

IBM Tivoli OMEGAMON XE for DB2 Performance Expert on
z/OS
IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on
z/OS
Version 5.2.0

Configuration and Customization



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Note

Before using this information and the product it supports, read the information in "Notices" on page 209.

First edition, October 2013

This edition applies to the following releases and to all subsequent releases and modifications until otherwise indicated in new editions:

- IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS, version 5, release 2, modification 0 (5655-W37)
- IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS, version 5, release 2, modification 0 (5655-W38)

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About this publication

This information describes how to configure and customize the following products:

- IBM® Tivoli® OMEGAMON® XE for DB2® Performance Expert on z/OS®, hereafter abbreviated to OMEGAMON XE for DB2 PE.
- IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS, hereafter abbreviated to OMEGAMON XE for DB2 PM.

The technical changes for this edition are summarized under “What's new” on page xvii. Specific changes since the previous edition of this publication are indicated by a vertical bar (|) to the left of a change.

Always check the *IBM DB2 Tools Product Page* and the *Tivoli Documentation Central* for the most current version of this publication.

Intended audience

The target audience for this configuration guide includes persons responsible for configuring and customizing OMEGAMON XE for DB2 PE, or OMEGAMON XE for DB2 PM, for example:

- Database administrators
- System programmers
- System operators

Readers should be familiar with:

- DB2 Relational databases
- Multiple Virtual Storage (MVS™)
- Time Sharing Option (TSO)
- Interactive System Productivity Facility (ISPF)
- Job Control Language (JCL)
- Structured Query Language (SQL)
- z/OS
- Windows
- Microsoft

Conventions used in the OMEGAMON documentation

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

Panels and figures

The panels and figures in this document are representations. Actual product panels might differ.

Symbols

The following symbols might appear in command syntax:

Symbol	Usage
	The or symbol is used to denote a choice. You can use the argument on the left or the argument on the right. For example: YES NO In this example, you can specify YES or NO.
()	Denotes optional arguments. Arguments that are not enclosed in square brackets are required. For example: APPLDEST DEST (ALTDEST) In this example, DEST is a required argument and ALTDEST is optional.
{ }	Some documents use braces to denote mandatory arguments, or to group arguments for clarity. For example: COMPARE {workload} - REPORT={SUMMARY HISTOGRAM} In this example, the workload variable is mandatory. The REPORT keyword must be specified with a value of SUMMARY or HISTOGRAM.
_	Default values are underscored. For example: COPY infile outfile - [COMPRESS={YES NO}] In this example, the COMPRESS keyword is optional. If specified, the only valid values are YES or NO. If omitted, the default is YES.

Notation conventions

The following conventions are used when referring to high-level qualifiers:

hilev A high-level qualifier. The high-level qualifier is the first prefix or set of prefixes in the data set name. Site-specific high-level qualifiers are shown in italics.

For example:

- *thilev* refers to the high-level qualifier for your target data set.
- *rhilev* refers to the high-level qualifier for your runtime data set.
For members in target libraries, the high-level qualifier is *thilev* rather than *rhilev*.
- *shilev* refers to the SMP/E library high-level qualifier.

Typeface conventions

This information uses the following typeface conventions:

Bold

- 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 **Note:**)

- Keywords and parameters in text

Italic

- Words defined in text
- Emphasis of words (for example: Use the word *that* to introduce a restrictive clause.)
- New terms in text (except in a definition list)

Monospaced

- 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

Significant elements

Recommendation

Provides guidance when more than one option is available.

Related reading

Refers you to other publications that contain relevant information.

Requirement

Identifies a condition that must be met to ensure that the product is functional.

Restriction

Identifies a restriction or limitation with this product or an associated procedure.

Terminology used

IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS can be considered as a functional subset of IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS. Therefore the abbreviation OMEGAMON XE for DB2 PE or DB2 PE is used for both products. If a distinction is required, OMEGAMON XE for DB2 PM or DB2 PM is used explicitly.

The following table shows the products that are described in this publication and the short names with which they are referred to throughout this publication:

Table 1. Product names and their short names

Product name	Short name
IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS	OMEGAMON XE for DB2 PE or DB2 PE
IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS	OMEGAMON XE for DB2 PM or DB2 PM
IBM DB2 Buffer Pool Analyzer for z/OS or a particular subsystem	Buffer Pool Analyzer
IBM DB2 database for z/OS	DB2

- Performance Expert Client and Workstation Online Monitor designate the client component of DB2 PE.

The client component of DB2 PE also designates the end user interface of Performance Expert for Multiplatforms, Performance Expert for Workgroups, and DB2 PE.

- OMEGAMON Collector designates the server component of DB2 PE.

How to read syntax diagrams

The rules in this section apply to the syntax diagrams that are used in this publication.

Arrow symbols

Read the syntax diagrams from left to right, from top to bottom, following the path of the line.

- ▶▶— Two right arrows followed by a line indicate the beginning of a statement.
- ▶ One right arrow at the end of a line indicates that the statement syntax is continued on the next line.
- ▶— One right arrow followed by a line indicates that a statement is continued from the previous line.
- ▶◀ A line followed by a right arrow and a left arrow indicates the end of a statement.

Conventions

- SQL commands appear in uppercase.
- Variables appear in italics (for example, *column-name*). They represent user-defined parameters or suboptions.
- When entering commands, separate parameters and keywords by at least one blank if there is no intervening punctuation.
- Enter punctuation marks (slashes, commas, periods, parentheses, quotation marks, equal signs) and numbers exactly as given.
- Footnotes are shown by a number in parentheses, for example, (1).

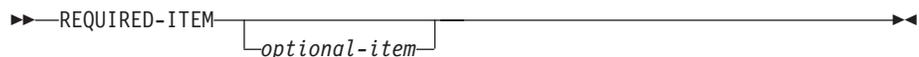
Required items

Required items appear on the horizontal line (the main path).

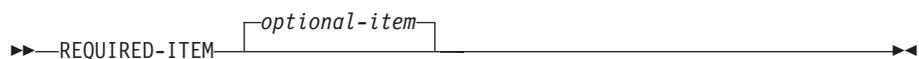


Optional items

Optional items appear below the main path.

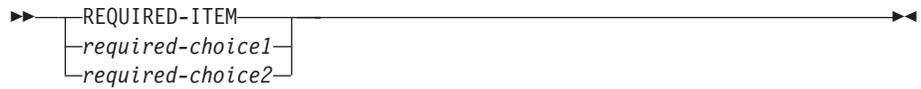


If an optional item appears above the main path, that item has no effect on the execution of the statement and is used only for readability.



Multiple required or optional items

If you can choose from two or more items, they appear vertically in a stack. If you *must* choose one of the items, one item of the stack appears on the stack main path.

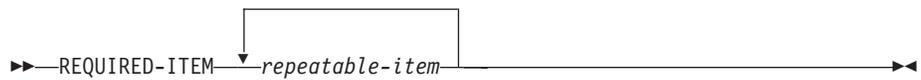


If choosing one of the items is optional, the entire stack appears below the main path.

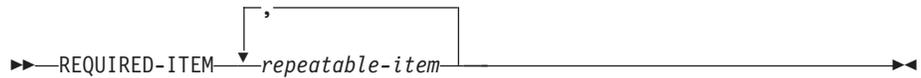


Repeatable items

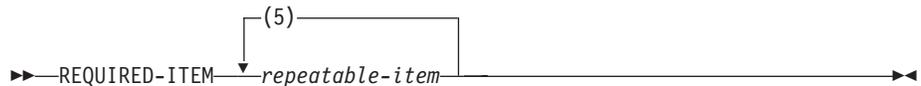
An arrow returning to the left above the main line indicates that an item can be repeated.



If the repeat arrow contains a comma, you must separate repeated items with a comma.



If the repeat arrow contains a number in parenthesis, the number represents the maximum number of times that the item can be repeated.



A repeat arrow above a stack indicates that you can specify more than one of the choices in the stack.

Default keywords

IBM-supplied default keywords appear above the main path, and the remaining choices are shown below the main path. In the parameter list following the syntax diagram, the default choices are underlined.



Where to find information

You can access the documentation in several ways.

The documentation for this product is provided in PDF and in HTML format at the following websites:

- Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS information center

- Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS information center

Accessing publications online

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli software information center website. You can access the Tivoli software information center by going to the Tivoli Documentation Central website and clicking **O** under **Tivoli Documentation A-Z** to access all of the IBM Tivoli OMEGAMON product manuals.

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

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

Ordering publications

You can order many IBM publications such as product manuals or IBM Redbooks® online at the IBM Publications Center website.

You can also order by telephone by calling one of the following 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.

Accessing terminology online

The IBM Terminology website consolidates the terminology from IBM product libraries in one convenient location.

Service updates and support information

You can access support information for IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS and IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS on the Support home website, or you can use the IBM Support Assistant.

Support home

On the Support home website, you can find service updates and support information including software fix packs, PTFs, Frequently Asked Questions (FAQs), technical notes, troubleshooting information, and downloads.

IBM Support assistant

The IBM Support Assistant (ISA) is a free tool that provides access to several IBM support resources in a single location. You can use the ISA tool to quickly access support-related information and serviceability tools for problem determination.

To use ISA, complete the following steps:

1. Download ISA from the IBM Software Support website.
2. Start the ISA tool.
ISA runs as a web application in the default system-configured web browser.
3. Select the Updater tab.
4. Select the New Products and Tools tab.
The plug-in features are categorized by product family.
5. Select **Tivoli > IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS and IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS**.
6. Check the feature(s) to be installed and click **Install**.
7. Restart ISA.

To learn more about how to use ISA, click the Help link in the IBM Support Assistant window.

Accessibility features

Accessibility features help people with a physical disability, such as restricted mobility or limited vision, or with other special needs, to use software products successfully. This information center is developed to comply with the accessibility requirements of software products according to Section 508 of the Rehabilitation Act of the United States.

The accessibility features in this information center enable users to do the following tasks:

- Use assistive technologies, such as screen-reader software and digital speech synthesizer, to hear what is displayed on the screen. In this information center, all information is provided in HTML format. Consult the product documentation of the assistive technology for details on using assistive technologies with HTML-based information.
- Operate specific or equivalent features using only the keyboard.
- Magnify what is displayed on the screen.

In addition, all images are provided with alternative text so that users with vision impairments can understand the contents of the images.

Navigating the interface by using the keyboard

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

Magnifying what is displayed on the screen

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

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information.

If you have any comments about this information or any other documentation, you can do one of the following actions:

- Complete and submit the Reader Comment Form .
- Send your comments by e-mail to swsdid@de.ibm.com.

Include the documentation name, the part number, the version number, and, if applicable, the specific location of the text you are commenting on (for example, a page number or table number).

What's new

This topic summarizes the significant improvements or enhancements for the product and refers you to the relevant topics for more information.

GH12-6998-00 — October 2013

This edition replaces *IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS*; *IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS: Configuration and Customization*, GH12-6970-00.

- Updates have been made relating to stored procedure monitoring support.
- The new subtask "START PARM=(COLD=value)" has been added to "Subtask commands to Performance Expert Server" on page 189.
- 64-bit support has been added for the Performance Expert Client.
- OMEGAMON XE for DB2 PE V5.2.0 supports DB2 9 or later. References to DB2 V8 have been removed.
- Software requirements for Performance Expert Client have been updated.
- The ISPF Online Monitoring functions "Display Thread Activity", "Display Statistics", and "Display System Parameters" are not supported for DB2 V11.
- The migration chapters have been updated for migration from V5.1.0/V5.1.1 to V5.2.0 and V4.2.0 to V5.2.0
- Migration from V4.1.0 to V5.2.0 is not supported. You must migrate to V4.2.0, V5.1.0, or V5.1.1 first.
- PARMGEN replaces the former Configuration Tool (also known as ICAT). This causes many changes in Part 3. Configuration. This section has been restructured and contains mainly new information.
- Created the new section Chapter 16, "Questions and answers," on page 121.
- Automatic update of the Performance Expert Agent is no longer supported starting with OMEGAMON XE for DB2 PE V5.2.0. The migration from previous versions of OMEGAMON XE for DB2 PE to version V5.2.0 will automatically deactivate this option. Existing Performance Expert Agent installations will still test for the availability of automatic updates when connected to OMEGAMON XE for DB2 PE V5.2.0 but receive the status that automatic update is disabled. Any messages issued to the Performance Expert Agent log referring to option AUTOMATICAGENTUPDATE can be ignored. Performance Expert Agent V5.2.0 will no longer test for the availability of automatic updates.
- Added new IFCIDs to the performance data for the "Performance Database" on page 10.
- Added section "Setting up your environment for Performance Warehouse" on page 158 to "Installing and configuring Performance Expert Client" on page 153.

Part 1. Introduction to OMEGAMON XE for DB2 PE

OMEGAMON XE for DB2 PE is a performance analysis, monitoring, and tuning tool for DB2 on z/OS environments.

This product is part of the integrated and complete cross zSeries® monitoring solution of the IBM Tivoli OMEGAMON XE family that monitors all DB2 subsystems on z/OS and other resources, such as IMS™, MVS, or CICS®. OMEGAMON XE for DB2 PE simplifies and supports system and application performance monitoring, reporting, trend analysis, charge back usage, and buffer pool analysis. If problems are encountered you are notified and advised how to continue.

This section introduces you to the basic concepts of the following products:

- IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS
- IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS

It also provides a short introduction to IBM DB2 Buffer Pool Analyzer for z/OS. IBM DB2 Buffer Pool Analyzer for z/OS is sold as a stand-alone product and is included as part of IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS. The end-to-end SQL monitoring function is only available with IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS and not with the other product IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS.

Chapter 1. Function overview

OMEGAMON XE for DB2 PE has three main functions: analyzing a current problem, collecting historical data, and tuning buffer pools.

This product offers several components to help you achieve these goals. The sections below introduce you to the main components used for each goal. For a description of each OMEGAMON XE for DB2 PE component and for an overview of the relationships between the components, see Chapter 2, “Components of OMEGAMON XE for DB2 PE,” on page 5.

Analyzing a current problem

You can use OMEGAMON XE for DB2 PE to analyze current application and system problems. For example, an employee has complained that the system is running slow this morning. You can use one of the following components to analyze and identify bottlenecks and other performance problems:

Classic Interface

A VTAM[®] interface for OMEGAMON XE for DB2 PE with conventional menus and panels. Like Performance Expert Client, Classic Interface shows you all of the information necessary to analyze a problem, but instead uses a fast and reliable VTAM interface. Using VTAM allows you to monitor and solve a DB2 problem even if the whole LPAR is impacted and a logon to TSO is no longer possible.

OMEGAMON enhanced 3270 user interface

An enhanced 3270 user interface for OMEGAMON XE for DB2 PE with predefined workspaces that enable you to quickly and easily diagnose problems with monitored resources and take action to correct them. You can customize the workspaces to suit your requirements, even design and create your own workspaces and navigation.

Tivoli Enterprise Portal

A Java-based interface for OMEGAMON XE for DB2 PE that is flexible and customizable. You can install Tivoli Enterprise Portal on the local machine or you can access it through a web browser. Tivoli Enterprise Portal provides information similar to that provided by Performance Expert Client and Classic Interface. When installed in conjunction with the appropriate OMEGAMON products, Tivoli Enterprise Portal can also monitor other products and display the information in the same user interface.

Performance Expert Client

A graphical user interface for OMEGAMON XE for DB2 PE that runs on the Windows operating system. Performance Expert Client provides all of the functions that are necessary to analyze the system or to analyze a specific application. It shows you all the details about the activity on the DB2 subsystem, plus information about resource utilization and processing times. It also automatically informs you about problems or resource constraints such as deadlock, timeout, or CF structure resize.

Collecting and evaluating historical data

You can also use OMEGAMON XE for DB2 PE to collect and evaluate historical data for different tasks. Historical data is useful for tuning, for problem analysis,

for trend analysis, and for capacity planning. For example, you can use historical data to predict resource usage for trend analysis and capacity planning. Historical data also allows you to analyze a problem over a long period of time. This is helpful when current data is not sufficient to analyze the problem, for example when you want to check the size of a DB2 resource, such as an EDM pool, for cursor tables or package tables. You can also use historical data to establish a baseline performance record that can be used to detect deviations. For example, you could collect Accounting data for several months and then compare the current CPU usage time of a static SQL package to the average CPU usage time stored in the history. If the current time is well above the average time, then you know that you need to investigate the change. You can use the following components to store and evaluate historical data:

Performance Database

A set of tables that can be filled with DB2 performance information collected via SMF or via a batch job using the FPEZCRD program. You can then retrieve, aggregate, or filter the information using SQL. To load the collected DB2 information into the performance database, functions of the reporter component (batch engine) have to be used.

Performance Warehouse

An automated version of Performance Database. The database is maintained and controlled by the OMEGAMON Collector and you can use a GUI to define the ETL process and to evaluate the information in the tables.

Reporter

Generates reports that reflect the activity on different levels, for example, subsystem, application, SQL statements, locking, and utility. The Reporter does not store the information in a database. This component helps you identify related problems and charges back the DB2 usage to your users. You can use a command language to filter, sort, and aggregate the reported information.

Tuning buffer pools

OMEGAMON XE for DB2 PE can also be used to tune buffer pools. If you want to find the optimal use of buffer pool resources and to simulate the effects of possible changes, you can use the following component:

Buffer Pool Analyzer

A suite of tools that can be used to monitor, analyze, and tune buffer pools.

Chapter 2. Components of OMEGAMON XE for DB2 PE

OMEGAMON XE for DB2 PE is made up of several components, some required and some optional.

Before you can install the product, you must decide which components are necessary for your environment. This section demonstrates the relationships between the components of the products and also gives you a brief introduction to each component.

Relationships between components

The components of OMEGAMON XE for DB2 PE work in combination with each other to help you monitor, analyze, and tune your DB2 performance. You need to understand how the components work together in order to decide which components you want to install.

The following graphic demonstrates the relationship between the components of OMEGAMON XE for DB2 PE.

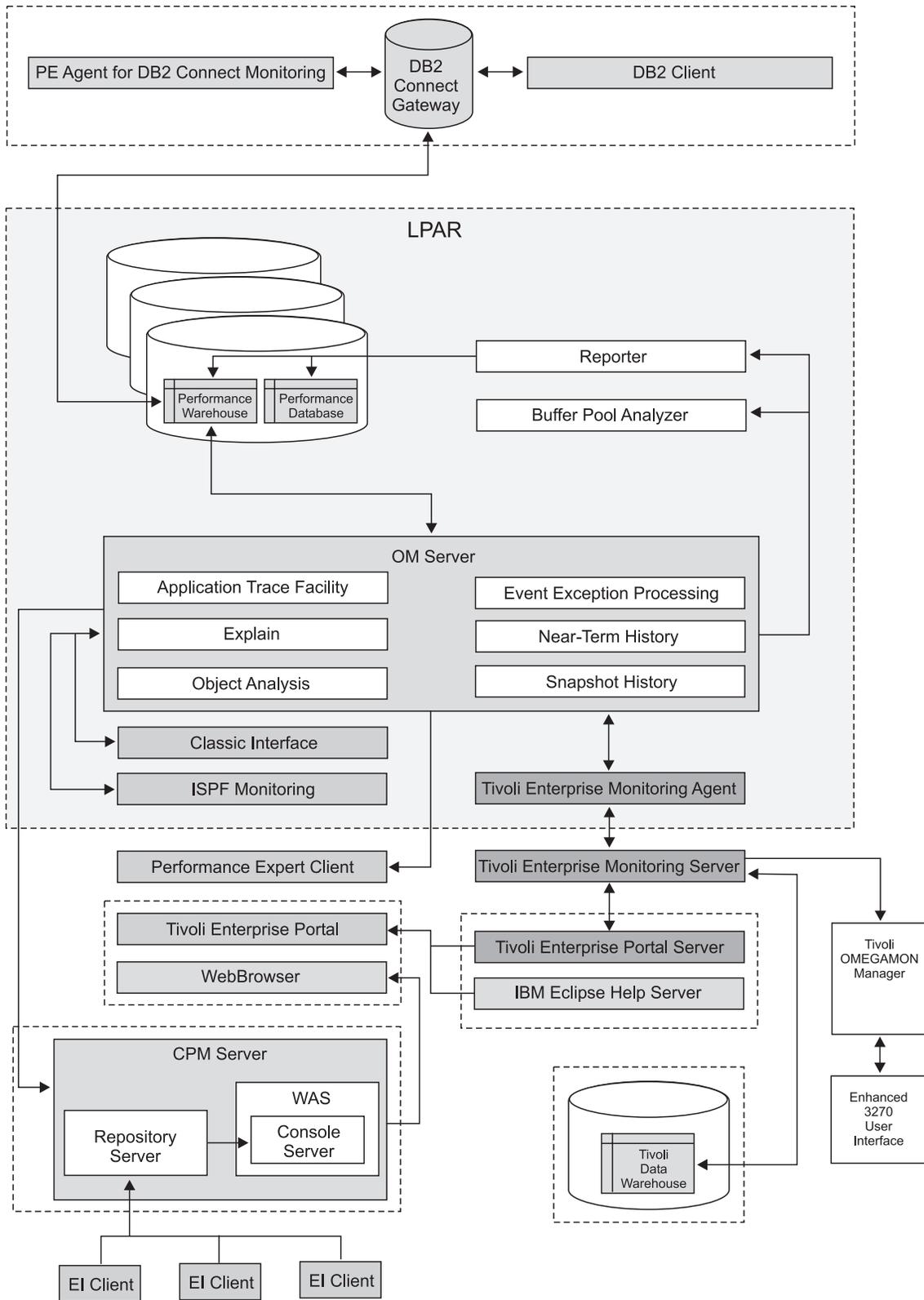


Figure 1. Overview of OMEGAMON XE for DB2 PE components

The following table shows which prerequisite components and optional subcomponents are associated with each main component of OMEGAMON XE for DB2 PE.

Table 2. Main Components, prerequisite components, and optional subcomponents for OMEGAMON XE for DB2 PE

Main components	Prerequisite components	Optional subcomponents
Classic Interface	<ul style="list-style-type: none"> • OMEGAMON Collector 	<ul style="list-style-type: none"> • Application Trace Facility • IBM DB2 SQL Performance Analyzer • Near-Term History • Object Analysis • Performance Expert Agent for DB2 Connect Monitoring • Periodic Exception Processing
Enhanced 3270 user interface	<ul style="list-style-type: none"> • OMEGAMON Collector • Tivoli Enterprise Monitoring Server • Tivoli Enterprise Monitoring Agent 	<ul style="list-style-type: none"> • None
Buffer Pool Analyzer	<ul style="list-style-type: none"> • At least one ISPF Monitoring Dialog • Performance Expert Client 	<ul style="list-style-type: none"> • None
Performance Database	<ul style="list-style-type: none"> • Reporter 	<ul style="list-style-type: none"> • None
Performance Warehouse	<ul style="list-style-type: none"> • OMEGAMON Collector • Reporter • Performance Expert Client 	<ul style="list-style-type: none"> • None
Tivoli Enterprise Portal	<ul style="list-style-type: none"> • OMEGAMON Collector • Tivoli Enterprise Monitoring Server • Tivoli Enterprise Monitoring Agent • Tivoli Enterprise Portal Server 	<ul style="list-style-type: none"> • Tivoli Data Warehouse (TDW) • IBM Eclipse Help Server • Performance Expert Agent for DB2 Connect Monitoring • Periodic Exception Processing
Performance Expert Client	<ul style="list-style-type: none"> • OMEGAMON Collector 	<ul style="list-style-type: none"> • Snapshot History • Periodic Exception Processing • DB2 Event Exception Processing • Performance Expert Agent for DB2 Connect Monitoring • Performance Warehouse • Buffer Pool Analyzer
Reporter	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None

Main components

The components in this section are the main OMEGAMON XE for DB2 PE components.

Buffer Pool Analyzer

IBM DB2 Buffer Pool Analyzer for z/OS helps database administrators manage buffer pools more efficiently by providing information about current buffer pool behavior and by using simulation to anticipate future behavior.

Note: IBM DB2 Buffer Pool Analyzer for z/OS functions are sold as a stand-alone product and are included as a part of IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS. The functions and components of the Buffer Pool Analyzer are identical in both offerings.

You can use Buffer Pool Analyzer to analyze the performance data from DB2 for z/OS systems, to simulate changes in the buffer pool settings, to move DB2 objects to a different buffer pool, or to generate reports. The product provides the following functions:

- Comprehensive reporting of the buffer pool activity, including:
 - Ordering by various identifiers (for example, buffer pool, plan, object, primary authorization ID)
 - Sorting by, for example, getpage, sequential prefetch, and synchronous read
 - Filtering capability
 - Loading into DB2 tables
- Simulation of buffer pool usage for:
 - Optimizing the usage of available buffer pool memory
 - Adjusting buffer pool thresholds by grouping objects with like characteristics in the same buffer pools.

For installation instructions, see *IBM DB2 Buffer Pool Analyzer for z/OS Configuration Guide*.

OMEGAMON Classic Interface

The OMEGAMON Classic Interface is a user interface on the host that provides real-time information about a DB2 subsystem.

It is a Virtual Telecommunications Access Method (VTAM) application. It is part of the OMEGAMON Collector. You can use the OMEGAMON Classic Interface to:

- Review the current DB2 activity, such as threads or statistics
- View enclave information from the Work Load Manager (WLM)
- Monitor activity on DB2 gateways using DB2 Connect™, and receive enhanced information about DBATs connected by a DB2 gateway.
- Observe counter thresholds
- Review information about terminated DB2 threads using the Near-Term History function
- Analyze objects and drill down into object allocation and usage of thread activities, as well as volume allocation and activities
- Receive detailed runtime performance information at the thread, unit of work, program, and SQL statement level using Application Trace Facility

OMEGAMON enhanced 3270 user interface

The OMEGAMON enhanced 3270 user interface is a user interface on the host that provides predefined workspaces that enable you to quickly and easily diagnose and solve problems.

The OMEGAMON enhanced 3270 user interface is the latest generation of 3270 user interfaces for the OMEGAMON family of monitoring products. The OMEGAMON enhanced 3270 user interface is developed upon the common OMNIMON base component and provides DB2 Data Sharing Group reporting. The OMEGAMON enhanced 3270 user interface component enables you to monitor the performance of your z/OS systems, applications, and devices in your environment and helps you to identify and troubleshoot problems with those monitored resources. OMEGAMON enhanced 3270 user interface offers the following features:

- Plex-wide as well as single system views of data
- Autodiscovery of and autoconnection to data sources

- Dynamic behavior and operation
- User-customizable workspaces
- Fastpath navigation
- Lateral and vertical scrolling
- Sorting by column

For installation and configuration instructions, see the *IBM Tivoli OMEGAMON XE and Tivoli Management Services on z/OS: Common Planning and Configuration Guide*.

Performance Expert Client

The Performance Expert Client is a graphical user interface that supports online monitoring and reporting, Performance Warehouse management, and buffer pool analysis on the workstation.

The following list shows what the client comprises when you install the different products:

- If you install OMEGAMON XE for DB2 PE, the client consists of online monitoring, Performance Warehouse with extended Rules-of-Thumb, and buffer pool analysis.
- If you install OMEGAMON XE for DB2 PM, the client consists of online monitoring and Performance Warehouse with limited Rules-of-Thumb.

Online monitoring and reporting

The PE Client online monitor function allows you to identify bottlenecks, applications that are performing poorly, and areas for tuning improvements. You can review all of the defaults of the current activity at the system and application levels. Snapshot History, an optional subcomponent, allows you to look at historical data. This helps you compare information at various timestamps and to analyze problems that occurred in the past. In addition to these monitoring capabilities, the tool can inform you of specific DB2 situations, such as deadlocks, timeouts, lock escalations, and CF structure rebuilds. Another function called threshold exception processing checks the system or application information for threshold violations. This can help you detect increased usage or unusual usage patterns. The product then uses exits to automatically record this information even if you are not logged on to the Performance Expert Client. The exit writes the information to a system log where it can be picked up by system automation or where it can invoke a batch job that initiates further processing.

Performance Warehouse management

The Performance Warehouse GUI allows you to control the Performance Warehouse database. You can use it to perform tasks such as defining the Extract-Transfer-Load (ETL) process for collecting and loading data or for creating reports from the collected data. For more information about this component, see “Performance Warehouse” on page 10.

Buffer pool analysis

The buffer pool analysis GUI lets you control the Buffer Pool Analyzer. You can use it to simulate buffer pool changes so that you can optimize buffer pool memory. For more information about this component, see “Buffer Pool Analyzer” on page 7.

For installation and configuration instructions, see “Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support” on page 83 and “Installing and configuring Performance Expert Client” on page 153.

Performance Database

The Performance Database is a DB2 database, which can hold aggregated DB2 activity information spanning a long period of time. This long-term history can help you with performance tuning activities, with trend analysis, and with capacity planning.

You can store performance data from the following data groups:

- Accounting
- Audit
- Locking
- Record traces (IFCIDs 22, 63, 96, 125, 316, and 401)
- Statistics and System parameters

You must build, load and maintain the DB2 tables for the Performance Database manually. This allows for greater flexibility. To help you get started, sample library *&rhilev.&rte.RKO2SAMP* (where *&rhilev.&rte* is the runtime high-level qualifier) is included in the product. The library contains the following items:

- The definitions of the Data Definition Language (DDL)
- The definitions of the Data Manipulation Language (DML)
- The DB2 LOAD Statements

You must also prepare the performance data with the Reporter functions before you can load it into the Performance Database. The Reporter component provides the data either in timestamp sequence (FILE format) or as reduced data (aggregated data or summary data, called SAVE format).

For installation and configuration instructions, see “Adding a Performance Database” on page 111.

Performance Warehouse

The Performance Warehouse is a fully automated Performance Database that consists of DB2 tables to save Accounting and Statistics performance counters and internal control tables.

You can perform tasks such as defining the ETL process for collecting and loading data into the database and creating reports from the collected data. You can perform such tasks immediately or you can schedule them to happen automatically after a certain event. For example, you can schedule a task so that reports of the activity are automatically created each morning.

You can use this feature with a database that is created for each monitored DB2 subsystem or with one database for all DB2 subsystems, including subsystems in other LPARS or on different sysplexes. The Performance Warehouse database is automatically maintained by the OMEGAMON Collector. In other words, mandatory changes to the structure of the Performance Warehouse database are automatically performed by the OMEGAMON Collector.

You can evaluate the performance information in the Performance Warehouse databases using a built-in query tool, an external SQL query interface, or Rules-of-Thumb analysis tool. With Rules-of-Thumb you can analyze historical data, identify bottlenecks, resource constraints, and predict trends.

Predefined Rules-of-Thumb are included with the Performance Warehouse, but you can also create your own.

For installation and configuration instructions, see “Enabling Performance Warehouse” on page 109.

Tivoli Enterprise Portal (TEP)

Tivoli Enterprise Portal is a Java-based browser user interface for viewing and monitoring your enterprise.

The Tivoli Enterprise Portal is a user interface on the workstation that offers a single point of view for online monitoring and analysis. You can view information about all the resources in your IT environment. For example, you can view information about your operating systems, hardware such as routers, applications such as WebSphere[®], IMS, and CICS, and custom applications. It can run as a browser applet or as a Java[™] application. OMEGAMON XE for DB2 PE gathers data from remote agents residing on the managed systems of your DB2 network and stores this data in system elements called *attributes*.

The monitoring data is received via the Tivoli Enterprise Portal Server (TEPS) and the Tivoli Enterprise Monitoring Server from the Tivoli Enterprise Monitoring Agents (TEMA). Information is then displayed in named *workspaces*.

The Tivoli Enterprise Portal is a customizable interface. For example, you can:

- Configure the workspaces and attributes according to your requirements. The Tivoli Enterprise Portal comes with a set of predefined workspaces for each item in the navigation tree, but you can edit any of them to suit your needs.
- Filter the information presented in a workspace by moving from the top-level workspace to lower-level workspaces.

Note: A workspace is not refreshed automatically, however, you can choose to automate the refresh of a workspace at specified intervals.

The Tivoli Enterprise Portal allows you to view a wealth of information, including the following:

- Detailed thread activity information about your DB2 threads, including Workload Manager information
- The interaction of a DB2 system with MVS, CICS, IMS, z/OS, and other systems, databases and applications within a single interface from any location
- Database lock activities and detailed lock conflict information about your database locks
- Information about DB2 resources such as buffer pools, EDM pools, group buffer pools, and dynamic statement caches
- Enhanced information for data base access threads (DBATs) at DB2 Connect gateways
- DB2 log manager active logging and archiving activities
- Distributed Database Facility statistics, including send and receive counts
- Detailed information about threads and thread exceptions connected to DB2

- Information about the performance of volumes that contain DB2 objects so that you can monitor the DASD performance by volume (Group Object Analysis (GOA) Volume workspace group)
- Information about a data sharing group and its coupling facility structures
- Active utility jobs
- DB2 Connect gateway activities

You can use the Tivoli Enterprise Portal to perform the following analysis activities:

- Detecting I/O related bottlenecks such as heavily used volumes
- Analyzing system-wide or application-specific resource usage to tune DB2 resources or to identify applications that are performing poorly
- Using historical information in the short-term history to detect and analyze problems in the past
- Using situations to automatically inform you about problems. You can use predefined situations or you can create your own situations
- Automating problem resolution by taking automatic action when certain events are detected. For example, you can run an MVS job, send a message to a system automation tool, or cancel a thread
- Managing problems detected by your team by using a built-in trouble ticket system or by forwarding the alert to an external event console

For installation and configuration instructions, see “Installing and configuring Tivoli Enterprise Portal” on page 161.

Prerequisite components

The components described in this section are required for one or more of the main components.

ISPF Monitoring Dialogs

The ISPF Monitoring Dialogs are a user interface on the host that provide access to the main functions or components of OMEGAMON XE for DB2 PE when running under TSO/ISPF.

You can:

- Create and run reporting commands using the Interactive Report Facility (IRF). Here you select the report specification and input data. You create and run reporting commands to generate batch reports.
- View online DB2 activity using the OMEGAMON Classic Interface for real-time monitoring as described in “OMEGAMON Classic Interface” on page 8. From ISPF Monitoring Dialogs, you can access this application through TSO.
- Customize report and trace layouts using the User-Tailored Reporting function (UTR). You can customize batch report and trace layouts according to your requirements using User-Tailored Reporting (UTR). This function gives you full control over the volume, contents, and layout of your traces and reports.

OMEGAMON Collector

The OMEGAMON Collector is the central access point for the clients that request to retrieve performance data. It collects history data, exception processing data,

trace data, and snapshot data and controls and submits jobs to generate reports and load data into the Performance Warehouse.

The OMEGAMON Collector is stored and retrieved from the parameter library (as specified by the RKANPAR DD statement of the started task) or the MVS operator's console. You can use the MVS operator commands to make changes to the configuration that are effective immediately. For example, you can start or stop specific functions or you can stop the OMEGAMON Collector.

The OMEGAMON Collector hosts the following components:

- OMEGAMON Classic Interface
- OMEGAMON enhanced 3270 user interface
- Tivoli Enterprise Portal
- Performance Expert Client
- Performance Warehouse

It also provides the following services to the components:

- Periodic and event exception processing
- Event Collection Manager to analyze object and volume data

Note: You must run this service in a separate address space if you have more than one OMEGAMON Collector or more than one LPAR.

- Near-Term History
- Application Trace Facility
- Snapshot History

Performance Expert Client as a prerequisite component

Performance Expert Client supports online monitoring and reporting, Performance Warehouse management, and buffer pool analysis on the workstation.

The Performance Expert Client is a prerequisite component for the Performance Warehouse and for the Buffer Pool Analyzer because it provides the user interfaces, or clients, for these components. For more information, see “Performance Warehouse” on page 10 and “Buffer Pool Analyzer” on page 7.

The Performance Expert Client is also a main component. See “Performance Expert Client” on page 9 for more information.

Reporter

The Reporter generates predefined reports to help you collect and analyze historical performance data. It also enables you to prepare performance data before you load it into the Performance Warehouse or into the Performance Database.

The Reporter comes with the following predefined reports:

- Accounting
- Statistics
- System Parameters
- Utility
- Locking, Audit
- I/O Activity
- Record Trace

- SQL Activity

You can also use a report language to filter, sort, and group the data in the reports according to your preferences. For example, you can include or exclude specific data, sort or summarize by various options, and enable or disable reporting about specific performance data. You can use the User-Tailored Reporting (UTR) function to even further customize the reports.

You can use the Reporter to generate reports in the following ways:

- by submitting a batch job.
- by using the Interactive Report Facility (IRF). You can define the report commands and input data through ISPF panels. You can also submit the reports to run in the background.
- by using the Performance Warehouse Client. You can specify the report commands and input data through a graphical user interface. You can also submit the jobs immediately or schedule them to run later. This only applies to ACCOUNTING and STATISTICS reports.

When you want to load data into the Performance Warehouse or the Performance Database, you can use the command language in the Reporter to indicate which data should be prepared and to indicate how the data should be summarized. You can process the data in the following ways:

- by submitting a batch job.
- by using the Performance Warehouse Client to either submit the job immediately or to schedule the job to run later.

You can use one of the following methods to collect the data that the Reporter uses:

- A batch job. In this case, you use the FPEZCRD program to collect performance data from a DB2 subsystem.
- The Performance Warehouse Client. In this case, you can use a graphical user interface to configure the job and to either submit it or to schedule it to run later.
- The Collect Report Data function in the ISPF Monitoring Dialogs. In this case, you can use ISPF panels to configure the job and to submit it.
- SMF or GTF data sets.
- Sequential data sets generated by Near-Term-History Data Collector configured to store trace data to VSAM data sets and sequential data sets (VSAMSEQ).

The Reporter is added when you download the program files from SMP/E. You do not need to perform any additional installation or configuration activities.

Tivoli Enterprise Monitoring Agent (TEMA)

A Tivoli Enterprise Monitoring Agent retrieves performance information from the OMEGAMON Collector for the Tivoli Enterprise Monitoring Server.

A Tivoli Enterprise Monitoring Agent is called by a Tivoli Enterprise Monitoring Server to retrieve data from a monitored resource. These agents then test attribute values against a threshold and report these results to the monitoring servers. The Tivoli Enterprise Portal displays an alert icon when a threshold is exceeded or a value is matched. These tests are called situations.

For installation and configuration instructions, see “Enabling Tivoli Enterprise Monitoring Agent” on page 85.

Tivoli Enterprise Monitoring Server (TEMS)

The Tivoli Enterprise Monitoring Server collects and prepares performance information for the Tivoli Enterprise Server.

The Tivoli Enterprise Monitoring Server retrieves information from all of the connected Tivoli Enterprise Monitoring Agents and checks the information for situations. It also keeps a short history that you can view in the Tivoli Enterprise Portal. The history shows you how information has changed over time and allows you to perform actions such as running a batch job on the host when the Tivoli Enterprise Monitoring Server detects a situation.

For installation and configuration instructions, see “Configuring Tivoli Enterprise Monitoring Server” on page 85.

Tivoli Enterprise Portal Server (TEPS)

Tivoli Enterprise Portal Server, a gateway between the Hub TEMS and the Tivoli Enterprise Portal, stores user data, workspaces, and queries.

The Tivoli Enterprise Portal uses the Tivoli Enterprise Portal Server to visualize the collected performance information. The Tivoli Enterprise Portal Server works as an application server allowing the Tivoli Enterprise Portal to store configuration data and meta information.

For installation and configuration instructions, see “Installing and configuring Tivoli Enterprise Portal” on page 161.

Optional subcomponents

The components described in this section are optional subcomponents that can be used with the main components.

Application Trace Facility (ATF)

Application Trace Facility (ATF) traces the execution of a DB2 thread so that you can improve application flow and resource consumption.

The Application Trace Facility collects information about the DB2 thread and shows you the performed operations in a report. It traces the following DB2 thread operations:

- Executed SQL statements.
- Performed sorts.
- Pageset access and scan information.
- Obtained locks.
- Application times, such as in-DB2 Time and in-DB2 CPU Time.

It can be invoked from the Classic Interface.

For installation and configuration instructions, see “Enabling Application Trace Facility” on page 111.

DB2 Event Exception Processing

DB2 Event Exception Processing alerts you when specific system events occur. These events include deadlocks, timeouts, locks, escalations, and starts and stops of a coupling facility structure rebuild. This component is also sometimes called DB2 Event Observation.

You can use the Performance Expert Client to see the events and the details of the events.

For installation and configuration instructions, see “Enabling DB2 Event Exception Processing” on page 82.

Explain

Explain functions provide an easy-to-read representation of access plan information for your SQL queries and statements. You can use this information to decide how to tune your queries.

The built-in explain functions are Easy Explain and the EXPLAIN report. You can use them as follows:

- You can use the Easy Explain function to view the information while browsing or editing a data set containing SQL statements.
- You can generate an EXPLAIN report that shows access plan information for all of the SQL statements found in the collected performance information.

The following explain functions are optional. They provide access plan information for an individual SQL statement.

- **IBM DB2 SQL Performance Analyzer.** You can use this function through the Classic Interface.
- **DB2 Optimization Expert.** You can use this function through the Performance Expert Client.
- **Visual Explain.** You can use this function through the Performance Expert Client.

For installation and configuration instructions, see “Enabling DB2 EXPLAIN” on page 105.

IBM DB2 SQL Performance Analyzer (SQL PA)

IBM DB2 SQL Performance Analyzer provides resource usage information and costs associated with SQL queries without having to run them in DB2. This analysis helps you tune your queries to achieve maximum performance.

SQL PA calculates the cost of queries before you start them, so that you can tune them before implementation. With SQL PA, you find out how long queries will take before you run them, before resources are consumed, and before the query is terminated by a governor. You are able to determine the cost of running a query under the attach facilities of IMS, CICS, and batch, as well as TSO, SPUIFI, and QMF™. The cost estimate is given in familiar units: CPU time, I/O count, and elapsed time, and, in even simpler terms, as QUNITS (a single number representing the overall cost). The monetary cost of each query is also presented.

Note: With SQL PA, OMEGAMON XE for DB2 PE enables the user to analyze SQL statements that are displayed in certain VTAM panels.

For more information, search for *DB2 SQL Performance Analyzer* in the *IBM Information Management Software for z/OS Solutions information center*.

IBM Eclipse Help Server

This feature allows you to use the online help in the Tivoli Enterprise Portal.

For installation and configuration instructions, see “Installing and configuring Tivoli Enterprise Portal” on page 161.

Near-Term History Data Collector

Near-Term History captures and stores recent DB2 instrumentation data so that you can review thread performance after the threads have ended.

Data captured includes all statistics and accounting records written by DB2. Near-Term History might also collect certain performance data at the thread level, such as dynamic SQL or sorting, locking, and scanning information.

Many events are too short lived to be viewed in real time. Near-term history collection identifies threads that have experienced problems in the past few hours. These threads can then be examined in more detail to help identify the cause of the problem. Some of the types of thread problems that can be identified in this way are:

- Excessive CPU or elapsed time
- Threads that have had timeouts or deadlocks
- Threads committing too infrequently
- Threads that have aborted
- Threads with excessive lock waiting time
- Threads with excessive DB2 wait time for I/O

You can also use the filter options to identify these types of problem threads more quickly.

For installation and configuration instructions, see “Enabling Near-Term History” on page 102.

Object Analysis

The Object Analysis function reveals the affect of an application on overall disk access. This can help you balance the load and determine where DB2 data sets should be placed to evenly spread I/O over available disks.

Object Analysis helps you analyze DB2 object allocations, linear VSAM data set extend activity, I/O activity at the DASD volume level, and object activity from a DB2 perspective. Often the first indicator of a DB2 performance problem is the I/O activity being performed on a particular DASD volume or a DB2 table space or index space. Object Analysis enables you to isolate this activity at a granular level. This can often lead to an understanding of a specific workload or external event that might be contributing to an I/O related DB2 problem.

You can use Object Analysis through the Classic Interface or the Tivoli Enterprise Portal.

For installation and configuration instructions, see “Enabling Object Volume Analysis” on page 100.

Performance Expert Agent for DB2 Connect Monitoring

The Performance Expert Agent for DB2 Connect Monitoring monitors connections of remote applications within the Distributed Relational Database Architecture™ (DRDA®) of DB2 that are connected through DB2. It is installed on the DB2 Connect Server gateway and provides DB2 Connect data for the OMEGAMON Collector.

When Performance Expert Agent for DB2 Connect Monitoring is installed on a DB2 Connect gateway, it collects connection-related data, such as the connection status of a remote application. It also collects statistics about DB2 Connect activities. The collected snapshot data is then stored periodically and can be examined using the user interfaces.

DB2 administrators can use the collected data, for example, to find out whether the connection of the remote application is working. They can also use this data to identify network problems between DB2 Connect and the DB2 server.

For installation and configuration instructions, see “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring” on page 123.

Periodic Exception Processing

Periodic Exception Processing is an OMEGAMON feature that analyzes system metrics and compares them against predefined thresholds, user-defined thresholds, and application metrics.

When a threshold is exceeded, an exception event is shown. This event is commonly called an exception. This function is available in Performance Expert Client.

You can start Periodic Exception Processing manually after you start Performance Expert Client. In this case, you can define a set of thresholds for each user ID. Alternatively you can configure Periodic Exception Processing to automatically start one user's threshold definitions when the server starts. In this case, the threshold definitions are already started when the user logs on to the client.

For installation and configuration instructions, see “Enabling Periodic Exception Processing” on page 101.

Snapshot History

Snapshot history data is useful, for example, if you want to examine activities leading to, and following, an exception without recreating the situation.

The data is periodically stored by the OMEGAMON Collector in a wrap-around-managed snapshot history data set. You can define how often the snapshots are stored and how many snapshots are stored. When the defined maximum number of snapshots is exceeded, the oldest snapshot is deleted and the newest snapshot is added.

You can view this information through the history mode in the Performance Expert Client. This mode allows you to display recently stored snapshots at a specified point-in-time. You can then scroll forward and backward through the history of snapshot data to get a better understanding of what happened and to identify what caused the problem (for example, detected situations, bottlenecks, deadlocks, timeouts).

For installation and configuration instructions, see “Enabling Snapshot History” on page 104.

Tivoli Data Warehouse (TDW)

You can use the Tivoli Data Warehouse to store collected performance information for a long time. This is helpful when you want to compare DB2 activity that occurred in the past or when you want to review trends.

Other Tivoli products also use this information. For example, IBM Tivoli Performance Analyzer uses this information to predict trends and IBM Tivoli Usage and Accounts Manager uses it to charge back the usage of a system.

For installation and configuration instructions, see “Adding Tivoli Data Warehouse” on page 161.

InfoSphere Optim Performance Manager

InfoSphere® Optim™ Performance Manager is a performance analysis and tuning tool for managing DB2 systems by using a web interface. The new web interface, which is provided by InfoSphere Optim Performance Manager, provides system health overviews and a guided workflow to problematic areas with detailed displays.

