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This guide describes how to configure and customize OMEGAMON II® for IMS or OMEGAMON II for DBCTL after installation. It assumes that you have already installed the product as described in the Installation & Configuration of Candle Products on OS/390 and z/OS manual.

In this guide, the product name OMEGAMON II and product component names such as OMEGAMON®, DEXAN, RTA, or EPILOG denote both the OMEGAMON II for IMS and OMEGAMON II for DBCTL products, unless otherwise specified.

This guide contains the following types of information to help you prepare for and perform the configuration and customization:

- a list of product publications
- background about the product components
- considerations that you need to review before you configure or customize
- an overview of the installation, configuration, and customization process
- configuration instructions
- customization instructions

Who should read this book

This guide is intended for those responsible for configuring and customizing OMEGAMON II for IMS or OMEGAMON II for DBCTL. It is a hands-on guide that provides the information you need to configure OMEGAMON II for IMS or OMEGAMON II for DBCTL for your site, and quickly start monitoring your IMS or DBCTL network.

This manual is for users who are familiar with performance monitoring software and IMS. For introductory, step-by-step instructions on how to use OMEGAMON II for IMS’s command interface as well as the primary CUA™ interface and menu interface, see the OMEGAMON II for IMS User’s Guide.
This manual does not include information about the commands used by the bottleneck analysis (DEXAN), response time analysis (RTA), or historical (EPILOG) components of OMEGAMON II for IMS. For descriptions of these commands, see the:

- **OMEGAMON II for IMS Bottleneck Analysis Reference Manual**,
- **OMEGAMON II for IMS Response Time Analysis (RTA) Reference Manual**,  
- **OMEGAMON II for IMS Historical Component (EPILOG) Reference Manual**

In this manual, OMEGAMON II refers to the OMEGAMON II for IMS product, and OMEGAMON refers to the command interface of the realtime performance component of OMEGAMON II for IMS, unless the context indicates otherwise.

### Documentation set information for OMEGAMON II for IMS

The documentation listed in the following table is available for the Candle IMS Products. To order additional product manuals, contact your Candle Support Services representative.

#### Table 1. OMEGAMON II for IMS Documentation Set

<table>
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<th>Document Name</th>
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<tr>
<td>I251-6317</td>
<td>OMEGAMON II for IMS and OMEGAMON II for DBCTL Configuration and Customization Guide</td>
<td>Explains how to configure and customize OMEGAMON II and its user interfaces and components.</td>
</tr>
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<td>I253-6332</td>
<td>OMEGAMON II for IMS Realtime Commands Reference Manual</td>
<td>Describes in detail all of the features of the OMEGAMON II command interface.</td>
</tr>
<tr>
<td>I253-6333</td>
<td>OMEGAMON II for IMS Bottleneck Analysis Reference Manual</td>
<td>Provides reference information and descriptions of the features of the bottleneck analysis component.</td>
</tr>
<tr>
<td>I253-6336</td>
<td>OMEGAMON II for IMS Historical Component (EPILOG) Reference Manual</td>
<td>Provides a comprehensive description of the features of the historical component (EPILOG).</td>
</tr>
<tr>
<td>I254-6334</td>
<td>OMEGAMON II for IMS User’s Guide</td>
<td>Teaches the basics of using OMEGAMON II for IMS to manage realtime IMS environments.</td>
</tr>
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<td>I299-6303</td>
<td>OMEGAMON II for IMS and OMEGAMON II for DBCTL</td>
<td>Provides user and reference information about the features of the ATF component.</td>
</tr>
<tr>
<td>I299-6338</td>
<td>OMEGAMON II for IMS and OMEGAMON II for DBCTL</td>
<td>Provides user and reference information about the features of the TRF component.</td>
</tr>
<tr>
<td>I299-6339</td>
<td>OMEGAMON II for IMS and OMEGAMON II for DBCTL</td>
<td>Provides a comprehensive description of the features of the IMS ICF component.</td>
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<td>W052-6238,</td>
<td>OMEGAMON II for IMS and OMEGAMON II for DBCTL</td>
<td>Provides reference summary information for all Candle product messages.</td>
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<tr>
<td>W052-6239,</td>
<td>OMEGAMON II for IMS and OMEGAMON II for DBCTL</td>
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Documentation set information for OMEGAMON II for DBCTL

The documentation listed in the following table is available for OMEGAMON II for DBCTL. To order additional product manuals, contact your Candle Support Services representative.

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<th>Document Name</th>
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<td>ID53-6341</td>
<td>OMEGAMON II for DBCTL Realtime Commands Reference Manual</td>
<td>Describes in detail all of the features of the OMEGAMON II for DBCTL command interface.</td>
</tr>
<tr>
<td>ID53-6344</td>
<td>OMEGAMON II for DBCTL Bottleneck Analysis (DEXAN) Reference Manual</td>
<td>Provides reference information and descriptions of the features of the bottleneck analysis component.</td>
</tr>
<tr>
<td>ID53-6345</td>
<td>OMEGAMON II for DBCTL Historical Component (EPILOG) Reference Manual</td>
<td>Provides a comprehensive description of the features of the historical component (EPILOG).</td>
</tr>
<tr>
<td>ID53-6346</td>
<td>OMEGAMON II for DBCTL Historical Component (EPILOG) User’s Guide</td>
<td>Teaches you, step-by-step, how to operate the historical component (EPILOG) reporter after installation.</td>
</tr>
<tr>
<td>I251-6317</td>
<td>OMEGAMON II for IMS/DBCTL Configuration and Customization Guide</td>
<td>Explains how to configure and customize OMEGAMON II and its user interfaces and components.</td>
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<td>Application Trace Facility for OMEGAMON II for IMS and DBCTL</td>
<td>Provides user and reference information about the features of the Application Trace Facility (ATF) component.</td>
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<tr>
<td>I299-6338</td>
<td>Transaction Reporting Facility for OMEGAMON II for IMS and DBCTL</td>
<td>Provides user and reference information about the features of the Transaction Reporting Facility (TRF) component.</td>
</tr>
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<td>I299-6339</td>
<td>IMS Console Facility for OMEGAMON II for IMS and DBCTL</td>
<td>Provides a comprehensive description of the features of the IMS Console Facility (ICF) component.</td>
</tr>
<tr>
<td>W052-6238,</td>
<td>Candle Products Messages Manual, Vol. 1 through 5</td>
<td>Provides reference summary information for all Candle product messages.</td>
</tr>
<tr>
<td>W052-6239,</td>
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<td>W052-6240,</td>
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<tr>
<td>W052-6357</td>
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Online documentation

With version 510, Candle Corporation has moved OMEGAMON II for IMS and OMEGAMON II for DBCTL manuals from IBM BookMaster to Adobe FrameMaker. This move was made to better enable us to address our customers’ needs by providing tools that enhance productivity.

One of the results of the move is that it is no longer possible to create BookManager versions of the manuals. However, the manuals remain available online in the Adobe PDF version on CD-ROM and are also available on the Candle Corporation website at www.Candle.com.

The documentation CD being provided with this release has robust and easy-to-use search capabilities. You can search for information in multiple volumes, multiple versions, and across products. The CD also provides easy setup of search indexes with a single click of the mouse.

If you want to order printed copies of the documentation, please contact your Candle Support Services representative.
Where to look for more information

For more information related to this product, please see the
- technical documentation CD-ROM that came with your product
- technical documentation information available on the Candle Web site at www.candle.com
- online help provided with this product

Ordering additional documentation

To order additional product manuals, contact your Candle Customer Support representative.

We would like to hear from you

Candle welcomes your comments and suggestions for changes or additions to the documentation set. A user comment form, located at the back of each manual, provides simple instructions for communicating with the Candle Information Development department.
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Candle supplies documentation in the Adobe Portable Document Format (PDF). The Adobe Acrobat Reader will print PDF documents with the fonts, formatting, and graphics in the original document. To print a Candle document, do the following:

1. Specify the print options for your system. From the Acrobat Reader Menu bar, select **File > Page Setup**… and make your selections. A setting of 300 dpi is highly recommended as is duplex printing if your printer supports this option.

2. To start printing, select **File > Print**… on the Acrobat Reader Menu bar.

3. On the Print pop-up, select one of the **Print Range** options for
   - All
   - Current page
   - Pages from: [ ] to: [ ]

4. (Optional). Select the Shrink to Fit option if you need to fit oversize pages to the paper size currently loaded on your printer.

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The print quality of your output is ultimately determined by your printer. Sometimes printing problems can occur. If you experience printing problems, potential areas to check are:

- settings for your printer and printer driver. (The dpi settings for both your driver and printer should be the same. A setting of 300 dpi is recommended.)
- the printer driver you are using. (You may need a different printer driver or the Universal Printer driver from Adobe. This free printer driver is available at www.adobe.com.)
- the halftone/graphics color adjustment for printing color on black and white printers (check the printer properties under **Start > Settings > Printer**). For more information, see the online help for the Acrobat Reader.
- the amount of available memory in your printer. (Insufficient memory can cause a document or graphics to fail to print.)

For additional information on printing problems, refer to the documentation for your printer or contact your printer manufacturer.

Contacting Adobe
If additional information is needed about Adobe Acrobat Reader or printing problems, see the Readme.pdf file that ships with Adobe Acrobat Reader or contact Adobe at www.adobe.com.
Section 1.
Before You Begin
Background about Components and Modes of Operation

Chapter Overview

This chapter contains information about the components and modes of operation for OMEGAMON II for IMS and OMEGAMON II for DBCTL. The chapter provides background information about the

- product components
- user interfaces
- Candle Subsystem
- Response Time Analysis component
- Bottleneck Analysis component
- historical component
- modes of operation

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Modes of Operation ............................................................... 30
Product Components

This section provides background information about the product components for OMEGAMON II for IMS and OMEGAMON II for DBCTL.

Product components for the Candle IMS/DBCTL products

The following table lists the components available when you install OMEGAMON II for IMS and OMEGAMON II for DBCTL, provides a brief description of each component, and indicates whether the component is required or optional.

Table 3. Product Components for the IMS/DBCTL Products

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
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<tbody>
<tr>
<td>CUA interface for the realtime monitor (required)</td>
<td>Provides realtime information about an IMS/DBCTL subsystem using a graphical user interface</td>
</tr>
<tr>
<td>Realtime Performance Monitor component (required)</td>
<td>Provides basic realtime information about the IMS/DBCTL environment</td>
</tr>
<tr>
<td>Menu interface for the realtime monitor (required)</td>
<td>Provides realtime information about an IMS/DBCTL subsystem using the original OMEGAMON II menu system interface</td>
</tr>
<tr>
<td>Command interface for the realtime monitor (required)</td>
<td>Provides realtime information about an IMS/DBCTL subsystem using an extensive set of flexible commands</td>
</tr>
<tr>
<td>Candle Subsystem (optional)</td>
<td>Provides dynamic I/O information to OMEGAMON II</td>
</tr>
<tr>
<td>End-to-End Response Time (required)</td>
<td>Provides OMEGAMON II with response time data</td>
</tr>
<tr>
<td>Response Time Analysis (optional)</td>
<td>Provides monitoring of IMS transaction and end-to-end response time</td>
</tr>
<tr>
<td>Application Trace Facility (ATF) (optional)</td>
<td>Tracks activity on a transaction by transaction basis and records the individual events for transactions</td>
</tr>
<tr>
<td>Bottleneck Analysis (optional)</td>
<td>Provides information for degradation analysis</td>
</tr>
<tr>
<td>Historical component (optional)</td>
<td>Provides historical information about the IMS/DBCTL environment</td>
</tr>
<tr>
<td>IMS Console Facility (optional)</td>
<td>Provides a complete IMS Master Console for OMEGAMON II</td>
</tr>
</tbody>
</table>

Process for components that are optional

When you install the product using CICAT, CICAT automatically installs the components that are optional. For example, CICAT automatically installs the Candle Subsystem. To make these components available, you must also:

- configure the component using CICAT
- complete the configuration and customization steps for the component using the instructions in this guide (if any).
Overview of the user interfaces and components

The following figure shows the OMEGAMON II user interfaces and components.

FIGURE 1. OMEGAMON II User Interfaces and Components
Details about the User Interfaces

This section provides background information about the OMEGAMON II user interfaces. OMEGAMON II has several user interfaces that you can use to:

- monitor performance
- view and/or print historical performance data
- look for exception conditions
- enter IMS operator commands

CUA interface

- Systems Application Architecture
- Common User Access model
- SAA
- CUA model

OMEGAMON II’s primary user interface is an easy-to-use, graphical interface that follows the guidelines of IBM’s SAA®/CUA™ (Systems Application Architecture®/Common User Access) model for consistent graphical user interfaces across products.

The main CUA interface gives you access to OMEGAMON II’s key realtime status information, and provides an operator assist feature for very efficiently and easily issuing IMS commands without having to remember command names or syntax.

From the main CUA interface, you can also zoom into OMEGAMON II’s menu and command interfaces for additional information.

You must install the CUA interface as part of the installation process.
Menu and command interfaces

If you need more detailed information, OMEGAMON II also has two additional user interfaces to the product’s realtime IMS information.

**Command Interface**

Allows the user to enter a set of extensive and very flexible commands in any order or combination covering every aspect of the IMS environment in realtime.

**Menu Interface**

Enables the user to access realtime data using an easy-to-use menu system. Each menu option leads to a panel displaying appropriate OMEGAMON II commands and output.

The menu and command interfaces are standard with OMEGAMON II. If you choose to access these interfaces directly (rather than zooming from the main CUA interface), you can use several optional modes of operation, including dedicated, TSO, and ISPF modes.

**Note:** TSO and ISPF modes require additional installation steps.

For more information about TSO and ISPF installation, see “Install and Start OMEGAMON II in TSO Mode” on page 88 and “Install and Start OMEGAMON II in ISPF Mode” on page 93.

Historical information interfaces

For historical information, you can request printed reports via a batch report generator, or make interactive queries through a series of TSO or ISPF panels.

These interfaces are a standard part of OMEGAMON for IMS.
Details about the Response Time Analysis Component

This section provides background information about the Response Time Analysis (RTA) component of OMEGAMON II.

Background about RTA

The Response Time Analysis component (RTA) monitors IMS transaction response time and End-to-End Response Time Feature.

IMS transaction response time is the time it takes IMS to acknowledge an input message from the teleprocessing network and initiate a response. RTA measures queuing and service times within IMS, and summarizes its measurements into user-defined groups.

End-to-End™ (ETE) response time is the time interval between pressing Enter and the appearance of a response on the screen. The information that ETE gathers helps you determine whether a response problem is in the network or on the host system.

RTA information is available through the CUA interface’s graphical status displays, or in the form of tables and graphs that you can access through OMEGAMON II’s command and menu interfaces.

Note: RTA does not pertain to DBCTL users.

For more information on RTA, see the Response Time Analysis (RTA) Reference Manual.
Details about the Bottleneck Analysis Component

This section provides background information about the Bottleneck Analysis (DEXAN) component of OMEGAMON II.

Background about DEXAN

The bottleneck analysis component (DEXAN) helps a system tuner perform bottleneck, or degradation, analysis. Bottleneck Analysis focuses on workloads rather than resources. Bottleneck Analysis breaks down IMS transaction response time or DBCTL executing threads into times spent in various executing states: CPU usage, MVS waits, IMS scheduling waits, database I/O waits, output waits, and external subsystem waits.

This information is available through the CUA interface’s graphical status displays, or in the form of tables and graphs you access through OMEGAMON II’s command and menu interfaces.

For more information on bottleneck analysis, see the Bottleneck Analysis (RTA) Reference Manual.
Details about the Historical Component

This section provides background information about the historical component (EPILOG) of OMEGAMON II.

Background about EPILOG

The historical component (EPILOG) provides historical information about your IMS or DBCTL environment.

EPILOG collects, analyzes, and reports on resource and response time information, and provides bottleneck analysis like DEXAN. However, EPILOG collects the data over substantial periods of time, hours, or days.

EPILOG has three major subcomponents:

- EPILOG collector
- EPILOG reporter
- maintenance utilities

The EPILOG collector gathers system performance data of various kinds. At regular intervals the collector writes the data to the EPILOG datastore (EDS), a VSAM KSDS, and to SMF (optionally).

You can either invoke the EPILOG collector interactively through TSO or run it in batch for reporting purposes. The EPILOG collector is a standard part of OMEGAMON for IMS.

The EPILOG reporter produces reports from data recorded in the EDS. You can view these reports online through TSO or print the reports. You will prepare the EPILOG reporter and adjust its collection parameters as the final steps in the standard installation process.

The maintenance utilities allow you to create, initialize, backup, and restore the EDS.

Following is a functional diagram of the EPILOG components.
FIGURE 2. EPILOG Components

For more information on EPILOG, see the Historical Component (EPILOG) Reference Manual and Historical Component (EPILOG) User’s Guide.
Details about the Candle Subsystem

This section provides background information about the Candle Subsystem.

Candle Subsystem component

The Candle Subsystem is an MVS subsystem that enables OMEGAMON II to monitor
dynamic device activity in MVS/ESA™ SP4 and higher.

When installed, the Candle Subsystem runs in its own address space, providing dynamic
I/O device information to OMEGAMONs running in other address spaces.

Sharing the Candle Subsystem

You only need one Candle Subsystem for an MVS system image. A single Candle
Subsystem can support multiple copies of OMEGAMON II and multiple OMEGAMON II
products on a single MVS image.

The subsystem ID identifies a copy of the Candle Subsystem. To use the same Candle
Subsystem for all OMEGAMON II runtime environments on a single MVS image, Candle
recommends that you specify the same subsystem ID during the configuration of each
OMEGAMON II product. The Candle default subsystem ID is CNDL.

System requirements

The Candle Subsystem has the following system requirements:

- The Candle Subsystem requires 4K of ECSA.
- The Candle Subsystem must be defined to MVS as a subsystem.
- The initialization module, KCNDLINT, must reside in a link list authorized library.
- An IPL is required to initialize the Candle Subsystem unless the keyword parameter
  form of the IEFSSNxx PARMLIB member, supported in MVS/SP 5 or above, is used.
  In this case, MVS dynamic SSI services can be invoked.

Note: The example for IEFSSNxx, a positional parameter, works as shown on OS/390
systems. If you would like to update SYS1.PARMLIB(IEFSSNxx) in accordance with IBM
OS/390 documentation, then use the following syntax:

  SUBSYS SUBNAME(CNDL)
  INITRTN(KCNDLINT)
  INITPARM(‘SSPROC=CANSCN’)
Starting the Candle Subsystem automatically

Member rhilev.RKANSAM(CANSCN) contains a sample JCL procedure for creating the Candle Subsystem. You can modify this to fit your configuration standards, and then copy it to a system procedure library.

If you want the Candle Subsystem address space to be started automatically at system IPL, then the name given to the JCL procedure must match the value of the SSPROC keyword in the IEFSSNxx member of SYS1.PARMLIB.

Determining whether or not to install the Candle Subsystem

You should migrate from your current Candle Subsystem, V120 FMID AKOB400 to the current version, V500 from FMID AKOB500. This will ensure that new PTF maintenance gets properly installed. However, V120 is currently compatible with V500 of the OMEGAMONs and other Generally Available (GA) products. For example, you can use V120 of the Candle Subsystem with V500 of OMEGAMON II for IMS.

The latest version of the Candle Subsystem, V500, can be used with earlier versions (GA-1) of the OMEGAMON products. For example, V500 of the Candle Subsystem can be used with V400 of an OMEGAMON II product.

If you have installed another OMEGAMON II product at your site, at the same level as shipped with the OMEGAMON II product you are currently installing, you may have already installed the Candle Subsystem.
Modes of Operation

This section provides background information about operating modes.

During configuration, you will be asked to select and customize an operating mode. Available operating modes are:

- VTAM mode
- TSO/ISPF mode
- dedicated mode

VTAM mode is required to run the CUA interface.

See “Overview of the user interfaces and components” on page 21, which shows the relationship of OMEGAMON II’s components in VTAM, TSO, and ISPF modes.

Operating mode characteristics and requirements

The following table describes each operating mode and its requirements.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Characteristics</th>
<th>Configuration Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTAM</td>
<td>VTAM mode enables you to run OMEGAMON II sessions from a VTAM terminal without an intermediate online application, such as TSO. You can set automatic update mode so that the screen refreshes automatically. VTAM mode allows all VTAM terminal users to share a single copy of OMEGAMON II.</td>
<td>Define a VTAM applid for OBVTAM.</td>
</tr>
</tbody>
</table>
| TSO and ISPF | The TSO address space communicates with the OMEGAMON II address space via a VTAM application, VTM1. In this mode there is no auto screen refresh; the screen refreshes when you press the Enter key. TSO mode enables you to access OMEGAMON II without logging off TSO. ISPF mode includes split-screen capability that lets you swap between multiple OMEGAMON II sessions, or between OMEGAMON II and another ISPF application. | Define a VTAM applid for OBVTAM.  
Requires an active OBVTAM application.  
Define a set of virtual terminals to VTAM. You can define up to 99 virtual terminals in the virtual terminal pool (VTPOOL). |
Dedicated mode offers high availability and does not require VTAM services. Dedicated mode uses EXCP to communicate with a terminal and refreshes the screen every few seconds. Dedicated mode allows OMEGAMON II to provide realtime data even when VTAM is not available.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Characteristics</th>
<th>Configuration Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated</td>
<td>Dedicated mode offers high availability and does not require VTAM services.</td>
<td>Availability of a locally attached non-SNA terminal.</td>
</tr>
<tr>
<td></td>
<td>Dedicated mode uses EXCP to communicate with a terminal and refreshes the screen every few seconds.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dedicated mode allows OMEGAMON II to provide realtime data even when VTAM is not available.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter Overview

This chapter provides information about installing, configuring, and customizing the product.

This chapter provides:

- the considerations you should review before you begin to configure and customize
- an overview of how you use CICAT to perform part of the configuration and a checklist listing the steps for the CICAT configuration procedure
- a checklist listing the steps for the manual configuration procedures
- a checklist listing the steps for the manual customization procedures

If you are installing the product for the first time or you need a reminder about the different components and modes of operation, see Chapter 1.

Chapter Contents

- Configuration Planning and Considerations ........................................... 34
- Overview of the Process ................................................................. 31
- Getting Help with CICAT ............................................................... 40
- CICAT Background and Requirements ............................................. 41
- Accessing the Configure OMEGAMON II for IMS/DBCTL Menu .......... 43
- CICAT Configuration Procedures .................................................... 46
- Manual Configuration Procedures .................................................... 48
- Manual Customization Procedures .................................................... 49
Configuration Planning and Considerations

This section provides the considerations you must review before you begin to configure and customize OMEGAMON II for IMS.

Requirements for hardware and software

For information about hardware and software requirements, see Installation & Configuration of Candle Products on OS/390 and z/OS.

Installing OMEGAMON II in a shared CSI

Candle has designed some of its products to share a target and distribution zone of an SMP/E CSI with other Candle products.

<table>
<thead>
<tr>
<th>Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before you install this product in a target or distribution zone with any other Candle products, check the Installation &amp; Configuration of Candle Products on OS/390 and z/OS manual to verify that those products can coexist in a common CSI zone.</td>
</tr>
</tbody>
</table>

Running multiple IMS systems

The following rules apply when you want to use the Realtime Performance Monitor in a multiple IMS systems environment:

- For each IMS system you are monitoring, you must have at least one OMEGAMON II Realtime performance Monitor running on the same MVS system as the IMS system you are monitoring.
- For multiple IMS systems, you need only one OMEGAMON II CUA system on a single MVS image.

Communication protocol

OMEGAMON II for IMS and OMEGAMON II for DBCTL use the LU2 communication protocol for program to terminal communications.
Autostarting RTM components

During CICAT configuration you can set the autostart values for the following Realtime Monitor (RTM) components/features:

- VTAM connection to IMS region
- RTM dedicated session
- Attach command BMP
- Response Time Analysis (RTA)
- Transaction Reporting Facility (TRF)
- Bottleneck Analysis (DEXAN)
- EPILOG
- VSAM message logging
- SAP support

Requirements for runtime datasets

Several VSAM and non-VSAM datasets need to be allocated and initialized. This requires approximately 2.75 tracks (measured in 3390 tracks) of additional storage. High-level qualifiers are required and mid-level qualifiers can be used, if desired.

Qualifiers for runtime datasets

In some cases, the runtime datasets may have been created while installing other Candle products. These preallocated datasets can be used for OMEGAMON II.

The configuration process allows a unique set of qualifiers for the following groups of runtime datasets:

- VSAM datasets
- non-VSAM datasets
- Candle Subsystem datasets

The mid-level qualifier is used to distinguish multiple copies of the runtime environment. This qualifier allows a unique name to be created for each copy while allowing for a common high-level qualifier. Together these two qualifiers are described in this document as rhilev. Be sure to specify the correct qualifiers when referring to datasets that already exist.
Requirements for virtual storage

The following table lists the minimum bytes of virtual storage that OMEGAMON II Versions 300 and up require in conjunction with other OMEGAMON II product components.

Table 5. Minimum Virtual Storage Requirements for IMS/DBCTL Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Private</th>
<th>Extended Private</th>
<th>Common</th>
<th>Extended Common</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMEGAMON II CUA interface uses</td>
<td>5634</td>
<td>31744</td>
<td>105</td>
<td>150</td>
</tr>
<tr>
<td>OMEGAMON II Realtime Performance Monitor uses</td>
<td>644</td>
<td>832</td>
<td>8</td>
<td>68 per first user, 35 per additional user</td>
</tr>
<tr>
<td>DEXAN adds</td>
<td>24</td>
<td>24</td>
<td>0</td>
<td>72</td>
</tr>
<tr>
<td>DEXAN Note</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTA adds</td>
<td>512</td>
<td>1229</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>EPILOG adds</td>
<td>292</td>
<td>12</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>TRF adds</td>
<td>4</td>
<td>20</td>
<td>See TRF Note</td>
<td>See TRF Note</td>
</tr>
<tr>
<td>TRF Note:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATF adds</td>
<td>5</td>
<td>0</td>
<td>See ATF Note</td>
<td>See ATF Note</td>
</tr>
</tbody>
</table>

Note: OMEGAMON II and OMEGAMON run in separate address spaces. DEXAN, RTA, EPILOG and TRF are incremental to the storage required for the OMEGAMON address space.

