count	Count of the UNKNOWN work processes with a free status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='7' AND KSAPROCESS.STATUS='1'
UNKNOWN: Running Count	Count of the UNKNOWN work processes with a running status	COUNT(KSAPROCESS.STATUS) WHERE KSAPROCESS.TYPE='7' AND KSAPROCESS.STATUS='4'

The Available Work Process Status group widget references the KPIs in the following table:

Table 346. Available Work Process Status group widget referenced KPIs

KPI	Description
KSAPROCESS.STATUS	The current state of the work process

IBM Tivoli Composite Application Manager for SOA Agent group widgets

Specific group widgets are available for the Business Process Management (BPM) or SOA component. Use these group widgets to monitor activity and system status.

Business process group widget

The Business process group widget provides a status summary of the business processes.

The following table contains information about the key performance indicators (KPIs) in this group widget:

Table 347. KPIs in the Business process group widget

KPI	Description	Note
Name	Process group name	KS4GRPSTAT.LABEL
Status	Process group status	KS4GRPSTAT.STATUS
Unavailable front end services	Number of unavailable front end services	KS4GRPSTAT.NUMUNFS
Volume	Message counts	KS4GRPSTAT.VOLUME
performance	Response time in seconds	KS4GRPSTAT.PERFORM

Important: The events in Event dashboards are filtered by selected agents in application components, but not by the business process group.

IBM Tivoli Composite Application Manager Agent for WebSphere Applications group widgets

Specific group widgets are available for the WebSphere Applications Server agent. Use these group widgets to monitor activity and system status.

WAS Instances group widget

The WAS Instances group widget provides a list with server status.

The WAS Instances group widget provides the information in the following table:

Table 348. WAS Instances group widget

KPI	Description	Note
Agent node	The server name subnode	KYNAPSRV.ORIGINNODE

WAS Cluster JVM CPU group widget

The WAS Cluster JVM CPU group widget provides a table with the JVM CPU usage of each server in a cluster.

The WAS Cluster JVM CPU group widget provides the information in the following table:

Table 349. WAS Cluster JVM CPU group widget

KPI	Description	Note
Instance ID	The server name subnode	KYNAPSRV.ORIGINNODE
Server	The server name	KYNAPSRV.SERVER_NAM
JVM CPU Used (%)	The percentage of the JVM CPU used during the interval	TOP(KYNAPSRV.AS_CPUP,DESC,1000)

The WAS Cluster JVM CPU group widget references the KPIs in the following table:

Table 350. WAS Cluster JVM CPU group widget referenced KPIs

KPI	Description
KYNAPSRV.AS_CPUP	The percentage of the JVM CPU used during the interval

WAS Cluster List group widget

The WAS Cluster List group widget provides a table with average response times and error rates for each server in a cluster.

The WAS Cluster List group widget provides the information in the following table:

Table 351. WAS Cluster List group widget

KPI	Description	Note
Average Response Time (ms)		AVG(KYNREQHIS.AVG_TIME)
Error Rate (%)	Thresholds: Normal, Warning, Critical	AVG(KYNREQHIS.ERR_RATE)

The WAS Cluster List group widget references the key performance indicators (KPIs) in the following table:

Table 352. WAS Cluster List group widget referenced KPIs

KPI	Description
KYNREQHIS.AVG_TIME	
KYNREQHIS.ERR_RATE	

WAS Cluster Request Completion group widget

The WAS Cluster Request Completion group widget provides a table with the worst request completion of each server in cluster.

The WAS Cluster Request Completion group widget provides the information in the following table:

Table 353. WAS Cluster Request Completion group widget

KPI	Description	Note
Instance ID	The server name subnode	REQUEST_COMPLETION_TEMP.ORIGINNODE
Server	The server name	REQUEST_COMPLETION_TEMP.SERVER_NAM
Request Detail	Request detail	REQUEST_COMPLETION_TEMP.REQ_DETAIL
Request Completion (%)	Request completion (%)	TOP(REQUEST_COMPLETION_TEMP.COMPL_PCT, ASC,1000)

The WAS Cluster Request Completion group widget references the KPIs in the following table:

Table 354. WAS Cluster Request Completion group widget referenced KPIs

KPI	Description
KYNREQHIS.ERR_RATE	Request completion (%)

WAS Cluster Request Response Time group widget

The WAS Cluster Request Response Time group widget provides a table with the highest average response time of each server in a cluster.

The WAS Cluster Request Response Time group widget provides the information in the following table:

Table 355. WAS Cluster Request Response Time group widget

KPI	Description	Note
Instance ID	The server name subnode	RES_TIME_TEMP.ORIGINNODE
Server	The server name	RES_TIME_TEMP.SERVER_NAM
Request Detail	Request detail	RES_TIME_TEMP.REQ_DETAIL
Avg Response Time (ms)	Average response time	TOP(RES_TIME_TEMP.C10,DESC,1000)

The WAS Cluster Request Response Time group widget references the KPIs in the following table:

Table 356. WAS Cluster Request Response Time group widget referenced KPIs

KPI	Description
RES_TIME_TEMP.C10	Average response time (ms)

WAS Cluster Server List group widget

The WAS Cluster Server List group widget provides a list with instance status and sorted by instance status.

The WAS Cluster Server List group widget provides the information in the following table:

Table 357. WAS Cluster Server List group widget

KPI	Description	Note
Instance ID	The server name subnode	KYNAPSRV.ORIGINNODE
Server	The name of the system on which the server is running	KYNAPSRV.SERVER_NAM
Status	The status of the WebSphere Application Server, Disconnected=0, Connected=1, TimedOut=2, and Unconfigured=100. There are three thresholds: • Normal=Connected=1 • Warning=Unconfigured=100 or TimedOut=2 • Critical=Disconnected=0	There are four server states: • Disconnected=0 • Connected=1 • TimedOut=2 • Unconfigured=100 Customize the thresholds with the corresponding digital values.
CPU Used (%)	The percentage of the JVM CPU used during the interval	KYNAPSRV.AS_CPUP

WAS Cluster Summary group widget

The WAS Cluster Summary group widget provides a table with the WebSphere Applications cluster summary status.

The WAS Cluster Summary group widget provides the information in the following table:

Table 358. WAS Cluster Summary group widget

KPI	Description	Note
Server status: Critical Servers	Count of servers that is disconnected	COUNT(KYNAPSRV.STATUS) WHERE KYNAPSRV.STATUS='0'
Server status: Warning Servers	Count of servers that is connecting timeout	COUNT(KYNAPSRV.STATUS) WHERE KYNAPSRV.STATUS='2' OR KYNAPSRV.STATUS='100'
Server status: Normal Servers	Count of servers that is connected	COUNT(KYNAPSRV.STATUS) WHERE KYNAPSRV.STATUS='1'
Average response time: Critical	Count of servers that has a high average response time	Customize by changing value of "Critical: >=" in "Avg Response Time (ms) Summary" section under **Instance Thresholds** tab in the group widget setting.

Table 358. WAS Cluster Summary group widget (continued)

KPI	Description	Note
Average response time: Warning	Count of servers that has a moderate average response time	The response time (ms) between "Normal: <=" and "Critical: >=" in "Avg Response Time (ms) Summary" section under **Instance Thresholds** tab in the group widget setting.
Average response time: Normal	Count of servers that has a low average response time	Customize by changing value of "Normal: <=" in "Avg Response Time (ms) Summary" section under **Instance Thresholds** tab in the group widget setting.
Request completion: Critical	Count of servers that has a low request completion	Customize by changing value of "Critical: <=" in "Request Completion (%) Summary" section under **Instance Thresholds** tab in the group widget setting.
Request completion: Warning	Count of servers that has a moderate request completion	The request completion (%) between "Normal: >=" and "Critical: <=" in "Request Completion (%) Summary" section under **Instance Thresholds** tab in the group widget setting.
Request completion: Normal	Count of servers that has a high request completion	Customize by changing value of "Normal: >=" in "Request Completion (%) Summary" section under **Instance Thresholds** tab in the group widget setting.
Server JVM CPU: Critical	Count of servers that has a high JVM CPU usage	Customize by changing value of "Critical: >=" in "JVM CPU (%) Summary" section under **Instance Thresholds** tab in the group widget setting.
Server JVM CPU: Warning	Count of servers that has a moderate JVM CPU usage	The JVM CPU usage between "Critical: >=" and "Normal: <=" in "JVM CPU (%) Summary" section under **Instance Thresholds** tab in the group widget setting.
Server JVM CPU: Normal	Count of servers that has a low JVM CPU usage	Customize by changing value of "Normal: <=" in "JVM CPU (%) Summary" section under **Instance Thresholds** tab in the group widget setting.
Top 5 Servers With Highest Average Response Time: Server Instance	The server name subnode	SUMMARY_RES_TIME_TEMP. ORIGINNODE
Top 5 Servers With Highest Average Response Time: Server Name	The server name	SUMMARY_RES_TIME_TEMP. SERVER_NAM
Top 5 Servers With Highest Average Response Time: Request Detail	Request detail	SUMMARY_RES_TIME_TEMP. REQ_DETAIL
Top 5 Servers With Highest Average Response Time: Avg Response Time (ms)	Average response time (ms)	TOP(SUMMARY_RES_TIME_TEMP. C10,DESC,5)

The WAS Cluster Summary group widget references the KPIs in the following table:

Table 359. WAS Cluster Summary group widget referenced KPIs

KPI	Description
KYNAPSRV.AS_CPUP	The percentage of the JVM CPU used during the interval
KYNAPSRV.STATUS	The status of the WebSphere Application Server. • Disconnected=0 • Connected=1 • TimedOut=2 • Unconfigured=100 Thresholds: • Normal=Connected=1 • Warning=Unconfigured=100 or TimedOut=2 • Critical=Disconnected=0
SUMMARY_REQUEST_ COMPLETION_TEMP.COMPL_PCT	Request completion (%)
SUMMARY_RES_TIME_TEMP.C10	Average response time (ms)

Datasources group widget

The Datasources group widget provides a table with data source information. The data source is not collected until the custom request monitoring is set to level 2. Set this monitoring level with the **Set_Application_Monitoring** command for the application in the IBM Tivoli Monitoring product.

The Datasources group widget provides the information in the following table:

Table 360. Datasources group widget

KPI	Description	Note
Average query proc time (ms): Data source name	Data source name	KYNDATAS.NAME
Average query proc time (ms): Avg query proc time	Average query processing Time (ms)	TOP(KYNDATAS.AVG_QRESP,DESC,5)
Average update proc time (ms): Datasource name	Data source name	KYNDATAS.NAME
Average update proc time (ms): Avg update proc time	Average update processing time (ms)	TOP(KYNDATAS.AVG_URESP,DESC,5)

The Datasources group widget references the KPIs in the following table:

Table 361. Datasources group widget referenced KPIs

KPI	Description
KYNDATAS.AVG_QRESP	Average query processing time (ms)
KYNDATAS.AVG_URESP	Average update processing time (ms)

Average DB Connection Pool Size - Top 5 group widget

The Average DB Connection Pool Size - Top 5 group widget provides a table with the top 5 average DB connection pool sizes.

The Average DB Connection Pool Size - Top 5 group widget provides the information in the following table:

Table 362. Average DB Connection Pool Size - Top 5 group widget

KPI	Description	Note
Data source name	The name of the data source	KYNDBCONP.NAME
Average pool size	The average size of the pool that is based on the number of connections	KYNDBCONP.POOL_SIZE

JVM GC (Last Hour) group widget

The JVM GC (Last Hour) group widget provides JVM garbage collection analysis data. Data for this widget is not collected until historical collection is enabled for the KPIs in the IBM Tivoli Monitoring product.

The JVM GC (Last Hour) group widget provides the information in the following table:

Table 363. JVM GC (Last Hour) Size group widget

KPI	Description	Note
KB free	The number of KB in the heap that were free at the end of the last garbage collection cycle during the interval	KYNGCACT.NUMB_FREE
KB used	The number of KB in the heap that were in use at the end of the last garbage collection cycle during the interval	KYNGCACT.IN_USE
GC rate (per min)	GC rate per minute	KYNGCACT.GC_RATE
Heap used (%)	The percentage of heap that is used at the end of interval	KYNGCACT.HEAP_USPCT

Worst Response Time - Top 5 group widget

The Worst Response Time - Top 5 group widget provides a list of the top 5 worst average response times.

The Worst Response Time - Top 5 group widget provides the information in the following table:

Table 364. Worst Response Time - Top 5 group widget

KPI	Description	Note
Request name	Request name	KYNREQUEST.REQ_NAME
Request detail	Request detail	KYNREQUEST.REQ_DETAIL

Table 364. Worst Response Time - Top 5 group widget (continued)

KPI	Description	Note
Response time (ms)	Average response time (ms)	KYNREQUEST.C10

WAS Status group widget

The WAS Status group widget provides a table with the WebSphere Applications Server summary status.

The WAS Status group widget provides the information in the following table:

Table 365. WAS Status group widget

KPI	Description	Note
Server status	The status of the WebSphere Application Server. Disconnected=0, Connected=1, TimedOut=2, Unconfigured=100. Thresholds: • Normal=Connected=1 • Warning=Unconfigured=100 or TimedOut=2 • Critical=Disconnected=0	There are four server states: • Disconnected=0 • Connected=1 • TimedOut=2 • Unconfigured=100 Customize the thresholds with the corresponding digital values.
Server status: Worst Avg response time (ms)	Worst average response time	TOP(KYNREQUEST.C10,DESC,1)
Server status: JVM memory used (KB)	JVM memory that is used	KYNAPSRV.MEM_SIZE_K WHERE KYNAPSRV.STATUS=1
JVM CPU usage: JVM CPU used (%)	The percentage of the JVM processor that is used during the interval	KYNAPSRV.AS_CPUP WHERE KYNAPSRV.STATUS=1
Conn pool usage: DB Conn pool used (%)	The average percentage of the connection pool that is in use	KYNDBCONP.PCT_USED
Heap usage: Heap used (%)	The percentage of heap that is used at the end of interval	KYNGCACT.HEAP_USPCT
Worst request completion (%)	Worst request completion (%)	TOP(KYNREQUEST. COMPL_PCT,ASC,1)

The WAS Status group widget references the KPIs in the following table:

Table 366. WAS Status group widget referenced KPIs

KPI	Description
KYNAPSRV.AS_CPUP	The percentage of the JVM processor that is used during the interval
KYNAPSRV.MEM_SIZE_K	The JVM used memory size in KB
KYNREQUEST.C10	Average response time (ms)
KYNREQUEST.COMPL_PCT	Request completion (%)

Average Thread Pool Size - Top 5 group widget

The Average Thread Pool Size - Top 5 group widget provides a list of the top 5 average thread pool sizes.

The Average Thread Pool Size - Top 5 group widget provides the information in the following table:

Table 367. Average Thread Pool Size - Top 5 group widget

KPI	Description	Note
Thread pool name	The thread pool name	KYNTHRDP.THRDP_NAME
Average pool size	The average number of threads in a pool	KYNTHRDP.POOL_SIZE

WebSphere Process Server dashboards

Specific dashboards are available for the WebSphere Applications Server component. Use these dashboards with predefined widgets to monitor activity and system status.

WebSphere Process Server Instances group widget

The WebSphere Process Server Instances group widget provides a list of instances that are sorted by instance status.

The WebSphere Process Server Instances group widget provides the information in the following table:

Table 368. WebSphere Process Server Instances group widget

KPI	Description	Note
Agent node	The server name subnode	KYNAPSRV.ORIGINNODE
Server status	The status of the WebSphere Process Server.	There are four server states: • Disconnected=0 • Connected=1 • TimedOut=2 • Unconfigured=100 Customize the thresholds with the corresponding digital values: • Normal=Connected=1 • Warning=Unconfigured=100 or TimedOut=2 • Critical=Disconnected=0

WebSphere Process Server Cluster JVM CPU group widget

The WebSphere Process Server Cluster JVM CPU group widget provides the JVM CPU usage of each server in the cluster.

The WebSphere Process Server Cluster JVM CPU group widget provides the information in the following table:

Table 369. WebSphere Process Server Cluster JVM CPU group widget

KPI	Description	Note
Instance ID	The server name subnode	KYNAPSRV.ORIGINNODE
Server	The server name	KYNAPSRV.SERVER_NAM
JVM CPU Used (%)	The percentage of the JVM CPU used during the interval	TOP(KYNAPSRV.AS_CPUP,DESC,1000)

The WebSphere Process Server Cluster JVM CPU group widget references the KPIs in the following table:

Table 370. WebSphere Process Server Cluster JVM CPU group widget referenced KPIs

KPI	Description
KYNAPSRV.AS_CPUP	The percentage of the JVM CPU used during the interval

WebSphere Process Server Cluster group widget

The WebSphere Process Server Cluster group widget provides the highest average request response time of each server in the cluster.

The WebSphere Process Server Cluster group widget provides the information in the following table:

Table 371. WebSphere Process Server Cluster group widget

KPI	Description	Note
Instance ID	The server name subnode	RES_TIME_TEMP.ORIGINNODE
Server	The server name	RES_TIME_TEMP.SERVER_NAM
Request Detail	Request Detail	RES_TIME_TEMP.REQ_DETAIL
Average Response Time (ms)	Average response time	TOP(RES_TIME_TEMP.C10,DESC,1000)

The WebSphere Process Server Cluster group widget references the KPIs in the following table:

Table 372. WebSphere Process Server Cluster group widget referenced KPIs

KPI	Description
RES_TIME_TEMP.C10	Average response time (ms)

WebSphere Process Server Cluster group widget

The WebSphere Process Server Cluster group widget provides the highest average service response time of each server in the cluster.

The WebSphere Process Server Cluster group widget provides the information in the following table:

Table 373. WebSphere Process Server Cluster group widget

KPI	Description	Note
Instance ID	The server name subnode	RES_TIME_TEMP.ORIGINNODE

Table 373. WebSphere Process Server Cluster group widget (continued)

KPI	Description	Note
Component name	Component name	KYNSVCOMEL.C_NAME
Element	Element	KYNSVCOMEL.ELEMENT
Average response time (ms)	Average response time (ms)	KYNSVCOMEL.AVG_RESP

The WebSphere Process Server Cluster group widget references the KPIs in the following table:

Table 374. WebSphere Process Server Cluster group widget referenced KPIs

KPI	Description
SERVICE_RESPONSE_TIME.AVG_RESP	Average response time (ms)

WebSphere Process Server Cluster Instance List group widget

The WebSphere Process Server Cluster Instance List group widget provides an instance list that is sorted by instance status.

The WebSphere Process Server Cluster Instance List group widget provides the information in the following table:

Table 375. WebSphere Process Server Cluster Instance List group widget

KPI	Description	Note
Instance ID	The server name subnode	KYNAPSRV.ORIGINNODE
Server	The name of the system on which the server is running	KYNAPSRV.SERVER_NAM
Status	The status of the WebSphere Process Server.	There are four server states: • Disconnected=0 • Connected=1 • TimedOut=2 • Unconfigured=100 Customize the thresholds with the corresponding digital values: • Normal=Connected=1 • Warning=Unconfigured=100 or TimedOut=2 • Critical=Disconnected=0
CPU Used (%)	The percentage of the JVM CPU used during the interval	KYNAPSRV.AS_CPUP

WebSphere Process Server Cluster summary group widget

The WebSphere Process Server Cluster summary group widget provides a summary status of the cluster.

The WebSphere Process Server Cluster summary group widget provides the information in the following table:

Table 376. WebSphere Process Server Cluster summary group widget

KPI	Description	Note
Server status: Critical Servers	Number of servers that are disconnected	COUNT(KYNAPSRV.STATUS) WHERE KYNAPSRV.STATUS='0'
Server status: Warning Servers	Number of servers that are connecting timeout	COUNT(KYNAPSRV.STATUS) WHERE KYNAPSRV.STATUS='2' OR KYNAPSRV.STATUS='100'
Server status: Normal Servers	Number of servers that are connected	COUNT(KYNAPSRV.STATUS) WHERE KYNAPSRV.STATUS='1'
Average request response time: Critical	Numbers of servers that have a high average request response time	Customize the KPI by changing the value of **Critical: >=** in the **Avg Request Response Time (ms) Summary** section under the **Instance Thresholds** tab in the group widget.
Average request response time: Warning	Numbers of servers that have a high moderate request response time	The response time (ms) between **Normal: <=** and **Critical: >=** in the **Avg Request Response Time (ms) Summary** section under the **Instance Thresholds** tab in the group widget.
Average request response time: Normal	Numbers of servers that have a high low request response time	Customize the KPI by changing the value of **Normal: >=** in the **Avg Request Response Time (ms) Summary** section under the **Instance Thresholds** tab in the group widget.
Average service response time: Critical	Number of servers that have a high average service response time	Customize the KPI by changing the value of **Critical: >=** in the **Avg Service Response Time (ms) Summary** section under the **Instance Thresholds** tab in the group widget.
Average service response time: Warning	Number of servers that have a high moderate service response time	The response time (ms) between **Normal: <=** and **Critical: >=** in the **Avg Service Response Time (ms) Summary** section under the **Instance Thresholds** tab in the group widget.
Average service response time: Normal	Number of servers that have a high low service response time	Customize the KPI by changing the value of **Normal: >=** in the **Avg Service Response Time (ms) Summary** section under the **Instance Thresholds** tab in the group widget.
Server JVM CPU: Critical	Number of servers that have a high JVM CPU usage	Customize the KPI by changing the value of **Critical: >=** in the **JVM CPU(%) Summary** section under the **Instance Thresholds** tab in the group widget.
Server JVM CPU: Warning	Number of servers that have a moderate JVM CPU usage	The JVM CPU usage between **Normal: <=** and **Critical: >=** in the **JVM CPU(%) Summary** section under the **Instance Thresholds** tab in the group widget.
Server JVM CPU: Normal	Number of servers that have a low JVM CPU usage	Customize the KPI by changing the value of **Normal: >=** in the **JVM CPU(%) Summary** section under the **Instance Thresholds**tab in the group widget.

Table 376. WebSphere Process Server Cluster summary group widget (continued)

KPI	Description	Note
Top 5 Servers With Highest Average Service Response Time: Server Instance	The server name subnode	TOP5_VALUES.ORIGINNODE
Top 5 Servers With Highest Average Response Time: Component Name	The component name	TOP5_VALUES.C_NAME
Top 5 Servers With Highest Average Response Time: Element	Element	TOP5_VALUES.ELEMENT
Top 5 Servers With Highest Average Response Time: Average Response Time (ms)	Average response time (ms)	TOP5_VALUES.AVG_RESP

The WebSphere Process Server Cluster summary group widget references the KPIs in the following table:

Table 377. WebSphere Process Server Cluster summary group widget referenced KPIs

KPI	Description
KYNAPSRV.AS_CPUP	The percentage of the JVM CPU used during the interval
KYNAPSRV.STATUS	The status of the WebSphere Process Server. • Disconnected=0 • Connected=1 • TimedOut=2 • Unconfigured=100 Thresholds: • Normal=Connected=1 • Warning=Unconfigured=100 or TimedOut=2 • Critical=Disconnected=0
SUMMARY_RES_TIME_TEMP.C10	Average response time (ms)

Average DB Connection Pool Size - Top 5 group widget

The Average DB Connection Pool Size - Top 5 group widget provides the top 5 average DB connection pool sizes.

The Average DB Connection Pool Size - Top 5 group widget provides the information in the following table:

Table 378. Average DB Connection Pool Size - Top 5 group widget

KPI	Description	Note
Data source name	The name of the data source	KYNDBCONP.NAME
Average pool size	The average size of the pool that is based on the number of connections	KYNDBCONP.POOL_SIZE

Worst Request Response Time - Top 5 group widget

The Worst Request Response Time - Top 5 group widget provides the top 5 worst request response times.

The Worst Request Response Time - Top 5 group widget provides the information in the following table:

Table 379. Worst Request Response Time - Top 5 group widget

KPI	Description	Note
Request name	Request name	KYNREQUEST.REQ_NAME
Request detail	Request detail	KYNREQUEST.REQ_DETAIL
Average response time (ms)	Average response time (ms)	KYNREQUEST.C10

Worst Service Error Rate - Top 5 group widget

The Worst Service Error Rate - Top 5 group widget provides the top 5 worst service error rates.

The Worst Service Error Rate - Top 5 group widget provides the information in the following table:

Table 380. Worst Service Error Rate - Top 5 group widget

KPI	Description	Note
Component name	Component name	KYNSVCOMEL.C_NAME
Element	Element	KYNSVCOMEL.ELEMENT
Error rate (per sec)	Error rate (per sec)	KYNSVCOMEL.ERR_RATE

Worst Service Response Time - Top 5 group widget

The Worst Service Response Time - Top 5 group widget provides the top 5 worst service response times.

The Worst Service Response Time - Top 5 group widget provides the information in the following table:

Table 381. Worst Service Response Time - Top 5 group widget

KPI	Description	Note
Component name	Component name	KYNSVCOMEL.C_NAME
Element	Element	KYNSVCOMEL.ELEMENT
Average response time (ms)	Average response time (ms)	KYNSVCOMEL.AVG_RESP

Average Thread Pool Size - Top 5 group widget

The Average Thread Pool Size - Top 5 group widget provides the top 5 average pool sizes.

The Average Thread Pool Size - Top 5 group widget provides the information in the following table:

Table 382. Average Thread Pool Size - Top 5 group widget

KPI	Description	Note
Thread pool name	The thread pool name	KYNTHRDP.THRDP_NAME
Average pool size	The average number of threads in the pool	KYNTHRDP.POOL_SIZE

WebSphere Process Server Status group widget

The WebSphere Process Server Status group widget provides a summary status of the server.