The InfoSphere Optim Performance Manager end-to-end SQL and stored procedure monitoring dashboard displays end-to-end data about the entire database application system, which includes clients, application servers, data servers, and the network. With this optional end-to-end SQL and stored procedure monitoring feature, you can monitor and analyze the performance of the entire database application system. If you install the optional plug-in for Tivoli Enterprise Portal (TEP) you can get extended operating system performance data and view this data on the System dashboard. You can also run end-to-end SQL and stored procedure monitoring from within the TEP console.

For installation and configuration instructions, see “Installing and configuring end-to-end SQL and stored procedure monitoring” on page 161.

User interfaces

OMEGAMON XE for DB2 PE provides user interfaces for DB2 performance analysis on the host and on the workstation.

User interfaces on the host

OMEGAMON XE for DB2 PE provides user interfaces for DB2 performance analysis on the host.

To monitor and analyze DB2 performance on the host you can use the Classic Interface for real-time monitoring or you can use ISPF Monitoring Dialogs. See the following sections for more information:

- “OMEGAMON Classic Interface” on page 8
- “ISPF Monitoring Dialogs” on page 12

User interfaces on the workstation

OMEGAMON XE for DB2 PE provides graphical user interfaces for DB2 performance analysis on the workstation.

You can use the Tivoli Enterprise Portal, Performance Expert Client, or InfoSphere Optim Performance Manager. See the following sections for more information:

- “Tivoli Enterprise Portal (TEP)” on page 11
- “Performance Expert Client” on page 9
- “InfoSphere Optim Performance Manager” on page 19

Part 2. Planning the configuration

This information describes how to plan the configuration.

Chapter 3. Gathering information

You will need a lot of information about your environment, your configuration, and your users while you configure the product. To simplify the configuration process, gather this information before you begin.

Deciding on your setup

Decide on your setup before you start the configuration.

About this task

The following planning activities help you gather the information required for your configuration:

Procedure

1. Decide what types of runtime environments you need for your configuration. See *IBM Tivoli OMEGAMON XE and Tivoli Management Services on z/OS: Common Planning and Configuration Guide* for more information.
2. If you are installing OMEGAMON XE for DB2 PE in a data sharing environment, consider the applicable product restrictions. See Chapter 5, "Special considerations for a data sharing environment," on page 31 for more information.
3. Grant all of the necessary authorizations. See Chapter 4, "Prerequisites," on page 25 for more information.
4. If you are installing OMEGAMON XE for DB2 PE in a multihost environment, plan the VTPOOL sharing configuration. See Chapter 6, "VTPOOL sharing in a multihost environment," on page 33 for more information.
5. Decide which security functions you will implement. See Chapter 7, "Security," on page 37 for more information.
6. Decide which optional features and functions you want enable. See "Cost of optional features" for more information.
7. Complete the Chapter 24, "Worksheet for planning your configuration," on page 203. This worksheet helps you understand what key parameters and values are required to configure the product and gives you the opportunity to plan the values that you will use during the configuration process.

Cost of optional features

Be aware of the fact that each optional feature or function that you add causes additional resource and CPU costs.

For best results, consider for each function whether it is really needed. If it is, decide whether you want to run it all the time or if you would rather save CPU costs and turn the feature on only when needed.

Following are additional tips for deciding which optional features and functions to add:

- Monitor traces for real-time are typically inexpensive. This includes Statistics and Accounting class (1) traces.

- Accounting trace class (3) and especially class (2) on the plan level as well as the equivalent classes (7 and 8) on the package level will generate additional overhead within the DB2 engine.
- SQL related traces (Dynamic SQL, NegSQL, sort, scan, and locking) can be very expensive. These traces should be used cautiously and only for a short period of time. For example, they are used as an option in Near-Term History.
- Object Analysis can be very expensive. Consider using the online function to switch this function on and off dynamically if you need it.
- For further information on resource and CPU consumption, see APAR 'II14438: Known issues causing high CPU utilization in OMEGAMON DB2 and performance tuning tips COMPID 5655OPE00' on the z/OS Communications Server.

Chapter 4. Prerequisites

Before configuring the product, you must know what is required for the configuration process, such as hardware or software requirements, or access rights that you need for the configuration.

Hardware requirements

The product can be deployed on any zSeries system that is capable of running z/OS, version 1 release 8, or later.

Software requirements

For a detailed list of the software requirements, refer to the Announcement Letter.

OMEGAMON XE for DB2 PE installation

OMEGAMON XE for DB2 PE must be installed through SMP/E.

SMP/E is the basic tool for installing and maintaining software in z/OS systems and subsystems.

Related reading:

- The SMP/E installation of OMEGAMON XE for DB2 PE is described in the Program Directory for IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS.
- The SMP/E installation of OMEGAMON XE for DB2 PM is described in the Program Directory for IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS.

Authorization requirements

To set up the product and certain DB2 privileges, such as data set privileges, access privileges are required. You find these in the two tables below. Furthermore, several user IDs are required for the configuration. You must create the following new user IDs or assign existing user IDs to the tasks:

- DB2PM as user ID or group ID for the OMEGAMON Collector (For details, see “Setting up security for the OMEGAMON Collector address spaces” on page 69.)
- A user ID for the DB2 Connect Monitoring Agent (in case you want to use the function DB2 Connect Monitoring)

During the configuration process, the PARMGEN generates jobs that contain all the statements that grant the required DB2 privileges. After successful configuration, you find these jobs in your *Erhilev.Erte.RD2SAM* library.

The following table lists the DB2 privileges you must grant to the different users and the respective grant jobs that must be submitted.

Table 3. DB2 privileges

Users	DB2 privileges/grant jobs
End users of Performance Expert Client (including Performance Warehouse Client) or ISPF Monitoring Dialogs	<p>OMGP<ssid></p> <p>Note: This job contains the following privileges:</p> <ul style="list-style-type: none"> • EXECUTE on PLAN KO2PLAN • MONITOR1 • MONITOR2 • DISPLAY • TRACE <p>If you want to allow certain users to execute CANCEL THREAD in Thread Activity, then you have to grant those privileges additionally (for example SYSOPR).</p>
User ID of DB2 Connect Monitoring Agent	PWGA<ssid>
End users of the EXPLAIN function	EXGP<ssid>
End users of the Performance Warehouse	PWG2<ssid>
User that does the product setup	<ul style="list-style-type: none"> • SYSADM (to submit GRANT jobs) • SYSCNTRL (to submit BIND jobs)
OMEGAMON Collector user ID (DB2PM)	<ul style="list-style-type: none"> • OMGR<ssid> • OMGP<ssid> <p>Note: This job contains the following privileges:</p> <ul style="list-style-type: none"> - EXECUTE on PLAN KO2PLAN - MONITOR1 - MONITOR2 - DISPLAY - TRACE <ul style="list-style-type: none"> • If Performance Warehouse is enabled: PWG1<ssid>
End users of Classic Interface or CUA	No additional DB2 privileges needed.

Table 3. DB2 privileges (continued)

Users	DB2 privileges/grant jobs
<p>End users of DB2 z/OS subsystem/data sharing group in the InfoSphere Optim Performance Manager Web Console</p>	<p>To configure InfoSphere Optim Performance Manager:</p> <ul style="list-style-type: none"> • Privileges described in row 'End users of Performance Expert Client (including Performance Warehouse Client) or ISPF Monitoring Dialogs'. • The privilege to connect to the DB2 z/OS subsystem/data sharing group. • The necessary privileges to perform CREATE/DROP/ALTER on function or procedure, that is GRANT CREATEIN,DROPIN,ALTERIN ON SCHEMA OPM. The system privilege GRANT BINDADD is also required, as well as the privileges to issue GRANT EXECUTE on all functions and stored procedures on schema OPM. • JDBC stored procedures that allow getMetaData() method call have to be installed and configured. <p>To view static SQL statement text:</p> <ul style="list-style-type: none"> • The SELECT privilege on tables SYSIBM.SYSCOLUMNS, SYSIBM.SYSPACKSTMT, SYSIBM.SYSROUTINES, and SYSIBM.SYSPARMS. <p>Note: In order to speed up performance of the static SQL statement text retrieval, create the following indices:</p> <ul style="list-style-type: none"> – SYSIBM.SYSPACKSTMT (SECTNOI ASC, NAME ASC, CONTOKEN ASC, COLLID ASC, SEQNO ASC) for DB2 9 and DB2 10 – SYSIBM.SYSPACKSTMT (STMT_ID ASC) for DB2 10
<p>Note: <ssid> denotes the DB2 subsystem ID.</p>	

The following table lists the required authorizations on the data sets.

Table 4. Authorizations on data sets

Users	Authorizations on data sets
<p>End users of ISPF Online Monitoring or Buffer Pool Analyzer</p>	<ul style="list-style-type: none"> • READ on <i>Erhilev.Erte.RKANCHT</i> • READ on <i>Erhilev.Erte.RKANCLI</i> • READ on <i>Erhilev.Erte.RKANISP</i> • READ and EXECUTE on <i>Erhilev.Erte.RKANMOD</i> • READ on <i>Erhilev.Erte.RKANENU</i> • READ on <i>Erhilev.Erte.RKANSAMV</i> • READ on <i>Erhilev.Erte.RKD2SAM</i> • READ on <i>Erhilev.Erte.RKANSAS</i>

Table 4. Authorizations on data sets (continued)

Users	Authorizations on data sets
User who does the product setup	<ul style="list-style-type: none"> • UPDATE on system VTAMLST • UPDATE on system PROCLIB • ALTER on the high-level qualifier of your RTE(s) (<i>&rhilev.&rte</i>) • EXECUTE on the high-level qualifier of the Configuration Tool (<i>&shilev</i>) • READ on the SMP/E target high-level qualifier of your SMP/E installation (<i>&thilev</i>)
OMEGAMON Collector user ID (DB2PM)	<ul style="list-style-type: none"> • ALTER on the high-level qualifiers that you want the OMEGAMON Collector to use for work data set allocation. You can specify a high-level qualifier for VSAM data sets and one for non-VSAM data sets.

Table 4. Authorizations on data sets (continued)

Users	Authorizations on data sets
OMEGAMON Collector started task	<ul style="list-style-type: none"> • READ on MVSADMIN.WLM.POLICY RACF® facility class profile. • If PE Client is enabled: OMVS access in RACF (for details, see “Setting up TCP/IP services for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring” on page 70). • For information about configuring RRSAF, see “Setting up RRSAF” on page 72. • If the ability to dynamically add to link pack area is restricted, the OMEGAMON Collector started task (ompestc_uid) needs update authority to the facility. In RACF this is accomplished by permitting the OMEGAMON XE for DB2 PE task update authority to the facility: <ul style="list-style-type: none"> – PERMIT CSVDYLPA.ADD.KO2ZINIB CLASS(FACILITY) ID(ompestc_uid) ACCESS(UPDATE) – PERMIT CSVDYLPA.DEL.KO2ZINIB CLASS(FACILITY) ID(ompestc_uid) ACCESS(UPDATE) – PERMIT CSVDYLPA.ADD.DGOVRM01 CLASS(FACILITY) ID(ompestc_uid) ACCESS(UPDATE) – PERMIT CSVDYLPA.DEL.DGOVRM01 CLASS(FACILITY) ID(ompestc_uid) ACCESS(UPDATE) • If the specific facility needs to be defined: <ul style="list-style-type: none"> – RDEFINE FACILITY CSVDYLPA.ADD.KO2ZINIB UACC(NONE) – RDEFINE FACILITY CSVDYLPA.DEL.KO2ZINIB UACC(NONE) – RDEFINE FACILITY CSVDYLPA.ADD.DGOVRM01 UACC(NONE) – RDEFINE FACILITY CSVDYLPA.DEL.DGOVRM01 UACC(NONE)

The following tables lists the required APF authorizations.

Table 5. APF authorizations

Users	APF authorizations
Tivoli Enterprise Monitoring Agent user ID	<p>APF authorizations on the libraries in the steplib of the Tivoli Enterprise Monitoring Agent</p> <p>Note: For detailed information, see <i>Configuring Tivoli Enterprise Monitoring Server on z/OS</i> in the <i>IBM Tivoli Monitoring and OMEGAMON XE Information Center</i>. Search for <i>APF-authorize the runtime load libraries</i>.</p>
OMEGAMON Collector user ID (DB2PM)	<p>APF authorizations on the libraries in the steplib of the OMEGAMON Collector.</p> <p>Depending on the type of runtime environment that you are using, add the following runtime load libraries to your list of APF-authorized libraries:</p> <p>FULL RTE</p> <ul style="list-style-type: none"> • <i>&rhilev.&rte.RKANMODU</i> • <i>&rhilev.&rte.RKANMOD</i> • <i>&rhilev.&rte.RKANMODL</i> <p>BASE SHARING RTE</p> <ul style="list-style-type: none"> • <i>&rhilev.&rte.RKANMODU</i> • <i>&rhilev2.&rte.RKANMOD</i> • <i>&rhilev2.&rte.RKANMODL</i> <p>where <i>&rhilev2</i> is the high-level qualifier of the BASE runtime environment.</p> <p>SMP/E SHARING RTE</p> <ul style="list-style-type: none"> • <i>&rhilev.&rte.RKANMODU</i> • <i>&rhilev.&rte.RKANMOD</i> • <i>&rhilev.TKANMOD</i> • <i>&rhilev.TKANMODL</i>

Chapter 5. Special considerations for a data sharing environment

If you are installing or configuring OMEGAMON XE for DB2 PE in a data sharing environment, you might need to alter your configuration of certain components.

Performance Expert Agent for DB2 Connect Monitoring

The following configuration scenarios are possible with Performance Expert Agent for DB2 Connect Monitoring in a data-sharing environment:

- **Monitor one member of a data sharing group.** This configuration is sufficient in most data sharing environments, even when the members reside on different LPARS in a sysplex environment.
- **Monitor two or more members of a data sharing group.** To enable DB2 Connect Monitoring, you have to enable Snapshot History and activate the collection of DB2 Connect Monitoring data. You can enable that for two or more members of a data sharing group. However, consider the following effects:
 - DB2 Connect Monitoring data is collected and stored for only one member of the data sharing group. Monitoring is started first for this DB2 subsystem.
 - The user interfaces must connect to the member for which DB2 Connect Monitoring data is collected and stored. Otherwise, they cannot display DB2 Connect Monitoring data.
 - If the monitoring for the DB2 subsystem, for which the DB2 Connect Monitoring data was collected, is stopped, and you have enabled DB2 Connect Monitoring for two or more members of a data sharing group, then data collection for another member takes over. Ensure to reconnect the user interface to this member to display DB2 Connect Monitoring data.

Performance Warehouse

In a data-sharing environment, you can enable Performance Warehouse for only one member of a data sharing group.

Chapter 6. VTPOOL sharing in a multihost environment

Virtual terminal pool (VTPOOL) defines the virtual terminal pool from which the virtual terminal manager VTM1 uses a virtual terminal for each OMEGAMON XE for DB2 PE session. Usually, each installation of VTM1 includes a VTPOOL definition. You can, however, also share a VTPOOL definition among several VTM1 installations.

Requirement: To provide support for OMEGAMON XE for DB2 PE sessions under more than one TSO or ISPF, you must install VTM1 in every VTAM domain that controls a TSO.

Sample network

For the VTPOOL sharing procedure that is described in this topic, it is assumed that the network looks like this:

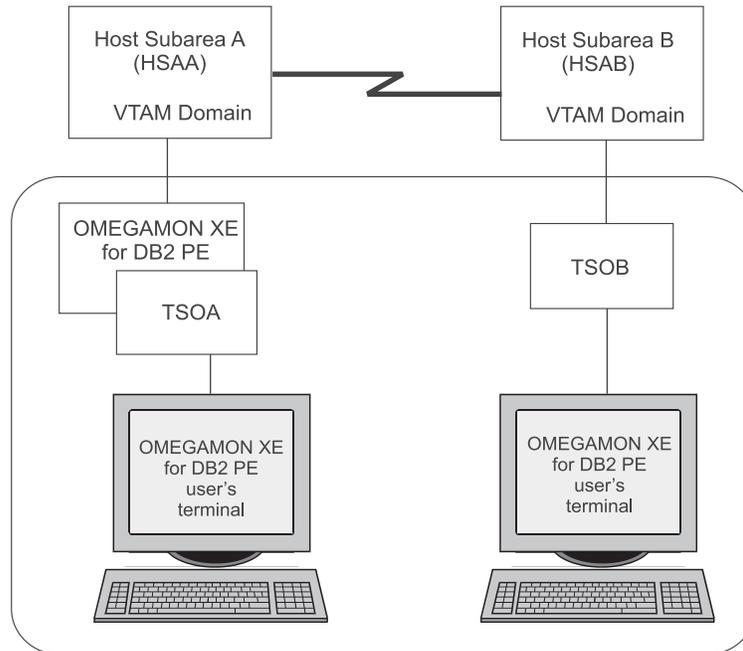


Figure 2. Sample network for VTPOOL sharing

In this example, there are two VTAM domains:

- Host Subarea A (HSAA)
- Host Subarea B (HSAB)

Host Subarea A runs OMEGAMON XE for DB2 PE and TSO (TSOA). Host Subarea B runs TSO (TSOB).

Assumptions are that:

- Users of OMEGAMON XE for DB2 PE who use ISPF or TSO mode must use the local TSO.
- A pool of ten virtual terminals is required for each host subarea.

This means that:

- Users whose terminals are controlled by VTAM domain HSAA must log on to TSOA.
- Users whose terminals are controlled by VTAM domain HSAB must log on to TSOB.

To share the VTPOOL definition, you must:

1. Define the VTPOOL to VMT1.
2. Define the VTPOOL to each VTAM.
3. Provide access to VTPOOL.

Define the VTPOOL to VMT1

To define the VTPOOL of ten virtual terminals to VTM1, use this \$VTAPPL statement:

```
$VTAPPL APPL#=10,VTAPPL=OBVTM1
```

Define the VTPOOL to each VTAM

To define the virtual terminals to each VTAM domain, define the local name and the network name separately.

Both names are defined in the VTAM APPL definition statement:

- The ACBNAME keyword defines the local name.
- The name field defines the network name.

In the following sample VTAM APPL definition statements, the HSAA network names are different from the HSAB network names. The local names for each virtual terminal are identical in both host subareas.

This example shows HSAA VTAM definition statements for Host Subarea A that correspond to the \$VTAPPL definition statement.

```
HSAAVTM1 VBUILD TYPE=APPL
HSAAVT01 APPL ACBNAME=OBVTM101,EAS=1
HSAAVT02 APPL ACBNAME=OBVTM102,EAS=1
HSAAVT03 APPL ACBNAME=OBVTM103,EAS=1
HSAAVT04 APPL ACBNAME=OBVTM104,EAS=1
HSAAVT05 APPL ACBNAME=OBVTM105,EAS=1
HSAAVT06 APPL ACBNAME=OBVTM106,EAS=1
HSAAVT07 APPL ACBNAME=OBVTM107,EAS=1
HSAAVT08 APPL ACBNAME=OBVTM108,EAS=1
HSAAVT09 APPL ACBNAME=OBVTM109,EAS=1
HSAAVT10 APPL ACBNAME=OBVTM110,EAS=1
```

This example shows HSAB VTAM definition statements or Host Subarea B that correspond to the \$VTAPPL definition statement.

```
HSABVTM1 VBUILD TYPE=APPL
HSABVT01 APPL ACBNAME=OBVTM101,EAS=1
HSABVT02 APPL ACBNAME=OBVTM102,EAS=1
HSABVT03 APPL ACBNAME=OBVTM103,EAS=1
HSABVT04 APPL ACBNAME=OBVTM104,EAS=1
HSABVT05 APPL ACBNAME=OBVTM105,EAS=1
HSABVT06 APPL ACBNAME=OBVTM106,EAS=1
HSABVT07 APPL ACBNAME=OBVTM107,EAS=1
HSABVT08 APPL ACBNAME=OBVTM108,EAS=1
HSABVT09 APPL ACBNAME=OBVTM109,EAS=1
HSABVT10 APPL ACBNAME=OBVTM110,EAS=1
```

Provide access to VTPOOL

To provide access to VTPOOL, you must:

1. Assemble and link-edit the VTPOOL definition statements to produce the module *&shilev.TKANSAM(KOBVTPL)*.

VTM1 uses this module at runtime to select a virtual terminal prior to starting a OMEGAMON XE for DB2 PE session.

2. Store the VTM1 execution-time modules including the link-edited module *&shilev.TKANSAM(KOBVTPL)* in a library on DASD that is shared by TSOA and TSOB users.

If this is not possible, you must use separate libraries with identical modules for both host subareas. You can, however, still perform VTPOOL maintenance from a single master library.

Modify VTPOOL definitions for TSO/ISPF mode

If you use TSO or ISPF mode and if your runtime environment does not share libraries with other runtime environments or with SMP/E, perform these steps:

1. Define your virtual terminals and LOGMODE names to the VTM1 program by updating RKANSAM data set member KOBVTPL.
2. Assemble and link the KOBVTL source by using the JCL in RKANSAM data set member KOBVTPLX.

The resulting load module KOBVTPL is stored in the RKANMOD data set.

3. Update the following member and controls accordingly if you modified the terminal names or the number of terminals:
 - VTAM node list member KOBVT1AP in the RKANSAM data set
 - VTAMLIST controls

Chapter 7. Security

Plan your security strategy before you begin your configuration. You might need user IDs or special privileges during the configuration process. You might also want to consider optional security features before you begin to configure the product.

Contents of the security file listing

The security update program creates a list of the control statement modifications. By using the **LIST** control statement, you can produce an additional listing that contains all security information. It is called security file listing.

The security file listing consists of these parts:

- Header
- Control Statement Edit Listing
- Security File Listing
- Security Update Program Trace

Header

The header of the security file listing contains this information:

- The name of the data set where the load module resides
- The module name of the security table
- The OMEGAMON XE for DB2 PE version number in the format *XnnnCOM*, where *nnn* denotes the version number. For example, *X420COM* denotes OMEGAMON XE for DB2 PE V4.2.0.
- Messages indicating successful completion of the job or errors, such as a failure to open the SYSLIB data set or to read the security table.

This example shows a typical header:

```
OBSECUP 1.2-- SECURITY UPDATE PROGRAM--(c) IBM CORPORATION-- mm/dd/yy 16:41
OB9261 OBSECUP BEGUN
OB9144 OBSELR00 CALLED TO READ 020CMDB
OB9148 SYSLIB DCB OPENED SUCCESSFULLY
OB9149 LIBRARY DSNAME IS: &rhilev.&rte.RKANMOD
OB9158 LOAD MODULE ID:
      OMCMDX
      X420COM
      mm/dd/yy 19:02
OB9146 LOAD MODULE TEXT SUCCESSFULLY READ
OB9150 SYSLIB DCB CLOSED
OB9262 LOAD MODULE READ RETURN CODE IS 0000
```

Control Statement Edit Listing

The control statement edit listing contains a list of the control statements that have been edited. The list shows the previous contents and the new contents. It does not show previous passwords.

If the **UPDATE** control statement is specified as **UPDATE=YES**, date and time of the previous update is reported.

This example shows a typical control statement edit listing:

```

OBSECUP 1.2-- SECURITY UPDATE PROGRAM--(c) IBM CORPORATION-- mm/dd/yy 16:41

          *** CONTROL STATEMENT EDIT ***

          AUTHLIB=&rhilev.&rte.RK02PROC,VOL=NOVOLUME
          PREVIOUS CONTENTS =
          NEW CONTENTS      = &rhilev.&rte.RK02PROC          NOVOLUME

*          CHANGE THE PASSWORD FOR LEVEL 3 COMMAND ACCESS
          PASSWORD=IBM3,LEVEL=3
          PREVIOUS CONTENTS = ***** NEW CONTENTS = IBM3

* DISPLAY SECURITY INFORMATION FOR THE PEEK COMMAND
          COMMAND=PEEK
          PREVIOUS CONTENTS = 3 B          NEW CONTENTS = 3 B

* DISPLAY SECURITY INFORMATION FOR MINOR JOBS
          MINOR=JOBS
          PREVIOUS CONTENTS = 0EW          NEW CONTENTS = 0EW

* PROTECT MZAP COMMAND
          COMMAND=MZAP,LEVEL=3
          PREVIOUS CONTENTS = 0          NEW CONTENTS = 3

* DISABLE CONS COMMAND
          COMMAND=CONS,LEVEL=DISABLE,AUDIT=BOTH
          PREVIOUS CONTENTS = 0          NEW CONTENTS = * B

*** END OF CONTROL STATEMENT INPUT ***

```

The codes for the previous and new contents of commands are positional. This list shows the valid positions:

1. The first position shows the number of the internal security level. If the command is not enabled, it shows an asterisk (*).
2. The second position shows the external security option.
 - E** Use external security for this command.
 - blank** A blank denotes no external security.
3. The third position shows the auditing option.
 - W** Audit this command by using WTO.
 - S** Audit this command by using SMF.
 - B** Audit this command by using WTO and SMF.
 - blank** A blank denotes no auditing.

Security File Listing

If you specify LIST=YES anywhere in the input stream, the security update program generates this information:

- A complete listing of the security information
- The name of the authorized screen library and its volume serial number
- The name of the external security user exit module
- The SMF record number
- All commands and their security information

This example shows a typical security file listing:

```

OBSECP 1.2-- SECURITY UPDATE PROGRAM--(c) IBM CORPORATION-- mm/dd/yy 16:41
  * * * SECURITY FILE LISTING * * *

      AUTHLIB=&rhilev.&rte.RK02PROC          VOLUME=NOVOLUME

      LEVEL1=***** LEVEL2=***** LEVEL3=*****
      SMFNUM=233
      MODULE=MYSECURE

COMMAND= /A           0           TYPE=S      (ALIAS)
COMMAND= /ABORT       0           TYPE=S
.
.
COMMAND= /AUP         0           TYPE= S
.
.
COMMAND= .AUP         0           TYPE= I
COMMAND= .DSA         0           TYPE= I
COMMAND= .SCC         *           TYPE= I
.
.
COMMAND= OCMD         3EB         TYPE= I
.
.
SECURITY TABLE LAST UPDATED ON mm/dd/yy 06:00:10

```

The commands are succeeded by the security level. An asterisk (*) indicates that a command is not enabled. Minor commands are listed below their corresponding major commands.

The **TYPE** field shows the following kinds of Classic Interface commands:

C Major
I Immediate
S Slash (INFO-line)

Security Update Program Trace

The last part of the listing shows if an update has successfully completed.

This example shows a typical security update program trace:

```

OBSECP 1.2-- SECURITY UPDATE PROGRAM--(c) IBM CORPORATION-- mm/dd/yy 16:41

      OB9145 OBSELW00 CALLED TO WRITE K020CMDB
      OB9148 SYSLIB DCB CLOSED SUCCESSFULLY
      OB9147 LOAD MODULE TEXT SUCCESSFULLY UPDATED
      OB9150 SYSLIB DCB CLOSED
      OB9269 KOBSPDPT ENDED

```

Optional external security features

You can setup your user exit routine to use one of the following external security features.

The exit routine concepts are described in “Exit routine concepts” on page 49.

You can also use the control options that are supplied with the security package, such as SHIFT validation and SOURCE validation. To use them, specify the commands EXTERNAL=YES and implement the option as the security package directs.

Customization of error messages

To suit your individual requirements, you can create customized error messages if one of these conditions occur:

- The authority of the user is insufficient.
- The user enters a wrong user ID.
- The user enters a wrong password.

The customized error messages can be up to 120 bytes long, except for INFO-line messages. INFO-line messages, for example, /PWD relogon messages, can be up to 60 bytes long.

Members KO2RACFX and KOACF2X in the *&rhilev.&rte.RKD2SAM* data set contain sample exit routines.

Password update

You can give the user the ability of interactive communication when logging on to external security.

For example, if a user logs on by using an expired password, the security exit can prompt the user for a new password and update the security database.

Restriction: This option is not available when relogging on by using the /PWD command.

Audit suppression

You can suppress WTO or SMF auditing. To indicate suppression of WTO or SMF, your exit routine might set a flag in \$UCHECK at initialization or relogon.

Audit supplement

In addition to the WTO and SMF audits that are available with the Classic Interface, you can use the audit features of the external security package to supplement command tracking. The RACF Report Writer and ACF2 ACFRPT utility programs are examples of this supplemental audit capability.

Locking feature

The feature can prevent users from changing their internal security level by using the /PWD command. Their level of authority is set only once and only at logon. It can be set to one of four levels (level 0, 1, 2, or 3).

Restrictions:

- Because the feature locks the internal security level of a user, it affects only those commands that are marked as EXTERNAL=NO.
- The locking feature disables the /PWD command only for supplying internal passwords. The user can still use the /PWD command to relogon to an external user ID.
- You must define the security level of a user in ACF2 or RACF as an INITIAL n resource, where n is a number from 0 to 3.
- You must assign corresponding values to commands in the security update program by using the **LEVEL** keyword of the **COMMAND** control statement.

- The routine starts checking INITIAL n resources at the highest level. If you define users of INITIAL2, INITIAL3, and PERMIT to INITIAL3, the users are locked to level 3.
- Users who have INITIAL authority without an attached value from 0 to 3 are allowed to change their internal security level by using the **/PWD** command.

User validation through RACF

To validate a user, the user exit routine checks the RACF resource class that is defined by the ICHERCDE macro.

The resources that allow the startup of the Classic Interface include INITIAL, INITIAL0, INITIAL1, and INITIAL3.

This example shows these resources:

```
<Allows /PWD to work>
RDEFINE ccccccc INITIAL UACC(READ)

<Defines security level 0 as inaccessible>
RDEFINE ccccccc INITIAL0 UACC(NONE)

<Defines security level 1 as inaccessible>
RDEFINE ccccccc INITIAL1 UACC(NONE)

<Defines security level 2 as inaccessible>
RDEFINE ccccccc INITIAL2 UACC(NONE)

<Defines security level 3 as inaccessible>
RDEFINE ccccccc INITIAL3 UACC(NONE)

<Locks USER02 to level 2 power>
PERMIT INITIAL2 CLASS(classme) ID(USER02) ACC(READ)
```

where *classme* is the resource class name that you define when you modify RACF security rules as described in “Modifying RACF security rules” on page 46.

User validation through ACF2

To validate a user, the user exit routine checks the ACF2 resource class.

The resources that allow the startup of the Classic Interface include INITIAL, INITIAL0, INITIAL1, and INITIAL3.

To allow users to change their authorization level with the **/PWD** command, use INITIAL.

This example shows sample definitions:

```

<Allows /PWD to work for USER01>
ACFNRULE KEY(INITIAL) TYPE(c1s) ADD(UID(*****USER01) ALLOW)

<Locks USER02 to security level 0 commands>
ACFNRULE KEY(INITIAL0) TYPE(c1s) ADD(UID(*****USER02) ALLOW)

<Locks USER03 to security level 1 commands>
ACFNRULE KEY(INITIAL1) TYPE(c1s) ADD(UID(*****USER03) ALLOW)

<Locks USER04 to security level 2 commands>
ACFNRULE KEY(INITIAL2) TYPE(c1s) ADD(UID(*****USER04) ALLOW)

<Locks USER05 to security level 3 commands>
ACFNRULE KEY(INITIAL3) TYPE(c1s) ADD(UID(*****USER05) ALLOW)

```

where *cls* is the generalized resource class name that you define when you modify RACF security rules as described in “Modifying RACF security rules” on page 46.

Customized security for the Classic Interface

You can set up an interface between the Classic Interface and an external security package, such as RACF or ACF2. The product has no security feature set up as the default.

Whether you use internal security, external security, or a combination of the two, you can customize the Classic Interface security table to the needs of your installation.

Terminology for security procedures

The following terms are used in the descriptions of the customization procedures for security:

Update Program

The KOBSUPDT member of *&rhilev.&rte.RKANMOD* is a utility program that performs the update to the security table of the Classic Interface.

Control Statements

The KO2SUPDI member of *&rhilev.&rte.RKD2SAM* contains control statements that you can edit to change the defaults for internal security or to specify external security. KO2SUPDI provides the input for the update program.

JCL The KO2SUPD member of *&rhilev.&rte.RKD2SAM* contains the JCL to run the security update program.

Exit Routine

At start time, the Classic Interface accesses the security exit routine of the user that provides the interface to the external security package. The name of this routine must be specified by the administrator.

Internal versus external security

When you start the Classic Interface, it checks if an exit routine for an external security package is installed.

You can use external security alone, internal security alone, or external security on some commands and internal on others.

Important: The use of the term *authorized* implies APF authorization.

- If the exit routine exists, it gets control for the commands that are marked for external security. It determines authorization through the external security package. If external security allows the command, the Classic Interface does not check internal security.
- If external security is not used for the command, internal security takes effect. The Classic Interface includes specific authorized commands. They require an internal security password for execution.

Authorized commands and their authorization level

The Classic Interface includes specific authorized commands for which you can use internal security. Authorized commands have a security level of 3.

All Classic Interface commands (major, minor, immediate, and INFO-line) have a security level of 0, 1, 2, or 3. Level 3 provides the highest degree of protection. A setting of 0 means that any user can access the command.

All commands have a default security level of 0 except for authorized commands. By default, authorized commands have a security level of 3.

You must run the security update to prevent that specific commands that can potentially damage your system are available to all users.

The KO2SUPDI member in *Erhilev.erte.RKD2SAM* contains instructions and the control statements for updating the authorization level of authorized commands as needed.

For the procedure to update the security level of Classic Interface commands, refer to “External security concepts” on page 44.

The following commands are the authorized commands for this product:

CONS	DCMD	DCNS	.DSA	MCHN	MLST	MSCN
MZAP	OCMD	OSPC	PEEK	SCHN	SLST	SSCN
SZAP	TCMD	XMCH	XMLS	XMSC	XMZP	

These commands are described in *IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS*; *IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS: Monitoring Performance from the OMEGAMON Classic Interface*.

Important: The **PEEK** major command has the minor commands **AMAP**, **DDNS**, **JOBS**, **MODS**, **STEP**, **SUBP**, and **TCBS**. These minor commands also have default security level of 3.

The authorized commands require an internal password for execution. How to use these passwords is described in “Using passwords for authorized commands.”

Using passwords for authorized commands

Each security level can have its own password.

About this task

The level 3 password accesses all levels. The level 2 password accesses levels 2, 1, and 0. The level 1 password accesses only levels 1 and 0. Level 0 commands execute without a password.

If you enter a command that requires higher authority than yours, the following message is displayed:

```
0B0921 Security check failed (Internal)
```

To get access to the authorized commands, use the **/PWD** command in the following way:

Procedure

1. Enter **/PWD** on the INFO-line.

The Classic Interface shows the password prompt.

```
_____ <=== Please enter password
```

2. Enter your password on the INFO-line.

The password does not display as you type it.

The message **PASSWORD ACCEPTED** is displayed.

3. Press Enter again to get access to all authorized commands that are associated with that password and to lower command levels.

What to do next

To reset the security level to 0 after you complete the authorized functions, do one of the following:

- Press the PA1 or the ATTN key.
- Enter **/PWD** on the INFO-line and press Enter twice without entering a password.

The Classic Interface shows:

```
_____ Password level reset
```

Access to the authorized commands is restricted until you enter the password again.

If you use the Classic Interface with an external security package, you can prevent the use of the **/PWD** command. For details about this feature, see “Locking feature” on page 40.

External security concepts

The Classic Interface supports external security for all modes of operation.

You can use external security for the logon and for commands. When using external security, you can log on to the Classic Interface only if you are allowed to access the INITIAL resource name.

You can use a resource name of INITIAL0, INITIAL1, INITIAL2, or INITIAL3 to allow logon to the Classic Interface and set the internal security level to 0, 1, 2, or 3, respectively.

When you issue a command, the Classic Interface performs an external security check to see if the following conditions are met:

- The name of the user exit module is specified in the security table.
- An external security exit routine is located and loaded.

- External security is specified for the issued command in the security table by using the COMMAND control statement with the EXTERNAL=YES keyword setting.
- For VTAM mode, the library that contains the KOBVTAM load module is APF-authorized.

If any commands are specified for external security checking and if an exit routine is not found, the Classic Interface recognizes a possible security exposure and disables those commands with an internal security level of 0 for the session. Commands with a level of 1, 2, or 3 run only after you enter the internal password. For more information about authorized commands and using passwords, see the following:

- “Authorized commands and their authorization level” on page 43
- “Using passwords for authorized commands” on page 43

Using the VTAM, TSO, or ISPF mode logon panel

You can log on through the VTAM, TSO, or ISPF mode panel using the KOBVTAM logon panel.

About this task

Advantages of using the KOBVTAM logon panel are:

- The exit routine can cause the Classic Interface to stop an unauthorized logon.
- The exit routine makes all security checks based on the user logon ID and not on the authority for the Classic Interface address space.

Note: If you are in an active VTAM session and you want to change the external security level of authorization, you can use the relogon feature as described in “Logging on again to an active session.”

To logon to the Classic Interface through the VTAM, TSO, or ISPF mode panel, perform the following step:

Procedure

Log on to VTAM. The logon panel for the Classic Interface VTAM application program (KOBVTAM) is displayed.

Logging on again to an active session

You can use the relogon feature to logon to an active VTAM session without logging out first.

About this task

The relogon feature is a function of the **/PWD** command. You can use this feature to perform the following tasks:

- Enter your user ID and password for the external security package from an active Classic Interface session.
- Change the security level without having to close a current VTAM session.

When you work with the relogon feature, consider these issues:

- Do not mark the **/PWD** command as EXTERNAL=YES in the security table.
- In your user exit, you can determine the default action if the supplied user ID or logon password is not valid.

For example, you can specify that all Classic Interface commands that are marked as EXTERNAL=YES are not enabled. You can also specify that the session reverts to the previous user ID. The available options are explained in the sample exit routines.

- If you use the relogon feature and your password has expired, you cannot enter a new one by using the **/PWD** command.

To use the relogon feature, perform the following step:

Procedure

Enter **/PWD** and your user ID on the INFO-line as seen in the following example:

```
/PWD user01____02INIT01 DED 02 V600.#P $DB2 mm/dd/yy 17:03:37
```

You are now logged on again to the active session using external security.

Implementing external security

You must implement an external security package before the exit routine can refer to it for authorization. If external security is not implemented, internal security takes effect.

About this task

To implement external security, perform the following steps:

Procedure

1. Modify the rules in the external security package to interface with the Classic Interface as described in “Modifying RACF security rules.”
2. Customize the sample exit routine that is provided on the Classic Interface tape according to the procedure described in “Exit routine concepts” on page 49. For a description of options that you can use, refer to “Optional external security features” on page 39.
3. Assemble and link-edit the routine.
4. Modify and update the security table to specify the commands that are to be checked by RACF or ACF2 and the name of the module that contains the exit routine. Note that no default is supplied for the module name. Follow the steps in “Updating the security table” on page 60.
5. Ensure that your security package has authorized the started-task identifier for OMEGAMON XE for DB2 PE.

During configuration, OMEGAMON XE for DB2 PE generates the security jobs KO2ACF2A, KO2RACFA, and KO2SUPD. These jobs create exit programs for external security packages. The members are in *&rhilev.&erte.RKD2SAM*.

Modifying RACF security rules

You must modify the RACF security rules to interface with the Classic Interface.

About this task

To modify RACF security rules, do the following:

Procedure

1. Update the resource class description table to define a class name, for example, O2IBM, by using the ICHERCDE macro call.

Requirement: This must be the same name that you use when you define the resource class in the security exit routine.

You should define the ICHERCDE macro as follows:

```
ICHERCDE CLASS=classme,  
            ID=nnn,  
            MAXLNTH=8,  
            FIRST=ALPHANUM,  
            OTHER=ANY,  
            POSIT=nnn,  
            DFTUACC=NONE
```

where *classme* and *nnn* are determined by your installation. Additional operands for this macro might also be required at your installation.

2. Define a resource profile for logging on to the Classic Interface by using the **TSO RDEFINE** command with a resource of **INITIAL**.

The following example shows a definition that allows all users to sign on to the Classic Interface and use the **/PWD** command for internal security. It allows access to all commands that are marked EXTERNAL=NO.

```
RDEFINE classme INITIAL UACC(READ)
```

where *classme* is the name that is assigned in the previous step.

This definition is the minimum required for logon. If you want to restrict the use of the **/PWD** command, refer to “Optional external security features” on page 39.

3. Define resource profiles for the commands that you want to protect by using external security. The commands are marked EXTERNAL=YES.

- a. Use the **TSO RDEFINE** to specify the Classic Interface command as the resource.

Ensure that you define UACC(NONE) so that only specific users can execute the command.

- b. Use the **PERMIT** command to define the users who can access the resource, that is the users who can execute the command.
- c. Give the defined users READ access

The following example shows how to authorize a user to run the **PEEK** command with RACF:

```
RDEFINE classme PEEK UACC(NONE)
```

```
PERMIT PEEK CLASS(classme) ID(USER01) ACCESS(READ)
```

4. Include the RACF macro libraries SYS1.MACLIB and SYS1.AMODGEN, and the macro library *&thilev*.TKANMAC in the assembly of the security exit routine.

What to do next

Important: When you authorize commands, the Classic Interface modifies the command name. For example, it makes the following replacements:

- It replaces the slash of the INFO-line commands with a dollar sign. For example, /cccc becomes \$cccc and /LOGOUT is defined to RACF as \$LOGOUT in CLASS(cccccc).
- It replaces the period of the immediate commands with @. For example, .ccc becomes @ccc.

Modifying ACF2 security rules

You must modify the ACF2 security rules to interface with the Classic Interface.

About this task

To modify ACF2 security rules, do the following:

Procedure

1. If you run the Classic Interface in VTAM mode, define the name of its started task to ACF2.

The started task name that you use for the Classic Interface in VTAM mode should have the MUSASS attribute assigned. This allows ACF2 to check the individual user authorization rather than using the address space ID of the Classic Interface. If STC(NO) is specified, you must run the Classic Interface in batch mode with a job name that has the MUSASS attribute.

2. To set up a resource class for ACF2, define a generalized resource class name, for example, O2S.

Requirement: It must be the same name that you use when you define the resource class in the security exit routine.

For generalized resources, the name consists of three characters but gets the letter R as prefix within the security exit.

This allows the Classic Interface to make security checks.

3. Define an ACF2 rule for resource INITIAL.

This allows VTAM users to log on to the Classic Interface as in the following example:

```
ACFNRULE KEY(INITIAL) TYPE(O2S) ADD(UID(*****uid) ALLOW)
```

Requirement: O2S must be identical to the resource class name that you define in the security exit routine.

uid is a user ID or a user ID mask. If you want to restrict the use of the /PWD command, refer to “Optional external security features” on page 39.

4. Define resource rules for the command that you want to protect by using the KEY operand of the ACF2 rule compiler.

This authorizes a user to execute the PEEK command with ACF2 as in the following example:

```
ACFNRULE KEY(PEEK) TYPE(O2S) ADD(UID(*****USER01) ALLOW)
```

For information about the format of the string, ask your security administrator.

5. Include the ACF2 macro library and the IBM macro library *&thilev.TKANMAC* in the assembly of the security exit routine.

What to do next

Important: When you authorize commands, the Classic Interface modifies the command name. For example, it makes the following replacements:

- It replaces the slash of the INFO-line commands with a dollar sign. For example, /cccc becomes \$cccc and /LOGOUT is defined to ACF2 as \$LOGOUT in CLASS(cccccc).
- It replaces the period of the immediate commands with @. For example, .ccc becomes @ccc.

Modifying CA-TOP SECRET security rules

You must modify the CA-TOP SECRET security rules to interface with the Classic Interface.

About this task

To modify CA-TOP SECRET security rules, do the following:

Procedure

1. Define the users who can access the resource by using the **TSS PERMIT** command.
2. Run the Classic Interface command.

Example

The following example shows how to authorize a user to execute the **PEEK** command with CA-TOP SECRET.

```
TSS PERMIT(userid) ccccccc(PEEK)
```

where *ccccccc* is the resource class name.

Exit routine concepts

The exit routine provides an interface between the Classic Interface and the security product.

Concepts for exit routines are:

- You can specify any unique name for your exit routine.
The name must be identical to the name in the control statements that update the security table. For more information, refer to the **MODULE=** control statement in “MODULE control statement” on page 57.
- You can share the exit routine between systems.
- You must define a resource class in the exit routine.
The name of this resource class must be identical to the generalized resource class name that you define when you modify RACF or ACF2 rules.
- You can use the same exit routine to define security for several Classic Interfaces.

You must then use the same name on the **MODULE=** control statement for each Classic Interface.

You can use the value of the **B#DDPRFX** field in the **\$BIA** data area as part of a resource name that you want to use for the Classic Interface that is currently in use.

The *Erhilev.&rte.RKD2SAM* data set contains the following sample members:

- Members **KO2ACF2X** and **KO2RACFX** that contain models for ACF2 and RACF routines.

Many configurations use these models without modification. They are, however, documented with comments so that you can modify them because security procedures are configuration-dependent.

You can also use these models if you have a security system other than RACF or ACF2. In this case, use the sample RACF or ACF2 exits as guides to see the following:

- Which information is passed to the exit routine
- Which information is returned to the Classic Interface
- Members KO2ACF2A and K02RACFA that contain sample JCL to help you assemble and link-edit your routine.

External security features are described in “Optional external security features” on page 39.

Calling conventions of the Classic Interface

The Classic Interface uses a single control block \$UCHECK to pass information to the exit routine. The exit routine uses \$UCHECK to pass information back to the Classic Interface.

The \$UCHECK control block is mapped by the \$UCHECK macro. The macro is defined in member KOBGMAC of *thilev.TKANMAC*.

The Classic Interface maintains the control block for the entire duration of the session.

Restriction: The \$UCHECK work area for the configuration is limited to 512 bytes. If your installation requires a larger work area, perform these steps:

1. Perform a GETMAIN for the additional storage required.
2. Place the pointer to this GETMAIN area in \$UCHECK.

Note: Do not try to enlarge the work area in another way because this causes an overlay of essential control blocks for the Classic Interface. Results are then unpredictable.

If you modify the RACF RACROUTE macro, you must perform a GETMAIN for at least 512 bytes for use as the WORKA parameter.

The Classic Interface calls the user exit module with these conventions:

Register 1

Address of parameter list

Register 13

Address of a standard save area

Register 14

Return address

Register 15

Entry point address (in)

Register 15

Return code (out)

Word 1

Address of control block

Calling flow between Classic Interface and user security exit

Calling flow between the Classic Interface and your user security exit routine takes place at initialization, during command verification, at relogin, and at termination.