TRF Note: TRF CSA/ECSA utilization is
- CSA = 4k
- ECSA = 4k per IMS region + 256 bytes per database

ATF Note: ATF CSA/ESA utilization is
- CSA = 2k
- ECSA = 7.5k + 660k per OMEGAMON region

Dexan Note: Depending on the use of groups, the Extended Common Area may be larger than 72.
Migrating elements from a previous version to Version 510

After configuring OMEGAMON II for IMS or OMEGAMON II for DBCTL, you will need to migrate the elements you want to keep.

Following is a list of the system elements you can migrate from previous versions of OMEGAMON II to Version 510. If you do not migrate an element, OMEGAMON II uses the Version 510 default. The migration process is handled through CICAT.

- Product-level security (VSAM)
- Internal tables database (VSAM)
- Screen spaces and menus
- Profiles and exception thresholds
- EPILOG. Historical Datastore List
- EPILOG Historical Collector options
- EPILOG default PF key definition ($)
- EPILOG default PF key definition (@)

**Note:** You can keep the Candle-supplied OMEGAMON II default profile settings and use them until you know how you want to customize the OMEGAMON II realtime controls.

Migrating from Version 400

When migrating from Version 400 to Version 500 or 510, for the EPILOG Historical Collector Options RKANPAR(KEIOPTMO) you will need to change the Version 400 M0 to the actual m prefix defined.

Migrating started task names

When migrating started task names:

<table>
<thead>
<tr>
<th>IF you...</th>
<th>THEN...</th>
</tr>
</thead>
<tbody>
<tr>
<td>discontinue using Version 400</td>
<td>you can reuse the started task names you defined in Version 300 or 400</td>
</tr>
<tr>
<td>continue to use Version 400 or 500 concurrently with Version 510</td>
<td>you must define new started tasks for Version 510</td>
</tr>
</tbody>
</table>

**Note:** You cannot migrate started task JCL.
Migrating VTAM nodes

When migrating VTAM nodes:

<table>
<thead>
<tr>
<th>IF you...</th>
<th>THEN...</th>
</tr>
</thead>
<tbody>
<tr>
<td>discontinue using Version 400</td>
<td>you can reuse the VTAM nodes you set up in Version 510</td>
</tr>
<tr>
<td>continue to use Version 400 or 500 concurrently with Version 510</td>
<td>you must set up new VTAM nodes for Version 510</td>
</tr>
</tbody>
</table>

Security

See Part II in this manual for information relating to any external security system that you are using at your site. Examples are:

- IBM RACF™
- CA-ACF2®
- CA-TOP SECRET®

End-to-End (ETE)

All of the OMEGAMON products that use ETE Version 500, can run on one ETE system. For each OMEGAMON that uses ETE, the ETE proc is installed into your PROCLIB during CICAT configuration.

Candle recommends that all your OMEGAMON’s share the same ETE started task. If some OMEGAMON systems require ETE Version 500 and some require an ETE release prior to Version 160, you will need to run two ETE systems.

See the End-to-End™ Response Time Feature Reference Manual for more information on ETE.

IMS Console Facility (I/CF)

See the IMS Console Facility manual for detailed information on configuring the I/CF feature of OMEGAMON II for IMS and OMEGAMON II for DBCTL.
Overview of the Process

This section provides a broad overview of the installation, configuration, and customization process. It also includes information about accessing help when using CICAT.

Broad overview of the process

The following table contains the broad steps you follow when you install, configure, and customize the product. The table also shows where you can find the information you will need during each of the steps.

Table 6. Overview of the Process

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Using CICAT, install the product and create any new runtime environments.</td>
<td><em>Installation &amp; Configuration of Candle Products on OS/390 and z/OS</em> and the online help for the product panel you are using</td>
</tr>
<tr>
<td>2</td>
<td>Using CICAT, configure the components you want to use.</td>
<td>Online help for the product panel you are using</td>
</tr>
<tr>
<td>4</td>
<td>Manually configure the components and verify that the configuration is complete.</td>
<td>Chapters 1 — 4 in this guide</td>
</tr>
<tr>
<td>5</td>
<td>Manually customize the components you want to use.</td>
<td>Chapters 5 — 13 in this guide</td>
</tr>
</tbody>
</table>
Getting Help with CICAT

The help for CICAT contains detailed information about using the CICAT panels. For example, the help contains information about:

- how to use the panel
- why parameters are required
- what the available action codes provide
- what the input fields mean
- what you are required to supply

To display help from any CICAT panel, press the Help key (F1) or enter HELP on the command line.

You can also display help for the help. For example, you can display information about the command to use to return to the previous topic in the help system. To display the help for help from any help panel, press the Help key (F1) or enter HELP on the command line.
CICAT Background and Requirements

This section describes using the Candle Installation and Configuration Assistance Tool (CICAT).

Background about CICAT

You must use CICAT to install and configure the product. CICAT is an ISPF dialog that guides you through the installation and configuration steps required to install this product. Data entry panels assist you in understanding your site-specific parameter values. Associated help panels assist you in understanding the CICAT process and describe the input fields on the entry panels.

CICAT is restartable. If necessary, you can end the dialog, start it again, and continue from the point of interruption. ISPF V2.3 or above is required to use CICAT.

If you have not previously installed CICAT during installation of this or any other Candle product, you must do so now. For instructions on installing CICAT, see the *Installing Candle Products on MVS* manual. If you want to use CICAT from a previous installation, you must ensure that it is the most current version of CICAT. The *Installing Candle Products on MVS* manual will help you make this determination.

Restrictions on specifying values in CICAT

*Important Note:* Entering ampersand (&) in any CICAT parameter string, whether you are in interactive or batch mode, results in a CICAT abend.

Reminder about the information available

If you need information about installing the product using CICAT, you can locate information in the

- *Installing Candle Products on MVS* manual
- online help for the product panel you are using
Examples of the tasks performed by CICAT

CICAT performs tasks that make the product operational with a basic set of defaults. You use CICAT to:

- modify JCL
- allocate datasets
- define VTAM applids
- configure I/CF console and trap commands
- create runtime libraries
- run the migration utility
- install the Candle Subsystem
Accessing the Configure OMEGAMON II for IMS/DBCTL Menu

Prerequisites for configuring OMEGAMON II for IMS or OMEGAMON II for DBCTL

Before you start to configure OMEGAMON II for IMS or OMEGAMON II for DBCTL, be sure that you have reviewed the considerations and planning information in this chapter. The following configuration procedures assume that you have:

- Completed SMP/E installation and applied maintenance, or for a MultiProduct Quick Install tape that includes the product, as described in your *Installation & Configuration of Candle Products on OS/390 and z/OS* manual.

Reminder about the information available

If you need information about configuring OMEGAMON II for IMS or OMEGAMON II for DBCTL using CICAT or specific information about the values you specify using CICAT, see the online help for the product panel you are using.

Accessing CICAT

For information about starting CICAT, see *Installation & Configuration of Candle Products on OS/390 and z/OS*.

Accessing the Configure OMEGAMON II for IMS/DBCTL Menu in CICAT

There are two versions of CICAT available to install and configure Candle products. These include:

- CICAT Version 200
- CICAT Version 300

The method you use to access the Configure OMEGAMON II for IMS/DBCTL Menu will vary depending on the version of CICAT you are using.
Accessing the menu in CICAT Version 200

Follow these instructions to access the Configure OMEGAMON II for IMS/DBCTL Menu in CICAT Version 200.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | On the CICAT Main Menu, perform the appropriate action.  
  ■ If you are installing the MultiProduct Quick Install tape, select MultiProduct Quick Install.  
  ■ If you are installing OMEGAMON II for IMS/DBCTL as a separate product, select the product. |
| 2    | On the Installation/Configuration Primary Menu, select Assist configuration and manage runtime environments. |
| 3    | On the Runtime Environments (RTE) panel, use C (Configure) to select a runtime environment.  
  **Result:** CICAT displays the Product Configuration Selection Menu. |
| 4    | On the Product Configuration Selection Menu, select OMEGAMON II for IMS/DBCTL.  
  **Result:** CICAT displays the Configure OMEGAMON II for IMS/DBCTL Menu. |

Accessing the menu in CICAT Version 300

Follow these instructions to access the Configure OMEGAMON II for IMS/DBCTL Menu in CICAT Version 300.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>On the Main Menu, select Configure products.</td>
</tr>
<tr>
<td>2</td>
<td>On the Configure Products menu, select Setup Configuration Environment.</td>
</tr>
<tr>
<td>3</td>
<td>On the Setup Configuration Environment panel, specify the values.</td>
</tr>
<tr>
<td>4</td>
<td>Return to the Configure Products menu.</td>
</tr>
</tbody>
</table>
| 5    | On the Configure Products menu, select Configure Products.  
  **Result:** CICAT displays the Product Selection Menu. |
| 6    | On the Product Selection Menu, select OMEGAMON II for IMS/DBCTL.  
  **Result:** CICAT displays the Configure OMEGAMON II for IMS/DBCTL Menu. |
Example of the Configure OMEGAMON II for IMS/DBCTL Menu

The following illustration shows an example of the Configure OMEGAMON II for IMS/DBCTL Menu in CICAT.

--- CONFIGURE OMEGAMON II FOR IMS/DBCTL ---

Option ===> 

Perform these configuration steps in order: 

1. Specify configuration values 
2. Allocate additional runtime datasets 
3. Create runtime members 
4. Modify Classic interface command security 
5. Complete the configuration

Optional:

5. Configure I/CF console commands 
6. Configure I/CF trap commands 
7. Install Candle Subsystem 
8. Run migration utility

F1=Help F3=Back
# CICAT Configuration Procedures

## CICAT configuration checklist

The following table contains the steps you perform on the CICAT Configure OMEGAMON II for IMS/DBCTL menu. The steps are listed in the sequence in which they are to be performed. Use the ✓ column to check off steps as you complete them.

<table>
<thead>
<tr>
<th>✓</th>
<th>CICAT Configuration Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td><strong>Use Specify configuration values</strong> to:</td>
</tr>
<tr>
<td></td>
<td>▪ specify the IMS Realtime Monitor (RTM) parameters, IMS VTAM parameters, and autostart RTM components to start and run the RTM tasks</td>
</tr>
<tr>
<td></td>
<td>▪ modify the IMS Realtime Monitor parameters for your site</td>
</tr>
<tr>
<td></td>
<td>▪ specify the CUA and VTAM parameters required to configure the runtime members</td>
</tr>
<tr>
<td>✓</td>
<td><strong>Use Allocate additional runtime datasets</strong> to review the JCL that CICAT generates to allocate other required libraries in addition to the standard set of runtime datasets.</td>
</tr>
<tr>
<td>✓</td>
<td><strong>Use Create runtime members</strong> to review the JCL that CICAT generates to:</td>
</tr>
<tr>
<td></td>
<td>▪ create the members for the interfaces for the IMS Realtime Monitor</td>
</tr>
<tr>
<td></td>
<td>▪ select the IMS subsystem and install the related members for the subsystem</td>
</tr>
<tr>
<td></td>
<td>▪ specify the IMS IDs and generate the job for IMS Callable Services (if configured)</td>
</tr>
<tr>
<td>✓</td>
<td><strong>Use Modify Classic interface command security</strong> to customize the security exit and to install security information into each runtime environment that requires Classic interface security.</td>
</tr>
<tr>
<td>✓</td>
<td><strong>Use Complete the configuration</strong> to view a list of procedures that you must perform outside of CICAT to finalize the installation of OMEGAMON II for IMS/DBCTL. See “Manual Configuration Procedures” on page 48 and “Manual Customization Procedures” on page 49 for more information on these procedures.</td>
</tr>
<tr>
<td>✓</td>
<td>If you want to configure I/CF console commands, use <strong>Configure I/CF console commands</strong>. See the IMS Console Facility manual for details on executing this step. (This step is optional.)</td>
</tr>
<tr>
<td>✓</td>
<td>If you want to install a Candle subsystem, specify the values using <strong>Install Candle Subsystem</strong>. (This step is optional and is not required if you performed the step when you installed another Candle product.)</td>
</tr>
<tr>
<td>✓</td>
<td>If you want to migrate data from a previous version, specify the version of OMEGAMON II from which you are migrating using <strong>Run migration utility</strong>. (This step is optional.)</td>
</tr>
<tr>
<td>✓</td>
<td>Load the runtime libraries using “When to load runtime libraries” on page 47.</td>
</tr>
</tbody>
</table>
When to load runtime libraries

You use action code L (Load Libs after SMP/E) on the Runtime Environments (RTEs) panel to populate the load libraries for a selected RTE. This action code upgrades your RTE to the latest Candle maintenance level. Use action code L at the following points in the CICAT process:

- After you install and configure the products you want in a new RTE.
- After you install and configure an additional product into an existing RTE.
- After you apply additional Candle maintenance.
- After you apply maintenance to the OMEGAMON II modules or the OMEGAMON II IMS component DFSCCMD0 (These must be relinked by using action code L on the RTE that contains the load library rhilev.RKANMOD or by rerunning the link edit job.)

When you defined or updated your RTE, you had the option to selectively load from the target to the runtime libraries only those members that changed.

If you requested Load Optimization, the load job generated when you use action code L (Load):

- Copies only modified modules.
- Requires access to IBM’s SuperC (ISRSUPC) utility.
- Uses less DASD space.
- Performs additional analysis which uses more CPU and I/O.

If you bypass Load Optimization, the load job:

- Copies all members.
- Requires more DASD space.
- Uses less CPU time.
Manual Configuration Procedures

This section provides information about performing manual configuration procedures outside of CICAT.

Reminder about the information available

The checklist in the following table contains the location where you can find the information you will need.

Manual configuration checklist

The following table contains the steps you perform manually to configure the product. The steps are listed in the sequence in which they are to be performed. Use the ✓ column to check off steps as you complete them.

<table>
<thead>
<tr>
<th>✓</th>
<th>Manual Configuration Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>Verify ETE installation using “Verifying the Installation of ETE” on page 55. (This does not pertain to DBCTL.)</td>
</tr>
<tr>
<td>✓</td>
<td>APF-authorize the detests using “APF-Authorizing the Load Library” on page 56.</td>
</tr>
<tr>
<td>✓</td>
<td>Prepare to start OMEGAMON II using “Startup Files and Flow” on page 57.</td>
</tr>
<tr>
<td>✓</td>
<td>Add default security using “Adding Command Level Security” on page 66.</td>
</tr>
<tr>
<td>✓</td>
<td>Define OMEGAMON II to VTAM using “Installing VTAM Support” on page 67.</td>
</tr>
<tr>
<td>✓</td>
<td>Configure I/CF IMS SYSGEN changes using the IMS Console Facility manual.</td>
</tr>
<tr>
<td>✓</td>
<td>Configure I/CF VTAM changes using the IMS Console Facility manual.</td>
</tr>
<tr>
<td>✓</td>
<td>Implement the BMP interface using “Implementing the Installation-Defined Profile” on page 109.</td>
</tr>
<tr>
<td>✓</td>
<td>Review EPILOG Reporter usage using “Preparing the EPILOG Reporter and Adjusting Collection Options” on page 68.</td>
</tr>
<tr>
<td>✓</td>
<td>Modify the SAP monitor exit using “Modifying the SAP Monitor Exit” on page 71. (This does not pertain to DBCTL.)</td>
</tr>
<tr>
<td>✓</td>
<td>Install the command authorization user exit using “Extending IMS Support for Generic Command Parameters” on page 72.</td>
</tr>
<tr>
<td>✓</td>
<td>Verify the installation of OMEGAMON II using “Installation Verification Checklist” on page 78.</td>
</tr>
</tbody>
</table>
Manual Customization Procedures

This section provides information about performing the manual customization procedures outside of CICAT.

Reminder about the information available

The checklist in the following table contains the location where you can find the information you will need.

Manual customization checklist

The following table contains the steps you perform manually to customize the product. The steps are listed in the sequence in which they are to be performed. Use the ✔ column to check off steps as you complete them. Candle recommends that you review the entire process before you begin customizing the product.

Table 9. Manual Customization Procedures Checklist

<table>
<thead>
<tr>
<th>❑</th>
<th>Manual Customization Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔</td>
<td>Review OMEGAMON II profiles using “Reviewing OMEGAMON II Profiles” on page 100.</td>
</tr>
<tr>
<td>✔</td>
<td>Review exception analysis using “Reviewing Exception Analysis” on page 103.</td>
</tr>
<tr>
<td>✔</td>
<td>Create an installation-defined profile using “Creating an Installation-Defined Profile” on page 105.</td>
</tr>
<tr>
<td>✔</td>
<td>Implement an installation-defined profile using “Implementing the Installation-Defined Profile” on page 109.</td>
</tr>
<tr>
<td>✔</td>
<td>Customize exceptions for your site using “Setting Exception Analysis Thresholds from the CUA Interface” on page 111.</td>
</tr>
<tr>
<td>✔</td>
<td>Implement the BMP interface using “Implementing Your BMP Interface” on page 113. (This does not pertain to DBCTL.)</td>
</tr>
<tr>
<td>✔</td>
<td>Implement the SAP interface using “Implementing the SAP Interface” on page 118. (This does not pertain to DBCTL.)</td>
</tr>
<tr>
<td>✔</td>
<td>Customize workload parameters using “Using KOIGBL to Customize Workload Parameters” on page 121.</td>
</tr>
<tr>
<td>✔</td>
<td>Concatenate screen spaces and profile datasets using “Concatenating Screen Space and Profile Datasets” on page 130.</td>
</tr>
</tbody>
</table>
Section 2.
Configuring and Customizing
OMEGAMON II
Chapter Overview

This chapter guides you through the configuration of the OMEGAMON II Realtime Performance Monitor.

Chapter Contents

Background about the Process .................................................. 54
Verifying the Installation of ETE ................................................. 55
APF-Authorizing the Load Library .............................................. 56
Startup Files and Flow ............................................................... 57
Adding Command Level Security .............................................. 66
Installing VTAM Support. ......................................................... 67
Preparing the EPILOG Reporter and Adjusting Collection Options ........ 68
Running the Reporter in ISPF Split-Screen Mode ......................... 69
Modifying the SAP Monitor Exit .............................................. 71
Extending IMS Support for Generic Command Parameters ............. 72
Start VSAM Message Logging ............................................... 75
Background about the Process

Background about the configuration of the Realtime Performance Monitor

The configuration process includes tasks you must perform to make the product operational with a basic set of defaults. Review the entire procedure before you begin configuring OMEGAMON II for your environment.

Upon completion of these steps, you will be able to start, execute, and stop your OMEGAMON II product. However, before you can put the product to work in your environment, you must complete the procedures in this chapter.

**Note:** You must RECEIVE and APPLY the preventive maintenance tape that Candle includes in your product package, prior to performing the steps in this chapter.

If you want to use the End-to-End Response Time feature for the Realtime Performance Monitor, see the information on using the $OIGROUP macro with the NODE parameter in this chapter.

If you are using the Historical Component (EPILOG) and want to use the End-to-End Response Time feature, see the information on using the NODE parameter at startup in the *Historical Component (EPILOG) Reference Manual*, Collector Operation chapter, Data Collection Groups section.

**Note:** References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

Before you begin

It is important that you read “Installing, Configuring, and Customizing OMEGAMON II for IMS/DBCTL” on page 33 before you begin the configuration procedures.
**Verifying the Installation of ETE**

Verify that someone has installed the End-to-End (ETE) Response Time feature on your system and if not, you will need to install ETE.

**Note:** The ETE Response Time feature does not pertain to DBCTL users.

**Verifying ETE installation**

Since all OMEGAMONs on the same MVS system at your site share a single copy of ETE Version 500, someone may have already installed ETE on your system.

From an SMP/E inquiry, FMID AKET500 will be present if someone at your site has installed ETE.
APF-Authorizing the Load Library

The OMEGAMON II load modules must reside in an APF (Authorized Program Facility) library.

Planning the APF-authorization

In planning the authorization procedure, remember that most of the OMEGAMON II modules link-edit with an authorization code of (AC=0).

You must preserve this code if you copy modules with the linkage editor.

Authorizing the OMEGAMON II load library

OMEGAMON II requires APF-authorization for the JOBLIB or STEPLIB dataset(s) that OMEGAMON II uses for execution.

Use one of the standard procedures IBM has defined to accomplish the APF-authorization. For example, you can either authorize the OMEGAMON II load library or move the OMEGAMON II load modules into a library that already has authorization.

Note: Whenever you authorize a new library, you must IPL MVS. However, moving modules into a previously authorized library does not require an IPL.

You can APF-authorize OMEGAMON II by adding the dataset name or names with the appropriate volume identification to your current SYS1.PARMLIB(IEAAPFxx) member and doing an IPL of your MVS operating environment. You need to authorize the following datasets:

- `rhilev.RKANMOD`
- `rhilev.RKANMODL`

Notes:

1. If one library in a STEPLIB or JOBLIB concatenation requires APF-authorization, all libraries in the concatenation require APF-authorization or all libraries will lose their APF status. You may already have APF authorization if you have installed other Candle products.

2. ETE does not pertain to DBCTL users.

Caution

If you make changes in the load modules after you move them into the library, you will have to replace those members.
Startup Files and Flow

The following illustrations show the flow of the startup procedure and the files being used by OMEGAMON II.

Startup files and flow of the startup procedure

The first illustration shows the flow of the startup procedure and the second illustration shows the files.

FIGURE 3. Startup Procedure Flow
Startup Files and Flow

FIGURE 4. OMEGAMON II Startup Files

- OMEGAMON II Startup Files
  - OMEGAMON II in dedicated mode
  - OMEGAMON II in VTAM mode
  - Bottleneck Analysis Collector (DEXAN)
  - RTA Collector
  - EPILOG Collector
  - VSAM Message Logging
  - TRF Collector and Online TRF
  - Application Trace Facility (ATF)
  - Route IMS Command through Batch Message Processing
  - SAP

- KOI1ACO0 interface program
- KOI1AP00 PARM file
- KOI1AP00 PROC
  - START command
- KOI1VM00 START command
- KOI1DX00 START command
- KIRITA00 START command
- KEICOL00 START command using KEIOPTr00
- K12VSM00 START command
- K12TRF00 START command
- K12TF00 START command
- K12BP00 START command
- K12SA00 START command

(not valid for DBCTL)
Using the startup PROC
To use the startup PROC, copy the PROC to a system PROCLIB. For example, SYS1.PROCLIB.

Defining the MVS modify ID MPREFIX and IMSID
When you execute the startup PROC, the product interface defines a new MVS modify ID that you use to communicate with the interface. This modify ID consists of:

- a 2-character MPREFIX specified in the PROC. The value entered for the MVS suffix is used as the value for the MPREFIX parm in the startup proc.
- an IMSID specified in the PROC

For example, if the default prefix is M0 and your IMSID is IMSA, then the MVS modify ID is M0IMSA.

Also, when you execute the startup PROC, the startup PROC calls the PARM file rhilev.RKANPAR(KOImpp00), where mp is the 2-character MPREFIX. OMEGAMON II will automatically execute any interface commands in this PARM file. You may choose the characters of an MPREFIX arbitrarily, as long as each MPREFIX is unique.

**Note:** You cannot specify a stepname that is the same as this modify ID.

Using Candle standard DDNAMES
The startup procedure contains DD statements pointing to standard Candle datasets. The procedure has the started task name you specified for OMEGAMON II using CICAT.

**RKHANHENU** The OMEGAMON II command help dataset.

**RKOIPROC** The datasets from which OMEGAMON II reads screen spaces that the command and menu interfaces use.

The concatenation includes the rhilev.RKOIPROC dataset, which contains Candle-defined screen spaces and the rhilev.IMSID.RKOIPCSV dataset, which may contain user-defined screen spaces. The datasets in the RKOIPROC DD statements are read-only.

**RKOIPCSV** The rhilev.IMSID.RKOIPCSV dataset. (CICAT allocates one data set for each IMS ID.)

RKOIPCSV is initially empty, but any screen spaces that your site creates or modifies will be written to and subsequently read from RKOIPCSV. The RKOIPCSV DD statement cannot consist of concatenated datasets.

**RKOIPROF** The RKOIPROF dataset from which OMEGAMON II reads user profiles.

**RKOIPFSV** The rhilev.IMSID.RKOIPFSV dataset to which OMEGAMON II writes user profiles. This DD statement does not have concatenated datasets. (CICAT allocates one data set for each IMS ID.)

**RKANPAR** The dataset from which the product interface start commands are read.

**RKEIEDS** The EPILOG datastore in rhilev.IMSID.RKEIEDS. (CICAT allocates one data set for each IMS ID.)
**Editing the PARM file**

When you execute the startup PROC, the startup PROC calls the PARM file `rhilev.RKANPAR(KOImP00)`, where `mp` is the 2-character MPREFIX. The default member is KOIM0P00.

You must edit KOIM0P00 to activate various product components, following the instructions in KOIM0P00. Since OMEGAMON II automatically executes any interface commands in the KOIM0P00 PARM file, OMEGAMON II can automatically start any combination of the following components.