The WebSphere Process Server Status group widget provides the information in the following table:

Table 383. WebSphere Process Server Status group widget

KPI	Description	Note
Server status	The status of the WebSphere Process Server	There are four server states: • Disconnected=0 • Connected=1 • TimedOut=2 • Unconfigured=100 Customize the thresholds with the corresponding digital values: • Normal=Connected=1 • Warning=Unconfigured=100 or TimedOut=2 • Critical=Disconnected=0
Worst Avg request response time (ms)	Worst average request response time	TOP(KYNREQUEST.C10,DESC,1)

Table 383. WebSphere Process Server Status group widget (continued)

KPI	Description	Note
Worst Avg service response time (ms)	Worst average service response time	TOP(KYNSVCOMEL.AVG_RESP,DESC,1)
Worst service error rate (per sec)	Worst service error rate	TOP(KYNSVCOMEL.ERR_RATE,DESC,1)
JVM CPU usage: JVM CPU used (%)	The percentage of the JVM CPU used during the interval	KYNAPSRV.AS_CPUP WHERE KYNAPSRV.STATUS=1
Conn pool usage: DB Conn pool used (%)	The average percentage of the connection pool that is in use	KYNDBCONP.PCT_USED
Heap usage: Heap used (%)	The percentage of heap that is used at the end of interval	KYNGCACT.HEAP_USPCT

The WebSphere Process Server Status group widget references the KPIs in the following table:

Table 384. WebSphere Process Server Status group widget referenced KPIs

KPI	Description
KYNAPSRV.AS_CPUP	The percentage of the JVM CPU used during the interval
KYNAPSRV.MEM_SIZE_K	The JVM used memory size in Kbytes
KYNREQUEST.C10	Average request response time (ms)
KYNSVCOMEL.AVG_RESP	Average service response time (ms)
KYNSVCOMEL.ERR_RATE	Average service error rate (per sec)

JVM GC (Last Hour) group widget

The JVM GC (Last Hour) group widget displays JVM garbage collection analysis data. Data for this widget is not collected until historical collection is enabled for the key performance indicator (KPI) in the IBM Tivoli Monitoring product.

The JVM GC (Last Hour) group widget provides the information in the following table:

Table 385. JVM GC (Last Hour) group widget

KPI	Description	Note
Kbytes free	The number of Kbytes in the heap that were free at the end of the last garbage collection cycle during the interval	KYNGCACT.NUMB_FREE
Kbytes used	The number of Kbytes in the heap that were in use at the end of the last garbage collection cycle during the interval	KYNGCACT.IN_USE

Table 385. JVM GC (Last Hour) group widget (continued)

KPI	Description	Note
GC rate (per min)	GC rate per minute	KYNGCACT.GC_RATE
Heap used (%)	The percentage of heap that is used at the end of the interval	KYNGCACT.HEAP_USPCT

IBM Tivoli Composite Application Manager Agent for WebSphere DataPower Appliance group widgets

Specific group widgets are available for IBM WebSphere DataPower SOA Appliances. Use these group widgets to monitor activity and system status.

Ethernet Interface Received Throughput (Kb/s) - Top 5 group widget

The Ethernet Interface Received Throughput (Kb/s) - Top 5 group widget provides a graph of the top 5 received throughputs of the last 10 minutes for the Ethernet interface.

The Ethernet Interface Received Throughput (Kb/s) - Top 5 group widget provides the information in the following table:

Table 386. Ethernet Interface Received Throughput (Kb/s) - Top 5 group widget

KPI	Description	Note
Ethernet Interface Name	Name of the Ethernet interface	KBNDPSTAT6.NAME
Kb Received Per Second	The average received throughput (Kb/sec) in the last 10 minutes.	KBNDPSTAT6.TENMINUTES

Ethernet Interface Transmitted Throughput (Kb/s) - Top 5 group widget

The Ethernet Interface Transmitted Throughput (Kb/s) - Top 5 group widget provides a graph of the top 5 transmitted throughputs of the last 10 minutes for the Ethernet interface.

The Ethernet Interface Transmitted Throughput (Kb/s) - Top 5 group widget provides the information in the following table:

Table 387. Ethernet Interface Transmitted Throughput (Kb/s) - Top 5 group widget

KPI	Description	Note
Ethernet Interface Name	Name of the Ethernet interface	KBNDPSTAT5.NAME
Kb Transmitted Per Second	The average transmitted throughput (Kb/s) in the last 10 minutes.	KBNDPSTAT5.TENMINUTES

HTTP Mean Transaction Times (ms) - Top 5 group widget

The HTTP Mean Transaction Times (ms) - Top 5 group widget provides a graph of the top 5 HTTP mean transaction times.

The HTTP Mean Transaction Times (ms) - Top 5 group widget provides the information in the following table:

Table 388. HTTP Mean Transaction Times (ms) - Top 5 group widget

KPI	Description	Note
Proxy Name	Name of the proxy service	KBNDPSTAT3.PROXY
Mean Transaction Times (ms)	The mean transaction time over the last 10 minutes	KBNDPSTAT3.TENMINUTES

MQ Active Connections - Top 5 group widget

The MQ Active Connections - Top 5 group widget provides a table that displays the top 5 MQ active connections.

The MQ Active Connections - Top 5 group widget provides the information in the following table:

Table 389. MQ Active Connections - Top 5 group widget

KPI	Description	Note
Queue Manager	Name of the queue manager	KBNMQCON.QUEMGR
Domain Name	Name of the application domain	KBNMQCON.DOMAIN
Back-End Active Connections	Number of active connections for the back-end side	KBNMQCON.BACKACTCON
Front-End Active Connections	Number of active connections for the front-end side	KBNMQCON.FRNTACTCON

Service Memory Status (KB) - Top 5 group widget

The Service Memory Status (KB) - Top 5 group widget provides a graph with the top 5 memory usage services.

The Service Memory Status (KB) - Top 5 group widget provides the information in the following table:

Table 390. Service Memory Status (KB) - Top 5 group widget

KPI	Description	Note
Command	Name of the service	KBNSMSTAT.SERNAME
Memory Utilization (KB)	The peak memory usage by the service 1-5 minutes ago.	KBNSMSTAT.FIVEMIN

SQL Active Connections - Top 5 group widget

The SQL Active Connections - Top 5 group widget provides a list of the top 5 SQL active connections.

The SQL Active Connections - Top 5 group widget provides the information in the following table:

Table 391. SQL Active Connections - Top 5 group widget

KPI	Description	Note
SQL Data Source	Name of the SQL data source	KBNSQLCON.DTASRC
Domain Name	Name of the application domain	KBNSQLCON.DOMAIN
Active Connections	Number of active connections	KBNSQLCON.ACTCON

DataPower Status group widget

The DataPower Status group widget provides a summary of the DataPower appliance status.

The DataPower Status group widget provides the information in the following table:

Table 392. DataPower Status group widget

KPI	Description	Note
Firmware version	The firmware version of the DataPower appliance	KBNFIRMWAR.VERSION
System load (%)	The percentage of total load on the device during the measurement interval. A load above 90% indicates that the device is at or near load capacity.	KBNSYSTEMU.LOAD
Work List	The number of pending messages in the queue for processing by the appliance	KBNSYSTEMU.WORKLIST
CPU usage (%)	The average CPU usage of the monitored DataPower appliance in the last 10 seconds	KBNCPUUSAG.TENSECONDS
Memory usage (%)	The instantaneous memory usage as a percentage of the total memory	KBNMEMORYS.USAGE
Quiesced domains	The total number of the quiesced domains in the appliance	COUNT(KBNDSTATUS.QSTATE) where KBNDSTATUS.QSTATE='quiesced'
Inactive objects	The total number of inactive objects in the appliance.	COUNT(KBNDPSTA17.OPSTATE) where KBNDPSTA17.OPSTATE=2 AND KBNDPSTA17.ADMINSTATE=1
Ethernet interface status	The status of the Ethernet interfaces	COUNT(KBNDPSTAT4.STATUS) where KBNDPSTAT4.STATUS=1

The DataPower Status group widget references the key performance indicators (KPIs) in the following table:

Table 393. DataPower Status group widget referenced KPIs

KPI	Description
KBNDSTATUS.QSTATE	Indicates the quiescent state of the domain. Individually quiesced services within a domain are not reported here.
KBNDPSTA17.ADMINSTATE	Administrative state of the configuration object
KBNDPSTA17.OPSTATE	Operational state of the configuration object
KBNDPSTAT4.STATUS	The current link status of the interface. If there is no link, the interface does not respond to the network.

IBM Tivoli Composite Application Manager Agent for WebSphere MQ group widgets

Specific group widgets are available for the WebSphere MQ agent. Use these group widgets to monitor activity and system status.

Channel Connection Not Running - Latest 5 group widget

The Channel Connection Not Running - Latest 5 group widget provides a list of the latest five channel connections not running. The list is sorted in descending order of channel start date and time.

The Channel Connection Not Running - Latest 5 group widget provides the information in the following table:

Table 394. Channel Connection Not Running - Latest 5 group widget

KPI	Description	Note
Start date and time	The date and time at which the channel was started	QMCHAN_ST.CHSTADTTM
Channel name	Name of the channel	QMCHAN_ST.CHNAME
Connection name	Name of the connection	QMCHAN_ST.CONNAM
Status	Status of the channel	QMCHAN_ST.STATUS

MQ Cluster Channel Status group widget

The MQ Cluster Channel Status group widget provides a list of the cluster channel status with the channel type cluster sender or cluster receiver.

The MQ Cluster Channel Status group widget provides the information in the following table:

Table 395. MQ Cluster Channel Status group widget

KPI	Description	Note
Channel name	Name of the channel	QMCHAN_ST.CHNAME
Channel type	Type of the channel	QMCHAN_ST.CHLTYPE
Connection name	Name of the connection	QMCHAN_ST.CONNAM
Channel status	Status of the channel	QMCHAN_ST.STATUS
Server	Node name of the managed system	QMCHAN_ST.ORIGINNODE

MQ Cluster Queue Manager Status group widget

The MQ Cluster Queue Manager Status group widget provides a list of the cluster queue manager status.

The MQ Cluster Queue Manager Status group widget provides the information in the following table:

Table 396. MQ Cluster Queue Manager Status group widget

KPI	Description	Note
Cluster name	The name of the cluster to which the channel belongs	QMCH_DATA.CLUSTER
Server	The WebSphere MQ Monitoring agent-assigned name of the node on which the data for the queue manager originates	QMCH_DATA.ORIGINNODE
Queue Manager name	The name of the cluster queue manager	QMCH_DATA.CLUSQMGR
Queue Manager type	The function of the associated queue manager in the cluster	QMCH_DATA.CLQMTYPE
Suspend	Is the cluster queue manager suspended	TOP(QMCH_DATA.SUSPEND,ASC,1)
Channel name	The name of this channel	QMCH_DATA.CHNAME

The MQ Cluster Queue Manager Status group widget references the KPIs in the following table:

Table 397. MQ Cluster Queue Manager Status group widget referenced KPIs

KPI	Description
QMCH_DATA.SUSPEND	The status of cluster queue manager

XmitQ Messages Available group widget

The XmitQ Messages Available group widget provides a list of cluster transmission queue message available.

The XmitQ Messages Available group widget provides the information in the following table:

Table 398. XmitQ Messages Available group widget

KPI	Description	Note
Channel name	Name of the channel	QMCHAN_ST.CHNAME
Connection name	Name of the channel connection	QMCHAN_ST.CONNAM
Channel status	Status of the channel	QMCHAN_ST.STATUS
XmitQ Msg available	Number of messages on the transmission queue available to the channel for MQGET	QMCHAN_ST.XQMSGSA
Server	Node name of the managed system	QMCHAN_ST.ORIGINNODE

MQ Instances group widget

The MQ Instances group widget provides the instance list in a WebSphere MQ cluster.

The MQ Instances group widget provides the information in the following table:

Table 399. MQ Instances group widget

KPI	Description	Note
Server	The WebSphere MQ Monitoring agent-assigned name of the node on which the data for the queue manager originates	QMCURSTAT.ORIGINNODE
QMCURSTAT.QMSTATUS	The current execution status of the queue manager	QMCURSTAT.QMSTATUS

MQ Cluster List group widget

The MQ Cluster List group widget provides the detailed status of each queue manager in WebSphere MQ cluster.

The MQ Cluster List group widget provides the information in the following table:

Table 400. MQ Cluster List group widget

KPI	Description	Note
Server	The WebSphere MQ Monitoring agent-assigned name of the node on which the data for the queue manager originates	QMCURSTAT.ORIGINNODE
Status	The current execution status of the queue manager	QMCURSTAT.QMSTATUS
Channel initiator status	The status of the channel initiator reading	QMCURSTAT.CHINIT
Command server status	The status of the command server	QMCURSTAT.CMDSERV

MQ Cluster Status group widget

The MQ Cluster Status group widget provides the cluster queue manager status.

The MQ Cluster Status group widget provides the information in the following table:

Table 401. MQ Cluster Status group widget

KPI	Description	Note
Queue Manager status: Critical Queue Manager	Count of the queue managers that are quiescing, stopping, or stopped	Calculated by the following logical expression: COUNT(QMCURSTAT. QMSTATUS) WHERE QMCURSTAT.QMSTATUS=0 OR QMCURSTAT.QMSTATUS=3 OR QMCURSTAT.QMSTATUS=4
Queue Manager status: Warning Queue Manager	Count of the queue managers that are starting or n/a	Calculated by the following logical expression: COUNT(QMCURSTAT. QMSTATUS) WHERE QMCURSTAT.QMSTATUS=-1 OR QMCURSTAT.QMSTATUS=1
Queue Manager status: Normal Queue Manager	Count of the queue managers that are running or standby	Calculated by the following logical expression: COUNT(QMCURSTAT. QMSTATUS) WHERE QMCURSTAT.QMSTATUS=2 OR QMCURSTAT.QMSTATUS=5
Cluster Queue Manager status: SUSPEND Queue Manager	Count of the cluster queue managers that are suspended	Calculated by the following logical expression: COUNT(QMCH_DATA. SUSPEND) WHERE QMCH_DATA.SUSPEND=1
Cluster Queue Manager status: NOSUSPEND Queue Manager	Count of the cluster queue managers that are not suspended	Calculated by the following logical expression: COUNT(QMCH_DATA. SUSPEND) WHERE QMCH_DATA.SUSPEND=0
Cluster channel status: Channels not running	Count of the channels in cluster queue manager that are not running	Calculated by the following logical expression: COUNT(QMCHAN_ST. CHNAME) WHERE QMCHAN_ST.STATUS!=3 AND (QMCHAN_ST.CHLTYPE=8 OR QMCHAN_ST.CHLTYPE=9)

Table 401. MQ Cluster Status group widget (continued)

KPI	Description	Note
Cluster channel status: Channels in running	Count of the channels in cluster queue manager that are running	Calculated by the following logical expression: COUNT(QMCHAN_ST. CHNAME) WHERE QMCHAN_ST.STATUS!=3 AND (QMCHAN_ST.CHLTYPE=8 OR QMCHAN_ST.CHLTYPE=9)
Cluster XMITQ Message available: XMITQ with messages	Count of the cluster channels that have messages in the transmission queue	COUNT(QMCHAN_ST. CHNAME) WHERE QMCHAN_ST.XQMSGSA>0 AND QMCHAN_ST.CHLTYPE=9
Cluster XMITQ Message available: XMITQ with no messages	Count of the cluster channels that do not have messages in the transmission queue	Calculated by the following logical expression: COUNT(QMCHAN_ST. CHNAME) WHERE QMCHAN_ST.XQMSGSA=0 AND QMCHAN_ST.CHLTYPE=9

The MQ Cluster Status group widget references the KPIs in the following table:

Table 402. MQ Cluster Status group widget referenced KPIs

KPI	Description
QMCHAN_ST.CHNAME	Name of the channel
QMCH_DATA_UNIQ.SUSPEND	Is the cluster queue manager suspended
QMCURSTAT.QMSTATUS	The current execution status of the queue manager

Critical Errors - Latest 5 group widget

The Critical Errors - Latest 5 group widget provides details of the latest five critical errors with the message ID of AMQ9448, AMQ9409, AMQ9874, AMQ5008, and AMQ5053.

The Critical Errors - Latest 5 group widget provides the information in the following table:

Table 403. Critical Errors - Latest 5 group widget

KPI	Description	Note
Log time	Date and time when the error is logged	QMERRLOG_TOP.LOG_DTTM
Message ID	The identifier of the message in the queue manager's error log	QMERRLOG.MSG_ID
Message text	The text of the message in the queue manager's error log	QMERRLOG.UMSG_TEXT

The Critical Errors - Latest 5 group widget references the KPIs in the following table:

Table 404. Critical Errors - Latest 5 group widget referenced KPIs

KPI	Description
QMERRLOG.LOG_DTTM	The date and time of the sample

Get Inhabited Queues - Top 5 group widget

The Get Inhabited Queues - Top 5 group widget provides a list of the top five inhabited queues.

The Get Inhabited Queues - Top 5 group widget provides the information in the following table:

Table 405. Get Inhabited Queues - Top 5 group widget

KPI	Description	Note
Queue name	The name of the queue	QMQ_DATA.QNAME
Percentage full	The percentage of the queue	TOP(QMQ_DATA.QCURDEP,DESC,5)

The Get Inhabited Queues - Top 5 group widget references the KPIs in the following table:

Table 406. Get Inhabited Queues - Top 5 group widget referenced KPIs

KPI	Description
QMQ_DATA.QCURDEP	Current depth of the queue

Indoubt Channel Connections - Latest 5 group widget

The Indoubt Channel Connections - Latest 5 group widget provides a summary of the latest five indoubt channel connections.

The Indoubt Channel Connections - Latest 5 group widget provides the information in the following table:

Table 407. Indoubt Channel Connections - Latest 5 group widget

KPI	Description	Note
Channel name	Name of the channel	QMCHAN_ST.CHNAME
Connection name	Name of the channel connection	QMCHAN_ST.CONNAM
Status	Status of the channel	QMCHAN_ST.STATUS

Indoubt Channel Connections - Latest 5 group widget

The Indoubt Channel Connections - Latest 5 group widget provides details of the latest five indoubt channel connections.

The Indoubt Channel Connections - Latest 5 group widget provides the information in the following table:

Table 408. Indoubt Channel Connections - Latest 5 group widget

KPI	Description	Note
Start date and time	Start date and time	QMCHAN_ST.LSTMSGDTTM
Channel name	Name of the channel	QMCHAN_ST.CHNAME
Connection name	Name of the channel connection	QMCHAN_ST.CONNAM
Status	Status of the channel	QMCHAN_ST.STATUS

Queues with oldest MSG age - Top 5 group widget

The Queues with oldest MSG age - Top 5 group widget provides a list of the top five queues with oldest message age.

The Queues with oldest MSG age - Top 5 group widget provides the information in the following table:

Table 409. Queues with oldest MSG age - Top 5 group widget

KPI	Description	Note
Queue name	The name of a queue that is managed by the selected queue manager	QMQ_QU_ST.QNAME
Oldest MSG Age	Age, in seconds, of the oldest message on the queue	QMQ_QU_ST.MSGAGE

Queue Manager Status group widget

The Queue Manager Status group widget provides the status of the Queue Manager.

The Queue Manager Status group widget provides the information in the following table:

Table 410. Queue Manager Status group widget

KPI	Description	Note
Queue manager status	WebSphere MQ Manager Status	QMCURSTAT.QMSTATUS
Queue manager status: Channel initiator status	Channel Initiator Status	QMCURSTAT.CHINIT
Queue manager status: Command server status	Command Server Status	QMCURSTAT.CMDSERV

Queue Depth Percentage - Top 5 group widget

The Queue Depth Percentage - Top 5 group widget provides a list of the top five queue depth percentages.

The Queue Depth Percentage - Top 5 group widget provides the information in the following table:

Table 411. Queue Depth Percentage - Top 5 group widget

KPI	Description	Note
Queue name	The name of a queue that is managed by the selected queue manager	QMQ_DATA.QNAME
Percentage full	Current depth full percentage	QMQ_DATA.QPCTFULL

MQ Status group widget

The MQ Status group widget provides summary information for the current Queue Manager.

The MQ Status group widget provides the information in the following table:

Table 412. MQ Status group widget

KPI	Description	Note
Queue manager status	The current execution status of the queue manager	QMCURSTAT.QMSTATUS
Channel initiator status	The status of the channel initiator reading	QMCURSTAT.CHINIT
Command server status	The status of the command server	QMCURSTAT.CMDSERV
High depth queue count	Count of queue with full percentage greater than high depth threshold (default: 80%)	Calculated by the following logical expression: COUNT(QMQ_DATA. QPCTFULL) WHERE QMQ_DATA.QPCTFULL> QMQ_DATA.QDEPTHRPCT
DLQ depth	The number of messages that are currently stored in this queue manager's dead-letter queue	QMANAGER.DLQ_DEPTH
XMITQ depth	The total message count in all transmission queues	Calculated by the following logical expression: SUM(QMQ_DATA. QCURDEP) WHERE QMQ_DATA.QUSAGE=1
Count of channels not running	Count of channel that is not running	Calculated by the following logical expression: COUNT(QMCHAN_ST.CHNAME) WHERE QMCHAN_ST.STATUS!=3
Count of indoubt channels	Count of indoubt channels	Calculated by the following logical expression: COUNT(QMCHAN_ST.CHNAME) WHERE QMCHAN_ST.INDOUBT=1
Count of server connections	Count of the channel with type of server connection	Calculated by the following logical expression: COUNT(QMCHAN_ST.CHLTYPE) WHERE QMCHAN_ST.CHLTYPE=7
Count of WMQ events not reset	Count of WebSphere MQ events not reset	Calculated by the following logical expression: COUNT(QMEVENTC.EVENT_NAME)

Table 412. MQ Status group widget (continued)

KPI	Description	Note
Critical MQ errors	Count of the error log with the message ID in AMQ9448, AMQ9409, AMQ9874, AMQ5008, and AMQ5053.	Calculated by the following logical expression: COUNT(QMERRLOG.MSG_ID) WHERE QMERRLOG.MSG_ID='AMQ9448' OR QMERRLOG.MSG_ID='AMQ9409' OR QMERRLOG.MSG_ID='AMQ9874' OR QMERRLOG.MSG_ID='AMQ5008' OR QMERRLOG.MSG_ID='AMQ5053'

The MQ Status group widget references the key performance indicators (KPIs) in the following table:

Table 413. MQ Status group widget referenced KPIs

KPI	Description
QMCHAN_ST.CHLTYPE	Type of the channel
QMCHAN_ST.CHNAME	Name of the channel
QMERRLOG.MSG_ID	The identifier of the message in the queue manager's error log
QMEVENTC.EVENT_NAME	The description of the performance-related WebSphere MQ event
QMQ_DATA.QCURDEP	Current depth of the queue
QMQ_DATA.QPCTFULL	Current depth full percentage

WMQ Event not Reset - Latest 5 group widget

The WMQ Event not Reset - Latest 5 group widget provides a list of the latest five WMQ events not reset.

The WMQ Event not Reset - Latest 5 group widget provides the information in the following table:

Table 414. WMQ Event not Reset - Latest 5 group widget

KPI	Description	Note
Event time	The time and date the event was posted to the WebSphere MQ event queue	QMEVENTC.EVDAT_TIME
Event name	The description of the performance-related WebSphere MQ event	QMEVENTC.EVENT_NAME

WMQ Event not Reset - Latest 5 group widget

The WMQ Event not Reset - Latest 5 group widget provides a list of the latest five WMQ events not reset.

The WMQ Event not Reset - Latest 5 group widget provides the information in the following table:

Table 415. WMQ Event not Reset - Latest 5 group widget

KPI	Description	Note
Event time	The time and date the event was posted to the WebSphere MQ event queue	QMEVENTC.EVDAT_TIME
Event name	The description of the performance-related WebSphere MQ event	QMEVENTC.EVENT_NAME
Resource name	The name of the WebSphere MQ resource (channel or queue) on which the event occurred	QMEVENTC.EV_RESRC
Host name	The name of the system reporting this event	QMEVENTC.ORIG_HOST
MQ Manager name	The name that is assigned to the queue manager reporting this event	QMEVENTC.ORIG_QMGR

XMITQ Depth - Top 5 group widget

The XMITQ Depth - Top 5 group widget provides a list of the top five transmission queue depths.

The XMITQ Depth - Top 5 group widget provides the information in the following table:

Table 416. XMITQ Depth - Top 5 group widget

KPI	Description	Note
Queue name	The name of a queue that is managed by the selected queue manager	QMQ_DATA.QNAME
XMITQ depth	Current depth of the queue	QMQ_DATA.QCURDEP

Event group widgets

Specific group widgets are available for IBM Tivoli Monitoring situation events. Use these group widgets to monitor activity and system status.

Event Status group widget

The Event Status group widget displays IBM Tivoli Monitoring situation events for the selected application. The Event Severity Summary displays the count and percentage of the events by severity. The Event Table displays situation events that are ordered by severity and time stamp. In both components, the data is based on the top 300 situation events available from IBM Tivoli Monitoring. Click a situation event to view more details for the event, the Event Detail group widget opens.

Important: Because percentages are rounded to one decimal place, the sum of all percentages might not equal 100%.

The following table contains information about the KPIs in this group widget:

Table 417. KPIs in the Event Status group widget

KPI	Description	Note
Event Severity Summary: Normal	Count of events with normal status	COUNT(events.SEVERITY) WHERE events.SEVERITY=27 or events.SEVERITY=25 or events.SEVERITY = 15
Event Severity Summary: Warning	Count of events with warning status	COUNT(events.SEVERITY) WHERE events.SEVERITY=40 or events.SEVERITY=30
Event Severity Summary: Critical	Count of events with critical status	COUNT(events.SEVERITY) WHERE events.SEVERITY=90 or events.SEVERITY=100
Situation Name	The name of the IBM Tivoli Monitoring situation	events.FULLNAME
Status	The event state	events.DELTASTAT
Description	The description of the event	events.TEXT
Severity	Thresholds: normal, warning, critical	events.SEVERITY
Display Item	Event display item, which highlights what this event is	events.ATOMIZE
Source	The managed system on which the situation event fired	events.ORIGINNODE
Timestamp	The event global time stamp	events.GBLTMSTMP

Event Detail group widget

The Event Detail group widget displays the details of the event that is selected in the event table. This widget supports in-context navigation to a detailed view for the relevant resource.