Calling flow at initialization

At initialization, the Classic Interface passes control to your user exit routine. The initialization call is indicated by an **I** in the **U#CHTYP** field. This indicates that the Classic Interface requires a logon validation.

This list shows the conditions that apply to the calling flow at initialization:

- If the user ID field length is nonzero, the user ID and password information are available.
- If additional information or some form of retry is required, the routine can request a reshown of the screen. It can also reset any field lengths to indicate that no data, such as user ID, password, group, or new password, is available.

To perform a reshown in VTAM mode, perform these steps:

1. Set a message of up to 120 bytes length in the **U#CHMSG** field.
2. Set the **U@CHRSHO** bit in the **U#CHRESP** field.
3. Return to the caller.

The message appears below the panel. Appropriate fields, such as original user ID and password, are filled in, unless overridden (length = 0).

- After validation is complete, a return code of 0 from the user exit indicates that the user is allowed to log on.

Any other return code stops the session.

- After successful logon, the validation routine can perform resource validation. Optionally, it assigns a command security level (0, 1, 2, or 3) to the user. The default level is 0.

Place the appropriate number into the **U#CHAUT4** field. To force the user to use only this level, you must also set the **U@CH1LOK** bit in the **U#CHAUT1** field.

Calling flow during command verification

During command verification, the Classic Interface places a **C** in the **U#CHTYP** field. At this point, the user authorization can be checked.

If a command is allowed, the user can use this account on subsequent tries until security is reset with the **/PWD** command.

If a command is not allowed, the user cannot use this account on subsequent tries until security is reset with the **/PWD** command.

Each time the user attempts to use the command, the user exit is notified. Also, an audit record can be written, and a customized error message can be issued.

Return codes from the exit routine can be:

RC = 0

Indicates that the command is allowed.

For RACF and ACF.

RC = 4

Indicates that the command is unknown.

The Classic Interface allows the command to execute. For information about how to define a command to RACF, refer to “Modifying RACF security rules” on page 46.

For RACF only.

RC = 8

Indicates that the command is known to the security package and that access is denied.

For RACF and ACF.

Important: When you authorize commands, the Classic Interface modifies the command name. For example, it makes the following replacements:

- It replaces the slash of the INFO-line commands with a dollar sign. For example, `/cccc` becomes `$cccc`.
- It replaces the period of the immediate commands with `@`. For example, `.cccc` becomes `@cccc`.

Calling flow at relogon

At relogon, the Classic Interface places an **R** in the **U#CHTYP** field to indicate a logon validation.

The processing is identical to the one for initialization, except that users might not enter a new password or group because the Classic Interface does not display the logon panel.

Calling flow at termination

At termination, the Classic Interface passes a **T** to the user exit routine.

You can then do any termination cleanup required, such as freeing user control blocks, or perform a **FREEMAIN** for any **GETMAIN** areas.

Security control statements

The security table consists of specific control statements and control keywords. You can edit these statements to update the security table for internal and external security.

Overview

This table provides a summary of available security control statements and their descriptions in alphabetical order.

For more information about the control statements and keywords, refer to the individual description of each statement.

Table 6. Security control statements

Control statement	Purpose	Description
AUTHLIB	Specifies an authorized screen space (PROC) library for initialization that bypasses the security check.	"AUTHLIB control statement" on page 54
COMMAND	Sets the internal security levels of commands, marks them for external security, and requests an audit.	"COMMAND control statement" on page 54

Table 6. Security control statements (continued)

Control statement	Purpose	Description
LIST	Specifies whether a listing of the current security settings is to be produced on this run.	"LIST control statement" on page 56
MINOR	Specifies the security options for minor commands.	"MINOR control statement" on page 56
MODULE	Specifies the name of the module that contains the user external security exit routine.	"MODULE control statement" on page 57
PASSWORD	Specifies the internal passwords.	"PASSWORD control statement" on page 58
RESET	Clears current settings.	"RESET control statement" on page 58
SMFNUM	Specifies the record ID number for SMF audit requests.	"SMFNUM control statement" on page 59
UPDATE	Specifies whether updating is to be performed on this run.	"UPDATE control statement" on page 60

Format rules for control statements

These format rules apply to all control statements.

- Control statements can begin anywhere in the input record but cannot extend beyond column 72.
- Statements can be in any order in the input stream. The update program processes the statements as it encounters them, with the exception of the LIST and UPDATE statements. These statements take effect after all other input is processed.
- All information for a particular control statement must fit in a single line.
- All input must be in uppercase letters.
- Statements must be in this format:

CONTROLSTATEMENT=cccccc,KEYWORD1=cccccc,KEYWORD2=cccccc,

Note: Blanks are not allowed because the update program treats data that follows a blank as a comment. The data prints on the edit listing but is ignored for processing purposes.

- To insert comment lines anywhere in the input stream, place an asterisk (*) in the first column of the input record.
- If the update program identifies statements as incorrect, correct the statements and resubmit them.

To correct the setting, specify a new one instead of deleting or replacing part of the old one, especially when changing a command from EXTERNAL=YES to EXTERNAL=NO.

- The Classic Interface does not recognize changes of control statements until the update job completes successfully and until a new Classic Interface session is started.

Usually, the control statement edit listing indicates successful completion of the update.

AUTHLIB control statement

This control statement specifies the data set name of an authorized screen space (PROC) library. The library contains commands that should be invoked without security checks at the Classic Interface initialization.

Purpose

It lets you execute protected commands as part of the initialization screen without entering a password.

Recommendation: You should restrict WRITE access to the **AUTHLIB** data set because security checking for screens from this data set is bypassed.

Concatenate the data set that contains the authorized screens in your O2PROC DD statement. Note that the data set that contains the authorized screen libraries is not an APF-authorized data set.

Security checking resumes if one of these conditions occurs:

- The Classic Interface fetches a screen from an unauthorized library
- A screen is loaded into memory
- A user enters any keystroke including a cursor movement

Important: If you create an authorized screen library and if you use the Classic Interface menu system, checking security causes initialization to fail if one of these conditions occurs:

- The Classic Interface fetches a screen that contains an authorized command. Therefore, the **.FGO** and **.VAR** commands should be unprotected.
- The Classic Interface fetches a screen space that is loaded into memory. Screen @ZSCRNDF loads screen spaces into memory.

Format

The format of the **AUTHLIB** control statement is:

```
AUTHLIB=dsname,VOL={volume|NOVOLUME}
```

where *dsname* denotes the name of the authorized screen library that you have created.

Keyword

VOL

Always required.

Specifies the volume serial where the specified data set resides and serves as an additional security measure.

You can specify a volume serial number even if the data set is cataloged.

If you do not want the additional volume serial number checking to be performed, specify NOVOLUME.

COMMAND control statement

This control statement protects the name of a major, immediate, or INFO-line command of the Classic Interface. Minor commands are protected at the major command level unless the **MINOR** control statement is specified.

Purpose

When you update an INFO-line command, you must use the actual command name and not its alias. The Classic Interface automatically assigns the same protection attributes to all aliases of the command.

The Classic Interface does not check for multiple **COMMAND** control statements for the same command in the same run. It processes the last **COMMAND** control statements for the command.

Format

The format of the **COMMAND** control statement is:

```
COMMAND=  
{cccc|.ccc|/cccccc}  
[,LEVEL={0|1|2|3|DISABLE}]  
[,EXTERNAL={YES|NO}]  
[,AUDIT={WTO|SMF|BOTH|NONE}]
```

where *cccc*, *.ccc*, or */cccccc* is the name of the Classic Interface command that should be audited.

To have the control statement edit listing show the current security settings for a command, enter a **COMMAND=cccc**, **=.ccc**, or **=/cccccc** control statement without additional operands.

Keywords

LEVEL

Specifies the internal security level to be associated with this command.

Level 0

Allows the command to execute without an internal security check.

Levels 1, 2, and 3

Specify that the command executes only if you have previously entered the corresponding password for that level or for a higher level by using the **/PWD** INFO-line command.

DISABLE

Specifies that the Classic Interface should never execute the command.

You can audit attempts to execute the command for the session, but you cannot specify internal or external security.

EXTERNAL

Specifies if an external security package checks this command.

YES The external security package checks the command unless you specify **LEVEL=DISABLE**.

If no exit routine is available, the Classic Interface disables the command for the session if the command security level is 0.

If the command security level is 1, 2, or 3, internal security is used by default.

NO The external security package does not check the command.

If you change **EXTERNAL=YES** to **EXTERNAL=NO**, you must run the security update program before the change comes into effect.

AUDIT

Specifies if the Classic Interface audits the command when a user invokes it.

If you specify an audit for a disabled command, you are notified of attempts to execute it.

Possible values are:

NONE Specifies that commands are not audited. This is the default setting.

WTO Produces a one-line message on the master console.

SMF Specifies that the Classic Interface writes an SMF record.

The SMF record must be specified in the **SMFNUM** control statement.

If the SMF audit cannot be performed, the Classic Interface uses a WTO audit by default.

BOTH Specifies that the Classic Interface issues a WTO message to a console and writes an SMF record.

LIST control statement

This control statement specifies if the update program produces a security file listing.

Purpose

A security file listing is a complete record of the security table.

It shows:

- The name of the authorized screen library
- Its volume serial number
- The name of the user exit module
- All command names along with their corresponding security information

You can specify only one **LIST** control statement per run.

Format

The format of the **LIST** control statement is:

```
LIST={YES|NO}
```

Keywords

YES

Generates the security file listing independent of edits to the control statements when submitted as the only control statement in the command stream.

NO This is the default setting. Generates a listing that shows what the control statements and security information would look like if the update had taken place.

For detailed information about the contents of a security file listing, refer to “Contents of the security file listing” on page 37.

MINOR control statement

This control statement specifies the name of a Classic Interface minor command that should be protected.

Purpose

The Classic Interface protects the minor commands independently of the major commands. Therefore, any changes to minor commands apply to all minor commands with the same name and attributes, regardless of their major commands.

Access to a minor command requires access to the appropriate major command. If you do not specify an EXTERNAL keyword, the associated major controls access this minor command.

A minor command in a run is not checked for multiple **MINOR** control statements. The last **MINOR** control statement for the minor command takes effect.

Format

The format of the **MINOR** control statement is:

```
MINOR=cccc  
[,LEVEL={1|2|3|DISABLE}]  
[,EXTERNAL={YES|NO}]  
[,AUDIT={WTO|SMF|BOTH|NONE}]
```

Keywords

cccc denotes the name of the minor command that should be protected.

For an explanation of the keywords LEVEL, EXTERNAL, and AUDIT, refer to “COMMAND control statement” on page 54.

MODULE control statement

This control statement specifies the name of the module that contains your external security exit routine.

Purpose

You must specify this control statement to use external security.

The name of the module must be identical to the name of the load module that you specify in KO2ACF2A or KO2RACFA.

Format

The format of the **MODULE** control statement is:

```
MODULE=cccccccc
```

where *cccccccc* denotes the name of the module that contains your external security exit routine.

Usage notes

- No default value exists.
- To remove control from external security:
 1. Delete the value of MODULE=
 2. Run the security update job.

3. Restart the Classic Interface.

PASSWORD control statement

This control statement specifies that the password for each internal security level must be used with the **/PWD** command.

Purpose

If you enter a valid password for a security level, the Classic Interface allows access to commands that have the same security level, and to commands that have a lower security level.

Requirements:

- The password must be one to eight characters long.
- Use a separate **PASSWORD** control statement for each security level.
- Use unique passwords for each security level.

If you assign the same password to more than one security level, the Classic Interface matches it at the lowest level and denies access to commands at higher levels.

The Classic Interface checks the password for a match in this order:

1. Level 1
2. Level 2
3. Level 3

Format

The format of the **PASSWORD** control statement is:

```
PASSWORD=password,LEVEL={1|2|3}
```

where *password* denotes the unique password for this level.

Keywords

LEVEL

Always required.

Specifies the security level that is associated with this password.

Levels 1, 2, and 3 specify that the command executes only if you have previously entered the corresponding password for that level or for a higher level through the **/PWD** INFO-line command.

RESET control statement

This control statement clears the current settings of the other control statements.

Purpose

Reset control statements remain unprotected unless you specify new settings with the appropriate control statements and rerun the update program.

You can use the **RESET** control statement only once per run.

Format

The format of the **RESET** control statement is:

```
RESET=ccccccc
```

where *ccccccc* denotes one of the keywords.

Keywords

ALL | YES

Clears settings for all control statements and all keywords in the security table for the Classic Interface.

AUTHLIB

Clears the name and volume serial number of the authorized library.

INFO

Clears settings for all INFO-line commands on the **COMMAND** control statement.

For example, if you do not want to use the default security levels for INFO-line commands and if you want to start again, enter **RESET=INFO**. This resets all **LEVEL** settings to security level 0 and clears any existing **EXTERNAL** and **AUDIT** settings for the INFO-line commands.

MAJOR

Clears settings for all major and immediate commands on the **COMMAND** control statement.

For example, if you do not want to use the default security levels for major and immediate commands and if you want to start again, enter **RESET=MAJOR**. This resets all **LEVEL** settings to security level 0 and clears any existing **EXTERNAL** and **AUDIT** settings for major and immediate commands.

MINOR

Clears settings for all minor commands.

MODULE

Clears the name of your exit routine module.

PASSWORD

Clears the internal passwords.

SLASH

Clears the record number for SMF audits.

SMFNUM control statement

This control statement specifies the ID number of the SMF record.

Purpose

The Classic Interface uses this SMF record for its audit.

The record ID number must be a unique number from 128 to 255 that you do not use for other applications.

A default value does not exist.

Format

The format of the **SMFNUM** control statement is:

```
SMFNUM=nnn
```

where *nnn* denotes the SMF record ID number.

UPDATE control statement

This control statement specifies if the Classic Interface updates the control statements during a run.

Purpose

The default is UPDATE=YES.

You can use the **UPDATE** control statement only once per run.

Format

The format of the **UPDATE** control statement is:

```
UPDATE={YES|NO}
```

Updating the security table

You can update the security table for internal and external security.

About this task

To update the security table, perform these steps:

Procedure

1. Edit the control statements in the KO2SUPDI member of *&rhilev.&rte.RKD2SAM*.

To edit the setting, specify a new one instead of blanking out the old one, especially when changing a command from EXTERNAL=YES to EXTERNAL=NO.

If you implement external security, perform these steps:

- a. Enter the **MODULE** control statement.
It denotes the load module that contains the exit routine.
- b. Indicate which commands should use external security by using the EXTERNAL=YES setting on the **COMMAND** control statements.

To remove control from external security, perform these steps:

- a. Blank out the keyword of the **MODULE** control statement.
- b. Change commands that are marked with EXTERNAL=YES to EXTERNAL=NO.

Otherwise, you cannot execute commands that are marked with an internal security level of 0.

2. Submit the job by using the KO2SUPD member of *&rhilev.&rte.RKD2SAM*.

KO2SUPD contains the JCL to run KOBSPDPT, which is the security update utility program. KOBSPDPT performs the updates to the security table. It generates a list of the edits and, if requested, a complete list of security information.

Successful completion of the job produces the message 0B9147 LOAD MODULE TEXT SUCCESSFULLY UPDATED

If the update program flags statements as incorrect, correct the statements and resubmit them.

3. Stop all Classic Interface sessions in an address space.

You must do this before the changed security table comes into effect because it is part of a reentrant load module. For example, if five Classic Interface sessions are active, you must stop them all before new Classic Interface sessions can use the updated security table.

4. Start a new Classic Interface session.

Results

The changes to the security table come into effect.

Examples

This example shows the provided sample JCL that you can modify according to the needs of your system.

It resides in the data set *&rhilev.&rte.RKD2SAM(KOBSPDPT)*, where *&rhilev.&rte* is the high-level qualifier of your runtime environment.

```
//SECURITY JOB ,
//STEP1      EXEC PGM=KOBSPDPT,PARM=KO2OCMDB
//STEPLIB    DD DSN=&rhilev.&rte.RKANMOD,DISP=SHR
//SYSLIB     DD DSN=&rhilev.&rte.RKANMOD,DISP=SHR
//SYSPRINT   DD SYSOUT=*
//SYSIN      DD DSN=&rhilev.&rte.RKD2SAM(O2SUPDI),DISP=SHR
//
```

where:

PARM=

Identifies the load module that contains the security table of the Classic Interface.

STEPLIB

Specifies the name of the load library where KOBSPDPT resides.

SYSLIB

Specifies the name of the library where KO2OCMDB resides.

SYSPRINT

Specifies the print output for the reports that the security program produces.

SYSIN

Specifies the name of the data set that contains the control statements.

This example shows the control statements that are used to update the security table.

Member O2SUPDI in the *Erhilev.&rte.RKD2SAM* data set contains these control statements:

```
COMMAND=PEEK LEVEL=1
COMMAND=.DSA,LEVEL=3,EXTERNAL=YES,AUDIT=WTO
COMMAND=MLST,EXTERNAL=YES
COMMAND=XMZP,LEVEL=DISABLE,AUDIT=BOTH
COMMAND=XMLS,LEVEL=2
MINOR=JOBS,LEVEL=2
COMMAND=/SAVE,LEVEL=1,AUDIT=NONE
MODULE=MYSECURE
SMFNUM=233
LIST=YES
UPDATE=NO
```

The command control statements in this example result in these settings for the commands of the Classic Interface:

- PEEK** A user who has specified the internal security level 1 password or higher can execute PEEK and its minor commands. The Classic Interface does not perform external security checking.
- .DSA** The Classic Interface performs external security checking and writes a message on the master console when .DSA is invoked. If external security is unavailable, only a user who specifies the internal security level 3 password can execute .DSA.
- MLST** The Classic Interface performs external security checking but no auditing.
- XMZP** The command cannot be executed. The Classic Interface writes a message on the master console and writes an SMF record when XMZP is issued. There is no external security checking.
- XMLS** A user who has specified either the level 2 or level 3 internal security password can execute XMLS.
- JOBS** This is a minor command of the **PEEK** command. In the example, the **PEEK** is specified as a level 1 authorized command. The LEVEL=2 setting on the **JOBS** command specifies that only level 2 or 3 users can access it.
- /SAVE** A user who has specified the level 1 password, the level 2 password, or the level 3 password can execute the **/SAVE** command. It is not audited.

The remaining command control statements in this example result in these settings:

MODULE

MYSECURE is the name of the module that contains the security exit routine.

SMFNUM

The SMF ID is set to 233.

LIST YES indicates that the Classic Interface produces a listing.

UPDATE

NO indicates that the Classic Interface does not update the security table. This is a trial run.

Part 3. Configuration

This information describes how to configure the program.

Chapter 8. PARMGEN

PARMGEN was designed to deliver a more intuitive method for configuration. It replaces the former Configuration Tool (also known as ICAT).

With PARMGEN, the configuration of all available products follows exactly the same procedure:

1. Basic setup of an RTE.
2. Choosing the products and components to configure.
3. Preparing the environment.
4. Configuring all products and components.
5. Finishing with the deployment.

The differences in product configuration are mainly in the PARMGEN parameter profile. This is the reason why this documentation only covers OMEGAMON XE for DB2 PE topics. General information on how to use PARMGEN, migration from older versions, or from the Configuration Tool can be found in the following sources:

- *PARMGEN Alternative Configuration for IBM Tivoli OMEGAMON XE and other Tivoli Management Services technote*
- *Configuring products using the PARMGEN Workflow user interface*
- *PARMGEN Reference: Implementation Scenarios*
- *Common Parameter Reference*

In the Configuration Tool, the configuration of parameters and values was done in a product-specific user interface. In PARMGEN, all product-specific parameters are stored in one PARMGEN profile. Parameters are grouped into sections, and each section contains the parameters for only one product or component. Additionally, all parameters start with *Kpp_* where *pp* is the product identifier. The components that make up OMEGAMON XE for DB2 PE are the following:

- D2 - OMEGAMON XE for DB2 PE/OMEGAMON XE for DB2 PM
- D5 - OMEGAMON XE for DB2 on z/OS Agent

For a comprehensive reference of the PARMGEN parameters for this product, see the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*. This reference can be used to look up specific parameters to get the following information:

- Parameter description
- Required or optional parameter for running the OMEGAMON XE for DB2 PE server
- Default value
- Minimum value (if the parameter type is numeric)
- Maximum value (if the parameter type is numeric)
- Permissible values (if the parameter type is list)
- Locations where the parameter is stored (the configuration member and the data set it is generated to)
 - Parameter name (the line that is written to the configuration member to store the value)

- Panels in the Configuration Tool, which is especially helpful when you are moving from the Configuration Tool to PARMGEN. You can look up the following information:
 - Panel name
 - Panel ID
 - Panel field
 - Default value
 - Minimum value (if the parameter type is numeric)
 - Maximum value (if the parameter type is numeric)
 - Permissible values (if the parameter type is list)
- Batch parameter name (the name of the parameter when using batch installation)
- PARMGEN name (the name of the parameter in PARMGEN)
- PARMGEN classification

A list of all available parameters is available in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Monitoring profiles and DB2 subsystems

Monitoring profiles specify which monitoring functionality is to be used for the different DB2 subsystems. Each DB2 subsystem is associated with a monitoring profile.

OMEGAMON XE for DB2 PE offers many functions that can be configured for each DB2 subsystem. In most cases however, the monitoring requirements for the different DB2 subsystems are not completely unique, which means that you can reuse one configuration for several DB2 subsystems. For example, in a development environment you might want to collect very detailed performance data to perform a sophisticated analysis, while in a production environment this level of detail is not needed and causes unnecessary overhead. So you would use one set of configuration values for the DB2 subsystems that are used for development and another set of configuration values for DB2 subsystems in production.

A monitoring profile is such a set of configuration values. It is independent of the DB2 subsystem. Each DB2 subsystem is associated with a monitoring profile to determine the monitoring functionality. Several DB2 subsystems can be associated with the same profile, independent of the LPAR they reside on. As a result, profiles are reusable for many different DB2 subsystems that have similar monitoring requirements across different LPARs, and you can do changes to monitoring profiles rather than re-configuring every single DB2 subsystem.

Note: The monitoring profile refers to the DB2 monitoring function parameters. This is not to be confused with the PARMGEN user profile that holds all product and component parameters.

In PARMGEN, DB2 subsystems and monitoring profiles can be distinguished by their parameter name, as follows:

- **KD2_DBnn** - Parameters for the DB2 subsystem configuration
- **KD2_PFnn** - Parameters for the monitoring profiles

nn is used to distinguish between different DB2 subsystem configurations and monitoring profiles. The first profile uses *01*, the second *02*, and so on. It is required to put all **KD2_DBnn**/**KD2_PFnn** parameters between starting and ending identifiers, as in the following examples:

```
KD2_DB  START
```

```
KD2_DB01...
```

```
...
```

```
KD2_DB02...
```

```
...
```

```
KD2_DBnn...
```

```
...
```

```
KD2_DB  END
```

```
KD2_PF  START
```

```
KD2_PF01...
```

```
...
```

```
KD2_PF02...
```

```
...
```

```
KD2_PFnn...
```

```
...
```

```
KD2_PF  END
```

Chapter 9. Preparing the system

Before you can configure OMEGAMON XE for DB2 PE, you must install the program files, set up PARMGEN and a first runtime environment, and ensure that your system fulfills the prerequisites for the components that you plan to use.

About this task

The following topics provide detailed information:

1. "Installing the program files"
2. "Setting up security for the OMEGAMON Collector address spaces"
3. "Setting up TCP/IP services for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring" on page 70
4. "Enabling started jobs for Performance Warehouse" on page 71
5. "Specifying DB2 load libraries for the ISPF Monitoring Dialogs" on page 71
6. "Setting up RRSAP" on page 72

Installing the program files

OMEGAMON XE for DB2 PE on z/OS is installed using SMP/E.

About this task

See the *Program Directory for IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS* for detailed instructions.

Setting up security for the OMEGAMON Collector address spaces

The OMEGAMON Collector started task runs under a user ID. Therefore, you must create either a user ID or a group ID with the name DB2PM and connect the started task to this ID. Note that if you do not want to use Performance Warehouse, DB2 Connect Monitoring, or SQL Performance Analyzer, you can use a different started task user ID that is not DB2PM. In this case, perform the steps below with your started task user ID instead of DB2PM.

Before you begin

Ensure that you have sufficient privileges to create a new user ID or group ID in the security system that you are using, for example RACF.

About this task

Complete the following steps to create the user ID or group ID DB2PM and connect the OMEGAMON Collector started task to it:

Procedure

1. Create the user ID DB2PM in your security system. If you prefer to use an alternative user ID other than DB2PM, create a group ID DB2PM and add the user ID that you want to use to the user group DB2PM.
2. Connect the OMEGAMON Collector started task to the user ID DB2PM.

If you use RACF security, issue the following commands:

```
RDEFINE STARTED <aaa>.* STDATA(USER(DB2PM))
RDEFINE STARTED <bbb>.* STDATA(USER(DB2PM))
SETR RACLIST(STARTED) REFRESH
```

where <aaa> is the OMEGAMON Collector started task name and <bbb> is the CUA interface started task name.

If you use a group ID DB2PM instead of a user ID, assign the OMEGAMON Collector started task to the user ID that you added to the group ID DB2PM:

```
RDEFINE STARTED <aaa>.* STDATA(USER(<user>) GROUP(DB2PM))
RDEFINE STARTED <bbb>.* STDATA(USER(<user>) GROUP(DB2PM))
SETR RACLIST(STARTED) REFRESH
```

where <aaa> is the OMEGAMON Collector started task name, <bbb> is the CUA interface started task name, and <user> is the user ID that belongs to the group ID DB2PM.

Note: If there are additional OMEGAMON Collector started tasks in your configuration (such as the Performance Warehouse started task or the Tivoli Enterprise Monitoring Server started task) and these started tasks are named with the same prefix, you can use the prefix instead of the explicit started task name in the command to connect all OMEGAMON Collector started tasks at the same time.

Setting up TCP/IP services for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring

The OMEGAMON Collector uses OpenEdition to perform TCP/IP services. If you plan to use Performance Expert Client and/or end-to-end SQL and stored procedure monitoring, you must configure the OMEGAMON Collector to use TCP/IP services. This means that the user ID and the connected group ID of the OMEGAMON Collector must be known to OpenEdition and have sufficient OpenEdition privileges.

Before you begin

Perform this task only if you plan to use Performance Expert Client and/or end-to-end SQL and stored procedure monitoring.

If you perform this task, ensure that you have system administrator privileges for your security system, for example RACF SPECIAL for RACF security.

About this task

OpenEdition can be used by user IDs that have a valid OMVS segment in the RACF user profile. Add the OMVS segment to the user ID of the OMEGAMON Collector by performing the following steps:

Procedure

1. Assign a UID in the OMVS segment to the RACF user profile of the OMEGAMON Collector user ID. Issue the following command:

```
ALTUSER <OMEGAMON Collector user ID> OMVS(UID(0))
```

where <OMEGAMON Collector user ID> is the user ID that the OMEGAMON Collector started task is connected to.

Note: The usage of special TCP/IP services requires that the user ID of the OMEGAMON Collector has root privileges in OpenEdition. To minimize the impact of granting the OpenEdition root privilege, use a user ID for the OMEGAMON Collector started task that is not a valid TSO user ID.

- Optional: If you connected the OMEGAMON Collector started task to a user ID and a group ID, you need to assign a GID in the OMVS segment to the group ID. Issue the following command:

```
ALTGROUP <OMEGAMON Collector group ID> OMVS(GID(<gid>))
```

where <OMEGAMON Collector group ID> is the group ID that the OMEGAMON Collector started task is connected to. Replace <gid> with a valid and free group ID in OpenEdition. You can use the **LISTGRP OMVS** command of RACF to get an overview about the currently used group IDs in OpenEdition.

Enabling started jobs for Performance Warehouse

The Performance Warehouse job is run as a started job. A started job is a started task that contains a job statement. If you plan to use Performance Warehouse, you must configure your z/OS system to support started jobs.

Before you begin

Perform this task only if you plan to use Performance Warehouse.

If your z/OS system is already configured to support started jobs, skip this task.

If you perform this task, ensure that you have UPDATE privileges on the system PARMLIB, for example on SYS1.PARMLIB.

About this task

Your z/OS system must be configured to search started jobs in the PROCLIB of the started tasks, so that the OMEGAMON Collector can create the Performance Warehouse at startup.

The master JCL MSTJCLxx in your system PARMLIB defines started job PROCLIBs either by an IEFJOBS or an IEFPDSI DD statement. As the Performance Warehouse job will be copied to the started tasks PROCLIB, this PROCLIB data set must be part of the IEFJOBS or IEFPDSI concatenation.

Procedure

- Open the master JCL in your system PARMLIB and find the IEFJOBS or the IEFPDSI DD statement. If no IEFJOBS or IEFPDSI DD statement exists, add a new IEFJOBS DD statement to the master JCL.
- Add a further partitioned data set to the IEFPDSI or IEFJOBS concatenation for your started tasks PROCLIB.

Specifying DB2 load libraries for the ISPF Monitoring Dialogs

If you want to use Online Monitoring from the ISPF Monitoring Dialogs, you must add the DB2 load libraries to your standard search libraries for load modules. This must be done for every user that wants to use Online Monitoring from the ISPF Monitoring Dialogs.

Before you begin

You only need to perform this task if you plan to use Online Monitoring from the ISPF Monitoring Dialogs. If you do not plan to use Online Monitoring from the ISPF Monitoring Dialogs, you can skip this task.

If you perform this task, ensure that you have z/OS system administrator privileges.

About this task

You must add the DB2 load library of the DB2 subsystem that you want to monitor to the standard search path.

Note: If you use more than one DB2 version, use the DB2 load library from the DB2 subsystem with the second highest DB2 version. Like this, you can monitor DB2 subsystems of three different versions. For example, with the load library of DB2 10, you can monitor subsystems of DB2 9 and DB2 10, and DB2 11. If you do not do this, you must unload and load the DB2 load modules when switching to a DB2 subsystem with a different DB2 version in the ISPF Monitoring Dialogs.

Use one of the following methods to add the DB2 load library to the standard search path:

Procedure

- Use the TSO TSOLIB command. This is the preferred method.
- Add the DB2 load library to the TSO logon step library STEPLIB DD.
- Add the DB2 load library to the link pack area LPALSTxx.
- Add the DB2 load library to the system link list concatenation LNKLSTxx.

Setting up RRSAP

OMEGAMON XE for DB2 PE uses Resource Recovery Services Attachment Facility (RRSAF) for connecting to DB2 subsystems.

About this task

Ensure that RRSAP can be used on your system. Complete the following steps:

1. Ensure that the RRS subsystem is running on your system.
2. If you have not already established a profile for controlling access from the RRS attachment facility, define <ssid>.RRSAF (where *ssid* is the DB2 subsystem ID) in the resource class DSNR (the RACF resource class for DB2). This has to be done for each DB2 subsystem that you want to monitor. You can also define a generic resource RRSAP. These profiles might already exist if, for example, stored procedures have been used before. Assign READ authority for this RACF profile to the OMEGAMON XE for DB2 PE Collector started task ID (userid).

Chapter 10. Configuration scenarios

This section contains configuration scenarios to help you set up OMEGAMON XE for DB2 PE/OMEGAMON XE for DB2 PM.

About this task

The following topics provide detailed information:

1. "Basic configuration scenario"
2. "Installing OMEGAMON XE for DB2 PE from scratch with the most basic configuration"
3. "Configuration scenario specific to OMEGAMON XE for DB2 PE/OMEGAMON XE for DB2 PM" on page 78
4. "Configuring Near-Term History with system variable support" on page 78
5. "Configuring InfoSphere Optim Performance Manager and Performance Expert Client" on page 79

Basic configuration scenario

This section contains one basic scenario that shows how to set up OMEGAMON XE for DB2 PE/OMEGAMON XE for DB2 PM from scratch with the most basic configuration. The scenario mainly contains default values.

About this task

The following topic provides detailed information:

1. "Installing OMEGAMON XE for DB2 PE from scratch with the most basic configuration"

Installing OMEGAMON XE for DB2 PE from scratch with the most basic configuration

This scenario shows how to install OMEGAMON XE for DB2 PE from scratch.

Before you begin

Apply SMP/E before you start with this scenario.

About this task

In order to keep the setup effort to a minimum, monitoring functions will not be enabled. After the configuration, you will be able to open the Classic interface and check the performance of your DB2 subsystem.

Procedure

1. Start the Configuration and Installation Tools user interface by issuing the command **ex** on the TKANCUS library in your SMP/E installation.

```
ex '&trgh1q.TKANCUS'
```

2. Use option 5 **Configure** to open the PARMGEN workflow user interface.

- As this is the first setup, you have to provide some basic information on this first panel:

```

KCIP@PG0 ----- PARAMETER GENERATOR (PARMGEN) WORKFLOW - WELCOME -----
Option ==>                                     Scroll ==> PAGE
Enter PARMGEN parameter values appropriate for your environment:
GBL_USER_JCL: _____
                PARMGEN common/global library for RTEs (CONFIG DD lib. in STCs)
RTE_PLIB_HILEV: _____
                High-Level Qualifier (HLQ) of work libraries (IK*,WCONFIG,WK*)
RTE_NAME: _____ (Type ? for a list of configured RTEs)
                Runtime environment (RTE) name for this LPAR

```

```

Note: Enter n (1-11) to perform tasks.                Status      Date
       Enter ns (1s-11s) for detailed job/task status. -----
                                               More:      +

```

- KCIJPCFG Set up PARMGEN work environment for an RTE.
- \$JOBINDX Review PARMGEN job index.
- KCIJPCCF Clone customized WCONFIG members. (COND)
- KCIJPUP1 Update interim libraries and create profiles.
- KCIJPMC1 Merge profile from backup profile (COND)
- KCIJPMC2 Merge profile from model RTE. (COND)
- KCIJPCNV Convert an ICAT RTE Batch member. (COND)
- Customize PARMGEN configuration profiles.
- KCIJPVAL Validate PARMGEN profile parameter values.
- Create the RTE members and jobs.

- Add common PARMGEN-related information for parameter **GBL_USER_JCL**. For example, which RTE did you use last, what jobs were run, when were they run, and what are their return codes.
- Add high-level qualifier for your runtime environments for parameter **RTE_PLIB_HILEV**.
- Add the name of your new RTE for parameter **RTE_NAME**.
- This example uses the following values for these parameters:
 - GBL_USER_JCL**: SAR.PG.V520.JCL
 - RTE_PLIB_HILEV**: SAR.PG.V520
 - RTE_NAME**: RTE0A

Note: The length of **RTE_PLIB_HILEV** plus **RTE_NAME** must not exceed 18 characters.

- Press **Enter** to commit your settings.
- Use option **1 KCIJPCFG** to start the setup of the PARMGEN work environment for this new RTE. As PARMGEN is workflow-based, this walkthrough follows steps 1 to 10, as shown in the list below the RTE names.
- On **KCIP@PG1**, fill in your jobcard that will be used for all jobs at the bottom of the screen. If you need more lines for your jobcard, you can edit the \$JOB CARD member in your user JCL data (provided by parameter **GBL_USER_JCL**).

Note: If you change **\$JOB CARD**, the user interface will only show the first four lines.

- Press **Enter** to get to the next panel.
- On **KCIP@PG2**, provide a value for parameter **GBL_TARGET_HILEV**. This parameter is the high-level qualifier of your SMP/E target data sets. Fill out UNIT, VOLSER, STORCLAS, and MGMGCLAS as appropriate for your system.
- Press **Enter** to get to the next panel.

14. On **KCIP@PG3** you find a number of RTE-specific parameters. For this walkthrough, review the following:
 - a. **RTE_HILEV** is the high-level qualifier as previously defined by parameter **RTE_PLIB_HILEV**, which is why it is set as default.
 - b. **RTE_VSAM_HILEV** is the high-level qualifier for VSAM runtime libraries. The same applies here as for **RTE_HILEV**.
 - c. **RTE_TEMS_CONFIGURED_FLAG** is the enablement flag for the Tivoli Enterprise Monitoring Server. Change the default to N, as this walkthrough does not cover the enablement of the Tivoli Monitoring infrastructure.
 - d. **RTE_X_SECURITY_EXIT_LIB** is the security exit library. If you changed **RTE_HILEV** or **RTE_VSAM_HILEV**, ensure that the high-level qualifier is the same as for **RTE_PLIB_HILEV**.
 - e. Leave the rest of the parameters as is and press **Enter**.

```

KCIP@PG3 ---- SET UP PARMGEN WORK ENVIRONMENT FOR AN RTE (3 OF 3) -----
Command ==>                                     Scroll ==> PAGE

Enter parameter values appropriate for your RTE=RTE0A.
Note: See F1=Help for SMS-related and RTE HLQ-related considerations
when VOLUME, UNIT, STORCLAS, and MGMTCLAS parameters are required for
the global RTE_* parameters and the Kpp_* product-specific parameters.

More:      +
RTE_SMS_PDSE_FLAG:      Y              (PDSE flag (Y, N))

RTE_SMS_UNIT:           _____ (Non-VSAM disk UNIT type)
RTE_SMS_VOLUME:         _____ (Non-VSAM disk VOLSER)
RTE_SMS_MGMTCLAS:       _____ (Non-VSAM disk MGMTCLAS)
RTE_SMS_STORCLAS:       _____ (Non-VSAM disk STORCLAS)
RTE_SMS_VSAM_VOLUME:    _____ (VSAM disk VOLSER)
RTE_SMS_VSAM_MGMTCLAS:  _____ (VSAM disk MGMTCLAS)
RTE_SMS_VSAM_STORCLAS:  _____ (VSAM disk STORCLAS)

RTE_HILEV:              SAR.PG.V520_____ (Non-VSAM prod. RK* HLQ)
RTE_VSAM_HILEV:         SAR.PG.V520_____ (VSAM production RK* HLQ)

RTE_TYPE:               FULL_____ (FULL, SHARING)
RTE_SHARE:              _____ (SMP or shared RTE name)
RTE_X_HILEV_SHARING:    _____ (HLQ of shared RTE)
RTE_TEMS_CONFIGURED_FLAG: Y          (Y, N)
RTE_TEMS_NAME_NODEID:   RTE0A:CMS_____ (e.g., RTE1:cms)
RTE_STC_PREFIX:         CANS_____ (Started task prefix)
RTE_VTAM_APPLID_PREFIX CTD_____ (VTAM APPLID prefix)
RTE_SYSV_SYSVAR_FLAG:   N          (Y, N) (System variable flag)
RTE_X_SYSV_OVERRIDE_SYMBOLS: N      (Y, N) (SysVar override flag)

RTE_SECURITY_USER_LOGON: NONE_____ (RACF, ACF2, TSS, NAM, SAF, None)
RTE_SECURITY_FOLD_PASSWORD_FLAG: Y   (Fold to upper case (Y, N))
RTE_SECURITY_CLASS:     _____
RTE_X_SECURITY_EXIT_LIB: SAR.PG.V520.RTE0A.RKANSAMU_____
GBL_DSN_ACF2_MACLIB:    _____ (If ACF2)
GBL_DSN_ACF2_MACLIB1:   _____ (If ACF2)

KDS_TEMS_TYPE:          HUB_____ (Hub, Remote)
KDS_TEMS_HA_TYPE:       _____ (Hub TEMS type (HA))

```

15. On **KCIP@PG4**, you see a list of components that were found in your TKANCUS library, and thus can be configured.
16. Press **Enter** to get to the next panel.
17. On **KCIP@PG5**, you see a list of products that can be configured, as a result of the components found in the previous step. In general, you can exclude specific products if you do not want PARMGEN to run through their configuration processing. For OMEGAMON XE for DB2 PE you must not exclude the Tivoli Enterprise Monitoring Server (KDS). Even if you disabled the Tivoli Enterprise Monitoring Server using **RTE_TEMS_CONFIGURED_FLAG** on **KCIP@PG3**, this product is still required for the configuration. For this example, do not exclude anything and confirm this with N in the appropriate field.
18. Press **Enter** to open up a dialog that asks you whether you want to back up your existing configuration.

19. Press **Enter**, as the backup is only required if you rerun the KCIJPCFG job.
20. Submit the KCIJPCFG job that is open and go back to the main menu by pressing **PF3** twice. You now see in the status field of the KCIJPCFG job that the job is submitted.
21. Press **Enter** until the KCIJPCFG field contains a return code. The expected return code is zero. If you have a higher return code, then look into the job log and take appropriate actions.
22. Use option **4 KCIJPUP1** to open the KCIJPUP1 job that is used to update the interim libraries and create the PARMGEN user profiles. KCIJPCFG creates the work data sets and KCIJPUP1 fills them with the code that will finally generate the product configuration. For a more detailed explanation on all the jobs and their functions, read the job headers or look at the various PARMGEN documentation and videos.
23. Submit the KCIJPUP1 job and go back to the main panel by pressing **PF3** twice. Wait until the job has finished. The expected return code is zero.
24. Use option **8 RTE0A** (name of the RTE) to open the list of available PARMGEN profiles.
25. On **KCIP@PG6** you see the list of available PARMGEN profiles.

```

KCIP@PG6 ----- CUSTOMIZE PARMGEN CONFIGURATION PROFILE MEMBERS -----
Option ==>
(Required)* Select option 1 to customize the RTE0A RTE LPAR profile:
  1. RTE0A   RTE LPAR CONFIG profile in WCONFIG

(Conditional)* Select option 2 and/or 3 if applicable to this RTE:
  2. $GBL$USR Global parameters CONFIG profile in WCONFIG
      (Required if this is not an ICAT-to-PARMGEN conversion
      or if this is a product upgrade - see F1=Help)
  3. RTE0A   System Variables CONFIG profile in GBL_USER_JCL
      (SAR.PG.V520.JCL)
      (Required if using user-defined symbols or overriding
      system symbols' resolved values - see F1=Help)
*Note: The PARMGEN configuration profiles above are preserved
      (initially created by KCIJPUP1 or KCIJPUP2 job).
(Reference) IBM-supplied default profiles (refreshed by KCIJPUP1 job):
  4. $CFG$IBM IBM default RTE LPAR CONFIG profile in WCONFIG
  5. $GBL$IBM IBM default Global parameters CONFIG profile in WCONFIG
  6. $SYSIN   $PARSE/$PARSESV SYSIN controls (CONFIG/SELECT MEMBER)

(Optional) Select option 7 for member list of the WCONFIG library:
  7. WCONFIG SAR.PG.V520.RTE0A.WCONFIG

```

PARMGEN profiles contain the parameter value pairs that make up the configuration. RTE0A contains all product/component-specific parameters. \$GBL\$USR contains all global configuration parameters.

26. Use option **1 RTE0A** to open the PARMGEN user profile for the products/components and adjust the following parameters with the given values:
 - a. **RTE_X_STC_INAPF_INCLUDE_FLAG** = Y When this parameter is set to Y, the started task will contain an imbed that does the APF authorization for you. If you need to set the APF authorizations in your environment by hand, leave this parameter to N and follow the steps in the *Complete the Configuration for the OMEGAMON XE for DB2 Performance Expert/Monitor Technote* at the end of this walkthrough.
 - b. **KD2_CLASSIC_DB2PM_PLANPKG_OWNER** = DB2PM This is the name of the plan and package owner that is used to access the OMEGAMON XE for DB2 PE packages in DB2.

- c. **KD2_DB01_DB2_SSID** = <SSID of the subsystem you want to monitor> Use this parameter to specify the SSID of the subsystem that you want to monitor at the end of this walkthrough.
 - d. **KD2_DB01_DB2_VER** = <DB2 version of the subsystem that you want to monitor> Specify the DB2 version of your subsystem that you want to monitor. This can be either 91, 10, or 11.
27. Use **PF3** to get back to **KCIP@PG6**. This walkthrough covers only a very basic setup. After you complete all the steps, you can adjust all parameters, add subsystems, and configure your monitoring profiles accordingly. For now, keep all other parameters as is.
 28. Use option **2 \$GBL\$USR** to open the global PARMGEN user profile and adjust the following parameters with the given values:
 - a. **GBL_DSN_DB2_RUNLIB_Vxx** = <Path to your DB2 runlib> This is the path to the data sets that holds your DB2 RUNLIB. You have to specify the corresponding library of the DB2 version that is provided by **KD2_DB01_DB2_VER**. This parameter and the following parameters are commented out by default. To comment them in, just remove the two asterisks (**) at the beginning of the line.
 - b. **GBL_DSN_DB2_LOADLIB_Vxx** = <Path to your DB2 loadlib> This is the path to the data sets that hold your DB2 LOADLIB. You have to specify the corresponding library of the DB2 version that is provided by **KD2_DB01_DB2_VER**.
 - c. **GBL_DSN_DB2_DSNEXT** = <Path to your DB2 exit library> This is the path to the data sets that hold your DB2 exit library.
 29. Use **PF3** twice to get back to **KCIP@PG0**, the workflow user interface welcome page.
 30. Use option **10 \$PARSE** to open **KCIP@PRS**.
 31. Use option **1 \$PARSE** to open the composite job that generates the work libraries. The resulting set of libraries is a complete environment that can be used to test the configuration before deploying it to the production environment. In other words, **\$PARSE** generates all the configuration members in the corresponding work data sets **WK***.
 32. Submit the job. The expected return code is zero.
 33. Use **PF3** to get back to **KCIP@PG0**. Option **9 on KCIP@PG0** runs a validation over the PARMGEN profiles to check whether the parameter values are valid. This validation is also run during the composite **\$PARSE**. If the validation of at least one parameter fails, nothing is changed or generated. To see the validation report, open **\$VALRPT** in your **WCONFIG** work library, which you find under your RTE high-level qualifier.
 34. Use option **11 SUBMIT** to open **KCIP@SUB**. This panel contains several more jobs, most of which are conditional and are used to finish the configuration. This includes the allocation of the runtime libraries and the copy of the program code from the target libraries to the runtime libraries. Not all jobs that are listed here are submitted by the composite job automatically. This depends on your environment and your monitoring needs.
 35. Use option **1 KCIJPSUB** to open the composite **SUBMIT** job and submit it. The expected return code is zero.
 36. Use **PF3** to get back to the **KCIP@SUB** panel.
 37. Use option **13 KCIJPW2R** to copy the configuration from the work libraries to the runtime libraries. This job is never run automatically by PARMGEN. You can configure anything in PARMGEN but it will not override your existing

production environment. Only when you run KCIJPW2R, your production environment is updated with the new configuration.

38. Submit the job that comes up. The expected return code is zero.
39. As a final step, refer to the *Complete the Configuration for the OMEGAMON XE for DB2 Performance Expert/Monitor Technote*. This guide contains several mandatory steps in order to properly set up the server. Most of these steps only have to be done once. After you finished the steps in the *Complete the Configuration for the OMEGAMON XE for DB2 Performance Expert/Monitor Technote*, you can start the server and open the Classic Interface in order to start monitoring your subsystem.