<table>
<thead>
<tr>
<th>IF you want to automatically start</th>
<th>THEN remove the asterisk (*) in front of</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMEGAMON II in dedicated mode</td>
<td>EXEC KOIITEDmp</td>
</tr>
<tr>
<td>OMEGAMON II in VTAM mode</td>
<td>EXEC KOIVTMmp</td>
</tr>
<tr>
<td>Bottleneck Analysis (DEXAN) collector</td>
<td>EXEC KOIDEXmp</td>
</tr>
<tr>
<td>EPILOG collector</td>
<td>EXEC KEICOLmp</td>
</tr>
<tr>
<td>BMP for IMS commands (not valid for DBCTL)</td>
<td>EXEC KI2BMPmp</td>
</tr>
<tr>
<td>VSAM message logging</td>
<td>EXEC KI2VSMmp</td>
</tr>
<tr>
<td>Transaction Reporting Facility</td>
<td>EXEC KI2TRFmp</td>
</tr>
<tr>
<td>SAP (not valid for DBCTL)</td>
<td>EXEC KOISAPmp</td>
</tr>
<tr>
<td>Response Time Analysis</td>
<td>EXEC KRIRTAmp</td>
</tr>
</tbody>
</table>

**Notes:**

1. We address each of the programs in the above table as separate topics in this manual.
2. The BMP for IMS command program and SAP do not pertain to DBCTL users.
3. During CICAT configuration, member KI2ATFmp is created in `rhilev.RKANPAR`. It contains the start command for the Application Trace Facility (ATF) component. The ATF component is not meant to be automatically started upon OMEGAMON II startup and is NOT included in the PARM file. Refer to the Application Trace Facility manual for information on starting the Application Trace Facility.

To use OMEGAMON II with its standard CUA interface, be sure to remove the asterisk in front of the EXEC statements for KOIVTMmp, KOIDEXmp, KEICOL.mp, KI2VSMmp, and KI2TRFmp.

Follow the procedures in “Start VSAM Message Logging” on page 75 to customize KI2VSMmp and other related members for VSAM message logging, and in “Adjusting EPILOG collection parameters” on page 70 to customize KEICOLmp for EPILOG collection parameters.
Editing the START commands

The members that the PARM file executes-KOIVTMmp, KOIDEXmp, KEICOLmp, KI2VSMmp, KI2TRFmp, KOISAPmp- contain product interface START commands. Edit the appropriate commands listed in Table 10: START Command Parameters on page 61.

You can enter the parameters with an asterisk (*) in the table in the VTAM logon data stream to override the setting in the VTAM START procedure.

See “START” on page 232 for the format of the START command.

START command parameters

The following table describes the START commands and tells you which members use them, what their possible values are, and what the Candle default is. In some cases, the parameter is not in the member generated by CICAT. If the parameter is listed in the table, you can manually add it to the member.

Table 10. START Command Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Member Used In</th>
<th>Description</th>
<th>Possible Values</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPL</td>
<td>KOIVTMmp</td>
<td>1- to 8-character name that defines OMEGAMON® to VTAM. Also specified in SYS1.VTAMLST.</td>
<td>cccccccc</td>
<td>cccOl00</td>
</tr>
<tr>
<td>ATFACT</td>
<td>KI2ATFmp</td>
<td>Control option to activate or deactivate ATF</td>
<td>ON or OFF</td>
<td>OFF</td>
</tr>
<tr>
<td>ATTACH</td>
<td>KI2BMPmp</td>
<td>Specifies when you want the IMS command BMP to be available.</td>
<td>YES NO WAIT AUTO SUSP END</td>
<td>YES</td>
</tr>
<tr>
<td>AUP</td>
<td>KOIVTMmp</td>
<td>Specifies whether VTAM sessions run in automatic update mode or not.</td>
<td>YES or NO</td>
<td>NO</td>
</tr>
</tbody>
</table>
#### BUFNO

(not valid for DBCTL)

**KRIRTAmp**

Size of the storage area that RTA collector (DATACOL) buffers use. The default is 1024*1024/OLDS block size. RTA copies IMS log buffers into RTA cell pools. The BUFNO parameter specifies the number of buffers that RTA can allocate for cell pools. This BUFNO number should be high enough to allow RTA to keep up with the IMS physical logger.

If RTA is unable to keep up with the physical logger, RTA becomes inactive, and you must manually stop and restart RTA. To resolve this situation, you must increase RTA's dispatching priority and the BUFNO parameter. When the BUFNO parameter is greater than 499 and RTA is still unable to keep up with IMS logging, RTA will become temporarily inactive, skip the IMS log records for which there is no room in the cell pool, and resume when the cell pool frees up.

<table>
<thead>
<tr>
<th>Possible Values</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-999</td>
<td>Total buffer size = IM above the 16M line</td>
</tr>
</tbody>
</table>

#### CMPAT

(not valid for DBCTL)

**KRIRTAmp**

Controls compatibility mode for RTA, the RTA collector (DATACOL).

Specify YES when you run previous versions of RTA for IMS, during the same IPL of your MVS system as RTA for IMS Version 120. Specify NO otherwise.

<table>
<thead>
<tr>
<th>Possible Values</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES or NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

#### COLS

**KOIDEDEmp**

Number of columns on the screen. (Best not to specify; use CANDLE default.)

<table>
<thead>
<tr>
<th>Possible Values</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>80-240</td>
<td>80</td>
</tr>
</tbody>
</table>

#### DATA

**KOIVTMmp**

YES indicates that you use a logon string. NO lets you log on with VTAM interpret table names.

<table>
<thead>
<tr>
<th>Possible Values</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES or NO</td>
<td>YES</td>
</tr>
</tbody>
</table>
Table 10. START Command Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Member Used In</th>
<th>Description</th>
<th>Possible Values</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLOBAL</td>
<td>KOIDEDmp</td>
<td>Suffix of the KOGI BL data module. Only one global data suffix can be active.</td>
<td>mp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KOIVTMmp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>KOIDEXmp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CICAT builds this module for you.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IDEG</td>
<td>KOIDEXmp</td>
<td>Control option to start or stop the Bottleneck Analysis (DEXAN) Collector.</td>
<td>BEGN</td>
<td>BEGN</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DTCH</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>END</td>
<td></td>
</tr>
<tr>
<td>IRTA</td>
<td>KRI RTAmp</td>
<td>KRI RTAmp control option to start RTA data collection.</td>
<td>ON</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td>(not valid for DBCTL)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITRF</td>
<td>KI2TRFmp</td>
<td>ON indicates that TRF collection is to be performed. OFF suppresses the TRF</td>
<td>ON or</td>
<td>ON</td>
</tr>
<tr>
<td></td>
<td></td>
<td>collection.</td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LROWS</td>
<td>KOIDEDmp</td>
<td>Number of logical rows for the output area. In cross-memory and cross-system</td>
<td>ROWS to 9999</td>
<td>255</td>
</tr>
<tr>
<td></td>
<td>KOIVTMmp</td>
<td>mode, LROWS takes the value of the ROWS parm. (If specified less than ROWS, ROWS is used instead.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OL</td>
<td>KI2TRFmp</td>
<td>ON indicates that online TRF is to be started. OFF indicates that online TRF will not be started.</td>
<td>ON or</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td>OPTION</td>
<td>KEICOLmp</td>
<td>Name of the RKANPAR member that contains the EPILOG startup options and collector group definitions.</td>
<td>cccccccccc</td>
<td>KEIOPTmp</td>
</tr>
<tr>
<td>PROCLIM</td>
<td>KI2BMPmp</td>
<td>The number of commands the BMP processes before terminating. Accepts same</td>
<td>0-65535</td>
<td>0</td>
</tr>
<tr>
<td>(not valid for DBCTL)</td>
<td></td>
<td>values as the PROCLIM=keyword on the IMS SYSGEN TRANSACT statement.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The default is zero, indicating that there is no limit to the number of commands the BMP can process.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Member Used In</td>
<td>Description</td>
<td>Possible Values</td>
<td>Default</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>-------------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>PSB</td>
<td>KI2BMPmp</td>
<td>The PSBNAME defined in the PSBGEN and named in the IMS SYSGEN APPLCTN statement.</td>
<td>cccccc</td>
<td>CANDLE1</td>
</tr>
<tr>
<td>PSWD</td>
<td>KOIVTmp</td>
<td>If specified, requires terminal users to enter a password allowing access to KOBVTAM. We recommend that you use external security instead of this option.</td>
<td>cccccc</td>
<td>(none)</td>
</tr>
<tr>
<td>ROWS</td>
<td>KOIDEmp</td>
<td>Number of physical rows on the screen. (Best not to specify; use VTAM default.)</td>
<td>2-99</td>
<td>24</td>
</tr>
<tr>
<td>TIMEOUT</td>
<td>KOIVTmp</td>
<td>Specifies the number of minutes until OMEGAMON terminates idle VTAM sessions, including those that VTM1 initiates. If you do not apply a timeout value, an idle session remains idle until the session user terminates it.</td>
<td>1-99</td>
<td>30</td>
</tr>
<tr>
<td>TDUR</td>
<td>KI2ATFmp</td>
<td>The number of minutes that an application trace is left to execute if a stop time or duration is not provided in the filter definition.</td>
<td>1-999</td>
<td>5</td>
</tr>
<tr>
<td>SIZE</td>
<td>KI2ATFmp</td>
<td>The size of the ATF/TRF data space, which holds the data, collected ATF/TRF trace data.</td>
<td>1-999</td>
<td>65MB</td>
</tr>
<tr>
<td>TRAN</td>
<td>KI2BMPmp</td>
<td>The transaction code you associated with the BMP in the IMS SYSGEN TRANSACT statement.</td>
<td>cccccc</td>
<td>CANDLE1</td>
</tr>
<tr>
<td>UMAX</td>
<td>KOIVTmp</td>
<td>Maximum number of sessions you want to support. (Each OMEGAVIEW or TSO user counts as a session.)</td>
<td>1-99</td>
<td>6</td>
</tr>
<tr>
<td>UNIT</td>
<td>KOIDEmp</td>
<td>Unit address of the OMEGAMON terminal. Skeleton director uses this address; dedicated mode requires this address.</td>
<td>cuu</td>
<td>(none)</td>
</tr>
</tbody>
</table>
### Table 10. START Command Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Member Used In</th>
<th>Description</th>
<th>Possible Values</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>USER</td>
<td>KOIDEDmp</td>
<td>2-character session profile identifier. May be Candle-provided, site-defined, or user-defined.</td>
<td>/C /I cc</td>
<td>/C</td>
</tr>
<tr>
<td></td>
<td>KOIVTMmp</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Adding Command Level Security

Before starting OMEGAMON II, you might want to add password security to several sensitive commands.

Setting default security

You can establish default security by following these steps:

1. Update `rhilev.RKANSAM(KOISUPDI)` with your site requirements.
2. Create a KOISUPD security update job using the sample KOISUPD job in `rhilev.RKANSAM`.
3. In the KOISUPD job you create, use the KOISUPDI job you updated in `rhilev.RKANSAM` as the input.
4. Submit the KOISUPD security update job you created.

See the comments in these dataset members for further details.
Installing VTAM Support

You can now install VTAM support as follows:

1. Define OMEGAMON II to VTAM.
2. Optionally, simplify the logon process.

Defining OMEGAMON II to VTAM

To define OMEGAMON II to VTAM, perform the following steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Define the KOBVTAM application program as an application to VTAM in SYS1.VTAMLST. Candle supplies a sample application major node definition in &amp;rhileu.RKANSAM(cccccccc), where cccccccc is the major node name you specified for VTAM using CICAT.</td>
</tr>
<tr>
<td>2</td>
<td>Provide this information to your VTAM systems programmer, requesting an update of SYS1.VTAMLST to include the major node definition.</td>
</tr>
</tbody>
</table>

Note: The optional TSO and ISPF modes require additional VTAM definitions for the application program VTM1, which uses VTAM services to provide access between TSO address spaces and OMEGAMON II. If your site plans to support these modes, review the information in the section “Defining virtual terminals to VTAM” on page 88 in this manual, to allow the VTAM systems programmer to perform all VTAMLST edits at one time.

Starting the VTAM connection to IMS region automatically

During CICAT configuration of OMEGAMON II, you can specify that you want the VTAM connection to IMS region to start automatically when you start OMEGAMON II. See “Autostarting RTM components” on page 35 and the CICAT online help for more information.

Simplifying the logon process (optional)

You may simplify the user logon process by creating or modifying the VTAM Unformatted System Services (USS) table(s) or the VTAM Interpret table(s).

Contact your VTAM systems programmer, or refer to the IBM Manual VTAM Resource Definition Reference for assistance.
Preparing the EPILOG Reporter and Adjusting Collection Options

You can run the EPILOG reporter component of OMEGAMON II in one of the following ways:

- from a TSO CLIST, in TSO full-screen mode
- in ISPF split-screen mode
- as a batch job
Running the Reporter in ISPF Split-Screen Mode

The member `rhilev.RKANSAM(KEISPF)` contains a sample CLIST for running EPILOG in ISPF split-screen mode.

To prepare the EPILOG reporter to run in ISPF split-screen mode:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Copy `rhilev.RKANSAM(KEISPF2)` to `rhilev.RKANPAR(KEISPF2)`.
| 2    | Edit `rhilev.RKANPAR(KEISPF2)`, changing the `-THILEV-` and `-RHILEV-` strings in the PROC statement to match the installation-defined `-THILEV-` and `-RHILEV-` variables.
This CLIST is set to direct all reporter messages to SYSOUT via the RKEIMSG DD name. The user may reset the CLIST and may also change the RKEILOG DD name.
| 3    | Copy both `rhilev.RKANSAM(KEISPF)` and `rhilev.RKANPAR(KEISPF2)` to a PDS CLIST library that ISP or TSO reads. You can then invoke KEISPF to use EPILOG in ISPF split-screen mode. |

**Note:** The first time each user invokes CLIST KEISPF from a TSO user ID after product installation, he must select option 0 (the PARMS option) to initialize PF key assignments. On subsequent invocations, users can select option 1 to begin a reporting session. Refer to the *Historical Component (EPILOG) User’s Guide* for additional information on running EPILOG in split-screen mode.

You must copy the following required panel definition members to an appropriate panel dataset that will be available to users operating in this mode:

- `rhilev.RKANSAM(KEISPF2)`
- `thilev.TKANISP(KEBSPFP1)`
- `thilev.TKANISP(KEBSPFP3)`

You must copy these panels into a partitioned dataset that you have defined to ISP as a panel library by each reporter user’s TSO session. Generally, this means that each user’s TSO session must allocate the dataset to DDNAME ISPPLIB. However, if your version of ISP supports the LIBDEF service, you can use LIBDEF instead of modifying the ISPPLIB concatenation. These members require no user modification.

Panel KEBSPFP3 can be pre-processed for better performance; KEBSPFP1 and KEISPF2 are not eligible for pre-processing because of their dynamic nature.
Running the report in TSO full-screen mode

The member rhilev.RKANSAM(KEICLIST) contains a sample TSO CLIST that enables TSO users to run the reporter.

To use the CLIST:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Edit KEICLIST, changing the TARGET and RUNTIME defaults to match the thilev and rhilev values you specified during CICAT configuration of the runtime environment.</td>
</tr>
<tr>
<td>2</td>
<td>Save the CLIST in an appropriate CLIST library that is available to TSO users.</td>
</tr>
</tbody>
</table>

Running the reporter as a batch job

The member thilev.TKANSAM(KEIEPLG) contains an example of a cataloged procedure that you must use to run the EPILOG reporter in batch mode.

The sample batch jobs in thilev.TKANSAM named KEIJCTRS, KEIJDBAS, and KEIJSPGS use this type of PROC.

To use the example procedure in thilev.TKANSAM(KEIEPLG):

1. Change the CANPRF and USRPRF defaults to match the high-level index values you selected for your site.
2. Copy the procedure to a system procedure library, such as SYS1.PROCLIB.

Adjusting EPILOG collection parameters

You can run the EPILOG component of OMEGAMON II using EPILOGs default collection parameters, or you can reset the parameters using rhilev.RKANPAR(KEIOPTmp).

The KEIOPTmp member includes runtime parameters that indicate, for example, which PSB groups to monitor and what sampling interval to use. The OPTION default member, as identified in the START EPILOG statement in rhilev.RKANPAR(KEICOLtmp), is KEIOPTmp.

See the Historical Component (EPILOG) Reference Manual for more information about the KEIOPTmp member.
Modifying the SAP Monitor Exit

When to use this unit

Use the following table to determine if this unit is appropriate for your site:

<table>
<thead>
<tr>
<th>IF you are using...</th>
<th>AND...</th>
<th>THEN...</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMEGAMON II for IMS</td>
<td>SAP</td>
<td>follow the instructions in this unit.</td>
</tr>
<tr>
<td></td>
<td>are not using SAP</td>
<td>skip this unit.</td>
</tr>
<tr>
<td>OMEGAMON II for DBCTL</td>
<td></td>
<td>skip this unit.</td>
</tr>
</tbody>
</table>

You must modify KOISSTEI, the SAP statistics/monitor exit, before you can use SAP. This unit tells you how to change the SAP monitor exit code to make the SPE functional and includes a modified sample of KOISSTEI.

Procedure for modifying KOISSTEI

Use the following procedure to change the SAP monitor exit code.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Copy thilew.TKANSAM[KOISSTEI] to rhilew.RKANSAM[KOISSTEI].</td>
</tr>
<tr>
<td>2</td>
<td>Edit the SAP statistics/monitor exit code, KOISSTEI.</td>
</tr>
</tbody>
</table>
Extending IMS Support for Generic Command Parameters

Candle now supplies a standard command authorization user exit for IBM IMS/ESA releases 5.1 and up, which extends the standard generic functionality that IBM supplies in IMS.

Generic qualifiers

Candle’s user exit supports the following generic qualifiers:

<table>
<thead>
<tr>
<th>Generic Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>* (asterisk)</td>
<td>Represents zero to any number of characters</td>
</tr>
<tr>
<td>% (percent)</td>
<td>Represents any one character</td>
</tr>
</tbody>
</table>

For example:

- **A*B**
  - matches AB, AXB, and AXXB, and
- **A%B**
  - matches AXB, AYB, but not AB.
Command authorization user exit

Candle’s command authorization user exit adds support for generic parameters for the following resources:

<table>
<thead>
<tr>
<th>RESOURCE</th>
<th>Command KEYWORDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Databases</td>
<td>DB, DBD, DB2, DATABASE, DATABASES</td>
</tr>
<tr>
<td>Programs</td>
<td>.PGM, PGMS, PROG, PROGRAM, PROGRAMS, PROGS, PSB</td>
</tr>
<tr>
<td>Regions</td>
<td>REG, REGS, REGION, REGIONS</td>
</tr>
</tbody>
</table>

Candle’s user exit intercepts all commands, except those that IMS internally generates. If a command has a link with another IMS command user exit, Candle’s user exit calls this user exit first. If the other user exit rejects the command, Candle’s user exit skips all further processing and forwards the generated return code to the invoking IMS module.

If Candle’s user exit does not link with another IMS command user exit or there is no other IMS command user exit, Candle’s user exit parses the command. If Candle’s user exit detects that the second word of a command is one of the command keywords in the table above, the user exit parses the third word for a generic qualifier (either an asterisk (*) or percent sign (%)).

When Candle’s user exit finds a generic qualifier, it calls the appropriate processor to scan the IMS control blocks to find all resource names that match the specific pattern. When the user exit finds one or more matches, it reissues the command substituting up to 15 specific parameters per command. The user exit will continue to reissue the command until it uses all matches.

If IMS returns a response to a command, Candle’s user exit forwards the response to the LTERM where you entered the command. If you entered the command programmatically, the user exit returns any response to the command to the MTO console.

The Candle user exit combines all responses to a particular command into a single-segment message and then sends this message to the LTERM or MTO console. The user exit supports a maximum of 22 lines, at 79 characters per line, for a response to any one command. When there are more than 15 resources that match a specific pattern, the user exit may generate and send multiple messages to the originating LTERM or MTO console.

When Candle’s user exit has processed all substituted commands, it will return control to IMS by issuing a return code that will cause IMS to discard the original generic command. IMS will confirm this by issuing message DFS3662W.

Note: If you do not want to see this message, you can suppress it in the IMS DFSAOUE0 exit or by using Candle’s AF/Operator product.
## Installing the command authorization user exit

Perform the following steps to install Candle’s command authorization user exit.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | If you already have a DFSCCMD0 exit, change the source code for that exit to name the entry point DFSCCMD1. If you do not have access to the source code, use Linkage Editor control statements to make this change.  
If you need Candle’s user exit to call more than one command authorization user exit, rename the entry points to DFSCCMD1, DFSCCMD2, DFSCCMD3, and (up to) DFSCCMD4. Candle’s user exit will call these exits in alphabetical order.  
When linking Candle’s user exit with an existing exit, insert the following statement before the INCLUDE statement for the existing exit.  

```
CHANGE OLDNAME(DFSSCMD\n)  
```

where OLDNAME is the entry point of the existing exit and \n is a number between 1 and 4. This renames the entry point to DFSCCMD1 (DFSCCMD2, DFSCCMD3, or DFSCCMD4), so that the Candle exit can also process this exit.  

**Note:** If you do not need the Candle user exit to call an existing DFSCCMD0, go to step 3. |
| 2    | Use the Assembly and Linkage Editor job stream in `thileu.TKANSAM(KI2CMDAL)` to assemble and link your exits.  
You can find the JCL to assemble and link the user exits in the `thileu.TKANSAM` member of KI2CMDAL. You can find the JCL to link the user exits with Candle’s user exit in KI2CMDLK. |
| 3    | Create a load module called DFSCCMD0 from the load module KI2CMDx0, where  
x=F for IMS 5.1  
x=G for IMS 6.1  
x=H for IMS 7.1  
KI2CMDx0 (renamed to DFSCCMD0) will call any existing DFSCCMDW, DFSCCMDX, DFSCCMDY, and DFSCCMDZ, in this order. If DFSCCMD0 encounters a non-zero return code from any of these calls, it preserves and returns the return code to IMS. For all return codes that are zero, DFSCCMD0 proceeds to provide IMS generic resource support.  

**Note:** KI2CMDxM depends on any called DFSCCMDx to save and restore the registers that IMS provides to it. KI2CMDxM runs in 31 bit addressing mode and may reside above the 16M line. |
Start VSAM Message Logging

The OMEGAMON II CUA interface enables you to browse the messages that IMS generates. OMEGAMON II writes these messages to a pair of VSAM datasets. When a VSAM dataset fills, OMEGAMON II automatically switches to the second dataset and then archives and reinitializes the first dataset.

This unit tells you how to prepare the VSAM datasets for message logging.

Starting VSAM message logging automatically

During CICAT configuration of OMEGAMON II, you can specify that you want VSAM message logging to start automatically when you start OMEGAMON II. See “Autostarting RTM components” on page 35 and the CICAT online help for more information.

Start VSAM message logging manually

To manually start VSAM message logging, remove the asterisk in from of the EXEC KI2VSMmp command in rhlevRKANPAR(KOImP00) (where mp is the two-character MPREFIX). The default member is KOIM0P00.

You can also activate VSAM message logging by issuing the EXEC KI2VSMmp interface command. VSAM message logging can be active whether users are logged onto the OMEGAMON II CUA interface or not.

Note: To start the VSAM message logging, at least one initialized message log dataset must be available.
Chapter Overview

This chapter will guide you through the installation verification of the OMEGAMON II Realtime Performance Monitor. You must perform the steps in this section to verify your installation, before you begin customizing OMEGAMON II.

Note: References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

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Start OMEGAMON II Realtime Performance Monitor .......................... 83
Start OMEGAMON II Realtime Performance Monitor in VTAM Mode ...... 84
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Install and Start OMEGAMON II in TSO Mode .................................... 88
Install and Start OMEGAMON II in ISPF Mode ................................... 93
Start and Stop SAP ........................................................................... 95
Exit OMEGAMON II ......................................................................... 97
Installation Verification Checklist

The steps below outline the OMEGAMON II verification procedure. You will find detailed descriptions of these activities in this chapter. Upon completion of these steps you will be ready to customize OMEGAMON II.

Review the entire procedure before you begin verifying the installation of OMEGAMON II.

Installation verification checklist

The following checklist lists the steps you should follow to verify your installation. You should perform these steps in sequence.

Use the ✓ column to check off steps as you complete them.

<table>
<thead>
<tr>
<th>✓</th>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Start the Candle subsystem, if not already up.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>For OMEGAMON II for IMS users who use ETE: Start the End-to-End (ETE) Response Time feature.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Start OMEGAMON II</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Start OMEGAMON II in VTAM, dedicated, TSO, and ISPF modes.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>For OMEGAMON II for IMS users who use SAP: Start and stop SAP.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Exit OMEGAMON II.</td>
<td></td>
</tr>
</tbody>
</table>
Start the Candle Subsystem

This section explains how to start the Candle subsystem. You can start the Candle subsystem either:

- at IPL
- after IPL

**Note:** If your MVS operating system level is not ESA 4.2 or higher, do not continue with the installation of the Candle subsystem. The Candle subsystem will not run on a pre-ESA 4.2 system. You should continue the install of the Candle subsystem after upgrading your operating system to ESA 4.2 or higher.

### Starting the Candle subsystem at IPL

To start the Candle subsystem at IPL:

- Make sure the definition statement includes the statement SSPROC=CANSCN.

**Result:** The IPL automatically invokes the Candle subsystem CANSCN startup procedure.
Starting the Candle subsystem after IPL

To start the Candle subsystem after IPL:

- Issue the START command from the operator console START CANSCN where CANSCN is the name of the subsystem startup procedure.

  \[
  \text{START CANSCN}
  \]

  where CANSCN is the name of the subsystem startup procedure.

Using the RESTART parameter

The optional RESTART parameter forces the subsystem to complete initialization, bypassing checks we designed to prevent the start of a second address space.