The following table contains information about the KPIs in this group widget:

Table 418. KPIs in the Event Detail group widget

KPI	Description
Situation Name	The name that was given to the eventing threshold.
Situation ID	The identifier of the eventing threshold.
Status	The current status of the event, such as Open.
Severity	The severity value of the event: Critical, Warning, Normal, or Unknown.
Display Item	Applies to multiple-row data sets only. The display item is a key attribute that was selected for the threshold to distinguish multiple events from one another that were opened for the same managed system.
Source	The system host name or other name derived from the monitoring agent that identifies the source of the event.
Local Timestamp	The date and time when the event occurred or the condition was observed by the originating agent, expressed in the timezone where the managed system resides.

Table 418. KPIs in the Event Detail group widget (continued)

KPI	Description
Global Timestamp	The date and time when the event occurred or the condition was observed by the originating agent, expressed in the timezone where the monitoring infrastructure resides.
Node	The network name of the managed system on which the event occurred.
Type	Whether the event is pure or sampled. Pure events are unsolicited notifications. Thresholds for pure events have no sampling interval, thus they have no constant metric that can be monitored for current values.
Description	The description, if any, that was written for the eventing threshold.
Formula	The formula as it is written in the Situation Definition log. For example, `(Percent Failed > 10.000 AND Transaction Definition Name != 'Ignore_Resources')`.

Linux operating system group widgets

Specific group widgets are available for Linux operating systems. Use these group widgets with your IBM Tivoli Monitoring infrastructure to monitor activity and system status.

Linux OS CPU group widgets

Two Linux OS CPU group widgets are provided; the Linux OS Process CPU Utilization (%) - Top 5 group widget and the Linux OS CPU Utilization group widget.

Linux OS Process CPU Utilization (%) - Top 5 group widget

The Linux OS Process CPU Utilization (%) - Top 5 group widget provides the information in the following table:

Table 419. Linux OS Process CPU Utilization (%) - Top 5 group widget

KPI	Description	Note
CPU used (%)	Sum of user CPU percentage and system CPU percentage for the process	
Command	Command-line string of the process	

Linux OS CPU Utilization group widget

The Linux OS CPU Utilization group widget provides the information in the following table. Enable historical data collection for the Linux CPU attribute group to obtain data for this group widget.

Table 420. Linux OS CPU Utilization group widget

KPI	Description	Note
CPU used (%)	The aggregate busy processor used percentage	
Date Time	Date time	

Linux OS disk group widgets

Two Linux OS disk group widgets are provided; the Linux OS Disk Utilization (%) - Top 5 group widget and the Linux OS Disk I/O Average Reads and Writes group widget.

Linux OS Disk Utilization (%) - Top 5 group widget

The Linux OS Disk Utilization (%) - Top 5 group widget provides the information in the following table:

Table 421. Linux OS Disk Utilization (%) - Top 5 group widget

KPI	Description	Note
Disk used (%)	Disk used percentage	
Name	Disk name	

Linux OS Disk I/O Average Reads and Writes group widget

The Linux OS Disk I/O Average Reads and Writes group widget provides the information in the following table. Enable historical data collection for the Linux Disk I/O attribute group to obtain data for this group widget.

Table 422. Linux OS Disk I/O Average Reads and Writes group widget

KPI	Description	Note
Disk I/O read (blocks per second)	Indicates the amount of data that is read from the drive that is expressed in number of blocks per second	
Disk I/O write (blocks per second)	Indicates the amount of data that is written to the drive expressed in number of blocks per second	
Date Time	Date time	

Linux OS memory group widgets

Two Linux OS memory group widgets are provided; the Linux OS Process Memory Utilization (MB) - Top 5 group widget and the Linux OS Memory Utilization group widget.

Linux OS Process Memory Utilization (MB) - Top 5 group widget

The Linux OS Process Memory Utilization (MB) - Top 5 group widget provides the information in the following table:

Table 423. Linux OS Process Memory Utilization (MB) - Top 5 group widget

KPI	Description	Note
Memory Utilization (MB)	Virtual memory size (MB)	
Command	Process command name	

Linux OS Memory Utilization group widget

The Linux OS Memory Utilization group widget provides the information in the following table. Enable historical data collection for the Linux VM Stats attribute group to obtain data for this group widget.

Table 424. Linux OS Memory Utilization group widget

KPI	Description	Note
Memory used (%)	Used real memory (%)	
Date Time	Date time	

Linux OS network group widgets

Two Linux OS network group widgets are provided; the Linux OS Network Status group widget and the Linux OS Network Bytes Received and Transmitted group widget. Enable historical data collection for the Linux Network attribute group to obtain data for these group widgets.

Linux OS Network Status group widget

The Linux OS Network Status group widget provides the information in the following table:

Table 425. Linux OS Network Status group widget

KPI	Description	Note
Interface	Network interface name	
Status	Network interface status	Network interface status: • Green indicates UP state • Red indicates DOWN state • Yellow indicates UP_NOT_RUNNING state
Bytes in (per second)	Bytes received per second	
Bytes out (per second)	Bytes transmitted per second	

Linux OS Network Bytes Received and Transmitted group widget

The Linux OS Network Bytes Received and Transmitted group widget provides the information in the following table:

Table 426. Linux OS Network Bytes Received and Transmitted group widget

KPI	Description	Note
Network bytes in (per second)	Bytes received per second	
Network bytes out (per second)	Bytes transmitted per second	
Date Time	Date time	

Linux OS Status group widget

The Linux OS Status group widget provides a summary of the Linux OS system status. Clicking on this widget opens a Linux OS details page.

The Linux OS Status group widget provides the information in the following table:

Table 427. Linux OS Status group widget

KPI	Description	Note
Aggregate CPU used (%)	The aggregate busy processor used percentage	This KPI provides an aggregate value for multiple processors
Number of CPUs	The number of processors	
Memory used (%)	Percentage of physical memory used	
Available memory (MB)	Available physical memory (in megabytes)	
Network interface status	The network interface status summary	Summary network interface status: • Green indicates UP state • Red indicates DOWN state • Yellow indicates UP_NOT_RUNNING state
Network errors (%)	Total number of errors as a percentage of the total number of packets (received and transmitted) in the sample period	
Network collisions (%)	Total number of collisions as a percentage of the total number of packets that are transmitted in the sample period	
Highest file systems utilization (%)	Highest file systems utilization (%)	
Days until full disk	Days until full disk based on moving average	

UNIX operating system group widgets

Specific group widgets are available for UNIX operating systems. Use these group widgets with your IBM Tivoli Monitoring infrastructure to monitor activity and system status.

UNIX OS CPU group widgets

Two UNIX OS CPU group widgets are provided; the UNIX OS Process CPU Utilization (%) - Top 5 group widget and the UNIX OS CPU Utilization group widget.

UNIX OS Process CPU Utilization (%) - Top 5 group widget

The UNIX OS Process CPU Utilization (%) - Top 5 group widget provides the information in the following table:

Table 428. UNIX OS Process CPU Utilization (%) - Top 5 group widget

KPI	Description	Note
CPU used (%)	Sum of user CPU percentage and system CPU percentage for the process	
Command	Command-line string of the process	

UNIX OS CPU Utilization group widget

The UNIX OS CPU Utilization group widget provides the information in the following table. Enable historical data collection for the UNIX CPU attribute group to obtain data for this group widget.

Table 429. UNIX OS CPU Utilization group widget

KPI	Description	Note
CPU used (%)	The aggregate busy processor used percentage	
Date Time	Date time	

UNIX OS disk group widgets

Two UNIX OS disk group widgets are provided; the UNIX OS Disk Utilization (%) - Top 5 group widget and the UNIX OS Disk I/O Average Reads and Writes group widget.

UNIX OS Disk Utilization (%) - Top 5 group widget

The UNIX OS Disk Utilization (%) - Top 5 group widget provides the information in the following table:

Table 430. UNIX OS Disk Utilization (%) - Top 5 group widget

KPI	Description	Note
Disk used (%)	Disk used percentage	
Name	Disk name	

UNIX OS Disk I/O Average Reads and Writes group widget

The UNIX OS Disk I/O Average Reads and Writes group widget provides the information in the following table. Enable historical data collection for the UNIX Disk I/O attribute group to obtain data for this group widget.

Table 431. UNIX OS Disk I/O Average Reads and Writes group widget

KPI	Description	Note
Disk I/O read (blocks per second)	Indicates the amount of data that is read from the drive expressed in number of blocks per second	
Disk I/O write (blocks per second)	Indicates the amount of data that is written to the drive expressed in number of blocks per second	

Table 431. UNIX OS Disk I/O Average Reads and Writes group widget (continued)

KPI	Description	Note
Date Time	Date time	

UNIX OS memory group widgets

Two UNIX OS memory group widgets are provided; the UNIX OS Process Memory Utilization (MB) - Top 5 group widget and the UNIX OS Memory Utilization group widget.

UNIX OS Process Memory Utilization (MB) - Top 5 group widget

The UNIX OS Process Memory Utilization (MB) - Top 5 group widget provides the information in the following table:

Table 432. UNIX OS Process Memory Utilization (MB) - Top 5 group widget

KPI	Description	Note
Memory Utilization (MB)	Virtual memory size (MB)	
Command	Process command name	

UNIX OS Memory Utilization group widget

The UNIX OS Memory Utilization group widget provides the information in the following table. Enable historical data collection for the UNIX VM Stats attribute group to obtain data for this group widget.

Table 433. UNIX OS Memory Utilization group widget

KPI	Description	Note
Memory used (%)	Used real memory (%)	
Date Time	Date time	

UNIX OS network group widgets

Two UNIX OS network group widgets are provided; the UNIX OS Network Status group widget and the UNIX OS Network Bytes Received and Transmitted group widget. Enable historical data collection for the UNIXNetwork attribute group to obtain data for these group widgets.

UNIX OS Network Status group widget

The UNIX OS Network Status group widget provides the information in the following table:

Table 434. UNIX OS Network Status group widget

KPI	Description	Note
Interface	Network interface name	

Table 434. UNIX OS Network Status group widget (continued)

KPI	Description	Note
Status	Network interface status	Network interface status: • Green indicates UP state • Red indicates DOWN state • Yellow indicates UP_NOT_RUNNING state
Megabytes in (per second)	Megabytes received per second	
Megabytes out (per second)	Megabytes transmitted per second	

UNIX OS Network Bytes Received and Transmitted group widget

The UNIX OS Network Bytes Received and Transmitted group widget provides the information in the following table:

Table 435. UNIX OS Network Bytes Received and Transmitted group widget

KPI	Description	Note
Network megabytes in (per second)	Megabytes received per second	
Network megabytes out (per second)	Megabytes transmitted per second	
Date Time	Date time	

UNIX OS Status group widget

The UNIX OS Status group widget provides a summary of the UNIX OS system status. Clicking on this widget opens a UNIX OS details page.

The UNIX OS Status group widget provides the information in the following table:

Table 436. UNIX OS Status group widget

KPI	Description	Note
Aggregate CPU used (%)	The aggregate busy processor used percentage	This KPI provides an aggregate value for multiple processors
Number of CPUs	The number of processors	
Memory used (%)	Percentage of physical memory used	
Available memory (MB)	Available physical memory (in megabytes)	
Network errors (%)	Total number of errors as a percentage of the total number of packets (received and transmitted) in the sample period	

Table 436. UNIX OS Status group widget (continued)

KPI	Description	Note
Network collisions (%)	Number of collisions as a percentage of the total number of packets that are transmitted in the sample period	
Highest file systems utilization (%)	Highest file systems utilization (%)	
Network interface status	The network interface status summary	Summary network interface status: • Green indicates UP state • Red indicates DOWN state • Yellow indicates UP_NOT_RUNNING state

Windows operating system group widgets

Specific group widgets are available for Windows operating systems. Use these group widgets with your IBM Tivoli Monitoring infrastructure to monitor activity and system status.

Windows OS CPU group widgets

Two Windows OS CPU group widgets are provided; the Windows OS Process CPU Utilization (%) - Top 5 group widget and the Windows OS CPU Utilization group widget.

Windows OS Process CPU Utilization (%) - Top 5 group widget

The Windows OS Process CPU Utilization (%) - Top 5 group widget provides the information in the following table:

Table 437. Windows OS Process CPU Utilization (%) - Top 5 group widget

KPI	Description	Note
CPU used (%)	Sum of user CPU percentage and system CPU percentage for the process	
Command	Command-line string of the process	

Windows OS CPU Utilization group widget

The Windows OS CPU Utilization group widget provides the information in the following table. Enable historical data collection for the Windows CPU attribute group to obtain data for this group widget.

Table 438. Windows OS CPU Utilization group widget

KPI	Description	Note
CPU used (%)	The aggregate busy processor used percentage	
Date Time	Date time	

Windows OS disk group widgets

Two Windows OS disk group widgets are provided; the Windows OS Disk Utilization (%) - Top 5 group widget and the Windows OS Disk I/O Average Reads and Writes group widget.

Windows OS Disk Utilization (%) - Top 5 group widget

The Windows OS Disk Utilization (%) - Top 5 group widget provides the information in the following table:

Table 439. Windows OS Disk Utilization (%) - Top 5 group widget

KPI	Description	Note
Disk used (%)	Disk used percentage	
Name	Disk name	

Windows OS Disk I/O Average Reads and Writes group widget

The Windows OS Disk I/O Average Reads and Writes group widget provides the information in the following table. Enable historical data collection for the Windows Disk I/O attribute group to obtain data for this group widget.

Table 440. Windows OS Disk I/O Average Reads and Writes group widget

KPI	Description	Note
Disk I/O read (blocks per second)	Indicates the amount of data that is read from the drive expressed in number of blocks per second	
Disk I/O write (blocks per second)	Indicates the amount of data that is written to the drive expressed in number of blocks per second	
Date Time	Date time	

Windows OS memory group widgets

Two Windows OS memory group widgets are provided; the Windows OS Process Memory Utilization (MB) - Top 5 group widget and the Windows OS Memory Utilization group widget.

Windows OS Process Memory Utilization (MB) - Top 5 group widget

The Windows OS Process Memory Utilization (MB) - Top 5 group widget provides the information in the following table:

Table 441. Windows OS Process Memory Utilization (MB) - Top 5 group widget

KPI	Description	Note
Memory Utilization (MB)	Virtual memory size (MB)	
Command	Process command name	

Windows OS Memory Utilization group widget

The Windows OS Memory Utilization group widget provides the information in the following table. Enable historical data collection for the Windows VM Stats attribute group to obtain data for this group widget.

Table 442. Windows OS Memory Utilization group widget

KPI	Description	Note
Memory used (%)	Used real memory (%)	
Date Time	Date time	

Windows OS network group widgets

Two Windows OS network group widgets are provided; the Windows OS Network Status group widget and the Windows OS Network Bytes Received and Transmitted group widget. Enable historical data collection for the Windows Network attribute group to obtain data for these group widgets.

Windows OS Network Status group widget

The Windows OS Network Status group widget provides the information in the following table:

Table 443. Windows OS Network Status group widget

KPI	Description	Note
Interface	Network interface name	
Bytes in (per second)	Bytes received per second	
Bytes out (per second)	Bytes transmitted per second	

Windows OS Network Bytes Received and Transmitted group widget

The Windows OS Network Bytes Received and Transmitted group widget provides the information in the following table:

Table 444. WindowsOS Network Bytes Received and Transmitted group widget

KPI	Description	Note
Network bytes in (per second)	Bytes received per second	
Date Time	Date time	

Windows OS Status group widget

The Windows OS Status group widget provides a summary of the Windows OS system status. Clicking on this widget opens a Windows OS details page.

The Windows OS Status group widget provides the information in the following table:

Table 445. Windows OS Status group widget

KPI	Description	Note
Aggregate CPU used (%)	The aggregate busy processor used percentage	This KPI provides an aggregate value for multiple processors
Number of CPUs	The number of processors	
Memory used (%)	Percentage of physical memory used	
Available memory (MB)	Available physical memory (in megabytes)	
Number of network interfaces	Number of network interfaces	
Packets per second	Total number of packets (received and transmitted) in the sample period	
Error packets per second	Total number of error packets (received and transmitted) in the sample period	
Highest logical disk utilization (%)	Highest logical disk utilization (%)	

Chapter 6. Advanced configuration tasks

Several advanced configuration options are provided with the IBM SmartCloud Application Performance Management UI.

Integration with IBM Dashboard Application Services Hub is supported in IBM SmartCloud Application Performance Management UI. For more information about Dashboard Application Services Hub integration, see the best practices wiki page (https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM%20SmartCloud%20Application%20Performance%20Management/page/Best%20Practices%20for%20SC%20APM%20UI).

The application repository

The application repository is the service component repository (SCR), which enables IBM SmartCloud Application Performance Management UI to discover resources and to automatically build application models from resource model data sources. These sources include Tivoli Application Dependency Discovery Manager and IBM Tivoli Monitoring resources through Jazz for Service Management, IdML book conforming to the common data model, and the application repository Open Services for Lifecycle Collaboration (OSLC) API.

The application repository consists of three components:

- Application repository database that is running in either DB2 or Derby.

  The SCR database contains the registration and resource records that is processed by the SCR. The records describe resource identity, attribute, and relationship information that is provided by multiple sources, which are consolidated into one model. The Derby database runs in the Liberty scrderby profile.
- Application repository back-end process.

  The SCR back-end process, often referred to as the toolkit, processes data that is received from various data sources into the application repository database. These data sources can include: Transaction Tracking, OSLC Performance Monitoring, and Jazz for Service Management. The Jazz for Service Management data can include data from IBM Tivoli Monitoring and Tivoli Application Dependency Discovery Manager. The SCR persists the data from each of these data sources and reconciles resources that are reported from more than one data source. The SCR applies both designed and customized naming rules to identify common resources that are provided by multiple sources. This process is called the reconciliation process. The reconciled resources are referred to as resource records within OSLC. The individual records from each data source are referred to as registration records.
- Application repository servlets that are running in the application repository Liberty profile.

  The SCR uses Liberty to run a series of servlets that satisfy OSLC requests directed to the SCR. These OSLC requests can both post data to the SCR and query data that is contained within the SCR. IBM SmartCloud Application Performance Management UI uses the SCR Liberty servlets to access the resource information that is contained within the application repository database.

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The database is accessed by both the application repository servlets and the application repository back-end process.

The SmartCloud Application Performance Management application repository database resides in either a Derby or DB2 database. By default, the installed Derby database is used by the application repository to persist resource models. The database is queried using OSLC queries.

Administer the application repository

Learn about running the application repository, application repository commands, and customization artifact command line utilities. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Running the application repository

Learn how to run the application repository, which is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

About this task

Run the application repository by completing the following steps:

Procedure

1. Start the database server, as described in the "Starting and stopping the application repository database" section.
2. Start the application repository toolkit Java process, as described in the "Starting the application repository back-end process" on page 293 section.
3. Start the Open Services for Lifecycle Collaboration (OSLC) interface, as described in the "Starting and stopping the application repository servlets" on page 293 section.

Starting and stopping the application repository database

You can run commands to stop and start the application repository database. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Before you begin

If you are using the DB2 database, see the Database administration (http://pic.dhe.ibm.com/infocenter/db2luw/v10r1/index.jsp?topic=%2Fcom.ibm.db2.luw.container.doc%2Fdoc%2Fc0052965.html) section in the DB2 Information Center for more information about how to complete this task. If you are using the Derby database, complete the following steps:

Procedure

1. Open the command line interface.
2. Run one of the following commands to stop the application repository database:
   - On a Linux system

     ```
     APMUI_INSTALL/bin
     server stop scrderby
     ```

   - On a Windows system

```
APMUI_INSTALL\bin
server stop scrderby
```

The application repository database is stopped.

3. Run one of the following commands to start the application repository database:
   - On a Linux system

     ```
     APMUI_INSTALL/bin
     server start scrderby
     ```

   - On a Windows system

     ```
     APMUI_INSTALL\bin
     server start scrderby
     ```

   The application repository database is started.

   Note: If you close the command line interface after you run the `server start scrderby`command, the application repository database stops. Therefore, do not close the command line interface after you start the application repository database server.

Results

The application repository database is stopped or started according to the commands that you run.

Tip: For information about backing up and restoring the application repository Derby database, see Backing up and restoring the databases of SmartCloud Application Performance Management UI.

Starting the application repository back-end process

Learn how to run the application repository back-end by starting the application repository toolkit Java process. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Procedure

1. On Linux systems, start the application repository daemon by running the `scrstart.sh` script in the `$APMUI_HOME/SCR/XMLtoolkit/bin` directory. To add the daemon to the `/etc/init.d` directory so that the application repository is automatically restarted if you restart the host, login as root and run the `tbsmrdr_enable.sh` script.
2. On Windows systems, start the application repository service from the Services window or by issuing the **scrstart** command.
3. On Linux systems, stop the application repository daemon by running the **scrstop.sh** script.
4. On Windows systems, stop the application repository service from the Services window or by issuing the **scrstop** command.

Starting and stopping the application repository servlets

You can run commands to stop and start the application repository servlets. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Procedure

1. Open the command line interface.
2. Run one of the following commands to stop the application repository servlets:

- On a Linux system

  APMUI_INSTALL/bin
  server stop scr
- On a Windows system

  APMUI_INSTALL\bin
  server stop scr

The application repository servlets are stopped.

3. Run one of the following commands to start the application repository servlets:
   - On a Linux system

     APMUI_INSTALL/bin
     server start scr
   - On a Windows system

     APMUI_INSTALL\bin
     server start scr

   The application repository servlets are started.

Results

The application repository servlets are stopped or started according to the commands that you run.

Application repository commands

The commands for the application repository are in the $APMUI_HOME/SCR/XMLtoolkit/bin directory on UNIX systems and in the %APMUI_HOME%\SCR\XMLtoolkit\bin directory on Windows systems. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. For help on any of these commands, run the command with the -? option.

Tip: On Windows systems of Western European language such as French, command prompt windows with an active code page of 850 might contain messages that contain corrupted characters. To fix this condition, run the **chcp 1252** command to change the active code page for the command prompt window to 1252.

setxmlaccess

This section describes the **setxmlaccess** command.

Purpose

The **setxmlaccess** command encrypts the user IDs and passwords that are used by the toolkit. The **-U** and **-P** options can be used to set all the user IDs and passwords at one time. If the user IDs and passwords are set and need to be changed, you can use some options to change a particular set of values.

Syntax

```
setxmlaccess [ [ -U userIDs -P passwords ] |
 [ -apmid userID -apmpw password ] |
  [ -scrdbid dbUserId -scrdbpw dbPassword ]]
[-k encryptionKey]
```

Parameters

-U Sets the application repository database and IBM SmartCloud Application

Performance Management UI user IDs. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. The format is as follows.

```
scrDbUserID:apmUserID
```

At a minimum, the SmartCloud Application Performance Management UI and application repository database user IDs must be provided.

-P Set the passwords that are associated with the **-U** flag. The format is as follows.

```
scrDbPw:apmPw
```

The number of passwords depends on the input to the **-U** flag; two or four passwords must be provided. Separate the passwords with colons.

-k Encryption key. This option specifies the encryption key that is used to encrypt the user IDs and passwords. If the key is not provided, an internal default key is used. The key does not need to be specified on each invocation. If a key is specified, it is saved for future use.

The following options are mutually exclusive with the **-U** and **-P** options. Use these options to set an individual user ID / password pair. Only one pair can be set per invocation of the script.

-apmid
SmartCloud Application Performance Management UI user ID.

-apmpw
SmartCloud Application Performance Management UI password.

-scrdbid
Application repository database user ID.

-scrdbpw
Application repository database password.

In the following example, the database user ID is set to `dbuser`, with a password of `dbpassword`, and the SmartCloud Application Performance Management user ID is `admin`, with a password of `netcool`.

```
setxmlaccess.sh -U dbuser:admin -P dbpassword:netcool
```

In the following example, the SmartCloud Application Performance Management user ID and password are set.

```
setxmlaccess.sh -apmid apmadmin -apmpw passw0rd
```

utils

This section describes the **utils** command.

Purpose

The **utils** command provides IBM SmartCloud Application Performance Management application repository utilities. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Syntax

```
utils -e utility [-U user -P pw -d dbname -h hostname -m schema -p port -z]
```

Parameters

-e Execute the specified utility. Utilities must be in the `$APMUI_HOME/SCR/XMLtoolkit/scripts` directory and must follow the toolkit scripting schema.

-U Database user. Required for database access

-P Database password. Required for database access

-d Database name

-h Database host name

-m Database schema

-p Database port

-z Execute the script without using RMI

If the script specified by the `-e` flag contains a SQL task, you must supply the database user name and password. If the `-U` and `-P` flags are not specified on the command line, the script prompts you for them.

If the `-d`, `-h`, `-m`, and `-p` flags are not specified, the database configuration that is specified in the Service Component Repository properties is used.

Scripts that reload definitions or reevaluate data in the database are integrated with the Service Component Repository. The request is sent to the Service Component Repository and the system is quiesced before the action is taken. After the action is completed the system resume processing. You do not have to stop and start the Service Component Repository for new definitions to take effect.

If the Service Component Repository is down and you want to run one of the actions that reload definitions or reevaluate data, specify the `-z` flag so that the `utils` script does not attempt to route the request to the Service Component Repository.

Utility values

`initiate_failover.xml`
Initiates process to fail over to the acting secondary Service Component Repository instance in a failover environment.

`toolkit_status.xml`
Displays the status of the various Service Component Repository processes.

`backupdb.xml`
Backs up the Derby database. This value schedules a backup and runs when the system is idle. The backup directory is defined in the `xmltoolkitsvc.properties` file. The default location is `APMUI_HOME/SCR/XMLtoolkit/maint/db`. Two copies are maintained. If the application repository backend is down, use the **-z** flag to back up the database immediately.

setdbschema

This section describes the **setdbschema** command.

Purpose

The **set_db_schema** command drops, truncates, and creates the toolkit database schema. Care must be taken when you run this script, data loss can occur. Before you run this command, always back up your database.