What to do next

After having installed OMEGAMON XE for DB2 PE from scratch, you can continue by enabling more functions. Functions that can be enabled are, for example, Near-Term History and Snapshot History.

You can continue with other scenarios in order to configure more than one DB2 subsystem, even if they are spread over different LPARs in your environment.

Configuration scenario specific to OMEGAMON XE for DB2 PE/OMEGAMON XE for DB2 PM

This section contains some scenarios that are specific to OMEGAMON XE for DB2 PE/OMEGAMON XE for DB2 PM.

About this task

The following topics provide detailed information:

1. "Configuring Near-Term History with system variable support"
2. "Configuring InfoSphere Optim Performance Manager and Performance Expert Client" on page 79

Configuring Near-Term History with system variable support

This scenario describes how to configure Near-Term History in an RTE that is enabled for system variable support.

Before you begin

As a prerequisite, you need an RTE having OMEGAMON XE for DB2 PE already configured and system variable support enabled.

Procedure

1. Start the **Configuration and Installation Tools** user interface by issuing the command **ex** on the TKANCUS library in your SMP/E installation.

ex '&trghlq.TKANCUS'
2. Use option **5 Configure** to open the PARMGEN workflow user interface.
3. Enable your existing RTE that has been already enabled for system variable support.
4. Use option **8** to open the **PARMGEN profile selection menu**.
5. Use option **1** to open the **RTE LPAR configuration profile**.

6. Enable Near-Term History for those profiles that you use for monitoring your DB2 subsystems by setting parameter **KD2_PFn_HIS_START** to Y. *nn* is the profile ID. Previously, with the Configuration Tool, you had to enable system variable support for Near-Term History separately on the panel **KD261PI Global Control Parameters**. This in turn prevented the use of %DB% and %SY% in the Near-Term History data sets. This limitation does not exist anymore. In addition, you do not have to enable system variable support for Near-Term History separately.
7. Use **PF3** to get back to the main workflow panel **KCIP@PG0**.
8. Use option **10** to open the **\$PARSESV** job panel **KCIP@PRS**.
9. Use option **1** to open the composite **\$PARSESV** job and submit it. The expected return code is zero.
10. Use **PF3** to get back to the main workflow panel **KCIP@PG0**.
11. Use option **11** to open the **SUBMIT** job panel **KCIP@SUB**.
12. Use option **5** to open the **KCIJVUPV** job that will regenerate the Near-Term History configuration and submit it. The expected return code is zero.
13. Use option **13** to open the **KCIJPW2R** deployment job and submit it. The expected return code is zero.

What to do next

Now that you configured Near-Term History, restart the OMEGAMON XE for DB2 PE server. Use the Classic Interface to look at the history data.

Configuring InfoSphere Optim Performance Manager and Performance Expert Client

This scenario describes how to configure the InfoSphere Optim Performance Manager in order to get end-to-end SQL monitoring and stored procedure monitoring. This feature is only for OMEGAMON XE for DB2 PE only (not for OMEGAMON XE for DB2 PM).

Before you begin

As a prerequisite, you need a runtime environment having OMEGAMON XE for DB2 PE already configured.

Procedure

1. Start the **Configuration and Installation Tools** user interface by issuing the command **ex** on the TKANCUS library in your SMP/E installation.

```
ex '&trgh1q.TKANCUS'
```

2. Use option **5 Configure** to open the PARMGEN workflow user interface.
3. Enable the runtime environment where you want to configure InfoSphere Optim Performance Manager.
4. Use option **8** to open the **PARMGEN profile selection menu**.
5. Use option **1** to open the **RTE LPAR configuration profile** and adjust the following parameters:

Table 7. Parameter values of the RTE LPAR configuration profile

Parameter	Value	Description
KD2_OMPE_E2E_MON_SPRT	Y	Enables end-to-end SQL monitoring

Table 7. Parameter values of the RTE LPAR configuration profile (continued)

Parameter	Value	Description
KD2_DBnn_DB2_PORT_NUM	<port>	Optional. This specifies the port that will be used to connect InfoSphere Optim Performance Manager to the OMEGAMON XE for DB2 PE server. You can keep the default port 2000. You need this port information for later.
KD2_PFnN_TRACES_318	Y	Enables the automatic start of IFCID 318.
KD2_PFnN_TRACES_400	Y	Enables the automatic start of IFCID 400. Set this parameter to Y only if you want to monitor DB2 10 and above.
KD2_PFO1_READA_SPMON	Y	Enables stored procedure monitoring.

6. Use **PF3** to get back to the main workflow panel **KCIP@PG0**.
7. Use option **10 \$PARSESV** to open the job panel **KCIP@PRS**.
8. Use option **1** to open the composite **\$PARSESV** job and submit it. The expected return code is zero.
9. Use **PF3** to get back to the main workflow panel **KCIP@PG0**.
10. Use option **11** to open the SUBMIT job panel **KCIP@SUB**.
11. Use option **13** to open the **KCIJPW2R** to copy the configuration from the work libraries to the runtime libraries. Submit the upcoming job. The expected return code is zero.

What to do next

For integration of the InfoSphere Optim Performance Manager into Tivoli Enterprise Portal find more information in section “Enabling InfoSphere Optim Performance Manager integration” on page 87 in Chapter 15, “Completing the configuration for z/OS components,” on page 119.

Install InfoSphere Optim Performance Manager and configure it for the monitored database. For more information, see the *IBM InfoSphere Optim Performance Manager information center*.

Chapter 11. Configuring basic components on z/OS

The basic setup of OMEGAMON XE for DB2 PE covers the configuration of the OMEGAMON Collector, the configuration of the user interfaces, and the configuration of the monitoring functions that are enabled globally for all DB2 subsystems.

About this task

Perform the following steps to configure basic components on z/OS:

Procedure

1. Configure global control parameters. See “Configuring global control parameters and the OMEGAMON Collector” for detailed information.
2. Optional: Enable DB2 Event Exception Processing. See “Enabling DB2 Event Exception Processing” on page 82 for detailed information.
3. Optional: Enable CPU parallelism data collection. See “Enabling CPU parallelism data collection” on page 82 for detailed information.
4. Configure the user interfaces on z/OS. See the following topics for detailed information:
 - “Configuring Classic Interface” on page 82
 - For configuring OMEGAMON enhanced 3270 user interface, see the *IBM Tivoli OMEGAMON XE and Tivoli Management Services on z/OS: Common Planning and Configuration Guide*.
 - Optional: “Configuring ISPF Monitoring Dialogs” on page 83
 - Optional: “Configuring CUA” on page 83
5. Optional: Enable Performance Expert Client/and or end-to-end SQL and stored procedure monitoring support. See “Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support” on page 83 for detailed information.
6. Optional: Enable IBM Tivoli Monitoring and integration of end-to-end SQL monitoring support. See “Enabling IBM Tivoli Monitoring” on page 84 and “Enabling InfoSphere Optim Performance Manager integration” on page 87 for detailed information.

Configuring global control parameters and the OMEGAMON Collector

You must specify the global control parameters for the runtime environment that you created and configure the OMEGAMON Collector.

You must specify parameters to control specific rollout scenarios, to control the creation of DB2 related runtime members, and to handle DB2 Performance Expert Agent for DB2 Connect Monitoring program updates. To configure global control parameters and the OMEGAMON Collector, open the PARMGEN user profile and adjust the parameters that you find in the section “Basic product parameters” in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Enabling DB2 Event Exception Processing

You can enable DB2 Event Exception Processing in the PARMGEN user profile.

DB2 Event Exception Processing alerts you when specific system events occur. These events include deadlocks, timeouts, locks, escalations, and starts and stops of a coupling facility structure rebuild. To enable DB2 Event Exception Processing, set parameter **KD2_OMPE_DB2_EVENT** to Y in the PARMGEN user profile. If you want to make further changes to DB2 Event Exception Processing, refer to the related parameters in section "Basic product parameters" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Here is a list of the related parameters:

- KD2_OMPE_AUTH_FAIL
- KD2_OMPE_EDMP_FULL
- KD2_OMPE_THREAD_COMMIT
- KD2_OMPE_DEADLOCK
- KD2_OMPE_TIMEOUT
- KD2_OMPE_CF_REBUILT
- KD2_OMPE_GLOBAL_TRACE
- KD2_OMPE_DSN_EXTENT
- KD2_OMPE_EXTENT_THOLD
- KD2_OMPE_UR
- KD2_OMPE_LOGSPACE

Enabling CPU parallelism data collection

You can enable CPU parallelism data collection in the PARMGEN user profile.

To collect query parallelism data for real-time and historical monitoring, enable CPU parallelism data collection. To enable CPU parallelism data collection, set parameter **KD2_OMPE_CPU_PARALLEL** to Y in the PARMGEN user profile. If you want to make further changes to CPU parallelism data collection, refer to the related parameters in section "Basic product parameters" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

The following parameter is related:

- KD2_OMPE_DSP_SIZE

Configuring Classic Interface

Classic Interface is always configured by default.

If you want to make further changes to Classic Interface, refer to the related parameters in section "Basic product parameters" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Here is a list of the related parameters:

- KD2_CLASSIC_VTAM_NODE
- KD2_CLASSIC_VTAM_APPL_LOG
- KD2_CLASSIC_UMAX
- KD2_CLASSIC_USER_PROFILE

- KD2_CLASSIC_LROWS
- KD2_CLASSIC_DB2ID_DEFAULT

Configuring ISPF Monitoring Dialogs

ISPF Monitoring Dialogs is always configured by default.

If you want to make further changes to ISPF Monitoring Dialogs, refer to the related parameters in section "Basic product parameters" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

The following parameter is related:

- KD2_OMPE_ISPF_LANGUAGE

Configuring CUA

You can configure CUA for the runtime environment that you created.

CUA is disabled by default, but you can enable it if you want to use it. To configure CUA, set parameter **KD2_CUA_ACT** to Y in the PARMGEN user profile. If you want to make further changes to CUA, refer to the related parameters in section "Basic product parameters" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Here is a list of the related parameters:

- KD2_CUA_ACT
- KD2_CUA_STC
- KD2_CUA_ENABLE_MULTISESSION_FLAG
- KD2_CUA_RESTRICT_MULTISESSION_ID
- KD2_CUA_WTO_MSG
- KD2_CUA_SECURITY
- KD2_CUA_VTAM_VTRM_APPL_LENGTH
- KD2_CUA_VTAM_VTRM_SUFFIX
- KD2_CUA_VTAM_VTPOOL_NUM
- KD2_CUA_VTAM_VTPOOL_PREFIX
- KD2_CUA_VTAM_NODE
- KD2_CUA_VTAM_APPL_OPERATOR
- KD2_CUA_VTAM_PRIMARY_APPL
- KD2_CUA_VTAM_SECONDARY_APPL

Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support

If you want to use Performance Expert Client and/or end-to-end SQL and stored procedure monitoring, you must enable Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support.

Performance Expert Client is a user interface that supports online monitoring and reporting, Performance Warehouse management, and buffer pool analysis on the workstation. End-to-end SQL monitoring and stored procedure support is a feature

that brings new functionality in end-to-end monitoring via the InfoSphere Optim web user interface. With this new functionality, distributed SQL statement execution can be monitored, as well as stored procedures called via DDF, or directly on the Host. You must enable Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support before you can specify the port information for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring support.

To enable Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support, set parameter **KD2_OMPE_PE_SUPPORT** or parameter **KD2_OMPE_E2E_MON_SPRT** to Y in the PARMGEN user profile. If you want to make further changes to Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support, refer to the related parameters in section "Basic product parameters" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Here is a list of the related parameters:

- KD2_OMPE_TCPIP_NAME
- KD2_OMPE_TCPIP_ADDRESS
- KD2_OMPE_MAX_SESSIONS

After you have enabled Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support, you must perform the following tasks:

- You have to specify a port for each DB2 subsystem if the Performance Expert Client or end-to-end SQL and stored procedure monitoring is enabled, otherwise there will be errors in the log. See "Specifying the port information for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring" on page 107.
- Ensure that the OMEGAMON Collector is configured to use TCP/IP services. See "Setting up TCP/IP services for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring" on page 70 for detailed information.
- Install Performance Expert Client or end-to-end SQL and stored procedure monitoring on the workstation. For Performance Expert Client, see "Installing and configuring Performance Expert Client" on page 153 for more information. For end-to-end SQL and stored procedure monitoring, see "Installing and configuring end-to-end SQL and stored procedure monitoring" on page 161 for more information.

Enabling IBM Tivoli Monitoring

IBM Tivoli Monitoring (ITM) monitors and manages system and network applications and monitors the availability and performance of all parts of your enterprise. IBM Tivoli Monitoring also provides reports that you can use to track trends and troubleshoot problems.

IBM Tivoli Monitoring consists of the following components:

- Tivoli Enterprise Monitoring Agent. The Tivoli Enterprise Monitoring Agent for OMEGAMON XE for DB2 PE is the OMEGAMON Agent.
- Tivoli Enterprise Monitoring Server
- Tivoli Enterprise Portal Server
- Tivoli Enterprise Portal
- IBM Eclipse Help Server

- Tivoli Data Warehouse

To use IBM Tivoli Monitoring, you must install Tivoli Enterprise Monitoring Server, Tivoli Enterprise Monitoring Agent, and Tivoli Enterprise Monitoring Server application support. Additionally, you must install Tivoli Enterprise Portal, Tivoli Enterprise Portal Server, and IBM Eclipse Help Server on the workstation. Tivoli Data Warehouse is an optional component that is installed on the workstation.

For an explanation of each component and the relationships between the components, see Part 1, “Introduction to OMEGAMON XE for DB2 PE,” on page 1.

The following sections contain detailed installation and configuration instructions or references to the respective documentation:

1. “Configuring Tivoli Enterprise Monitoring Server”
2. “Enabling Tivoli Enterprise Monitoring Agent”
3. “Verifying that Tivoli Enterprise Monitoring Agent starts correctly” on page 86
4. “Installing application support for a Tivoli Enterprise Monitoring Server on z/OS” on page 88

For more information about Tivoli Enterprise Portal, see “Installing and configuring Tivoli Enterprise Portal” on page 161.

For more information about Tivoli Data Warehouse, see “Adding Tivoli Data Warehouse” on page 161.

Detailed information about the components, additional instructions for installation, and additional instructions for configuration are available in the *IBM Tivoli Monitoring and OMEGAMON XE Information Center*.

Configuring Tivoli Enterprise Monitoring Server

The Tivoli Enterprise Monitoring Server collects performance data from monitored resources, preprocesses it, and then archives it in a central database. You need at least one Tivoli Enterprise Monitoring Server to be the HUB for your Tivoli Enterprise Portal environment.

About this task

If you have many monitored resources, you might also install remote Tivoli Enterprise Monitoring Servers to preprocess some of the data for the HUB Tivoli Enterprise Monitoring Server.

Detailed configuration instructions are provided in the *IBM Tivoli Monitoring and OMEGAMON XE Information Center*. Search for *Configuring Tivoli Enterprise Monitoring Server on z/OS*. Also see section ‘Installing and configuring the hub Tivoli Enterprise Monitoring Server’.

Enabling Tivoli Enterprise Monitoring Agent

The Tivoli Enterprise Monitoring Agent for OMEGAMON XE for DB2 PE is the OMEGAMON Agent.

About this task

When used with OMEGAMON XE for DB2 PE, the Tivoli Enterprise Monitoring Agent does not retrieve performance data. Instead, it connects with the OMEGAMON Collector so that the Tivoli Enterprise Portal infrastructure can access the performance data that is collected in the OMEGAMON Collector.

You can configure the Tivoli Enterprise Monitoring Agent as a stand-alone address space or as part of a Tivoli Enterprise Monitoring Server address space. To improve performance, you might want to configure the Tivoli Enterprise Monitoring Agent as a stand-alone address space.

Restriction: When more than one Tivoli Enterprise Monitoring Agent for DB2 is installed and running on the same LPAR connecting to the same hub Tivoli Enterprise Monitoring Server, the hub Tivoli Enterprise Monitoring Server can only accept data from one Tivoli Enterprise Monitoring Agent per LPAR at a time.

The instructions in this section describe how to configure a stand-alone Tivoli Enterprise Monitoring Agent in its own address space (that is on the same LPAR as the Tivoli Enterprise Monitoring Server). Instructions for configuring the Tivoli Enterprise Monitoring Agent in a Tivoli Enterprise Monitoring Server address space are available in the *PARMGEN Reference: Implementation Scenarios*.

To configure Tivoli Enterprise Monitoring Agent, refer to the KD5 parameters in section 'OMEGAMON XE for DB2 Agent' in the IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor *Parameter Reference*.

For more information, refer to the *IBM Tivoli OMEGAMON XE and Tivoli Management Services on z/OS: Common Planning and Configuration Guide* and the *Common Parameter Reference*.

For the Complete the Configuration information, refer to the *Complete the Configuration for the OMEGAMON XE for DB2 Agent Technote*.

Verifying that Tivoli Enterprise Monitoring Agent starts correctly

Before you install Tivoli Enterprise Portal, check that the Tivoli Enterprise Monitoring Server and the Tivoli Enterprise Monitoring Agent are configured correctly and that they connect to the other components correctly.

About this task

To verify that Tivoli Enterprise Monitoring Agent starts successfully, perform the following steps:

Procedure

1. Start the OMEGAMON Collector.
2. Start the Tivoli Enterprise Monitoring Server.
3. Start the Tivoli Enterprise Monitoring Agent.
4. Check the Tivoli Enterprise Monitoring Agent startup messages.
 - a. Verify that the Tivoli Enterprise Monitoring Server that is configured is correct. This information is found in the RKLVLLOG in the following message:

```
(000B-DA3327CB:kbbssge.c,52,"BSS1_GetEnv") CT_CMSLIST="<protocol>:<TEMS>";
```

where *<protocol>* is the communication protocol and *<TEMS>* is the name of the Tivoli Enterprise Monitoring Server.

- b. Verify that the Tivoli Enterprise Monitoring Agent connected to the Tivoli Enterprise Monitoring Server. This information is found in the RKLVLOG in the following message:

```
(0001-DA300D6B:kraau.log.cpp,442,"ctira_insert_log") KRAREG000,  
Connecting to CMS MMRTE:CMS., Producer(IRA Manager)
```

where *MMRTE:CMS* is the name of the Tivoli Enterprise Monitoring Server

- c. Verify that the Tivoli Enterprise Monitoring Agent connected to the OMEGAMON Collector. This information is in the JESMSGLOG in the following message:

```
K02I0189I AGENT Agent STC CONNECTED TO D2  
OM Server STC VERSION V520 BY REQUEST - DB2 DB2SSID
```

where:

- *Agent STC* is the name of the Tivoli Enterprise Monitoring Agent started task.
- *OM Server STC* is the Started task ID of server.
- *DB2SSID* is the DB2 subsystem ID.

If you do not see this message, verify that the OMEGAMON Collector started task name specified in the **KD5_AGT_STC** parameter is correct on the **SPECIFY CONFIGURATION PARAMETERS** panel.

- d. Verify that the Tivoli Enterprise Monitoring Agent connected to the OMEGAMON Collector. This information is in the JESYSMSG of the OMEGAMON Collector in the following message:

```
K02I0154I D5API COLLECTOR IS CONNECTING TO DB2 DB2SSID  
ON BEHALF OF AGENT Agent STC
```

where:

- *DB2SSID* is the DB2 subsystem ID.
- *Agent STC* is the name of the Tivoli Enterprise Monitoring Agent started task.

If you do not see this message, verify on the **SPECIFY CONFIGURATION PARAMETERS** panel that the OMEGAMON Collector started task name, specified in the **KD5_AGT_STC** parameter, is correct.

Enabling InfoSphere Optim Performance Manager integration

If you want to use InfoSphere Optim Performance Manager integrated into Tivoli Enterprise Portal, you need to enable InfoSphere Optim Performance Manager integration.

About this task

Before you can use the InfoSphere Optim Performance Manager integrated into Tivoli Enterprise Portal, check that the subsystems are enabled for monitoring support in the Tivoli Enterprise Monitoring Agent configuration. To do this, set the appropriate values for the following parameters for each DB2 subsystem configuration:

- **KD5_DBnn_OPM_E2ESEQUIRE_SECURE**
- **KD5_DBnn_OPM_E2ESQLHN_TCP_HOST**
- **KD5_DBnn_OPM_E2ESQLPT_PORT_NUM**

Installing application support for a Tivoli Enterprise Monitoring Server on z/OS

Before you can view data in the Tivoli Enterprise Portal on the workstation, you must install application support. Application support files provide agent-specific information for workspaces, helps, situations, templates, and other data.

About this task

Detailed configuration instructions are provided in the *IBM Tivoli Monitoring and OMEGAMON XE Information Center*. Search for *Configuring Tivoli Enterprise Monitoring Server on z/OS*.

Chapter 12. Best practices

This section contains different best practices to help you reduce the configuration effort.

About this task

The following topics provide detailed information:

1. “Creating new DB2 subsystem configurations and/or monitoring profiles via duplication”
2. “Configuring all DB2 subsystems/data sharing groups in one runtime environment and using enterprise deployment to deploy the configuration to other LPARs with only one PARMGEN profile” on page 92

Creating new DB2 subsystem configurations and/or monitoring profiles via duplication

In order to monitor more DB2 subsystems/data sharing groups, you need to add more subsystem configurations to the PARMGEN profile. The same applies to monitoring profiles, if you want to analyze different performance metrics for selected DB2 subsystems. In order to create a new DB2 configuration or monitoring profile, you can duplicate an existing one. Per default, two DB2 configurations and one monitoring profile are available.

Before you begin

This best practice does not require any prerequisites. You can follow the steps while doing your first configuration or when updating your existing configuration.

About this task

You will duplicate an existing monitoring profile in this workflow. However, this information is also applicable to all other parameters that are table-based. These are all parameters of the structure **Kpp_AAxx**, where:

- **pp** is the product code
- **AA** is the parameter function identifier (for example, **PF** for monitoring profiles, or **DB** for DB2 configurations)
- **xx** is the row ID

In order to create a new monitoring profile in the PARMGEN user profile, you duplicate an existing profile. After this step, you adjust the profile ID that is part of the parameter. For example, in parameter **KD2_PF01_SQLPA_VERSION**, the profile ID is **PF01**.

The sample PARMGEN profile that is provided with OMEGAMON XE for DB2 PE already contains a default monitoring profile configuration. You can use this default profile for the following steps, or create a new profile **PF02**.

Procedure

1. Open the PARMGEN user profile and search for the first or any existing monitoring profile. Issue the following command: **f PFxx**

- Issue the following primary command to exclude all lines: **x all**

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.03 All lines excluded
Command ==> x all Scroll ==> CSR
***** Top of Data *****
- - - - - 2534 Line(s) not Displayed
***** Bottom of Data *****

```

- Issue the following primary command to include all profile monitoring parameters: **f PF01 all**

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.03 253 CHARS 'PF01'
Command ==> f PF01 all Scroll ==> CSR
***** Top of Data *****
- - - - - 1742 Line(s) not Displayed
001743 ** BEGIN KD2_PFO1 - Monitoring profile ID: P001
001744 KD2_PFO1_ROW 01
001745 KD2_PFO1_PROFID P001
001746 KD2_PFO1_DESCRIPTION "P001 PROFILE"
- - - - - 6 Line(s) not Displayed
001753 KD2_PFO1_OA_ECM N * Enablement Parameter *
- - - - - 1 Line(s) not Displayed
001755 KD2_PFO1_OA_WAIT 5
001756 KD2_PFO1_OA_START N
001757 KD2_PFO1_OA_THREAD N
001758 KD2_PFO1_OA_INTV 15
- - - - - 7 Line(s) not Displayed

```

Note: You can include commented lines using the line command **f**. For example, to include the six lines between **KD2_PFO1_DESCRIPTION** and **KD2_PFO1_OA_ECM**, use **f6**. This results in the following screen:

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.03 253 CHARS 'PF01'
Command ==> Scroll ==> CSR
***** Top of Data *****
- - - - - 1742 Line(s) not Displayed
001743 ** BEGIN KD2_PFO1 - Monitoring profile ID: P001
001744 KD2_PFO1_ROW 01
001745 KD2_PFO1_PROFID P001
001746 KD2_PFO1_DESCRIPTION "P001 PROFILE"
f6- - - - - - 6 Line(s) not Displayed
001753 KD2_PFO1_OA_ECM N * Enablement Parameter *
- - - - - 1 Line(s) not Displayed
001755 KD2_PFO1_OA_WAIT 5
001756 KD2_PFO1_OA_START N
001757 KD2_PFO1_OA_THREAD N
001758 KD2_PFO1_OA_INTV 15
- - - - - 7 Line(s) not Displayed

```

Results in:

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.03 Columns 00001 00080
Command ==> Scroll ==> CSR
***** Top of Data *****
- - - - - 1742 Line(s) not Displayed
001743 ** BEGIN KD2_PFO1 - Monitoring profile ID: P001
001744 KD2_PFO1_ROW 01
001745 KD2_PFO1_PROFID P001
001746 KD2_PFO1_DESCRIPTION "P001 PROFILE"
001747
001748 ** -----
001749 ** Object and Volume Analysis (OA):
001750 ** -----

```

```

001751 ** Specify Object and Volume Analysis (OA) parameters used in the
001752 ** xKD2PAR(STRTOA) member:
001753 KD2_PFO1_OA_ECM                N                * Enablement Parameter *
----- 1 Line(s) not Displayed
001755 KD2_PFO1_OA_WAIT              5
001756 KD2_PFO1_OA_START            N
001757 KD2_PFO1_OA_THREAD           N
001758 KD2_PFO1_OA_INTV             15
----- 7 Line(s) not Displayed

```

4. Issue the **rr** block line command on all included lines to repeat the profile once.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.03          253 CHARS 'PF01'
Command ==> Scroll ==> CSR
***** Top of Data *****
----- 1742 Line(s) not Displayed
rr1743 ** BEGIN KD2_PFO1 - Monitoring profile ID: P001
001744 KD2_PFO1_ROW                01
001745 KD2_PFO1_PROFID             P001
001746 KD2_PFO1_DESCRIPTION        "P001 PROFILE"
:
:
rr2159 ** END KD2_PFO1 - Monitoring profile ID: P001

```

5. Issue the **rr** block line command to exclude the first of the two identical profiles to ensure you do not edit it.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.03          253 CHARS 'PF01'
Command ==> Scroll ==> CSR
***** Top of Data *****
----- 1742 Line(s) not Displayed
xx1743 ** BEGIN KD2_PFO1 - Monitoring profile ID: P001
001744 KD2_PFO1_ROW                01
001745 KD2_PFO1_PROFID             P001
001746 KD2_PFO1_DESCRIPTION        "P001 PROFILE"
:
:
xx2159 ** END KD2_PFO1 - Monitoring profile ID: P001
002160 ** BEGIN KD2_PFO1 - Monitoring profile ID: P001
002161 KD2_PFO1_ROW                01
002162 KD2_PFO1_PROFID             P001
002163 KD2_PFO1_DESCRIPTION        "P001 PROFILE"

```

6. Issue the following primary command to change the monitoring profile ID to a new ID, so that you have two different monitoring profiles:

c PF01 PF02 all nx

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.04          Columns 00001 00080
Command ==> c PF01 PF02 all nx          Scroll ==> CSR
***** Top of Data *****
----- 2159 Line(s) not Displayed
==CHG> ** BEGIN KD2_PFO2 - Monitoring profile ID: P001
==CHG> KD2_PFO2_ROW                01
==CHG> KD2_PFO2_PROFID             P001
==CHG> KD2_PFO2_DESCRIPTION        "P001 PROFILE"

```

Note: The **nx** command ensures that the change command only affects the non-excluded lines.

7. Change the **KD2_PFO2_ROW** parameter to match the ID in **PFxx**.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----

```

```

EDIT      SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.04      CHARS 'KD2_PF02_PROFID'
Command ==>
002161 KD2_PF02_ROW                                02                Scroll ==> CSR

```

- Change the **KD2_PF02_PROFID** parameter to a new monitoring profile ID to ensure that it differs from the original profile ID.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT      SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.04      CHARS 'KD2_PF02_PROFID'
Command ==>
002162 KD2_PF02_PROFID                               P002
002163 KD2_PF02_DESCRIPTION                          "P002 PROFILE"

```

Configuring all DB2 subsystems/data sharing groups in one runtime environment and using enterprise deployment to deploy the configuration to other LPARs with only one PARMGEN profile

The most basic deployment scenario in PARMGEN is to create one completely separate RTE on each single LPAR. PARMGEN provides support for system variables in order to have only one PARMGEN profile that can be shared among all runtime environments.

Before you begin

You need a runtime environment where OMEGAMON XE for DB2 PE is already configured. This runtime environment must have system variable support enabled.

The following table shows some necessary information on runtime environments for this best practice. The source runtime environment is the one that needs to exist already while the deployment target runtime environment is the one that is being created.

Table 8. Runtime environment values

	Source runtime environment	Deployment target runtime environment
Name of runtime environment	OMPE01	OMPE02
Started task name	OMPE01S	OMPE02S
Started task prefix	OMPE	OMPE
VTAM APPLID prefix	APL1	APL2
LPAR name	PMO1	PMO2
Global user JCL	SAR.PG.V511.JCL (shared DASD)	
Runtime environment high-level qualifier	SAR.PG.V511 (shared DASD)	

About this task

As DB2 subsystem configurations and data sharing group configurations (in the following example only DB2 subsystem configurations) depend on the LPAR, this approach is not ready for immediate use. The reason is that a DB2 subsystem resides on only one LPAR but PARMGEN configures all specified DB2 subsystem configurations that are given in the PARMGEN user profile. Thus, you need to adjust those DB2 subsystem configurations on each runtime environment. The best

approach is to share as much as possible and to change as little as possible. This best practice will show you a way how to achieve this.

This scenario has the following setup: Two LPARs have two DB2 subsystems each. You need an existing runtime environment that is configured on the first LPAR. The following graphic shows the prerequisite and the desired outcome of this scenario.

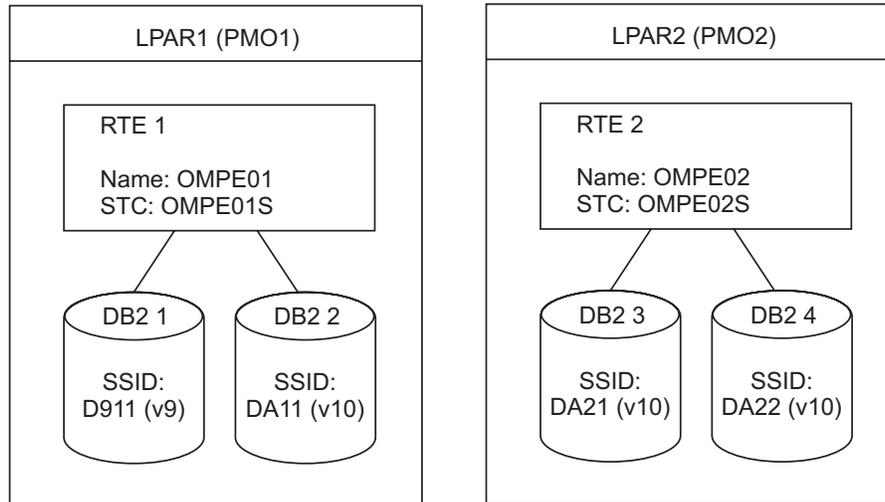


Figure 3. Scenario setup

The basic idea of the setup is to adjust RTE 1 in a way that it can be used as input for RTE 2 with as little effort as possible. Then you create RTE 2 and only adjust the local DB2 subsystem information.

Procedure

1. Adjust RTE 1 by moving all DB2 subsystem-specific information from the PARMGEN user profile to a new configuration member in your WCONFIG library.
2. Create two new configuration members in the WCONFIG library named DB2PMO1 and DB2PMO2. Name the configuration member starting with DB2, followed by the system name.

```

Menu Functions Confirm Utilities Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG Row 0000025 of 0000079
Command ==> s DB2PMO2 Scroll ==> CSR
Name Prompt Size Created Changed ID
-----
DB2PMO1 *Edited 0 2013/06/07 2013/06/07 14:54:49 SAR
JOB CARD
KAG$PENV
KAG$SST1
KAG$SST2

```

3. When starting on the deployment source runtime environment, move all **KD2_DBxx** parameters from the PARMGEN profile to DB2PMO1.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(DB2PMO1) - 01.01 Columns 00001 00080
Command ==> Scroll ==> CSR
***** Top of Data *****

```

```

000001 ** DB2 subsystem information: one KD2_DBxx_ROW per DB2ID:
000002 KD2_DB                BEGIN                * Table begin *
000003
000004 ** BEGIN KD2_DB01 - DB2 subsystem ID: SS01 (KD2_DBxx_ROW #1)
000005 KD2_DB01_ROW            01
000006 KD2_DB01_DB2_SSID     DA11 * Replace with DB2ID *
000007 KD2_DB01_DB2_PROFID   P001
000008 KD2_DB01_DB2_DESCRIPTION "DA11 DB2 Subsystem"
000009 KD2_DB01_DB2_VER      10
000010 KD2_DB01_DB2_MONITOR_START Y
- - - - - 110 Line(s) not Displayed
000121
000122 KD2_DB                END                * Table end *
***** Bottom of Data *****

```

4. Add a short note to include the subsystem configuration in \$SYSIN later.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
ISREDDE2 SAR.PG.V511.OMPE01.WCONFIG(OMPE01) - 01.03      Columns 00001 00080
Command ==>                                           Scroll ==> CSR
001729 ** =====
001730 ** DB2 subsystem configuration
001731 ** =====
001732
001733 ** include DB2PMO1 in $SYSIN for DB2 subsystem configuration for PMO1
001734 ** include DB2PMO2 in $SYSIN for DB2 subsystem configuration for PMO2
001735
001736 ** =====
001737 ** Monitoring profiles:
001738 ** =====

```

5. DB2PMO1 now contains your DB2 subsystem configuration for your first LPAR. Adjust DB2PMO2 accordingly, so that it contains all DB2 subsystem configurations on your second LPAR. Create a DB2 subsystem configuration member for each LPAR where you want it to deploy OMEGAMON XE for DB2 PE.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
VIEW SAR.PG.V511.OMPE01.WCONFIG(DB2PMO1) - 01.01      Columns 00001 00080
Command ==>                                           Scroll ==> CSR
***** Top of Data *****
- - - - - 5 Line(s) not Displayed
000006 KD2_DB01_DB2_SSID     DA11 * Replace with DB2ID *
- - - - - 2 Line(s) not Displayed
000009 KD2_DB01_DB2_VER      10
- - - - - 60 Line(s) not Displayed
000070 KD2_DB02_DB2_SSID     D911 * Replace with DB2ID *
- - - - - 2 Line(s) not Displayed
000073 KD2_DB02_DB2_VER      91
- - - - - 49 Line(s) not Displayed

***** Bottom of Data *****
File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
EDIT SAR.PG.V511.OMPE01.WCONFIG(DB2PMO2) - 01.01      Columns 00001 00080
Command ==>                                           Scroll ==> CSR
***** Top of Data *****
- - - - - 5 Line(s) not Displayed
000006 KD2_DB01_DB2_SSID     DA21 * Replace with DB2ID *
- - - - - 2 Line(s) not Displayed
000009 KD2_DB01_DB2_VER      10
- - - - - 60 Line(s) not Displayed
000070 KD2_DB02_DB2_SSID     DA22 * Replace with DB2ID *
- - - - - 2 Line(s) not Displayed
000073 KD2_DB02_DB2_VER      10
- - - - - 49 Line(s) not Displayed
***** Bottom of Data *****

```

6. Add the following parameters to the DB2PMO* configuration members:
 - a. Parameter for the started task name (**GBL_DB2_CLASSIC_STC** from \$GBL\$USR) to the DB2PMO* configuration members, if USER.PROCLIB is shared.
 - b. Parameters **GBL_DSN_DB2_*** from \$GBL\$USR to the DB2PMO* configuration members, if the DB2 run and load libraries are not shared.

This prevents you from having to adjust these parameters on each LPAR.

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
VIEW SAR.PG.V511.OMPE01.WCONFIG(DB2PMO2) - 01.00 Columns 00001 00080
Command ==> Scroll ==> CSR
-----
137 Line(s) not Displayed
000138 **GBL_DSN_DB2_SDSNLOAD "DSN.V9R1M0.SDSNLOAD"
000139 **GBL_DSN_DB2_LOADLIB_V8 "DSN.V8R1M0.SDSNLOAD"
000140 **GBL_DSN_DB2_LOADLIB_V9 "DSN.V9R1M0.SDSNLOAD"
000141 GBL_DSN_DB2_LOADLIB_V10 "SYS1.DSN.V100.SDSNLOAD"
000142 **GBL_DSN_DB2_LOADLIB_V11 "DSN.VBR1M0.SDSNLOAD"
000143 **GBL_DSN_DB2_RUNLIB_V8 "DSN.V8R1M0.RUNLIB"
000144 **GBL_DSN_DB2_RUNLIB_V9 "DSN.V9R1M0.RUNLIB"
000145 GBL_DSN_DB2_RUNLIB_V10 "SYS1.DSN.V100.SDSNLOAD"
000146 **GBL_DSN_DB2_RUNLIB_V11 "DSN.VBR1M0.RUNLIB"
000147 **GBL_DSN_DB2_DSNEXTIT "DSN.V9R1M0.DSNEXIT"
000148
-----
11 Line(s) not Displayed
000160 GBL_DB2_KD2_CLASSIC_STC OMPE02S
```

Note: Depending on your configuration, you can have more parameters that can be moved to DB2PMO2. In general, use system variables if possible. But if parameters are not applicable for system variables, you can put them into LPAR-specific configuration members.

7. Open \$SYSIN and add DB2PMO1 to the list of configuration members.

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
ISREDDE2 SAR.PG.V511.OMPE01.WCONFIG($SYSIN) - 01.00 Columns 00001 00080
Command ==> Scroll ==> CSR
-----
000058 CONFIG MEMBER=(WCONFIG:OMPE01)
000059 CONFIG MEMBER=(WCONFIG:DB2PMO1)
000060 * CONFIG MEMBER=(WCONFIG:&user_config_profile_placeholder)
000061 * ---- END - USER SECTION: CONFIG MEMBER=(WCONFIG:&profile) ---- *
```

8. Create a new runtime environment (RTE 2) on LPAR 2 and ensure that system variable support is enabled. Reference the PARMGEN profile of RTE 1 in the PARMGEN work environment setup.

```
KCIP@PG1 ---- SET UP PARMGEN WORK ENVIRONMENT FOR AN RTE (1 OF 3) -----
Command ==>

Specify the RTE profile library and member name that fits your scenario:
==> SAR.PG.V511.OMPE01.WCONFIG(OMPE01)_____ (ex:&dset(&rte))
- If creating a brand new RTE, leave this field blank. ***or**
- If creating another new RTE and you want to clone a PARMGEN-created
  RTE's configured product set, specify the WCONFIG profile library and
  RTE member name to clone (ex.: &h1q.&rte.WCONFIG(&clone_from)). ***or**
- If reconfiguring or upgrading this existing OMPE02 RTE, specify its
  values (SAR.PG.V511.OMPE02.WCONFIG(OMPE02)) ***or**
- If converting an ICAT-created RTE to PARMGEN mode, specify the ICAT
  RTE Batch member location and RTE member (ex.: &h1q.INSTJOBS(OMPE02))
```

Note: If you need more information on enterprise deployment, refer to the deployment scenario in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

- Before submitting the KCIJPCCF job to clone the existing OMPE01 RTE, include the DB2PMO* DB2 subsystem configuration members. This way, they are copied to RTE 2 as well.

```

000095 * *****
000096 * ----- BEGIN - USER SECTION: SELECT MEMBER ----- *
000097 * *****
000098 * USER SECTION: SELECT MEMBER
000099 * *****
000100 SELECT MEMBER=(???)$C*)
000101 SELECT MEMBER=(???)$P*,???)@PDAL,???)@PDPG)
000102 SELECT MEMBER=(???)$S*,???)$X*)
000103 SELECT MEMBER=(?)$BL$USR)
000104 SELECT MEMBER=(?)$JOB$CARD)
000105 SELECT MEMBER=(DB2PMO*)
000106 * SELECT MEMBER=(?)$MBR1,?)$MBR2*)
000107 EXCLUDE MEMBER=(???)$CFG,???)@CFG,$CFG???,KCI)$SYSV,KCI)$SYSN)
000108 EXCLUDE MEMBER=(???)@C*,???)@S*)
000109 EXCLUDE MEMBER=(???)$PAUD,???)$PSDA,KPD)$PD*)
000110 * ----- END - USER SECTION: SELECT MEMBER ----- *

```

Note: This job will overwrite your existing JOBCARD with the one from RTE 1 on LPAR 1. If you want to prevent this, comment out the appropriate line in the KCIJPCCF job (line number 104 in the above job example).

- Replace %MODEL% with the source runtime environment (for example, OMPE01) before submitting the KCIJPMC2 job.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
ISREDDE2 SAR.PG.V511.OMPE02.WCONFIG(KCIJPMC2) - 01.00 Columns 00001 00080
Command ==> c %MODEL% OMPE01 all Scroll ==> CSR
000044 /* Merge the changes in %OLDMEM% into %NEWMEM% member.
000045 /* *****
000046 //MERGECHG EXEC PGM=IKJEFT01,DYNAMNBR=99,REGION=4M
000047 //SYSEXEC DD DISP=SHR,
000048 // DSN=SYS1.K02.V511.TKANCUS
000049 //SYSTSPRT DD SYSOUT=*
000050 //SYSPRINT DD SYSOUT=*
000051 //SYSTSIN DD *
000052 K CIRPLBX +
000053 BATCH +
000054 SKIPVAR(SYS1.K02.V511.TKANCUS(KCIDPGNX)) +
000055 OLDMEM(SAR.PG.V511.%MODEL%.WCONFIG(%MODEL%)) +
000056 NEWMEM(SAR.PG.V511.OMPE02.WCONFIG(OMPE02))
000057 /*

```

- Remove all **KD2_DB2xx** parameters in the PARMGEN user profile.
- Add DB2PMO2 to the \$SYSIN configuration profile including the member.