**Important**

Use RESTART only if the subsystem address space terminates abnormally and, when you subsequently attempt to start the Subsystem, message CNDL018I appears.

Message CNDL018I indicates that the subsystem is already active. Verify that the subsystem address space is not active before using RESTART.

If you use RESTART when the subsystem is already active, results are unpredictable.

RESTART requires the FORCE operand, as in the following example:

  \[
  \text{START CANSCN,RESTART=’,RESTART=FORCE’}
  \]

  where CANSCN is the name of the subsystem startup procedure.
Start the End-to-End Response Time Feature

This section explains how to start the End-to-End (ETE) Response Time feature.

**Note:** ETE does not pertain to DBCTL users.

### Starting ETE

Follow these steps to start ETE:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | If you already have ETE Version 500 running, you must stop ETE by issuing the following command on the MVS operator console:  
  **ETE QUIESCE**  
  To be sure that both the ETE subsystem and the address space are shut down completely, wait for the following messages:  
  **ETE0086: ETE ADDR SPACE TERMINATED BY SYSBSYSTEM QUIESCE**  
  **ETE0051:QUIESCE COMPLETE**  
  **ETE0003: COMPLETE** |
| 2    | To start ETE, issue the following command on the MVS operator console:  
  **START cccccccc**  
  where `cccccccc` is the started task name you specified for ETE using CICAT.  
  The member in `rhilev:RKANSAM` contains the JCL procedure that starts the ETE address space. |
| 3    | To verify that ETE started successfully, look on the operator console for the message:  
  **ETE009 ETE VERSION 500 SUCCESSFULLY INITIALIZED**  
  At an MVS console, enter the ETE USERS command to verify that ETE started, as shown in Figure 5 on page 82 |
ETE USERS command output

The following figure shows the output from the ETE USERS command which includes the ETE version number and the load libraries from which you have installed ETE.

FIGURE 5. ETE USERS Command Output

Note: If you want to run concurrent versions of ETE, refer to the End-to-End Response Time Feature Reference Manual.
Start OMEGAMON II Realtime Performance Monitor

This section explains how to start the OMEGAMON II Realtime Performance Monitor.

Starting OMEGAMON II Realtime Performance Monitor automatically

To automatically start the product interface and the OMEGAMON II address space under VTAM, follow these steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Issue the VTAM command  
      | `VARY NET,ACT,ID=cccccccc`  
      | where cccccc is the major node name you specified for OMEGAMON II to VTAM using CICAT.  
      | Example: If `CTDOI00` is CTDOI00, issue the command  
      | `VARY NET,ACT,ID=CTDOI00` |
| 2    | Make sure the IMS system you are monitoring is active. |
| 3    | Issue the start command from a system console to activate the monitor:  
      | `START proc`  
      | where proc is the name of the OMEGAMON procedure member name in your PROCLIB. |
| 4    | Log on to the OMEGAMON II Realtime Performance Monitor. |
Start OMEGAMON II Realtime Performance Monitor in VTAM Mode

You installed VTAM support as part of the standard installation procedure, because you must have VTAM support to access the OMEGAMON II CUA interface.

In VTAM mode:

- OMEGAMON II is connected directly to VTAM terminals, without the intervention of an intermediate online application such as TSO.
- You have up to 99 sessions for accessing OMEGAMON II, each from an individual terminal, without requiring access to TSO.
- You can set OMEGAMON II so that the screen refreshes automatically as in dedicated mode, but also responds immediately when you press Enter or any program function key, as in TSO mode.
- You have the assurance that if TSO is experiencing problems or is inoperable, you can access OMEGAMON II.
Starting OMEGAMON II Realtime Performance Monitor in VTAM mode

Follow these steps to start OMEGAMON II in VTAM mode:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Follow the instructions for “Starting OMEGAMON II Realtime Performance Monitor automatically” on page 83.</td>
</tr>
</tbody>
</table>
| 2    | At a VTAM terminal, log on to OMEGAMON II as follows:  
  \[
  \text{LOGON APPLID(applid)}
  \]  
  where applid is the APPLID that defines your OMEGAMON II session to VTAM.
  For example:  
  \[
  \text{LOGON APPLID(CTDOI0)}
  \]  
  The system displays the OMEGAMON II copyright.  
  **Note:** Your site may offer or require another way to log on.
  When logging on to VTAM, you can override the following parameter values set by the START command:  
  AUP  
  COLS  
  DATA  
  LROWS  
  OL  
  ROWS  
  SYS  
  USER  
  For more information on these parameters, see “START Command Parameters,” as shown in Table 10: START Command Parameters on page 61. |
| 3    | Press Enter to display the Main Menu.  
  **Note:** You can use OMEGAMON II’s menu system, or press F12 to access the command interface. |
Start OMEGAMON II Realtime Performance Monitor in Dedicated Mode

The standard installation procedure automatically installs in dedicated mode. In dedicated mode:

- OMEGAMON II is connected to one or, optionally, two dedicated consoles, each of which is a local, non-SNA device.
- You have the smallest amount of down time (the highest OMEGAMON II availability).
- OMEGAMON II uses no telecommunications access methods. OMEGAMON II communicates with the terminal via EXCP. By operating this way, OMEGAMON II can report hardware and software problems so severe that they disable other mechanisms, including MVS system consoles.
- OMEGAMON II refreshes the screen automatically every few seconds without operator intervention.

The default refresh cycle is 5 seconds. You can change this interval using the SET command to suit your reporting requirements. See “Customization Procedures for Realtime Performance Monitor” on page 99 for information on how to change the refresh cycle interval.

Automatically starting an RTM dedicated session

During CICAT configuration of OMEGAMON II, you can specify that you want a Realtime Performance Monitor (RTM) dedicated session to start automatically when you start OMEGAMON II. See “Autostarting RTM components” on page 35 and the CICAT online help for more information.
Manually starting RTM in dedicated mode

Follow these steps to start OMEGAMON II in dedicated mode:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Make sure that you have installed OMEGAMON II following the guidelines in the <em>Installing Candle Products on MVS</em> manual.</td>
</tr>
<tr>
<td>2</td>
<td>Modify <code>rhilev.RKANPAR(KOIDEDmp)</code>, to identify the device number of the desired locally-attached 327X device in the UNIT = parameter. Be sure that this device is a non-SNA, unallocated, dedicated terminal, and that this terminal is online.</td>
</tr>
<tr>
<td>3</td>
<td>Remove the asterisk (*) in front of the statement EXEC KOIDED.mp in the <code>rhilev.RKANPAR(KOImpP00</code> member (where <code>mp</code> is the MPREFIX value).</td>
</tr>
<tr>
<td>4</td>
<td>Verify that the IMS or DBCTL subsystem is running.</td>
</tr>
</tbody>
</table>
| 5    | Issue the MVS command  

```
START cccccccc
```

where `cccccccc` is the started task name you specified for OMEGAMON II using CICAT.  
This command starts the OMEGAMON II interface and starts OMEGAMON II in dedicated mode.  
The system displays the OMEGAMON II copyright. |
| 6    | Press Enter to display the Main Menu. You can use the OMEGAMON II menu system or press F12 to access the command interface. |
Install and Start OMEGAMON II in TSO Mode

Installing the OMEGAMON II Realtime Performance Monitor in TSO mode is more complicated than installing the OMEGAMON II Realtime Performance Monitor in VTAM or dedicated mode. In TSO mode:

- OMEGAMON II communicates with the TSO address space using VTM1, a Candle-supplied VTAM application.
- Up to 99 persons can operate OMEGAMON II, each from an individual terminal. Because TSO is in widespread use, many users can have convenient access to OMEGAMON II.
- The screen does not refresh automatically; press Enter to refresh the screen.

Starting TSO support

To start OMEGAMON II in TSO mode,

1. Define virtual terminals to VTAM.
2. Define the VTPOOL to VTM1.
3. Define the virtual terminals.
4. Install TSO CLISTs.

The following sections explain each of these steps in detail.

Defining virtual terminals to VTAM

To define virtual terminals to VTAM:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Define the VTM1 application program as an application to VTAM in SYS1.VTAMLST. The VTM1 program communicates between OMEGAMON II and TSO address spaces through a virtual terminal interface. Candle supplies a sample application major node definition in rhilev.RKANSAM(ccccccmp), where cccccmp is the major node name you specified for VTAM using CICAT.</td>
</tr>
<tr>
<td>2</td>
<td>To provide support for OMEGAMON II sessions under more than one TSO (or ISPF), you must install VTM1 in every VTAM domain that controls a TSO. See “Sharing VTPOOL in a Multi-Host Environment” on page 241 for more information.</td>
</tr>
</tbody>
</table>
Defining VTPOOL to VTM1

To define a virtual terminal pool for VTM1:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use member KOBVTPL in dataset thilev.TKANSAM, which contains a sample VTPOOL definition. This sample defines a virtual terminal pool containing 25 terminals, and establishes default VTAM LOGMODE names for models 2, 3, 4, and 5; 3270-type devices; and a native-mode 3290. The normal product installation installs the sample VTPOOL definition.</td>
</tr>
</tbody>
</table>
| 2    | If the sample suits your installation’s requirements, the definition for VTM1 is complete. If the sample is inadequate, you can edit KOBVTPL in thilev.TKANSAM(KOBVTPL). (The member also contains information about any additional steps you must perform.) The sample definition might require change for any of the following reasons:  
  - size of the virtual terminal pool does not meet your site’s requirements.  
  - names of the virtual terminals do not meet your site’s naming conventions.  
  - VTAM LOGMODE name defaults are inappropriate. |
| 3    | Remember that OMEGAMON products can share VTPOOL, when changing the number of virtual terminals in the pool. You must consider the number of all concurrent OMEGAMON users when determining the size of the pool. To make VTPOOL changes, such as changing the sample VTPOOL definition, you can change KOBVTPL in thilev.TKANSAM. (The member also contains information about any additional steps you must perform.) |

Defining the virtual terminals

You must define each virtual terminal, that you defined to VTM1, to VTAM. To define virtual terminals:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use dataset member KOBVT1AP in thilev.TKANSAM, which contains a VTAM application major node definition that includes an APPL definition statement for every virtual terminal that the sample VTPOOL defines. If you do not need to make changes to the sample VTPOOL, save this major node definition in SYS1.VTAMLST.</td>
</tr>
<tr>
<td>2</td>
<td>If you make changes to VTPOOL that affect either the number of virtual terminals or the names of the virtual terminals, you must make corresponding changes to the major node definition before you save it.</td>
</tr>
</tbody>
</table>
### Be aware of the following limitations for network and ACB names:

- VTPOOL defines the ACB name to VTM1, so the VTAM definition must reflect the name defined to VTM1.
- The network name may differ from the ACB name. This may be useful to you in situations where you must support multiple VTAM hosts.
- The VTPOOL $VTAPPL definition statement determines the ACB names of the virtual terminals.

The first portion of the names (up to 6 characters) is taken from the value of the VTAPPL keyword. A two-character suffix is added based on the value of the APPL# keyword, which may range from 01 to 99, inclusive.

For example, if a $VTAPPL statement is coded with VTAPPL=OBVTM1 and APPL#=25, a combination of the two keyword values results in 25 ACB names, OBVTM101 through OBVTM125.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Be aware of the following limitations for network and ACB names:</td>
</tr>
<tr>
<td></td>
<td>- VTPOOL defines the ACB name to VTM1, so the VTAM definition must reflect the name defined to VTM1.</td>
</tr>
<tr>
<td></td>
<td>- The network name may differ from the ACB name. This may be useful to you in situations where you must support multiple VTAM hosts.</td>
</tr>
<tr>
<td></td>
<td>- The VTPOOL $VTAPPL definition statement determines the ACB names of the virtual terminals. The first portion of the names (up to 6 characters) is taken from the value of the VTAPPL keyword. A two-character suffix is added based on the value of the APPL# keyword, which may range from 01 to 99, inclusive.</td>
</tr>
<tr>
<td></td>
<td>For example, if a $VTAPPL statement is coded with VTAPPL=OBVTM1 and APPL#=25, a combination of the two keyword values results in 25 ACB names, OBVTM101 through OBVTM125.</td>
</tr>
</tbody>
</table>
Installing TSO CLISTs

To run in TSO or ISPF mode you must install TSO CLISTs:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The sample CLIST members that Candle provides for TSO operation are in <code>thilev.TKANSAM</code>. You can use any of the six executable CLIST members that Candle supplies either as is or as templates for creating your own CLISTs.</td>
</tr>
<tr>
<td>2</td>
<td>Use the sample jobstream in member KOICPYCV to copy the six executable CLIST members from the sample dataset to a CLIST dataset of your choice.</td>
</tr>
<tr>
<td>3</td>
<td>Copy member KOICPYCV to <code>rhilev.RKANPAR</code>.</td>
</tr>
<tr>
<td>4</td>
<td>Edit KOICPYCV with the changes that the comments in the member indicate.</td>
</tr>
<tr>
<td>5</td>
<td>Submit this IEBGENER job stream for execution, to copy the CLIST member.</td>
</tr>
<tr>
<td>6</td>
<td>Modify any parameter as appropriate for your site. We list the default parameters for the KOICLSTV member in your selected destination dataset below.</td>
</tr>
<tr>
<td>7</td>
<td>Add your CLIST dataset to the concatenation of CLISTs in each user’s logon procedure, to make your CLIST available to users who access OMEGAMON through TSO or ISPF.</td>
</tr>
</tbody>
</table>

You can now use OMEGAMON II in TSO mode or ISPF.

The following table lists KOI CLIST default parameters, including the parameter name, description, range of possible values, and the defaults that Candle provides.

**Table 12. KOI CLIST Default Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Possible Values</th>
<th>Candle Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLIST</td>
<td>Dataset that contains the CLIST library.</td>
<td>cccccccc</td>
<td>USER.CLIST</td>
</tr>
<tr>
<td>LROWS</td>
<td>Number of logical rows for scrolling.</td>
<td>24-999</td>
<td>255</td>
</tr>
<tr>
<td>OIAPPL</td>
<td>The OMEGAMON II VTAM application to start an OMEGAMON II session under VTAM.</td>
<td>cccccccc</td>
<td>ccccccnn</td>
</tr>
<tr>
<td>OIPREFIX</td>
<td>High-level qualifier ISPF/TSO mode load library.</td>
<td>cccccccc</td>
<td>CANDLE</td>
</tr>
<tr>
<td>OIUSER</td>
<td>2-character suffix for the OMEGAMON II user profile.</td>
<td>cc</td>
<td>/C</td>
</tr>
</tbody>
</table>
Starting OMEGAMON II in TSO mode

To start OMEGAMON II in TSO mode:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Follow the procedure for starting OMEGAMON II in VTAM mode, as described in “Starting OMEGAMON II Realtime Performance Monitor in VTAM mode” on page 85, until you are ready to log on to VTAM.</td>
</tr>
<tr>
<td>2</td>
<td>Issue the VTAM command <code>VARY NET,ACT,ID=tnode</code> where <code>tnode</code> is the major node name you used to define your virtual terminals to VTAM.</td>
</tr>
<tr>
<td>3</td>
<td>Log on to TSO.</td>
</tr>
<tr>
<td>4</td>
<td>At the TSO READY prompt, issue the command <code>%KOI</code> The system displays the OMEGAMON II copyright.</td>
</tr>
<tr>
<td>5</td>
<td>Press Enter to display the Main Menu. You can use the OMEGAMON II menu system, or press F12 to access the command interface.</td>
</tr>
</tbody>
</table>
Install and Start OMEGAMON II in ISPF Mode

Installing OMEGAMON II in ISPF mode is more complicated than installing OMEGAMON II in VTAM or dedicated mode. In ISPF mode, users communicate with OMEGAMON II through TSO by means of ISPF.

In ISPF mode, the screen does not refresh automatically; it refreshes when you press Enter. OMEGAMON II has an ISPF split-screen mode that lets you swap back and forth between this product and other Candle OMEGAMON products, or between OMEGAMON II and another ISPF application.

Installing ISPF support

To install ISPF support, you must install ISPF mode and then (optionally) add OMEGAMON II to the ISPF primary menu.

Installing ISPF mode

Install ISPF mode as follows:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Follow all the required steps to install OMEGAMON II in TSO mode.</td>
</tr>
</tbody>
</table>
| 2    | To install the ISPF panels, copy the following members from thilev.TKANSAM to a dataset that the ISPF logon procedures define for users who access OMEGAMON through ISPF:  
  - KOISPF1  
  - KOISPF1A  
  - KOISPF1B  
  - KOISPF2A  
  - KOISPF2V  
  - KOISPF3  
  - KOISPF4  
  - KOISPF5  
  **Note:** As an alternate way of providing access to the panel definitions, define your panel dataset at runtime with the LIBDEF command. |
| 3    | You might also want to add OMEGAMON as a selection option on the ISPF Primary Menu. |

Adding OMEGAMON II to the ISPF primary menu (optional)

If you add an OMEGAMON II option to your ISPF Primary Options Menu, you invoke the OI CLIST when you select that option. Otherwise, you must invoke it from the ISPF command line as described in Starting OMEGAMON II in ISPF Mode.

Use the example in thilev.TKANSAM.(K0I@PRIM) as a model for adding this option to your Primary Options Menu.
You can now use OMEGAMON II in ISPF mode.

Starting ISPF directly from the RTE

Follow these steps to start OMEGAMON II in ISPF mode, directly from the RTE:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do not follow the procedure for starting OMEGAMON II for IMS in TSO mode.</td>
</tr>
<tr>
<td>2</td>
<td>Bring up the ISPF Primary Options Menu.</td>
</tr>
</tbody>
</table>
| 3    | Type the following command:  
   TSO EXEC 'rhilev.RKANSAM(KOISPF)' |
| 4    | Press Enter to display the Main Menu.  
   You can use the OMEGAMON II menu system, or press F12 to access the command interface. |

Starting OMEGAMON II in ISPF Mode

Follow these steps to start OMEGAMON II in ISPF mode:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Follow the procedure for starting OMEGAMON II in TSO mode until you have logged on to TSO.</td>
</tr>
<tr>
<td>2</td>
<td>Bring up the ISPF Primary Options Menu.</td>
</tr>
</tbody>
</table>
| 3    | If OMEGAMON II is a menu option, select that option.  
   If OMEGAMON II is not an option, execute the TSO command %KOI in one of the following ways:  
   - Choose ISPF option 6. Then issue the TSO command  
     %KOI  
   - On the ISPF command line, issue the command  
     TSO %KOI  
   The system displays the OMEGAMON II copyright. |
| 4    | Press Enter to display the Main Menu.  
   You can use the OMEGAMON II menu system, or press F12 to access the command interface. |
Start and Stop SAP

This section tells you how to verify that you have modified the SAP monitor exit correctly.

When to use this unit

Use the following table to determine if this unit is appropriate for your site:

<table>
<thead>
<tr>
<th>IF you are using...</th>
<th>AND...</th>
<th>THEN...</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMEGAMON II for IMS</td>
<td>SAP</td>
<td>follow the instructions in this unit.</td>
</tr>
<tr>
<td></td>
<td>are not using SAP</td>
<td>skip this unit.</td>
</tr>
<tr>
<td>OMEGAMON II for DBCTL</td>
<td></td>
<td>skip this unit.</td>
</tr>
</tbody>
</table>

Before you begin

Pick an MPP region where you have SAP transactions running.

Automatically starting SAP support

During CICAT configuration of OMEGAMON II, you can specify that you want SAP support to start automatically when you start OMEGAMON II. See “Autostarting RTM components” on page 35 and the CICAT online help for more information.
Verification procedure

Use the following procedure to verify that you can use SAP with OMEGAMON II for IMS.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From the OMEGAMON II for IMS command interface, type <strong>TSAP ON</strong></td>
</tr>
</tbody>
</table>
| 2    | Press Enter.  
**Result:** The system displays a message that SAP support is started. |
| 3    | Type **MPP** |
| 4    | Press Enter.  
**Result:** The system displays the IMS message regions. |
| 5    | Type **Tran** |
| 6    | Press Enter.  
**Result:** The system displays the transaction running in each IMS message region. |
| 7    | Type **SAPC** |
| 8    | Press Enter.  
**Result:** The system displays transaction information, as follows:  
- If there is a SAP transaction running, the system displays the accumulated CPU time in hundredths of a second for the SAP transaction.  
- If there is no SAP transaction running, the system displays **Not SAP** |
| 9    | From the OMEGAMON II for IMS command interface, type **ISAP OFF** |
| 10   | Press Enter.  
**Result:** The system displays a message that SAP support has been stopped. |
Exit OMEGAMON II

This section explains how to exit:

- an OMEGAMON II session in OMEGAVIEW
- the OMEGAMON II address space
- the OMEGAMON II interface
- the Candle subsystem
- the End-to-End (ETE) Response Time feature

Exiting an OMEGAMON II session in OMEGAVIEW

To exit an OMEGAMON II for IMS session in OMEGAVIEW:

- Press the PA2 key.

**Result:** The system exits OMEGAMON II and returns to OMEGAVIEW.

Stopping the OMEGAMON II VTAM applications

To stop the OMEGAMON II VTAM applications:

- Issue the MODIFY command
  
  ```
  M0imsid,STOP=cccccccc
  ```

  where `M0imsid` is the mprefix concatenated to the IMSID specified in the OMEGAMON II startup proc, and `cccccccc` is the literal for VTAM.

**Result:** The OMEGAMON II VTAM interface stops. It is no longer possible to log on OMEGAMON through VTAM.

The virtual terminal interface remains active after all OMEGAMON II sessions terminate.
Stopping the OMEGAMON II interface

The OMEGAMON II interface remains active after all OMEGAMON II sessions terminate. To stop the OMEGAMON II address space after all OMEGAMON II sessions terminate:

- Issue the MVS command
  
  ```
  MODIFY stepname,STOP
  ```

  where `stepname` is the name of the started procedure.

**Result:** The OMEGAMON II interface stops.

You should normally use KOIEPROC when running with EPILOG; use KOIXPROC when running without EPILOG.

**Note:** You can also issue commands to bring down IMS.

When the interface detects that IMS is terminated, the interface shuts down any OMEGAMON II sessions that are still active, and the OMEGAMON II address space terminates.

Stopping ETE

We have designed the End-to-End Response Time feature to run continuously. Other Candle products on the host system may be using ETE.

**Important**

We recommend that you do not stop ETE if there are other Candle products executing that are dependent on the services that ETE furnishes.

**Note:** ETE does not pertain to DBCTL users.

Stopping the Candle subsystem

We have designed the Candle subsystem to start and stop during the IPL process. Multiple Candle monitors on the same MVS image can use the Candle subsystem.

**Important**

Do not stop the Candle subsystem unless you are sure that no other product is currently using it.

- To stop the Candle subsystem, issue the STOP command from the operator console:

  ```
  STOP CANSCN
  ```

  where CANSCN is the name of the Subsystem startup procedure.

**Result:** The Candle subsystem stops.
Chapter Overview

You are now ready to customize your system, including modifying defaults and making other changes that reflect your site’s needs and preferences.

This chapter will guide you through the customization of the OMEGAMON II Realtime Performance Monitor, explains levels of CUA user authority, and assumes that you have installed and configured OMEGAMON II.

Notes:

- See the Installing Candle Products on MVS manual for detailed instructions on installing OMEGAMON II.
- See chapters 1-3 of this manual for detailed instructions on configuring OMEGAMON II and verifying your installation.
- References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

Chapter Contents

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Reviewing Exception Analysis ................................................................. 103
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Implementing the Installation-Defined Profile ............................................. 109
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Implementing Your BMP Interface ............................................................. 113
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Concatenating Screen Space and Profile Datasets ....................................... 130
The OMEGAMON II profiles control the characteristics of an active OMEGAMON II session. Both the installer and the general user community can create and save customized OMEGAMON II profiles. Users can configure profile options according to their needs.

Profile options include:

- all thresholds that you can define in the system
- all options that you can change in the Controls window under the Options path of the action bar (this applies only to the CUA interface)
- all view preferences that you can define in the system, such as regions (this applies only to the CUA interface)
- the start-up profile

This section describes the types of profiles, tells how to create an installation profile, and discusses profile security.

**Note:** The following information applies only to the Realtime Performance Monitor. The CUA interface maintains profile information in CUA tables. If you are a CUA interface user, refer to the “Setting Exception Analysis Thresholds from the CUA Interface” section in this chapter.

## Reviewing types of profiles

There are three types of OMEGAMON II profiles:

<table>
<thead>
<tr>
<th>Profile Type</th>
<th>Definition</th>
</tr>
</thead>
</table>
| **Candle-supplied** | This profile contains session configuration defaults and default exception analysis thresholds.  
This profile lets you easily install OMEGAMON II without customization and assures that users can always initialize an OMEGAMON II session, even if there are no other profiles defined.  
The Candle-supplied profile is always available; you cannot change this profile. |
| **Installation-defined** | This profile enables the installer to define default settings that are different from the Candle-supplied profile settings.  
You can specify this customized profile as the default for all OMEGAMON II sessions at your installation.  
This profile is optional and can exist independently of the other profiles. |
| **User-defined** | This profile allows users to customize their individual OMEGAMON II sessions.  
This profile is optional and can exist independently of the other profiles. |
Using profile suffixes

Each profile has a unique two-character suffix.

The suffixes for the three types of OMEGAMON II profiles are:

<table>
<thead>
<tr>
<th>Profile suffix</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>/C</td>
<td>Candle-supplied profile</td>
</tr>
</tbody>
</table>
| /I             | Installation-defined profile  
OMEGAMON II automatically assigns the suffix /I when you save an installation profile. |
| cc             | User-defined profile—any two alphanumeric characters  
Users specify the suffixes for user-defined profiles when they save profiles. |

You can also use profile suffixes to specify the desired profile on the USER parameter in your OMEGAMON II startup JCL, CLIST, VTAM logon data stream, or on the USER SUFFIX option on the ISPF logon menu. The current session’s profile suffix appears in the middle of the INFO-line, as follows:

```
__________ ZMENU VTM 01-II /I 151A 01/02/97 8:05:11 OB
```

Determining profile search order

During OMEGAMON II initialization, OMEGAMON II always loads the Candle-supplied profile, as well as the installation-defined profile and user-defined profiles if they exist.