Syntax

```
setdbschema -U dbUser -P dbPassword -f a|s|t|i|d|v|w
```

If no options are specified, stage tables are dropped/created (`-f t`).

Parameters

-U The database user ID.

-P The database password

-f Function identifier, specify as follows:

- **a** All permanent and stage tables are dropped/created. All data is deleted.
- **s** Permanent tables dropped/created. All data is deleted.
- **t** Stage tables dropped/created. This setting is the default setting.
- **i** IdML stage tables dropped/created.
- **d** Permanent tables are truncated. All data is deleted.
- **v** Drop and rebuild all the views.
- **w** Drop all the views.
- **m** Deletes duplicate ESDA instances from the database.

oslcconfig

This topic describes the options for the **oslcconfig** command.

Purpose

To configure the Open Services Lifecycle Collaboration (OSLC) enrichment and import support, use the `oslcconfig` command in the `$APMUI_HOME/SCR/XMLtoolkit/bin` directory. The OSLC enrichment support allows the application repository to enrich data that is received from TADDM and resource model books with data from the Jazz for Service Management Registry Services. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. Resources that are registered with the Registry Services are enabled for features such as hover preview.

The OSLC import support imports objects from the Registry Services and instantiates them in the application repository. These objects are reconciled with objects from other sources. This function is applicable to IBM SmartCloud Application Performance Management UI.

Syntax

The `oslcconfig` command has the following syntax:

```
oslcconfig [-alter [properties]] | [-disable] | [-display] |
[-enable [e | i]] | [-test]
```

UNIX/Linux: On UNIX and Linux systems, the command is `oslcconfig.sh`

Parameters

One of the following parameters is required:

alter
Updates one or more of the OSLC configuration properties.

disable
Disables the OSLC enrichment support.

display
Displays the current property values.

enable
Enables the OSLC enrichment support. Optionally update one or more of the OSLC properties:

- **e** Enable OSLC Enrichment. This option creates internal objects that are used to enrich existing Common Data Model objects that are received from either TADDM or IBM Tivoli Monitoring DLA books.
- **i** Enable OSLC Import. This imports OSLC objects from the Jazz for Service Management Repository. These objects correspond to the crtv shape model and will be instantiated in the application repository as objects. These objects will be reconciled with existing CDM object in the application repository by using the configured cross namespace mapping rules.

The **e** and **i** options are mutually exclusive. The **i** option should be used in environments where products requesting data from the application repository are interested in the crtv shape model.

Additional properties

-i (Optional) Default interval in seconds that the Registry Services is queried. Minimum value 5, smaller values are converted to 5. The default value is 120.

-s (Optional) Protocol to use to communicate with the Liberty application repository profile. Specify `true` to use HTTPS, any other value is interpreted as false. The default value is `false`.

Important: Application repository property updates take effect the next time that the application repository is started.

Example

This example turns on the OSLC import support. The application repository must be recycled to pick up this change:

```
oslcconfig -enable i
```

Example

This example turns off the OSLC support. The toolkit must be recycled to pick up this change:

```
oslcconfig -disable
```

scrdbconfig

This section describes the **scrdbconfig** command.

Purpose

The **scrdbconfig** command configures the connection information for the application repository database. The application repository is the service

component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Syntax

```
scrdbconfig [-update -t dbtype -h hostname -d database -p port] | [-display] |
[-test]
```

Parameters

One of the following parameters is required:

-display
Displays the current settings

-test
Tests the JDBC connection. If the connection fails, enter ctrl-c to end the retry sequence

-update
Updates the JDBC connection

The following options are mutually exclusive with the **-update** parameter:

-t Type of database. Valid values are DB2 and DERBY

-h Application repository database host name

-d Database name

-p Port that the database listens on

Important: The application repository database user ID and password must be configured by using the **setxmlaccess** command, for example:

```
setxmlaccess -scrdbid abc -scrdbpw xyz
```

For more information about the **setxmlaccess** command, see "setxmlaccess" on page 294.

restoredb

This section describes the **restoredb** command.

Purpose

The **restoredb** command utility restores the application repository database. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. To restore the database, the Derby database must be started with the boot URL set with the location of the backup copy of the database. To complete this task, the script stops the application repository back-end and application repository servlets and stops and starts the Derby database.

Syntax

```
restoredb -U dbid -P dbpw -s xx
```

Parameters

-U database user ID

-P database password

-s Indicates which backup to restore from. Choose from the following values:

- **1** Use the backup that is stored in DL_DB_BACKUP_DIR1
- **2** Use the backup that is stored in DL_DB_BACKUP_DIR2
- **n** Use the latest backup
- **f** A fully qualified directory that contains the backup

Important: This command pertains to Derby only and can be used to restore a copy of the Derby database that was backed up with the **utils -e backupdb.xml** command. For more information about the **utils** command, see "utils" on page 295.

registryupdate

You can use the registryupdate command to manage the application repository registry table. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Purpose

The application repository registry table is set up during installation. The registry table generally contains two rows, one for the primary application repository and one for the alternative application repository. The table entries are not order dependent, row 1 is not necessarily the primary. The table contains only one row if an alternative failover application repository is not defined. The registryupdate command sets the Name field in the selected database row according to the DL_Toolkit_Instance_ID property from the xmltoolkitsvc.properties file and the Primary value according to the DL_Preferred_Primary property. The xmltoolkitsvc.properties file is in the %APMUI_HOME%\SCR\XMLToolkit\bin directory on Windows systems and $APMUI_HOME /SCR/XMLToolkit/bin on UNIX systems. If you change the DL_Preferred_Primary or DL_Alternate_APMUI_Hostname properties in the xmltoolkitsvc.properties file, run the registryupdate command to update the registry entries in the database.

Syntax

```
registryupdate -U dbUser -P dbPassword [-s ID] [-v]
```

Parameters

The parameters for the registryupdate command are as follows.

Where:

-U The database user ID. If you do not provide a value for this parameter, you are prompted to provide a value.

-P The database user password. If you do not provide a value for this parameter, you are prompted to provide a value.

-s Updates the application repository registry table according to the integer value that you enter. This integer indicates the registry entry that you want to update. Valid values are 1 and 2.

-v Display the contents of the application repository registry table.

Customization artifact command line utilities

The application repository centralizes the management of many of its customization files, also called customization artifacts, into a central artifact data store. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. The artifact data store is

maintained in the application repository database. IBM SmartCloud Application Performance Management UI provides a set of command line utilities that you can use to manually interact with the customization artifact data store.

The artifact command utilities can be used to move configuration files between application repository installations. For example, configuration files can be used to move configuration files from a test environment to a production environment.

Note: The syntax for each of the commands is given in the topics in this section. To access the command help information, type the command followed by a `-?` and press `Return`.

These commands are in the `$APMUI_HOME/SCR/XMLtoolkit/bin` directory on UNIX systems and in the `%APMUI_HOME%\SCR\XMLtoolkit\bin` directory on Windows systems.

On UNIX systems, these commands have a `.sh` extension. For example, **`getArtifact.sh.`**

On Windows systems, these commands have a `.bat` extension. For example, **`getArtifact.bat.`**

`getArtifact, putArtifact, removeArtifact, and listArtifact`
: These commands work interactively with the artifact data store when you develop customization enhancements. The commands are tailored to individual artifact operations against the runtime configuration of the artifact as defined by the category and origin attributes of the artifact.

getArtifact

This section describes the `getArtifact` command.

Purpose

You can use the `getArtifact` command to retrieve a customization artifact, available to the application repository runtime configuration, from the application repository database and write the contents to a specified directory.

Syntax

The syntax for this command is as follows.

```
getArtifact.sh|bat [-U dbUser [-P dbPassword] ] -d directory -n artifactname
 -c category [-s subcategory]
```

Note: The `getArtifact` command parameters are positional. The command must be followed by, in order, the database access credentials (optional), and then the command options.

Parameters

-U The database user ID. If you do not specify a value for this parameter, you are prompted for the database user ID.

-P The database used ID password. If you do not specify a value for this parameter, you are prompted for the database user ID password.

-d directory
: The target file system directory for the customization artifact. The specified directory can be a fully qualified or relative directory path.

-n artifactname
The name of a customization artifact. This parameter can be replaced with `-name artifactname`.

-c category
The category, or type, of a customization artifact. This parameter can be replaced with `-category category`. The valid categories are as follows.

Table 446. Customization categories for the IBM SmartCloud Application Performance Management UI application repository

Category	Description
`crossnaming`	Extended implementation-specific naming rules
`notifications`	Application repository notification rule
`scrconfig`	Application repository base configuration XML files

-s subcategory
The subcategory, or subtype, of a customization artifact. This parameter can be replaced with `-subcategory subcategory`.

Important: The updated runtime configuration is activated when the application repository Java process is started after artifact changes are made. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. Alternately, the application repository updates its runtime process by running the **utils** command with the **-e** option of **toolkit_reinit_and_resume.xml**. For more information about the **utils** command, see "utils" on page 295.

putArtifact

This section describes the `putArtifact` command.

Purpose

You can use the `putArtifact` command to copy a customization artifact into the database from the specified location.

Syntax

The syntax for this command is as follows.

```
putArtifact.sh|bat [-U dbUser [-P dbPassword] ] -n artifactname -c category
[-s subcategory]
```

Note: The `putArtifact` command parameters are positional. You must adhere to the command syntax and the order in which they are provided.

Parameters

-U The database user ID. If you do not specify a value for this parameter, you are prompted for the database user ID.

-P The database used ID password. If you do not specify a value for this parameter, you are prompted for the database user ID password.

-n artifactname
The name of a customization artifact on the file system. The specified name can be a fully qualified or relative directory path. This parameter can be replaced with `-name artifactname`.

-c category
The category, or type, of a customization artifact. This parameter can be replaced with `-category category`. The valid categories are as follows.

Table 447. Customization categories for the IBM SmartCloud Application Performance Management UI application repository

Category	Description
`crossnaming`	Extended implementation-specific naming rules
`notifications`	Application repository notification rule
`scrconfig`	Application repository base configuration XML files

-s subcategory
The subcategory of a customization artifact. This parameter can be replaced with `-subcategory subcategory`.

Important: If the specified customization artifact had a previous version in the database, the previous version is saved in the database as a backup. When a new backup version is saved, the previous backup, if one existed, is deleted from the database.

Important: The updated runtime configuration is activated when the application repository Java process is started after artifact changes are made. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. Alternately, the application repository updates its runtime process by running the **utils** command with the **-e** option of **toolkit_reinit_and_resume.xml**. For more information about the **utils** command, see "utils" on page 295.

removeArtifact

This section describes the `removeArtifact` command.

Purpose

You can use the `removeArtifact` command to remove a customization artifact from the application repository database. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Syntax

The syntax for this command is as follows.

```
removeArtifact.sh|bat [-U dbUser [-P dbPassword] ] -n artifactname -c category
[-s subcategory]
```

Note: The `removeArtifact` command parameters are positional. You must adhere to the command syntax and the order that they are provided.

Parameters

-U The database user ID. If you do not specify a value for this parameter, you are prompted for the database user ID.

-P The database used ID password. If you do not specify a value for this parameter, you are prompted for the database user ID password.

-n artifactname
The name of a customization artifact. This parameter can be replaced with `-name artifactname`.

-c category
The category, or type, of a customization artifact. This parameter can be replaced with `-category category`. The valid categories are as follows.

Table 448. Customization categories for the IBM SmartCloud Application Performance Management UI application repository

Category	Description
`crossnaming`	Extended implementation-specific naming rules
`notifications`	Application repository notification rule
`scrconfig`	Application repository base configuration XML files

-s subcategory
The subcategory of a customization artifact. This parameter can be replaced with `-subcategory subcategory`.

Important: If the specified customization artifact had a previous version in the database, the previous version is saved in the database as a backup. When a new backup version is saved, the previous backup, if one existed, is deleted from the database.

Important: The updated runtime configuration is activated when the application repository Java process is started after artifact changes are made. Alternately, the application repository updates its runtime process by running the **utils** command with the **-e** option of **toolkit_reinit_and_resume.xml**. For more information about the **utils** command, see "utils" on page 295.

listArtifact

This section describes the `listArtifact` command.

Purpose

You can use the `listArtifact` command to list the customization artifacts available to the runtime configuration in the application repository database. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Syntax

The syntax for this command is as follows.

```
listArtifact.sh|bat [-U dbUser [-P dbPassword] ][-n  artifactname] [-c category]
[-s subcategory] ]                    | -all
```

Note: The `listArtifact` command parameters are positional. You must adhere to the command syntax and the order that they are provided.

Parameters

-U The database user ID. If you do not specify a value for this parameter, you are prompted for the database user ID.

-P The database used ID password. If you do not specify a value for this parameter, you are prompted for the database user ID password.

-n artifactname
The name of a customization artifact. This parameter can be replaced with `-name artifactname`. The name that you specify can include a percent-sign, `%` wildcard. This parameter can be used to represent a number of characters, or none.

-c category
The category, or type, of a customization artifact. This parameter can be replaced with `-category category`. The valid categories are as follows.

Table 449. Customization categories for the IBM SmartCloud Application Performance Management UI application repository

Category	Description
`crossnaming`	Extended implementation-specific naming rules
`notifications`	Application repository notification rule
`scrconfig`	Application repository base configuration XML files

-s subcategory
The subcategory, or subtype, of a customization artifact. This parameter can be replaced with `-subcategory subcategory`.

- all Lists all customization artifacts.

Important: The updated runtime configuration is activated when the application repository Java process is started after artifact changes are made. Alternately, the application repository updates its runtime process by running the **`utils`** command with the **`-e`** option of **`toolkit_reinit_and_resume.xml`**. For more information about the **`utils`** command, see "`utils`" on page 295.

tbsm_export

This section describes the **`tbsm_export`** command.

Purpose

You can use the **`tbsm_export`** command to export customization artifacts from the application repository database and write their contents to a specified directory. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. You can use the **`tbsm_export`** and **`tbsm_import`** commands to move customization artifacts from one system to another. For more information about the **`tbsm_import`** command, see tbsm_import.

The **`tbsm_export`** command can be used to periodically back up customized artifacts.

Syntax

The syntax for this command is as follows.

```
tbsm_export [-U dbUser [-P dbPassword] ] -d directory [ [-n artifactname]
[-c category]                    [-s subcategory] ]
                                       | -d directory -all
                                       | -d directory -commandfile filename
```

Note: The **tbsm_export** command parameters are positional. You must adhere to the command syntax and the order that they are provided. The command must be followed by, in order, the database access credentials (optional), and then the command options. The database access credentials and target directory are not required for **tbsm_export** commands in the command file.

Note: To export SCR data on Windows 2012 systems, you must open the command line by starting the command window from a Windows search.

Parameters

-U The database user ID. If you do not specify a value for this parameter, you are prompted for the database user ID.

-P The database used ID password. If you do not specify a value for this parameter, you are prompted for the database user ID password.

-d directory
The target file system directory for customization artifacts in an export or import directory hierarchy. The specified directory can be a fully qualified or relative directory path. This parameter can be replaced with `-directory directory`.

-n artifactname
The name of a customization artifact. This parameter can be replaced with `-name artifactname`. The name that you specify can include a percent-sign, `%` wildcard. This percent-sign can be used to represent a number of characters, or none.

-c category
The category, or type, of a customization artifact. This parameter can be replaced with `-category category`. The valid categories are as follows.

Table 450. Customization categories for the IBM SmartCloud Application Performance Management UI application repository

Category	Description
`crossnaming`	Extended implementation-specific naming rules
`notifications`	Application repository notification rule
`scrconfig`	Application repository base configuration XML files

-s subcategory
The subcategory, or subtype, of a customization artifact. This parameter can be replaced with `-subcategory subcategory`.

-all This parameter exports all customization artifacts.

-commandfile filename
You can use this parameter to specify a command file that contains one or more `tbsm_export` commands with the following syntax:

```
tbsm_export [ [-n artifactname] [-c category] [-s subcategory] ]
 | -all
```

The commands within the command file must be specified with each on an individual line. Any line with a leading number sign # is interpreted as a comment that is not executed. The specified command file can be at a fully qualified or relative path file location.

Important: The **tbsm_export** command exports each customization artifact into an export directory hierarchy structure that defines their category, subcategory, and origin. This structure is then used by a subsequent **tbsm_import** command. Runtime customization artifacts can be copied from the application repository database directly to a specified directory, without an export directory hierarchy, using the **getArtifact** command. For more information about the **getArtifact** command, see getArtifact.

Important: Application repository base customization artifacts are not exported by the **tbsm_export** command. Only artifacts that are added to the application repository configuration after installation are exported.

Example

The following example exports all of the customization artifacts in the database to the specified directory:

```
tbsm_export -directory \temp\tbsmExportImportDir -all
```

Important: The updated runtime configuration is activated when the application repository Java process is started after artifact changes are made. Alternately, the application repository updates its runtime process by running the **utils** command with the **-e** option of **toolkit_reinit_and_resume.xml**. For more information about the **utils** command, see "utils" on page 295.

tbsm_import

This section describes the **tbsm_import** command.

Purpose

You can use the **tbsm_import** command to import customization artifacts to the application repository database and therefore make them available to the runtime configuration. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. The **tbsm_import** command imports customization artifacts that are exported by the **tbsm_export** command. For more information about the **tbsm_export** command, see tbsm_export. The **tbsm_export** and **tbsm_import** commands are used to move customization artifacts from one system to another.

Syntax

The syntax for this command is as follows.

```
tbsm_import [-U dbUser [-P dbPassword] ] -directory directory
```

Note: The **tbsm_import** command parameters are positional. You must adhere to the command syntax and the order that they are provided. The command must be followed by, in order, the database access credentials (optional), and then the command options.

Parameters

-U The database user ID. If you do not specify a value for this parameter, you are prompted for the database user ID.

-P The database used ID password. If you do not specify a value for this parameter, you are prompted for the database user ID password.

-d directory
The target file system directory for customization artifacts in an export or import directory hierarchy. The specified directory can be a fully qualified or relative directory path. This parameter can be replaced with `-directory directory`.

Important: The updated runtime configuration is activated when the application repository Java process is started after artifact changes are made. Alternately, the application repository updates its runtime process by running the **utils** command with the **-e** option of **toolkit_reinit_and_resume.xml**. For more information about the **utils** command, see "utils" on page 295.

Important: You must run the **tbsm_import** command with an appropriate directory hierarchy that is created by the **tbsm_export** command. New or updated customization artifacts, which are added to the application repository database directly from a specified directory, have no export or import directory hierarchy. Such new or updated customization artifacts must be added using the **putArtifact** command. For more information about the **putArtifact** command, see putArtifact.

Important: If the customization artifacts in the specified directory are replacing previous versions of the same files, the previous version is saved in the database as a backup. When a new backup version is saved, the previous backup, if one existed, is deleted from the database.

Example

The following example imports all of the customization artifacts in the database from the specified directory:

```
tbsm_import -directory \temp\tbsmExportImportDir
```

Application repository reconciliation

The application repository, also referred to as the service component repository (SCR), consolidates resource and relationship information from multiple sources, or providers, into a data store. The information is reconciled and presented as a single resource model for easy consumption by IBM SmartCloud Application Performance Management UI application structure building.

When coupled with sources of resource information that can provide relevant information concerning the structure of an application, the application repository might ease the costs of building and maintaining application models within SmartCloud Application Performance Management UI.

The application repository can be configured to receive resource model information from different sources, including the ITCAM for Transactions Transaction Tracking component and Jazz for Service Management. The primary responsibility of the application repository is to determine how to consolidate the different models reported by different providers into a single consumable resource model. The process of reconciliation implemented by the application repository is critical to the

goals of presenting a single consolidated view of the resources and relationships that support key business applications. The following paragraphs explain the reconciliation process. This information is useful when determining if your implementation needs to augment the reconciliation process with implementation specific rules.

Reconciliation process

Reconciliation occurs in two steps. The first step is the generation of identification, or naming strings, for the resources. The second step merges the content of resources that share one or more identity strings so that a consumer of resource information, such as SmartCloud Application Performance Management UI, deals with a single entity representing the subject resource rather than two or more views of the same resource from different sources. This merged view promises to deliver a more complete view of the application components and IT resources than can be provided by any single source.

Identification, or naming of resources involves interrogating the resources, attributes, and relationships and applying them to IBM-provided naming rules, which generate identity strings that are defined by the content of the data rather than the source of data. For example, many sources of data maintain a product-specific identifier to uniquely identify a resource. Using this identifier to perform reconciliation would by unfruitful. However, if the source provided an IP address and the IP address was an IBM-provided naming rule, then resources sharing the same IP address would be merged despite any product-specific identity information. Identity rules are defined for the class of resource (for example, computer system, software server) and there are typically more than one naming rule for a class.

Once naming is complete, the reconciliation merging engine attempts to match identity strings between what at this point are considered different resources. If one or more identity strings match, the resources are merged.

Consider a simple flow example, which communicates that the Appl11 application contains the Res11 resource. This information is reported to the application repository by the S1 provider. Provider S2 reports that a Res12 resource is running on the Res 22 resource. The application repository receives this information and after generating the identity of all resources. The application repository determines that the Res 11 resource and Res12 resource are the same resource. As a result, the application repository merges the information for Res11 and Res12 resources. When SmartCloud Application Performance Management UI queries the resource structure in the application repository, the overall view of the Appl11 application contains the Res11/21 resource, which is running on the Res22 resource.

Prerequisite for reconciliation

Many factors affect the function of reconciliation. For the reconciliation to work properly, configure the following points.

- Install Web Response Time (WRT) agent on a computer that has direct communication with the computer hosting Transaction Tracking server, and enable TCP monitoring. Configure TO agent to get Web Response Time TCP data.
- Rational® Performance Tester and servers like WebSphere MQ must be installed on different computers.

When you extract TO data to application repository, the reconciliation works well with the Web Response Time TCP data that is included in the TO data.

Value of the single reconciled view

SmartCloud Application Performance Management UI takes advantage of this consistent reconciled view in the application repository by using the transitive property (if A has a dependency on B, and B has a dependency on C, then A must have a dependency on C) to include resources within an application structure.

The following relationships cause SmartCloud Application Performance Management UI to consider a resource as part of an application structure:

- If a middleware component is part of an application structure, then so is the host environment that the middleware component is running on.
- If a middleware component is part of an application structure, then so are the other middleware components that ITCAM for Transactions determines are within the same transaction paths.

Implementation-specific reconciliation rules

Reconciliation occurs when two or more resources produce the same identity strings due to the attributes and relationships communicated to the application repository from resource model providers. There might be times when source providers are unable to capture the required attribute and relationship information, which enables the default identity or naming rules to produce identity strings that match resources from other sources of information. In this situation, the application repository supports implementation-specific rules that can take a less strict approach to generating naming identity strings that can result in a more aggressive reconciliation process.

If standard naming rules do not deliver as required, the SmartCloud Application Performance Management UI solution includes the following sets of naming rules that can be used. extended naming rules might help enhance the reconciliation process. See the best practices page (https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/IBM%20SmartCloud%20Application%20Performance%20Management/page/Best%20Practices%20for%20SC%20APM%20UI) on the SmartCloud Application Performance Management UI wiki for sample naming rules that might enhance your solution. Each rule at this site contains a description of its impact on reconciliation and its applicability to certain environments.

Configuring the application repository to point to a different data store

Learn how to configure the application repository to point to a different data store. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Procedure

1. Stop the IBM SmartCloud Application Performance Management UI system, including all application repository components, except for the database component. For systems where Derby is the persistence store for the application repository XMLtoolkit, Derby is started and stopped as a Liberty server.
2. Change the application repository XMLtoolkit data store by completing these steps:

- Change directory to the *APMUI_home*/SCR/XMLtoolkit/bin directory, where *APMUI_HOME* is the installation directory of SmartCloud Application Performance Management UI.
- To point the application repository XMLtoolkit to the new data store, run the **scrdbconfig** command, for example:

  ```
  ./scrdbconfig.sh -update -t DB2 -h db2instancehostname -d SCR -p 50000
  ```
- Use the **scrdbconfig.sh -display** command to view the current database settings.

Tip: This command supports redirecting the application repository XMLtoolkit to either a DB2 or Derby database.

Important: To use the **scrdbconfig** command, you must first stop the SCR Java application with the **tbsmrdr_stop.sh** command and then restart it with the **tbsmrdr_start.sh** command.

3. After the application repository XMLtoolkit is configured to the new data store, provide the database user authentication access information by using the **setxmlaccess** command with the **scrdbid** and **scrdbpw** options. For example,

   ```
   ./setxmlaccess -scrdbid db2username -scrdbpw db2password
   ```
4. Run the **scrdbconfig.sh -test** command to test the database connection.
5. Change the application repository OSLC Liberty application to point to the new database.
   - Change directory to the <APMUI_HOME>/usr/servers/scr directory.
   - Use the SecurityUtility tool in the APMUI/bin directory to encode the database password for use in the next step. For more information about the SecurityUtility tool, see "Configuring role-based authorization" on page 321.
   - Edit the server.xml file.
     - Locate the section of the file that starts with <dataSource id="SCR_DB", which defines the applications access to the application repository database.