```

File Edit Edit_Settings Menu Utilities Compilers Test Help
-----
ISREDDE2 SAR.PG.V511.OMPE02.WCONFIG($SYSIN) - 01.00 Columns 00001 00080
Command ==> Scroll ==> CSR
000058 CONFIG MEMBER=(WCONFIG:OMPE02)
000059 CONFIG MEMBER=(WCONFIG:DB2PMO2)
000060 * CONFIG MEMBER=(WCONFIG:&user_config_profile_placeholder)
000061 * ---- END - USER SECTION: CONFIG MEMBER=(WCONFIG:&profile) ---- *

```

Note: Depending on your configuration, it is possible that you do not have to submit the KCIJPMC2 job. Whenever possible, use system variables with system variable support. If you need the KCIJPMC2 merge job, check all parameters and adjust them if required. What you always have to adjust are the following:

- Name of runtime environment (and all corresponding prefixes)
- VTAM APPLID refix

- Started task prefix (if your USER.PROCLIB is shared among the LPARs)
13. Finish the installation and configuration as usual.

What to do next

If you want to deploy to more LPARs, you have to create more LPAR-specific profiles. After that, the procedure remains the same. Create a new runtime environment having system variable support enabled, remove the **KD2_DBxx*** parameters and include the LPAR-specific DB2PMO* configuration member in \$SYSIN.

Chapter 13. Configuring monitoring profiles and DB2 subsystems

OMEGAMON XE for DB2 PE provides several optional z/OS components to help you analyze, monitor, and tune your DB2 subsystems.

About this task

You must add one or more monitoring profiles to configure the monitoring functionality that you want to use for the different DB2 subsystems. In the next step you can associate these monitoring profiles to the DB2 subsystems that you want to monitor.

Adding and configuring one or more monitoring profiles:

- The monitoring profiles define the monitoring functionality that you want to use. To add a new monitoring profile, see “Creating new DB2 subsystem configurations and/or monitoring profiles via duplication” on page 89.
- The following topics provide detailed configuration information on the functionality that can be configured as part of a monitoring profile:
 - “Enabling Object Volume Analysis” on page 100
 - “Enabling Periodic Exception Processing” on page 101
 - “Enabling Near-Term History” on page 102
 - “Enabling Snapshot History” on page 104
 - “Enabling Performance Expert Agent for DB2 Connect Monitoring support” on page 104
 - “Enabling DB2 EXPLAIN” on page 105
 - “Enabling IBM DB2 SQL Performance Analyzer” on page 106
 - “Starting Additional DB2 Traces” on page 106

Now you can configure which DB2 subsystems you want to monitor:

- For each DB2 subsystem, you must specify which monitoring profile it should use. Each profile can be used for one or more DB2 subsystems. You do this by associating the DB2 subsystem with a monitoring profile. See “Associating a DB2 subsystem with a monitoring profile” on page 100 for instructions on how to do this.
- For configuring DB2 subsystem-specific Performance Expert Client and/or end-to-end SQL monitoring and stored procedure monitoring information, see “Specifying the port information for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring” on page 107 for configuration instructions.
- For configuring Performance Warehouse, see “Enabling Performance Warehouse” on page 109 for configuration instructions.

Configuring DB2 subsystem monitoring

You must associate each DB2 subsystem with a monitoring profile and build the DB2-related runtime members.

About this task

After you configure the monitoring profiles, you must configure the DB2 subsystem monitoring. The monitoring profiles define the monitoring functionality that you wish to use. Then you specify which monitoring profile you want to apply for each DB2 subsystem. In addition, you must enter some configuration information that is specific to each DB2 subsystem, and build the runtime members for the DB2 subsystem.

The following topic provides detailed configuration information:

1. "Associating a DB2 subsystem with a monitoring profile"

Associating a DB2 subsystem with a monitoring profile

You enter the configuration information for your DB2 subsystem and associate it with a monitoring profile.

About this task

In order to assign a monitoring profile to a DB2 subsystem configuration, provide the profile ID from the **KD2_PFxx_PROFID** parameter to the **KD2_DBxx_DB2_PROFID** parameter. The default profile assigned to the DB2 subsystems is P001.

Enabling Object Volume Analysis

The Object Volume Analysis function reveals the effect of an application on overall disk access. This can help you balance the load and determine where DB2 data sets should be placed to reduce system congestion.

About this task

The following sections provide detailed installation and configuration instructions:

1. "Configuring Object Volume Analysis"
2. "Verifying the Object Volume Analysis configuration" on page 101

What to do next

1. You configure Object Volume Analysis in a monitoring profile. After you have configured the component, you must associate a DB2 subsystem with this profile and create the runtime members for this DB2 subsystem. See "Configuring DB2 subsystem monitoring" on page 99 for detailed instructions.

Configuring Object Volume Analysis

You can enable and configure Object Volume Analysis in the PARMGEN user profile.

About this task

To enable Object Volume Analysis, set parameter **KD2_PFxx_OA_ECM** to Y in the PARMGEN user profile. For more information on this and on other function-specific parameters, refer to section "Profile parameters", "Object/Volume analysis" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Verifying the Object Volume Analysis configuration

Check the OMEGAMON Collector JESMSGLOG output to verify that the server accepted your parameters.

Before you begin

Before you test the setup of Object Volume Analysis, ensure that you have completed the product setup, so that you can start the OMEGAMON Collector.

About this task

After you have configured the DB2 subsystem, perform the following steps:

Procedure

1. Start the OMEGAMON Collector.
2. In SDSF, open the JESMSGLOG output of the OMEGAMON Collector started task.
3. Review the JESMSGLOG. You should see the output similar to the following excerpt:

```
...
K02E3000I EVENTMGR INITIALIZATION IN PROGRESS
K02E3001I EVENTMGR INITIALIZATION SUCCESSFUL
...
K02E3070I OBJECT ANALYSIS - INITIALIZATION IN PROGRESS FOR DB2=D824
K02E3050I OBJECT ANALYSIS - PHASE1 INITIALIZATION COMPLETE FOR DB2=D824
...
K02E3051I OBJECT ANALYSIS - PHASE2 INITIALIZATION COMPLETE FOR DB2=D824
...
K02E3071I OBJECT ANALYSIS - INITIALIZATION SUCCESSFUL FOR DB2=D824
```

Messages K02E3000I and K02E3001I indicate that the Event Collection Manager is configured and is starting.

Messages K02E3070I, K02E3051I, and K02E3071I indicate that the Object Analysis support is configured and is starting.

Enabling Periodic Exception Processing

Periodic Exception Processing analyzes system metrics and compares them against predefined thresholds, user-defined thresholds, and application metrics. When a threshold is exceeded, an exception event is shown.

About this task

You can use Periodic Exception Processing in three different ways:

- You configure Periodic Exception Processing in the PARMGEN user profile.

In this case, the function is started automatically at startup of the OMEGAMON Collector. One common set of threshold definitions is used for all users.

- You start Periodic Exception Processing manually after you start Performance Expert Client.

In this case, you do not need to configure the function in the PARMGEN user profile. You can define a set of threshold definitions for each user ID.

- You can use the Exception Processing user exit that issues messages to the operator console in case of exceptions.

The following section provides detailed instructions for configuring Periodic Exception Processing in the PARMGEN user profile:

“Configuring Periodic Exception Processing in PARMGEN.”

What to do next

1. After you configure the component, you allocate operational data sets. See the Chapter 15, “Completing the configuration for z/OS components,” on page 119 for detailed instructions.
2. In addition, you have to provide threshold definitions in the threshold data set. Before you can use Periodic Exception Processing, you must allocate additional runtime data sets first to allocate the Threshold Exception data set, and then copy the default threshold definitions. For more information, see the *Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS Reporting User’s Guide* in the *IBM Tivoli Monitoring and OMEGAMON XE Information Center*.

Configuring Periodic Exception Processing in PARMGEN

If you configure Periodic Exception Processing in PARMGEN, the function is started automatically at startup of the OMEGAMON Collector.

About this task

To configure Periodic Exception Processing, set parameter **KD2_PFxx_AEXCP_D2PYACT** to Y in the PARMGEN user profile. For more information on this and on other function-specific parameters, refer to section “Profile parameters”, “Periodic exception processing” in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Enabling Near-Term History

Near-Term History captures and stores recent DB2 instrumentation data so that you can review thread performance after the threads have ended.

About this task

Important: Near-Term History is only available through the Classic Interface.

The following sections provide detailed installation and configuration instructions:

1. “Configuring the Near-Term History Data Collector”
2. “Verifying the Near-Term History configuration” on page 103

What to do next

1. After you configure the component, you must allocate operational data sets. See Chapter 15, “Completing the configuration for z/OS components,” on page 119 for detailed instructions.

Configuring the Near-Term History Data Collector

You must specify the settings for the Near-Term History Data Collector in the PARMGEN user profile.

About this task

To configure Near-Term History, set parameter **KD2_PFxx_HIS_START** to Y or C in the PARMGEN user profile. For more information on this and on other

function-specific parameters, refer to section "Profile parameters", "Near-Term History" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

You can use variable %DB% for the DB2 subsystem ID or variable %SY% for the system ID in the VSAM data set names. Variable %DB% will be replaced by the DB2 subsystem ID for the allocation of the data sets, and variable %SY% will be replaced by the z/OS system ID that you configured.

Verifying the Near-Term History configuration

Check the OMEGAMON Collector JESMSGLOG output to verify that the server accepted your parameters.

Before you begin

Before you test the setup for Near-Term History, make sure that you have completed the product setup, so that you can start the OMEGAMON Collector.

About this task

To verify that the OMEGAMON Collector accepted your changes for Near-Term History, perform the following steps:

Procedure

1. Start the OMEGAMON Collector.
2. In SDSF, open the JESMSGLOG output of the OMEGAMON Collector started task.
3. Review the JESMSGLOG. You should see the output similar to the following excerpt:

```
.  
. .  
K0201309I NEAR-TERM HISTORY DATA COLLECTOR SERVER K02DMGRB  
IS ACTIVE (SERVINIE)  
K02R0100I DRIVER INITIALIZED (CPINIT )  
K02R0128I CAPTURING OUTPUT ON DATA SET  
SYS1PMO.V4.FULLTST.D824.RKD2VS03  
K02R0105I SET STARTED - CONTSET1 D824 K0201309I  
NEAR-TERM HISTORY DATA COLLECTOR  
SERVER K02SSRVB IS ACTIVE (SERVINIE)  
K0201308I NEAR-TERM HISTORY DATA COLLECTOR ACTIVELY  
MONITORING DB2 D824 (H2WLMGRE)  
. .  
.
```

Messages KO2O1309I and KO2O1308I indicate that Near-Term History started successfully for the configured DB2 subsystems. Message KO2R0128I identifies the previously configured Near-Term History data sets.

4. Review the SYSPRINT log. You should see the following message:

```
K0201318I NEAR-TERM HISTORY DATA COLLECTOR - NEW OPTIONS  
IN EFFECT FOR CURRENT INTERVAL (NEWINOPT)
```

Enabling Snapshot History

Snapshot history data is useful, for example, if you want to examine activities leading to, and following, an exception without recreating the situation.

About this task

The following section provides detailed installation and configuration instructions:

“Configuring Snapshot History”

What to do next

1. After you configure the component, you must allocate operational data sets. See Chapter 15, “Completing the configuration for z/OS components,” on page 119 for detailed instructions.

Configuring Snapshot History

Here you specify the type of information that is collected in the Snapshot History.

About this task

To enable Snapshot History, set parameter **KD2_PFxx_SH_D2SHKHST** to Y in the PARMGEN user profile. For more information on this and on other function-specific parameters, refer to section “Profile parameters”, “Snapshot history (including DB2 Connect Monitoring)” in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Enabling Performance Expert Agent for DB2 Connect Monitoring support

The Performance Expert Agent for DB2 Connect Monitoring monitors connections of remote applications within the Distributed Relational Database Architecture (DRDA) of DB2 that are connected through DB2. It is installed on the DB2 Connect Server gateway and provides DB2 Connect data for the OMEGAMON Collector.

Before you begin

You must enable Performance Warehouse before beginning. See “Enabling Performance Warehouse” on page 109 for more information.

Tip: If you do not want to use Performance Warehouse for purposes other than DB2 Connect Monitoring, you can enable it in PARMGEN a single time, verify that the OMEGAMON Collector has created the Performance Warehouse tables, and then return to PARMGEN to disable it. If you disable Performance Warehouse, you must enable it again before you install a PTF that indicates that in the ++HOLD. Otherwise, the necessary changes to the Performance Warehouse database are not made. This might result in SQL errors.

About this task

The following section provides detailed installation and configuration instructions:

“Configuring Performance Expert Agent for DB2 Connect Monitoring support” on page 105

What to do next

1. After you complete the configuration steps outside of PARMGEN, you must complete the configuration in PARMGEN. See Chapter 15, “Completing the configuration for z/OS components,” on page 119 for detailed instructions.
2. After you have enabled Performance Expert Agent for DB2 Connect Monitoring support, you must install Performance Expert Agent for DB2 Connect Monitoring on the system hosting a DB2 Connect gateway. See “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring” on page 123 for more information.

Configuring Performance Expert Agent for DB2 Connect Monitoring support

You can use the PARMGEN user profile to configure Performance Expert Agent for DB2 Connect Monitoring support.

About this task

To enable Performance Expert Agent for DB2 Connect Monitoring support, set parameter **KD2_PFxx_SH_D2SHKHST** to Y and parameter **KD2_PFxx_DCM_D2SHDCAP** to Y in the PARMGEN user profile. For more information on this and on other function-specific parameters, refer to section “Profile parameters”, “Snapshot history (including DB2 Connect Monitoring)” in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Enabling DB2 EXPLAIN

Explain functions provide an easy-to-read representation of access plan information for your SQL queries and statements. You can use this information to decide how to tune your queries. The built-in explain functions are Easy Explain and the EXPLAIN report.

Before you begin

You must create a database to be used by EXPLAIN. There are no special requirements regarding database name, storage group, or index buffer pool. But you must use an 8 KB buffer pool. The database name has to be specified in parameter **KD2_PFxx_EX_D2EXDB**.

About this task

The following section provides detailed installation and configuration instructions:

“Configuring DB2 EXPLAIN”

What to do next

1. After you complete the configuration steps in PARMGEN, you must complete the configuration outside of PARMGEN. See Chapter 15, “Completing the configuration for z/OS components,” on page 119 for detailed instructions.

Configuring DB2 EXPLAIN

Before you can use DB2 EXPLAIN, you must enter your configuration values in PARMGEN.

About this task

To configure DB2 EXPLAIN, set parameter **KD2_PFxx_EX_D2EXACT** to Y in the PARMGEN user profile. For more information on this and on other function-specific parameters, refer to section "Profile parameters", "DB2 Explain" in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Enabling IBM DB2 SQL Performance Analyzer

IBM DB2 SQL Performance Analyzer provides resource usage information and costs associated with SQL queries without having to run them in DB2. This analysis helps you to tune your queries to achieve maximum performance.

Before you begin

You must enable Performance Warehouse before beginning. See "Enabling Performance Warehouse" on page 109 for more information. Performance Warehouse has to be running while you are using SQL Performance Analyzer.

- You must install IBM DB2 SQL Performance Analyzer as a separate product before you begin. See the *IBM DB2 SQL Performance Analyzer for z/OS Installation Guide* in the *IBM DB2 Tools Product Page*.

About this task

The following section provides configuration instructions for IBM DB2 SQL Performance Analyzer:

"Configuring IBM DB2 SQL Performance Analyzer."

Configuring IBM DB2 SQL Performance Analyzer

You use PARMGEN to enable and configure IBM DB2 SQL Performance Analyzer.

About this task

To configure IBM DB2 SQL Performance Analyzer, set parameter **KD2_PFxx_SQLPA_ENABLE** to Y in the PARMGEN user profile. For more information on this and on other function-specific parameters, refer to section "Profile parameters", "DB2 SQL Performance Analyzer" in the *Parameter Reference*.

Starting Additional DB2 Traces

With this option you can start additional DB2 traces. For certain functionality, such as displaying SQL statements and metrics for dynamic statement cache or EDM pool, it is required to start additional DB2 traces. Starting these traces causes considerable CPU overhead. Therefore, these traces are not started by default. With this option you can specify if additional DB2 traces should be started automatically when the OMEGAMON Collector starts.

About this task

The following section provides detailed installation and configuration instructions:

"Configuring Additional DB2 Traces" on page 107

Configuring Additional DB2 Traces

You can use the Configuration Tool to configure Additional DB2 Traces.

About this task

There are two ways to configure Additional DB2 Traces.

Procedure

- The first way is to set parameter **KD2_PFxx_TRACES_318** and parameter **KD2_PFxx_TRACES_400** to Y. This enables collection IFCID 318 for dynamic and IFCID 400 for static statement cache metrics.

Note: Parameter **KD2_PFxx_TRACES_400** is only applicable for DB2 10 and above versions. The enablement of those two parameters is required when using end-to-end SQL monitoring and stored procedure monitoring.

- The second way is to use the **KD2_PFxx_TRACES_DB2CMDx** parameters (where *x* is either 2, 3, or 4). This alternative gives you the possibility to provide three more custom **START TRACE** commands.

Note: It is not possible to add line breaks to the statement. Therefore, use abbreviations for this command wherever possible. For more information on the **START TRACE** command, see the *DB2 documentation*.

You find more information on these parameters in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Configuring Additional Monitoring Features

Additional Monitoring Features are a special set of functions only for OMEGAMON XE for DB2 PE. If you want to enable additional monitoring functions, such as DB2 message monitoring and stored procedure monitoring, you must enable them in PARMGEN. DB2 message monitoring is used to show DB2 messages in the Tivoli Enterprise Portal workspaces. Stored procedure monitoring data is used in the InfoSphere Optim Performance Manager dashboards.

To start DB2 message monitor, set parameter **KD2_PFxx_ACS_DB2MSGMON** to Y.

To enable stored procedure monitoring support in the InfoSphere Optim Performance Manager user interface, set parameter **KD2_PFxx_READA_SPMON** to Y in the PARMGEN user profile. In order for this function to work, you also have to enable end-to-end SQL and stored procedure monitoring, see “Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support” on page 83, and you also have to enable collection of IFCID 318 and 400 traces, see “Configuring Additional DB2 Traces.”

You find more information on this and an other function-specific parameters in the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Specifying the port information for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring

If you want to use Performance Expert Client and/or end-to-end SQL and stored procedure monitoring for some DB2 subsystems, you must specify the Performance Expert Client port information for each DB2 subsystem.

Before you begin

You must enable Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support before you specify the port information. See “Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support” on page 83 for more information.

About this task

To specify the port information, use parameter **KD2_DBxx_DB2_PORT_NUM** for each of your DB2 subsystem configurations that you want to monitor using either Performance Expert Client or end-to-end SQL and stored procedure monitoring.

What to do next

1. For Performance Expert Client: After you have added Performance Expert Client support, you must install Performance Expert Client on the workstation. See “Installing and configuring Performance Expert Client” on page 153 for more information. For end-to-end SQL and stored procedure monitoring: After you have added end-to-end SQL and stored procedure monitoring support, you must install end-to-end SQL and stored procedure monitoring on the workstation. See “Installing and configuring end-to-end SQL and stored procedure monitoring” on page 161 for more information.

Verifying the Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support configuration

Check the OMEGAMON Collector started task SYSPRINT output to verify that the server accepted your parameters.

Before you begin

Before you test the setup of the OMEGAMON Collector, ensure you have completed the product setup, so that you can start the OMEGAMON Collector.

About this task

After you have configured the DB2 subsystem, perform the following steps:

Procedure

1. Start the OMEGAMON Collector.
2. Review the SYSPRINT output of the OMEGAMON Collector started task in SDSF. Verify that the following outputs match the parameters you specified:
 - a. TCP/IP.
 - b. IP ADDRESS OF SERVER INSTANCE. If you left the IP address blank because your host only has one IP address, you will see 0.0.0.0 here.
 - c. MAXIMUM NUMBER OF PARALLEL SESSIONS.
 - d. TCPNAME (this value is not of interest for end-to-end SQL and stored procedure monitoring).
 - e. DATASHARINGGROUP.
 - f. TCPIP PORT.
3. Verify that the last output is FPEV1330I, TCP/IP SERVER TASK STARTED. This means that the TCP/IP port opened successfully.

Enabling Performance Warehouse

You can use PARMGEN to install and configure Performance Warehouse.

Before you begin

- The started task user ID must be DB2PM or associated with a group ID with the name DB2PM, see “Setting up security for the OMEGAMON Collector address spaces” on page 69.
- If you want to install the Performance Warehouse Client, you must enable Performance Expert Client support first. See “Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support” on page 83 and “Specifying the port information for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring” on page 107 for more information.
- Verify that your system supports started jobs. For a detailed explanation, see “Enabling started jobs for Performance Warehouse” on page 71.
- Create any storage groups that you will use for this Performance Warehouse database.
- Create 4 KB and 32 KB buffer pools that you will use for this Performance Warehouse database.
- Grant user DB2PM or group DB2PM access to the buffer pools that you will use for this Performance Warehouse database.

About this task

The Performance Warehouse is an automated Performance Database that consists of DB2 tables to save Accounting and Statistics performance data and internal control tables.

The following section contains detailed installation and configuration instructions:

1. “Configuring the Performance Warehouse”

What to do next

After you enable Performance Warehouse, you must perform the following tasks:

- Complete the configuration outside of PARMGEN. See Chapter 15, “Completing the configuration for z/OS components,” on page 119 for more information.
- Install and configure the Performance Expert Client on the workstation. This enables you to view information that is stored in the Performance Warehouse using the Performance Warehouse Client function. For more information, see “Installing and configuring Performance Expert Client” on page 153 or “Configuring the Performance Warehouse Client” on page 160.
- Verify that the OMEGAMON Collector accepted your changes for Performance Warehouse. See “Verifying the Performance Warehouse configuration” on page 110 for more information.

Configuring the Performance Warehouse

You must configure Performance Warehouse so that the OMEGAMON Collector can create and control it.

About this task

You must configure Performance Warehouse on DB2 subsystem level. It cannot be configured on monitoring profile level, because several configuration parameters are unique for each DB2 subsystem.

During the configuration process, you can define some parameters for the database, but the database name is always DB2PM and you cannot change it.

To enable Performance Warehouse, set parameter **KD2_DBxx_PWH_D2PWPWA** to Y in the PARMGEN user profile. For more information on this and on other function-specific parameters, refer to section "DB2 subsystem parameters", "Performance Warehouse" in the IBM Tivoli OMEGAMON XE for DB2 Performance Expert *IBM Tivoli OMEGAMON XE for DB2 Performance Expert/Performance Monitor: Parameter Reference*.

Verifying the Performance Warehouse configuration

Check the OMEGAMON Collector started task SYSPRINT output to verify that the server accepted your parameters.

Before you begin

Before you test the setup of the Performance Warehouse, ensure that you have completed the product setup, so that you can start the OMEGAMON Collector.

About this task

To verify that the OMEGAMON Collector has successfully incorporated your changes, review the SYSPRINT output of the OMEGAMON Collector started task:

Procedure

1. Start the OMEGAMON Collector.
2. In SDSF, open the SYSPRINT output of the OMEGAMON Collector started task.
3. Review the SYSPRINT. You should see the output similar to the following excerpt:

```
0FPEV0129I D824 PERFORMANCEWAREHOUSE=YES
0FPEV0133I D824 - PERFORMANCEWAREHOUSEADDRESSSPACENAME=CANSPW
0FPEV1339I D824 TCPIP PORT=6080
...
0FPEV5003I D824 CHECKING DATABASE FOR NECESSARY CHANGES. PLEASE WAIT
0FPEV5016I D824 REQUIRED DBRM DGO@MIG1 NOT BOUND. BINDING IT
...
0FPEV5005I D824 DATABASE UPDATE COMPLETE
```

Note: It might take several minutes to create the Performance Warehouse database. Message 0FPEV5016I indicates that the OMEGAMON Collector is still creating the database and binding the DBRMs. In every subsequent startup, the database already exists and the OMEGAMON Collector will only check for required updates and BINDs. After this check, the message 0FPEV5005I is displayed.

Chapter 14. Configuring additional components on z/OS

OMEGAMON XE for DB2 PE provides additional optional z/OS components to help you analyze, monitor, and tune your DB2 databases. These components are configured outside of PARMGEN.

About this task

The following sections provide configuration instructions for the additional components on z/OS:

- “Enabling Application Trace Facility”
- “Enabling Buffer Pool Analyzer”
- “Adding a Performance Database”
- “Enabling Reporter” on page 112
- “Enabling options in OMEGAMON XE for DB2 PE Collector Realtime Customer Options (OMPEOPTS)” on page 113

Enabling Application Trace Facility

You can enable and configure Application Trace Facility in the Classic Interface.

About this task

Application Trace Facility (ATF) traces the execution of a DB2 thread so that you can improve application flow and resource consumption.

You enable Application Trace Facility in the Classic Interface. For more information, see *IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS*; *IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS: Monitoring Performance from the OMEGAMON Classic Interface*.

Enabling Buffer Pool Analyzer

You can use the sample members in the TKO2SAMP library to help you configure Buffer Pool Analyzer.

About this task

IBM DB2 Buffer Pool Analyzer for z/OS helps database administrators manage buffer pools more efficiently by providing information about current buffer pool behavior and by using simulation to anticipate future behavior.

For detailed installation and configuration instructions see *IBM DB2 Buffer Pool Analyzer for z/OS Configuration Guide* on the *IBM DB2 Tools Product Page*.

Adding a Performance Database

You can use the sample statements in the sample library to create and to load a Performance Database. If you use an SMP/E sharing runtime environment, the sample library is TKO2SAMP. For all other types of runtime environments, the sample library is RKO2SAMP.

About this task

The Performance Database is a DB2 database that can hold aggregated and raw DB2 activity information spanning a long period of time. The type of data stored in the Performance Database depends on the reporter command (FILE or SAVE) used to create input data sets for the DB2 LOAD utility. This long-term history can help you with performance tuning activities, with trend analysis, and with capacity planning.

Important: If you are planning to use a Performance Warehouse and a Performance Database in the same DB2 subsystem, then you need to create the Performance Database tables with an owner ID that differs from the Performance Warehouse owner ID DB2PM.

To add a Performance Database, perform the following steps:

Procedure

1. Create data for the Performance Database from already collected performance data. You can use the OMEGAMON XE for DB2 PE batch reporter with either the FILE option or the SAVE option to create performance data. However, if you use the SAVE option, you must convert the data to the FILE format before you can load it into the tables.
2. Create the Performance Database tables. You can use the sample CREATE statements in the RKO2SAMP library as a starting point and then modify the statements to meet your needs.
3. Load data into the Performance Database. You can use the sample LOAD statements in the RKO2SAMP library and the DB2 LOAD utility. If you modified the CREATE statements from the RKO2SAMP library, you must also modify the LOAD statements.

What to do next

For detailed information about the structure of the Performance Database, including the types of data that you can store in a Performance Database, and how it is formatted and loaded, see the *IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS*; *IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS: Reporting User's Guide*.

Enabling Reporter

The Reporter is enabled when you download the program files from SMP/E.

About this task

The Reporter generates predefined reports to help you collect and analyze historical performance data. It also enables you to prepare performance data before you load it into the Performance Warehouse or into the Performance Database.

You do not need to perform any additional installation or configuration steps.

For more information about Reporter, see *IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS*; *IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS: Report Command Reference*.

Enabling options in OMEGAMON XE for DB2 PE Collector Realtime Customer Options (OMPEOPTS)

You can enable options in OMEGAMON XE for DB2 PE Collector Realtime Customer Options to override default settings.

About this task

OMEGAMON XE for DB2 PE externalizes user-modifiable options in member OMPEOPTS of the *'hlq.RKD2PAR'* parameter library. You can use the defaults, or change them to conform to your installation standards.

The XCFMODE option specifies how the coupling facility component of the OMEGAMON XE for DB2 PE Collector subsystem is initialized at OMEGAMON XE for DB2 PE Collector initialization time. The default is XCFMODE=ACTIVE, which causes the coupling facility component of the OMEGAMON XE for DB2 PE to initialize in active mode. You can disable this option by specifying XCFMODE=INACTIVE. This causes the coupling facility XCF gateway component of the OMEGAMON XE for DB2 PE to be initialized in inactive mode.

Once XCFMODE is enabled, you can also enable user options DB2RTCPU and DB2REMIO. The default for both user options is disabled (DB2RTCPU=NO and DB2REMIO=NO).

The DB2RTCPU user option allows viewing DB2 remote thread CPU time for threads running on remote members of the data sharing group that the connected DB2 subsystem belongs to. You can enable this user option by specifying DB2RTCPU=YES.

The DB2REMIO user option allows viewing Thread DSN Activity for threads running on remote members of the data sharing group that the connected DB2 subsystem belongs to. You can enable this user option by specifying DB2REMIO=YES.

The message subsystem displays the current DB2 subsystem and IRLM messages. It also allows you to issue DB2 commands, for example, to display the status of utility jobs or terminate utilities that have abended. Message subsystem activation and deactivation is controlled by the MGSUBSYS={ACTIVE/INACTIVE} user option specified in OMPEOPTS member of the RKD2PAR PARMGEN data set. By default, OMEGAMON XE for DB2 PE on z/OS is shipped with MGSUBSYS=INACTIVE. To activate the message subsystem, set MGSUBSYS=ACTIVE and restart the OMEGAMON XE for DB2 PE Collector address space.

Cross-system coupling facility (OMEGAMON/XCF) feature

The cross-system-coupling facility (OMEGAMON/XCF) feature enables peer-to-peer communication between OMEGAMON Collectors.

The OMEGAMON Collector XCF gateway component allows peer-to-peer communication between OMEGAMON Collectors by implementing the cross-system coupling (XCF) services supported in the z/OS system complex (sysplex) environment. OMEGAMON Collectors use XCF member connection services to connect to a predefined **OMPEXCF** default group name. All OMEGAMON

Collectors connected to the same group can then issue send and receive requests against each other to exchange DB2 performance monitoring data.

The OMEGAMON/XCF feature is initialized at OMEGAMON Collector initialization time when real-time user option **XCFMODE=ACTIVE** is specified in member OMPEOPTS of the **RKD2PAR** parameters data set. When **XCFMODE=ACTIVE** is specified, the XCF gateway component performs additional environmental initialization functions specified by the following parameters of member **OMPE00** of the **RKD2PAR** data set:

- **XCFGROUP=OMPEXCF**
- **XCFTASKS=04**
- **XCFTIMER=30**
- **DSPSIZE=128M**

The XCF group is a set of related members defined in the z/OS XCF by the OMEGAMON Collector XCF gateway, in which members of the group can communicate (send and receive data) between z/OS systems with other OMEGAMON Collector members of the same group. A group can span one or more of the systems in a sysplex and represents a complete logical entity to z/OS XCF. When a Classic or Common (D5API) OMEGAMON Collector session is started, the OMEGAMON Collector XCF gateway connects a member to the group name (**XCFGROUP=OMPEXCF**). The member connection persists for the life of the Classic or Common Collector session.

The z/OS XCF member connection is terminated when one of the following conditions is met:

- The Classic or Common Collector session terminates.
- The Classic session switches to a different DB2 subsystem.
- The OMEGAMON Collector address space is normally shut down.

When the OMEGAMON Collector address space is abnormally terminated, all connections are terminated. Cancelling or forcing the OMEGAMON Collector address space might under certain conditions only activate the XCF connections. Issuing the **D XCF, GROUP, OMPEXCF** z/OS command might still show these connections as defined to z/OS XCF.

Note:

The OMEGAMON Collector XCF gateway will reuse these existing connections on subsequent OMEGAMON Collector start ups.

Message KO2Z638I is issued to indicate that a Classic or Common Collector session has joined the OMPEXCF group. For example, KO2Z638I OMPE V520 Session BPMYD2C/IPV\$TCE0 joined XCF group OMPEXCF/PM01SGP1DM520001

KO2Z638I message explanation:

Value	Explanation
OMPE	Identifies the subsystem name assigned to the OMEGAMON Collector
V520	Identifies the OMEGAMON Collector release
BPMYD2C	Identifies the OMEGAMON Collector VTAM ACB name
IPV\$TCE0	Identifies the VTAM terminal ID

Value	Explanation
/	Group name and member name separator
OMPEXCF	Identifies the OMEGAMON Collector XCF gateway group name
PM01	Identifies the SMF system ID
SGP1DM52	Identifies the name of the OMEGAMON Collector STC address space
0001	Identifies the joined unique XCF gateway connection ID

Message KO2Z806I is issued to indicate that a Classic or Common Collector session has been disconnected from the OMPEXCF group. For example, K02Z608I OMPE V520 Session BPMYD2C/IPV\$TCE0 disconnected from XCF group OMPEXCF/PM01SGP1DM520001

KO2Z806I message explanation:

Value	Explanation
OMPE	Identifies the subsystem name assigned to the OMEGAMON Collector
V520	Identifies the OMEGAMON Collector release
BPMYD2C	Identifies the OMEGAMON Collector VTAM ACB name
IPV\$TCE0	Identifies the VTAM terminal ID
/	Group name and member name separator
OMPEXCF	Identifies the OMEGAMON Collector XCF gateway group name
PM01	Identifies the SMF system ID
SGP1DM52	Identifies the name of the OMEGAMON Collector STC address space
0001	Identifies the joined unique XCF gateway connection ID

This OMEGAMON Collector XCF gateway parameter specifies the number of receive tasks to attach in the OMEGAMON Collector address space. These tasks are used to receive and process OMEGAMON Collector service requests from other local or remote OMEGAMON Collectors connected to the same **OMPEXCF** group name.

The default number of tasks that are attached at OMEGAMON Collector initialization time is **MAXTASKS=04**. The minimum number of tasks that can be specified is **MAXTASKS=2**. At task initialization time, each receive task connects to the OMEGAMON Collector XCF gateway using the **XCFGROUP=OMPEXCF**. The XCF connection for each attached receive task persists for the life of the OMEGAMON Collector address space. When the OMEGAMON Collector is normally shut down, these XCF connections are terminated. When the OMEGAMON Collector is cancelled or forced, these XCF connections remain defined to the z/OS XCF and will be reused by the OMEGAMON Collector on subsequent start up.

You can display all XCF gateway connections by issuing the **D XCF, GROUP, OMPEXCF** z/OS XCF command. For example:

```
D XCF, GROUP, OMPEXCF
IXC332I 22.45.54 DISPLAY XCF 992
GROUP OMPEXCF:
          PM01SGP1DM52X000 PM01SGP1DM52X001 PM01SGP1DM52X002
PM01SGP1DM52X003 PM01SGP1DM52X004 PM01SGP1DM52X005
PM01SGP1DM52X006 PM01SGP1DM52X007 PM01SGP1DM52X008
PM01SGP1DM52X009 PM01SGP1DM52X010 PM01SGP1DM52X011
PM01SGP1DM52X012 PM01SGP1DM52X013 PM01SGP1DM52X014
PM01SGP1DM52X015
```

Value	Explanation
OMPEXCF	Identifies the OMEGAMON Collector XCF gateway group name
PM01	Identifies the SMF system ID
SGP1DM52	Identifies the name of the OMEGAMON Collector STC address space
X	Identifies the member name as a receive task member name
0001	Identifies the joined unique XCF gateway connection ID

The default **XCFTIMER=30** parameter specifies the maximum elapsed time in seconds required to complete a send request for DB2 performance monitoring data from one OMEGAMON Collector to another collector, connected to the same **OMPEXCF** group. If a response is not received within the 30 seconds default elapsed time interval, the request is terminated and the KO2Z810E error message is issued. For example: KO2Z810E OMPE V510 OMPE Collector SGP1DM5S SSID=D91A MEMBER=PM01SGP1DM5S0010 response not received

This error condition might be caused by one or more of the following:

- The remote OMEGAMON Collector address space terminated either normally or abnormally.
- All receive tasks specified by the **MAXTASKS** parameter are busy.
- The remote LPAR/VMID has failed or is being restarted.
- The OMEGAMON Collector WLM dispatch priority is too low.

Take the following action(s):

- Verify that the remote OMEGAMON Collector is still active.
- Increase the number of receive tasks defined by the **XCFTASKS** parameter.
- Increase the **XCFTIMER** elapsed time seconds value.
- Verify that the OMEGAMON Collector is executing with the same priority or higher as your DB2 subsystem.

The default **DSPSIZE=128M** parameter specifies the size of the XCF gateway data space (in megabytes) that is created when a Classic or Common Collector session is connected to the OMEGAMON Collector XCF gateway. The data space is used to collect remote thread CPU data. Up to 20,000 remote threads CPU usage data can be collected in a single XCF send service request.

Note: z/OS page data set space is only incurred when remote thread CPU data is being retrieved. When remote thread CPU data is not being collected, the paging space is released and not used.

Dynamic subsystem name assignment

Dynamic subsystem name assignment removes the restriction that the OMEGAMON Collector subsystem name is specified in the **PARM=JCL** parameter.

This change does not affect you if you already specify the OMEGAMON Collector subsystem name in your JCL procedure. You can optionally specify a two-character prefix in addition to the four-character name that is required.

The following subsystem name specifications are supported:

- **PARM='/SUB=OMPE'**

The OMEGAMON Collector JCL procedure is shipped with a default OMEGAMON Collector subsystem name of **OMPE(PARM='/SUB=OMPE')**.

```
//O2CI EXEC PGM=K02ZTOPB,  
// REGION=0M,MEMLIMIT=NOLIMIT,DPRTY=(15,15),TIME=1440,  
// PARM='/SUB=OMPE'
```

- **PARM='/SUB=OM'**

This serviceability enhancement also allows you to only specify a two-character OMEGAMON Collector subsystem prefix. When only the subsystem prefix is specified, the subsystem initialization driver dynamically adds an unused suffix in the range of 00 to 99 to form a complete four-character OMEGAMON Collector subsystem name.