To determine which profile to use, OMEGAMON II checks the value on the USER parameter:

<table>
<thead>
<tr>
<th>IF...</th>
<th>THEN OMEGAMON II uses...</th>
</tr>
</thead>
<tbody>
<tr>
<td>/C is specified</td>
<td>the Candle-supplied profile</td>
</tr>
</tbody>
</table>
| /I is specified | the installation-defined profile  
If no installation profile is found, OMEGAMON II defaults to /C, the Candle-supplied profile. |
| A user-defined (cc) profile is specified, and OMEGAMON II cannot find the user member | the /I profile  
If OMEGAMON II cannot find the installation profile, then OMEGAMON II defaults to /C. |
Storing profile datasets

Candle stores the Candle-supplied command/menu interface profile in the load library; you cannot change this profile. Therefore, the Candle-supplied values are always available as shipped.

OMEGAMON II stores both the installation-defined profile and the user-defined profiles in the same profile datasets that the DD statement RKOIPFSV references (rhlev.IMSID.RKOIPFSV). Both types of profiles use the same naming conventions as their DD name statements.
Exception analysis is one of the most powerful features of OMEGAMON II. An exception is an unusual condition or situation which might affect system availability and/or performance.

Candle ships OMEGAMON II with defaults for each exception. However, because each IMS environment is different, you will probably want to adjust some exceptions to meet the needs of your site.

This section tells you how to tailor exceptions to your site. For information on how to use exception analysis to improve your system’s performance, see your product’s User’s Guide.

Using OMEGAMON II exceptions

You can use exceptions to specify

- which system activities you want to monitor
- at what points you want the system to notify you about potential problems associated with those activities’ performance

There are two kinds of exceptions:

**Alerts**
Alerts represent incidents or conditions. If you are monitoring a given alert, a yellow light displays when the associated incident occurs, or when the associated condition exists.

**Thresholds**
Thresholds represent levels of activity, and allow you to define acceptable and unacceptable performance. There are high and low thresholds to represent high and low activity levels. Both kinds of thresholds have warning and critical values.

If you are monitoring a threshold and you specified a warning value, a yellow light displays when the associated activity reaches or falls to that value (depending on the threshold type, high or low).

If you specified a critical value, a red light displays when the activity reaches or falls to that value.
Each exception belongs to a group of related exceptions—an exception group. You can choose to monitor any of the following:

- an entire exception group
- an individual exception
- either the warning or the critical component of an individual threshold

Each exception maps to a light on the System Overview panel. The help for each exception group explains the exception light mapping.

If multiple exceptions trip at their critical thresholds, the corresponding light turns red. If multiple exceptions trip at their warning thresholds, the corresponding light turns yellow.

**Warning**

You must follow the procedure in step 3 of “Creating an Installation-Defined Profile” on page 105 to customize exceptions.

An administrator who has access to the CUA interface can override the profiles defined through the Realtime Performance monitor. This includes the installation-defined profile. When you log off the CUA interface, you are given the option of saving the profile (defined during logon to the CUA) in the Realtime Performance Monitor. If you take the option and the profile already exists in the Realtime Performance monitor profile datasets, it will be overridden by the values contained in the CUA profile table.
Creating an Installation-Defined Profile

You can change some or all of the Candle-supplied profile defaults to customize OMEGAMON II for your system.

Customization includes determining, selecting, and saving appropriate options and thresholds to create an installation-defined profile. Customization also includes specifying the installation-defined profile as the default for your system.

The customization options for user-defined profiles are the same as those discussed in this section for the installation-defined profile.

You must follow a three-step process to customize your profiles:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Establish the default options.</td>
</tr>
<tr>
<td>2</td>
<td>Select the appropriate session and exception analysis options.</td>
</tr>
<tr>
<td>3</td>
<td>Set a default startup configuration.</td>
</tr>
</tbody>
</table>

**Step 1: Establishing default options**

To establish default options for your installation-defined profile, run OMEGAMON II with the Candle-supplied profile to become familiar with basic OMEGAMON II session and exception analysis options. You can then determine what options your installation requires, so that you can create an installation-defined profile.
**Step 2: Selecting session and exception analysis options**

To display the following Profile Maintenance and Session Controls Menu, select the Profile (P) option from the OMEGAMON II Main Menu.

**FIGURE 6. Profile Maintenance and Session Controls Menu**

You can specify settings through the Profile menu and use them for the current session only or you can save them in a profile for subsequent sessions.

You can choose as many or as few of the menu options as you wish in customizing your profile.

Press PF1 for online help on each option or consult the Realtime Commands Reference Manual for details on individual commands.
Step 3: Setting default startup configuration

Use the following options to set the default startup parameters for OMEGAMON II:

The following table summarizes the display, control, and routing options that you access from the Set Startup Configuration Menu. In addition, the table summarizes the IOPT command, which the installer can issue in command mode. (Press PF24 from the menu system to access command mode.)

<table>
<thead>
<tr>
<th>Command Function</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls session and display options</td>
<td>OPTN</td>
<td>Activates and deactivates:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the automatic screen facility (ASF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the timed screen facility (TSF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the exception logging facility (XLF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the terminal bell</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the log</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controls display characteristics:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the date (USA or EUROPEAN)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ minor commands (UPPER or LOWER case)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ all command output (UPPER or MIXED case)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ scroll amount (PAGE or CSR)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the first screen when you start OMEGAMON II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>■ the interval for the terminal bell</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Important</strong>: OMEGAMON II does not save the setting for the ZEROS keyword in a profile.</td>
</tr>
<tr>
<td>Sets color options</td>
<td>.SCC</td>
<td>Allows you to set color, highlighting, and extended attribute options for each field on the OMEGAMON II display.</td>
</tr>
</tbody>
</table>
Creating an Installation-Defined Profile

<table>
<thead>
<tr>
<th>Command Function</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
</table>
| Sets operational parameters | SET | Sets parameters for:  
  - the screen space fetch feature (.FGO)  
  - the interval for OMEGAMON II cycles  
  - the number of entries in the device name table  
  - guarding against loops caused by the PEEK command  
  - the automatic updating delay cycle  
  - the size of the REPORT file for logging screens  
  - the size of the work area for the PEEK command |
| Sets installation profile options | IOPT | Controls installation options, such as:  
  - issuing DASD reserves when OMEGAMON II saves members in rhilev:IMSID.RKOIPCSV  
  - whether OMEGAMON II storage is page-fixed in memory |
| Sets print output options | OUTP | The minor command settings saved in a profile are:  
  - COPY: Specifies number of copies to print.  
  - DDNM: Specifies ddname to override standard ddname.  
  - DEST: Specifies the report destination.  
  - DSTU: Specifies the userid for a report.  
  - FOLD: Specifies whether lowercase is folded to uppercase.  
  - FORM: Specifies the name of the form on which to print.  
  - HOLD: Specifies that OMEGAMON II place the output in the hold queue and retrieve the output from TSO.  
  - ID1: Requests separator pages and page headers that identify output from different OMEGAMON II sessions.  
  - ID2: Defines up to 16 characters on the left of the separator page.  
  - ID3: Defines up to 16 characters in the center of the separator page.  
  - ID4: Defines up to 16 characters on the right of the separator page.  
  - LNCT: Sets number of lines per page on report.  
  - SOUT: Defines the SYSOUT class of the report. |
Implementing the Installation-Defined Profile

To implement the profile, you must perform the following three steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Save the installation-defined profile.</td>
</tr>
<tr>
<td>2</td>
<td>Secure the installation commands.</td>
</tr>
<tr>
<td>3</td>
<td>Specify the default profile.</td>
</tr>
</tbody>
</table>

Step 1: Saving the installation-defined profile

You can change the setting of any installation-defined profile option at any time during an OMEGAMON II session. OMEGAMON II uses the changed setting for the duration of the current session (except for the IOPT command, where only the RESERVE parameter takes effect immediately).

To save the changed profile for future sessions, press PF22 to access the profile save screen or issue the IPRF command as follows:

IPRF SAVE

OMEGAMON II automatically assigns the /I suffix to profiles that you save with IPRF command.

You can also use Profile Menu Option H to save, delete, or list installation profiles.

Important

The saved profile picks up not only the settings you just changed, but all of the current settings for all profile-definition commands.

You can delete the installation-defined profile by issuing the IPRF command as follows:

IPRF DELETE

You can save or delete individual user profiles by using the PPRF SAVE or DELETE commands.

The distinction between IPRF and PPRF enables you to restrict access to the installation-defined profile, while allowing the general user community to customize their own profiles.
Step 2: Securing the installation commands

Profile security is available in the CUA system. See “Configuring and Customizing the OMEGAMON II CUA Interface” on page 193 for complete information.

Candle ships IPRF and IOPT, the commands specific to the installation-defined profile, unsecured so that you can easily install and start OMEGAMON II.

However, if you create an installation-defined profile, you may want to protect the profile. There is no need for users to have access to the installation-defined profile, because each user can create and save a unique profile using the PPRF command. This profile overrides the installation-defined and Candle default profiles.

To protect the installation-defined profile, you can use either OMEGAMON II’s default internal security or OMEGAMON II’s interface to external security packages, such as RACF or CA-ACF2.

See “OMEGAMON II’s Realtime Performance Monitor Security Facility” on page 137 for complete information.

Step 3: Specifying the default profile

If you want the installation-defined profile to be your site’s default profile, set the USER parameter to /I in your startup procedure, CLIST, or VTAM logon data stream. See “Modes of Operation” on page 30 for information on modifying your startup parameters.

For ISPF mode, specify /I in the USER SUFFIX field on the ISPF invocation panel.
Customizing exceptions

You can customize the exceptions associated with a profile as follows:

1. Log on to the OMEGAMON II CUA interface with the profile you want to customize. Anyone authorized to use the CUA interface can change a profile for use during the current session. Only a person with administrator authority can save the changes for later use.

2. From any OMEGAMON II CUA panel, select **Customize Exceptions** from the **Options** pull-down.

   **Note:** When you are running in a DBCTL environment, you will see a slightly different System Overview panel.

3. If you know the name of the exception you want to customize, you can look up the name of its exception group in **Table 17: OMEGAMON II Exceptions on page 248**. Otherwise, choose the group whose name describes the IMS activity you want to monitor or stop monitoring. Scroll through the list of exception groups using F7 and F8, and select the group you want to customize.

   OMEGAMON II displays the appropriate exception group.

   For example, **Figure on page 111** shows the **Threads - High Exceptions Thresholds** exception group.

4. If you want to monitor any of the exceptions in this exception group, type **ON** in **Exceptions Group Monitor**.

   If you do not want to monitor any of the exceptions in this exception group, type **OFF** in **Exceptions Group Monitor**, and skip to step “When you finish customizing this exception group, press F3 to return to the list of exception groups.” on page 112.

   **Note:** For more detailed information about this exception group, press F1.

5. Tab to the exception you want to customize. If you want to monitor this exception, type **ON** under **Monitor**.

   If you do not want to monitor this exception, type **OFF** under **Monitor**, and skip to step 7 on page 112.
Note: If an exception doesn’t apply to your OMEGAMON II system, OMEGAMON II turns all that exception’s values OFF. For example, if you don’t have an Extended Recovery Facility (XRF), the exception XRTO doesn’t apply to your system, and OMEGAMON II turns it OFF. If you try to customize such an exception, the exception’s values revert to OFF when you exit the exception group panel.

6. If the exception you’re customizing is an alert, skip to step 7 on page 112

If the exception you’re customizing is a threshold, you can customize its warning and critical threshold values. When the activity this threshold monitors reaches the warning value, a yellow light displays. When the threshold reaches the critical value, a red light displays.

If you don’t want to monitor this threshold at the warning level, you can type OFF under Warning. If you don’t want to monitor this threshold at the critical level, you can type OFF under Critical. You can turn both values OFF if you want. If you do this, the system turns the exception OFF.

If you want to specify both values, remember that if the threshold is a high threshold, you must specify a critical value that is higher than the warning value. If the threshold is a low threshold, you must specify a critical value that is lower than the warning value.

You can specify both values and press Enter, or you can specify one value, blank out the other, and press Enter to have the system calculate the other value for you, as follows:

<table>
<thead>
<tr>
<th>IF you specify...</th>
<th>THEN the system calculates...</th>
</tr>
</thead>
<tbody>
<tr>
<td>a warning value (for example, 10) for a low threshold,</td>
<td>a critical value that is 80% of your warning value (in this case, 8).</td>
</tr>
<tr>
<td>a critical value (for example, 8) for a low threshold,</td>
<td>a warning value that is 125% of your critical value (in this case, 9).</td>
</tr>
<tr>
<td>a warning value (for example, 80) for a high threshold,</td>
<td>a critical value that is 125% of your warning value (in this case, 96).</td>
</tr>
<tr>
<td>a critical value (for example, 96) for a high threshold,</td>
<td>a warning value that is 80% of your critical value (in this case, 76).</td>
</tr>
</tbody>
</table>

7. Repeat steps 5 and 6 on page 112 for any other exceptions in this group that you want to customize.

8. When you finish customizing this exception group, press F3 to return to the list of exception groups.

9. To return to your panel, press F12.

An administrator who has access to the CUA interface can override the profiles defined through the Realtime Performance monitor. This includes the installation-defined profile. When you log off the CUA interface, you are given the option of saving the profile (defined during logon to the CUA) in the Realtime Performance Monitor. If you take the option and the profile already exists in the Realtime Performance monitor profile datasets, it will be overridden by the values contained in the CUA profile table.
Implementing Your BMP Interface

Candle has designed the IMS Command BMP Interface subfunction (hereafter referred to as the BMP interface) to supplement (not replace) the WTOR interface, which the ICMD command of the menu and common interface employs. You can choose to use both interfaces, or only one of them.

Using the BMP interface in addition to the WTOR interface has the following advantages:

- reduces contention for the WTOR interface if you are using the WTOR interface to control IMS, or if you have other software products that use the WTOR interface
- increases command throughput
- provides additional features, such as:
  - a user security exit, which allows you to control which users can issue which IMS commands
  - an option which allows you to wait for IMS commands to complete

Note: You cannot use BMP if you are monitoring a DBCTL system.

Setting up your BMP interface

To setup your BMP interface, you must perform the following steps:

**Step 1: Define your BMP to IMS**
To define your BMP to IMS:

1. Run the PSBGEN utility, using the sample JCL and instructions in `rhilev.RKANSAM(KI2BPGEN)`.
2. Run the ACBGEN utility, using the sample JCL and instructions in `rhilev.RKANSAM(KI2BAGEN)`.
3. Update the IMS SYSGEN to define your BMP to IMS. Sample IMS SYSGEN statements are in `rhilev.RKANSAM(KI2BIGEN)`.
4. Update IMS security to allow the BMP to enter IMS commands. If your site uses the IMS Security Maintenance Utility (SMU), you can use the sample input statements in `rhilev.RKANSAM(KI2BSGEN)`.

**Step 2: Link-edit DL/I into your BMP**
Link-edit DL/I into your BMP, using the sample JCL and instructions in `rhilev.RKANSAM(KI2BLDLI)`.

**Step 3: Remove the comment character from the IMS RESLIB dataset**
Remove the comment character from the IMS RESLIB dataset to include it with your OI online PROC again.
Step 4: Optionally implement command-level security

If your site has implemented OMEGAMON II command-level security, you must update that security in order to use the BMP interface. You need to give each user who is going to use the BMP interface access to the BCMD command. Only the BMP interface actually uses this internal command.

Step 5: Optionally implement a security exit

You can choose to secure individual IMS commands with an external security product such as CA-ACF2 or RACF. If you do so, you must write a standalone security exit using the following guidelines:

- Use standard OS linkage.

  **Note:** Register 1 at entry to the user exit points to an 8-byte user ID field, followed immediately by an LLZZ field, a slash, and an IMS command.

- Implement the following return code standard:
  - To allow an IMS command, return a return code of zero.
  - To disallow an IMS command, return a return code that is greater than zero.

- Name your standalone load module KI2BMPX1, and place it in `rhilev.RKANMOD`.

---

**Important**

If your security exit abends, OMEGAMON II turns the exit off. You must stop and restart OMEGAMON II to reimplement your security exit. No IMS command security is in force between the time your security exit abends, and the time you stop OMEGAMON II.

If the BMP abends, IMS stops the associated PSB and transaction. The BMP cannot reATTACH until you:

1. `/START` the PSB.
2. `/START` the transaction.
3. Restart your BMP interface. For more detailed information, see Starting your BMP interface manually.

---

Starting and stopping your BMP interface automatically

During CICAT configuration of OMEGAMON II, you can specify that you want the BMP interface to start automatically when you start OMEGAMON II. See “Autostarting RTM components” on page 35 and the CICAT online help for more information.

If you want to start and stop your BMP interface automatically at the same time you start and stop your OMEGAMON II address space, you can also do so using the instructions and sample EXEC card in `rhilev.RKANPAR` members KOImpP00 and KI2BMPmp.
Starting your BMP interface manually

You can start your BMP interface manually using the following interface command:

```
START CBMP keyword
```

where `keyword` is any of the keywords that we list in Table 13 below.

The following table lists all of the keywords and keyword values that are available for you to use with START CBMP.

Table 13. START CBMP Keywords

<table>
<thead>
<tr>
<th>Keyword:</th>
<th>Possible values:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSB=</td>
<td>The PSBNAME defined in the PSBGEN and named in the IMS SYSGEN APPLCTN statement. The default is CANDLE1.</td>
</tr>
<tr>
<td>TRAN=</td>
<td>The transaction code you associated with the BMP in the IMS SYSGEN TRANSACT statement. The default is CANDLE1.</td>
</tr>
<tr>
<td>AGN=</td>
<td>The optional RACF AGN associated with the BMP. No default is specified.</td>
</tr>
<tr>
<td>PROCLIM=</td>
<td>The number of commands the BMP processes before it terminates. (The BMP reATTACHes itself when needed by a user whose profile has <strong>Automatically Attach BMP when needed</strong> ON.) This keyword accepts the same values as the PROCLIM= keyword on the IMS SYSGEN TRANSACT statement. The default is zero, which indicates that there is no limit on the number of commands the BMP can process.</td>
</tr>
<tr>
<td>ATTACH=</td>
<td>YES, NO, WAIT, AUTO, SUSP, END</td>
</tr>
</tbody>
</table>

Note: Specifying PROCLIM= on the IMS SYSGEN TRANSACT statement has no effect, because the BMP does not issue a GU for each IMS command it processes.

For more information about when to use each of these values, see Table 14.

The following table provides information to help you understand when to use the various ATTACH= keyword values.
Stopping your BMP interface manually

You can stop your BMP interface manually using one of the following interface commands:

- START CBMP with ATTACH=SUSP or ATTACH=END
- STOP ID=CBMP

STOP ID=CBMP does not accept any keywords, but its effect is the same as that of START CBMP ATTACH=END.

For more information about START CBMP’s ATTACH= values, see Table 14 Changing the IMS command options in your user profile.

You can change the IMS command options in your user profile as follows:

1. Select the Options pull-down from the Action Bar of any CUA panel.
2. Select Set IMS Options… from the Options pull-down.
3. You can change the following IMS command options:

<table>
<thead>
<tr>
<th>IF you...</th>
<th>THEN use this ATTACH= value...</th>
</tr>
</thead>
<tbody>
<tr>
<td>want to ATTACH the BMP during OMEGAMON II initialization,</td>
<td>YES (default)</td>
</tr>
<tr>
<td>do not want the BMP ATTACHed during OMEGAMON for IMS initialization, and do not want the BMP to ATTACH automatically, regardless of the user profile setting for Automatically Attach BMP when needed,</td>
<td>NO</td>
</tr>
<tr>
<td>do not want the BMP attached during OMEGAMON for IMS initialization, but do want the BMP to ATTACH automatically when it’s needed, regardless of the user profile setting for Automatically Attach BMP when needed,</td>
<td>WAIT</td>
</tr>
<tr>
<td>want the BMP to ATTACH automatically when it’s needed in accordance with the user profile setting for Automatically Attach BMP when needed, except when the BMP is detached and explicitly reATTACHed with a different ATTACH= value,</td>
<td>AUTO</td>
</tr>
<tr>
<td>want to detach the BMP and prevent the BMP from ATTACHing automatically until the BMP is explicitly reATTACHed with a START CBMP command,</td>
<td>SUSP</td>
</tr>
<tr>
<td>want to detach the BMP, but allow the BMP to reATTACH automatically in accordance with the ATTACH= value specified when the BMP was last ATTACHed,</td>
<td>END</td>
</tr>
</tbody>
</table>

Table 14. Understanding ATTACH= values
Implementing Your BMP Interface

Submit Commands via BMP Interface

On This is the default. OMEGAMON II submits your commands through the BMP interface whenever possible. If OMEGAMON II cannot use the BMP interface, OMEGAMON II attempts to submit your commands using the WTOR interface.

Off Turn this option OFF if you don’t want to submit any commands using the BMP interface.

Wait for IMS to Process Each Command

On Turn this option ON if you want to wait for each IMS command that you submit using the BMP interface to process. If you submit multiple commands, or if you request an action that requires OMEGAMON II to submit multiple IMS commands, you’ll wait a maximum of 30 seconds for the last of these commands to process.

Note: After 30 seconds the system terminates the wait; the IMS command continues to process.

Off This is the default; you don’t wait for your IMS commands to process. IMS responses to your commands appear on the console and Operator Assist panels.

Automatically Attach BMP when needed

On Turn this option ON if you want the BMP to attach automatically when you need it (for example, if the BMP has terminated itself due to having processed the number of commands specified on PROCLIM=).

Note: The BMP cannot attach automatically if the current CBMP ATTACH= value is either NO or SUSP.

Off This is the default. The BMP does not ATTACH automatically for you unless you started the BMP with ATTACH=WAIT and you have Submit Commands via BMP interface set ON. If the BMP is not currently ATTACHed, and you are submitting commands using the BMP interface only (Automatically Use WTOR if needed OFF), your IMS commands queue in memory until the BMP is reATTACHed.

Automatically Use WTOR if needed

On This is the default. OMEGAMON II uses the WTOR interface as a backup interface for submitting your IMS commands.

Off Turn this option OFF if you don’t want your commands submitted using the WTOR interface under any circumstances.

Note: You cannot submit some IMS commands using a BMP interface. For a list of these commands, see your IBM IMS Operator’s Reference. If you turn this option OFF, you won’t be able to issue any of these IMS commands. And if the BMP is not ATTACHed and cannot ATTACH automatically, you won’t be able to issue any IMS commands.

Note: If you are going to use the BMP facility to submit IMS commands, you must be authorized to enter the BCMD command.
Implementing the SAP Interface

You can customize OMEGAMON II for IMS to start SAP automatically or manually. You can also check the status of SAP. This unit tells you when and how to customize OMEGAMON II for IMS to work with SAP. It also tells you how to start SAP, stop SAP, and check the status of SAP.

When to customize OMEGAMON II for IMS for SAP

Use the following chart to determine if you want to customize OMEGAMON II to use it with SAP.

<table>
<thead>
<tr>
<th>IF you are using...</th>
<th>AND...</th>
<th>THEN...</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMEGAMON II for IMS</td>
<td>SAP</td>
<td>read the information in this unit.</td>
</tr>
<tr>
<td></td>
<td>are not using SAP</td>
<td>skip this unit.</td>
</tr>
<tr>
<td>OMEGAMON II for DBCTL</td>
<td></td>
<td>skip this unit.</td>
</tr>
</tbody>
</table>

Customizing OMEGAMON II for IMS to start SAP automatically

During CICAT configuration of OMEGAMON II, you can specify that you want SAP support to start automatically when you start OMEGAMON II. See “Autostarting RTM components” on page 35 and the CICAT online help for more information.

You can also start SAP support by including the START SAP command or the EXEC KOISAPmp command in your automatic start member KOImP00. The mp in KOImP00 is the modify prefix assigned in your OMEGAMON II for IMS procedure.

Starting SAP support from the MVS console

You can start SAP support with an OMEGAMON II for IMS interface command, as shown in the following chart.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From the MVS console, type <strong>MODIFY interface_name, START SAP</strong></td>
</tr>
<tr>
<td>2</td>
<td>Press Enter. <strong>Result:</strong> The system displays the OSP050 SAP SUPPORT STARTED message.</td>
</tr>
</tbody>
</table>
Starting SAP support from OMEGAMON II for IMS
You can start SAP support using the ISAP immediate command from the OMEGAMON II for IMS command interface as shown in the following chart.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From the OMEGAMON II for IMS command interface, type <strong>ISAP ON</strong></td>
</tr>
<tr>
<td>2</td>
<td>Press Enter. <strong>Result</strong>: The system displays a message that SAP support is started.</td>
</tr>
</tbody>
</table>

Customizing OMEGAMON II for IMS to start SAP automatically
You can start SAP support by including the START SAP command or the EXEC KOISAPmp command in your automatic start member KOImpP00. The mp in KOImpP00 is the modify prefix assigned in your OMEGAMON II for IMS procedure.