       Important: There are two definitions in this file by default. One definition contains the data that is configured during installation. The other definition is a commented version that contains template information for changing the access information to the application repository database.
     - If the new database is a DB2 database, copy the following code outside the enclosing comments:

       ```
       <dataSource id="SCR_DB"
        jndiName="jdbc/scr">
       <connectionManager
        maxPoolSize="20"
        minPoolSize="5"
        numConnectionsPerThreadLocal="1"
        connectionTimeout="10s"
        agedTimeout="30m"/>
       <jdbcDriver
        libraryRef="SCRDB2JDBC"/>
       <properties.db2.jcc
        databaseName="__DBNAME__"
        serverName="__DB_HOST_NAME__"
        portNumber="__DB_PORT__"
        currentLockTimeout="30s"
        user="__DB_USER__"
        password="__DB_PASSWORD__"/>
       </dataSource>
       ```

– If the new database is a DERBY database, copy the following code outside enclosing comments:

```
<dataSource id="SCR_DB"
 jndiName="jdbc/scr">
<connectionManager
 maxPoolSize="20"
 minPoolSize="5"
 numConnectionsPerThreadLocal="1"
 connectionTimeout="10s"
 agedTimeout="30m"/>
<jdbcDriver
 libraryRef="SCRDERBYJDBC"/>
<properties.db2.jcc
 databaseName="__DBNAME__"
 serverName="__DB_HOST_NAME__"
 portNumber="__DB_PORT__"
 currentLockTimeout="30s"
 user="__DB_USER__"
 password="__DB_PASSWORD__"/>
</dataSource>
```

– Replace the following parameters:
  - **__DBNAME__** to the name of the new database
  - **__DB_HOST_NAME__**to the host name or IP address of the new database instance
  - **__DB_PORT__** to the port used to access the new database
  - **__DB_USER__** to the user ID that the application repository OSLC Liberty application uses to access the new database
  - **__DB_PASSWORD__** to the encrypted password, which is generated in the first step in this section, that the application repository OSLC Liberty application uses to access the new database

– Make sure that only one section of the file defines the application repository database, for example: `<datasource dataSource id="SCR_DB"` is outside a comment.

• Save the `server.xml` file.

Results

Changes take effect the next time you restart the application.

Advanced DB2 configuration for application repository database

You can use the advanced DB2 configuration utility and the advanced options to customize the buffer pool and transaction log sizes.

To configure the databases:

• Review DB2 configuration settings
• Run the advanced DB2 configuration utility

Advanced database configuration settings

Specify the connection information for the database.

Purpose

Supply the information that is described.

The information is saved in the following properties files.

```
tbsmdb\sql\tbsm_db.properties
tbsmdb\sql\tbsmudf_db.properties
```

SmartCloud Application Performance Management application repository database

This database is the primary database for the IBM SmartCloud Application Performance Management UI application repository. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Choices

You can choose from the following options:

Database Name

The name of the database.

By default, it is set to `SCR`.

Database Hostname or IP address

The host name of the system where the DB2 is installed.

By default, it is set to the host name of the local system.

Database Port

The database port number for DB2. The default is `50000`.

Database User ID

The database user ID for DB2. This user must have permission to add and drop database tables.

Database password

Database users password. Confirm the password in the **Confirm password** field.

Should the installer create the schema for this database

- If you select **Yes**, the installer configures the tables, table spaces, and views in your DB2 instance.
- If you select **No**, the installer creates the configuration files for the tables, table spaces, and views, and you install the configuration on your DB2 instance with the **tbsm_db** command.

Database path

The path that is used to create the database. The value `<default>` or a null value specifies the default database path that is specified by the database manager configuration.

If you want to use multiple paths, the first path must contain the database, and the paths must be separated by commas.

Table space configuration

Specify the 16K and 32K table space names for the database. The default names are as follows.

Table 451. Default table space names

Database	Default table space names
Application repository server	`TBSM16KTS` and `TBSM32KTS`.

Buffer pool configuration

Specify the 16K and 32K (Data server only) buffer pool names and sizes for the database.

Table 452. Default buffer pool names

Database	Default buffer pool names
Application repository server	`TBSM16KBP` and `TBSM32KBP`.

Transaction log configuration

Specify the transaction log configuration for the database. This configuration includes the log buffer size, log file, size, number of primary logs, number of secondary logs, and the log file path. The default values are based on the number of services you have. You can view the default values for medium size installations (5000 - 20000 services) in the response file `dbconfig-installer.properties`.

If the transaction log file size is too small, an error is generated:

```
SQL0964C The transaction log for the database is full. SQLSTATE=57011
```

This error is displayed in the application repository log. To update the transaction log size to an appropriate value, open the DB2 command window by using the `db2cwadmin` command and run the command.

```
UPDATE DATABASE CONFIGURATION FOR TBSM USING LOGSECOND <size>
```

Where `<size>` is the new transaction log file size that you require.

To further optimize the configuration of the database, estimate the expected number of service instances that will be managed

The database is configured according to the size that you specify here.

Table 453. Service instance estimates

Size	Number of services	Disk space reserve
Large	More than 25,000	10 GB
Medium	5,000 to 25,000	6 GB
Small	Up to 5,000	3 GB

Running the advanced DB2 schema configuration utility

You can use the Database Configuration Utility to configure the application repository database log and buffer pool sizes to more closely fit your environment. The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

Before you begin

Before you start the database configuration utility, read the *Advanced DB2 Configuration settings* topic for the settings you specify for the DB2 schema configuration.

About this task

The configuration utility is `setup-dbconfig-platform_64.sh/exe` in the installation media of IBM SmartCloud Application Performance Management UI.

For example:

- On Windows, the command is `setup-dbconfig-windows_64.exe`
- On Linux systems, the command is `setup-dbconfig-linux_64.bin`

Procedure

1. On Windows systems, run the DB2 Schema utility from the db2cwadmin window as described in Before you begin.
2. Run the configuration utility. The configuration utility is `setup-dbconfig-platform_64.sh/exe` in the installation media of IBM SmartCloud Application Performance Management UI.
3. Select the language that you want to use for the installation, and then click **OK**. Only the languages that are supported by your system appears in the list of available languages.

   UNIX double-byte language selection: If your server does not have the double-byte code pages installed, the double-byte languages (Simplified Chinese, Traditional Chinese, Korean, Japanese) are corrupted in the language selection list. It is a display problem on the selection list.
4. In the Introduction windows, click **Next**.
5. In the Software License Agreement window, click **I accept both the IBM and non-IBM terms in the license agreement**, and then click **Next**.
6. In the **Where Would You Like to Install** field, type the fully qualified directory where you want to install the configuration utility.

   By default, the value in the field is set to the following locations.

   ```
   /opt/IBM/tivoli
   C:\Program Files\IBM\tivoli
   ```

   Directory restrictions: The directory names have these restrictions:

   - Do not specify an installation directory path that includes parenthesis, such as `c:\Program Files (x86)`. The installation might succeed with this path, but other utilities and components will fail when you attempt to run the application by using a path with parenthesis.
   - Do not choose an installation directory name that contains an **accent** character (for example, **à, é, Ñ, ô**). Otherwise, the installation fails.

   Click **Next**.
7. When you are prompted to select the product that will be using this database, ensure that you select 1-IBM SmartCloud Application Performance Management (APM).
8. In the Installation Type window, click **Advanced** and then click **Next**.
9. Specify the database name.

   application repository database
   Creates the files and schemas that are needed for the application repository databases as described in *Advanced Database configuration settings* and click **Next** when you complete each screen.

10. Select whether you want to create the schema in the database instance or if you want to install only the configuration files on the host, and create the schema later. Click **Next**.
11. Review the **Pre-Install Summary** and click **Install**.
12. Click **Finish** when done.

Configuring the application repository JVM settings

You can change the Java Virtual Machine (JVM) heap settings of the application repository according to your environment.

About this task

The application repository is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI. To perform basic configuration tasks that are associated with the application repository, complete the following steps:

Procedure

1. Configure the application repository database:
   a. Edit the Java Virtual Machine (JVM) heap settings in the `jvm.options` file.
   b. Run one of the following commands to start the application repository database:
      - On a Linux system

        ```
        APMUI_home/usr/servers/scrderby/jvm.options
        server start scrderby
        ```

      - On a Windows system

        ```
        APMUI_home\usr\servers\scrderby\jvm.options
        server start scrderby
        ```

2. Configure the application repository servlets:
   a. Edit the Java Virtual Machine (JVM) heap settings in the `jvm.options` file.
   b. Run one of the following commands to start the application repository servlets:
      - On a Linux system

        ```
        APMUI_home/usr/servers/scr/jvm.options
        server start scr
        ```

      - On a Windows system

        ```
        APMUI_home\usr\servers\scr\jvm.options
        server start scr
        ```

For Application repository back-end process

3. Configure the application repository back-end process:
   a. Open the *apm_ui_install*`/SCR/XMLtoolkit/bin/xmltoolkitsvc.properties` file, where *apm_ui_install* is the installation directory of IBM SmartCloud Application Performance Management UI.
   b. Change the following lines to set the minimum and maximum heap size to the value that you want:

      ```
      # Set the minimum heap size to 64M
       ms=64m

       # Set the maximum heap size to 1024M
       mx=1024m
      ```

c. Restart the application repository back-end process for the changes to take effect.

Results

The application repository JVM settings are configured.

Configuring IBM Tivoli Monitoring data provider and Application Repository connection

Manage IBM Tivoli Monitoring data provider information and Application Repository connection in the UI by issuing commands on the command-line interface.

About this task

Use the **connManager** command to add, delete, update, or query IBM Tivoli Monitoring data provider information or Application Repository connection.

The following command parameters are mandatory:

- **-apm**: SmartCloud Application Performance Management UI server
- **-o** or **--port** <*APMUI_port*>: Port number of the SmartCloud Application Performance Management UI server
- **-u** or **--user** <*APMUI_user*>: User name to access the SmartCloud Application Performance Management UI server
- **-p** or **--password** <*APMUI_password*>: Password that is associated with the user name

You must also choose one of the following parameters:

- **-l** or **--list**: Show all Tivoli Monitoring data providers and Application Repository connections
- **-v** or **--view** <*uid*>: Show the details of a specific Tivoli Monitoring data provider or an Application Repository connection
- **-d** or **--delete** <*uid*>: Delete a specific Tivoli Monitoring data provider or an Application Repository connection
- **-a** or **--addUpdate**: Add or update a Tivoli Monitoring data provider or an Application Repository connection. More options are available for adding or updating:
  - **-pt**: (Optional) This option is used to specify whether to add or update the Tivoli Monitoring data provider or Application Repository connection. The value must be `CURI` or `SCR`. `CURI` represents Tivoli Monitoring data provider, and `SCR` represents Application Repository connection.
    - If you do not enter the **-pt** option, the default value is `CURI`. The Tivoli Monitoring data provider is added or updated.
    - If you enter the **-pt** option with value `SCR`, the Application Repository connection is added or updated.
  - **-ph** or **--providerhost** <*PROVIDER_host*>: Host name or IP address of the Tivoli Monitoring data provider or Application Repository connection
  - **-po** or **--providerport** <*PROVIDER_port*>: Port number of the Tivoli Monitoring data provider or Application Repository connection
  - **-pu** or **--providerusername** <*PROVIDER_user*>: User name of the Tivoli Monitoring data provider or Application Repository connection

– **-pp** or **--providerpassword** <*PROVIDER_password*>: Password that is associated with the user name
– **-pi** or **--provideruid** <*uid*>: (Optional) Unique ID of the Tivoli Monitoring data provider. The <*uid*> is the unique ID for a Tivoli Monitoring data provider record in SmartCloud Application Performance Management UI.
  - If you do not enter the **-pi** option, a data provider is added and a new record is created.
  - If you do enter the **-pi** option with a <*uid*>, a data provider is added or updated. If the <*uid*> exists, the data provider record is updated; if the <*uid*> does not exist, the data provider record is added.

  Important: This option is applied to Tivoli Monitoring data provider only.
– **-pn** or **--providername** <*PROVIDER_name*>: (Optional) Name of the Tivoli Monitoring data provider or Application Repository connection

Procedure

1. Log on to the computer where SmartCloud Application Performance Management UI is installed.
2. Change directory to *APMUI_home*\usr\servers\apmui\apps\customcfg on Windows systems, or *APMUI_home*/usr/servers/apmui/apps/customcfg on Linux systems. Where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.
3. Run the **connManager** command to configure connections. See the following examples.
   - To add a Tivoli Monitoring data provider, run `connManager.bat -apm -o <APMUI_port> -u <APMUI_user> -p <APMUI_password> -a -ph <PROVIDER_host> -po <PROVIDER_port> -pu <PROVIDER_user> -pp <PROVIDER_password>`
   - To add an application repository connection, run `connManager.bat -apm -o <APMUI_port> -u <APMUI_user> -p <APMUI_password> -a -pt SCR -ph <PROVIDER_host> -po <PROVIDER_port> -pu <PROVIDER_user> -pp <PROVIDER_password>`
   - To update an existing Tivoli Monitoring data provider, run `connManager.bat -apm -o <APMUI_port> -u <APMUI_user> -p <APMUI_password> -a -pi <uid> -ph <PROVIDER_host> -po <PROVIDER_port> -pu <PROVIDER_user> -pp <PROVIDER_password> -pn <PROVIDER_name>`
   - To delete an existing provider, run `connManager.bat -apm -o <APMUI_port> -u <APMUI_user> -p <APMUI_password> -d <uid>`

Results

The IBM Tivoli Monitoring data provider and Application Repository connection is configured.

Configuring to use Jazz for Service Management

If you have applications that are defined in IBM Tivoli Application Dependency Discovery Manager or IBM Tivoli Monitoring, and you are syncing their data into Jazz for Service Management, you can reuse their application information in IBM SmartCloud Application Performance Management UI by configuring the application repository to synchronize with Jazz for Service Management.

About this task

Configuring Jazz for Service Management synchronizes application structures that are defined in Jazz for Service Management to the application repository of IBM SmartCloud Application Performance Management UI. The application repository is the service component repository (SCR) in SmartCloud Application Performance Management UI. It is used for storing application structures of SmartCloud Application Performance Management and communicating with multiple sources, such as Jazz for Service Management and the monitoring agents of ITCAM for Transactions, to get discovered application structures. You can then use the application structure information to build applications in SmartCloud Application Performance Management UI.

Procedure

1. To configure Jazz for Service Management, open the command-line interface.
2. Change directory to the `<APM_UI_INSTALL>/SCR/XMLtoolkit/bin` directory or to the `<APM_UI_INSTALL>\SCR\XMLtoolkit\bin` directory and run the following command:
   - On AIX, UNIX, or Linux systems:

     ```
     ./scrstop.sh
     ```
   - On Windows systems:

     ```
     scrstop
     ```
3. Go to the *APM_UI_install*`/usr/servers/apmui/apps/customcfg` directory or *APM_UI_install*`\usr\servers\apmui\apps\customcfg` directory, where *APM_UI_install* is the installation directory of SmartCloud Application Performance Management UI. You can use the default installation directory or choose a new path during installation.
   - On AIX, UNIX, or Linux systems, the default installation directory is the `<APMUI_HOME>` directory.
   - On Windows systems, the default installation directory is the `C:\Program Files\IBM\APMUI` directory.
4. Run one of the following commands, depending on your operating system:
   - On AIX, UNIX, or Linux systems:

     ```
     ./connManager.sh -alter -h FRS_host -p FRS_port
     -U FRS_user -P FRS_password
     ```
   - On Windows systems:

     ```
     connManager.bat -alter -h FRS_host -p FRS_port
     -U FRS_user -P FRS_password
     ```

     Where:
     - *FRS_host* is the fully qualified host name or IP address of the WebSphere Application Server where Registry Services is installed.
     - *FRS_port* is the HTTP port number that the Registry Services is listening on.
     - *FRS_user* is the user name to connect to the Registry Services.
     - *FRS_password* is the password that is associated with the user name.
5. Change directory to the `<APM_UI_INSTALL>/SCR/XMLtoolkit/bin` directory or to the `<APM_UI_INSTALL>\SCR\XMLtoolkit\bin` directory and run the following commands:
   - On AIX, UNIX, or Linux systems:

     ```
     ./scrstart.sh
     ```

- On Windows systems:
  ```
  scrstart
  ```

Results

The connection between Jazz for Service Management and the application repository of SmartCloud Application Performance Management UI is created. Information about applications that are defined in Jazz for Service Management is copied to the application repository periodically and you can use the application information to build applications in SmartCloud Application Performance Management UI.

Jazz for Service Management overview

Jazz for Service Management brings together the Open Services for Lifecycle Collaboration (OSLC) community's open specifications for linking data and other shared integration services, including administrative, dashboard, reporting, and security services. It underpins client-defined management scenarios such as cloud, performance monitoring, and IT Service Management.

Through these facets, Jazz for Service Management accelerates deployment, integration, and workflow automation across IBM, partner, and third-party tools. Its open and standardized approach to linking data means that clients and partners can rapidly deploy and improve collaboration across interdependent roles and functions with less labor and cost, and regardless of the source and the management scenarios applied. Furthermore, this approach significantly reduces the risk of broken integrations because it is not version or vendor API specific.

The integration services provide the following key features.

- Shared data repository for products that integrate through Registry Services in Jazz for Service Management
- Consistent dashboard and visualization experience
- Simplified administration of products and solutions that integrate through Administration Services in Jazz for Service Management
- Ad hoc, self-service reporting through IBM Tivoli Common Reporting in Jazz for Service Management
- Lightweight Third-Party Authentication (LTPA) single sign-on participation by non WebSphere IBM and partner application servers that integrate through Security Services in Jazz for Service Management

Jazz for Service Management adds value through:

- Open architecture for integrating IBM and other vendors products to deliver overall solution value
- Single point of configuration and administration of all solutions
- End-to-end view of IT resource, application, and business relationships
- Linked IT resources to management capabilities
- Real-time, dynamic federated data
- Provision of unique insight

For more information about Jazz for Service Management, see the Jazz for Service Management Information Center (http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.psc.doc_1.1.0.2/psc_ic-homepage.html).

Configuring role-based authorization

Role-based authorization is used in IBM SmartCloud Application Performance Management UI to assign applications to different users. Both Lightweight Directory Access Protocol (LDAP) registry and basic user registry (file system-based) can be used. Only one active registry is supported.

About this task

All roles, except apmAdmin, are view-only roles that are defined in the `roles.xml` file. The apmAdmin administrative role can modify applications. Administrators define users or groups in the `basicRegistry.xml` file. To use basic user registry, administrators must specify that the `basicRegistry.xml` file is used as the user repository in the `server.xml` file. To use an LDAP user registry, administrators must specify that the `ldapRegistry.xml` file is used as the user repository in the `server.xml` file. Administrators can define user or group mapping to roles in the `server.xml` file.

Users inherit authorizations from their groups. Administrators create new applications and assign view-only roles to users to access applications. All users that are associated with a view-only role can view the application, whether specified explicitly or implicitly.

The related XML files are in the following directories, where <*APMUI_HOME*> is the directory where SmartCloud Application Performance Management UI is installed:

- `basicRegistry.xml` file: <*APMUI_HOME*>`/usr/servers/apmui/basicRegistry.xml`

  Users and groups are defined in this file if LDAP registry is not used.

  Sample `basicRegistry.xml` code:

  ```
  <basicRegistry id="basic" realm="customRealm">
   <user id="apmadmin" name="apmadmin" password="{xor}Pi8yLz4sLA==">
   <user id="user1" name="user1" password="{xor}TcqZ2c1Njo="/>
   <user id="user2" name="user2" password="{xor}TcqZ2c1Njo="/>
   <user password="{xor}TcqZ2c1Njo=" name="user10" id="user10"/>
   <user password="{xor}TcqZ2c1Njo=" name="user11" id="user11"/>
   <user password="{xor}TcqZ2c1Njo=" name="user20" id="user20"/>
   <group id="apmadmin" name="apmadmin">
     <member id="user1" name="user1"/>
     <member id="user2" name="user2"/>
   </group>
   <group id="apmviewer" name="apmviewer">
     <member id="user10" name="user10"/>
     <member id="user11" name="user11"/>
     <member id="user20" name="user20"/>
   </group>
  </basicRegistry>
  ```

  User passwords can be plain text (not recommended) or encrypted with the help of the SecurityUtility Liberty tool in *APMUI_home*`/bin/securityUtility encode`, where *APMUI_home* is the installation path of SmartCloud Application Performance Management UI.

  Sample encryption code:

  ```
  securityUtility encode --encoding=aes --key=APMUI_KEY passw0rd
  {aes}ACIlOwPKlItcKhTywvpKOouLbsUUOPvlnV98CTPfJsjK
  ```

- `ldapRegistry.xml` file: <*APMUI_HOME*>`/usr/shared/config/ldapRegistry.xml`

  Refer to the sample configuration files that are supplied with Liberty for details: `$wlp/templates/config/ldapRegistry.xml`

Sample ldapRegistry.xml code:

```
<ldapRegistry id="IBMDirectoryServerLDAP" realm="SampleLdapIDSRealm"
       host="host.domain.com" port="389" ignoreCase="true"
       baseDN="o=domain,c=cn"         ldapType="IBM Tivoli Directory Server"
searchTimeout="1m" connectTimeout="2m"
reuseConnection="true">
    <idsFilters
    userFilter="(&(uid=%v)(objectclass=ePerson))"
    groupFilter="(&(cn=%v)(objectclass=groupOfNames))"
    userIdMap="*:uid"            groupIdMap="*:cn"
    groupMemberIdMap="groupOfNames:member" />
<contextPool enabled="false" initialSize="1" maxSize="0" timeout="0ms"
waitTime="3000ms" preferredSize="3"/>
</ldapRegistry>
```

- roles.xml file: *<APMUI_HOME>*/usr/servers/apmui/roles.xml

  Each role is defined with the **role-name** tag name. The apmAdmin or ConsoleUser roles must not be modified here because they are predefined roles.

  Sample roles.xml code:

  ```
  <security-role>
  <description>APM UI view-only role</description>
  <role-name>apmViewer</role-name>
  </security-role>
  ```

- server.xml file: *<APMUI_HOME>*/usr/servers/apmui/server.xml

  The server.xml file defines mapping from users or groups to roles. Add mapping under the SmartCloud Application Performance Management UI. Do not remove mapping to ConsoleUser for all authenticated users

  Sample server.xml code:

  ```
  <application-bnd>
    <security-role name="apmViewer">
      <user name="user10"/>
      <user name="user11"/>
      <user name="apmUser1"/>
      <user name="apmUser2"/>
      <group name="apmViewer" />
    </security-role>
    <security-role name="apmAdmin">
      <user name="user20"/>
      <group name="apmAdmin"/>
    </security-role>
    <security-role name="ConsoleUser">
      <special-subject type="ALL_AUTHENTICATED_USERS" />
    </security-role>
  </application-bnd>
  ```

Configuring an LDAP user registry for Liberty profile

You can configure one or more Lightweight Directory Access Protocol (LDAP) servers with the Liberty profile for authentication.

Before you begin

Before you configure an LDAP user registry, ensure that the user account, including the default user apmadmin, is already created on the LDAP server.

Procedure

1. Open the <APMUI_HOME>/usr/shared/config/ldapRegistry.xml file, where *<APMUI_HOME>* is the directory where you installed SmartCloud Application Performance Management UI.
2. Configure the LDAP entry for the server.

- IBM Directory Server example:

```
<ldapRegistry id="ldap" realm="SampleLdapIDSRealm"
  ldapType="IBM Tivoli Directory Server"
    host="ldapserver.mycity.mycompany.com" port="389" ignoreCase="true"
    baseDN="o=mycompany,c=us"
    userFilter="(&amp;(uid=%v)(objectclass=ePerson))"
  groupFilter="(&amp;(cn=%v)(|(objectclass=groupOfNames)
   (objectclass=groupOfUniqueNames)(objectclass=groupOfURLs)))"
  userIdMap="*:uid"
  groupIdMap="*:cn"
  groupMemberIdMap="mycompany-allGroups:member;
   mycompany-allGroups:uniqueMember;
   groupOfNames:member;
   groupOfUniqueNames:uniqueMember"
   ldapType="IBM Tivoli Directory Server">
</ldapRegistry>
```

- Microsoft Active Directory Server example:

```
<ldapRegistry id="ldap" realm="SampleLdapADRealm"
  ldapType="Microsoft Active Directory"
    host="ldapserver.mycity.mycompany.com" port="389" ignoreCase="true"
    baseDN="cn=users,dc=adtest,dc=mycity,dc=mycompany,dc=com"
    bindDN="cn=testuser,cn=users,dc=adtest,dc=mycity,dc=mycompany,dc=com"
    bindPassword="testuserpwd"
    userFilter="(&(sAMAccountName=%v)(objectcategory=user))"
  groupFilter="(&(cn=%v)(objectcategory=group))"
  userIdMap="user:sAMAccountName"
  groupIdMap="*:cn"
  groupMemberIdMap="memberOf:member">
</ldapRegistry>
```

3. Modify the <APMUI_HOME>/usr/servers/apmui/role.xml file to configure roles. Add a **<security-role>** parameter to add new roles. Each role is defined with the **<role-name>** parameter. The ampAdmin or ConsoleUser roles must not be modified because they are predefined roles. Sample roles.xml code:

```
<security-role>
<description>APM UI view-only role</description>
<role-name>apmViewer</role-name>
</security-role>
```

4. Modify both <APMUI_HOME>/usr/servers/apmui/server.xml file and <APMUI_HOME>/usr/servers/scr/server.xml file, where <*APMUI_HOME*> is the directory where you installed SmartCloud Application Performance Management UI.
   a. Create a comment for the basicRegistry.xml file location. Change the <include optional="false" location="${shared.config.dir}/basicRegistry.xml"/> code to a comment: <!--include optional="false" location="${shared.config.dir}/basicRegistry.xml"/-->
   b. Uncomment the ldapRegistry.xml file location. Change the <!--include optional="false" location="${shared.config.dir}/ldapRegistry.xml"/--> comment to the following code: <include optional="false" location="${shared.config.dir}/ldapRegistry.xml"/>
5. Map users, which are defined in LDAP, to roles in server.xml files. Associate users or groups with roles in the SmartCloud Application Performance Management UI application, IT Portal, and application repository. See following sample server.xml code.
   - For <APMUI_HOME>/usr/servers/apmui/server.xml file,

```
<application context-root="/ibm/tivoli/apm/rest" id="apmui">
 <application-bnd>
  <security-role name="apmViewer">
   <user name="user10"/>
   <user name="user11"/>
```

```
   <user name="apmUser1"/>
   <user name="apmUser2"/>
   <group name="apmViewer" />
  </security-role>
  <security-role name="apmAdmin">
   <user name="apmadmin"/>
   <group name="adminGroup"/>
  </security-role>
  <security-role name="ConsoleUser">
   <special-subject type="ALL_AUTHENTICATED_USERS" />
  </security-role>
 </application-bnd>
</application>
<application id="ITPortal"
location="${server.config.dir}/apps/com.ibm.apm.ui.eba"
name="ITPortal" type="eba">
 <application-bnd>
  <security-role name="apmViewer">
   <user name="user10"/>
   <user name="user11"/>
   <user name="apmUser1"/>
   <user name="apmUser2"/>
   <group name="apmViewer" />
  </security-role>
  <security-role name="apmAdmin">
   <user name="apmadmin"/>
   <group name="adminGroup"/>
  </security-role>
  <security-role name="ConsoleUser">
   <special-subject type="ALL_AUTHENTICATED_USERS" />
  </security-role>
 </application-bnd>
</application>
```

- For <APMUI_HOME>/usr/servers/scr/server.xml file,

```
<application id="APMScr" location="${server.config.dir}/apps/scr.war"
 name="SCRCLUSTER_SCR_oslc" type="war">
  <classloader apiTypeVisibility="spec, ibm-api, third-party"/>
      <application-bnd>
         <security-role name="apmAdmin">
          <user name="apmadmin"/>
         </security-role>

         <!--Don't remove this binding since it is always required
 to run apm ui-->
         <security-role name="tomcat">
          <user name="ALL_AUTHENTICATED_USERS"/>
         </security-role>
       </application-bnd>
</application>
```

Important: Do not remove the *ConsoleUser* role for all authenticated users. You can modify the attributes in the </application-bnd> section. However, do not modify the attributes in the <security-role name="ConsoleUser"> section.