```
//O2CI EXEC PGM=K02ZTOPB,  
// REGION=0M,MEMLIMIT=NOLIMIT,DPRTY=(15,15),TIME=1440,  
// PARM='/SUB=OM'
```

Once a subsystem name is associated with an OMEGAMON Collector address space, the association is maintained for the life of the z/OS operating system IPL.

| The OMEGAMON Collector also creates a subsystem called O2. If Object Analysis
| is configured, a subsystem called E2 will be started.

Defining OMEGAMON Collector component message logs

This function allows units of work executing in the OMEGAMON Collector address space to have their messages stored in component message logs.

Component message logs are optional and are not required for normal OMEGAMON Collector operation.

The following component message logs are supported:

FPEVLOG

This log is activated when DD name `"/FPEVLOG DD SYSOUT=*` is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by the OMEGAMON Collector Performance Expert component.

OMPELOG

This log is activated when DD name `"/OMPELOG DD SYSOUT=*` is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by all OMEGAMON Collector components.

KO2ILOG

This log is activated when DD name "//K02ILOG DD SYSOUT=*" is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by the Common Collector subsystem.

KO2HLOG

This log is activated when DD name "//K02HLOG DD SYSOUT=*" is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by the OMEGAMON Collector Near-Term History component.

KO2RLOG

This log is activated when DD name "//K02RLOG DD SYSOUT=*" is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by the capture server component.

KO2OLOG

This log is activated when DD name "//K02OLOG DD SYSOUT=*" is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by OMEGAMON Collector Near-Term History parser component.

KO2SLOG

This log is activated when DD name "//K02SLOG DD SYSOUT=*" is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by Virtual Storage Manager STORMAN component.

KO2XLOG

This log is activated when DD name "//K02XLOG DD SYSOUT=*" is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by VTAM classic cross-memory component functions.

KO2ZLOG

This log is activated when DD name "//K02ZLOG DD SYSOUT=*" is specified on the OMEGAMON Collector JCL procedure. It contains messages issued by the OMEGAMON Collector subsystem.

Chapter 15. Completing the configuration for z/OS components

PARMGEN does not have a replacement for the Complete the Configuration panel that existed in the Configuration Tool.

About this task

After you configured OMEGAMON XE for DB2 PE, refer to the *Complete the Configuration for the OMEGAMON XE for DB2 Performance Expert/Monitor Technote* for the following mandatory steps.

Chapter 16. Questions and answers

This section contains frequently asked questions and their answers.

Why do I need to enable the use of an existing configuration for IBM DB2 SQL Performance Analyzer for z/OS?

OMEGAMON XE for DB2 PE V5.2.0 only supports the use of an existing configuration. All parameters that could be configured in the Configuration Tool on the panels KD261PR, KD261PS, KD261PT, and KD261PU are obsolete.

After migrating from a previous OMEGAMON XE for DB2 PE version, there are two ways in order to use IBM DB2 SQL Performance Analyzer with your existing configuration. For both, you have to enable the use of an existing configuration (**KD2_PFxx_SQLPA_CF_ENBL** set to Y). Then, do one of the following:

- Use IBM DB2 SQL Performance Analyzer to recreate your configuration and use **KD2_PFxx_SQLPA_CF_ANLC** and **KD2_PFxx_SQLPA_CF_ANLP** to point to it.
- Point **KD2_PFxx_SQLPA_CF_ANLC** and **KD2_PFxx_SQLPA_CF_ANLP** to the OMQCssid and OMQPssid configuration members that were generated in the Configuration Tool or PARMGEN in your previous OMEGAMON XE for DB2 PE version.

How can I change the plan name from the default DSNTIA_{vv} (where *vv* is the DB2 z/OS version) to a custom name?

Use the **KD2_PLAN_NAME_OVERRIDE** parameter to provide an override.

Note: All plans will then have the same name, independent of the DB2 version.

Chapter 17. Installing and configuring components on the workstation

In addition to the components on z/OS, OMEGAMON XE for DB2 PE also offers several components that run on the workstation.

About this task

The following sections provide installation and configuration instructions for components that run on the workstation:

- “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring”
- “Installing and configuring Performance Expert Client” on page 153
- “Configuring the Performance Warehouse Client” on page 160
- “Adding Tivoli Data Warehouse” on page 161

Installing and configuring Performance Expert Agent for DB2 Connect Monitoring

You can use the installation wizard to install and configure Performance Expert Agent for DB2 Connect Monitoring on your workstation.

Before you begin

- You must enable Performance Warehouse before beginning. See “Enabling Performance Warehouse” on page 109 for more information.
- You must enable Performance Expert Agent for DB2 Connect Monitoring support on z/OS before beginning. See “Enabling Performance Expert Agent for DB2 Connect Monitoring support” on page 104 for more information.

About this task

The Performance Expert Agent for DB2 Connect Monitoring monitors connections of remote applications within the Distributed Relational Database Architecture (DRDA) of DB2 that are connected through DB2. It is installed on the DB2 Connect Server gateway and provides DB2 Connect data for the OMEGAMON Collector.

The following topics provide detailed installation and configuration instructions:

- “Configuration scenarios for Performance Expert Agent for DB2 Connect Monitoring” on page 124
- “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 125
 1. “Hardware requirements for Performance Expert Agent on Windows” on page 126
 2. “Software requirements for Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 126
 3. “Downloading the program files of Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 127
 4. “Installing the program files of Performance Expert Agent Version 5 on Windows” on page 127

5. "Configuring Performance Expert Agent for DB2 Connect Monitoring on Windows" on page 129
6. "Starting Performance Expert Agent for DB2 Connect Monitoring on Windows" on page 137
7. "Stopping Performance Expert Agent for DB2 Connect Monitoring on Windows" on page 137
- "Installing and configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux" on page 139
 1. "Hardware requirements for Performance Expert Agent on Linux and UNIX" on page 140
 2. "Software requirements for Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux" on page 140
 3. "Downloading the program files of Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux" on page 142
 4. "Installing the program files of Performance Expert Agent Version 5 on UNIX and Linux" on page 142
 5. "Configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux" on page 146
 6. "Starting Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux" on page 151
 7. "Stopping Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux" on page 151

Configuration scenarios for Performance Expert Agent for DB2 Connect Monitoring

With DB2 Connect Monitoring, you can monitor remote DB2 clients that connect through a DB2 Connect gateway. There are several possible ways to set up Performance Expert Agent for DB2 Connect Monitoring.

DB2 Connect Monitoring involves the OMEGAMON Collector and the Performance Expert Agent for DB2 Connect Monitoring. The Performance Expert Agent for DB2 Connect Monitoring, also called DB2 Connect Agent, collects information about the requests that are issued from the clients through the DB2 Connect gateway and makes it available for the OMEGAMON Collector. You can view the monitoring information with Tivoli Enterprise Portal, Classic Interface, and Performance Expert Client. This means that you can choose the platform that you are most comfortable with, view the type of information available, and decide which monitoring component is the most useful for you.

There are two configuration scenarios for the Performance Expert Agent for DB2 Connect Monitoring. Either you configure it to report the DB2 Connect gateway information to each DB2 subsystem that is monitored by the OMEGAMON Collector, or you configure it to report the information to just one of the monitored DB2 subsystems. This affects what data you can see in the user interface, for example in Performance Expert Client.

Scenario 1: The Performance Expert Agent for DB2 Connect Monitoring reports all client requests that come through the DB2 Connect gateway to one DB2 subsystem.

If the following conditions are met, the Performance Expert Agent for DB2 Connect Monitoring reports all requests that are issued to the DB2 Connect gateway to only one DB2 subsystem:

- Monitoring is enabled for only one DB2 subsystem. See “Enabling a DB2 instance gateway to be monitored by using Performance Expert Agent for DB2 Connect Monitoring” on page 130.
- In the Configuration Tool, you enabled Performance Expert Agent for DB2 Connect Monitoring for only this one DB2 subsystem. See “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring” on page 123.

In this setup, the data that you can access in the user interface is limited. If you are using Performance Expert Client, for example, and you select the DB2 subsystem for which you configured DB2 Connect Monitoring, you can retrieve all information that you gathered on the DB2 Connect gateway for this DB2 subsystem. However, if you select another DB2 subsystem in Performance Expert Client, you will not see any DB2 Connect data because the data is stored in the Performance Warehouse database for the one DB2 subsystem that is enabled for monitoring. The OMEGAMON Collector does not check this Performance Warehouse database when another DB2 subsystem is selected.

To view the requests from all DB2 subsystems, do not select a specific DB2 subsystem in the Performance Expert Client but choose the DB2 Connect gateway. This view is only available in Performance Expert Client, not in Tivoli Enterprise Portal or Classic Interface.

The setup of this scenario is limited, but it requires less configuration effort. It is sufficient if you plan to use the Performance Expert Client for monitoring and want to monitor the DB2 Connect data for all DB2 subsystems from only the DB2 Connect gateway perspective, or if you need the detailed data for only one DB2 subsystem.

Scenario 2: The Performance Expert Agent for DB2 Connect Monitoring reports all client requests that come through the DB2 Connect gateway to all DB2 subsystems.

If the following conditions are met, the Performance Expert Agent for DB2 Connect Monitoring reports all requests that are issued to the DB2 Connect gateway to all DB2 subsystems:

- Monitoring is enabled for all DB2 subsystems that you want to monitor. See “Enabling a DB2 instance gateway to be monitored by using Performance Expert Agent for DB2 Connect Monitoring” on page 130.
- In PARMGEN, you enabled Performance Expert Agent for DB2 Connect Monitoring for all DB2 subsystems. See “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring” on page 123.

In this setup, you can select each of the DB2 subsystems in the monitoring user interface and access all data. The restrictions that are mentioned above do not apply here. In most cases, this setup is preferred.

Installing and configuring Performance Expert Agent for DB2 Connect Monitoring on Windows

Performance Expert Agent for DB2 Connect Monitoring monitors connections of remote applications within the Distributed Relational Database Architecture (DRDA) of DB2. When Performance Expert Agent for DB2 Connect Monitoring is installed on the system on which DB2 Connect is installed as a gateway, it collects connection-related data, such as the connection status of a remote application. It also collects statistics about DB2 Connect activities.

The following topics provide additional information about how to install and configure Performance Expert Agent for DB2 Connect Monitoring on Windows:

- “Hardware requirements for Performance Expert Agent on Windows”
- “Software requirements for Performance Expert Agent for DB2 Connect Monitoring on Windows”
- “Downloading the program files of Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 127
- “Installing the program files of Performance Expert Agent Version 5 on Windows” on page 127
- “Configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 129
- “Starting Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 137
- “Stopping Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 137
- “Removing Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 139

Hardware requirements for Performance Expert Agent on Windows

Ensure that your system has enough resources. Check the RAM and available disk space.

The minimum hardware requirements for Performance Expert Agent are:

- A personal computer with Intel-based processor architecture, 400 MHz Pentium
- 256 MB RAM
- 150 MB disk space in the TEMP directory for the temporary program files during the installation of Performance Expert Agent. This applies to Windows 32-bit and Windows 64-bit.
- The following disk space in the installation directory for the program files of Performance Expert Agent according to your operating system:
 - Windows 32-bit: 180 MB
 - Windows 64-bit: 320 MB
- 5 MB disk space in the working directory for log and ini files of Performance Expert Agent

The name of the working directory is

C:\Program Files\IBM\IBM DB2 Performance Expert Agent V5\instances\
<instance name>

where <instance name> is the name of the DB2 instance on which Performance Expert Agent runs.

Software requirements for Performance Expert Agent for DB2 Connect Monitoring on Windows

Performance Expert Agent for DB2 Connect Monitoring requires the following system and software prerequisites. Review these requirements to ensure that your environment is prepared for installation.

The minimum software requirements to install and run Performance Expert Agent for DB2 Connect Monitoring on Windows are:

- One of the following Windows versions:

- Windows XP 32-bit Professional Edition
 - Windows XP 64-bit Professional Edition
 - Windows Server 2003 32-bit Standard Edition, Enterprise Edition, or Datacenter Edition
 - Windows Server 2003 64-bit Standard Edition, Enterprise Edition, or Datacenter Edition
 - Windows Vista Business Edition, Enterprise Edition, or Ultimate Edition
 - One of the following DB2 systems:
 - DB2 Enterprise systems:
 - DB2 Enterprise Server Edition V9.1 or later
 - DB2 Enterprise Server Edition V9.5 or later
 - DB2 Enterprise Server Edition V9.7 or later
 - DB2 Connect systems:
 - DB2 Connect Enterprise Edition V9.1 or later
 - DB2 Connect Enterprise Edition V9.5 or later
 - DB2 Connect Unlimited Edition V9.1 or later
 - DB2 Connect Unlimited Edition V9.5 or later
 - DB2 Connect Application Server Edition V9.1 or later
 - DB2 Connect Application Server Edition V9.5 or later
 - DB2 Connect Application Server Edition V9.7 or later
- To check the fix pack level of your DB2 installation, type **db2level** on the command line.
- TCP/IP installed on the workstation.
 - Software programs to download files or code from z/OS, such as File Transfer Protocol (FTP) or IBM Personal Communications.

Downloading the program files of Performance Expert Agent for DB2 Connect Monitoring on Windows

About this task

Both, the initial version and later fixes for the program files for Performance Expert Agent for DB2 Connect Monitoring are available online. For download instructions, refer to the technote "OMPE: web-based delivery and updates for Windows- and UNIX-based components" on the *IBM Software Support website*. If needed, the direct link to the technote is also included in the hold instructions of every Performance Expert Agent PTF on the host. The available program build levels and fix descriptions are documented in the technote.

Installing the program files of Performance Expert Agent Version 5 on Windows

Complete these steps to install Performance Expert Agent Version 5 or to migrate from Performance Expert Agent Version 3.

Before you begin

- The name of the directory from which you install the program files and the name of the directory to which you install the program files might not contain non-Latin-based characters.
- You need administration privileges and DB2 instance owner privileges.
- You must install Performance Expert Agent on the same system on which Database Connection Services (DCS) connections are performed.

- If you want to perform a silent installation for additional Performance Expert Agents, you must create a response file to record your installation steps. For detailed instructions on silent installation, see “Installing Performance Expert Agent silently by using a response file” on page 145.

About this task

To install the program files, complete these steps:

Procedure

1. Extract the files from the compressed file(s). Ensure that all downloaded files are extracted.
2. Ensure that all of the installation files are in the same directory. The installation package consists of these items:
 - a. An installation launcher `db2pe.agent.*.install-on-win32.exe`
 - b. An installation launcher `db2pe.agent.*.install-on-win64.exe`
 - c. The `iehs321win.jar` file that contains the help system files

The installation wizard starts, and the IBM DB2 Performance Expert Agent V5 Setup window opens.
3. Click **Next**.
The next IBM DB2 Performance Expert Agent V5 Setup window shows the License Agreement.
4. Select **I accept the terms of the license agreement**, then click **Next**.
The next IBM DB2 Performance Expert Agent V5 Setup window opens.
5. Specify the installation directory for the program files.
This step depends on the task that you want to perform:
 - New installation: You install Performance Expert Agent Version 5 whereas no previous version is installed.
 - Migration from Performance Expert Agent Version 3: You replace Performance Expert Agent Version 3 with Performance Expert Agent Version 5.
 - If you install Performance Expert Agent Version 5 whereas no previous version is installed, take one of these steps:
 - To install the program files to the default installation directory, click **Next**.
The name of the default installation directory is
`C:\Program Files\IBM\IBM DB2 Performance Expert Agent V5`
 - To install the program files to a different directory, click **Browse**, select another directory, then click **Next**.
The next **IBM DB2 Performance Expert Agent V5 Setup** window opens.
 - If you migrate from Performance Expert Agent Version 3, select the installation directory in which the previous version of Performance Expert Agent is installed.
The next IBM DB2 Performance Expert Agent V5 Setup window opens.
6. Check the displayed information, then click **Install**.
The program files are copied to the specified directory, then the next **IBM DB2 Performance Expert Agent V5 Setup** window opens. It shows summary information about the installation. It also shows the location of the log file.
7. Check the summary information, then click **Finish** to exit the installation wizard.

Results

Performance Expert Agent Version 5 is installed.

You can now start the configuration GUI of IBM DB2 Performance Expert Agent V5 Setup at any time from the Windows **Start** menu in Performance Expert Agent.

Configuring Performance Expert Agent for DB2 Connect Monitoring on Windows

Performance Expert Agent for DB2 Connect Monitoring stores the collected data in the Performance Warehouse database DB2PM on the host (referred to as *performance database*) on which the OMEGAMON Collector resides. OMEGAMON Collector correlates this data with the monitored DB2 activity. Therefore, you must register the OMEGAMON Collector and prepare DB2 Connect monitoring before starting it.

You can use the GUI or the Command line utility to do this.

The following topics provide additional information:

- “Configuring Performance Expert Agent for DB2 Connect Monitoring by using the GUI”
- “Configuring Performance Expert Agent for DB2 Connect Monitoring by using the command line utility” on page 133

Configuring Performance Expert Agent for DB2 Connect Monitoring by using the GUI:

To configure Performance Expert Agent for DB2 Connect Monitoring so that it monitors DB2 instances that serve as a gateway, you must perform several tasks within the Agent Configuration GUI.

Before you begin

Before you install the program files, ensure that you have the necessary privileges and that the users and user groups under which Performance Expert Agent for DB2 Connect Monitoring should run are defined. The required privileges and user group requirements are as follows:

- To install the program files, you must have the following privileges:
 - Windows administrator rights.
 - DB2 instance owner privileges. The DB2 instance user ID and password must be alphanumeric. White-space characters or multibyte characters are not allowed.

- The setup procedure can use only existing users and user groups.

If you do not want to use the default account db2admin but the option **Account from locally defined users**, ensure that one of the following conditions applies:

- The selected user has SYSADM authority in DB2 and the Windows right **Log on as service**.
- The selected user is a member of the Windows administrators group.

If none of these conditions applies, the selected user cannot start Performance Expert Agent for DB2 Connect Monitoring.

- One or more local DB2 instances that serve as a DB2 Connect gateway must be available.

About this task

The Performance Expert Agent for DB2 Connect Monitoring Configuration GUI guides you through the following tasks:

- “Enabling a DB2 instance gateway to be monitored by using Performance Expert Agent for DB2 Connect Monitoring”
- “Adding a performance database for an enabled DB2 instance” on page 131
- “Changing authorization for a performance database” on page 131
- “Disabling a DB2 instance for monitoring by using Performance Expert Agent for DB2 Connect Monitoring” on page 132
- “Removing a performance database from a DB2 instance” on page 132
- “Testing the connection to a performance database” on page 133

What to do next

The Performance Expert Agent for DB2 Connect Monitoring Configuration GUI window has the following panes:

- The left pane shows the local DB2 instance gateways, in a tree structure.
- The right pane shows details of the selected instance.

You can configure Performance Expert Agent for DB2 Connect Monitoring by using one of these options:

- The menu bar
- The context menu
- The buttons in the table pane

Note: These topics describe how to configure the Performance Expert Agent for DB2 Connect Monitoring by using the menu bar options.

Enabling a DB2 instance gateway to be monitored by using Performance Expert Agent for DB2 Connect Monitoring:

When Performance Expert Agent for DB2 Connect Monitoring is newly installed, it does not yet monitor the local DB2 instances that serve as a DB2 Connect gateway. You must enable monitoring for these DB2 instances.

About this task

To enable a DB2 instance for monitoring, complete the following steps:

Procedure

1. Open the DB2 Performance Expert Agent for DB2 Connect Monitoring Configuration window by clicking **Start → Programs → IBM DB2 Performance Expert Agent V5 → Configure Using the GUI**.
 - The left pane shows the local DB2 instances that serve as a DB2 Connect gateway. Active DB2 instances that are available for monitoring are indicated with **(available)**.
 - If you have not yet configured a system for monitoring, the **Enable Monitoring** button is displayed in the right pane.
2. Select the DB2 instance that you want to monitor.
3. Click **Enable Monitoring**.
4. In the field **User ID**, enter the user ID of the administrator of the gateway.

5. In the field **Password**, enter the password for this user ID.
6. Click **OK**.

What to do next

After the DB2 instance is successfully enabled, you must add a performance database in which Performance Expert Agent for DB2 Connect Monitoring can store the collected data.

Adding a performance database for an enabled DB2 instance:

You must add one or more performance databases to each enabled DB2 instance in which Performance Expert Agent for DB2 Connect Monitoring stores the collected data. A performance database is the database on the host that has been enabled for Performance Warehouse.

About this task

To add a performance database, complete the following steps:

Procedure

1. Open the **DB2 Performance Expert Agent for DB2 Connect Monitoring Configuration** window by clicking **Start** → **Programs** → **IBM DB2 Performance Expert Agent V5** → **Configure Using the GUI**.
2. Select the DB2 instance for which you want to add a performance database.
3. Select **Add Database** from the **Selected** menu.
4. In the field **System**, select the system where the performance monitor is running, **z/OS** or **Multiplatform**. According to your selection, the relevant dialog details appear.
5. Complete all fields in the dialog box, then click **OK**. For more information about the fields, see Field description. After you click **OK**, the dialog box closes and the updated information is shown in the right pane of the **DB2 Performance Expert Agent for DB2 Connect Monitoring Configuration** window.

What to do next

Before Performance Expert Agent for DB2 Connect Monitoring can collect data and store it in the performance database, you must start the Windows service for Performance Expert Agent for DB2 Connect Monitoring as described in “Starting Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 137.

Changing authorization for a performance database:

For security purposes, you might have to change authorization settings for a performance database. You must make these changes also on Performance Expert Agent for DB2 Connect Monitoring to enable connection to the database.

About this task

To change authorization for a performance database, complete the following steps:

Procedure

1. Open the **DB2 Performance Expert Agent for DB2 Connect Monitoring Configuration** window by clicking **Start → Programs → IBM DB2 Performance Expert Agent V5 → Configure Using the GUI**.
2. Select the DB2 instance that you want to change.
3. Select the performance database for which you want to change the authorization.
4. Select **Change Database Authorization** from the **Selected** menu. The connection details are disabled, you can change only the user details.
5. Change the user ID, or the password, or both, then click **OK**.
If you change the user ID, the **User ID** column in the right pane shows the updated information.

Disabling a DB2 instance for monitoring by using Performance Expert Agent for DB2 Connect Monitoring:

When you disable a DB2 instance, monitoring stops immediately. The DB2 instance remains in the list of registered DB2 instances.

About this task

To disable a DB2 instance, complete the following steps:

Procedure

1. Open the **DB2 Performance Expert Agent for DB2 Connect Monitoring Configuration** window by clicking **Start → Programs → IBM DB2 Performance Expert Agent V5 → Configure Using the GUI**.
2. Select the DB2 instance that you want to disable.
3. Select **Disable Monitoring** from the **Selected** menu.
4. Click **OK**. The selected DB2 instance is disabled for monitoring.

Removing a performance database from a DB2 instance:

You might have to remove a performance database if the location of the OMEGAMON Collector changes or is no longer available.

About this task

To remove a performance database, complete the following steps:

Procedure

1. Open the **DB2 Performance Expert Agent for DB2 Connect Monitoring Configuration** window by clicking **Start → Programs → IBM DB2 Performance Expert Agent V5 → Configure Using the GUI**.
2. Select the DB2 instance for which you want to remove the performance database.
3. Select the performance database that you want to remove.
4. Select **Remove Database** from the **Selected** menu.
5. To confirm the removal, click **Yes**. The performance database is removed from the right pane in the **DB2 Performance Expert Agent for DB2 Connect Monitoring Configuration** window.

Testing the connection to a performance database:

After you add a performance database, you can test the connection to ensure that Performance Expert Agent for DB2 Connect Monitoring can store collected data in this database.

About this task

To test the connection to a performance database, complete the following steps:

Procedure

1. Open the **DB2 Performance Expert Agent for DB2 Connect Monitoring Configuration** window by clicking **Start → Programs → IBM DB2 Performance Expert Agent V5 → Configure Using the GUI**.
2. Select the performance database that you want to test.
3. Select **Test Database Configuration** from the **Selected** menu. If the test is not successful, you get an SQL error message.

Configuring Performance Expert Agent for DB2 Connect Monitoring by using the command line utility:

Performance Expert Agent for DB2 Connect Monitoring can be configured with the command line utility to monitor DB2 connect gateways for collecting data.

Before you begin

Before you install the program files, ensure that you have the necessary privileges and that the users and user groups under which Performance Expert Agent for DB2 Connect Monitoring should run are defined. The required privileges and user group requirements are as follows:

- To install the program files, you must have the following privileges:
 - Windows administrator rights.
 - DB2 instance owner privileges. The DB2 instance user ID and password must be alphanumeric. White-space characters or multibyte characters are not allowed.
- The setup procedure can use only existing users and user groups.

If you do not want to use the default account db2admin but the option **Account from locally defined users**, ensure that one of the following conditions applies:

 - The selected user has SYSADM authority in DB2 and the Windows right **Log on as service**.
 - The selected user is a member of the Windows administrators group.

If none of these conditions applies, the selected user cannot start Performance Expert Agent for DB2 Connect Monitoring.
- One or more local DB2 instances that serve as a DB2 Connect gateway must be available.

About this task

Configuring Performance Expert Agent for DB2 Connect Monitoring with the command line utility includes the following tasks:

- “Registering the OMEGAMON Collector on Windows” on page 134
- “Reusing the configuration file on Windows” on page 136

- “Reactivating the connection mode on Windows” on page 136

Registering the OMEGAMON Collector on Windows:

Before Performance Expert Agent for DB2 Connect Monitoring can store the collected data, you must register the OMEGAMON Collector and prepare DB2 Connect monitoring.

About this task

To register the OMEGAMON Collector:

Procedure

1. Log on to the workstation on which Performance Expert Agent for DB2 Connect Monitoring is installed.
2. Open a Command Prompt window.
3. Change to the bin folder of the installation directory.
4. Stop Performance Expert Agent for DB2 Connect Monitoring.
5. Enter one of the following commands on the command line depending on what you want to do.
 - a. To add an OMEGAMON Collector that is located on z/OS to the e2e.ini file of Performance Expert Agent for DB2 Connect Monitoring, enter **e2e --addhost <host name> <DB2 port> <location name> <mainframe flag> <user login> <user password>**

Variable description:

<host name>

Denotes the network host name or IP address of the DB2 subsystem on which the registered OMEGAMON Collector runs.

<DB2 port>

Denotes the port number of the DB2 subsystem on which the registered OMEGAMON Collector runs.

<location name>

Denotes the location name of the DB2 subsystem on which the registered OMEGAMON Collector runs.

<mainframe flag>

Denotes whether the OMEGAMON Collector is located in a mainframe environment.

For a multiplatform environment, select 'N'.

<user login>

Denotes the user ID of the user who has access to the DB2PM database in Performance Warehouse on the OMEGAMON Collector side.

<user password>

Denotes the password of the user who has access to the DB2PM database in Performance Warehouse on the OMEGAMON Collector side.

Important: You should not include the password in the --addhost command if it contains special characters because the command might not work with special characters. You are then prompted to enter the password afterwards

on a separate line. You can include the following special characters in passwords, but they might not work on the command line: ! @ # \$ % ^ & () [] { } * . - _ / \ ? : ; , < > = ' " + |

- b. To change the user ID and password for a registered OMEGAMON Collector later, enter **e2e --change <number> <user login> <user password>** where:

<number>

Denotes the number of the OMEGAMON Collector that you want to change the user login and password for.

<user login>

Denotes the user ID of the user who has access to the DB2PM database in Performance Warehouse on the OMEGAMON Collector side.

<user password>

Denotes the password that you want to change.

Important: You should not include the password in the --change command if it contains special characters because the command might not work with special characters. You are then prompted to enter the password afterwards on a separate line. You can include the following special characters in passwords, but they might not work on the command line: ! @ # \$ % ^ & () [] { } * . - _ / \ ? : ; , < > = ' " + |

- c. To see the numbers of all registered OMEGAMON Collectors, enter **e2e --listhosts**

- d. To remove the registration entry of an OMEGAMON Collector from the e2e.ini file of Performance Expert Agent for DB2 Connect Monitoring, enter **e2e --removehost <number>**

where:

<number>

Denotes the number of the OMEGAMON Collector that you want to remove the registration entry for.

- e. To test the connection to the registered server, enter **e2e --test <number>**

6. Ensure that the following subcommands for the PESERVER subtask are issued before you start DB2 Connect monitoring:

- SNAPSHOTHISTORY=Y for Snapshot History processing
- SHDB2CONNECTAPPLICATION=Y if you want to collect DB2 Connect application data
- SHDB2CONNECTSYSTEM=Y if you want to collect DB2 Connect system data

For detailed information about these subcommands, refer to “Subtask commands to Performance Expert Server” on page 189.

7. When DB2 Connect monitoring is active for more than one server, ensure that only one of these servers accesses the collected data on the corresponding DB2 subsystem at a time.

You must consider this if one of these conditions applies:

- You use more than one OMEGAMON XE for DB2 PE.
- You use DB2 Performance Expert for z/OS and OMEGAMON XE for DB2 PE, or both, or several of both.
- You use OMEGAMON XE for DB2 PE in a data sharing group running on different logically partitioned modes (LPARs) in a sysplex environment.

Results

All information regarding the server registration is added to the configuration file `e2e.ini`. You can reuse the configuration file that contains a list of registered OMEGAMON Collectors for other Performance Expert Agents for DB2 Connect Monitoring that you want to install. For more information about reusing the configuration file, see “Reusing the configuration file on Windows.”

Reusing the configuration file on Windows:

You can reuse the `e2e.ini` configuration file of Performance Expert Agent for DB2 Connect Monitoring each time you install a new Performance Expert Agent for DB2 Connect Monitoring.

About this task

When you start Performance Expert Agent for DB2 Connect Monitoring, it uses the configuration file in the agent's working directory. If you want to reuse an existing `e2e.ini` configuration file for a new Performance Expert Agent for DB2 Connect Monitoring, perform the following steps:

Procedure

1. Copy the `e2e.ini` configuration file that you want to reuse from the agent's working directory to another directory to store it there.
2. Install the new Performance Expert Agent for DB2 Connect Monitoring.
3. Copy the `e2e.ini` configuration file from the directory where you stored it to the new agent's working directory.

Reactivating the connection mode on Windows:

If the host of the connection mode is in *paused* status, you can reactivate the connection in the `e2e.ini` configuration file. Refer to the **--change** command

About this task

Hosts in connection mode *paused* are shown in the log file and on the console after each start of Performance Expert Agent for DB2 Connect Monitoring. You can see the paused flag also by using the command **e2e --listhosts**.

Note: This information is not displayed in the GUI.

The connection to the corresponding host is changed to *paused* in the `e2e.ini` configuration file if one of the following conditions applies:

- You specified the wrong user ID or password.
- The password on the OMEGAMON Collector side is changed or expired.

To reactivate the connection to the registered OMEGAMON Collector, you must change the incorrect user ID or password by using either the command **e2e --change** or by selecting the **Change** option in the GUI.

Note: Starting with Performance Expert Agent V5, Performance Expert for Multiplatforms V5 and later are no longer supported. If a Performance Expert agent detects a connection to a Performance Expert for Multiplatforms V5 or later performance database, the corresponding connection is set in paused mode. This can happen in environments where Performance Expert agent retrieves both

Multiplatforms and z/OS connection data from the DB2 Connect gateway and the Performance Expert for Multiplatforms V3.2.0 server is updated to version V5. In this scenario it is not possible to reactivate the paused connection.

Starting Performance Expert Agent for DB2 Connect Monitoring on Windows

On Windows, you start Performance Expert Agent from the Windows Start Menu or from the Control Panel.

About this task

To start Performance Expert Agent for DB2 Connect Monitoring from the Control Panel:

Procedure

1. Click **Start** → **Settings** → **Control Panel** → **Administrative Tools**.
2. Double-click **Services**.
3. Check that the **DB2 Performance Expert Agent for DB2 Instance (DB2)** service is started, where (*DB2*) denotes the DB2 instance on which Performance Expert Agent for DB2 Connect Monitoring runs.
If it is not started, right-click the corresponding service and click **Start**.
4. Optional: Configure the service to start automatically at system start.
 - a. Right-click the corresponding service and click **Properties**.
 - b. In the **Startup Type** list, select **Automatic**.

The service will start automatically the next time Windows is started.

What to do next

Before you can work with Performance Expert Agent for DB2 Connect Monitoring, you must configure it as described in “Configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 129.

Stopping Performance Expert Agent for DB2 Connect Monitoring on Windows

On Windows, you stop Performance Expert Agent for DB2 Connect Monitoring from the Control Panel.

About this task

To stop Performance Expert Agent for DB2 Connect Monitoring on Windows:

Procedure

1. Click **Start** → **Settings** → **Control Panel** → **Administrative Tools**.
2. Double-click **Services**.
3. Right-click **Performance Expert Agent for DB2 Connect Monitoring**.
4. Click **Stop**.

Updating Performance Expert Agent for DB2 Connect Monitoring on Windows

This method is a step-by-step update of Performance Expert Agent for DB2 Connect Monitoring using an installation wizard.

About this task

To update Performance Expert Agent for DB2 Connect Monitoring manually:

Procedure

1. Ensure that the OMEGAMON Collector from which you want to get the update is registered and configured for Performance Expert Agent for DB2 Connect Monitoring.
2. Log on to the system on which Performance Expert Agent for DB2 Connect Monitoring is installed.
3. Click **Start** → **Settings** → **Control Panel**.
4. Double-click **Administrative Tools**.
5. Double-click **Services**.
6. Stop the service **DB2 Performance Expert Agent for DB2 Instance (DB2)**, where *(DB2)* denotes the DB2 instance on which Performance Expert Agent for DB2 Connect Monitoring runs.
7. Open a **Command Prompt** window.
8. Change to your installation directory, for example, C:\Program Files\IBM\Performance Expert Agent for DB2 Connect Monitoring\bin
9. Enter **e2e --update** on the command line.
If a new version of Performance Expert Agent for DB2 Connect Monitoring is found, you get the message New version downloaded.
10. Restart Performance Expert Agent for DB2 Connect Monitoring in one of the following ways:
 - Start the Performance Expert Agent for DB2 Connect Monitoring service in the **Services** window.
 - Enter **e2e --start** on the command line.

Results

The latest version of Performance Expert Agent for DB2 Connect Monitoring is installed. To test it, perform the following steps:

1. Ensure that Performance Expert Agent for DB2 Connect Monitoring is started.
2. Use Performance Expert Client to log on to a DB2 subsystem for which Performance Expert Agent for DB2 Connect Monitoring collects data about the connection status.
3. Verify that the data is collected.

If the update does not work correctly, you can recover the previous version of Performance Expert Agent for DB2 Connect Monitoring by doing the following:

1. Stop the service **Performance Expert Agent for DB2 Connect Monitoring (DB2)** if it is already started, where *(DB2)* denotes the DB2 instance on which Performance Expert Agent for DB2 Connect Monitoring runs.
2. Open a **Command Prompt** window.
3. Change to your installation directory, for example, C:\Program Files\IBM\Performance Expert Agent for DB2 Connect Monitoring\bin
4. Enter **e2e --rollback** on the command line.

The previous version of Performance Expert Agent for DB2 Connect Monitoring is reinstalled and you get the message Old version restored.

Removing Performance Expert Agent for DB2 Connect Monitoring on Windows

About this task

To remove Performance Expert Agent for DB2 Connect Monitoring from your Windows workstation:

Procedure

1. Stop Performance Expert Agent for DB2 Connect Monitoring.
2. Click **Start** → **IBM DB2 Performance Expert Agent V5** → **Uninstall**.
The **Performance Expert Agent for DB2 Connect Monitoring Setup** window opens.
3. Click **Next**.
4. Check the summary information, then click **Uninstall**.
The program files are removed. You are asked if you want to remove the files that were not deleted from the installation directory.
5. To completely remove Performance Expert Agent for DB2 Connect Monitoring, click **Next**.
The files are removed and the next Performance Expert Agent for DB2 Connect Monitoring Setup window opens. It shows summary information and the location of the log file.
6. Click **Finish** to exit the InstallAnywhere Wizard.

Results

Performance Expert Agent for DB2 Connect Monitoring is completely removed from your Windows workstation.

Installing and configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux

Performance Expert Agent for DB2 Connect Monitoring monitors connections of remote applications within the Distributed Relational Database Architecture (DRDA) of DB2. When Performance Expert Agent for DB2 Connect Monitoring is installed on the system on which DB2 Connect is installed as a gateway, it collects connection-related data, such as the connection status of a remote application. It also collects statistics about DB2 Connect activities.

The following topics provide additional information about how to install and configure it on UNIX and Linux systems.

- “Hardware requirements for Performance Expert Agent on Linux and UNIX” on page 140
- “Software requirements for Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 140
- “Downloading the program files of Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 142
- “Installing the program files of Performance Expert Agent Version 5 on UNIX and Linux” on page 142
- “Configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 146

- “Starting Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 151
- “Stopping Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 151
- “Removing Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 153

Hardware requirements for Performance Expert Agent on Linux and UNIX

Ensure that your system has enough resources. Check the RAM and available disk space.

The minimum hardware requirements for Performance Expert Agent are:

- 512 MB RAM
- The following disk space in a temporary directory for the temporary program files during the installation of Performance Expert Agent:
 - Linux on xSeries® 32-bit: 260 MB
 - Linux on xSeries 64-bit: 500 MB
 - Linux on pSeries: 300 MB
 - Linux on zSeries: 300 MB
 - AIX®: 150 MB
 - HP-UX: 600 MB
 - Solaris Operating System: 500 MB
- The following disk space in the installation directory for the program files and log files of Performance Expert Agent:
 - Linux on xSeries 32-bit: 200 MB
 - Linux on xSeries 64-bit: 350 MB
 - Linux on pSeries: 200 MB
 - Linux on zSeries: 200 MB
 - AIX: 200 MB
 - HP-UX: 350 MB
 - Solaris Operating System: 350 MB
- 5 MB disk space in the working directory for log and ini files of Performance Expert Agent

Software requirements for Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux

Performance Expert Agent for DB2 Connect Monitoring requires the following system and software prerequisites. Review these requirements to ensure that your environment is prepared for installation.

The minimum software requirements to install and run Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux are:

- One of the following operating systems:
 - AIX V5.3
 - AIX V6.1
 - AIX V7.1
- HP-UX for Itanium-based HP Integrity Series systems 11i v2 with patches PHKL_35029, PHSS_35045
- HP-UX for Itanium-based HP Integrity Series systems 11i v3

- Solaris Operating Environment V9 and V10 for UltraSPARC
- One of the Linux systems as shown in the following table:
 - Validated distributions are marked with *Validated*.
 - Distributions that are supported, but have not yet been validated are marked with *Supported*.
 - Unsupported distributions are marked with *Not supported*.

Table 9. Supported Linux systems.

			Linux on xSeries		Linux on zSeries	Linux on pSeries	
Distributions	Kernel	glibc	32-bit	64-bit	64-bit	32-bit	64-bit
SUSE Linux Enterprise Server 9	2.6.5	2.3.3	<i>Validated</i>	<i>Validated</i>	<i>Validated</i>	<i>Not supported</i>	<i>Validated</i>
SUSE Linux Enterprise Server 10	2.6.1	2.4 to 3.1	<i>Validated</i>	<i>Validated</i>	<i>Supported</i>	<i>Not supported</i>	<i>Supported</i>
Red Hat Enterprise Linux 4	2.6.9	2.3.4 to 2.13	<i>Validated</i>	<i>Validated</i>	<i>Supported</i>	<i>Not supported</i>	<i>Supported</i>
Red Hat Enterprise Linux 5	2.6.18	2.5	<i>Validated</i>	<i>Supported</i>	<i>Supported</i>	<i>Not supported</i>	<i>Supported</i>

- One of the following DB2 systems:
 - DB2 systems:
 - DB2 Enterprise Server Edition V9.1 or later
 - DB2 Enterprise Server Edition V9.5 or later
 - DB2 Enterprise Server Edition V9.7 or later
 - DB2 systems for HP-UX Version 11i v3 for Itanium-based HP Integrity Series systems:
 - DB2 Enterprise Server Edition V9.1 FP3 or later
 - DB2 Connect systems:
 - DB2 Connect Enterprise Edition V9.1 or later
 - DB2 Connect Enterprise Edition V9.5 or later
 - DB2 Connect Enterprise Edition V9.7 or later
 - DB2 Connect Unlimited Edition for zSeries V9.1 or later
 - DB2 Connect Application Server Edition V9.1 or later
 - DB2 Connect Application Server Edition V9.5 or later
 - DB2 Connect Application Server Edition V9.7 or later
 - DB2 Connect Personal Server Edition V9.1 or later
 - DB2 Connect Personal Server Edition V9.5 or later
 - DB2 Connect Personal Server Edition V9.7 or later
 - DB2 Connect systems for HP-UX Version 11i v3 for Itanium-based HP Integrity Series systems:
 - DB2 Connect Enterprise Edition V9.1 FP3 or later
 - DB2 Connect Unlimited Edition (for zSeries) V9.1 FP3 or later
 - DB2 Connect Application Server Edition V9.1 FP3 or later

- TCP/IP installed on the workstation
- Software programs to download files or code from z/OS, such as File Transfer Protocol (FTP) or IBM Personal Communications

The following table shows which bit width Performance Expert supports for the DB2 instances on the supported platforms.

Table 10. Platform support matrix.

Operating system	DB2 instance bit width	PE Agent
		V9.1/V9.5/V9.7
AIX	32-bit	<i>Not supported</i>
	64-bit	<i>Supported</i>
HP-UX on IA [®]	32-bit	<i>Not supported</i>
	64-bit	<i>Supported</i>
Solaris on SPARC	32-bit	<i>Not supported</i>
	64-bit	<i>Supported</i>
Linux on System x	32-bit	<i>Supported</i>
	64-bit	<i>Supported</i>
Linux on System p	32-bit	<i>Not supported</i>
	64-bit	<i>Supported</i>
Linux on System z	32-bit	<i>Not supported</i>
	64-bit	<i>Supported</i>
Windows	32-bit	<i>Supported</i>
	64-bit	<i>Supported</i>

Downloading the program files of Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux

About this task

Both, the initial version and later fixes for the program files for Performance Expert Agent for DB2 Connect Monitoring are available online. For download instructions, refer to the technote "OMPE: web-based delivery and updates for Windows- and UNIX-based components" on the *IBM Software Support website*. If needed, the direct link to the technote is also included in the hold instructions of every Performance Expert Agent PTF on the host. The available program build levels and fix descriptions are documented in the technote.

Installing the program files of Performance Expert Agent Version 5 on UNIX and Linux

Complete these steps to install Performance Expert Agent Version 5 or to migrate from Performance Expert Agent Version 3.

Before you begin

- The name of the directory from which you install the program files and the name of the directory to which you install the program files, might not contain non-Latin-based characters or blanks.
- You must install Performance Expert Agent on the same system on which DCS connections are performed.

- If you want to perform a silent installation for additional Performance Expert Agents, you must create a response file to record your installation steps. For detailed instructions on silent installation, see “Installing Performance Expert Agent silently by using a response file” on page 145.
- If you want to run the installation wizard in GUI mode, ensure that you can run X applications.
- If you are migrating from Performance Expert Agent Version 3 on AIX, Linux on System z, HP-UX, or Solaris on a 32-bit platform, you must uninstall Performance Expert Agent Version 3 before beginning. If you want to reuse your current settings, you can save your existing configuration file. The configuration is stored in the e2e.ini file.

About this task

To install the program files, complete these steps:

Procedure

1. Log on as **root** and ensure that your umask is 022. **sudo** is not supported.
2. Extract the file from the downloaded compressed file into one directory. The installation package consists of the following item:
 - An installation launcher `db2pe.agent.*.install-on-<operating system>.bin` where *<operating system>* is your operating system, for example, `db2pe.agent.*.install-on-xlinux.bin`.
3. Start the installation wizard in GUI mode or in console mode.
 - To run the installation wizard in GUI mode, open a shell window and run the executable file that is appropriate for your operating system. The executable files have the following form:

For Linux on xSeries:

```
./db2pe.agent.*.install-on-xlinux-x86-32.bin
./db2pe.agent.*.install-on-xlinux-x86-64.bin
```

For Linux on pSeries:

```
./db2pe.agent.*.install-on-pseries.bin
```

For Linux on zSeries:

```
./db2pe.agent.*.install-on-zseries.bin
```

For AIX:

```
./db2pe.agent.*.install-on-aix.bin
```

For HP-UX:

```
./db2pe.agent.*.install-on-hpia.bin
```

For the Solaris Operating Environment:

```
./db2pe.agent.*.install-on-solaris.bin
```

- To run the installation wizard in console mode, enter the appropriate command for your operating system and append **-i console**.

For example, for Linux on xSeries enter:

```
./db2pe.agent.*.install-on-xlinux -i console
```

Note: To avoid problems with multiple versions of the script being present in the installation directory, you should use the original file name, replacing the * as appropriate.

Important: Installation path names might not contain blanks.

The program files are temporarily stored in a temporary directory. By default, the temporary directory is created in the home directory of the root user, for example, /root.

Important: If you specify a different temporary directory, program files are stored in the new temporary directory, and program scripts are stored in the default temporary directory. Therefore, you must ensure that both temporary directories have enough disk space.

To specify a different path name for the temporary directory, enter the command

```
export IATEMPDIR=<temp dir name>
```

where *<temp dir name>* is the name of the temporary directory.

The installation wizard starts, and the IBM DB2 Performance Expert Agent V5 Setup Welcome window opens.

4. Click **Next**.

The IBM DB2 Performance Expert Agent V5 Setup window shows the License Agreement.

5. Select **I accept the terms of the license agreement**, then click **Next**.

The next IBM DB2 Performance Expert Agent V5 Setup window opens.

6. Specify the installation directory for the program files.

This step depends on the task that you want to perform:

New installation: You install Performance Expert Agent Version 5 whereas no previous version is installed.

Migration from Performance Expert Agent Version 3 on the same platform: You replace Performance Expert Agent Version 3 by Performance Expert Agent Version 5.

Migration from Performance Expert Agent Version 3 on AIX, Linux on System z, or Solaris on a 32-bit platform: You uninstall Performance Expert Agent Version 3 and then follow the new installation instructions.

- If you install Performance Expert Agent Version 5 whereas no previous version is installed or you migrate from Performance Expert Agent Version 3 on an older platform, take one of these steps:

- To install the program files to the default installation directory, click **Next**.

The name of the default installation directory is:

```
/opt/IBM/db2peage/v5
```

- To install the program files to a different directory, click **Browse**, select another directory, then click **Next**.

The next IBM DB2 Performance Expert Agent V5 Setup window opens.

- If you migrate from Performance Expert Agent Version 3 on the same platform, select the installation directory in which the previous version of Performance Expert Agent is installed.

The next IBM DB2 Performance Expert Agent V5 Setup window opens.

7. Click **Next**.

The next IBM DB2 Performance Expert Agent V5 Setup window opens.

8. Check the displayed information, then click **Install**.

The program files are copied to the specified directory, then the next IBM DB2 Performance Expert Agent V5 Setup window opens. It shows summary information about the installation. It also shows the location of the log file.

9. Check the summary information, then click **Finish** to exit the installation wizard.

Results

Performance Expert Agent Version 5 is installed.

Installing Performance Expert Agent silently by using a response file:

A silent installation is an installation that runs without displaying an interface or prompting you for input. You can do silent installations of Performance Expert Agent to simplify the process of installing it on multiple computers.

Before you begin

Before you install Performance Expert Agent silently, you must first create a response file. A *response file* is a file that contains the properties and values that drive the installation. You create a response file by running the installation wizard or console mode with the following command-line option: `-r response_file_name`. When you complete the installation, the information that you entered in the installation wizard or console mode is recorded in the response file. You will use this file to install the product silently on other computers.

Procedure

To install Performance Expert Agent silently by using a response file:

1. From the directory of the installation image for Performance Expert Agent, run the following command:

On Windows 32-bit:

```
db2pe.agent.*.install-on-win32.exe -i -silent -f response_file_name  
db2pe.agent.*.install-on-win64.exe -i -silent -f response_file_name
```

For Linux on xSeries:

```
db2pe.agent.*.install-on-xlinux-x86-32.bin -i -silent -f response_file_name  
db2pe.agent.*.install-on-xlinux-x86-64.bin -i -silent -f response_file_name
```

For Linux on pSeries:

```
db2pe.agent.*.install-on-pseries.bin -i -silent -f response_file_name
```

For Linux on zSeries:

```
db2pe.agent.*.install-on-zseries.bin -i -silent -f response_file_name
```

For AIX:

```
db2pe.agent.*.install-on-aix.bin -i -silent -f response_file_name
```

For HP-UX:

```
db2pe.agent.*.install-on-hpia.bin -i -silent -f response_file_name
```

For the Solaris Operating Environment:

```
db2pe.agent.*.install-on-solaris.bin -i -silent -f response_file_name
```

where *response_file_name* is the name of the response file that you created during a previous installation of the product.

The product is installed.

2. Verify that the installation was successful by checking the `db2peage.log` installation log file in the following directory:
 - On Windows: `%USERPROFILE%` (For example: `C:\Documents and Settings\Administrator`)
 - On Linux and Solaris: `/var/log`

- On AIX and HP-UX: /var/adm/sw
3. Start Performance Expert Agent:
 - “Starting Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 151
 - “Starting Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 137

What to do next

You are now ready to configure the product. For instructions on configuring and using Performance Expert Agent, see “Configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” and/or “Configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 129.

Configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux

Performance Expert Agent for DB2 Connect Monitoring stores the collected data in the Performance Warehouse database DB2PM on the host (referred to as *performance database*) on which the OMEGAMON Collector resides. OMEGAMON Collector correlates this data with the monitored DB2 activity. Therefore, you must register the OMEGAMON Collector and prepare DB2 Connect monitoring before starting it.

Restriction: Consider the following restrictions before configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux:

- When DB2 Connect monitoring is active for more than one server, only one of these servers should access the collected data on the corresponding DB2 subsystem at a time.
- When more than one Performance Expert Agent for DB2 Connect Monitoring is installed on one LPAR, the hub Tivoli Enterprise Monitoring Server can only accept monitoring data from one Performance Expert Agent for DB2 Connect Monitoring per LPAR at a time.

You must consider this if you use one of the following:

- More than one OMEGAMON XE for DB2 PE
- DB2 Performance Expert for z/OS and OMEGAMON XE for DB2 PE, or both, or several of both
- OMEGAMON XE for DB2 PE in a data sharing group running on different logically partitioned modes (LPARs) in a sysplex environment

The following topics provide additional information:

- “Registering the OMEGAMON Collector on UNIX and Linux as root”
- “Registering an OMEGAMON Collector on UNIX and Linux as DB2 instance owner” on page 148
- “Reusing the configuration file on UNIX and Linux” on page 150

Registering the OMEGAMON Collector on UNIX and Linux as root:

Before Performance Expert Agent for DB2 Connect Monitoring can store collected data, you must register the OMEGAMON Collector and prepare DB2 Connect monitoring before starting it.

About this task

To register the OMEGAMON Collector:

Procedure

1. Log on directly as root via telnet or ssh, for example, or switch to root by entering **su -**
2. Change to the directory `/opt/IBM/db2peage/V5/bin`
3. Invoke the configuration script by entering `./db2peage-config`
You get a list of available DB2 instances.
4. Type the name of the DB2 instance for which you want to configure Performance Expert Agent for DB2 Connect Monitoring.
A menu from which you can choose options for the selected DB2 instance opens.
5. Select **Add a host to your Performance Expert Agent**.
This host is the DB2 system on which the OMEGAMON Collector runs. It contains the DB2PM database in which the collected data is to be stored.
To add all OMEGAMON Collectors now, select this option repeatedly. If you want to register other OMEGAMON Collectors later, refer to “Registering an OMEGAMON Collector on UNIX and Linux as DB2 instance owner” on page 148.
6. Ensure that the following subcommands for the PESERVER subtask are issued before you start DB2 Connect monitoring.

SNAPSHOTHISTORY=Y

for Snapshot History processing

SHDB2CONNECTAPPLICATION=Y

if you want to collect DB2 Connect application data

SHDB2CONNECTSYSTEM=Y

if you want to collect DB2 Connect system data

For detailed information about these subcommands, refer to “Subtask commands to Performance Expert Server” on page 189.

7. When DB2 Connect monitoring is active for more than one server, ensure that only one of these servers accesses the collected data on the corresponding DB2 subsystem at a time.

You must consider this if you use one of the following:

- More than one OMEGAMON XE for DB2 PE
- DB2 Performance Expert for z/OS and OMEGAMON XE for DB2 PE, or both, or several of both
- OMEGAMON XE for DB2 PE in a data sharing group running on different logically partitioned modes (LPARs) in a sysplex environment

Results

All information regarding the server registration is added to the configuration file `e2e.ini`. It is located in the directory `/var/db2pe/V3/<DB2 subsystem>`, where `<DB2 subsystem>` denotes the DB2 subsystem on which Performance Expert Agent for DB2 Connect Monitoring runs. You can reuse the configuration file that contains a list of registered OMEGAMON Collectors for other Performance Expert Agents for DB2 Connect Monitoring that you want to install. For more information about

reusing the configuration file, see “Reusing the configuration file on UNIX and Linux” on page 150.

Registering an OMEGAMON Collector on UNIX and Linux as DB2 instance owner:

Probably, you have registered OMEGAMON Collectors during configuration of Performance Expert Agent for DB2 Connect Monitoring by using the script `db2peage-config`. You can, however, register and unregister OMEGAMON Collectors at any time without root authorization.

Before you begin

- You must prepare instances for the Performance Expert Agent for DB2 Connect Monitoring before beginning. You can do this either by:
 - Having registered an OMEGAMON Collector by using the script `db2peage-config` as root.
 - Starting the `db2peage-config` configuration script to prepare the instances, but exit the script without actually having configured the server. This will prepare the instances for later configuration.
- If Performance Expert Agent for DB2 Connect Monitoring is started, you must stop it before you can issue any command.

Note: Starting with Performance Expert Agent V5, Performance Expert for Multiplatforms V5 and later are no longer supported. If a Performance Expert agent detects a connection to a Performance Expert for Multiplatforms V5 or later performance database, the corresponding connection is set in paused mode. This can happen in environments where the Performance Expert agent retrieves both Multiplatform and z/OS connection data from the DB2 Connect gateway and the Performance Expert for Multiplatforms V3.2.0 server is updated to version V5. In this scenario it is not possible to reactivate the paused connection.

About this task

To register an OMEGAMON Collector:

Procedure

1. Log on to the DB2 instance on which Performance Expert Agent for DB2 Connect Monitoring is installed.
2. Change to the BIN folder of the installation directory of Performance Expert Agent for DB2 Connect Monitoring.
3. Stop Performance Expert Agent for DB2 Connect Monitoring by entering `./e2e --stop`
4. Enter one of the following commands on the command line depending on what you want to do:
 - a. To add an OMEGAMON Collector that is located on z/OS to the `e2e.ini` file of Performance Expert Agent for DB2 Connect Monitoring, enter `./e2e --addhost <host name> <DB2 port> <location name> <mainframe flag> <user login> <user password>`

where the variables represent the following:

`<host name>`

the network host name or IP address of the DB2 subsystem on which the registered OMEGAMON Collector runs.

<DB2 port>

the port number of the DB2 subsystem on which the registered OMEGAMON Collector runs.

<location name>

the location name of the DB2 subsystem on which the registered OMEGAMON Collector runs.

<mainframe flag>

whether the OMEGAMON Collector is located in a mainframe environment.

For a z/OS environment, specify Y. For a multiplatform environment, specify N.

<user login>

the user ID of the user who has access to the DB2PM database in Performance Warehouse on the OMEGAMON Collector side.

<user password>

the password of the user who has access to the DB2PM database in Performance Warehouse on the OMEGAMON Collector side.

Important: You should not include the password in the `--addhost` command if it contains special characters because the command might not work with special characters. You are then prompted to enter the password afterwards on a separate line. You can include the following special characters in passwords, but they might not work on the command line:

! @ # \$ % ^ & () [] { } * . - _ / \ ? : ; , < > = ' " + |

- b. To later change the user ID and password for a registered OMEGAMON Collector, enter `./e2e --change <number> <user login> <user password>` where the variables represent the following:

<number>

the number of the OMEGAMON Collector for which user login and password are to be changed.

<user login>

the user ID of the user who has access to the DB2PM database in Performance Warehouse on the OMEGAMON Collector side.

<user password>

the password that is to be changed.

Important: You should not include the password in the `--change` command if it contains special characters because the command might not work with special characters. You are then prompted to enter the password afterwards on a separate line. You can include the following special characters in passwords, but they might not work on the command line:

! @ # \$ % ^ & () [] { } * . - _ / \ ? : ; , < > = ' " + |

- c. To see the numbers of all registered OMEGAMON Collectors, enter `./e2e --listhosts`
- d. To remove the registration entry of an OMEGAMON Collector from the `e2e.ini` file of Performance Expert Agent for DB2 Connect Monitoring, enter `./e2e --removehost <number>` where `<number>` denotes the number of the OMEGAMON Collector for which you want to remove the registration entry.

- e. To test the connection, enter **e2e --test <number>**
5. Ensure that the following subcommands for the PESERVER subtask are issued before you start DB2 Connect monitoring:

SNAPSHOTHISTORY=Y

for Snapshot History processing

SHDB2CONNECTAPPLICATION=Y

if you want to collect DB2 Connect application data

SHDB2CONNECTSYSTEM=Y

if you want to collect DB2 Connect system data

6. When DB2 Connect monitoring is active for more than one server, ensure that only one of these servers accesses the collected data on the corresponding DB2 subsystem at a time.

You must consider this if you use one of the following:

- More than one OMEGAMON XE for DB2 PE
- DB2 Performance Expert for z/OS and OMEGAMON XE for DB2 PE, or both, or several of both
- OMEGAMON XE for DB2 PE in a data sharing group running on different logically partitioned modes (LPARs) in a sysplex environment

Results

All information regarding the server registration is added to the configuration file `e2e.ini`. You can reuse the configuration file that contains a list of registered OMEGAMON Collectors for other Performance Expert Agents for DB2 Connect Monitoring that you want to install. For more information about reusing the configuration file, see "Reusing the configuration file on UNIX and Linux."

Reusing the configuration file on UNIX and Linux:

You can reuse the `e2e.ini` configuration file of Performance Expert Agent for DB2 Connect Monitoring each time you install a new Performance Expert Agent for DB2 Connect Monitoring.

About this task

To reuse the `e2e.ini` configuration file, it must be located in the directory `/var/db2pe/V3/<DB2 instance>`, where `<DB2 instance>` denotes the name of the monitored DB2 instance that serves as a gateway.

To reuse the `e2e.ini` configuration file for a new Performance Expert Agent for DB2 Connect Monitoring:

Procedure

1. Copy the `e2e.ini` configuration file that you want to reuse from the home directory to another directory to store it there.
2. Install the new Performance Expert Agent for DB2 Connect Monitoring.
3. Copy the `e2e.ini` configuration file from the directory in which you stored it to the directory `/var/db2pe/V3/<DB2 instance>`, where `<DB2 instance>` denotes the name of the monitored DB2 instance that serves as a gateway.

When you start Performance Expert Agent for DB2 Connect Monitoring, it uses the configuration file in the directory `/var/db2pe/V3/<DB2 instance>`

Reactivating the connection mode on UNIX and Linux:

If the host of the connection mode is in *paused* status, you can reactivate the connection in the `e2e.ini` configuration file.

About this task

Hosts in connection mode *paused* are shown in the log file and on the console after each start of Performance Expert Agent for DB2 Connect Monitoring. You can see the paused flag also by using the command `e2e --listhosts`

The connection to the corresponding host is changed to *paused* in the `e2e.ini` configuration file if one of the following conditions applies:

- You specify the user ID or the password incorrectly.
- The password on the OMEGAMON Collector side is changed or expired.

To reactivate the connection to the registered OMEGAMON Collector, change the incorrect user ID or password by using the command `e2e --change`

Starting Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux

About this task

To start Performance Expert Agent for DB2 Connect Monitoring:

Procedure

1. Log on as the DB2 instance owner under which you want to run Performance Expert Agent for DB2 Connect Monitoring.
2. Change to the directory `<installdiragent>/bin`
where `<installdiragent>` denotes the installation directory of Performance Expert Agent for DB2 Connect Monitoring, for example, `/opt/IBM/db2peage/V5`
3. Enter `./e2e --start`.
To start Performance Expert Agent for DB2 Connect Monitoring as a background process, enter one of the following commands:
 - `./e2e --start &`
 - `./e2e --start -bg`

What to do next

Before you can work with Performance Expert Agent for DB2 Connect Monitoring, you must configure it as described in “Configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 146.

Stopping Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux

About this task

To stop Performance Expert Agent for DB2 Connect Monitoring:

Procedure

1. Log on as the DB2 instance owner under which you want to run Performance Expert Agent for DB2 Connect Monitoring.

2. Change to the directory `<installdiragent>/bin`
where `<installdiragent>` denotes the installation directory of Performance Expert Agent for DB2 Connect Monitoring.
3. Enter the command `./e2e --stop`

Updating Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux

This method is a step-by-step update of Performance Expert Agent for DB2 Connect Monitoring.

About this task

To update Performance Expert Agent for DB2 Connect Monitoring manually:

Procedure

1. Log on as the DB2 instance owner.
2. Change to the directory `<installdiragent>/bin`
where `<installdiragent>` denotes the installation directory of Performance Expert Agent for DB2 Connect Monitoring.
3. Stop Performance Expert Agent for DB2 Connect Monitoring if it is started by using the command `./e2e --stop`.
4. Log on as root.
5. Enter the command `./e2e --update`.
If a new version of Performance Expert Agent for DB2 Connect Monitoring is found, you get the message `New version downloaded`.
6. Restart Performance Expert Agent for DB2 Connect Monitoring by entering the command `./e2e --start` on the command line.

Results

The latest version of Performance Expert Agent for DB2 Connect Monitoring is installed. To test it, perform the following steps:

1. Ensure that Performance Expert Agent for DB2 Connect Monitoring is started.
2. Use Performance Expert Client to log on to a DB2 subsystem or DB2 instance for which Performance Expert Agent for DB2 Connect Monitoring collects data about the connection status.
3. Verify that the data is collected.

If the update does not work correctly, you can recover the previous version of Performance Expert Agent for DB2 Connect Monitoring by doing the following:

1. Stop Performance Expert Agent for DB2 Connect Monitoring by entering `./e2e --stop` on the command line.
2. Enter `./e2e --rollback` on the command line.

The previous version of Performance Expert Agent for DB2 Connect Monitoring is reinstalled and you get the message `Old version restored`.

Removing Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux

About this task

To remove Performance Expert Agent for DB2 Connect Monitoring from your UNIX or Linux system:

Procedure

1. Log on as the DB2 instance owner.
2. Change to the directory `<installdiragent>/bin`
where `<installdiragent>` denotes the installation directory of Performance Expert Agent for DB2 Connect Monitoring.
3. Stop Performance Expert Agent for DB2 Connect Monitoring.
4. Log on as root.
5. Enter `<installdiragent>/uninstall/uninstaller`
where `<installdiragent>` denotes the installation directory of Performance Expert Agent for DB2 Connect Monitoring.
6. Press Enter.
The InstallAnywhere Multiplatform Wizard opens.
7. Select **Next** and follow the instructions.
8. Select **Finish** to complete the procedure.
The InstallAnywhere Multiplatform Wizard is closed.
9. Enter `rm -fr /<installdiragent>` to delete the installation directory of Performance Expert Agent for DB2 Connect Monitoring.

Installing and configuring Performance Expert Client

Performance Expert Client provides real-time and historical monitoring of a DB2 subsystem or DB2 data sharing group. This section describes how to enable Performance Expert Client to an existing runtime environment.

Before you begin

You must do the following before beginning:

- Verify that your system meets the hardware and software requirements.
- Enable Performance Expert Client support on z/OS. See “Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support” on page 83.

About this task

The following topics provide detailed installation instructions:

- “Hardware requirements for Performance Expert Client” on page 154
- “Software requirements for Performance Expert Client” on page 154
- “Downloading the program files of Performance Expert Client” on page 155
- “Installing the program files of Performance Expert Client” on page 155
- “Preparing access to Performance Warehouse” on page 157
- “Defining the DB2 subsystem” on page 159

Hardware requirements for Performance Expert Client

Performance Expert Client requires the following hardware prerequisites. Review these requirements to ensure that your environment is prepared for installation.

The minimum hardware requirements to install and run Performance Expert Client are:

- A personal computer with Intel-based processor architecture, 400 MHz Pentium
- 512 MB RAM
- 400 MB (Windows 32-bit and 64-bit) disk space in the installation directory for the installation files
- 350 MB temporary space for running the installation program
- A high-resolution display unit of 1024 x 768 or higher
- If you install OMEGAMON XE for DB2 PE, which includes buffer pool object placement, the following free memory for object placement:
 - 60 MB for up to 1000 objects
 - 220 MB for up to 100 000 objects
 - 500 MB for up to 200 000 objects

where objects are table spaces and index spaces.

Recommendation: If you have installed only the minimum requirements, you should not run other applications at the same time.

Software requirements for Performance Expert Client

Performance Expert Client requires the following system and software prerequisites. Review these requirements to ensure that your environment is prepared for installation.

The minimum software requirements to install and run Performance Expert Client are:

- One of the following Windows (x86, x86-64) versions:
 - Windows XP Professional Edition with Service Pack 2, including XP FDCC
 - Windows Vista Business Edition, Enterprise Edition, and Ultimate Edition, including Vista XP FDCC
 - Windows 7 Professional Edition and Ultimate Edition including FDCC
 - Windows 8 Standard Edition, Professional Edition, and Enterprise Edition
 - Windows Server 2003 with Service Pack 1, Standard Edition, Enterprise Edition, and Datacenter Edition
 - Windows Server 2003 R2 Standard Edition, Enterprise Edition, and Datacenter Edition
 - Windows Server 2008 Standard Edition, Enterprise Edition, and Datacenter Edition
 - Windows Server 2008 R2 Standard Edition, Enterprise Edition, and Datacenter Edition
- The following data servers (32-bit and 64-bit) are supported for DB2 Performance Expert Client:
 - IBM DB2 Enterprise Server Edition for Linux, UNIX, and Windows Version 9.1 or later
 - IBM DB2 Workgroup Server Edition for Linux, UNIX, and Windows Version 9.1 or later

- | – IBM DB2 Personal Server Edition for Linux, UNIX, and Windows Version 9.1 or later
- | – IBM DB2 Connect Enterprise Edition for Linux, UNIX, and Windows Version 9.1 or later
- | – IBM DB2 Connect Personal Edition for Linux, UNIX, and Windows Version 9.1 or later
- | – IBM DB2 Connect Application Server Edition for Linux, UNIX, and Windows Version 9.1 or later
- | – IBM DB2 Connect Unlimited Edition for zSeries Version 9.1
- | – IBM DB2 Client Version 9.1
- | – IBM DB2 Data Server Client Version 9.5 and Version 9.7
- | • IBM Data Studio for DB2 for z/OS Version 3.2 or later or IBM InfoSphere Optim Query Tuner Version 3.2 or later if Explain function is used
- | • TCP/IP installed on the workstation
- | • One of the following web browsers:
 - | – Microsoft Internet Explorer Version 7 or later
 - | – Netscape Navigator Version 7 or later
 - | – Mozilla Firefox Version 3.6 or later

| **Downloading the program files of Performance Expert Client**

| **About this task**

| Both the initial version and later fixes for the program files for Performance Expert Agent for DB2 Connect Monitoring are available online. For download instructions, refer to the technote "OMPE: web-based delivery and updates for Windows- and UNIX-based components" on the *IBM Software Support website*. If needed, the direct link to the technote is also included in the hold instructions of every Performance Expert Agent PTF on the host. The available program build levels and fix descriptions are documented in the technote.

| **Installing the program files of Performance Expert Client**

| After downloading the program files of Performance Expert Client, you install them using the InstallAnywhere Wizard.

| **Before you begin**

| Before beginning, you must do the following:

- | • Verify that you have administration privileges.
- | • Download the program files of Performance Expert Client. See "Downloading the program files of Performance Expert Client" for more information.
- | • Close the DB2 Control Center before installing the Performance Expert Client program files (if applicable).
- | • If you want to perform a silent installation, you must create a response file to record your installation steps. For detailed instructions on silent installation, see "Installing Performance Expert Client silently by using a response file" on page 156.

| **About this task**

| To install the program files, do the following:

Procedure

1. Verify that you have closed the DB2 Control Center. The DB2 Control Center must be closed before you start the client installation in order for the Control Center plug-in to be installed properly.
2. Extract the files and directories from the compressed file(s) into the installation directory, for example, C:\PROGRAMS\IBM\PECLIENT. The archives contain the following files and directories:
 - db2pe.client.*.exe
 - iehs*win.jar
3. Run the *.exe file. If you are on Windows 8, ensure that you run the *.exe file in Windows 7 Compatibility mode.
The InstallAnywhere Wizard starts, and the IBM DB2 Performance Expert V5 Setup window opens.
If you did not close the DB2 Control Center before installing the plug-in then you might not be able to access the Performance Expert Client from the DB2 Control Center.
4. Click **Next**.
The next setup window shows the License Agreement.
5. To install Performance Expert Client, click **I accept the terms of the license agreement**, then click **Next**.
6. Click **Performance Expert on z/OS**, then click **Next**. If you only want to install IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS, click **Performance Monitor on z/OS** instead.
In the next window, you can specify the installation path.
7. Select the setup type that you prefer, then click **Next**.
8. To install the program files to the default destination folder, click **Next**. To install the program files to a different folder, click **Browse**, then select another folder.
9. Check the summary information, then click **Install**.
The program files are copied to the specified destination folder and the next setup window opens. It shows summary information about the installation. It also shows the location of the log file.
10. Click **Finish** to exit the InstallAnywhere Wizard.

Results

Performance Expert Client is installed.

Installing Performance Expert Client silently by using a response file

A silent installation is an installation that runs without displaying an interface or prompting you for input. You can do silent installations of Performance Expert Client to simplify the process of installing it on multiple computers.

Before you begin

Before you install Performance Expert Client silently, you must first create a response file. A *response file* is a file that contains the properties and values that drive the installation. You create a response file by running the installation wizard or console mode with the following command-line option: `-r response_file_name`. When you complete the installation, the information that you entered in the installation wizard or console mode is recorded in the response file. You will use

this file to install the product silently on other computers.

Procedure

To install Performance Expert Client silently by using a response file:

1. From the directory of the installation image for Performance Expert Client, run the following command:

On Windows 32-bit:

```
db2pe.client.*.install-on-win32.exe -i -silent -f response_file_name
```

where *response_file_name* is the name of the response file that you created during a previous installation of the product.

On Windows 64-bit:

```
db2pe.client.*.install-on-win64.exe -i -silent -f response_file_name
```

where *response_file_name* is the name of the response file that you created during a previous installation of the product.

Note: Run as Administrator.

Note: If you are on Windows 8, ensure that you run the *.exe file in Windows 7 Compatibility mode.

The product is installed.

2. Verify that the installation was successful by checking the db2pecli.log installation log file in the following directory:
 - On Windows: %USERPROFILE% (For example: C:\Documents and Settings\Administrator)
3. Start the Performance Expert Client from the Windows **Start** menu or the created Desktop icon.

What to do next

You are now ready to configure the product. For instructions on configuring and using Performance Expert Client, see “Preparing access to Performance Warehouse” and “Defining the DB2 subsystem” on page 159.

Preparing access to Performance Warehouse

Before you can access Performance Warehouse on z/OS from Performance Expert Client or use SQL activity tracing, you must configure the DB2 subsystem on which Performance Warehouse and the associated database DB2PM reside.

Before you begin

You must complete the configuration of Performance Warehouse as described in “Enabling Performance Warehouse” on page 109 before starting.

About this task

The following example shows how to configure the DB2 subsystem by using the Configuration Assistant. Note that the description applies to the Configuration Assistant for DB2 V9.

Procedure

1. Open the Configuration Assistant.
2. From the Selected menu, select **Add Database Using Wizard...**
The Add Database Wizard opens.
3. On the **Source** page, click **Manually configure a connection to a database**, then click **Next**.
4. On the **Protocol** page, click **TCP/IP**, select **The database physically resides on a host or OS/400 system**, then click **Next**.
5. On the **TCP/IP** page, specify the host name or TCP/IP address, and the TCP/IP port number, then click **Next**.
6. On the **Database** page, specify the database name (DB2 subsystem location) and type a name for the database alias, then click **Next**.

Note: You use this database alias in the **Connect to Performance Warehouse** window.

7. This step is optional. On the **Data Source** page:
 - a. Select **Register this database for ODBC**.
 - b. Select **As system data source**.
 - c. Click **Next**.
8. On the **Node Options** page, select **z/OS** as operating system, specify DB2 as instance name, then click **Next**.
9. On the **Systems Options** page, accept the default values, then click **Next**.
10. On the **Security Options** page, accept the default values, then click **Finish**.
11. This step is optional: On the **DCS Options** page, customize your direct connection to host or OS/400[®] databases.

Results

The DB2 subsystem is configured and you can access Performance Warehouse on z/OS or use SQL activity tracing.

Perform the following steps to start SQL activity trace from the Performance Expert Client:

1. Open the **DB2 Subsystem Properties** panel of the DB2 subsystem of interest.
2. On the **Performance Warehouse** tab, in the **Database alias** field, specify the database alias you just created.

Setting up your environment for Performance Warehouse

Before you can access Performance Warehouse on z/OS from Performance Expert Client, you must have at least DB2 Data Server Runtime Client installed with the appropriate licenses to access DB2 for z/OS. With OMEGAMON XE for DB2 PE, you receive a limited license for this usage.

About this task

Perform the following steps:

Procedure

1. Download the DB2 Data Server Runtime Client (version 9.7 or later) from the *Download DB2 Fix Packs by version for DB2 for Linux, UNIX and Windows website*.
 - For DB2 9.7, select Fixpack 6.

- For DB2 10.1, select Fixpack 1.
2. Download the member FPEKCNLI from your TKO2WS01 SMPE/E library in binary format. Add the extension *.zip*. Then extract the zip file. It contains several *.lic* and *.jar* files for the various Data Server Runtime client versions.
 3. Install the downloaded DB2 Data Server Runtime Client.
 4. After successful installation, run the following command: **db2licm -a nnnn** where *nnnn* is the version-related lic file name. Double check with command **db2licm -l** that you have the necessary permanent licenses installed.
 5. Copy the version-related *.jar* file into the following directory of your data server runtime client installation: `... \IBM\SQLLIB\JAVA`
 6. Before you can access your z/OS database, it needs to be added to your DB2 catalog. Run the following commands in a DB2 Command Line Processor window:

Note: For the 9.7 driver, you can use the Client Configuration Assistant to perform this task.

- a. **CATALOG TCPIP NODE <node-name> REMOTE <host-name> SERVER <port-number> OSTYPE OS390**
- b. **CATALOG DATABASE <location-name> AS <alias> AT NODE <node-name> AUTHENTICATION SERVER**
- c. **CATALOG DCS DATABASE <alias> AS <target-DB-name>**

Results

Now you can start the Performance Expert Client and add the alias for the Performance Warehouse connection and open Performance Warehouse.

Defining the DB2 subsystem

Before you can use the Performance Expert Client, you must establish a connection to the OMEGAMON Collector.

Before you begin

If there is a local firewall on the processor where the Performance Expert Client is installed, you must grant access for DB2PEClient.exe. Otherwise, the connection fails.

About this task

To monitor a DB2 subsystem from the PE Client, you must establish a connection between the PE Client and the OMEGAMON Collector. This allows the PE Client access to the performance data for this DB2 subsystem.

To define the DB2 subsystem, perform the following steps:

Procedure

1. Establish the connection.
 - a. Start the Performance Expert Client and go to **Monitor → New DB2 Subsystem**.
 - b. Select **DB2 on z/OS, OS 390** systems. Click **Next**.
 - c. In the **Host** field, enter the hostname where the OMEGAMON Collector is running.

- d. In the **Port** field, enter the port for the OMEGAMON Collector. Click **Next**.
- e. Click **Retrieve**. The Wizard adds information about the DB2 subsystem to your configuration.
- f. When prompted, enter a user ID and a password for a TSO user on the system where the OMEGAMON Collector is running. If the retrieval fails, check the following and then click retrieve again.
 - Check that the OMEGAMON Collector is started.
 - Check that the TCP/IP port is correct.
 - Check that a firewall is not blocking your connection request.

When retrieval is successful, the **DB2 System Properties** panel is displayed.

- g. Optional: If you want to work with Performance Warehouse, specify the database alias on the **Performance Warehouse** tab, in the **Database alias** field, specify the database alias you created.
 - h. Click **Finish**.
2. Verify that the connection was successful.
 - a. Logon to the OMEGAMON Collector. To do so, from the DB2 Performance Expert - System Overview window, right click on the server in the navigation tree in the panel on the left. Select **Logon**.
 - b. Verify that the main functions for the Performance Expert Client are displayed in the middle panel of the window.

Configuring the Performance Warehouse Client

You can view information that is stored in the Performance Warehouse from the Performance Warehouse Client. If you want to use the Performance Warehouse Client, you must configure it first.

Before you begin

- You must install the Performance Expert Client before beginning. See “Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support” on page 83 and “Installing and configuring Performance Expert Client” on page 153 for more information.
- You must install Performance Warehouse on z/OS before beginning. See “Enabling Performance Warehouse” on page 109 for more information.

About this task

To complete this task, you can use the DB2 Configuration Assistant, or you can use the DB2 command line utility. These instructions explain how to use the DB2 Configuration Assistant. This is also a prerequisite action to be able to start SQL activity tracing.

Procedure

1. Define a DB2 connection to the Performance Warehouse database DB2PM. See “Preparing access to Performance Warehouse” on page 157 for a detailed description.
2. Configure the Performance Warehouse Client. In this step, you tell the Performance Warehouse Client which DB2 connection to use to access the Performance Warehouse.
 - a. Start the Performance Expert Client.

- b. Right click on the DB2 subsystem that contains the Performance Warehouse from the navigation tree in the left frame. Select **Properties**.
- c. Select the **Performance Warehouse** tab. In the **Database alias** field, enter the Database alias that you just created. Click **OK**.

The Performance Warehouse Client is configured. You can start it by choosing one of the Performance Warehouse options in the **Tools** menu.

Installing and configuring Tivoli Enterprise Portal

In this step, you install and configure Tivoli Enterprise Portal, Tivoli Enterprise Portal Server, and IBM Eclipse Help Server on the workstation.

Before you begin

You must install and configure the IBM Tivoli Monitoring components on z/OS before installing and configuring Tivoli Enterprise Portal. See “Enabling IBM Tivoli Monitoring” on page 84 for more information.

About this task

The entire OMEGAMON family of products uses the Tivoli Enterprise Portal, so the installation and configuration are not explained here. For detailed instructions, see the *IBM Tivoli Monitoring and OMEGAMON XE Information Center*.

Adding Tivoli Data Warehouse

The configuration of your Tivoli Data Warehouse will vary, depending on the size of the environment, which database management systems you use, and which operating systems you use.

Before you begin

You must install and configure the IBM Tivoli Monitoring components on z/OS before adding Tivoli Data Warehouse. See “Enabling IBM Tivoli Monitoring” on page 84 for more information.

About this task

You can use the Tivoli Data Warehouse to store collected performance information for a long time. This is helpful when you want to compare DB2 activity that occurred in the past or when you want to review trends.

For detailed installation and configuration instructions, see *Setting up data warehousing* in the Monitoring section of the *IBM Tivoli Monitoring and OMEGAMON XE Information Center*.

Installing and configuring end-to-end SQL and stored procedure monitoring

In this step, you install and configure end-to-end SQL and stored procedure monitoring on the workstation.

Before you begin

1. You must add end-to-end SQL and stored procedure monitoring support before installing and configuring end-to-end SQL and stored procedure monitoring. See “Enabling Performance Expert Client support and/or end-to-end SQL and stored procedure monitoring support” on page 83 for more information.
2. You must add port information for end-to-end SQL and stored procedure monitoring before installing and configuring end-to-end SQL and stored procedure monitoring. See “Specifying the port information for Performance Expert Client and/or end-to-end SQL and stored procedure monitoring” on page 107 for more information.
3. You must add additional DB2 traces before installing and configuring end-to-end SQL and stored procedure monitoring. See “Starting Additional DB2 Traces” on page 106 for more information.
4. In order to use stored procedure monitoring, you must enable it separately. See “Configuring Additional Monitoring Features” on page 107 for more information.

About this task

Installation and configuration of the InfoSphere Optim Performance Manager including the end-to-end SQL and stored procedure monitoring feature is documented in the *InfoSphere Optim Performance Manager Installation Guide, Version 5.1.1* (or higher). For more information on configuring the stored procedure monitoring feature, refer to the *InfoSphere Optim Performance Manager Installation Guide, Version 5.1.1.1*. For detailed instructions, see the *IBM InfoSphere Optim Performance Manager information center*.

Part 4. Migration

This information describes how to migrate to the current version.

Chapter 18. Migration considerations

Before migrating to OMEGAMON XE for DB2 PE V5.2.0, familiarize yourself with changed values for certain parameters.

This information applies to both migration scenarios, migrating from the Configuration Tool and migrating in PARMGEN. Values have changed for the following parameters in the PARMGEN profile for V5.2.0:

Table 11. Changed parameter values

Parameter	V5.1.0/V5.1.1 values	V5.2.0 values
KD2_DBxx_DB2_VER	81, 91, 10	91, 10, 11
	With OMEGAMON XE for DB2 PE V5.2.0, support for DB2 V8 is dropped and support for DB2 11 is added. Thus, 81 is not a valid value anymore.	
KD2_PFxx_SQLPA_VERSION	3.1, 3.2, 4.1	4.1, 4.2
	With OMEGAMON XE for DB2 PE V5.2.0, support for SQL Performance Analyzer (SQLPA) for V3.2 and V3.1 is dropped and support for V4.2 is added. Thus, 4.1 and 4.2 are the only valid values for this parameter.	
KD2_PFxx_SQLPA_CF_ENBL	Y, N	Y
	With OMEGAMON XE for DB2 PE V5.2.0, configuration support for SQLPA as part of OMEGAMON XE for DB2 PE configuration is dropped. Hence, you need to enable the use of an existing configuration with this parameter. You then need to specify the ANLP and ANLC members that you configured in SQLPA.	
GBL_DSN_DB2_LOADLIB_V11 GBL_DSN_DB2_RUNLIB_V11	N/A	<i>DB2 load and run libraries</i>
	In order to configure the load and run libraries for DB2 11 monitoring, you need to specify them with these parameters. You find these parameters in the global parameter configuration profile \$GBL\$USR. If you do not see these parameters in this profile, then you can add them to the already existing LOADLIB and RUNLIB parameters for the other DB2 versions.	
GBL_DSN_DB2_LOADLIB_V8 GBL_DSN_DB2_RUNLIB_V8	<i>DB2 load and run libraries</i>	N/A
	With OMEGAMON XE for DB2 PE V5.2.0, monitoring support for DB2 V8 is dropped. Thus, these parameters are ignored during configuration.	

Chapter 19. Migrating from OMEGAMON XE for DB2 PE version 5.1.0/5.1.1 to version 5.2.0

Migrating from OMEGAMON XE for DB2 PE V5.1.0/V5.1.1 to OMEGAMON XE for DB2 PE V5.2.0 requires you to upgrade several components.

To migrate from OMEGAMON XE for DB2 PE V5.1.0/V5.1.1 to OMEGAMON XE for DB2 PE V5.2.0 you must perform the following steps:

- “Installing the SMP/E”
- “Upgrading the runtime environment in PARMGEN” on page 177

The following steps must also be performed if you have installed the components:

- “Upgrading Tivoli Enterprise Monitoring Agent” on page 170
- “Upgrading the Performance Database” on page 170
- “Updating the Performance Expert Client” on page 171
- “Upgrading the Performance Expert Agent for DB2 Connect Monitoring” on page 172
- “Upgrading IBM Tivoli Monitoring components” on page 172

Installing the SMP/E

You can use a separate SMP/E CSI zone for the new version of OMEGAMON XE for DB2 PE, or you can use the same SMP/E CSI zone for both, the old and the new versions.

When installing the SMP/E, do the following:

- Follow the instructions in the program directory and check the PSP bucket for additional information. You find the program directory in the Information Center of your product.
- Install the latest PTF for OMEGAMON XE for DB2 PE V5.2.0.

Using a separate SMP/E CSI zone for OMEGAMON XE for DB2 PE V5.1.0/V5.1.1 and OMEGAMON XE for DB2 PE V5.2.0

Install the SMP/E as you would for a new installation.

For more information, see migration scenario in the *PARMGEN Reference*.

Using the same SMP/E CSI zone for OMEGAMON XE for DB2 PE V5.1.0/V5.1.1 and OMEGAMON XE for DB2 PE V5.2.0

Use the instructions in the program directory, but consider that the SMP/E control statements of each FMID will control their acceptance and installation rules. For information about the FMIDs, see the following table:

Table 12. Differences in the FMIDs in version 5.1.0, the FMIDs in version 5.1.1, and the FMIDs in version V5.2.0

V5.1.0 FMID	V5.1.1 FMID	V5.2.0 FMID	OMEGAMON XE for DB2 PE component affected	Changed since last version?	Other OMEGAMON products shared with
HKDB51X	HKDB51T	HKDB52X	DB2 (License key)	Yes. Addition of new functions.	None
HKDB510	HKDB511	HKDB520	DB2	Yes. Addition of new functions.	None
HKDS621	HKDS623	HKDS623	Tivoli Enterprise Monitoring Server	Yes. Integration with IBM Tivoli Monitoring.	IBM Tivoli Monitoring
HKCI310	HKCI310	HKCI310	The Configuration Tool	No.	All OMEGAMON products
HKLV621	HKLV623	HKLV623	CT/Engine	Yes. Integration with IBM Tivoli Monitoring.	IBM Tivoli Monitoring
HKOB620	HKOB700	HKOB700	OMNIBASE	Yes. Addition of new functions.	All OMEGAMON products
N/A	HPMZ511	HPMZ520	Optim Performance Manager	No.	None

As a result of these FMID changes, the following will occur:

- FMID HKDB52X deletes the license keys for versions 3.1.0, 4.1.0, 4.2.0, 5.1.0, or 5.1.1 respectively.
- FMID HKDB52X deletes versions 3.1.0, 4.1.0, 4.2.0, 5.1.0, or 5.1.1 respectively. HKDB52X cannot be installed in parallel in the same CSI.
- HKDS623, HKCI310, HKLV623, and HKOB700 delete earlier versions of the product. These FMIDs are shared with other OMEGAMON products. Consider the following overlapping activities:
 - You might have already installed some of the prerequisite PTFs. Identify which of the PTFs are prerequisites and check to see if they are installed.
 - These FMIDs will not reinstall if they were already installed with a different OMEGAMON product.
 - FMIDs HKDS623 and HKLV623 are shared with IBM Tivoli Monitoring V6.2.3. As a result, upgrades to IBM Tivoli Monitoring V6.2.3 can cause some upgrade activities to occur in some of the OMEGAMON components on the distributed side. Shared components such as Tivoli Enterprise Portal Server and Tivoli Enterprise Portal might be affected.
 - You might have already upgraded to IBM Tivoli Monitoring V6.2.3 if you have several OMEGAMON components installed. OMEGAMON XE for DB2 PE V3.1.0/V4.1.0/V4.2.0/V5.1.0/5.1.1 and OMEGAMON XE for DB2 PM V3.1.0/V4.1.0/V4.2.0/V5.1.0/5.1.1 also work with IBM Tivoli Monitoring V6.2.3.

Related information:

- [IBM DB2 and IMS Tools PTF Listing](#)
- [New package versioning technote](#)
- [Tivoli Monitoring and OMEGAMON XE information centers](#)

Upgrading the runtime environment in PARMGEN

You need to upgrade your runtime environments so that they can be used in the new version.

About this task

For more information, see migration scenario in the *PARMGEN Reference*.

Note: Only valid for migration from V5.1.0 to V5.2.0: The Near-Term History Data Collector does not issue a START TRACE command to start flag IFCID 318 anymore. If you rely on this, you have to explicitly add this START TRACE command to option **Specify Additional Traces** when configuring your DB2 monitoring profile. See “Configuring Additional DB2 Traces” on page 107 for more information.

Note: For DB2 11, you must provide corresponding load and run libraries for using the version-specific libraries. As \$GBL\$USR is not updated during migration, you need to add the corresponding parameters manually. Add **GBL_DSN_DB2_LOADLIB_V11** and **GBL_DSN_DB2_RUNLIB_V11** to the list of DB2 system libraries, as shown below.

```
GBL_DSN_DB2_SDSNLOAD "DSN.V9R1M0.SDSNLOAD"  
GBL_DSN_DB2_LOADLIB_V8 "DSN.V8R1M0.SDSNLOAD"  
GBL_DSN_DB2_LOADLIB_V9 "DSN.V9R1M0.SDSNLOAD"  
GBL_DSN_DB2_LOADLIB_V10 "DSN.VAR1M0.SDSNLOAD"  
GBL_DSN_DB2_LOADLIB_V11 "DSN.VBR1M0.SDSNLOAD"  
GBL_DSN_DB2_RUNLIB_V8 "DSN.V8R1M0.RUNLIB"  
GBL_DSN_DB2_RUNLIB_V9 "DSN.V9R1M0.RUNLIB"  
GBL_DSN_DB2_RUNLIB_V10 "DSN.VAR1M0.RUNLIB"  
GBL_DSN_DB2_RUNLIB_V11 "DSN.VBR1M0.RUNLIB"  
GBL_DSN_DB2_DSNEXT "DSN.V9R1M0.DSNEXIT"
```

Procedure

1. Alternative for recreating the BIND jobs:
 - a. Copy the BIND sample jobs FPEVOMBD and FPEVOMBP from the *&shilev.TKO2SAMP* library to the *&rhilev.RKD2PRF* library of the RTE.
 - b. Rename the sample job FPEVOMBD to OMBDDBDID, and rename the sample job FPEVOMBP to OMBPDBID.
 - c. Submit the *&rhilev.RKD2PRF(CRTDB2M)* job. This will recreate all configured DB2 subsystem-related runtime members. This means that a BIND job for each configured DB2 subsystem will be created.
 - d. Continue with this step for both alternatives: For each DB2 subsystem you want to monitor, submit the BIND jobs OMBP<ssid> and OMBD<ssid> where <ssid> is the DB2 subsystem ID. If EXPLAIN is used, for each DB2 subsystem for which you want to use EXPLAIN, submit the BIND jobs EXBP<ssid> and EXBD<ssid> where <ssid> is the DB2 subsystem ID. For

more information, see the *PARMGEN Alternative Configuration for IBM Tivoli OMEGAMON XE and other Tivoli Management Services technote*.

2. Repeat the above steps for each runtime environment.

Related information:

 [New package versioning technote](#)

Upgrading Tivoli Enterprise Monitoring Agent

If the upgraded runtime environment has a Tivoli Enterprise Monitoring Agent, you must also upgrade the Tivoli Enterprise Monitoring Agent.

Procedure

Refer to the migration scenario in the *PARMGEN Reference: Implementation Scenarios*.

Upgrading the Performance Database

If you created a Performance Database for the earlier version, you must manually upgrade it for version V5.2.0. No tool is available to perform this function.

About this task

If you start with the new version of Performance Database tables, you do not have to upgrade. Instead, do the following:

- Use the sample CREATE and LOAD parts in library RKO2SAMP (RTE) and customize them according to your needs.
- If you work with Accounting and Statistics SAVE tables, use the SAVE file conversion utility that is shipped with the new version.

If you created a Performance Database for the earlier version and want to use the data stored in Accounting and Statistics tables in the new version, you must manually upgrade it for version V5.2.0. You do this by unloading the data from existing tables and loading this data into tables created with the new version. Perform the following steps:

1. Rename existing tables. For example, change the name by appending the suffix "_OLD".
2. Re-create tables with new CREATE parts. If you intend to use all columns, note that the Accounting FILE GENERAL table, the Accounting SAVE GENERAL table, and the Statistics GENERAL table should be allocated in a 32K table space.
3. Modify the new table definitions by using the same modifications as for the previous table definitions.
4. Use the DB2 Unload Utility to unload old tables.
5. Load the old data to the new tables by using the LOAD statement that was created by the DB2 Unload Utility. Following modifications are required in the created LOAD statements:
 - Replace the old table name by the new table name.
 - Remove all NULLIF clauses for columns DB2PM_REL, DB2_REL, LOCAL_LOCATION, GROUP_NAME, SUBSYSTEM_ID, MEMBER_NAME, INTERVAL_ELAPSED, BP_ID, and GBP_ID in statistics tables.

- Remove all NULLIF clauses for columns DB_NAME, DB_ID, SPACE_NAME, OB_ID, PART_PIECE, SPACE_TYPE, and GBP_DEPEND in statistics table DB2PM_STAT_DATASET.
- Remove the NULLIF clause for column REMOTE_LOCATION in statistics table DB2PM_STAT_DDF.
- Identify columns BP_ID and GBP_ID in Accounting and Statistics tables and if the data type is INTEGER replace it by SMALLINT and increase the begin position by 2.
- After reload to new tables, submit following update statement for the new statistics GENERAL table:

```
UPDATE <new statistics GENERAL table>
SET LOG_RBA = CONCAT('X'0000', SUBSTR(LOG_RBA,1,8))
WHERE LOG_RBA IS NOT NULL
```

6. To populate the new tables with new data, do the following:

- Use the LOAD parts of the new version and change them according to your needs.
- If you work with Accounting and Statistics SAVE tables, use the SAVE file conversion utility that is shipped with the new version.

During the life cycle of version V5.2.0, new columns might be added to the Performance Database tables. Corresponding ALTER TABLE statements would be delivered in the DGO*UPDB members of the sample library RKO2SAMP (RTE) where * is A for Accounting, S for Statistics, W for System Parameters, and X for Audit.

Note: After execution of ALTER TABLE statements, DB2 might place the table space that contains the modified data in advisory REORG-pending (AREO*) status. A table space is in AREO* status because existing data is not immediately converted to its new definition. Reorganizing the table space prevents possible performance degradation.

When data is in REORG-pending or AREO* status, use the REORG utility with the SCOPE PENDING option to automatically reorganize partitions. With this option, you do not need to first identify which partitions need to be reorganized, or to customize the REORG control statement.

Updating the Performance Expert Client

You must upgrade to the new Performance Expert Client when you upgrade the server. The old Performance Expert Client does not work with the new server.

Follow the instructions for installing the Performance Expert Client. For detailed instructions for installing the Performance Expert Client, see “Installing and configuring Performance Expert Client” on page 153.

When you double-click the .exe icon, you will be prompted to upgrade. Follow the prompts in the wizard. You do not need to uninstall the old version before beginning because the new version overwrites the old version. Subsystem definitions in the old Performance Expert Client are automatically imported into the new Performance Expert Client. You do not need to manually export and then import the definitions.

Upgrading the Performance Expert Agent for DB2 Connect Monitoring

Performance Expert Agent for DB2 Connect Monitoring must be updated manually to version V5.2.0 on each system.

Before you begin

Note: Configuration entries containing the DB2 Performance Expert for Linux, UNIX, and Windows server version 3.2.0 or later are still possible, but are no longer supported. They will be set to *paused* status during runtime.

Procedure

Manually upgrade the Performance Expert Agent for DB2 Connect Monitoring on each system. For detailed instructions, see “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 125 or “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 139.

Upgrading IBM Tivoli Monitoring components

IBM Tivoli Monitoring components such as Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal, and Tivoli Enterprise Portal Server must be upgraded so that the OMEGAMON XE for DB2 PE V5.2.0 Application Support works.

Procedure

1. Upgrade each of the IBM Tivoli Monitoring framework components to IBM Tivoli Monitoring V6.2.3 Fix Pack 1 or later. Personalized workspaces are automatically migrated during the upgrade. See the *IBM Tivoli Monitoring and OMEGAMON XE Information Center* for detailed instructions.
2. If you do not have self-describing agent capability configured, upgrade OMEGAMON XE for DB2 PE Application Support by using the V5.1.0 Consolidated DVD image. For detailed instructions, refer to the IBM Tivoli OMEGAMON XE Monitoring Agents on z/OS Quick Start Guide in the *IBM Tivoli Monitoring and OMEGAMON XE Information Center*.
3. Set the attribute Product (two-letter code of a monitoring agent) to D5 or DP if necessary.
 - a. In V5.1.1, the attribute Product in Tivoli Enterprise Monitoring Server table INODESTS has a value of DP for OMEGAMON XE for DB2 PE. In V5.1.0 and V4.2.0, this two-letter product code is D5. If you have a customized workspace or situation on Tivoli Enterprise Monitoring Server table INODESTS and filtering on the attribute Product that is set to D5, then you need to set the filtering to D5 or DP. If you only use OMEGAMON XE for DB2 PE V5.1.1, and neither V5.1.0 nor V4.2.0, this migration will not apply to you.
 - b. The attribute Product in workspace **Managed System Status** will have a value of DP for OMEGAMON XE for DB2 PE V5.1.1, and D5 for V5.1.0 and V4.2.0. You can navigate to workspace **Managed System Status** from navigator item **Enterprise**. If you have a customized workspace based from workspace **Managed System Status** and filtering on the attribute Product set to D5, then you need to set it to D5 or DP.
 - c. If you have a customized situation based from product-provided situation **MS_Offline** from **All Managed Systems**, and filtering on attribute Product set to D5, then you need to set it to D5 or DP.

What to do next

If you are upgrading from OMEGAMON XE for DB2 PE V5.1.0, V4.2.0, V4.1.0, or V3.1.0 and you want to run the OMEGAMON enhanced 3270 user interface, you need to re-configure the Tivoli Enterprise Monitoring Server.

Related information:

-  [Tivoli Monitoring and OMEGAMON XE Information Center](#)
-  [IBM DB2 Tools Product Page](#)

Chapter 20. Migrating from OMEGAMON XE for DB2 PE version 4.2.0 to version 5.2.0

Migrating from OMEGAMON XE for DB2 PE V4.2.0 to V5.2.0 requires you to upgrade several components.

To migrate from OMEGAMON XE for DB2 PE V4.2.0 to OMEGAMON XE for DB2 PE V5.2.0 you must perform the following steps:

- “Installing the SMP/E”
- “Upgrading the runtime environment in PARMGEN” on page 177

The following steps must also be performed if you have installed the components:

- “Upgrading Tivoli Enterprise Monitoring Agent” on page 170
- “Upgrading the Performance Warehouse” on page 178
- “Upgrading the Performance Database” on page 170
- “Updating the Performance Expert Client” on page 171
- “Upgrading the Performance Expert Agent for DB2 Connect Monitoring” on page 172
- “Upgrading IBM Tivoli Monitoring components” on page 172

Installing the SMP/E

You can use a separate SMP/E CSI zone for the new version of OMEGAMON XE for DB2 PE, or you can use the same SMP/E CSI zone for both, the old and the new versions.

When installing the SMP/E, you must do the following:

- Follow the instructions in the program directory and check the PSP bucket for additional information. You can find the program directory in the Information Center of your product.
- Install the latest PTF for OMEGAMON XE for DB2 PE V5.2.0.

Using a separate SMP/E CSI zone for OMEGAMON XE for DB2 PE V4.2.0 and OMEGAMON XE for DB2 PE V5.2.0

Install the SMP/E as you would for a new installation.

For more information, see migration scenario in the *PARMGEN Reference*.

Using the same SMP/E CSI zone for OMEGAMON XE for DB2 PE V4.2.0 and OMEGAMON XE for DB2 PE V5.2.0

You can use the instructions in the program directory, but consider that the SMP/E control statements of each FMID will control their acceptance and installation rules. For information about the FMIDs, see the following table.

Table 13. Differences in the FMIDs in version 4.2.0 and the FMIDs in version 5.1.1

V4.2.0 FMID	V5.2.0 FMID	OMEGAMON XE for DB2 PE component affected	Changed since last version?	Other OMEGAMON products shared with
HKDB42X	HKDB52X	DB2 (License key)	Yes. Addition of new functions.	None
HKDB420	HKDB520	DB2	Yes. Addition of new functions.	None
HKDS621	HKDS623	Tivoli Enterprise Monitoring Server	Yes. Integration with IBM Tivoli Monitoring.	IBM Tivoli Monitoring
HKCI310	HKCI310	The Configuration Tool	No.	All OMEGAMON products
HKLV621	HKLV623	CT/Engine	Yes. Integration with IBM Tivoli Monitoring.	IBM Tivoli Monitoring
HKOB620	HKOB700	OMNIBASE	Yes. Addition of new functions.	All OMEGAMON products

As a result of these FMID changes, the following will occur:

- FMID HKDB52X deletes the license keys for versions 3.1.0, 4.1.0, 4.2.0, 5.1.0, or 5.1.1 respectively.
- FMID HKDB520 deletes versions 3.1.0, 4.1.0, 4.2.0, 5.1.0, or 5.1.1 respectively. HKDB520 cannot be installed in parallel in the same CSI.
- HKDS623, HKCI310, HKLV623, and HKOB700 delete earlier versions of the product. These FMIDs are shared with other OMEGAMON products. Consider the following overlapping activities:
 - You might have already installed some of the prerequisite PTFs. Identify which of the PTFs are prerequisites and check to see if they are installed.
 - These FMIDs will not reinstall if they were already installed with a different OMEGAMON product.
 - FMIDs HKDS623 and HKLV623 are shared with IBM Tivoli Monitoring V6.2.3. As a result, upgrades to IBM Tivoli Monitoring V6.2.3 can cause some upgrade activities to occur in some of the OMEGAMON components on the distributed side. Shared components such as Tivoli Enterprise Portal Server and Tivoli Enterprise Portal might be affected.
 - You might have already upgraded to IBM Tivoli Monitoring V6.2.3 if you have several OMEGAMON components installed. OMEGAMON XE for DB2 PE V3.1.0/V4.1.0/V4.2.0/V5.1.0/5.1.1 and OMEGAMON XE for DB2 PM V3.1.0/V4.1.0/V4.2.0/V5.1.0/5.1.1 also work with IBM Tivoli Monitoring V6.2.3.

Related information:

- [IBM DB2 and IMS Tools PTF Listing](#)
- [New package versioning technote](#)
- [Tivoli Monitoring and OMEGAMON XE information centers](#)

Upgrading the runtime environment in PARMGEN

You need to upgrade your runtime environments so that they can be used in the new version.

About this task

For more information, see the migration scenario in the *PARMGEN Reference: Implementation Scenarios*.

Note: For DB2 11, you must provide corresponding load and run libraries for using the version-specific libraries. As \$GBL\$USR is not updated during migration, you need to add the corresponding parameters manually. Add **GBL_DSN_DB2_LOADLIB_V11** and **GBL_DSN_DB2_RUNLIB_V11** to the list of DB2 system libraries, as shown below.