Stopping SAP from the MVS console
Use the procedure below to stop SAP support.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From the MVS console, type <strong>MODIFY interface_name, STOP ID=SAP</strong></td>
</tr>
<tr>
<td>2</td>
<td>Press Enter. <strong>Result</strong>: The system displays a message indicating that SAP support has been stopped.</td>
</tr>
</tbody>
</table>

Stopping SAP support from OMEGAMON II for IMS
You can stop SAP support using the ISAP immediate command from the OMEGAMON II for IMS command interface as shown in the following chart.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From the OMEGAMON II for IMS command interface, type <strong>ISAP OFF</strong></td>
</tr>
<tr>
<td>2</td>
<td>Press Enter. <strong>Result</strong>: The system displays a message that SAP support has been stopped.</td>
</tr>
</tbody>
</table>
Checking the status of SAP

You can check the status of SAP support by using the ISAP immediate command from the OMEGAMON II for IMS command interface as shown in the following chart.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>From the OMEGAMON II for IMS command interface, type ISAP</td>
</tr>
<tr>
<td>2</td>
<td>Press Enter. <strong>Result:</strong> The system displays the status of SAP support.</td>
</tr>
</tbody>
</table>
Using KOIGBL to Customize Workload Parameters

Defining workload groups using the KOIGBL load module

After you install OMEGAMON II, there are a number of items that you may wish to change to suit your installation’s needs.

The OMEGAMON II realtime performance component and the DEXAN component let you segregate specific workloads into groups. You can define these workload groups using the KOIGBL load module.

You can also set defaults for parameters related to this support; for example, MAXIDS, the maximum number of PSB groups which you can define.

Specifying workload group definition versions

The 2-character suffix on the global data module (KOIGBL) lets you specify which version of the workload group definitions you want to use for a particular execution of IMS.

In this manner, the test IMS system can use a different set of PSB group definitions from those of the production IMS system.

Important
Be sure that the suffix you select for the GLOBAL=mp parameter is reflected in the PARM file members K0IVTMmp and K0IDEXmp. You edited these members previously during the installation process.

If you have different members, OMEGAMON II for IMS executes the first member loaded.

All OMEGAMON II users monitoring the same IMS system share the same workload definitions. The GLBL command loads a new KOIGBLmp global data module regardless of what you specify on the GLOBAL=mp parameter in the PARM file members.

Note: The 2-character suffix on the global data module is different from the 2-character suffix on the user profile.

KOIGBL defines all workload group definitions

All OMEGAMON II users monitoring the same IMS system share the same workload group definitions.

OMEGAMON II uses the KOIGBL module the first user selects to start all subsequent OMEGAMON II users, regardless of the GLOBAL parameter these users specify on their START command.

Defining OMEGAMON II’s workload groups

The $OIGROUP macro defines the workload groups which OMEGAMON II uses.

There are three types of $OIGROUP macros:

- $OIGROUP INITIAL
Defining targeted programs or program groups using the KOIGBL dataset

The `rhilev.RKANSAM(KOIGBLmp)` member allows you to define workload groups that you can use to target the OMEGAMON II analysis to individual programs or groups of programs.

Assembling and linking KOIGBL (Batch)

After you edit the KOIGBLmp member, you must assemble it to generate a new KOIGBL load module, linking into your OMEGAMON II load module dataset:

**Note:** The member KI2GBLmp in `rhilev.RKANSAM` contains a model of the JCL you should use to assemble and link a new KOIGBL under Batch

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Change the <code>-THILEV-</code> value to reflect what you specified for <code>&amp;thilev</code>.</td>
</tr>
<tr>
<td>2</td>
<td>Change the <code>-RHILEV-</code> value to the high-level qualifier for your runtime library.</td>
</tr>
</tbody>
</table>

The `GLOBAL=`mp parameter on the START OMEGAMON II statement at execution time tells OMEGAMON II which KOIGBL module to use. In this way, you can build up a library of different program group definitions, and select among them when you invoke OMEGAMON II.

You can also use the GLBL command to dynamically reload a new copy of a reassembled KOIGBL module, or to dynamically load a KOIGBL module with a suffix different from the one currently in use. For more information on the GLBL command, refer to the `Realtime Commands Reference Manual`.

The same KOIGBL modules work with any version of MVS or IMS. Remember, however, that your KOIGBL modules require reassembly when you install a new version of OMEGAMON II, because the `thilev.TKANMAC` library often changes between versions.

Modifying workload group definitions using the KOIGBL macros

Candle provides macro instructions that allow you to modify the workload group definitions. Comments within the `KOIGBLmp` describe these macros.

The macros that we provide for defining workload groups are:

- `$OIGROUP ID`
- `$OIGROUP FINAL`
- `$OIGROUP INITIAL`
- `$OIDEXAN`

The following sections discuss each macro and its parameters.
Modifying the default workload groups macros ($OIGROUP)

Use the $OIGROUP macros to modify the default workload groups for Bottleneck Analysis (DEXAN).

$OIGROUP INITIAL macro

The $OIGROUP INITIAL macro is required. Define the macro only once. The INITIAL macro must precede any other $OIGROUP macro.

Determine which format of the $OIGROUP INITIAL macro to use, as follows:

- If you are modifying workload group definitions for OMEGAMON II for IMS, then the format for $OIGROUP INITIAL is...

  \[
  \begin{align*}
  &\text{$OIGROUP INITIAL,MAXGRPS=nn,} \\
  &\quad \text{MAXIDS=nnnn,} \\
  &\quad \text{MAXTERM=nnnn,} \\
  &\quad \text{MAXNODE=nnnn}
  \end{align*}
  \]

- If you are modifying workload group definitions for OMEGAMON II for DBCTL, then the format for $OIGROUP INITIAL is...

  \[
  \begin{align*}
  &\text{$OIGROUP INITIAL,MAXGRPS=nn,} \\
  &\quad \text{MAXIDS=:nnnn}
  \end{align*}
  \]

MAXGRPS Specifies the maximum number of groups. The valid range is from 1-30 groups. You can change this value dynamically using the MAXG command. For more information about the MAXG command, see the Realtime Commands Reference Manual.

MAXIDS Specifies the maximum number of PSBs, transactions, and classes. Transactions and classes are only valid for OMEGAMON II for IMS. The valid range is from 1-1000 IDs.

MAXTERM Specifies the maximum number of logical terminal names. The valid range is from 1-1000 IDs. This parameter is only valid for OMEGAMON II for IMS.

MAXNODE Specifies the maximum number of VTAM node names. The valid range is from 1-1000. This parameter is only valid for OMEGAMON II for IMS.
Defining a group using the $OIGROUP macro

Use the $OIGROUP ID macro to specify to which group or groups the entry belongs, and optionally give the group a name. You can also specify threshold and display characteristics with this macro.

Use the following chart to determine which format of the $OIGROUP ID macro to use.

- If you are modifying workload group definitions for OMEGAMON II for IMS, then the format for $OIGROUP ID is

  $OIGROUP ID, item=cccccccc, GROUPS=(nn,..,nn), THRESH=(nnnn,..,nnnn), EXPTHR=(nnnn,..,nnnn)

- If you are modifying workload group definitions for OMEGAMON II for DBCTL, then the format for $OIGROUP ID is

  $OIGROUP ID,PSB=cccccccc, GROUPS=(nn,..,nn)

Item  Can be one of the following

PSB  Code cccccccc with 1-8 characters as follows:

  - Use an asterisk (*) to define generic PSB names. For example, if you want to include all PSB names that begin with the letters AB in PSB group 1, code the following macro:

    $OIGROUP ID,PSB=AB*,GROUPS=1

  - If you want to include all PSB names containing the letters CD in the third and fourth position of the name in PSB groups 2 and 4, code the following macro:

    $OIGROUP ID,PSB=**CD*,GROUPS=(2,4)

TRAN  Defines a transaction name (1-8 characters). You can use asterisks to specify generic names as outlined in the PSB description above. This parameter is only valid for OMEGAMON II for IMS.

CLASS Defines transaction classes that the specified transaction group(s) includes. The valid range is from 1-255. If the number exceeds the maximum class number you specify in the IMS SYSGEN, the system ignores the maximum class number. This parameter is only valid for OMEGAMON II for IMS.

TERM Defines logical terminal names. The logical terminal name is 1-8 characters. As with the PSB parameter, you can use asterisks to specify generic names. This parameter is only valid for OMEGAMON II for IMS.
NODE  Specifies a VTAM node name used in collecting end-to-end response time data. Generic node names are not allowed. This parameter is only valid for OMEGAMON II for IMS.

GROUPS  Specifies which group or groups include the given ID. You can code the group in the form GROUPS=n or GROUPS=(nn,..,nn).

A terminal related group can contain LTERMS or VTAM nodes, but not both.
A NODE related group is a terminal related group containing VTAM nodes (NODE=parameter).

<table>
<thead>
<tr>
<th>If you try...</th>
<th>Then...</th>
<th>And...</th>
</tr>
</thead>
<tbody>
<tr>
<td>to add a terminal name (TERM= or NODE= parameter) to a PSB group, which already contains PSB related items:</td>
<td>an error message is issued</td>
<td>the request is ignored.</td>
</tr>
<tr>
<td>TRAN=</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSB=</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLASS=</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to add a transaction item to a terminal related group, which contains only logical terminals or contains only VTAM nodes:</td>
<td>an error message is issued</td>
<td>the request is ignored.</td>
</tr>
<tr>
<td>TERM=parameter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NODE=parameter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Specifying RTA thresholds using the $OIGROUP ID macro

There are three additional parameters you may specify to define thresholds for RTA displays:

- FIX=
- THRESH=
- EXPTHR=

RTA is valid only for OMEGAMON II for IMS.
**FIX**

Provides information for the RTA display command, GRSP. The GRSP command graphically displays the response time history for workload groups or group items (such as transaction or PSB names). If you define these groups or items as FIXed, GRSP always displays them. If you do not define them as FIXed, GRSP only displays them when they exceed a response time threshold. The THRESH parameter defines this threshold.

The format of the FIX parameter is as follows:

- **FIX=(YES,NO,YES,NO,YES,NO)**
- or
- **FIX=(YES,ALL)

RTA reports information on six components of transaction response time. These components are as follows:

1. Input queue time
2. Program input queue time
3. Processing time
4. Output queue time
5. Response time 0 (sum of input queue and processing time)
6. Response time 1 (sum of input queue, processing, and output queue time)

For more information about RTA, see the *OMEGAMON II for IMS Realtime Commands Reference Manual*.

Because RTA reports on six different components of transaction response time, the FIX= parameter allows a different display setting for each of the components.

In the first format example above, enter values of either YES (always display this item) or NO (display this item only when it exceeds the response time threshold) for each of the six response types.

If you wish to have the same display setting for all six response type components, enter the latter format example above. For example, by coding FIX=(YES,ALL), you define the item as FIXed display for all six of the response time components.

If you code the value FIX=(NO,NO,YES,NO,NO,YES), you define the item as FIXed display only for the processing and response time 1 components. The default is (FIX=NO,ALL).

**THRESH**

Provides response time threshold values for the RTA command GRSP. The threshold values are specified as integers but are interpreted in tenths of a second. The valid range is from 1-9999 (.1 to 999.9 seconds)

The format of the THRESH parameter is as follows:

- **THRESH=(9999,9999,9999,9999,9999,9999)**
- or
- **THRESH=(9999,ALL)**
Using KOIGBL to Customize Workload Parameters

You can enter different threshold values for each of the six response time components, or use the latter format to set the same threshold value for all six components above. For example, coding the value `THRESH=(5,ALL)` results in a 0.5 second threshold value for all six response time components.

**EXPTHR**

Provides critical response time threshold values for the average response time (ARSP) exception analysis as the *OMEGAMON II for IMS Realtime Commands Reference Manual*, describes. The threshold values are in tenths of a second and the valid range is from 1-9999 (.1 to 999.9 seconds). When a group or group item exceeds the EXPTHR response time threshold, exception analysis displays a warning message.

The format of the EXPTHR parameter is as follows:

- `EXPTHR=(9999,9999,9999,9999,9999,9999)`
- or
- `EXPTHR=(9999,ALL)`

You can enter different threshold values for each of the six response time components, or use the latter format to set the same threshold value for all six components. For example, coding `EXPTHR=(5,ALL)`, results in a 0.5 second threshold value for all six response time components.

Use the format described in Figure 7 to define a group, give the group a name, and to set RTA display values.

**FIGURE 7. Format of $OIGROUP ID to Name a Group and/or Specify RTA Values**

- `$OIGROUP ID,GRP=nn, X`
- `NAME=cccccccc, X`
- `FIX=ccc, X`
- `THRESH=ccc, X`
- `EXPTHR=cccc`
Using KOIGBL to Customize Workload Parameters

You can change all of the group definitions that we describe above via the SETG command. See the OMEGAMON II for IMS Realtime Commands Reference Manual for more information about SETG.

You can change the RTA response time thresholds via the ISET command. See the OMEGAMON II for IMS Realtime Commands Reference Manual, for more information about ISET.

$OIGROUP FINAL macro

OMEGAMON II requires the $OIGROUP FINAL macro and it must be the last $OIGROUP macro. This macro indicates the end of all the KOIGBLmp group definition macros.

The $OIGROUP FINAL macro sorts the ID entries in alphabetical order and prints a KOIGBLmp group summary list. The format of the macro is as follows:

$OIGROUP FINAL
Modifying the default Bottleneck Analysis parameters ($OIDEXAN)

The $OIDEXAN macro allows you to specify the various options that control what information OMEGAMON II collects and displays. $OIDEXAN also allows you to permanently change the Bottleneck Analysis options.

The format of the $OIDEXAN macro is:

```
$OIDEXAN DBSW=ON/OFF,                 X
  CLRL=nnn,                               X
  CLRS=nn,                                X
  STIM=nn,                                X
  THRS=nn,                                X
  MTHR=nnnn,                              X
  SCAL=nnn                                X
  BMPX=OFF,                               X
  NMSX=ON                                 X
```

The $OIDEXAN macro and its parameters are all optional.

Bottleneck Analysis uses the default values in the following table if you do not supply an overriding value using the $OIDEXAN macro. In addition, you can change the various Bottleneck Analysis collector control commands to dynamically change the option values the $OIDEXAN macro sets. See the Bottleneck Analysis Reference Manual for more information.

The following list shows the default value for each parameter in the $OIDEXAN macro.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Default</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBSW</td>
<td>ON</td>
<td>I/O activity recorded by individual database name.</td>
</tr>
<tr>
<td>CLRL</td>
<td>30</td>
<td>Long-term interval counters cleared every 30 minutes.</td>
</tr>
<tr>
<td>CLRS</td>
<td>5</td>
<td>Short-term interval counters cleared every 5 minutes.</td>
</tr>
<tr>
<td>STIM</td>
<td>5</td>
<td>Collector samples once every .5 seconds.</td>
</tr>
<tr>
<td>THRS</td>
<td>0</td>
<td>PDEX minimum display threshold is 0 percent.</td>
</tr>
<tr>
<td>MTHR</td>
<td>0</td>
<td>MDEX minimum display threshold is 0.</td>
</tr>
<tr>
<td>SCAL</td>
<td>1</td>
<td>MDEX display scale factor.</td>
</tr>
<tr>
<td>BMPX</td>
<td>OFF</td>
<td>Collect data for BMP regions, but only if they are message-driven BMPs.</td>
</tr>
<tr>
<td>NMSX</td>
<td>ON</td>
<td>Exclude non-message driven BMP regions from Bottleneck Analysis data collection.</td>
</tr>
</tbody>
</table>

For a further description of each option parameter, refer to the Bottleneck Analysis Reference Manual.
Concatenating Screen Space and Profile Datasets

Candle stores the standard screen spaces, that we ship with OMEGAMON II, use in the menu and command interfaces, and that the DD statement RKOIPROC references, in the rhilev.RKOIPROC dataset.

If you want to create, modify, or delete screen spaces for your use without modifying either the standard screens or other users’ screens, create one or more additional datasets called cccccccc.RKOIPCSV. The prefix cccccccc can be for your site or for an individual user.

OMEGAMON II writes the members you change to the dataset that the DD statement RKOIPCSV references.

**Saving and reading screen space datasets example**

OMEGAMON II accesses the datasets in the following order:
- personal datasets in cccccccc.RKOIPCSV
- installation
- rhilev.IMSID.RKOIPCSV
- rhilev.RKOIPROC

The following example shows how OMEGAMON II saves and reads the screen space datasets:

```plaintext
OMEGAMON II saves screen spaces in this file:
//RKOIPCSV DD DISP=SHR,DSNAME=ccccccc.RKOIPCSV.
OMEGAMON II reads screen spaces from these files:
//RKOIPROC DD DISP=SHR,DSNAME=rhilev.RKOIPPROC.
```

You can concatenate profile datasets in the same manner as above, to allow general users the freedom to use their own personal profiles, or to restrict users to installation-defined parameters.
Restricting parameter modification

To restrict users from changing selected parameters, but allow them to customize others, you could implement the security facility for the desired commands and then concatenate the RKOIPROF DD statement in the following manner:

```
Individual profiles are saved in this file:
//RKOIPFSV DD DISP=SHR,DSN=userid.RKOIPFSV

Installation profiles are saved in this file:
//RKOIPFSV DD DISP=SHR,DSN=rhiliev.INSID.RKOIPFSV

Profiles are read from this file:
//RKOIPROF DD DISP=SHR,DSN=userid.RKOIPFSV
```

The Candle default profile is a load module in your STEPLIB, so it is always available if you do not load any other profile.
Concatenating Screen Space and Profile Datasets
Concatenating Screen Space and Profile Datasets
Section 3. Setting Security
Chapter Overview

Candle provides a security facility in OMEGAMON II to prevent unauthorized use of OMEGAMON for IMS commands. Candle ships OMEGAMON II with the internal security feature as the default.

For an added level of security, you can set up an interface between OMEGAMON II and an external security package, such as RACF or CA-ACF2.

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

*Note:* References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

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- Implement External Security ............................................................................... 144
- Modify RACF Rules to Interface with OMEGAMON II ................................. 145
- Modify ACF2 Rules to Interface with OMEGAMON II ................................. 147
- Modify TOP SECRET Rules ............................................................................ 148
Use Internal Security for Authorized Commands

All OMEGAMON II commands (major, minor, immediate, and INFO-line) have a security level of 0, 1, 2, or 3. Each security level can have its own password, as follows:

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

Candle ships all authorized commands with a default security level of 3, and all others with a level of 0. Level 3 provides the highest degree of protection, while a setting of 0 means that any user can access the command.

You can change the security level of any OMEGAMON II command to suit the needs of your installation. “Update the Security Table” on page 175 describes how to do this.

Defining terms

This chapter uses the following terms in its discussion of the customization procedures:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update Program</td>
<td>The KOBSUPDT member of thilev.TKANMOD is a utility program that performs the update to the OMEGAMON II security table.</td>
</tr>
<tr>
<td>Control Statements</td>
<td>The KOISUPDI member of thilev.RKANPAR contains control statements that you can edit to change the defaults for internal security or to specify external security. KOISUPDI provides the input for the update program.</td>
</tr>
<tr>
<td>JCL</td>
<td>The KOISUPD member of thilev.TKANSAM contains the JCL to run the security update program.</td>
</tr>
<tr>
<td>Exit Routine</td>
<td>At initialization, OMEGAMON II accesses the user’s security exit routine, which provides the interface to the external security package. The installer must specify the name of the user’s security exit routine.</td>
</tr>
</tbody>
</table>
Supplying the Password

If you enter a command that requires higher authority than yours, OMEGAMON II responds with the message:

**OB0921  Security check failed (Internal)**

Accessing authorized commands

You can access authorized commands by using the /PWD command.

If you are using OMEGAMON II with an external security package, you can prevent the use of the /PWD command. See “Setting authority levels with the locking feature” on page 189 for information.

To gain access to the authorized commands, use the /PWD command in the following manner:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Agent</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type /PWD on the INFO-line</td>
<td>When you press Enter, OMEGAMON II responds with the password prompt.</td>
</tr>
<tr>
<td>2</td>
<td>Type your password on the</td>
<td>The password does not display as you type it.</td>
</tr>
<tr>
<td></td>
<td>INFO-line</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Press Enter</td>
<td>The <strong>PASSWORD ACCEPTED</strong> message displays.</td>
</tr>
<tr>
<td>4</td>
<td>Press Enter</td>
<td>OMEGAMON II provides access to all authorized commands associated with that password, as well as lower command levels.</td>
</tr>
</tbody>
</table>

Resetting security levels to 0

To reset security levels to 0, after authorizing commands, do one of the following:

- Press the PA1 key.
- Press the ATTN key.
- Use the /PWD command in the following manner:

1. Type the /PWD command on the INFO-line and press Enter.
   The password prompt displays.

2. Do **not** type a password; just press Enter. You will see a message stating **Password level reset**.
   OMEGAMON II restricts access to authorized commands until you re-enter the password ID.
Use External Security

OMEGAMON II supports external security for all modes of operation, and for both logon and command use.

Setting limitations to external security

When using external security, users can log on to OMEGAMON II only if they have access to the INITIAL\textsubscript{x} resource name. Use the following guidelines to set internal security levels for INITIAL\textsubscript{x} resource names.

<table>
<thead>
<tr>
<th>Use this resource name...</th>
<th>To set internal security to this level</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIAL0</td>
<td>0</td>
</tr>
<tr>
<td>INITIAL1</td>
<td>1</td>
</tr>
<tr>
<td>INITIAL2</td>
<td>2</td>
</tr>
<tr>
<td>INITIAL3</td>
<td>3</td>
</tr>
</tbody>
</table>

Understanding conditions for external security

When a user issues a command, OMEGAMON II performs an external security check if the following conditions are met:
- The security table specifies the user exit module name.
- An external security exit routine is located and loaded.
- The security table specifies the external security for the issued command (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.

Processing an exit exception

If you specify any commands for external security checking and OMEGAMON II does not find an exit routine, then OMEGAMON II recognizes a possible security exposure and disables those commands with an internal security level of 0 for the session.

OMEGAMON II allows those commands with a level of 1, 2, or 3 to execute after you enter the internal password, as described in “Use Internal Security for Authorized Commands” on page 138.
Log On Using External Security in VTAM, TSO, and ISPF Modes

When you log on through VTAM, OMEGAMON II presents a logon panel for the OMEGAMON II VTAM application program (KOBVTAM). The same VTAM logon panel also appears for ISPF and TSO modes, because OMEGAMON II uses the OMEGAMON II VTAM application program for these modes as well.

The copyright screen you normally see at logon time has additional fields for User ID, Password, Group, and New Password.

Using the KOBVTAM logon screen

The advantages of using the KOBVTAM logon screen are that the exit routine

- can cause OMEGAMON II to stop an unauthorized logon
- makes all security checks based on the user’s logon ID and not on the OMEGAMON II address space’s authority

If you are in an active VTAM session and you want to alter the external security level of authorization, you can use the relogon feature we discussed in “Access Security from an Active Session” on page 143.
Log On Using External Security in Dedicated Mode

Security in dedicated mode differs from the other modes because, at startup time, there is no user ID or password associated with the session.

Accessing external security

The only security available by default is internal security.

You must enter the /PWD command, using the relogon feature we discussed in “Access Security from an Active Session” on page 143, to access external security.
Access Security from an Active Session

The relogon feature is a function of the /PWD command that allows you to enter your user ID and password for the external security package from an active OMEGAMON II session.

In dedicated mode, you can use the relogon feature to log on to external security. In VTAM mode, the relogon feature enables users to alter the security level without having to bring down a current VTAM session.

Using the relogon feature

To use the relogon feature:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type in the /PWD INFO-line command and your user ID as in this example: <code>/PWD user01 KOIMENU DEXO1 DED LOG OIDIRIE1 /C IMSA 01/02/97 9:20;</code></td>
</tr>
<tr>
<td>2</td>
<td>Press Enter.</td>
</tr>
<tr>
<td>3</td>
<td>Type your external security password at the prompt.</td>
</tr>
</tbody>
</table>

Follow these rules when using the relogon feature:

- Do not mark the /PWD command as EXTERNAL=YES in the security table, because in dedicated mode you must use /PWD to log on to external security.
- You can determine in your user exit what the default action should be when the user ID or logon password supplied is not valid.
  
  For example, you can specify the disabling of all OMEGAMON II commands marked as EXTERNAL=YES, or you can specify that the session reverts to the previous user ID.

The sample exit routines contain an explanation of the available options.

- If you use the relogon feature and your password has expired, you cannot enter a new password using the /PWD command.
Implement External Security

You can use the following procedure to implement external security.

Implementing external security

To implement external security:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Modify the rules in the external security package to interface with OMEGAMON II. See “Modify RACF Rules to Interface with OMEGAMON II” on page 145 for more information.</td>
</tr>
<tr>
<td>2</td>
<td>Customize the sample exit routine on the OMEGAMON II tape according to the procedure in “Create Your Exit Routine” on page 150. Refer to “Customize with Optional External Security Features” on page 188 for a description of options you may want to use.</td>
</tr>
<tr>
<td>3</td>
<td>Assemble and link-edit the routine.</td>
</tr>
<tr>
<td>4</td>
<td>Modify and update the security table to specify the commands that RACF or ACF2 need to check, and the name of the module that contains the exit routine. (We do not supply a default for the module name.) Follow the steps in “Updating the security table” on page 175.</td>
</tr>
</tbody>
</table>
Modify RACF Rules to Interface with OMEGAMON II

You can modify the RACF rules to interface with OMEGAMON II.

TSO and ISPF modes require APF-authorization to initialize with RACF.

Note: You will get an S282-10 abend if you do not do the APF-authorization.