6. If you changed the role.xml file, run one of the following commands to allow the changed roles to take effect. If not, skip this step.
   - On Windows systems

     ```
     cd <APMUI_HOME>\usr\servers\apmui\apps\customCfg
     roleManager.bat -o <APMUI port> -u <APMUI admin user>
     -p <APMUI user password>
     ```

   - On AIX, Linux, or UNIX systems

     ```
     cd <APMUI_HOME>/usr/servers/apmui/apps/customCfg
     ./roleManager.sh -o <APMUI port> -u <APMUI admin user>
     -p <APMUI user password>
     ```

Where,

- <*APMUI_HOME*> is the installation path of SmartCloud Application Performance Management UI.
- <*APMUI port*> is the HTTP port number of the SmartCloud Application Performance Management UI server.
- <*APMUI admin user*> is the user name with the administrator (apmAdmin) role to access the server, such as apmadmin.
- <*APMUI user password*> is the password.

7. If you use an LDAP user for the application repository, and this LDAP user name and its password are different from the basic registry user (apmadmin) and its password that is specified during installation, run the following command to update the user name and password for the application repository.
   - On Windows systems,

     ```
     cd <APMUI_HOME>\SCR\XMLtoolkit\bin
     setxmlaccesss.bat -apmid <APMUI_user> -apmpw <APMUI_password>
     ```

   - On Linux systems,

     ```
     cd <APMUI_HOME>/SCR/XMLtoolkit/bin
     ./setxmlaccess.sh -apmid <APMUI_user> -apmpw <APMUI_password>
     ```

   Where,

   - <*APMUI_HOME*> is the installation directory of SmartCloud Application Performance Management UI.
   - <*APMUI_user*> is the LDAP user that you use to log in SmartCloud Application Performance Management UI.
   - <*APMUI_password*> is the password of the user.
8. Reset the application repository connection by running the following command:
   - On Windows systems:

     ```
     cd <APMUI_Home>\usr\servers\apmui\apps\customCfg
     connManager.bat -apm -o <apmui_port> -u <apmui_user>
     -p <apmui_pass> -a
     -ph <scr_host> -po <scr_port>
     -pu <scr_user> -pp <scr_pass>
     -pt SCR
     ```

   - On Linux or UNIX systems:

     ```
     cd <APMUI_Home>/usr/servers/apmui/apps/customCfg
     ./connManager.sh -apm -o <apmui_port> -u <apmui_user>
     -p <apmui_pass>
     -a -ph <scr_host> -po <scr_port>
     -pu <scr_user> -pp <scr_pass>
     -pt SCR
     ```

     where

     – <*APMUI_Home*> is the installation location of SmartCloud Application Performance Management UI.
     – <*apmui_port*> is the HTTP port number that the server of SmartCloud Application Performance Management UI is listening on.
     – <*apmui_user*> is the user name of SmartCloud Application Performance Management UI with administrator role.
     – <*apmui_pass*> is the password that is associated with the user.
     – <*scr_host*> is the host name or IP address on which the application repository is running.
     – <*scr_user*> is the user name with application repository administrator role.
     – <*scr_pass*> is the password that is associated with the user.

– *<scr_port>* is the HTTP port number that the application repository uses.

Results

The LDAP user registry is configured. After the user-role mapping is established, when you create an application and assign the roles in the Roles to access this application list, users of the assigned roles can access the monitoring data of the application. For more information about configuring LDAP user registries with the Liberty profile, see the WebSphere Application Server information center at http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/index.jsp?topic=%2Fcom.ibm.websphere.wlp.nd.multiplatform.doc%2Fae%2Ftwlp_sec_ldap.html. For more information about mapping users to roles, see "Mapping users to roles" on page 328.

Configuring a basic user registry for Liberty profile

You can configure a basic user registry for authentication with the Liberty profile by editing the `basicRegistry.xml` file.

Procedure

1. Open the `basicRegistry.xml` file.
2. Configure the basic registry for the server as in the following example:

```
<basicRegistry id="basic" realm="customRealm">
     <user name="mlee" password="p@ssw0rd" />
     <user name="rkumar" password="pa$$w0rd" />
     <user name="gjones" password="{xor}Lz4sLCgwLTs=" />
     <group name="students">
         <member name="mlee" />
         <member name="rkumar" />
     </group>
</basicRegistry>
```

   Tip: You must use unique names for your users and groups. Remove all trailing and leading spaces from the user and group names. If the user ID or password contains characters other than US-ASCII characters, make sure that the file is saved by using UTF-8 character encoding.

   Important: If you edit the `server.xml` file directly, you can use the **securityUtility encode** command to encode the password for each user. The securityUtility command-line tool is available in the `$INSTALL_ROOT/bin/securityUtility encode` directory. When you run the **securityUtility encode** command, you either supply the password to encode as an input from the command line or, if no arguments are specified, the tool prompts you for the password. The tool then outputs the encoded value. Copy the value that is output by the tool, and use that value for the password. For example, to encode the **GiveMeLiberty** password, run the following command: **securityUtility encode GiveMeLiberty**
3. Modify the `<APMUI_HOME>/usr/servers/apmui/role.xml` file to configure roles. Add a **<security-role>** parameter to add new roles. Each role is defined with the **<role-name>** parameter. The ampAdmin or ConsoleUser roles must not be modified because they are predefined roles. Sample `roles.xml` code:

```
<security-role>
<description>APM UI view-only role</description>
<role-name>apmViewer</role-name>
</security-role>
```

4. Modify the <APMUI_HOME>/usr/servers/apmui/server.xml file, where <*APMUI_HOME*> is the directory where you installed SmartCloud Application Performance Management UI.
   a. Create a comment for the ldapRegistry.xml file location. Change the <include optional="false" location="${shared.config.dir}/ldapRegistry.xml"/> code to a comment: <!--include optional="false" location="${shared.config.dir}/ldapRegistry.xml"/-->
   b. Uncomment the basicRegistry.xml file location. Change the <!--include optional="false" location="${shared.config.dir}/basicRegistry.xml"/--> comment to the following code: <include optional="false" location="${shared.config.dir}/basicRegistry.xml"/>
5. Add user-role mapping in the <APMUI_HOME>/usr/servers/apmui/server.xml file. Associate users or groups with roles in the SmartCloud Application Performance Management UI application. Sample server.xml code:

```
<application context-root="/ibm/tivoli/apm/rest" id="apmui">
 <application-bnd>
  <security-role name="apmViewer">
   <user name="mlee"/>
   <user name="rkumar"/>
  </security-role>
  <security-role name="apmAdmin">
   <user name="gjones"/>
   <group name="students"/>
  </security-role>
  <security-role name="ConsoleUser">
   <special-subject type="ALL_AUTHENTICATED_USERS" />
  </security-role>
 </application-bnd>
</application>
<application id="ITPortal"
location="${server.config.dir}/apps/com.ibm.apm.ui.eba"
name="ITPortal" type="eba">
 <application-bnd>
  <security-role name="apmViewer">
   <user name="mlee"/>
   <user name="rkumar"/>
  </security-role>
  <security-role name="apmAdmin">
   <user name="gjones"/>
   <group name="students"/>
  </security-role>
  <security-role name="ConsoleUser">
   <special-subject type="ALL_AUTHENTICATED_USERS" />
  </security-role>
 </application-bnd>
</application>
```

   Important: Do not remove the *ConsoleUser* role for all authenticated users. You can modify the attributes under </application-bnd> except </security-role>.
6. If you changed the role.xml file, run one of the following commands to allow the changed roles to take effect. If not, skip this step.
   - On Windows systems

     ```
     cd <APMUI_HOME>\usr\servers\apmui\apps\customCfg
     roleManager.bat -o <APMUI port> -u <APMUI admin user>
      -p <APMUI user password>
     ```

   - On AIX, Linux, or UNIX systems

     ```
     cd <APMUI_HOME>/usr/servers/apmui/apps/customCfg
     ./roleManager.sh -o <APMUI port> -u <APMUI admin user>
      -p <APMUI user password>
     ```

Where,

- <*APMUI_HOME*> is the installation path of SmartCloud Application Performance Management UI.
- <*APMUI port*> is the HTTP port number of the SmartCloud Application Performance Management UI serve.
- <*APMUI admin user*> is the user name with the administrator (apmAdmin) role to access the server, such as apmadmin.
- <*APMUI user password*> is the password.

Results

The basic user registry is configured. After the user-role mapping is established, when you create an application and assign the roles in the Roles to access this application list, users of the assigned roles can access the monitoring data of the application. For information about configuring a basic user registry for the Liberty profile, see the WebSphere Application Server information center at http://pic.dhe.ibm.com/infocenter/wasinfo/v8r5/index.jsp?topic=%2Fcom.ibm.websphere.wlp.nd.multiplatform.doc%2Fae%2Ftwlp_sec_basic_registry.html.

Mapping users to roles

Learn how to map a user to a role for a specific application in IBM SmartCloud Application Performance Management UI.

Procedure

1. Configure a user registry for the Liberty profile. For more information about configuring basic user registries, see "Configuring a basic user registry for Liberty profile" on page 326. For more information about configuring LDAP user registries, see "Configuring an LDAP user registry for Liberty profile" on page 322.
2. Associate users or groups with roles in the SmartCloud Application Performance Management UI application. Add users or groups to roles in the `<APMUI_HOME>/usr/servers/apmui/server.xml` file, where <*APMUI_HOME*> is the directory where you installed SmartCloud Application Performance Management UI. Insert the following code sample after the `<application id="apmui" ...><application-bnd>` and `<application id="ITPortal" ...><application-bnd>` lines in the `server.xml` file:

```
<security-role name="apm_role_name">
 <user name="apm_user_name"/>
 <group name="apmViewer" />
</security-role>
```

3. Create an application. For more information about creating applications, see Creating an application. Assign the new role in the **Roles to access this application** list and click **Save**.

Results

The role is associated with the user for the specific application. Other non-administrative users cannot view the application.

Configuring context launching for the BPM group widget

The IBM SmartCloud Application Performance Management UI provides context launching. You can link from group widgets in component details dashboards to Tivoli Enterprise Portal workspaces. Context launching must be manually configured for the Business Process Management (BPM) group widget.

About this task

For BPM applications monitoring, the SOA Domain Management Server (SDMS) service is only enabled on the primary Tivoli Enterprise Portal Server. If a non-primary Tivoli Enterprise Portal Server stops, SmartCloud Application Performance Management UI can continue to work unless the primary server is down. For BPM context launching, if multiple data providers are selected, you must specify the primary Tivoli Enterprise Portal Server information where the SDMS service is enabled. If a non-primary data provider is selected, you must also specify the primary Tivoli Enterprise Portal Server information where the SDMS service is enabled.

Tip: For more information about best practices, see the Service Management Connect wiki (https://www.ibm.com/developerworks/mydeveloperworks/wikis/home?lang=en#/wiki/Tivoli%20Composite%20Application%20Manager/page/Best%20Practices%20for%20APM%20UI).

To configure the default Tivoli Enterprise Portal Server for context launching, complete the following steps:

Procedure

1. Open the *APMUI_home*/usr/servers/apmui/apps/customCfg/apmui.cfg configuration file, where *APMUI_home* is the installation directory of APM UI.
2. Specify a value for the **APM_TEPS_HOST** parameter in the configuration file. Enter the host name of the Tivoli Enterprise Portal Server that you want to link to for context launching. If no value is specified, the first active IBM Tivoli Monitoring data provider, which is selected in the Settings panel, is used as the default Tivoli Enterprise Portal Server. The default value for the **APM_TEPS_PORT** parameter is 15200.
3. Run one of the following commands in the same directory as the apmui.cfg file:
   - AIX or Linux systems:

     ```
     ./apmuicfg.sh  -u <APMUI user> -p <APMUI password> -o <APMUI Port>
     ```

   - Windows systems:

     ```
     apmuicfg.bat  -u <APMUI user> -p <APMUI password> -o <APMUI Port>
     ```

   Where, <*APMUI user*>, <*APMUI password*>, and <*APMUI Port*> are the SmartCloud Application Performance Management UI user name, password, and port number.
4. Refresh the browser or relaunch SmartCloud Application Performance Management UI.

Results

Context launching is configured for BPM applications monitoring. You can link from group widgets in component details dashboards to Tivoli Enterprise Portal workspaces.

Configuring the data prefetch interval

The data prefetch value is the sampling interval in which the IBM SmartCloud Application Performance Management UI server retrieves data from the IBM Tivoli Monitoring data provider. The default data prefetch value is 5 minutes. If this value is set to a value lower than 5 minutes, some data might not be retrieved in time. The data prefetch interval is defined in the `apmui.cfg` file that is in the *APMUI_home*`/usr/servers/apmui/apps/customCfg` directory, where *APMUI_home* is the installation directory of APM UI. All properties in this file are loaded during the product server startup. The data prefetch interval is configured on the product server. You can change the file properties at run time.

About this task

If you want to change the data prefetch interval to another value, complete the following steps:

Procedure

1. Open the `apmui.cfg` file in the *APMUI_home*`/usr/servers/apmui/apps/customCfg` directory.
2. Edit the following parameters:
   a. `APMUI_DATA_PREFETCH_INTERVAL=300`
      The data prefetch interval, in seconds. This parameter is enabled when the `APMUI_DATA_PREFETCH_STATUS` parameter is set to `ON`. The default value is 300 seconds. The minimum value is 60 seconds.
   b. `APMUI_DATA_PREFETCH_STATUS=ON`
      This parameter is enabled by default. Dashboards have a quick response time because data comes from memory cache. To disable data prefetch auto refresh, set this value to `OFF`.

- If you are configuring the data prefetch interval during startup, restart the product server. If you are configuring the data prefetch interval during run time, continue with the following step.

3. Run one of the following commands:
   - Windows systems:

     ```
     apmuicfg.bat -u <APMUI user> -p <APMUI password> -o <APMUI Port>
     ```

   - Linux or AIX systems:

     ```
     ./apmuicfg.sh  -u <APMUI user> -p <APMUI password> -o <APMUI Port>
     ```

   Where, <*APMUI user*>, <*APMUI password*>, and <*APMUI Port*> are the SmartCloud Application Performance Management UI user name, password, and port number.

Results

You must be able to log on to the product server with the user name and password. The user must have the role of *apmAdmin*. For users with the *apmAdmin* role, the results are displayed on the console, as in this example:

```
Set data prefetch status to on successfully,
Set data prefetch interval to 300 seconds successfully.
```

Configuring the interval for detecting application changes

IBM SmartCloud Application Performance Management UI detects the changes to the application from Jazz for Service Management and Transaction Tracking periodically. By default, the detection interval is 30 minutes. You can change the interval by modifying the parameter in the configuration file.

About this task

IBM SmartCloud Application Performance Management UI detects application changes by comparing the application in SmartCloud Application Performance Management UIwith the applications in application repository. Change the detecting interval according to the following steps.

Note: Transaction Tracking is not able to detect component deletions. For those related applications, if any component is deleted from the source, it cannot be detected by Transaction Tracking.

Procedure

1. Open the `apmui.cfg` file in *APMUI_home*`\usr\servers\apmui\apps\customCfg` on Windows systems, or in *APMUI_home*`/usr/servers/apmui/apps/customCfg` on Linux systems. Where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.
2. Edit the parameter **`OSLC_APP_DELTA_SYNC_INTERVAL`**. The value of the parameter is the interval (seconds) for detecting application changes. By default it is 1800. The minimum value is 120.
3. In the same directory as the `apmui.cfg` file, run one of the following commands for the change to take effect.
   - Windows systems:

     ```
     apmuicfg.bat -u <APMUI user> -p <APMUI password> -o <APMUI Port>
     ```
   - Linux or AIX systems:

     ```
     ./apmuicfg.sh  -u <APMUI user> -p <APMUI password> -o <APMUI Port>
     ```

   Where, <*APMUI user*>, <*APMUI password*>, and <*APMUI Port*> are the SmartCloud Application Performance Management UI user name, password, and port number.

Results

The interval for detecting application changes is configured.

Changing the JVM heap size

If you have many applications to monitor in your enterprise, you might need to adjust the JVM heap size for better performance.

About this task

Complete the following steps to change the JVM heap size for IBM SmartCloud Application Performance Management UI.

Procedure

1. Open the *apm_ui_install*/usr/servers/apmui/jvm.options file, where *apm_ui_install* is the directory where SmartCloud Application Performance Management UI is installed.
2. Change the following lines to set the minimum and maximum heap size to the values that you want:

```
# Set the minimum heap size to 1024M
-Xms1024m

# Set the maximum heap size to 2048M
-Xmx2048m
```

Stopping and starting SmartCloud Application Performance Management UI server

You can run commands to stop and start the IBM SmartCloud Application Performance Management UI server.

Procedure

1. Open the command-line interface.
2. Run one of the following commands to stop the IBM SmartCloud Application Performance Management UI server.
   - On a Linux system

     ```
     APMUI_home/bin/
     server stop apmui
     ```

   - On a Windows system

     ```
     APMUI_home\bin\
     server stop apmui
     ```

   The IBM SmartCloud Application Performance Management UI server is stopped.
3. Run one of the following commands to start the IBM SmartCloud Application Performance Management UI server.
   - On a Linux system

     ```
     APMUI_home/bin/
     server start apmui
     ```

   - On a Windows system

     ```
     APMUI_home\bin\
     server start apmui
     ```

   The IBM SmartCloud Application Performance Management UI server is started.

   Note: If you close the command-line interface after you run the `server start apmui` command, the IBM SmartCloud Application Performance Management UI server stops. Therefore, do not close the command-line interface after you start the IBM SmartCloud Application Performance Management UI server by running the command.

Results

The IBM SmartCloud Application Performance Management UI server is stopped or started according to the commands that you run.

Chapter 7. Customizing IBM SmartCloud Application Performance Management UI

The IBM SmartCloud Application Performance Management UI Version 7.7 provides customization support. An experienced user can update UI components by using specific commands. Users must be familiar with the definition template JavaScript Object Notation (JSON) file.

Group widget customization

Group widgets represent a set of performance metrics of monitored resources. Group widgets contain multiple widgets that represent key performance indicators (KPIs) of a single resource or clustered resources. You can customize your group widgets with definition templates.

Group widget definitions are described with the JavaScript Object Notation (JSON) file format. A group widget definition contains three parts: basic information (includes the size and title of the group widget), data sets, and widgets.

The following code is an example of a group widget definition:

- AIX, UNIX, or Linux systems:
  `$APMUI_home/usr/servers/apmui/apps/resources/samples/klz`
- Windows systems:
  `$APMUI_home\usr\servers\apmui\apps\resources\samples\klz`

Where, *APMUI_home* is the IBM SmartCloud Application Performance Management UI directory.

Defining the data source for widgets

You can assign one or multiple data sets in a group widget to define the data source for the widgets. You can define two types of data set in UI group widget definitions; simple and mashup.

Simple data sets

The simple data set fetches data from the IBM Tivoli Monitoring data provider directly. The following code is a standard format example of a simple data set definition:

```
{
  "id": "%DATASET_ID%",
  "column":["%COLUMN_1%","%COLUMN_2%","%COLUMN_3%", ...],
  "scale":{"%COLUMN_1%":2,"%COLUMN_2%":3,"%COLUMN_3%":2,...}
  "query":{
      "condition":"%CONDITION%",
      "sort":"%SORT%",
      "count":%COUNT%,
       ...
   }
}
```

- **id**: Used to define the data set unique ID. Values must be the same as the attribute group ID in the object definition interchange (ODI) file of the specific IBM Tivoli Monitoring agent.

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- **column**: Used to define columns in a data set. Every column is an attribute in the attribute group of the ODI file for the specific IBM Tivoli Monitoring agent. The UI gets the data for these attributes from the IBM Tivoli Monitoring data provider and binds the data to the group widget. The value of the column must be identical to the ***COLUMN** field that is defined in the ODI file.
- **scale**: Used to define the scale of columns in a data set. For example, the scale value of *%COLUMN_1%*, which is defined in the ODI file, is 2. The *%COLUMN_1%* attribute is scaled by two powers of 10. The value of the scale must be identical to the ***SCALE** property that is defined in the ODI file. The value must be identical unless the following conditions are all satisfied:
  1. The ***TYPE** property in the ODI file declares that the attribute is an integer.
  2. There is a ***BEHAVE** property in the ODI file with a value of *GAUGE*.
  3. There is a ***RANGE** property in the ODI file with a minimum value of *0* and a maximum value of *n* powers of 10 (*n*>=2). The value of the scale must be *n*.
- **query**: Used to define filter conditions for getting data from the IBM Tivoli Monitoring data provider. There are three parts in a query:
  - **count**: When there are multiple rows in one data set, the count parameter specifies the request return data in the range 0 - *"%COUNT%"* rows of data. If **count** is not defined, the UI assigns a default value (1000).
  - **sort**: Sort the data set with this parameter. The format of the **sort** parameter is *SORTED_COLUMN_ID* for ascending sort, or *-SORTED_COLUMN_ID* for descending sort. You can use the **count** parameter to get the top number of rows in a data set.
  - **condition**: Filter the data set with this parameter. The **condition** parameter is a Boolean expression. The request returns rows that make the Boolean expression true. The format of the condition must follow the rule:

    ```
    condition_expression := '('condition_expression')'
    condition_expression := condition_expression'
    and 'condition_expression | condition_expression'
    or 'condition_expression | '!'condition_expression |
    operand operator operand
    operand := COLUMN_ID | string | number | boolean
    operator := '>' | '=' | '<' | '>=' | '<=' | '!='
    ```

    Ensure that the condition expression contains parentheses when the condition expression is not a single condition, as in the following example:

    ```
    "condition": "(INDOUBT=1)"
    "condition": "(CHLTYPE=8 or CHLTYPE=9)"
    "condition": "CHTYPE=254"
    ```

Mashup data sets

A mashup data set is calculated from an existing data set, which can include mashup data sets and simple data sets. The following code is a standard format example of a mashup data set definition:

```
{
     "id": "%MASHUP_DATASET_ID%",
     "type":"MASHUP",
     "column":["%COLUMN_1%","%COLUMN_2%","%COLUMN_3%", ...],
     "atom":[{
           "colname":"%COLUMN_1%",
```

```
            "formula":"%SIMPLE_DATASET_ID%.%SIMPLE_COLUMN_n%"
           },{
            "colname":"%COLUMN_2%",
            "formula":"%SIMPLE_DATASET_ID%.%SIMPLE_COLUMN_m%"
           }
           ...
           ]
     "formula":[{
           "colname":"%COLUMN_x%",
           "formula":"%FORMULA%"},
             ...
     ]
}
```

The key items in mashup data set definitions are columns, atoms, and formulas:

- **column**: The **column** parameter defines the returned columns of this data set. It is a universal set of atom columns and formula columns.
- **atom**: The **atom** parameter defines the columns that are not defined in the formula. These columns are returned from the source data set along with the filter or sort conditions in the formula.
- **formula**: The **formula** parameter defines one or more formulas. Each formula returns one column after a series of calculations according to the **formula** parameter. Each formula is an array and each item in the array defines one complete formula:
  - **colname**: The column that is returned by formula calculations has a column name.
  - **formula**: The **formula** parameter is an expression that returns one column that is calculated from one or more columns. The following table lists the supported formula in UI with examples:

Table 454. Formula

Formula	Expression	Description
+ - * / ( )	Expr := Expr '+' Expr Expr := Expr '-' Expr Expr := Expr '*' Expr Expr := Expr '/' Expr Expr := '(' Expr ')'	Support the plus sign (+), the minus sign (-), asterisk (*), forward slash (/) and parentheses ( ) to change computation priority in a single data set or constant.

Widgets

A widget is the smallest unit of a group widget. Widgets are generic UI elements that can be controlled and can change the appearance of elements. Widgets represent one metric or multiple comparable metrics.

You can define every widget in the group widget with layout, meta, and threshold information. IBM SmartCloud Application Performance Management UI provides the following type of widgets:

- Bullet: Displays a key measure, along with a threshold measure, and qualitative ranges, to instantly declare if the measure is in a normal, warning, or critical state. The real value is displayed as a tooltip when the cursor is moved over it.
- Bullet chart: A multiple row version of the bullet widget, which displays multiple data rows.
- Chart: The primary UI widget with single or multiple lines, bars, or columns.
- Grid: A lightweight and high performance table grid widget.

- HTML table gauge: Provides multiple rows that display different properties across different data sets. This widget can display status icons.
- Sparkline: Provides a quick historical context without the quantitative precision of a standard line graph.
- Status summary: Displays the count of different states.