```
GBL_DSN_DB2_SDSNLOAD "DSN.V9R1M0.SDSNLOAD"  
GBL_DSN_DB2_LOADLIB_V8 "DSN.V8R1M0.SDSNLOAD"  
GBL_DSN_DB2_LOADLIB_V9 "DSN.V9R1M0.SDSNLOAD"  
GBL_DSN_DB2_LOADLIB_V10 "DSN.VAR1M0.SDSNLOAD"  
GBL_DSN_DB2_LOADLIB_V11 "DSN.VBR1M0.SDSNLOAD"  
GBL_DSN_DB2_RUNLIB_V8 "DSN.V8R1M0.RUNLIB"  
GBL_DSN_DB2_RUNLIB_V9 "DSN.V9R1M0.RUNLIB"  
GBL_DSN_DB2_RUNLIB_V10 "DSN.VAR1M0.RUNLIB"  
GBL_DSN_DB2_RUNLIB_V11 "DSN.VBR1M0.RUNLIB"  
GBL_DSN_DB2_DSNEEXIT "DSN.V9R1M0.DSNEEXIT"
```

Procedure

1. Alternative for recreating the BIND jobs:
 - a. Copy the BIND sample jobs FPEVOMBD and FPEVOMBP from the *&rhilev.TKO2SAMP* library to the *&rhilev.RKD2PRF* library of the RTE.
 - b. Rename the sample job FPEVOMBD to OMBDDDBID, and rename the sample job FPEVOMBP to OMBPDBID.
 - c. Submit the *&rhilev.RKD2PRF(CRTDB2M)* job. This will recreate all configured DB2 subsystem-related runtime members. This means that a BIND job for each configured DB2 subsystem will be created.
 - d. Continue with this step for both alternatives: For each DB2 subsystem you want to monitor, submit the BIND jobs OMBP<ssid> and OMBD<ssid> where <ssid> is the DB2 subsystem ID. If EXPLAIN is used, for each DB2 subsystem for which you want to use EXPLAIN, submit the BIND jobs EXBP<ssid> and EXBD<ssid> where <ssid> is the DB2 subsystem ID. For more information, see the *PARMGEN Alternative Configuration for IBM Tivoli OMEGAMON XE and other Tivoli Management Services technote*.
2. Repeat the steps above for each runtime environment.

Related information:

 [New package versioning technote](#)

Upgrading Tivoli Enterprise Monitoring Agent

If the upgraded runtime environment has a Tivoli Enterprise Monitoring Agent, you must also upgrade the Tivoli Enterprise Monitoring Agent.

Procedure

Refer to the migration scenario in the *PARMGEN Reference: Implementation Scenarios*.

Upgrading the Performance Warehouse

If you created a Performance Warehouse for the earlier version, you must manually upgrade it for version V5.2.0. No tool is available to perform this function.

Before you begin

If you start with the new version of Performance Warehouse, you do not have to upgrade. Instead, do the following:

- Delete the existing Performance Warehouse database DB2PM from the old version and drop the plan DB2PM with its packages.
- If Performance Warehouse is enabled in the configuration, the OMEGAMON Collector of the new version automatically manages the bind of its packages in the plan DB2PM and creates the Performance Warehouse tables.

If you created a Performance Warehouse for the earlier version and want to use existing process definitions and executions, or the data stored in Accounting and Statistics tables in the new version, you must manually upgrade it for version V5.2.0. You must perform unload and load steps and you must stop and start the OMEGAMON Collector accordingly.

If Performance Warehouse is enabled, the new OMEGAMON Collector automatically detects that an old Performance Warehouse is in place and the task of the Performance Warehouse server is stopped.

About this task

For upgrading Performance Warehouse, do the following (steps 2, 5, 6, and 7 are not needed if you only want to migrate existing process definitions and executions to the new version):

1. Disconnect all workstation clients and stop the old or new OMEGAMON Collector, for which the Performance Warehouse is enabled.
2. Unload the table spaces ACCS and STAT in the database DB2PM by using the DB2 Unload Utility.
3. Drop the table spaces ACCS and STAT in the database DB2PM.
4. Start the new OMEGAMON Collector with newly created Performance Warehouse configuration and Performance Warehouse response file. It re-creates the table spaces ACCS (default: 4K table space) and STAT (default: 32K table space; must be greater than 4K) and creates the new Accounting and Statistics tables.
5. Stop the new OMEGAMON Collector.

6. Load the old data to the new tables by using the LOAD statement that was created by the DB2 Unload Utility.

Note: Ensure that the created LOAD statement contains the option IGNOREFIELDS YES.

7. Start the new OMEGAMON Collector.
8. Stop the task of the Performance Warehouse server by using the following console command: /F <started task>,F PESERVER,F <db2ssid>, PWH=N
9. Restart the task of the Performance Warehouse server by using the following console command: /F <started task>,F PESERVER,F <db2ssid>, PWH=F This command starts a consistency check of Performance Warehouse.

What to do next

Note: After creation or upgrade of the Performance Warehouse tables, the table spaces ACCS or STAT may be placed by DB2 in advisory REORG-pending (AREO*) status because of ALTER TABLE statements executed by the OMEGAMON Collector. A table space is in AREO* status because existing data is not immediately converted to its new definition. Reorganizing the table space prevents possible performance degradation.

Recommendation: When data is in REORG-pending or AREO* status, use the REORG utility with the SCOPE PENDING option to automatically reorganize partitions. With this option, you do not need to first identify which partitions need to be reorganized, or to customize the REORG control statement.

Related information:

 [New package versioning technote](#)

Upgrading the Performance Database

If you created a Performance Database for the earlier version, you must manually upgrade it for version V5.2.0. No tool is available to perform this function.

About this task

If you start with the new version of Performance Database tables, you do not have to upgrade.

Note: If possible, start with the new version of Performance Database tables because many changes have been applied to the data model from V4.2.0 to V5.2.0. Then do the following:

- Use the sample CREATE and LOAD parts in library RKO2SAMP (RTE) and customize them according to your needs. If you intend to use all columns, note that the Accounting FILE GENERAL table, the Accounting SAVE GENERAL table, and the Statistics GENERAL table should be allocated in a 32K table space.
- If you work with Accounting and Statistics SAVE tables, use the SAVE file conversion utility that is shipped with the new version.

If you created a Performance Database for the earlier version and want to use the data stored in Accounting and Statistics tables in the new version, you must manually upgrade it for version V5.2.0. Perform the steps specified in “Upgrading the Performance Database” on page 170 in Chapter 19, “Migrating from OMEGAMON XE for DB2 PE version 5.1.0/5.1.1 to version 5.2.0,” on page 167.

Updating the Performance Expert Client

You must upgrade to the new Performance Expert Client when you upgrade the server. The old Performance Expert Client does not work with the new server.

Follow the instructions for installing the Performance Expert Client. For detailed instructions for installing the Performance Expert Client, see “Installing and configuring Performance Expert Client” on page 153.

When you double-click the .exe icon, you will be prompted to upgrade. Follow the prompts in the wizard. You do not need to uninstall the old version before beginning because the new version overwrites the old version. Subsystem definitions in the old Performance Expert Client are automatically imported into the new Performance Expert Client. You do not need to manually export and then import the definitions.

Upgrading the Performance Expert Agent for DB2 Connect Monitoring

Performance Expert Agent for DB2 Connect Monitoring must be updated manually to version V5.2.0 on each system.

Before you begin

Note: Configuration entries containing the DB2 Performance Expert for Linux, UNIX, and Windows server version 3.2.0 or later are still possible, but are no longer supported. They will be set to *paused* status during runtime.

Procedure

Manually upgrade the Performance Expert Agent for DB2 Connect Monitoring on each system. For detailed instructions, see “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 125 or “Installing and configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 139.

Upgrading IBM Tivoli Monitoring components

IBM Tivoli Monitoring components such as Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal, and Tivoli Enterprise Portal Server must be upgraded so that the OMEGAMON XE for DB2 PE V5.2.0 Application Support works.

Procedure

1. Upgrade each of the IBM Tivoli Monitoring framework components to IBM Tivoli Monitoring V6.2.3 Fix Pack 1 or later. Personalized workspaces are automatically migrated during the upgrade. See the *IBM Tivoli Monitoring and OMEGAMON XE Information Center* for detailed instructions.
2. If you do not have self-describing agent capability configured, upgrade OMEGAMON XE for DB2 PE Application Support by using the V5.1.0 Consolidated DVD image. For detailed instructions, refer to the IBM Tivoli OMEGAMON XE Monitoring Agents on z/OS Quick Start Guide in the *IBM Tivoli Monitoring and OMEGAMON XE Information Center*.
3. Set the attribute Product (two-letter code of a monitoring agent) to D5 or DP if necessary.

- a. In V5.1.1, the attribute Product in Tivoli Enterprise Monitoring Server table INODESTS has a value of DP for OMEGAMON XE for DB2 PE. In V5.1.0 and V4.2.0, this two-letter product code is D5. If you have a customized workspace or situation on Tivoli Enterprise Monitoring Server table INODESTS and filtering on the attribute Product that is set to D5, then you need to set the filtering to D5 or DP. If you only use OMEGAMON XE for DB2 PE V5.1.1, and neither V5.1.0 nor V4.2.0, this migration will not apply to you.
- b. The attribute Product in workspace **Managed System Status** will have a value of DP for OMEGAMON XE for DB2 PE V5.1.1, and D5 for V5.1.0 and V4.2.0. You can navigate to workspace **Managed System Status** from navigator item **Enterprise**. If you have a customized workspace based from workspace **Managed System Status** and filtering on the attribute Product set to D5, then you need to set it to D5 or DP.
- c. If you have a customized situation based from product-provided situation **MS_Offline** from **All Managed Systems**, and filtering on attribute Product set to D5, then you need to set it to D5 or DP.

What to do next

If you are upgrading from OMEGAMON XE for DB2 PE V5.1.0, V4.2.0, V4.1.0, or V3.1.0 and you want to run the OMEGAMON enhanced 3270 user interface, you need to re-configure the Tivoli Enterprise Monitoring Server.

Related information:

-  [Tivoli Monitoring and OMEGAMON XE Information Center](#)
-  [IBM DB2 Tools Product Page](#)

Part 5. Reference information for OMEGAMON XE for DB2 PE

This information provides reference information for OMEGAMON XE for DB2 PE.

Chapter 21. How to start OMEGAMON XE for DB2 PE

You can start the OMEGAMON XE for DB2 PE components in many different ways.

OMEGAMON XE for DB2 PE consists of the OMEGAMON Collector and various user interfaces. The OMEGAMON Collector must be up and running before the user interfaces can retrieve data for display. The only exception is ISPF Monitor, which can be used in stand-alone mode.

You can start OMEGAMON Collector as follows:

To start the OMEGAMON Collector, issue the **start** command for the OMEGAMON Collector started task, which you generated and copied to your PROCLIB as part of the configuration process.

For example:

```
s <started task name>
```

(system console)

```
/s <started task name>
```

(SDSF)

Check the SYSPRINT of the started task to ensure that the startup completed successfully.

When the OMEGAMON Collector is running, you can start the user interfaces.

Start Classic Interface:

The name of the application (the *applid*) is defined at your site when the product is configured. Depending on the system configuration at your site, you might have to select the application from a menu or issue the following command from a VTAM terminal:

```
LOGON APPLID(applid)
```

where *applid* is the application name.

To do a native VTAM LOGON to another DB2 than the default one, enter the following command:

```
LOGON APPLID(aaaaaaaa) DATA(DB2=cccc,LROWS=nnn,USER=bb)
```

where values for the variables are as follows:

aaaaaaaa

The VTAM APPLID specified to OBVTAM when it was started.

cccc

The subsystem ID of the DB2 subsystem that you want to monitor. If you do not specify a value, the default that you specified during configuration is used.

nnn

The number of logical rows. The default is 255.

- bb** The profile suffix. The default is #P. In this default profile all exceptions are set to OFF.

MVS console log message OMV0061 indicates that the VTAM session has started.
Session established for aaaaaaa/terminalid

Start Tivoli Enterprise Monitoring:

The Tivoli Enterprise Portal offers two modes of operation, desktop or browser:

- In desktop mode the application software is installed on your system.
- In browser mode the system administrator installs the application on the web server and you start the Tivoli Enterprise Portal from your browser. In browser mode the software is downloaded to your system the first time you log on to the Tivoli Enterprise Portal, and thereafter only when there are software updates.

Using the Tivoli Enterprise Portal requires that in addition to the OMEGAMON Collector started task, the Tivoli Enterprise Monitoring Agent (TEMA) started task is also started. If your Tivoli Enterprise Monitoring Server (TEMS) also runs on z/OS, then this started task has to run as well.

Ensure that the OMEGAMON Collector and TEMS started tasks are started before the TEMA started task.

For details on starting the Tivoli Enterprise Monitoring Server (TEMS) and Tivoli Enterprise Monitoring Portal, refer to *Tivoli IBM Monitoring Installation and Setup Guide V6.2.1* in the IBM Tivoli Monitoring information center.

Start Performance Expert Client:

To start the Performance Expert Client refer to *IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS; IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS: Monitoring Performance from the Performance Expert Client*.

Start ISPF Monitoring Dialogs:

1. Run the sample *&rhilev.&rte.RKD2SAM(FPEJINIT)* that is generated by the Configuration Tool or launch the ISPF panel, in which the ISPF Monitoring Dialogs were installed.
2. Select the tasks that you want to perform. For example, to view the DB2 activity online, you can select OMEGAMON Classic Interface or PE ISPF Online Monitor .

Start CUA:

In addition to the OMEGAMON Collector started task, you have to start the CUA started task.

The name of the application (the *applid*) is defined at your site when the product is configured. Depending on the system configuration at your site, you might have to select the application from a menu or issue the following command from a VTAM terminal:

```
LOGON APPLID(applid)
```

where *applid* is the application name.

Chapter 22. Operator commands

You can issue commands to the OMEGAMON Collector and its subtasks from the operator console.

This figure gives a graphical overview of the command hierarchy:

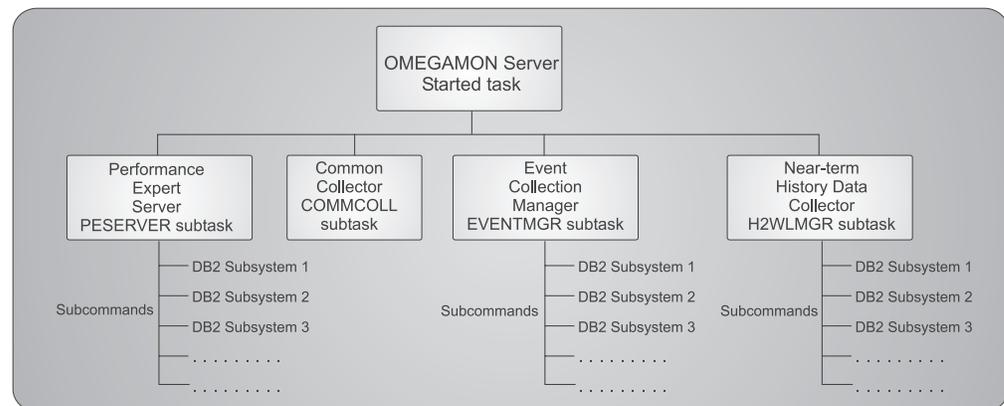


Figure 4. Overview of the command hierarchy

The started-task commands apply to the OMEGAMON Collector.

The subtask commands comprise:

- General subtask commands that apply to all subtasks
- Specific subtask commands that apply to a specific subtask

The command syntax is:

started-task command,subtask command,subcommand

The commands are listed in “Started-task commands” and “Additional OMEGAMON Collector subtask commands” on page 188.

Started-task commands

The OMEGAMON Collector runs as a started task.

Started-task commands for the OMEGAMON Collector are:

START command

Starts the started task for the OMEGAMON Collector.

You can abbreviate **START** to **S**.

S ccccccc

where ccccccc is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool.

STOP command

Stops the started task for the OMEGAMON Collector.

You can abbreviate **STOP** to **P**.

P *ccccccc*

where *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool.

MODIFY command

Changes the started task for the OMEGAMON Collector.

You can abbreviate **MODIFY** to **F**.

F *ccccccc*

where *ccccccc* is always the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool.

Parameters for this command are:

F *ccccccc*, **DISPLAY**

Shows all active tasks. It displays the unique ID for the task and the task program name. The internal ID is required, for example, if you want to stop the subtask under the OMEGAMON Collector.

Note: Command output is displayed in system log.

This example shows system output for the **DISPLAY** parameter:

```
CI0543: THE FOLLOWING TASK IDS ARE ACTIVE:
CI0594 ID=02U518    PROGRAM=K020INTB
CI0594 ID=02U520    PROGRAM=K020INTB
CI0594 ID=0BVTAM    PROGRAM=K0BVTAM
CI0594 ID=H2        PROGRAM=K02HWLMB
CI0594 ID=EVENTMGR PROGRAM=K02EINTB
```

F *ccccccc*, **LIST**

Shows all active tasks. Is an alternate name for the **DISPLAY** parameter and produces the same results.

Additional OMEGAMON Collector subtask commands

You can issue commands to subtasks, such as COMMCOLL, H2WLMGR, or EVENTMGR, which run under the OMEGAMON Collector. The subtask commands must be preceded by the **MODIFY** command of the OMEGAMON Collector.

General subtask commands are:

START subtask command

Starts a subtask under the OMEGAMON Collector.

You can abbreviate **START** to **S**.

F *ccccccc*, **S** *subtaskname,aaaaaaaa*
where:

- *cccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *subtaskname* is the name of the subtask that you want to start
- *aaaaaaaa* is the subcommand for the subtask

This example of the **START** subtask command starts the subtask Near-Term History Data Collector from collecting trace data from the DB2 subsystem D41X.

F ccccccc,S H2D41X

where *H2D41X* is the subtask ID for the Near-Term History Data Collector.

STOP subtask command

Stops a subtask under the OMEGAMON Collector.

You can abbreviate **STOP** to **P**.

F ccccccc,P subtaskID

where:

- *cccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *subtaskID* is the ID of the subtask that you want to stop

To find the subtask ID, use the **DISPLAY** command or the **LIST** command as described in “Started-task commands” on page 187.

This example of the **STOP** subtask command stops the subtask Near-Term History Data Collector from collecting trace data from the DB2 subsystem D41X.

F ccccccc,P H2D41X

where *H2D41X* is the subtask ID for the Near-Term History Data Collector.

You can also issue specific subtask commands as described in:

- “Subtask commands to Performance Expert Server”
- “Subtask commands to the Near-Term History Data Collector” on page 197
- “Subtask commands to the Event Collection Manager” on page 199

Subtask commands to Performance Expert Server

You can issue specific subtask commands to the Performance Expert Server subtask (PESERVER). The subtask commands must be preceded by the **MODIFY** command.

Specific subtask commands are:

START command

Starts an instance of Performance Expert Server for a specific DB2 subsystem.

You can abbreviate **START** to **S**.

Fccccccc,F PESERVER,S db2ssid

where

- *cccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool

- *db2ssid* is the identifier of the DB2 subsystem for which you want to start the Performance Expert Server instance

STOP command

Stops an instance of Performance Expert Server for a specific DB2 subsystem.

Note: If you stop a Performance Expert Server instance with the **STOP** command, it will no longer be started automatically during the detect cycles of the DB2 subsystem auto detect feature until the OMEGAMON Collector subtask PESERVER is restarted.

You can abbreviate **STOP** to **P**.

F ccccccc,F PESERVER,P db2ssid

where

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *db2ssid* is the identifier of the DB2 subsystem for which you want to stop the Performance Expert Server instance

MODIFY command

Issues a subcommand to the PESERVER subtask.

F ccccccc,F PESERVER,F db2ssid,option

where:

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *db2ssid* is the identifier of the DB2 subsystem on which the PESERVER subtask runs.

Tip: Enter **ALL** for all of the DB2 subsystems on which the PESERVER subtask runs.

- *option* is the subcommand for the PESERVER subtask

Subcommands for the PESERVER subtask are:

DB2MSGMON=*parameter*

Starts or stops the DB2 messages collector. This collector shows or hides DB2 messages in the Tivoli Enterprise Portal workspaces. *parameter* can be one of these values:

Y Starts the DB2 messages collector, which shows DB2 messages in the Tivoli Enterprise Portal workspaces. The DB2 messages collector is a function of the READA collector support task. If the READA collector support task has not been started, enabling the DB2 messages collector will start the READA collector support task.

N Stops the DB2 messages collector, which hides DB2 messages in the Tivoli Enterprise Portal workspaces. If the DB2 messages collector is the only function enabled for the READA collector support task, disabling the DB2 messages collector will stop the READA collector support task.

DISPLAY=(*parameter,parameter,...*)

Specifies that specific details of the PESERVER subtask are displayed, where *parameter* can be one of these values:

PARMS

Shows parameters for the PESERVER subtask.

You can abbreviate this parameter to **P**.

USERS

Shows users of the PESERVER subtask.

You can abbreviate this parameter to **U**.

TRACE

Shows the current status of all internal traces of the PESERVER subtask.

You can abbreviate this parameter to **T**.

If you specify DISPLAY without parameters, all details are shown.

EPTT=*parameter*

Specifies the threshold value for the elapsed processing time in seconds, where:

- *parameter* is an integer from 0 to 240

If EPTT is set to a value greater than 0, the elapsed processing time and threshold are being compared. If the elapsed processing time exceeds the threshold, message FPEV2100W is issued.

If EPTT is set to 0, the threshold is cleared and the comparison is disabled.

The MODIFY command can be used to diagnose timeout conditions that are reported during the operation of the monitoring PESERVER subtask. For example, message FPEV2102W reports timeout conditions when data retrieval requests issued by the Classic interface are not completed by the PESERVER subtask within 10 seconds. The MODIFY command sets an internal threshold for the elapsed processing time (EPTT) in the DB2 interface task of the PESERVER subtask. If a call to the DB2 IFI interface does not complete within the specified time:

- Message FPEV2103I is issued (optional).
- Message FPEV2100I is issued.

The control block containing measured elapsed times is dumped to the server log in hexadecimal format for use by IBM support. An SVC dump for the DB2 address spaces of the monitored DB2 subsystem is initiated. The dump will only be taken for the first occurrence of a timeout after EPTT is set. In this case message FPEV2101I is issued to inform the user that a dump was initiated. The dump title is 'FPEVDB2I - DB2 ADDRESS SPACES FOR *db2ssid*', where *db2ssid* is the identifier for the DB2 subsystem. No further dump can be initiated until the PESERVER subtask is recycled.

TONT=*parameter*

Specifies the value for the timeout notify threshold in seconds, where:

- *parameter* is an integer from 0 to 240

If TONT is set to a value greater than 0, the time exceeding the internal timeout value and the timeout notify threshold are compared. If the internal timeout value for the elapsed processing time is exceeded by more time than specified in the timeout notify threshold, message FPEV2102W is issued. Otherwise message FPEV2102W is suppressed.

If TONT is set to 0, the threshold is cleared, the comparison is disabled and message FPEV2102W will be issued for each data retrieval request exceeding the internal timeout value.

The MODIFY command sets the timeout notify threshold (TONT) in the DB2 interface task of the PESERVER subtask. If a call to the DB2 IFI interface does not complete within the time, which is calculated as internal timeout value plus specified notify threshold time, message FPEV2102W is issued. The current setting for the timeout notify threshold is displayed as part of the response to the DISPLAY MODIFY command (F ccccccc,F PESERVER,F db2ssid,DISPLAY).

The MODIFY command can be used to suppress the reporting of timeout conditions that are detected during the operation of the monitoring PESERVER subtask. You can suppress message FPEV2102W for systems running at their capacity limit where timeout conditions are expected but extraordinary situations will be reported. For example, message FPEV2102W reports timeout conditions when data retrieval requests issued by the classic interface are not completed by the PESERVER subtask within 10 seconds. If message FPEV2102W displays values up to 8 seconds in phases where limited responsiveness is expected, the timeout notify threshold can be set to 9 seconds to suppress expected messages and to still get alerted in case responsiveness decreases.

| **RACOPS=parameter**

| **RACOPSIZE=parameter**

| Changes the size of the OP buffer used by the READA collector support task to
| retrieve READA data from the monitored DB2 subsystem or data sharing
| group, where:

- *parameter* is an integer between 16 and 64 (representing an OP buffer size in MB)

| **Note:** Changing the OP buffer size will stop and restart the DB2 trace that is
| currently active for the OP buffer.

| **RACOPT=parameter**

| **RACOPTHRSHLD=parameter**

| Changes the threshold of the OP buffer used by the READA collector support
| task to retrieve READA data from the monitored DB2 subsystem or data
| sharing group, where:

- *parameter* is an integer between 6 and 75 (representing a percentage value)

| The OP buffer threshold defines the fill level of the OP buffer that should
| trigger processing of OP buffer data by the READA collector support task. For
| example, specifying a OP buffer threshold of 15% causes the READA collector
| support task to retrieve data from the OP buffer as soon as the OP buffer space
| is used up to 15%.

| **Note:** Changing the OP buffer size will stop and restart the DB2 trace that is
| currently active for the OP buffer.

| **SHDATASETSTATISTICS=(parameter, interval)**

| Specifies that data set information is collected, where:

- *parameter* can be Y or N
- *interval* is the time interval between two consecutive snapshots in seconds

| **SHDB2CONNECTAPPLICATION=(parameter, interval)**

| Specifies that DB2 Connect application data is collected if Performance Expert
| Agent for DB2 Connect Monitoring is installed, where:

- *parameter* can be Y or N
- *interval* is the time interval between two consecutive snapshots in seconds

Recommendation: For correlation reasons, the interval value should be identical to the interval value of the subcommand SHTHREAD.

Restriction: When DB2 Connect monitoring is active for more than one server, only one of these servers should access the collected data on the corresponding DB2 subsystem at a time. For more information about this restriction, refer to “Configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 129 or to “Configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 146.

SHDB2CONNECTSYSTEM=(parameter, interval)

Specifies that DB2 Connect system data is collected if Performance Expert Agent for DB2 Connect Monitoring is installed, where:

- *parameter* can be Y or N
- *interval* is the time interval between two consecutive snapshots in seconds

Recommendation: For correlation reasons, the interval value should be identical to the interval value of the subcommand SHSTATISTICS.

Restriction: When DB2 Connect monitoring is active for more than one server, only one of these servers should access the collected data on the corresponding DB2 subsystem at a time. For more information about this restriction, refer to “Configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 129 or to “Configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 146.

SHSQLCACHE=(parameter, interval)

Specifies that SQL statement cache information is collected, where:

- *parameter* can be Y or N
- *interval* is the time interval between two consecutive snapshots in seconds

SHSTATISTICS=(parameter, interval)

Specifies that DB2 statistics information is collected, where:

- *parameter* can be Y or N
- *interval* is the time interval between two consecutive snapshots in seconds

Recommendation: For correlation reasons, the interval value should be identical to the interval value of the subcommand SHDB2CONNECTSYSTEM.

SHSYSTEMPARAMETERS=(parameter, interval)

Specifies that system parameter information is collected, where:

- *parameter* can be Y or N
- *interval* is the time interval between two consecutive snapshots in seconds

SHTHREAD=(parameter, interval)

Specifies that thread information is collected, where:

- *parameter* can be Y or N
- *interval* is the time interval between two consecutive snapshots in seconds

Recommendation: For correlation reasons, the interval value should be identical to the interval value of the subcommand SHDB2CONNECTAPPLICATION.

If SHTHREAD is set to Y, thread detail data is collected, except for lock data and SQL text data.

If you want to collect lock data or SQL text data, or both, you must specify the parameters SHTHREADLOCK or SHTHREADSQL, or both succeeding the parameter SHTHREAD. Lock data and SQL text data is then collected within the same time interval as SHTHREAD.

SHTHREADLOCK=parameter

If SHTHREAD is set to Y, SHTHREADLOCK specifies if thread data, which is collected for Snapshot History, includes lock data.

parameter can be one of these values:

- Y Thread data for Snapshot History is collected including lock data.
- N Thread data for Snapshot History is collected excluding lock data.

SHTHREADSQL=parameter

If SHTHREAD is set to Y, SHTHREADSQL specifies if thread data, which is collected for Snapshot History, includes SQL text data.

parameter can be one of these values:

- Y Thread data for Snapshot History is collected including SQL text data.
- N Thread data for Snapshot History is collected excluding SQL text data.

SNAPSHOTHISTORY=parameter

Activates or deactivates Snapshot History processing, where *parameter* can be one of these values:

- Y Activates Snapshot History processing.
- N Deactivates Snapshot History processing.

You can abbreviate the subcommand to **SH**.

Restriction: When DB2 Connect monitoring is active for more than one server, only one of these servers should access the collected data on the corresponding DB2 subsystem at a time. For more information about this restriction, refer to “Configuring Performance Expert Agent for DB2 Connect Monitoring on Windows” on page 129 or to “Configuring Performance Expert Agent for DB2 Connect Monitoring on UNIX and Linux” on page 146.

SPMON=parameter

Starts or stops the stored procedure collector. This collector shows or hides stored procedure monitoring data in the IBM InfoSphere Optim Performance Manager dashboards.

parameter can be one of these values:

- Y Starts the stored procedure collector, which shows stored procedure monitoring data in the IBM InfoSphere Optim Performance Manager dashboards. The stored procedure collector is a function of the READA collector support task. If the READA collector support task has not been started, enabling the stored procedure collector will start the READA collector support task.
- N Stops the stored procedure collector, which hides stored procedure monitoring data in the IBM InfoSphere Optim Performance Manager dashboards. If the stored procedure collector is the only function enabled for the READA collector support task, disabling the stored procedure collector will stop the READA collector support task.

TRACELEVEL=parameter

Specifies the trace level for internal data server traces, where *parameter* is an integer value from 0 to 127.

You can abbreviate this parameter to **TL**.

This example shows the command to display all PESERVER parameters for the monitored DB2 subsystem D721:

```
F D721DM1S,F PESERVER,F D721,DISPLAY=(PARMS)
```

where D721DM1S is the started task for the OMEGAMON Collector.

This example shows the command to display all PESERVER parameters and users for all monitored DB2 subsystems:

```
F D721DM1S,F PESERVER,F ALL,DISPLAY=(PARMS,USERS)
```

where D721DM1S is the started task for the OMEGAMON Collector.

Subtask commands to TEP Data Collection

You can issue specific subtask commands to the TEP Data Collection. The subtask commands must be preceded by the **MODIFY** command.

Specific subtask commands are:

MODIFY command

Issues a subcommand to the COMMCOLL subtask.

```
F ccccccc,F COMMCOLL,option
```

where:

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *option* is the task that the COMMCOLL subtask should perform

option can be one of the following:

CONNECTIONS

Displays the active Agent connections to DB2 subsystems that are created by the D5API collector on behalf of the Agent.

STIMER

Changes the D5API collect interval value.

REGISTRY

Displays the internal contents of the D5API registration table.

TRACE=NO

Removes additional D5API collector write-to-operator (WTO) messages in the joblog of the server address space.

TRACE=YES

Displays additional D5API collector write-to-operator (WTO) messages in the joblog of the server address space.

TRACEALL

Displays the internal contents of the D5API trace table.

STATUS

Displays the status of the D5API.

This example shows how the D5API collect interval is changed.

```
F D2DBnnn,F COMMCOLL,STIMER=hhmssth
```

```
F D2DB046,F COMMCOLL,STIMER=00001000  
CI0760: PROCESSING COMMAND  
CI0720: PROCESS MESSAGES FOLLOW  
D53101I COMMCOLL MODIFY PROCESSING IN PROGRESS
```

```
CI0551: MODIFY MESSAGE SENT TO TASK
D53113I STIMER WAIT VALUE SUCCESSFULLY CHANGED
CI0700: IBM COMMON INTERFACE READY FOR COMMANDS
```

This example shows how the contents of the D5API registration table are displayed.

The registration table (REGISTRY) contains registration entries (RTBEs) for every OMEGAMON Collector instance running on an MVS image.

F D2DBnnn, F COMMCOLL, REGISTRY

```
D53101I COMMCOLL MODIFY PROCESSING IN PROGRESS
D53106I COMMON COLLECTOR REGISTRATION DATA DISPLAY
REGISTRY: ACTIVE=00000002 CONNECTED=00000002 MAX=00000040
RTBE=0F203070 D2=D2DB058 D5APIUSE=10BC82C8 STATUS=ACTIVE
RTBE DATA: FLGS=80000000 ATTACH=0001 DETACH=0001 STIMER=00001500
RTBE=0F203090 D2=D2DB046 D5APIUSE=10BC8220 STATUS=ACTIVE
RTBE DATA: FLGS=80000000 ATTACH=0000 DETACH=0000 STIMER=00001500
```

If the module KO2AINIB is attached to any DB2 address space, the KO2AINIB registration routine adds an RTBE entry to the registration table. The RTBE contains the JOB/STC name of the DB2 address space and the address of the D5API communication control table and other information.

This list describes the RTB fields:

ACTIVE

The active number of number of connections

CONNECTED

The number of connected D2 address spaces

MAX The maximum number of D2 address spaces supported

This list describes the RTBE fields:

RTBE The registration table entry address within the RTB

D2 The registration entry owning D2 address space

D5APIUSE

The D5API common control table address

STATUS

The status of the D5API in the D2 address space

FLAGS

The status of the RTBE entry x'80' in use, x'00' available' Other flags currently 000000

ATTACH

The number of times the D5API has attached KO2ACONB

DETACH

The number of times the D5API has detached KO2ACONB

STIMER

The elapsed interval value in the format of hhmmssst that a collect call can consume

This example shows how the internal contents of the D5API trace table are changed.

F D2DBnnn,F COMMCOLL,TRACEALL

```
D53101I COMMCOLL MODIFY PROCESSING IN PROGRESS
D53107I COMMON COLLECTOR TRACE TABLE DISPLAY
MOD=AINI TID=BLDCCPC CID=0000 PCTB=0F9573C0 PCN=00008E00
MOD=AINI TID=WAITD2 CID=0000 SUSE=10BC8220
MOD=AINI TID=WAITD120 CID=0000 CECB=48000000
MOD=AINI TID=WAITD2 CID=0000 SUSE=10BC8220
MOD=AINI TID=CONNECT CID=0000 COMM=8ED364D8 SUSE=10BC8220
MOD=AINI TID=ACON200 CID=0000 SASN=000000CD KEY=00000070 DB2=D71D MROW=000000FA
MOD=AINI TID=POSTD2I CID=0000 COMM=8ED364D8 SUSE=10BC8220
MOD=AINI TID=APIPOST CID=0000 ECB =40000000
MOD=AINI TID=POSTIND2 CID=0000 POST=00000001 COMM=8ED364D8
MOD=AINI TID=ATCHD2 CID=0000 COMM=8ED364D8 DB2=D71D
MOD=AINI TID=WAITD2 CID=0000 SUSE=10BC8220
MOD=ACON TID=ATCHACON CID=0001 COMM=8ED364D8 TCB=007DF810
MOD=ACON TID=INITD2 CID=0000 COMM=8ED364D8 DB2=D71D
MOD=ACON TID=INITD2C CID=0000 COMM=8ED364D8 RC=00000000
MOD=ACON TID=WAITD2 CID=0001 COMM=8ED364D8 TCB=007DF810
MOD=AINI TID=COLLECT CID=0000 COMM=8ED364D8 SUSE=10BC8220
MOD=AINI TID=POSTD2C CID=0000 COMM=8ED364D8 SUSE=10BC8220
MOD=ACON TID=POSTACON CID=0000 COMM=8ED364D8 POST=00000003
MOD=ACON TID=CALLD2 CID=0001 TABL=REALTHDA THDA=00000000
MOD=ACON TID=CALLD2C CID=0001 RC=00000000 ADDR=00000080
MOD=ACON TID=WAITD2 CID=0001 COMM=8ED364D8 TCB=007DF810
MOD=AINI TID=WAITD120 CID=0000 CECB=48000000
MOD=AINI TID=WAITD2 CID=0000 SUSE=10BC8220
MOD=AINI TID=WAITD120 CID=0000 CECB=48000000
```

This example shows how the status of the D5API is displayed.

F D2DBnnn,F COMMCOLL,STATUS

```
D53101I COMMCOLL MODIFY PROCESSING IN PROGRESS
D53105I COMMON COLLECTOR STATUS DISPLAY
RTBE=0F203090 D5APIUSE=10BC8220 STATUS=ACTIVE TRACE=YES STIMER=00001500
COLLECT COUNT= 000001
AGENT SUMMARY:
DAPICOMM JOBNAME TCBADDR COMPCODE API ECB TERM ECB CALL RC POST ID DB2
8ED364D8 _D2DB000 007DF810 00000000 406DE5F3 F1F0FB08 2DB 00 F1 40 CALL
RTBE DATA: FLGS=80000000 ATTACH=0001 DETACH=0001 STIMER=00001500
```

Subtask commands to the Near-Term History Data Collector

You can issue specific subtask commands to the Near-Term History Data Collector subtask (H2WLMGR). The subtask commands must be preceded by the **MODIFY** command of the OMEGAMON Collector.

Specific subtask commands are:

START command

The **START** command starts the Near-Term History Data Collector.

```
F ccccccc,S H2WLMGR,OPTION=COPTxxxx
```

where

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *xxxx* is the name of the DB2 subsystem that the Near-Term History Data Collector monitors

STOP command

The **STOP** command stops the Near-Term History Data Collector.

F ccccccc,STOP H2xxxx

where

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *xxxx* is the name of the DB2 subsystem that the Near-Term History Data Collector monitors

LISTH2DS command

Lists the Virtual Storage Access Method (VSAM) data sets for history data that are defined in the collections options member. It also displays the status of each data set and the amount of space used.

F ccccccc,F H2cccc,LISTH2DS

where:

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *cccc* is the ID of the DB2 subsystem from which data is collected

This example shows system output for the **LISTH2DS** command:

020561	H2 DATA SET	STATUS	%FULL
020561	IBM.DB2P.VSAM01	AVAIL	20.1
	IBM.DB2P.VSAM02	AVAIL	20.1
	IBM.DB2P.VSAM03	ACTIVE	25.5

SWITCH command

The Near-Term History Data Collector can switch and archive data sets automatically when the data set is full. The **SWITCH** command allows you to perform this operation manually whenever you want.

Requirement: Before you use this command, check the availability of your VSAM data sets by using the **LISTH2DS** command. Data is saved only for available data sets.

F ccccccc,F H2cccc,SWITCH

where

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *cccc* is the ID of the DB2 subsystem from which data is collected

For more information about how to switch and archive VSAM data sets, refer to *IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS*; *IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS: Monitoring Performance from the OMEGAMON Classic Interface*.

VARY command

Changes the collection specifications when the Near-Term History Data Collector is active.

F ccccccc,F H2cccc,VARY OPTION=COPTxxxx

where

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *cccc* is the ID of the DB2 subsystem from which data is collected
- *xxxx* is the name of the DB2 subsystem that the Near-Term History Data Collector monitors

For more information about how to change these collection specifications, refer to *IBM Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS*; *IBM Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS: Monitoring Performance from the OMEGAMON Classic Interface*.

The new collection specifications take effect after the current collection interval expires.

Subtask commands to the Event Collection Manager

You can issue specific subtask commands to the Event Collection Manager subtask (EVENTMGR). The subtask commands must be preceded by the **MODIFY** command of the OMEGAMON Collector.

Specific subtask commands are:

START DB2=value

Starts the object and volume analysis collectors for one or more DB2 subsystems. The DB2 subsystems are specified by subsystem IDs.

Requirement: If you specify more than one DB2 ID, you must enclose the string in parentheses.

You can use this parameter with the **START** and **MODIFY** commands for the Event Collection Manager. Use the **MODIFY** command if the Event Collection Manager is already started.

```
F ccccccc,START EVENTMGR,DB2=(db2ssid1,db2ssid2,...db2ssidn)
F ccccccc,F EVENTMGR,START DB2=(db2ssid1,db2ssid2,...db2ssidn)
```

where:

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *db2ssid* is the identifier of the DB2 subsystem for which object and volume analysis collectors should be started

STOP DB2=value

Stops the object and volume analysis collectors for one or more DB2 subsystems. The DB2 subsystems are specified by subsystem IDs.

Requirement: If you specify more than one DB2 ID, you must enclose the string in parentheses.

```
F ccccccc,F EVENTMGR,STOP DB2=(db2ssid1,db2ssid2,...db2ssidn)
```

where:

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *db2ssid* is the identifier of the DB2 subsystem for which object and volume analysis collectors should be stopped

START INTERVAL=value

Specifies the time interval for the start of the object and volume analysis collectors in minutes.

Restrictions:

- You can specify only one value for the interval.
- The value must be a number from 1 to 1440.

You can use this parameter with the **START** and **MODIFY** commands for the Event Collection Manager.

F ccccccc,S EVENTMGR,START DB2=dbssid,INTERVAL=value

F ccccccc,F EVENTMGR,START DB2=dbssid,INTERVAL=value

where:

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *db2ssid* is the identifier of the DB2 subsystem for which object and volume analysis collectors are started
- *value* is the value for the interval

START PARM=(COLD=value)

Specifies if the Event Collection Manager configuration should be restarted. This option should only be used if a DB2 subsystem has been dynamically added to the z/OS LPAR since the Event Collection Manager was started, or under guidance from Level 2 support.

You can specify YES or NO. The default value is NO.

You can use this parameter with the **START** command for the Event Collection Manager.

F ccccccc,START EVENTMGR,PARM=(COLD=YES)

where:

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool

START THREAD=value

Specifies if the object and volume analysis collectors should collect thread information.

You can specify YES or NO. The default value is YES.

You can use this parameter with the **START** and **MODIFY** commands for the Event Collection Manager.

F ccccccc,S EVENTMGR,START DB2=dbssid,THREAD=YES

F ccccccc,F EVENTMGR,START DB2=dbssid,THREAD=YES

where:

- *ccccccc* is the started task name that you specify for the OMEGAMON Collector during the configuration within the Configuration Tool
- *db2ssid* is the identifier of the DB2 subsystem for which object and volume analysis collectors are started

Chapter 24. Worksheet for planning your configuration

The following worksheet describes key parameters for configuring OMEGAMON XE for DB2 PE.

Purpose

Use this worksheet in the following ways:

- To understand what key parameters and values are required to configure the product
- To record the values that you have provided for the configuration in the **value** field of the following tables.

The worksheet is not intended to be a complete list of all configuration parameters. It includes only the key parameters that you must determine before you configure the product.

Tip: Complete as much of this worksheet as you can before you begin installing the product. You might need to interact with several different roles to gather the information necessary to properly configure the product. Ensure that you have the necessary authorizations on the data sets as listed in Chapter 4, “Prerequisites,” on page 25.

User interfaces

Mark the user interfaces that you intend to use. For detailed information about the user interfaces, see Part 1, “Introduction to OMEGAMON XE for DB2 PE,” on page 1.

Table 14. User interfaces of OMEGAMON XE for DB2 PE

User interfaces	Use (Y/N)
3270 user interfaces on the host	
Classic Interface	
ISPF Online Monitoring	
CUA Interface	
Enhanced 3270 user interface	
User interfaces on the workstation	
Performance Expert Client	
Tivoli Enterprise Portal	

Data set naming conventions

Table 15. High-level qualifiers of the different data sets

High-level qualifier	Description	Your value
High-level qualifier of Configuration Tool working libraries	Used for the Configuration Tool work libraries (for example, INSTLIB and INSTJOBS).	
High-level qualifier for the SMP/E target libraries (<i>&thilev</i>)	The name of the target libraries of your SMP/E installation of the product.	

Table 15. High-level qualifiers of the different data sets (continued)

High-level qualifier	Description	Your value
High-level qualifier for VSAM and non-VSAM runtime libraries (<i>&rhilev</i>)	Used for allocating the runtime libraries. One set of runtime libraries contains the executable code (base libraries). A second set of libraries contains the configuration members that are unique for a particular LPAR. The runtime libraries are referenced by started tasks running on a z/OS image. You can specify two different high-level qualifiers for VSAM and non-VSAM data sets with a maximum length of 26 characters.	
High-level qualifier for work data sets allocated by the OMEGAMON Collector	Used by the OMEGAMON Collector for the allocation of additional work data sets (for example for Event Exception Processing or Performance Warehouse). This high-level qualifier is also used to allocate operational data sets, for example for Near-Term History data collection. You can specify two different high-level qualifiers for VSAM and non-VSAM data sets with a maximum length of 18 characters.	

Runtime environment variables

For a complete list of runtime environment parameters, refer to the *IBM Tivoli OMEGAMON XE and Tivoli Management Services on z/OS: Common Planning and Configuration Guide*.

The following table lists the key variables that you specify for the runtime environment. The other values that you specify for the runtime environment are used to generate default values for the configuration of the product. You can overwrite the values during the configuration of your runtime environments.

Table 16. Variables required to configure a runtime environment

Runtime environment variable	Description	Your value
Name of the runtime environment (mid-level qualifier)	Specify a name for your runtime environment. The runtime libraries that are allocated for this setup will use this name as mid-level qualifier in the data set names. If you enable system variable support, use the name of the LPAR that you run your initial tests on before rolling out the product(s) to other LPARs.	
Type of runtime environment	Select the type of runtime environment that you want to use: <ul style="list-style-type: none"> • FULL • SHARING SMP/E • SHARING BASE • BASE 	
Started task prefix for OMEGAMON address spaces	Specify a 4-character prefix according to the naming conventions on your system. It will be used to generate default values for the started tasks.	
JCL suffix for jobs generated by the Configuration Tool	Specify a 4-character suffix. It will be used as part of the names of the configuration jobs, which are generated in the course of the configuration and stored in the <i>&shilev</i> .INSTJOBS work library. Ensure that you use a unique suffix for each runtime environment so that you can identify the configuration jobs that belong to one runtime environment in <i>&shilev</i> .INSTJOBS.	

Table 16. Variables required to configure a runtime environment (continued)

Runtime environment variable	Description	Your value
Tivoli Enterprise Monitoring Server	You need Tivoli Enterprise Monitoring Server only if you want to use the Tivoli Enterprise Portal. If you want to configure a Tivoli Enterprise Monitoring Server in this runtime environment, specify Y. Your Tivoli Enterprise Monitoring Server can be configured in a different runtime environment on this LPAR, on a different LPAR or on one of the supported workstation platforms. For more information, see the <i>IBM Tivoli Monitoring and OMEGAMON XE Information Center</i> .	
System variable support	Specify whether you want to enable system variable support. If system variable support is enabled, the Configuration Tool allows z/OS system symbols as part of the VTAM applid names. Type readme sys on the command line for detailed information.	
Fold password to upper case	Specify whether you want to enable mixed case password support. If you specify N, the passwords entered by the user will not be folded to upper case any more.	
Network ID	Specify the network ID used for VTAM communication.	
VTAM applid prefix	A four character prefix that is used for generating the VTAM applids.	

Basic configuration variables

Table 17. Variables required for the basic configuration

Basic configuration variable	Description	Your value
OMEGAMON Collector started task	Started task name for the OMEGAMON Collector.	
DB2 load library	The name of the data set in which the DB2 load modules reside. Specify one DB2 load library for each DB2 subsystem version that you want to monitor.	
DB2 run library	The name of the data set in which the DB2 RUNLIB load modules reside. Specify one DB2 run library for each DB2 subsystem version that you want to monitor. This library should contain the modules DSNTIAD and DSNTIAUL to be used to run in batch. The run library is used to generate GRANT and BIND jobs that prepare the DB2 subsystems for monitoring.	
DB2 exit library	The name of the data set in which the DB2 exit load modules reside that should be used by the OMEGAMON Collector. This parameter is only needed if you want to use a DB2 authorization exit.	
OMEGAMON Collector plan/package owner	The OMEGAMON Collector plan/package owner is the USERID/GROUPID that will be granted the authority to administrate the OMEGAMON Collector, for example to rebind the DB2 packages of the OMEGAMON Collector.	

DB2 subsystem variables

You need to specify the information listed in the following table for each DB2 subsystem that you configure.

Table 18. Variables required for each DB2 subsystem

DB2 ID	DB2 version (for example, 81, 91)	MONITOR (Y or N)	TCP/IP port number (only if Performance Expert Client is used)	z/OS system ID (SMFID) that the DB2 runs on

Performance Warehouse and Performance Expert Agent for DB2 Connect Monitoring variables

Table 19. Variables required to configure Performance Warehouse and Performance Expert Agent for DB2 Connect Monitoring

Variable	Description	Your value
Performance Warehouse started job name	The name of the Performance Warehouse started job.	
DB2 load library	The name of the data set, in which the DB2 load modules reside that should be used by the Performance Warehouse job.	
DB2 exit library	The name of the data set, in which the DB2 exit load modules reside that should be used by the Performance Warehouse job.	
4 KB buffer pool	Buffer Pool with 4 KB page size for Performance Warehouse table spaces.	
32 KB buffer pool	Buffer Pool with 32 KB page size for Performance Warehouse table spaces.	
DB2 storage group(s) for Performance Warehouse table spaces	The storage group(s) that should be used for the Performance Warehouse table spaces.	

Part 6. Appendixes

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IBM Tivoli OMEGAMON XE for DB2 Performance Expert publications

The product library for Version 5 Release 2 covers the following information units:

OMEGAMON XE for DB2 PE and OMEGAMON XE for DB2 PM

- *Configuration and Customization*, GH12-6998
- *Parameter Reference*, SH12-6999
- *Monitoring Performance from ISPF*, SH12-6996
- *Monitoring Performance from the OMEGAMON Classic Interface*, SH12-6994
- *Monitoring Performance from Performance Expert Client*, SH12-6995
- *Report Command Reference*, SH12-6992
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- *Quick Start Guide for the end-to-end SQL monitoring function*, GH12-6990

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- *Buffer Pool Analyzer Configuration Guide*, SH12-7030
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InfoSphere Optim Performance Manager for Linux, UNIX, and Windows

- *InfoSphere Optim Performance Manager Installation Guide*, GC19-2934

The documentation is provided in PDF and htm format in the:

- *Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS information center*
- *Tivoli OMEGAMON XE for DB2 Performance Monitor on z/OS information center*

IBM Tivoli Monitoring publications

For the most current list of publications, see the Tivoli Monitoring information center.

IBM DB2 publications

For the most current list of publications, see the IBM Information Management Software for z/OS Solutions information center.

Other IBM publications

For IBM publications that are not directly related to OMEGAMON XE for DB2 PE and PM, see Related information in the MVS Programming Hiperbatch Guide.

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