Modifying RACF rules

To modify the RACF rules to interface with OMEGAMON II:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Update the resource class description table to define a class name (for example, OICANDLE) using the ICHERCDE macro call.  
  *Note:* Be sure to use the same name when you define the resource class in the security exit routine.  
  Candle recommends coding the ICHERCDE macro as follows:  
  ICHERCDE CLASS=classname,  
    ID=nnn,  
    MAXLNTH=8,  
    FIRST=ALPHANUM,  
    OTHER=ANY,  
    POSIT=n,  
    DFTUACC=NONE  
  Your installation determines the values for classname and nnn. Your installation may also require additional operands for this macro.  
  *Note:* The ICHERCDE macro sets RACLIST=DISALLOWED as a default. If you code RACLIST=ALLOWED, use the ICHRFRTB macro to create a router table entry for the class. |
| 2    | Activate the newly defined resource class. |
| 3    | Define a resource profile for logging on to OMEGAMON II, using the TSO RDEFINE command with a resource of INITIAL.  
  Here is an example of a definition that allows all users to sign on to OMEGAMON II and use the /PWD command for internal security (that is, it allows access only to those commands marked EXTERNAL=NO):  
  RDEFINE classname INITIAL UACC(READ)  
  This definition is the minimum that OMEGAMON II requires for logon. If you want to restrict the use of the /PWD command, see “Setting authority levels with the locking feature” on page 189. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Define resource profiles for the commands you wish to protect using external security (EXTERNAL=YES commands).&lt;br&gt;1. Use the TSO RDEFINE command and specify the OMEGAMON II command as the resource.&lt;br&gt;   Be certain to specify that only specific users may execute the command by setting UACC(NONE).&lt;br&gt;2. Use the PERMIT command to define those users who can access the resource (execute the command). Give them READ access.&lt;br&gt;The following example shows how to authorize a user to execute the PEEK command with RACF.&lt;br&gt;&lt;br&gt;<strong>RDEFINE classname PEEK UACC(NONE)</strong>&lt;br&gt;<strong>PERMIT PEEK CLASS(classname) ID(USER01) ACCESS(READ)</strong>&lt;br&gt;Note: When you authorize commands, OMEGAMON II modifies the command name by replacing the slash of INFO-line commands with a dollar sign (cccccc becomes $cccccc), and the period of immediate commands with @ (cccc becomes @cccc). For example, OMEGAMON II defines /LOGOUT to RACF as $LOGOUT in CLASS(cccccccc).</td>
</tr>
<tr>
<td>5</td>
<td>Include macro libraries in the assembly of the security exit routine.&lt;br&gt;You can use SYS1.MACLIB and SYS1.AMODGEN as the macro libraries for RACF. In addition, you must include the Candle macro library, thileu.TKANMAC.</td>
</tr>
</tbody>
</table>
Modify ACF2 Rules to Interface with OMEGAMON II

You can modify ACF2 rules to interface with OMEGAMON II.

Modifying ACF2 rules

To modify the ACF2 rules to interface with OMEGAMON II

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If you are running OMEGAMON II in dedicated or VTAM mode, define the name of the OMEGAMON II started task to ACF2. The started task name you use for OMEGAMON II in VTAM mode should have the MUSASS attribute assigned, to allow ACF2 to check the individual user’s authorization rather than using the OMEGAMON II address space ID. If you specify STC(NO), you must run the interface in batch with a job name that has the MUSASS attribute.</td>
</tr>
<tr>
<td>2</td>
<td>Once you install the exit, you must set up a resource class for ACF2 to allow OMEGAMON II to make the security checks. Define a generalized resource class name, for example OIS. This name will be three characters long for generalized resources, but will be prefixed with the letter R within the security. <strong>Note:</strong> Be sure to use the same name when you define the resource class in the security exit routine.</td>
</tr>
<tr>
<td>3</td>
<td>Define an ACF2 rule for resource INITIAL to allow VTAM users to logon to OMEGAMON II, as in the following example: <code>ACFNRULE KEY(INITIAL) TYPE(OIS) ADD(UID(****uid) ALLOW)</code> If you want to restrict the use of the /PWD command, see “Setting authority levels with the locking feature” on page 189.</td>
</tr>
<tr>
<td>4</td>
<td>Use the ACF2 rule compiler to define resource rules for the command you wish to protect. Specify the command with the KEY operand. The following example shows how to authorize a user to execute the PEEK command with ACF2. <code>ACFNRULE KEY(PEEK) TYPE(&amp;PR.S) ADD(UID(****USER01) ALLOW)</code> See your security administrator for information on the format of the string. <strong>Note:</strong> When you authorize commands, OMEGAMON II modifies the command name by replacing the slash of INFO-line commands with a dollar sign (/cccccc becomes $cccccc) and the period of immediate commands with @ (ccc becomes @ccc). For example, OMEGAMON II stores /LOGOUT in ACF2 as $LOGOUT.</td>
</tr>
<tr>
<td>5</td>
<td>Include the ACF2 macro library in the assembly of the routine. In addition, you must include the Candle macro library, <code>hlev.TKANMAC</code>.</td>
</tr>
</tbody>
</table>
Modify TOP SECRET Rules

You can modify TOP SECRET rules, by using the TSS PERMIT command to define those users who can access the resource by executing the OMEGAMON II command.

The following example shows how to authorize a user to execute the PEEK command with TOP SECRET:

\[\text{TSS PERMIT}(\text{userid}) \text{cccccccc}(\text{PEEK})\]

The variable \text{cccccccc} is the resource class name you define for TOP SECRET.
Chapter Overview

This chapter explains how to use security exit routines for OMEGAMON II, including how to:

- create an OMEGAMON II exit routine
- use call conventions for OMEGAMON II exit routines
- review call flow for OMEGAMON II exit routines

Note: References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

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Use OMEGAMON II’s Calling Conventions for Security Exit Routines ........... 151
Review OMEGAMON II’s Calling Flow for Security Exit Routines ................. 152
Create Your Exit Routine

The OMEGAMON II exit routine provides an interface between OMEGAMON II and the security product.

You can specify any unique name for your exit routine, but you must also specify that name in the control statements that update the security table. Multiple systems can share one exit routine.

For more information, see Using MODULE under “Use Control Statements to Modify the Security Table” on page 158.

Locating example ACF2 and RACF exit routines

The KOIACF2X and KOIRACFX members of thilev.TKANSAM contain models of ACF2 and RACF routines. Many installations use these members without modification, but because security procedures are installation-dependent, we have documented these members with comments to enable you to modify them.

**Note:** Be sure that the resource class you define in the exit routine has the same name as the resource class you defined when modifying RACF/ACF2 rules.

The thilev.TKANSAM dataset contains members called KOIRACF2A and KOIRRACFA that supply sample JCL to help you assemble and link-edit your routine.

Using your exit routine for multiple OMEGAMON IIs

You can use the same exit routine to define security for multiple OMEGAMON IIs, by using the same name on the MODULE= statement for each OMEGAMON II (see “Using MODULE” on page 166).

**Note:** You could use the value of the B#DDPRFX field in the $BIA data area as part of a resource name for the OMEGAMON II currently in use.

Using other security systems

If you have a security system other than RACF or ACF2, you can still implement a security interface using their models. Use the sample RACF and ACF2 exits as guides to see what information passes to the exit routine and what information returns to OMEGAMON II.
Use OMEGAMON II’s Calling Conventions for Security Exit Routines

OMEGAMON II uses a single control block to pass information to the exit routine and certain conventions to call the user exit module.

Using the $UCHECK control block

OMEGAMON II uses the $UCHECK control block to pass information to the exit routine. The exit routine also uses $UCHECK to pass information back to OMEGAMON II.

The $UCHECK macro maps the $UCHECK control block. Member KOBGMAC of thilev.TKANMAC. defines $UCHECK.

OMEGAMON II maintains the $UCHECK control block for the entire life of the session, and gives the installation a 512-byte work area for its own use.

<table>
<thead>
<tr>
<th>Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>The $UCHECK work area is limited to 512 bytes.</td>
</tr>
<tr>
<td>If your installation requires a larger work area, GETMAIN the additional storage required and place the pointer to this GETMAINed area in $UCHECK.</td>
</tr>
<tr>
<td>An attempt to enlarge this work area beyond its 512-byte limit in any other way causes an overlay of essential OMEGAMON II control blocks. Results are unpredictable.</td>
</tr>
<tr>
<td>If you modify the RACF RACROUTE macro, you must GETMAIN at least 512 bytes for use as the WORKA parameter.</td>
</tr>
</tbody>
</table>

Using calling conventions

OMEGAMON II calls the user exit module using the following conventions:

<table>
<thead>
<tr>
<th>Register Number</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Address of parameter list.</td>
</tr>
<tr>
<td>13</td>
<td>Address of standard save area.</td>
</tr>
<tr>
<td>14</td>
<td>Return address.</td>
</tr>
<tr>
<td>15</td>
<td>Entry point address (in).</td>
</tr>
<tr>
<td>15</td>
<td>Return code (out).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter List</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word 1</td>
<td>Address of control block.</td>
</tr>
</tbody>
</table>
Review OMEGAMON II’s Calling Flow for Security Exit Routines

This section describes the flow for calls to your user security exit routine

- at initialization
- during command verification
- at termination

**Note:** This unit does not apply to the IMS command BMP security exit. See “Implementing Your BMP Interface” on page 113 for more information.

**Reviewing call flow at initialization**

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

<table>
<thead>
<tr>
<th>IF...</th>
<th>THEN...</th>
</tr>
</thead>
<tbody>
<tr>
<td>the user ID field length is non-zero</td>
<td>the user ID and password are available.</td>
</tr>
</tbody>
</table>
| additional information or some form of retry is required | the user exit routine can request a reshow of the screen and reset any field lengths to indicate that no data is present (user ID, password, group, or new password).
|                                             | To perform a reshow in VTAM mode, set a message into the U#CHMSG field (120 bytes maximum length), set the U@CHRSHO bit in U#CHRESP, and return to the caller.
|                                             | The message displays below the panel, with appropriate fields filled in (original user ID and password), unless overridden (length = 0). |
| validation is complete                      | a return code of 0 from the user exit indicates that the user should be allowed to log on. Any other return code causes the session to abort. |
| logon acceptance is successful             | the validation routine can perform resource validation and optionally assign a command security level (0, 1, 2, or 3) to the user. The default is 0. Place the appropriate number into U#CHAUT4. To force the user to use only this level, also set the U@CH1LOK bit in U#CHAUT1. |
Reviewing call flow during command verification

During command verification, OMEGAMON II places a C in the U#CHTYP field. At this point, you can check the user’s authorization.

You cannot change the decision to allow or disallow a command on the first encounter on subsequent tries by the same user unless you reset security with the /PWD command.

However, on each try OMEGAMON II notifies the user exit, may write an audit record, and may issue a customized error message.

Return codes from the exit routine are as follows:

<table>
<thead>
<tr>
<th>IF the return code is...</th>
<th>THEN...</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>the command is allowed (RACF and ACF2)</td>
</tr>
</tbody>
</table>
| 4                       | the command is unknown to RACF (RACF only)  
OMEGAMON II allows the command to execute.  
See “Modify RACF Rules to Interface with OMEGAMON II” on page 145, for instructions on defining a command to RACF. |
| 8                       | the command is known to the security package and access is denied 
(both RACF and ACF2) |

When you authorize commands, OMEGAMON II modifies the command name by replacing the slash of INFO-line commands with a dollar sign (/cccccc becomes $cccccc), and the period of immediate commands with @ (ccc becomes @$ccc).

At relogon, OMEGAMON II places an R in the U#CHTYP field to indicate a logon validation. The processing is the same as at initialization time, except that users may not enter a new password or group because OMEGAMON II does not display a logon panel.

Reviewing call flow at termination

At termination, OMEGAMON II passes a T to the user’s exit routine. You can then do any termination cleanup required, such as freeing user control blocks and FREEMAINing any GETMAINed areas.
Chapter Overview

This chapter explains how to modify the OMEGAMON II security table and includes:

- a review of format rules for control statements
- detailed explanations of each control statement
- an example of using control statements to update the security table

**Note:** References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

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- Use Control Statements to Modify the Security Table ...................... 158
- Use Control Statements to Update the Security Table ...................... 173
- Update the Security Table .......................................................... 175
Modify the Security Table

This section describes how to update the security table for both external and internal security.

**Caution**
Security tables from previous versions are compatible only with Versions 300 and up. For Version 120 and earlier versions, you must customize your table or rerun security gen. (We have not changed the inputs.)

The following is a summary of the available options.

<table>
<thead>
<tr>
<th>Control Statement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTHLIB</td>
<td>Specifies an authorized screen space (PROC) library for initialization that bypasses the security check.</td>
</tr>
<tr>
<td>COMMAND</td>
<td>Sets the internal security levels of commands, marks them for external security, and requests an audit.</td>
</tr>
<tr>
<td>LIST</td>
<td>Specifies whether a listing of the current security settings is to be produced on this run.</td>
</tr>
<tr>
<td>MINOR</td>
<td>Specifies the security options for minor commands.</td>
</tr>
<tr>
<td>MODULE</td>
<td>Specifies the name of the module containing the user’s external security exit routine.</td>
</tr>
<tr>
<td>PASSWORD</td>
<td>Specifies the internal passwords.</td>
</tr>
<tr>
<td>RESET</td>
<td>Clears current settings.</td>
</tr>
<tr>
<td>UPDATE</td>
<td>Specifies whether OMEGAMON II is to perform updating on this run.</td>
</tr>
</tbody>
</table>
Reviewing format rules for control statements

These general 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, which take effect after the update program processes all other input.
- All information for a particular control statement must fit on a single line.
- All input must be in uppercase letters.
- Statements must be in the format:
  \[\text{CONTROLSTATEMENT}=\text{cccccccc},\text{KEYWORD1}=\text{cccccccc},\text{KEYWORD2}=\text{cccccccc},\text{etc.}\]
  There can be no intervening blanks. The update program treats data that follows a blank as a comment. This data prints on the control statement listing, but is ignored for processing purposes.
- To insert comment lines anywhere in the input stream, place an asterisk (*) in column one of the input record.
- If the update program flags statements as being in error, correct the statements and submit them again.
  To change a setting, you must specify a new setting instead of blanking out the old setting. This is especially important to remember when changing a command from \text{EXTERNAL=YES} to \text{EXTERNAL=NO}.
- OMEGAMON II does not recognize changes to control statements until the update job successfully terminates and a new OMEGAMON II session starts.
  The control statement listing should indicate successful completion of the update.
Use Control Statements to Modify the Security Table

The sections that follow explain the control statements and associated keywords you can use to modify the security table.

We have underscored keyword defaults.

This section gives you the following information about a control statement:

- purpose of the control statement
- format of the control statement
- acceptable keywords
- restrictions for the control statement (if any)
- other information that is specific to the control statement (if any)

Using AUTHLIB

The AUTHLIB control statement specifies the dataset name of an authorized screen space library, that contains commands to invoke at OMEGAMON II initialization bypassing any security checks.

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

Format of AUTHLIB

The format of AUTHLIB is

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

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

Keywords

AUTHLIB accepts the following keyword:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOL</td>
<td>Specifies the volume serial where the specified dataset resides. This acts as an additional security measure. You can specify a volume serial number even if the dataset is cataloged. The AUTHLIB statement always requires the VOL keyword. If you do not want OMEGAMON II to perform the additional volume serial number checking, specify NOVOLUME.</td>
</tr>
</tbody>
</table>

Restrictions

Because OMEGAMON II bypasses all security checking for screens coming from the AUTHLIB dataset, you should restrict WRITE access to this dataset.
Security check points
Security checking resumes when OMEGAMON II fetches a screen from:

- an unauthorized library
- a screen that has been loaded into memory
- when a user enters any keystroke, including a cursor movement

<table>
<thead>
<tr>
<th>Important</th>
</tr>
</thead>
</table>
| If you create an authorized screen library and use the OMEGAMON II menu system, security checking will cause initialization to fail when:
| - OMEGAMON II fetches a screen containing an authorized command. (Menu system users should leave the .FGO and .VAR commands unprotected).
| - OMEGAMON II fetches a screen space that has been loaded into memory. (@ZSCRNDF is the screen that loads screen spaces into memory). |

Concatenate the dataset containing the authorized screens in your RKOIPROC DD statement.

**Note:** The dataset that contains the authorized screen libraries is not an APF-authorized dataset.
Using COMMAND

The COMMAND control statement specifies the name of an OMEGAMON II major, immediate, or INFO-line command that you want to protect. OMEGAMON II protects minor commands at the major command level unless you specify the MINOR control statement.

Format of COMMAND

The format of COMMAND is

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

where cccc, .ccc, or /cccccc is the name of the OMEGAMON II command you want to protect.

To have the control statement listing show the current security settings for a command, enter a COMMAND=cccc, =.ccc, or =/cccccc statement with no additional operands.

Keywords

COMMAND accepts the following keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL</td>
<td>Specifies the internal security level associated with this command.</td>
</tr>
<tr>
<td></td>
<td>Level 0 allows the command to execute without an internal security bcheck.</td>
</tr>
<tr>
<td></td>
<td>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) using the /PWD INFO-line command.</td>
</tr>
<tr>
<td></td>
<td>DISABLE specifies that OMEGAMON II is never to execute the command.</td>
</tr>
<tr>
<td></td>
<td>You can audit attempts to execute the command for the session, but you cannot specify internal or external security.</td>
</tr>
</tbody>
</table>

You can audit attempts to execute the command for the session, but you cannot specify internal or external security.
<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
</table>
| EXTERNAL | Specifies whether an external security package checks this command. OMEGAMON II ignores the EXTERNAL keyword if you specify LEVEL=DISABLE. If you code EXTERNAL=YES for a command and no exit routine is available, OMEGAMON II does one of the following:  
- disables the command for the session if it has an associated security level of 0  
- defaults to internal security if the command has a security level of 1, 2, or 3  
Once you specify EXTERNAL=YES, you can change EXTERNAL only by specifying EXTERNAL=NO and rerunning the security update program. |
| AUDIT | Specifies whether OMEGAMON II is to audit the command each time a user invokes it. The possible values are:  
- WTO Produces a one line message on the master console.  
- SMF Specifies that OMEGAMON II write an SMF record. You must specify the SMF record number in the SMFNUM control statement.  
  
  If OMEGAMON II cannot perform the SMF audit, OMEGAMON II defaults to a WTO audit. See “Generate the System Management Facilities Audit” on page 184 for details about setting up the SMF audit.  
- BOTH Specifies that OMEGAMON II issue a WTO message to a console and write an SMF record.  
- NONE Specifies no auditing. This is the default setting.  
If you specify an audit for a disabled command, OMEGAMON II notifies you of attempts to execute the command. |
Restrictions
When you update an INFO-line command, you must use the actual command name and not its alias. OMEGAMON II automatically assigns the same protection attributes to all aliases of the command.

How OMEGAMON II treats multiple COMMAND statements
OMEGAMON II always processes the last COMMAND statement for the command. OMEGAMON II does not check for multiple COMMAND statements for the same command in the same run.
Using LIST

The LIST control statement specifies whether the update program produces a security file listing.

A security file listing is a complete record of the security table that shows the following information:
- the name of the authorized screen library
- security file volume serial number
- the name of the user exit module
- all command names, along with their corresponding security information

A security file listing does not list the internal security passwords.

**Format**

The format of LIST is

\[
\text{LIST=\{YES | NO\}}
\]

If you also specify UPDATE=NO, the listing shows what the control statements and security information would look like if the update had taken place.

To generate the security file listing independent of edits to the control statements, submit LIST=YES as the only control statement in the input stream.

**Keywords**

There are no keywords.

**Restrictions**

OMEGAMON II allows only one LIST statement per run. The default is LIST=NO.
Using MINOR

The MINOR control statement specifies the name of an OMEGAMON II minor command you want to protect.

OMEGAMON II protects the minor commands independent of the majors. Therefore, any changes to minor commands apply to all minors with the same name and attributes, regardless of their major commands.

Format

The format of MINOR is

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

where `cccc` is the name of the minor command to be protected.

Keywords

MINOR accepts the following keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL</td>
<td>Specifies the internal security level you want to associate with this command.</td>
</tr>
<tr>
<td></td>
<td>Level 0  Allows the command to execute without an internal security check.</td>
</tr>
<tr>
<td></td>
<td>Levels 1, 2, and 3  Specifies that the command execute only if you have previously entered the corresponding password for that level (or for a higher level), using the /PWD INFO-line command.</td>
</tr>
<tr>
<td></td>
<td>DISABLE  Specifies that OMEGAMON II is never to execute the command.</td>
</tr>
<tr>
<td></td>
<td>If you specify this value, you can audit attempts to execute the command for the session, but you cannot specify internal or external security.</td>
</tr>
<tr>
<td>EXTERNAL</td>
<td>Specifies whether an external security package checks this command.</td>
</tr>
<tr>
<td></td>
<td>OMEGAMON II ignores the EXTERNAL keyword if you specify LEVEL=DISABLE.</td>
</tr>
<tr>
<td></td>
<td>If you code EXTERNAL=YES for a command and no exit routine is available, OMEGAMON II does one of the following:</td>
</tr>
<tr>
<td></td>
<td>- disables the command for the session if it has an associated security level of 0</td>
</tr>
<tr>
<td></td>
<td>- defaults to internal security if the command has a security level of 1, 2, or 3</td>
</tr>
<tr>
<td></td>
<td>Once you specify EXTERNAL=YES, you can change EXTERNAL only by specifying EXTERNAL=NO and rerunning the security update program.</td>
</tr>
<tr>
<td>AUDIT</td>
<td>Specifies whether OMEGAMON II is to audit the command each time a user invokes it. The possible values are:</td>
</tr>
</tbody>
</table>
Use Control Statements to Modify the Security Table

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

**SMF**
- Specifies that OMEGAMON II write an SMF record. You must specify the SMF record number in the SMFNUM control statement.
- If OMEGAMON II cannot perform the SMF audit, OMEGAMON II defaults to a WTO audit.
- See “Generate the System Management Facilities Audit” on page 184 for details about setting up the SMF audit. This option requires APF-authorization.

**BOTH**
- Specifies that OMEGAMON II issue a WTO message to a console and write an SMF record.

**NONE**
- Specifies no auditing. This is the default setting.
- If you specify an audit for a disabled command, OMEGAMON II notifies you of attempts to execute the command.

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

**Multiple MINOR statements**
OMEGAMON II always processes the last MINOR statement for the command.
OMEGAMON II does not check for multiple MINOR statements for the same command in the same run.
Using MODULE

The MODULE control statement specifies the name of the module that contains the user’s external security exit routine.

You must specify the MODULE parameter for an external security check to take place. There is no default.

**Format**

The format of MODULE is

```
MODULE=cccccccc
```

where ccccccccc is the name of the module that contains the user’s external security exit routine.

Be sure that this name matches the load module name you specified in KOIACF2A or KOIRACFA.

**Keywords**

There are no keywords.

**Restrictions**

There are no restrictions.

**Removing control from external security**

To remove control from external security:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Blank out the value of MODULE=.</td>
</tr>
<tr>
<td>2</td>
<td>Run the security update job.</td>
</tr>
<tr>
<td>3</td>
<td>If you are running OMEGAMON II, exit OMEGAMON II.</td>
</tr>
<tr>
<td>4</td>
<td>Restart OMEGAMON II.</td>
</tr>
</tbody>
</table>
Using PASSWORD

The PASSWORD control statement specifies the 1- to 8-character password for each internal security level, that you want to use with the /PWD command.

**Format**
The format of PASSWORD is

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

where `password` is the unique password for this level.

**Keywords**
PASSWD accepts the following keyword:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL</td>
<td>Specifies the security level you want to associate with this password. OMEGAMON II requires a level for a 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), using the /PWD INFO-line command.</td>
</tr>
</tbody>
</table>
Restrictions
You must 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 level, OMEGAMON II will match it only at the lowest level, and deny access to commands protected at higher levels.

When you enter a valid password for one security level, OMEGAMON II allows access to commands secured at that level, and commands secured at lower levels. OMEGAMON II checks the password for a match in the following order:

1. Level 1
2. Level 2
3. Level 3
Using RESET

The RESET control statement clears the current settings of the other control statements.

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

**Format**
The format of RESET is

```
RESET=keyword
```

where `keyword` is one of the keywords described below.
Keywords
RESET accepts the following keywords:

<table>
<thead>
<tr>
<th>Keyword</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>Clears settings for all control statements and all keywords in OMEGAMON II’s security table.</td>
</tr>
<tr>
<td>AUTHLIB</td>
<td>Clears the name and volume serial number of the authorized library.</td>
</tr>
<tr>
<td>INFO</td>
<td>Clears settings for all INFO-line commands (on the COMMAND control statement). For example, if you do not want to use the Candle default security levels for INFO-line commands and want to start over, enter RESET=INFO. For INFO-line commands, this resets all LEVEL settings to security level 0 and also clears any existing EXTERNAL and AUDIT settings.</td>
</tr>
<tr>
<td>MAJOR</td>
<td>Clears settings for all major and immediate commands (on the COMMAND control statement).</td>
</tr>
<tr>
<td>MINOR</td>
<td>Clears settings for all minor commands.</td>
</tr>
<tr>
<td>MODULE</td>
<td>Clears the name of the user’s exit routine module.</td>
</tr>
<tr>
<td>PASSWORD</td>
<td>Clears the internal passwords.</td>
</tr>
<tr>
<td>SLASH</td>
<td>Clears settings for all INFO-line commands (on the COMMAND control statement). For example, if you do not want to use the Candle default security levels for INFO-line commands and want to start over, enter RESET=SLASH. For INFO-line commands, this resets all LEVEL settings to security level 0 and also clears any existing EXTERNAL and AUDIT settings.</td>
</tr>
<tr>
<td>SMFNUM</td>
<td>Clears the record number for SMF audits.</td>
</tr>
<tr>
<td>YES</td>
<td>Clears settings for all control statements and all keywords in OMEGAMON II’s security table.</td>
</tr>
</tbody>
</table>

Restrictions
OMEGAMON II only allows one RESET statement per run.
Using SMFNUM

The SMFNUM control statement indicates the ID number of the SMF record that OMEGAMON II should use for its audit.