The widget part of a group widget definition includes three sections:

class Used to define widget style. The value of this attribute is the name of a widget style. Every widget style is mapped to a unique name.

Table 455. Widget styles mapped to unique class names

Widget style	Unique class name
Bullet	ibm.apm.widgets.BulletWidget
Bullet chart	ibm.apm.widgets.BulletChartWidget
Chart	ibm.apm.widgets.ChartWidget
Grid	ibm.apm.widgets.GridWidget
HTML table gauge	ibm.apm.widgets.HtmlTableGauge
Sparkline	ibm.apm.widgets.SparklineWidget
Status summary	ibm.apm.widgets.StatusSummaryWidget

wid A random, unique ID of a widget in a group widget, for example: w100.

Important: This ID must be unique in the scope of each group widget.

params
Used to define the layout, style, data format, and threshold of a widget.

Table 456. Params items

Items	Type	Optional	Default	Description
label	String	true	""	Widget label
x	Number	false	0	X position of widget
y	Number	false	0	Y position of widget
widget	Number	false	0	Width in pixels
height	Number	false	0	Height in pixels
meta	Object	false	null	Meta has some basic properties that can determine how to get the data, how to format data, and how to configure the threshold condition.

Table 457. Meta properties

Properties	Type	Optional	Default	Description
id	String	false	""	Used to define data that is displayed in this widget. Value is *%DATASET_ID%. %COLUMN_ID%*
alias	String	false	""	Label of attribute in widget.
format	Object	true	null	Used to define display format of one attribute.
threshold	Array	true	null	Used to compute status of one attribute.

Table 458. Format properties

Properties	Type	Optional	Default	Description
pattern	String	false	null	The pattern string is constructed according to the Unicode Common Locale Data Repository (CLDR) specifications, which use a convention similar to the Java NumberFormat.
type	String	false	"decimal"	"decimal" or "percentage"
place	Number	false	0	Fixed number of decimal places to display. This number overrides any information in the provided pattern.

Table 459. Threshold properties

Properties	Type	Optional	Default	Description
start	Number String Array	false	null	Scope different threshold anchor point.
status	String	false	"Normal"	Choose one of the following case-sensitive enumerations: • "Normal" • "Warning" • "Critical"
name	String	false	"Normal"	

The following code is a standard format example of a widget definition:

```
{
  "class": "%STYLE_UNIQUE_NAME%",
  "wid":"%WIDGET_UNIQUE_ID%"
  "params":{
       "label":"",
       "x":0,
       "y":0,
       "width":490,
       "height":150,
        "meta":[
           {
             "id":"KLZPROC.BUSYCPU",
             "alias":"CPU Used (%)",
             "axis": "y",
              "format": {
                 "pattern":"#,##0",
                 "type":"decimal",
                 "places":2
               },
                "thresholds": [
```

```
                {
                  "start": 0,
                  "status": "Normal",
                  "name": "Normal"
                },
                {
                    "start": 0.7,
                    "status": "Warning",
                    "name": "Warning"
                  },
                    ...
                  ]
            },
             ...
          ]
    }
}
```

Thresholds

When you modify thresholds in a JavaScript Object Notation (JSON) file, edit the thresholds in order of size. Edit the smallest threshold first, followed by larger thresholds of increasing size.

The server cannot identify the following code:

```
"thresholds":[ {"start":50, "status":"Critical", "name":"Critical"},
    {"start":20,"status":"Warning", "name":"Warning"},
       {"start":0,"status":"Normal", "name":"Normal"}]
```

Modify thresholds in the JSON file in order of size, as in the following code example:

```
"thresholds":[ {"start":0,"status":"Normal", "name":"Normal"},
    {"start":20,"status":"Warning", "name":"Warning"},
       {"start":50, "status":"Critical", "name":"Critical"}]
```

Customizing the dashboard

Before you begin

Before you begin this task, stop all UI operations. Back up your current running UI, as described in "Backing up and restoring the databases of SmartCloud Application Performance Management UI" on page 353.

All group widget definition files must have a `.json` file name extension and must be in the root folder directly. Assign a name to the root folder.

When you successfully deploy the UI, the command-line interface can be reached from *<APMUI_HOME>*`/usr/servers/apmui/apps/customCfg`, where *<APMUI_HOME>* is the IBM SmartCloud Application Performance Management UI directory, for example, `/opt/IBM/APMUI/usr/servers/apmui/apps/customCfg`.

Before you add a custom application, put group widget template definition files in one directory on the server, such as the `/tmp/klz` directory. Only one group widget definition file for page2 and one or more files for page3 can be defined. The page2 file must be named as `summary.json`. Other files can have any file name that is suffixed with the `.json` file name extension. The file name is not case sensitive and must be unique.

The customBuilder.sh CLI tool takes care of relationships between various file types. Custom application data developers can focus on group widget definition. The following list provides options for the customBuilder.sh tool:

- Mandatory input:
  - *-i, --id*: Unique identifier for the custom application. If the action is add or update, the id is checked first. A message prompts users that the id is in use. The id is input without the prefix _, but the tool adds the prefix to classify the id in the custom application.

    Important: *id* is not case sensitive. *WAS*, *was*, and *Was* are considered to be identical.
  - *-u, --user*: SmartCloud Application Performance Management UI user name.
  - *-p, --password*: SmartCloud Application Performance Management UI password.
  - *-o, --port*: SmartCloud Application Performance Management UI port (default 8080).
- Optional input:
  - *-d, --directory*: Specifies the root path of definition files. This option is not available when you delete a custom application. All group widget files must be located directly in the root folder, and not in a subdirectory. The CLI tool generates a set of subdirectories: `application template`, `category`, `datasource`, `groupwidgets` (some new attributes are added, comparing the original version, and the source file is not changed), `groupwidgetPalette`, and `page-src`.
  - *-r, --remove*: Deletes the custom application for the id, which is specified by the *–i* option.
  - *-s, --search*: Specifies the filter to narrow down the selection of the data source. If the option is not provided, all data sources in the default data provider are listed. Users must select one filter for generating category and data source files. Users can still change the filter when the interactive choices are displayed.

    Important: The keyword is not case sensitive.
  - *-y, --yes*: This option is for answering interactive questions.
  - *-v, --verbose*: Displays detailed output.
  - *-h, --help*: Displays the help message.

Procedure

1. To add or update a custom application, on the command line, enter the following command:
   `./customBuilder.sh -u myuser -p mypass -o 8080 -i identifier -d gw_dir`
   Where, *identifier* is the unique identifier for the custom application and *gw_dir* is the directory where the group widget definitions are located, such as the `/tmp/klz` directory.
   - For existing components, update related components.
   - For new components, assign a new category name for your new template definitions. Add templates by using the previous command.
2. To delete a custom application, on the command line, enter the following command: `customBuilder.sh/bat -u myuser -p mypass -o 8080 -r -i identifier`

Example

Before you add a custom application, put group widget definition files in one directory on the server, such as the /tmp/klz directory. The following code gives an example of adding a custom application. In this example, the developer wants to define a custom application that collects data from Linux OS agent, but the data source is unknown. No filter is provided and all data sources are listed:

```
[root@tive17 customCfg]# ./customBuilder.sh -u apmadmin -p apmpass -o 8080 -i klz
 -d /tmp/cus/klz
Please input a keyword to query datasources in itm.TEMS_v5254006de5fe
.tivp079.cn.ibm.com
ENTER key for all datasources:
1. Queue-Sharing Group
2. Web Response Time
3. Apache Web Server
4. Universal Data Provider
5. Sun Java System Web Server
6. DB2
7. Universal Agent
8. Warehouse Proxy
9. MS Host Integration Server
10. Active Directory
11. Robotic Response Time
12. Lotus Domino
13. i5/OS
14. mySAP
15. DataPower Systems
16. QI Agent
17. BPM SOA UI Agent
18. QI Broker
19. HSLT
20. Transaction Collector
21. Transaction Reporter
22. Microsoft Hyper-V Server
23. SNMP HP-UX Systems
24. mySAP Agent
25. Microsoft IIS Web Server
26. Performance Analyzer Warehouse Agent
27. Agentless Linux OS
28. Microsoft Exchange Server
29. Web Server Agent
30. All Managed Systems
31. IBM Tivoli Monitoring 5.x Endpoint Agent
32. CIM Solaris Systems
33. System Management Agent Systems
34. Microsoft HIS
35. MS .NET Framework
36. IBM Tivoli Monitoring 5.x Endpoint
37. MS SharePoint Portal Server
38. Sun Management Center Systems
39. SNMP AIX Systems
40. Linux OS
41. UNIX OS
42. Microsoft Lync Server
43. Services Management Agent
44. Monitored Network Devices
45. Network Devices Monitoring Agent
46. Agentless AIX OS
47. Microsoft IIS
48. Agentless Solaris OS
49. Lotus Workplace Server
50. MS BizTalk Server
51. WebSphere App Server
52. WebSphere XS Zone
53. WebSphere Agent
```

```
54. Windows OS
55. Summarization and Pruning Agent
56. MQSERIES
57. Microsoft SQL Server
58. Oracle Database Extended
59. UDB Agent
60. WebSphere Portal Server
61. WebSphere ESB
62. Generic Configuration
63. Clients
64. Applications
65. Oracle Data Guard
66. MS Cluster Server
67. Application Management Console
68. Client Response Time
69. WebSphere XD Cell
70. DataPower Monitoring Agent
71. SNMP Windows Systems
72. UNIX Logs
73. Services Management Agent Environment
74. WebSphere Process Server
75. Oracle RDBMS
76. Tivoli Enterprise Portal Server
77. WebSphere Message Broker
78. Internet Services
79. Agentless HP-UX OS
80. BPM SOA Process Group
81. Oracle ASM
82. WMI Windows Systems
83. SNMP Linux Systems
84. Agentless Windows OS
85. Input a new keyword
86. Quit
40
```

Where, *40* represents Linux OS, all files are generated automatically and imported to the database.

When operations are successful and the custom id is in the database, developers might want to change the group widget size or chart type. The following code gives an example of updating a custom application:

```
[root@tive17 customCfg]# ./customBuilder.sh -u apmadmin
-p apmpass -o 8080 -i klz -d /tmp/cus/klz -s "Linux OS" -v
The ID [_klz] is in use.
To continue operation will update existing definition.
1. Update _klz
2. Quit and input a new ID 1
Verifying groupwidget definition file: _klz_top5_process_cpu.json
Verifying groupwidget definition file: _klz_network.json
Verifying groupwidget definition file: _klz_disk.json
Verifying groupwidget definition file: _klz_summary.json
Verifying groupwidget definition file: _klz_top5_process_mem.json
Verifying groupwidget definition file: _klz_memory_trend.json
Verifying groupwidget definition file: _klz_cpu_trend.json
Find default data provider: itm.TEMS_v5254006de5fe.tivp079.cn.ibm.com
1. Agentless Linux OS
2. Linux OS
3. SNMP Linux Systems
4. Input a new keyword
5. Quit
2
Datasource selected: Linux OS
Writing application template to _klz_app_tpl.json
Writing category to _KLZ.json
Writing datasource to _KLZ.json
```

```
Writing groupwidget palette to _klz_resource_groupwidgets.json
Writing page source for page2 to _klz_page_summary.json
Writing page source for page3 to _klz_page_details.json
----- AddUpdate Category Phase -----
AddUpdate Category from file /tmp/cus/klz/categories/_KLZ.json:
updating category [_KLZ] succeeded.
AddUpdate Category from file /tmp/cus/klz/categories/_KLZ.json finished.
===== Category Summary Total Added 0,Updated 1,Failed 0 =====
----- AddUpdate DataSource Phase -----
AddUpdate Datasource from file /tmp/cus/klz/datasources/_KLZ.json:
updating datasource [_KLZ] finished.
AddUpdate Datasource from file /tmp/cus/klz/datasources/_KLZ.json finished.
===== Datasource Summary Total Added 0,Updated 1,Failed 0 =====
----- AddUpdate GroupWidget Phase -----
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
cpu_trend.json:
start to update groupwidget [_klz_cpu_trend].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_cpu_trend] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
cpu_trend.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
disk.json:
start to update groupwidget [_klz_disk].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_disk] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
disk.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
memory_trend.json:
start to update groupwidget [_klz_memory_trend].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_memory_trend] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
memory_trend.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
network.json:
start to update groupwidget [_klz_network].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_network] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
network.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
summary.json:
start to update groupwidget [_klz_summary].
updating GroupWidget instance in page [tpl_res_j2ee_11] succeeded.
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating GroupWidget instance in page [_klz_page_summary] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_summary] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
summary.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
top5_process_cpu.json:
start to update groupwidget [_klz_top5_process_cpu].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_top5_process_cpu] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
top5_process_cpu.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
top5_process_mem.json:
start to update groupwidget [_klz_top5_process_mem].
```

```
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_top5_process_mem] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
top5_process_mem.json.
===== GroupWidget Summary Total Added 0,Updated 7,Failed 0 =====
----- AddUpdate Page Phase -----
AddUpdate Page Template from file /tmp/cus/klz/pages-src/_klz_
page_details.json:
updating page [_klz_page_details] succeeded.
AddUpdate Page Template from file /tmp/cus/klz/pages-src/_klz_
page_details.json: finished.
AddUpdate Page Template from file /tmp/cus/klz/pages-src/_klz_
page_summary.json:
updating page [_klz_page_summary] succeeded.
AddUpdate Page Template from file /tmp/cus/klz/pages-src/_klz_
page_summary.json: finished.
===== Page Summary Total Added 0,Updated 2,Failed 0 =====
----- AddUpdate Application Template Phase -----
AddUpdate Application Template from file /tmp/cus/klz/applications/_klz_
app_tpl.json:
updating Application Templete [_klz_app_tpl] succeeded.
AddUpdate Application Template from file /tmp/cus/klz/applications/_klz_
app_tpl.json finished.
===== Application Template Summary Total Added 0,Updated 1,Failed 0 =====
Category Summary Total Added 0,Updated 1,Failed 0
Datasource Summary Total Added 0,Updated 1,Failed 0
GroupWidget Summary Total Added 0,Updated 7,Failed 0
Page Summary Total Added 0,Updated 2,Failed 0
Application Template Summary Total Added 0,Updated 1,Failed 0
```

Tip: Refer to the <APMUI_HOME>/usr/servers/apmui/logs/customData_20130824032806.log file for details.

If the filter can select data source only, you can run a batch operation to update the custom application, which does not require interaction. The following code gives an example of updating a custom application with batch operation support:

```
[root@tive17 customCfg]# ./customBuilder.sh -u apmadmin
-p apmpass -o 8080 -i klz -d /tmp/cus/klz -s "KLZ" -y -v
The ID [_klz] is in use.
To continue operation will update existing definition.
Verifying groupwidget definition file: _klz_top5_process_cpu.json
Verifying groupwidget definition file: _klz_network.json
Verifying groupwidget definition file: _klz_disk.json
Verifying groupwidget definition file: _klz_summary.json
Verifying groupwidget definition file: _klz_top5_process_mem.json
Verifying groupwidget definition file: _klz_memory_trend.json
Verifying groupwidget definition file: _klz_cpu_trend.json
Find default data provider: itm.TEMS_v5254006de5fe.tivp079.cn.ibm.com
Datasource selected: Linux OS
Writing application template to _klz_app_tpl.json
Writing category to _KLZ.json
Writing datasource to _KLZ.json
Writing groupwidget palette to _klz_resource_groupwidgets.json
Writing page source for page2 to _klz_page_summary.json
Writing page source for page3 to _klz_page_details.json
----- AddUpdate Category Phase -----
AddUpdate Category from file /tmp/cus/klz/categories/_KLZ.json:
updating category [_KLZ] succeeded.
AddUpdate Category from file /tmp/cus/klz/categories/_KLZ.json finished.
===== Category Summary Total Added 0,Updated 1,Failed 0 =====
----- AddUpdate DataSource Phase -----
AddUpdate Datasource from file /tmp/cus/klz/datasources/_KLZ.json:
updating datasource [_KLZ] finished.
AddUpdate Datasource from file /tmp/cus/klz/datasources/_KLZ.json finished.
```

```
===== Datasource Summary Total Added 0,Updated 1,Failed 0 =====
----- AddUpdate GroupWidget Phase -----
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
cpu_trend.json:
start to update groupwidget [_klz_cpu_trend].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_cpu_trend] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
cpu_trend.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
disk.json:
start to update groupwidget [_klz_disk].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_disk] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
disk.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
memory_trend.json:
start to update groupwidget [_klz_memory_trend].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_memory_trend] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
memory_trend.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
network.json:
start to update groupwidget [_klz_network].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_network] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
network.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
summary.json:
start to update groupwidget [_klz_summary].
updating GroupWidget instance in page [tpl_res_j2ee_11] succeeded.
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating GroupWidget instance in page [_klz_page_summary] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_summary] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
summary.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
top5_process_cpu.json:
start to update groupwidget [_klz_top5_process_cpu].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_top5_process_cpu] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
top5_process_cpu.json.
Start AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
top5_process_mem.json:
start to update groupwidget [_klz_top5_process_mem].
updating GroupWidget instance in page [_klz_page_details] succeeded.
updating groupwidget template succeeded.
updating groupwidget [_klz_top5_process_mem] finished.
End AddUpdate Groupwidget from file /tmp/cus/klz/groupwidgets/_klz_
top5_process_mem.json.
===== GroupWidget Summary Total Added 0,Updated 7,Failed 0 =====
----- AddUpdate Page Phase -----
AddUpdate Page Template from file /tmp/cus/klz/pages-src/_klz_
page_details.json:
updating page [_klz_page_details] succeeded.
AddUpdate Page Template from file /tmp/cus/klz/pages-src/_klz_
page_details.json: finished.
```

```
AddUpdate Page Template from file /tmp/cus/klz/pages-src/_klz_
page_summary.json:
updating page [_klz_page_summary] succeeded.
AddUpdate Page Template from file /tmp/cus/klz/pages-src/_klz_
page_summary.json: finished.
===== Page Summary Total Added 0,Updated 2,Failed 0 =====
----- AddUpdate Application Template Phase -----
AddUpdate Application Template from file /tmp/cus/klz/applications/_klz_
app_tpl.json:
updating Application Templete [_klz_app_tpl] succeeded.
AddUpdate Application Template from file /tmp/cus/klz/applications/_klz_
app_tpl.json finished.
===== Application Template Summary Total Added 0,Updated 1,Failed 0 =====
Category Summary Total Added 0,Updated 1,Failed 0
Datasource Summary Total Added 0,Updated 1,Failed 0
GroupWidget Summary Total Added 0,Updated 7,Failed 0
Page Summary Total Added 0,Updated 2,Failed 0
Application Template Summary Total Added 0,Updated 1,Failed 0
```

Tip: Refer to the <APMUI_HOME>/usr/servers/apmui/logs/customData_20130824032808.log file for details.

When a custom application is no longer needed, developers can remove the custom application. The following code gives an example of deleting a custom application.

```
./customBuilder.sh -u apmadmin -p apmpass -o 8080 -r -i klz
...
```

Chapter 8. Backing up and migrating the SmartCloud Application Performance Management UI

SmartCloud Application Performance Management UI supports moving SmartCloud Application Performance Management UI data to another server, and backing up and restoring the database.

Moving SmartCloud Application Performance Management UI data

You can move IBM SmartCloud Application Performance Management UI data, including the data in application repository, and the user-defined UI settings, to another server. Complete the following tasks to move IBM SmartCloud Application Performance Management UI data to another server.

About this task

Complete the following tasks to move IBM SmartCloud Application Performance Management UI data to another server.

- To move the data in application repository, including customization artifacts, and application structure data, see"Moving application repository data to another server"
- To move user-defined UI settings, see "Moving user-defined UI settings to another server" on page 351

CAUTION:
All data in the destination SmartCloud Application Performance Management UI is overwritten after the operation.

Moving application repository data to another server

The data in application repository includes customization artifacts, and resources and application structure data. Complete the following steps to move the customization artifacts, and resource and application structure data from oneIBM SmartCloud Application Performance Management UI server to another.

About this task

Customization artifacts refer to the customization files of application repository, such as custom naming rules files, that are managed in a central artifact datastore. The artifact datastore is maintained in the application repository database. Resource and application structure data is the resource information that is discovered and held in the application repository.

Note: The related data in destination application repository is overwritten after you import data from the source.

Procedure

1. On the source server, run the following commands to stop application repository back-end process, SmartCloud Application Performance Management UI server, and application repository servlets.
   - On a Window system,

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```
scrstop
cd APMUI_home_s\bin
server stop apmui
server stop scr
```

- On a Linux system,

```
cd APMUI_home_d/SCR/XMLtoolkit/bin
scrstop.sh
cd APMUI_home_s
./server stop apmui
./server stop scr
```

Where, *APMUI_home_s* is the installation path of the source SmartCloud Application Performance Management UI.

2. On the source server, run the following commands to export customization artifacts.
   - On a Windows system,

```
cd APMUI_home_s\SCR\XMLtoolkit\bin
tbsm_export.bat –U DB_user –P DB_password –all –d artifacts_Export_dir
```

   - On a Linux system,

```
cd APMUI_home_s/SCR/XMLtoolkit/bin
./ tbsm_export.sh –U DB_user –P DB_password –all –d artifacts_Export_dir
```

     Where,
     - *APMUI_home_s* is the installation path of the source SmartCloud Application Performance Management UI.
     - *DB_user* is the user name for the database. If you are using DB2 as the database, input the login user name. If you are using Derby as the database, although Derby database does not require a user, this command requires a value for this parameter to work properly. You can input a user name in the same format as the user of DB2.
     - *DB_password* is the password for the user name. If you are using DB2 as the database, input the password for the DB2 login user. If you are using Derby as the database, although Derby database does not require a password, this command requires a value for this parameter to work properly. You can input a password in the same format as the password for DB2.
     - *artifacts_Export_dir* is the path for the exported customization artifacts data. It can be any available path that you want.
3. On the source server, run the following commands to export resource and application structure data.
   - On a Windows system,

```
cd APMUI_home_s\SCR\XMLtoolkit\tools\ExportDatabaseTool\bin
export_data.bat –t Database_type –o structure_Export_dir –h Database_host
–p Database_port -n SCR –u DB_user –w DB_password
```

   - On a Linux system,

```
cd APMUI_home_s/SCR/XMLtoolkit/tools/ExportDatabaseTool/bin
./export_data.sh  –t Database_type –o structure_Export_dir –h Database_host
–p Database_port -n SCR –u DB_user –w DB_password
```

     Where,
     - *APMUI_home_s* is the installation path of the source SmartCloud Application Performance Management UI.
     - *Database_host* is the host server of the database. If the database is Derby, specify the value as localhost. If database is DB2, specify the server of the DB2 instance.

- *Database_port* is the port of the database instance.
- *Database_type* is the type of the database of the application repository. The value must be `DERBY` or `DB2`
- *DB_user* is the user name for the database. If you are using DB2 as the database, input the login user name. If you are using Derby as the database, although Derby database does not require a user, this command requires a value for this parameter to work properly. You can input a user name in the same format as the user of DB2.
- *DB_password* is the password for the user name. If you are using DB2 as the database, input the password for the DB2 login user. If you are using Derby as the database, although Derby database does not require a password, this command requires a value for this parameter to work properly. You can input a password in the same format as the password for DB2.
- *structure_Export_dir* is the path for the exported resource and application structure data. It must be an existing path.

4. On the source server, run the following commands to start application repository back-end process, SmartCloud Application Performance Management UI server, and application repository servlets.
   - On a Window system,

     ```
     scrstart
     cd APMUI_home_s\bin
     server start apmui
     server start scr
     ```

   - On a Linux system,

     ```
     cd APMUI_home_d/SCR/XMLtoolkit/bin
     scrstart.sh
     cd APMUI_home_s
     ./server start apmui
     ./server start scr
     ```

   Where, *APMUI_home_s* is the installation path of the source SmartCloud Application Performance Management UI.
5. Copy the exported folder to the destination SmartCloud Application Performance Management UI server.
6. On the destination server, run the following commands to stop application repository back-end process, SmartCloud Application Performance Management UI server, and application repository servlets.
   - On a Window system,

     ```
     scrstop
     cd APMUI_home_d\bin
     server stop apmui
     server stop scr
     ```

   - On a Linux system,

     ```
     cd APMUI_home_d/SCR/XMLtoolkit/bin
     scrstop.sh
     cd APMUI_home_d
     ./server stop apmui
     ./server stop scr
     ```

   Where, *APMUI_home_d* is the installation path of the destination SmartCloud Application Performance Management UI.
7. On the destination server, run one the following commands to clean the data in application repository.
   - On a Windows system,

```
cd APMUI_home_d\SCR\XMLtoolkit\bin
setdbschema.bat –U DB_user –P DB_password –f a
```

- On a Linux system,

```
cd APMUI_home_d/SCR/XMLtoolkit/bin
./setdbschema.sh –U DB_user –P DB_password –f a
```

Where,

- *APMUI_home_d* is the installation path of the destination SmartCloud Application Performance Management UI.
- *DB_user* is the user name for the database. If you are using DB2 as the database, input the login user name. If you are using Derby as the database, although Derby database does not require a user, this command requires a value for this parameter to work properly. You can input a user name in the same format as the user of DB2.
- *DB_password* is the password for the user name. If you are using DB2 as the database, input the password for the DB2 login user. If you are using Derby as the database, although Derby database does not require a password, this command requires a value for this parameter to work properly. You can input a password in the same format as the password for DB2.

8. On the destination server, run the following commands to import customization artifacts.
   - On a Windows system,

```
cd APMUI_home_d\SCR\XMLtoolkit\bin
tbsm_import.bat –U DB_user –P DB_password –d artifacts_Export_dir
```

   - On a Linux system,

```
cd APMUI_home_d/SCR/XMLtoolkit/bin
./tbsm_import.sh –U DB_user –P DB_password –d artifacts_Export_dir
```

   Where,

   - *APMUI_home_d* is the installation path of the destination SmartCloud Application Performance Management UI.
   - *DB_user* is the user name for the database. If you are using DB2 as the database, input the login user name. If you are using Derby as the database, although Derby database does not require a user, this command requires a value for this parameter to work properly. You can input a user name in the same format as the user of DB2.
   - *DB_password* is the password for the user name. If you are using DB2 as the database, input the password for the DB2 login user. If you are using Derby as the database, although Derby database does not require a password, this command requires a value for this parameter to work properly. You can input a password in the same format as the password for DB2.
   - *artifacts_Export_dir* is the path of the export customization artifacts data folder that is copied to the destination server.

9. On the destination server, run the following commands to import resource and application structure data.
   - On a Windows system, use the **import_data.vbs** command with the **cscript** command, as in the following example:

```
cd APMUI_home_d\SCR\XMLtoolkit\tools\ImportDatabaseTool\bin
cscript import_data.vbs -U DB_user –P DB_password -n SCR –h Database_host
 –p Database_port –s tbsmscr –d structure_Export_dir
```

   - On a Linux system,

```
cd APMUI_home_d/SCR/XMLtoolkit/tools/ImportDatabaseTool/bin
./import_data.sh -U DB_user –P DB_password -n SCR –h Database_host
 –p Database_port –s tbsmscr –d structure_Export_dir
```

Where,

- *APMUI_home_d* is the installation path of the destination SmartCloud Application Performance Management UI.
- *Database_host* is the host server of the database. If the database is Derby, the value is `localhost`. If database is DB2, specify the server of the DB2 instance.
- *Database_port* is the port of the database instance.
- *DB_user* is the user name for the database. If you are using DB2 as the database, input the login user name. If you are using Derby as the database, although Derby database does not require a user, this command requires a value for this parameter to work properly. You can input a user name in the same format as the user of DB2.
- *DB_password* is the password for the user name. If you are using DB2 as the database, input the password for the DB2 login user. If you are using Derby as the database, although Derby database does not require a password, this command requires a value for this parameter to work properly. You can input a password in the same format as the password for DB2.
- *structure_Export_dir* is the path of the folder that contains the exported resource and application structure data. It is the folder that you copy from the source server.

10. On the destination server, run the following commands to start application repository back-end process, SmartCloud Application Performance Management UI server, and application repository servlets.
    - On a Window system,

      ```
      scrstart
      cd APMUI_home_d\bin
      server start apmui
      server start scr
      ```

    - On a Linux system,

      ```
      cd APMUI_home_d/SCR/XMLtoolkit/bin
      scrstart.sh
      cd APMUI_home_d
      ./server start apmui
      ./server start scr
      ```

    APMUI_home_d is the installation path of the destination SmartCloud Application Performance Management UI.

Results

The application repository data is moved to the destination server.

Moving user-defined UI settings to another server

You can export the user-defined UI settings from a SmartCloud Application Performance Management UI server to an archive file and import the file into another SmartCloud Application Performance Management UI server.

About this task

The user-defined UI settings refer to the user-configurable settings of applications, pages, and group widgets. To import the user-defined UI settings from another SmartCloud Application Performance Management UI, complete the following steps.

Note: The destination user-defined UI settings are overwritten by the source data.

Procedure

1. Go to the *APMUI_home*/usr/servers/apmui/apps/customCfg directory, where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.
2. To export the UI settings to an archive file, on the command line, run the following commands.
   - Windows systems

     customData.bat -e -u *APMUI_username* -p *APMUI_password* -o *APMUI_port* -f *SettingsArchivefile*
   - Linux or AIX systems

     ./customData.sh -e -u *APMUI_username* -p *APMUI_password* -o *APMUI_port* -f *SettingsArchivefile*

   Where:
   - **-e** is the export operation.
   - *APMUI_username* is the user name to access the SmartCloud Application Performance Management UI server.
   - *APMUI_password* is the password of the user.
   - *APMUI_port* is the port number of the SmartCloud Application Performance Management UI server.
   - *SettingsArchivefile* is the full path of the UI settings archive file. The file name must have a .zip suffix. If the path to the UI settings archive file is not specified, the path is set to the value of the APMUI_IMPORT_EXPORT_DIR property and the file name is set to the value of the APMUI_IMPORT_DATA_FILE property in the apmui.cfg file.

     The apmui.cfg file is in the same location as the customData utility.
3. Copy the UI settings archive file to the destination SmartCloud Application Performance Management UI server.
4. On the destination SmartCloud Application Performance Management UI server, go to the *APMUI_home*/usr/servers/apmui/apps/customCfg directory.
5. To import the UI settings archive file, on the command line, enter the following command.
   - Windows systems

     customData.bat -i -u *APMUI_username* -p *APMUI_password* -o *APMUI_port* -f *SettingsArchivefile*
   - Linux or AIX systems

     ./customData.sh -i -u *APMUI_username* -p *APMUI_password* -o *APMUI_port* -f *SettingsArchivefile*

   Where **-i** is the import operation and *SettingsArchivefile* is the full path of the UI settings archive file that you copy from the source server to the destination server.

Note: the UI settings are overwritten after you run this command.

Results

The user-defined UI settings file from the source server is imported into the destination server. The results are displayed on the console, for example: `import data succeeded.`

The log files for the `customData` utility are in the *APMUI_home*`/usr/servers/apmui/logs` directory.

Backing up and restoring the databases of SmartCloud Application Performance Management UI

SmartCloud Application Performance Management UI is integrated with the application repository. You must back up the databases of both SmartCloud Application Performance Management UI and application repository. When you do the restore, you must restore both databases to guarantee the function.

About this task

The backup and restore steps are different depending on whether the application repository database is Derby or DB2.

- For more information about the backup and restore steps when the database of application repository is Derby, see "Backing up the databases when the database of application repository is Derby" and "Restoring the databases when the database of application repository is Derby" on page 354
- For more information about the backup and restore steps when the database of application repository is DB2, see "Backing up the databases when the database of application repository is on DB2" on page 355 and "Restoring the databases when the database of application repository is on DB2" on page 356

Backing up the databases when the database of application repository is Derby

Back up the database by running scripts when both SmartCloud Application Performance Management UI and application repository are using Derby databases.

Procedure

1. Open the command-line interface.
2. Run one of the following commands to back up both databases.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\customCfg\
     backupBothDB.bat -b
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/customCfg/
     ./backupBothDB.sh -b
     ```

   Where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.

   Note: If there is any space in the file path parameter, quote the parameter to ensure that the command can work properly.

Results

The databases are backed up. The backup data is stored in *APMUI_home*\usr\servers\apmui\apps\BackupDB*timestamp* on Windows systems, or *APMUI_home*/usr/servers/apmui/apps/BackupDB/*timestamp* on Linux systems. Where *timestamp* is the backup data folder name that is suggesting the backup time.

Restoring the databases when the database of application repository is Derby

Restore the database by running scripts when both SmartCloud Application Performance Management UI and application repository are using Derby databases.

About this task

The backup data is in *APMUI_home*\usr\servers\apmui\apps\BackupDB*timestamp* on Windows systems, or *APMUI_home*/usr/servers/apmui/apps/BackupDB/*timestamp* on Linux systems. Where *timestamp* is the backup data folder name that is suggesting the backup time. Make sure to choose the exact backup data you would like to restore.

Procedure

1. Open the command line interface.
2. Optional: Run one of the following commands to list backup history.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\customCfg\
     restoreBothDB.bat -r
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/customCfg/
     ./restoreBothDB.sh -r
     ```

   Note: If there is any space in the file path parameter, quote the parameter to ensure the command could work properly.
3. Run one of the following commands to restore the databases.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\customCfg\
     restoreBothDB.bat -r -f BACKUP_dir
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/customCfg/
     ./restoreBothDB.sh -r -f BACKUP_dir
     ```

   Where *BACKUP_dir* is the full path of the backup data directory.

   Note: If there is any space in the file path parameter, quote the parameter to ensure the command could work properly.

Results

The databases are restored.

Backing up the databases when the database of application repository is on DB2

If the database of SmartCloud Application Performance Management UI is Derby, and the database of application repository is DB2, back up the database of SmartCloud Application Performance Management UI manually, and back up the database of application repository by using the backup method for DB2.

Procedure

1. Open the command-line interface and run the following commands to stop related services.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\customCfg
     server.bat stop
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/customCfg
     ./server.sh stop
     ```

   Where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.
2. Create a directory for the backup data. You can add a time stamp to this directory name for future reference.
3. Go to the directory of the Derby database for SmartCloud Application Performance Management UI, and copy the Derby database directory `RESTDB` to the backup data directory.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\dbdir\
     copy RESTDB BACKUP_dir
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/dbdir/
     cp -R RESTDB BACKUP_dir
     ```

   Where *BACKUP_dir* is the full path of the backup data directory.

   Note: If there is any space in the file path parameter, quote the parameter to ensure that the command can work properly.
4. Back up the database of application repository by using the backup method for DB2. See DB2 documentation for more details.
5. Run the following commands to start the services.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\customCfg
     server.bat start
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/customCfg
     ./server.sh start
     ```

Results

The databases are backed up.

Restoring the databases when the database of application repository is on DB2

Restore the database of SmartCloud Application Performance Management UI manually, and restore the database of application repository by using the restore method for DB2.

About this task

You must restore the databases of both SmartCloud Application Performance Management UI and application repository to guarantee the function.

Procedure

1. Open the command line interface and run the following commands to stop related services.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\customCfg
     server.bat stop
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/customCfg
     ./server.sh stop
     ```

   Where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.
2. Go to the directory of the Derby database for SmartCloud Application Performance Management UI, rename the current database file, and replace the Derby database directory RESTDB with the backup data.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\dbdir\
     ren RESTDB RESTDB.bak
     copy BACKUP_dir\RESTDB RESTDB
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/dbdir/
     mv RESTDB RESTDB.bak
     cp -r BACKUP_dir/RESTDB RESTDB
     ```

   Where *BACKUP_dir* is the full path of the backup data directory.

   Note: If there is any space in the file path parameter, quote the parameter to ensure the command could work properly.
3. Restore the database of application repository by using the restore method for DB2. See DB2 documentation for more details.
4. Run the following commands to start the services.
   - On Windows systems,

     ```
     cd APMUI_home\usr\servers\apmui\apps\customCfg
     server.bat start
     ```

   - On Linux systems,

     ```
     cd APMUI_home/usr/servers/apmui/apps/customCfg
     ./server.sh start
     ```

Results

The databases are restored.

Chapter 9. Error messages

Messages in the IBM SmartCloud Application Performance Management UI alert you to problems that might occur.

Important: All error messages result in an unknown application status in the Application Overview dashboard except for the following error messages:

- `No data available`
- `No Items to display`

However, if all error messages that are displayed on a resource, client, or transaction dashboard are either of these two exception errors, an unknown application status also results in the Application Overview dashboard.

The error messages are as follows:

CTGA00012E The agent is offline

Explanation: SmartCloud Application Performance Management UI gets error code KFWITM454E from the data provider.

User response: Take the following steps to fix this problem:

1. Check the agent status on the data provider side (IBM Tivoli Monitoring or SmartCloud Monitoring - Application Insight).
2. If the agent is stopped, restart it. Refer to data provider documentation for details.

CTGA00020E Failed to get business process group data or the agent is offline.

Explanation: SmartCloud Application Performance Management UI gets error code KFWITM454E from the data provider when it is fetching business process group data.

User response: Take the following steps to fix this problem:

1. Check the agent status on the data provider side (IBM Tivoli Monitoring or SmartCloud Monitoring - Application Insight).
2. If the agent is stopped, restart it. Refer to data provider documentation for details.

CTGA00023E The Oracle server is inactive or the agent is offline.

Explanation: SmartCloud Application Performance Management UI gets error code KFWITM454E from the data provider when it is fetching Oracle agent data.

User response: Take the following steps to fix this problem:

1. Check the Oracle agent or Oracle server status on the data provider side (IBM Tivoli Monitoring or SmartCloud Monitoring - Application Insight).
2. If the agent is stopped, restart it. Refer to data provider documentation for details.
3. If the Oracle server becomes inactive, make it active again. Refer to data provider documentation for details.

CTGA00024E The agent is invalid

Explanation: SmartCloud Application Performance Management UI gets error code KFWITM775E from the data provider.

User response: Take the following steps to fix this problem:

1. Check the agent status on the data provider side (IBM Tivoli Monitoring or SmartCloud Monitoring - Application Insight).
2. Make the agent available. Refer to data provider documentation for details.

CTGA00025E The agents are invalid or offline.

Explanation: SmartCloud Application Performance Management UI gets error code KFWITM777E from the data provider.

User response: Take the following steps to fix this problem:

1. Check the status of the agents on the data provider side (IBM Tivoli Monitoring or SmartCloud Monitoring - Application Insight) and make them available
2. If some agents are stopped, restart them. Refer to data provider documentation for details.

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3. If some agents are removed from, add them back to the data provider. Refer to data provider documentation for details.

CTGAO0001W The definition for page *page* has an incorrect format.

Explanation: The page definition that you import to SmartCloud Application Performance Management UI has an incorrect format and cannot be recognized.

User response: You might see this message when you customize your own dashboard with the **customBuilder** command and the definition format is not correct. Take the following steps to fix this problem:

1. Check to make sure that your page definition is a valid JSON file.
2. Ensure that all required properties are defined in your page definition file. For more information about how to customize your own dashboard, see the Customization Support chapter in the SmartCloud Application Performance Management UI User's Guide.

CTGAO0002E The definition for page *page* is not found.

Explanation: The page definition that you attempt to get from a REST service does not exist.

User response: You might see this message when you use the REST services of SmartCloud Application Performance Management UI to get a page definition with a specific definition ID and the page definition does not exist. To fix this problem, ensure that the page definition exists and the definition ID is valid. If you see this message in the user interface, call IBM Software Support.

CTGAO0003E The application that you attempt to modify has been deleted and the changes you make will not be saved.

Explanation: When you are editing the component dashboard of an application, the application is deleted by another user. The changes that you make to the component dashboard will not be saved.

User response: The application has been removed. Click **Cancel** to leave the current page.

CTGAO0004E The application that you attempt to modify has been updated and the changes you make will not be saved.

Explanation: When you are editing the component dashboard of an application, the application model has been changed by the administrator.

User response: The structure of the application that you attempt to modify has been updated. The changes you make will not be saved. To make changes to the application, click **Cancel** to leave the current page and then edit the component dashboard again.

CTGAP0001E The IBM Tivoli Monitoring data provider is offline.

Explanation: The dashboard shows no data because the IBM Tivoli Monitoring data provider that you use is not available.

User response: To fix this problem, restart the Tivoli Enterprise Portal Server and ensure that the REST service is enabled. Or you can select another IBM Tivoli Monitoring data provider that is available. For more information about how to select an IBM Tivoli Monitoring data provider, see the Selecting data providers section in the SmartCloud Application Performance Management UI User's Guide.

CTGAP0002E No active data providers are found.

Explanation: Launch in context to Tivoli Enterprise Portal failed because no active data providers are found.

User response: To fix this problem, check if you have set a value for the APMUI_TEPS_HOST parameter in the apmui.cfg configuration file. If APMUI_TEPS_HOST is set, restart the Tivoli Enterprise Portal Server that you specified in the APMUI_TEPS_HOST parameter and enable the REST service, or change the value of APMUI_TEPS_HOST to a Tivoli Enterprise Portal Server that is available. If APMUI_TEPS_HOST is not set, restart the Tivoli Enterprise Portal Server that is selected in the Configure Data Provider page and enable the REST service, or select a Tivoli Enterprise Portal Server that is available.

CTGAP0003E Launch to Tivoli Enterprise Portal failed because of an internal error.

Explanation: Launch to Tivoli Enterprise Portal failed because some required parameters are not specified.

User response: When this message is displayed, SmartCloud Application Performance Management UI has an internal error. To fix the problem, call IBM Software Support.

CTGAP0004E Launch to Tivoli Enterprise Portal failed because of an internal error.

Explanation: Launch to Tivoli Enterprise Portal failed because the values of some required parameters are invalid.

User response: When this message is displayed, SmartCloud Application Performance Management UI has an internal error. To fix the problem, call IBM Software Support.

CTGAR0001E The resource path *resource_path* cannot be found.

Explanation: The resource path that you use does not exist.

User response: You might see this message when you use REST services of SmartCloud Application Performance Management UI and the REST API that you use does not exist. SmartCloud Application Performance Management UI does not provide open REST APIs to users, so avoid using REST Services directly. If you see this message in the user interface, call IBM Software Support.

CTGAR0003E Post content is invalid.

Explanation: The content that you attempt to post to a REST URI is invalid.

User response: You might see this message when you use REST services of SmartCloud Application Performance Management UI and the post content is not valid for the REST URI that you use. SmartCloud Application Performance Management UI does not provide open REST APIs to users, so avoid using REST services directly. If you see this message in the user interface, call IBM Software Support.

CTGAR0004E Request content cannot be found.

Explanation: The REST URI that you attempt to get data from has no content.

User response: You might see this message when you use REST services of SmartCloud Application Performance Management UI and no content is available for your request. SmartCloud Application Performance Management UI does not provide open REST APIs to users, so avoid using REST services directly. If you see this message in the user interface, call IBM Software Support.

CTGAR0005E The value for the request parameter *request_parameter* is invalid.

Explanation: The parameter value that you use for the REST URI is invalid.

User response: You might see this message when you use REST services of SmartCloud Application Performance Management UI, and the request parameter that you pass has an invalid value. SmartCloud Application Performance Management UI does not provide open REST APIs to users, so avoid using REST services directly. If you see this message in the user interface, call IBM Software Support.

CTGAZ0001E The application cannot be saved because the application repository is not available.

Explanation: The problem occurs when the SCR_UID provider is deleted because of an internal error. This problem occurs if the Service Component Repository (SCR) is not running.

User response: This problem is caused by an internal error. Contact IBM Software Support.

CTGAZ0002E Saving the application to the Application Repository failed.

Explanation: Save application to Application Repository failed. This problem might be caused by multiple reasons. One common reason is that the database is not running.

System action:

User response: To fix this problem, run the **server start scr** command in the *APMUI_HOME*/bin directory, where *APMUI_HOME* is the installation directory of SmartCloud Application Performance Management UI. If this action cannot fix the problem, contact IBM Software Support.

Chapter 10. Log files

Log files are available in IBM SmartCloud Application Performance Management UI to assist with troubleshooting.

Configuring log files

Logging is an important feature for troubleshooting, tracking invalid or unexpected situations, and debugging the application. SmartCloud Application Performance Management UI uses a logging class to record messages to a number of various log channels. All server-side components of SmartCloud Application Performance Management UI use this logging class, which then starts a logging tool, the JLOG framework.

About this task

SmartCloud Application Performance Management UI writes the `APM_UI.log` file. The log files are located in *APMUI_home*`/usr/servers/apmui/logs`, where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.

The default size of each log file is 20 MB. When the `APM_UI.log` file is full, it is renamed to `APM_UI1.log` and a new `APM_UI.log` file is created and used by SmartCloud Application Performance Management UI. When that `APM_UI.log` file is full, the file named `APM_UI1.log` is then renamed to `APM_UI2.log` so that the current `APM_UI.log` file can be renamed to `APM_UI1.log` and then another `APM_UI.log` file is created. The `APM_UI3.log`, `APM_UI4.log`, and `APM_UI5.log` files are all created following this pattern. By default, the maximum log file number parameter is set to 5 (`APMUI.handler.file.maxFiles=5`).

You can configure both the log level and the size of each log file.

Configuring the log level

You can configure different log levels to generate different levels of messages in the log files.

About this task

You can configure the logs to four different levels.

- Information level
- Warning level
- Error level
- Maximum debug level

Procedure

1. Open the `apmui.cfg` file in the *APMUI_home*`/usr/servers/apmui/apps/customCfg` directory, where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.
2. Find the **`APMUI_TRACE_LEVEL`** parameter and change the value to one of the following values.

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- INFO: information level
- WARN: warning level
- ERROR: error level
- DEBUG_MAX: maximum debug level

3. Run one of the following commands in the same directory as the apmui.cfg file:
   - AIX or Linux systems:

     ```
     apmuicfg.sh  -u APMUI_user -p APMUI_password -o APMUI_Port
     ```

   - Windows systems:

     ```
     apmuicfg.bat  -u APMUI_user -p APMUI_password -o APMUI_Port
     ```

   Where:
   - *APMUI_user* is the user name of SmartCloud Application Performance Management UI.
   - *APMUI_password* is the password that is associated with the user name.
   - *APMUI_Port* is the port number of SmartCloud Application Performance Management UI.

Results

The log level is changed.

Configuring the log size

You can configure the size of each log file.

Procedure

1. Open the log.properties file in the *APMUI_home*/usr/servers/apmui/apps/customCfg directory, where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.
2. Fine the **APMUI.handler.file.maxFileBytes** parameter and change the value to the number that you want. The unit of this value is Byte. If you would like to set the log size as 30 MB, the value is 31457280.
3. Run the following commands to restart the SmartCloud Application Performance Management UI server.
   - On a Linux system

     ```
     APMUI_home/bin/
     server stop apmui
     server start apmui
     ```

   - On a Windows system

     ```
     APMUI_home\bin\
     server stop apmui
     server start apmui
     ```

     where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.

Results

The log file size is changed.

SCR log files

Log files are available for the application repository, which is the service component repository (SCR) in IBM SmartCloud Application Performance Management UI.

SCR servlet log files

SCR servlet log files are available at the following location: `/opt/IBM/APMUI/usr/servers/scr/logs/scrserver.log` The following code indicates that the Derby database is not available.

```
INFO  [ScrInitServlet] SCR Init processing started ...
ERROR [ScrDsConnectionImpact] getDbType
ERROR [ScrInitServlet] ScrInitSrvlet - initmeta - Exception:
java.net.ConnectException : Error connecting to server
127.0.0.1 on port 1527 with message Connection refused: connect.
DSRA0010E: SQL State = 08001, Error Code = 40,000
```

It is common to see this issue once because the applications are started in any order. Multiple occurrences usually point to an issue with Derby.

SCR Derby log files

SCR Derby log files are available at the following location: `/opt/IBM/APMUI/usr/servers/scrderby/logs/scrderby.log`

XMLtoolkit log files

XMLtoolkit log files are available at the following location: `/opt/IBM/APMUI/SCR/XMLtoolkit/log/msgGTM_XT.log.0` The following code indicates that the Derby database is not available.

```
GTMCL5387I: Verifying TBSM database connection.
GTMCL5205E: Exception caught. INFO:  JDBC connection: error code: 40000
java.net.ConnectException : Error connecting to server localhost on
port 1527 with message Connection refused: connect. Retry for 60
minutes. If this is a command line utility, press ctrl-c to stop the retry.
```

At startup, the first task is to verify the database connection. It is common to see this issue at startup since the startup sequence is not in any order. The process continues initialization when Derby is available. The wait for Derby is short.

Chapter 11. Running the PD collector tool

The PD collector tool can be used to gather required logs and other problem determination information that is requested by IBM Support. The tool is installed as a component of the SmartCloud Application Performance Management UI.

About this task

To run the PD collector tool, complete the following steps:

Procedure

1. On the command line, go to one of the following directories.
   - AIX or Linux systems: *APMUI_home*/tools.
   - Windows systems: *APMUI_home*\tools

   Where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.
2. Run one of the following commands:
   - AIX or Linux systems:

     ```
     pdcollector.sh
     ```
   - Windows systems:

     ```
     pdcollector.bat
     ```

   Important: On AIX or Linux systems, root permission is required for the PD collector tool to collect system information.

Results

A file with time stamp is generated in the directory *APMUI_home*/tools, for example *APMUI_home*/tools/apm_pdcollector_linux_09182013151654.jar. Send the output file to your IBM Support representative, where *APMUI_home* is the installation directory of SmartCloud Application Performance Management UI.

Important: Before you send the PD collector tool output file to IBM Support, run the **dataProviderVer** command to collect IBM Tivoli Monitoring data provider information. For more information about the **dataProviderVer** command, see dataProviderVer.

dataProviderVer

This section describes the **dataProviderVer** command.

Purpose

The **dataProviderVer** command gathers data provider information. The command provides the capability to check the IBM Tivoli Monitoring data provider version and status, and the application support version. The command also lists all managed systems that are registered to the Tivoli Enterprise Monitoring Server, which the active data provider connects to. Execute the command from the <APMUI_Install>/usr/servers/apmui/apps/customCfg directory.

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Syntax

```
dataProviderVer.sh -s <data_provider_host> -o <data_provider_port> -u
<data_provider_user> -p <data_provider_password> -f <output_file>
```

Parameters

-s --server
Mandatory: Data provider host name

-o --port
Mandatory: Data provider port

-u --user
Mandatory: Data provider user name

-p --password
Mandatory: Data provider password

-f --file
Optional: Output file name. Writes output to standard output if not specified.

-t --test
Optional: Check data provider status only. No detailed output and **-f** parameter is ignored when used together.

-v --verbose
Optional: Provide more detailed output.

-h --help
Optional: Display the help message and quit.

Command samples

- To collect data provider information and print the result on standard output, enter the following command:

  ```
  ./dataProviderVer.sh -s dp001.cn.ibm.com -o 15200 -u sysadmin -p password
  ```

- To collect data provider information and save the result in a file, enter the following command:

  ```
  ./dataProviderVer.sh -s dp001.cn.ibm.com -o 15200 -u sysadmin -p password -f
  /tmp/itmdp.txt
  ```

- To check the status of an IBM Tivoli Monitoring data provider, enter the following command:

  ```
  ./dataProviderVer.sh -s dp001.cn.ibm.com -o 15200 -u sysadmin -p password -t
  ```

- To collect data provider information with raw data of network requests and responses and print the result on standard output, enter the following command:

  ```
  ./dataProviderVer.sh -s dp001.cn.ibm.com -o 15200 -u sysadmin -p password -v
  ```

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. For more information, see the documentation that is provided by your operating system.

Magnifying what is displayed on the screen

You can enlarge information in the product windows with facilities that are 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. For more information, see the documentation that is provided by your operating system.

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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 (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.

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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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