**Format**
The format of SMFNUM is

```
SMFNUM=nnn
```

where *nnn* is the SMF record ID number.

The ID number you assign to OMEGAMON II must be between 128 and 255, inclusive, and should be different from the number that any other application is using.

There is no default.

**Keywords**
There are no keywords.

**Restrictions**
There are no restrictions.
Use Control Statements to Modify the Security Table

Using UPDATE

The UPDATE control statement specifies whether OMEGAMON II updates the control statements during this run.

**Format**
The format of UPDATE is

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

UPDATE=NO specifies that this run of the security update program should be a trial run.

**Keywords**
There are no keywords.

**Restrictions**
OMEGAMON II allows only one UPDATE statement per run.
Use Control Statements to Update the Security Table

This section provides an example of how to use control statements to update the security table.

We provide a list of control statements you can use to update the security table and a detailed explanation of how each control statement causes particular checks to happen.

Using control statements example

The following figure shows an example of using control statements to update the security table:

```
* Security Update for OMEGAMON II- 01/02/97
* Update: USER01: SYSTEMS GROUP
* COMMAND=PEEK,LEVEL=1
COMMAND=DSA,LEVEL=3,EXTERNAL=YES,AUDIT=WTO
COMMAND=MLST,EXTERNAL=YES
COMMAND=XMEP,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
```
Explaining control statement settings

The command control statements in the previous figure specify the following settings:

<table>
<thead>
<tr>
<th>Control Statement</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND=PEEK, LEVEL=1</td>
<td>A user who specifies the internal security level 1 or higher password can execute PEEK and its minors. OMEGAMON II does not perform external security checking at command execution.</td>
</tr>
<tr>
<td>COMMAND=.DSA, LEVEL=3, EXTERNAL=YES, AUDIT=WTO</td>
<td>OMEGAMON II performs external security checking and writes a message to the master console each time .DSA is invoked. If external security is unavailable, only a user who specified the internal security level 3 password can execute .DSA.</td>
</tr>
<tr>
<td>COMMAND=MLST, EXTERNAL=YES</td>
<td>OMEGAMON II performs external security checking, but no auditing.</td>
</tr>
<tr>
<td>COMMAND=XMZP, LEVEL=DISABLE, AUDIT=BOTH</td>
<td>The command cannot be executed. OMEGAMON II writes a message to the master console and writes an SMF record when XMZP is issued. There is no external security checking.</td>
</tr>
<tr>
<td>COMMAND=XML, LEVEL=2</td>
<td>A user who has specified either the level 2 or level 3 internal security password can execute XMLS.</td>
</tr>
<tr>
<td>MINOR=JOBS, LEVEL=2</td>
<td>JOBS is a minor of the PEEK command, which we specified above as a level 1 authorized command; however, the LEVEL=2 setting on JOBS specifies that only level 2 or 3 users can access it.</td>
</tr>
<tr>
<td>COMMAND=/SAVE, LEVEL=1, AUDIT=NONE</td>
<td>A user who has specified either the level 1, level 2, or level 3 password can execute the /SAVE command. The SAVE command is not audited.</td>
</tr>
<tr>
<td>MODULE=MYSECURE</td>
<td>MYSECURE is the name of the module that contains the security exit routine.</td>
</tr>
<tr>
<td>SMFNUM=233</td>
<td>The SMF ID is set to 233.</td>
</tr>
<tr>
<td>LIST=YES</td>
<td>YES indicates that OMEGAMON II produces a listing.</td>
</tr>
<tr>
<td>UPDATE=NO</td>
<td>NO indicates that OMEGAMON II does not update the security table. This is a trial run.</td>
</tr>
</tbody>
</table>
Update the Security Table

This section describes how to update the security table.

Updating the security table

To update the security table, follow these steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stop OMEGAMON II.</td>
</tr>
</tbody>
</table>
| 2    | Edit the control statements in the K&PR.SUPDI member of rhilev.RKANPAR.  

**Important**
To change an existing setting for a parameter, you must specify a new setting rather than just blanking out the old setting. For example, to remove a command from external security checking, change `EXTERNAL=YES` to `EXTERNAL=NO`.  

We describe the rules and keywords for the control statements in “Use Control Statements to Modify the Security Table” on page 158.

If you are implementing external security, you must enter the MODULE command statement naming the load module that will contain the exit routine.

You must also indicate which commands are to use external security with the `EXTERNAL=YES` setting on the COMMAND control statement.

To remove control from external security, blank out the value of the `MODULE=` keyword.

Remember that if you do not change commands marked `EXTERNAL=YES` to `EXTERNAL=NO`, those with an internal security level of 0 will be nonexecutable.

| 3    | If you have not already done so, copy `thilev.TKANSAM(KOISUPD)` to `rhilev.RKANPAR`. |
| 4    | Submit the job using the KOISUPD member.  
KOISUPD contains the JCL to run KOBSUPDT, the security update utility program.  
The KOBSUPDT member
- performs the updates to the security table.  
- generates a list of the edits.  
- generates a complete list of security information, if requested.  
Successful completion of the job produces the message:

`OB9147 LOAD MODULE TEXT SUCCESSFULLY UPDATED`

If the update program flags statements as being in error during an update run, correct the statements and submit them again. |
| 5    | Start OMEGAMON II. |
Update the Security Table
Chapter Overview

This chapter provides information to help you interpret the Security Update Program listing, including explanations of the:

- header
- control statement listing
- security file listing
- security update program trace

Note: References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

Chapter Contents

Interpret the Security Update Program Listing. .......................... 178
Interpret the Security Update Program Listing

The security update program generates a listing of the control statement modifications that you have made. With the LIST control statement, you have the option of producing an additional listing that includes all of the security information.

The security update program listing consists of 4 parts:

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

We explain each of these parts more fully in the sections that follow.

Explaining the header

The Security Update Program Listing contains the following information in the header:

- dataset name where the load module resides
- module name of the security table (OICMDccc)
- OMEGAMON II version number (nnn) in the format VnnnCOM
- messages indicating successful completion of the job or error conditions, such as a failure to open the SYSLIB dataset or read the security table

Explaining the control statement listing

The Security Update Program Report contains a listing of the control statements that you have edited. The listing shows the previous contents (except for previous passwords), as well as the new contents.

If you specified UPDATE=YES, OMEGAMON II reports the date and time of the previous update.

The following figure shows a typical control statement listing:
The codes for the **PREVIOUS CONTENTS** and **NEW CONTENTS** of commands are positional.

There are three positional codes:

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The first position shows the number of the internal security levels or an asterisk (*) if the command has been DISABLED.</td>
</tr>
</tbody>
</table>
| 2        | The second position shows the external security option:  
  E Use external security for this command.  
  b Blank specifies no external security. |
| 3        | The third position shows the auditing option:  
  W Audit this command via WTO.  
  S Audit this command via SMF.  
  B Audit this command via WTO and SMF.  
  b Blank indicates no auditing. |
Explaining the security file listing

If you specify LIST=YES anywhere in the input stream, the security update program generates a complete listing of the security information, including:

- 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 of the commands along with their security information

If LIST=YES is the only parameter specified in KOMSUPDI, the listing does not show the internal security passwords.

The following figure shows a typical security file listing without the internal security passwords:

```
** ** SECURITY FILE LISTING ** **

AUTHLIB=rhilev.RKOIPROC  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
COMMAND= .DA
COMMAND= .SCC

COMMAND= OCMD 3EB  TYPE= I

SECURITY TABLE LAST UPDATED ON 01/02/97 06:00:10
```
**TYPE** specifies the following types of OMEGAMON II commands:

<table>
<thead>
<tr>
<th>Command Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Major</td>
</tr>
<tr>
<td>I</td>
<td>Immediate</td>
</tr>
<tr>
<td>S</td>
<td>Slash (INFO-line)</td>
</tr>
</tbody>
</table>

The security level follows the command. An asterisk (*) indicates that a command has been disabled. We list minor commands below their corresponding majors.

**Explaining the security update program trace**

The last part of the Security Update Program listing indicates whether an update has successfully completed.

The following figure shows a typical Security Update Program trace:

```
OBSECUP 1.2--OMEGAMON SECURITY UPDATE PROGRAM--(c) CANDLE CORPORATION-- 01/02/97 16:41

OB9145 OBSELW00 CALLED TO WRITE cccccc.
OB9148 SYSLIB DCB CLOSED SUCCESSFULLY
OB9147 LOAD MODULE TEXT SUCCESSFULLY UPDATED
OB9150 SYSLIB DCB CLOSED
OB9269 OBSECUP ENDED
```
Chapter Overview

This chapter explains how to generate the System Management Facilities (SMF) audit.

Note: References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

Chapter Contents

Generate the System Management Facilities Audit .......................... 184
Generate the System Management Facilities Audit

When you generate the System Management Facilities (SMF) audit, make sure that both
- SMF record exits (IEFU83 and IEFU84)
- the SMF system parameters specifications (SMFPRMcc) do not suppress the ability of OMEGAMON II to log the audit activity records.

Understanding the SMF and audit records
The SMF record contains:
- IBM header (IFASMFR maps)
- Candle Corporation Common Header ($CANHDR maps)
  You define these maps in member KOBGMAC of thilev.TKANMAC.
- security audit record ($AUDIT maps)
  You define these maps in member KOBGMAC of thilev.TKANMAC.

The audit record contains:
- date/time/system stamp
- user ID/jobname associated with the session
- actual command text as you entered it on the OMEGAMON II screen

Records of minor commands also reference their associated major commands.

Caution
The SMF audit has a high overhead, so use it sparingly. Because the overhead for producing SMF records is high, you should use the audit only with sensitive commands, such as those that could disrupt the system (for example, ICMD and IZAP).
### Generating the SMF report

To generate the SMF report, follow these steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Copy <code>thilev.TKANSAM(KOISMFEX)</code> to <code>rhilev.RKANSAM(KOISMFEX)</code>. Modify <code>KOISMFEX</code>, following the instructions in the member.</td>
</tr>
<tr>
<td>2</td>
<td>Copy <code>thilev.TKANSAM(KOISMFREP)</code> to <code>rhilev.RKANSAM(KOISMFREP)</code>. Modify <code>KOISMFREP</code> to meet your site’s needs.</td>
</tr>
<tr>
<td>3</td>
<td>Copy <code>thilev.TKANSAM(KOISMFRA)</code> to <code>rhilev.RKANSAM(KOISMFRA)</code>. Modify <code>KOISMFRA</code>, following the instructions in the member.</td>
</tr>
<tr>
<td>4</td>
<td>Use <code>rhilev.RKANSAM(KOISMFRA)</code> to assemble and link your program.</td>
</tr>
<tr>
<td>5</td>
<td>Submit the job for execution.</td>
</tr>
</tbody>
</table>
Generate the System Management Facilities Audit
Optional External Security Features

Chapter Overview

This chapter explains the options you have for implementing external security packages such as RACF or ACF2, including:

- customization of error messages
- password updating
- audit suppression
- supplemental auditing
- locking feature
- validation with RACF and ACF2 user exit routines

You can set up your user exit routine (as explained in “Create Your Exit Routine” on page 150) to use any of the options we discuss in this section.

Notes:

- Remember that you can also use the control options that the security package supplies, such as SHIFT validation and SOURCE validation. Mark the commands EXTERNAL=YES and implement the option as the security package directs.
- References to OMEGAMON II in this chapter are to the Realtime Performance Monitor, unless we specify otherwise.

Chapter Contents

Customize with Optional External Security Features ........................................ 188
Customize with Optional External Security Features

You can customize your site with any of the following optional external security features:

- customize error messages
- give password update capability
- suppress auditing
- supplement command tracking
- set authority levels with the locking feature
- validate users with RACF
- validate users with ACF2

We discuss each of these options in the sections that follow.

Customizing error messages

To suit your individual requirements, your site can create custom error messages to display when a user has insufficient authority, or enters an invalid user ID or password.

Sample exit routines

See the sample exit routines in the members KOIRACFX and KOIACF2X in the thilev.TKANSAM dataset for information on creating custom error messages.

Restrictions

The user security message can be up to 120 bytes long, except for INFO-line messages (for example, /PWD re-logon messages), which can be a maximum of 60 bytes.

Giving password update capability

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

Example

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

Restrictions

Password update capability is not available when logging back on with the /PWD command.
Suppressing auditing

OMEGAMON II gives you the flexibility of suppressing WTO or SMF auditing.

Example
At initialization or re-logon, your exit routine may set a flag in $UCHECK to indicate WTO or SMF suppression.

Restrictions
There are no restrictions.

Supplementing command tracking
In addition to the WTO and SMF audits available with OMEGAMON II, you can use the audit features of the external security package to supplement command tracking.

Examples
The RACF Report Writer and ACF2 ACFRPT utility programs are examples of this supplemental audit capability.

Restrictions
There are no restrictions.

Setting authority levels with the locking feature
We have designed the locking feature to prevent users from changing their internal security level with the /PWD command. You set their level of authority only once and only at logon.

You can set the level of authority to one of four levels (level 0, 1, 2, or 3).
Validating users with the RACF routine

To validate a user, the user exit routine checks on the RACF resource class that the ICHERCDE macro defines.

Example

The resources that allow OMEGAMON II startup include INITIAL, INITIAL0, INITIAL1, INITIAL2, and INITIAL3, as shown in the following example:

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

<Defines security level 0 as unaccessible>
RDEFINE cccccccc INITIAL0 UACC(NONE)

<Defines security level 1 as unaccessible>
RDEFINE cccccccc INITIAL1 UACC(NONE)

<Defines security level 2 as unaccessible>
RDEFINE cccccccc INITIAL2 UACC(NONE)

<Defines security level 3 as unaccessible>
RDEFINE cccccccc INITIAL3 UACC(NONE)

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

The variable classnme is the resource class name you defined in “Modify RACF Rules to Interface with OMEGAMON II” on page 145.
Validating users with the ACF2 routine

The user exit routine checks the ACF2 resource class to validate a user.

Example

The resources that allow OMEGAMON II startup include INITIAL, INITIAL0, INITIAL1, INITIAL2, and INITIAL3.

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

Here are sample definitions:

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

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

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

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

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

The variable `cls` is the generalized resource class name you defined in “Modify RACF Rules to Interface with OMEGAMON II” on page 145.

Note: The UID operand is site-specific in format and content. For information about UID, contact your security administrator.
Section 4. Configuring and Customizing the OMEGAMON II CUA Interface
Chapter Overview

This chapter will guide you through the configuration and customization of the OMEGAMON II CUA interface.

This chapter assumes that you have completed the configuration and customization of the OMEGAMON II Realtime Performance Monitor.

Note: References to OMEGAMON II in this chapter are to the CUA interface, unless we specify otherwise.

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- Connecting your CUA system to OMEGAVIEW ............................ 205
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The steps below outline the OMEGAMON II CUA interface configuration and customization procedures. You will find detailed descriptions of these activities in the following sections of this chapter.

Review the entire procedure before you begin configuring and customizing your OMEGAMON II CUA system.

**Configuration and customization checklist**

The following checklist lists the steps you should follow to configure and customize your OMEGAMON II CUA system.

Use the ✓ column to check off steps as you complete them.

**Table 15. CUA Configuration and Customization Checklist**

<table>
<thead>
<tr>
<th>✓</th>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>1</td>
<td>Setup logon security.</td>
</tr>
<tr>
<td>✓</td>
<td>2</td>
<td>Execute the CUA JCL procedure.</td>
</tr>
<tr>
<td>✓</td>
<td>3</td>
<td>Connecting your CUA system to OMEGAVIEW</td>
</tr>
</tbody>
</table>
Set Up Logon Security

You must choose security for user logon to the OMEGAMON II CUA system. The types of security available are:

- Network Access Manager (NAM) for internal security
- System Authorization Facility (SAF) for external security
- RACF external security
- CA-ACF2 external security
- CA-TOP SECRET external security
- User-Coded Exit

**Note:** To bypass security, skip to the next step on the CUA Configuration and Customization Checklist, Table 15: CUA Configuration and Customization Checklist on page 196.
Using Network Access Manager (NAM)

The OMEGAMON II system provides an internal security system, NAM, which uses a VSAM dataset to store the userids and passwords of the users you authorize to access your CUA system.

To use NAM, follow these steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Set the parameters in `rhilev.RKANPAR(KI2INNAM)` as follows:  
      ```
      DEFAULT DSNAME(-RVHILEV.-I2NAM)  
      EXIT=xxxxxxxx  
      NORACF  
      NODB
      ```  
      where `xxxxxxxx` is the user-coded exit module name the CUA uses for resource access validation.  
| 2    | Create the NAM SET commands to define the userids and passwords of users you authorize for your OMEGAMON II CUA system. You can find a sample of these commands in `rhilev.RKANCMD(KI2CMNAM)`.  
      You can execute the NAM SET commands using one of three methods:  
      1. After starting the CUA system, issue the commands through the MVS console as modify commands to the CUA system. The format is  
         ```
         F jobname,NAM SET userid PASSWORD=password
         ```  
         where `jobname` is the name of the CUA interface job or started task.  
      2. After starting the CUA system and editing a member in your `rhilev.RKANCMD` dataset, execute all commands in that member through the MVS console as a modify command to the CUA system. The format is  
         ```
         F jobname,member
         ```  
         where `jobname` is the name of the CUA interface job or started task, and `member` is the member name of the member you edited in your `rhilev.RKANCMD` dataset.  
      3. After editing a member in your `rhilev.RKANCMD` dataset, add that member name as another command to the `KI2START` member in your `rhilev.RKANCMD` dataset.  
      You will only use this method under the following conditions:  
      - You are initializing the NAM dataset. Normally, this only occurs the first time you start your CUA system.  
      - You need to add more users to the database.  

Using SAF

The System Authorization Facility (SAF) provides an installation with centralized control over system security processing through a system service called the MVS router. The MVS router provides a focal point for all products that provide resource management. The resource management components and subsystems call the MVS router as part of security decision-making functions in their processing, such as access control checking and authorization-related checking. These functions are called control points. SAF supports the use of common control points across products and across systems.

SAF is the preferred security interface for CT/Engine and can be used by installations that have CA-ACF2 or CA-TOP SECRET, as well as with RACF, without the need to have any NAM exits installed. See your security product documentation for information regarding the use of SAF.

To use SAF as the security system for one or more control points, follow these steps:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure all libraries in the RKANMODL concatenation are APF-authorized. IBM’s <em>Initialization and Tuning Reference</em> has information about APF authorization.</td>
</tr>
<tr>
<td>2</td>
<td>For each control point that you want to use SAF, make the following changes in member rhilev.RKANPAR(KLVINNAM).&lt;br&gt; a. Change DB to NODB.&lt;br&gt; b. Add SAF to the control point definition.&lt;br&gt; If you have not added any control points, the member will look like this when you finish:&lt;br&gt; <code>DEFAULT DSNAME(rhilev.NAM) NORACF NODB SAF</code></td>
</tr>
<tr>
<td>3</td>
<td>You may need to increase the value assigned to the RESERVE parameter of member rhilev.RKANPAR(KLVSYSIN).</td>
</tr>
<tr>
<td>4</td>
<td>Restart CT/Engine to activate the change.</td>
</tr>
</tbody>
</table>
Using RACF

To use RACF external security:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Make sure you have Control access to the VSAM files that the CUA system defines for use.</td>
</tr>
</tbody>
</table>
| 2    | Set the parameters in the `rhilev.RKANPAR(KI2INNAM)` dataset, as follows:  <br> <br>   **DEFAULT**  
   **RACF**  
   **NODB**  |
Using CA-ACF2

To use CA-ACF2 external security:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Assemble and link the Candle-supplied CA-ACF2 security validation exit module KLVA2NEV.  
You will find the JCL to assemble and link KLVA2NEV in your rhilev.RKANSAM(KI2ASM) dataset. You must link KLVA2NEV using settings AC=1, AMODE=31, and RMODE=24.  
Follow the instructions in the sample JCL to assemble and link KLVA2NEV. |
| 2    | Set the parameters in the rhilev.RKANPAR(KI2INNAM) dataset, as follows.  
**DEFAULT**  
**EXIT=KLVA2NEV**  
**NORACF**  
**NODB** |
| 3    | Define the CUA system as a multi-user address space to CA-ACF2. From the TSO Ready prompt:  
1. Type **ACF** and press Enter.  
2. At the ACF prompt, type **SET LID** and press Enter.  
3. At the LID prompt, type **CH jobname MUSASS** and press Enter.  
4. At the LID prompt, type **END** and press Enter. |
Using CA-TOP SECRET

To use CA-TOP SECRET external security:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Assemble and link the Candle-supplied CA-TOP SECRET security validation exit module KLVTSNEV.  
      You will find the JCL to assemble and link KLVTSNEV in your rhilev:RKANSAM(KI2ASM) dataset. You must link KLVTSNEV using settings AC=1, AMODE=31, and RMODE=24.  
      Follow the instructions in the sample JCL to assemble and link KLVTSNEV. |
| 2    | Set the parameters in the rhilev:RKANPAR(KI2INNAM) dataset as follows:  
      DEFAULT  
      EXIT=KLVTSNEV  
      NORACF  
      NODB |
| 3    | Define the CUA address space as a started task in the STC record and relate the CUA address space to a Master Facility Accessor ID. For example:  
      TSS ADD(STC) PROC(jobname) ACID(master facility acid)  
      where jobname is the name of the started task. |
| 4    | Define jobname as a facility to CA-TOP SECRET in the Facility Matrix table.  
      To use the same Facility name across multiple CUA started task names, the Facility name must match at least one of the started task names in each address space. See the example at the end of this procedure. |

Example:

The following example shows FACILITY statements from a production installation using the CA-TOP SECRET security system. Some statements may not be relevant to your CUA system, so you may need to modify the statements to fit your standards and configuration.

FACILITY(USER3=NAME=jobname)
FACILITY(jobname=MODE=FAIL,ACTIVE,SHRPRF)
FACILITY(jobname=PGM=KLV,NOASUBM,NOABEND,NOXDEF)
FACILITY(jobname=ID=3,MULTIUSER,RES,LUMSG,STMSG,
          WARNPW,SIGN(M))
FACILITY(jobname=NOSTDATA,NORNDPW,AUTHINIT,
          NOPROMPT,NOAUDIT,NOMRO)
Set Up Logon Security

FACILITY(jobname=NOTSOC,LOG(INIT,SMF,MSG,SEC9))

Caution
Specify the sign parameter on the FACILITY statement as SIGN(M). Otherwise, CA-TOP SECRET produces a message stating that the system has revoked user access.
Also, verify that you set MODE=FAIL.

Using a user-coded exit
To use user-coded exit security:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Modify the Candle-supplied sample security validation exit routine to meet your specific security needs. This validation exit is in rhilev.RKANSAM(K12ICFX1). If you use this exit as is, you allow users to:  
- Log onto I/CF using any userid with a password that matches the userid  
- Use all display commands  
Modify the sample user validation routines to validate userids for access to all commands except display. |
| 2    | Assemble and link the Candle-supplied user-coded security validation exit module K12ICFX1. You will find the JCL to assemble and link K12ICFX1 in your rhilev.RKANSAM(K12ASM) dataset. You must link K12ICFX1 using settings AC=1, AMODE=31, and RMODE=24. Follow the instructions in the sample JCL to assemble and link K12ICFX1. |
| 3    | Set the parameters in the rhilev.RKANPAR(K12INNAM) dataset, as follows.  
- DEFAULT  
- EXIT=K12ICFX1  
- NORACF  
- NODB |
Executing the CUA JCL Procedure

This unit tells you how to execute the CUA JCL procedure.

**CUA JCL procedure**

Move `rhilev.RKANSAM(CANSI2)` to your system JCL procedure library.

**Note:** Contact your MVS Systems Programmer if you need further assistance.
Connecting your CUA system to OMEGAVIEW

This unit provides information about an OMEGAVIEW connection.

OMEGAVIEW Connection

OMEGAMON II Versions 300 and above give you the capability of running an OMEGAMON II CUA system without OMEGAVIEW.

However, to use the transplexing and remote transfer features of OMEGAMON II, you must have an OMEGAVIEW connection to your CUA system.

If you are running OMEGAVIEW it is not necessary for your OMEGAVIEW system to reside on the same MVS system as your OMEGAMON II CUA system.
Profile Security

Profile security is available in the CUA system. Setting profile security is accomplished by using selections from the Options pull-down.

If you are a CUA Administrator or you have the appropriate level of authority, you can assign different authorization levels to users. You can add, change, or delete the level of authority for each user.

**Note:**
The first user to logon to the CUA interface after installation is automatically given administrator authority. Having more than one user with administrator authority is highly recommended.

Other users can change their profiles for use in their current session. See the person with the appropriate authorization to save profile changes for future use.

**Setting levels of user authority**

There are three levels of user authority:

- **Administrator**
  
  This user can add, change, or delete the level of authority for any user and has access to all product functions.

- **User**
  
  This user has access to all product functions except saving changes to the Installation Profile (/I).

- **Basic**
  
  This user has access to all product functions except saving changes to profiles.

**Note:**

No one has authority to change the Candle default profile (/C). See the section, **Table : Reviewing OMEGAMON II Profiles on page 100**, for detailed information on profiles, including the Candle default profile and the Installation profile.

**Change startup profile**

This selection from the Options pull-down allows you to change or create a new startup profile. If you specify a two-character suffix to change your startup profile, your old profile remains as it was. The changes you make affect only your new profile.

**List of administrators**

This selection from the Options pull-down shows you the names of those who have administrator authority.
User authorities

This selection from the Options pull-down gives you a panel where you can change the level of authority for a user.

The KEIDEFLT user id contains the authority granted to users who are not specifically authorized. The default user id is Basic.

For user authorization to take effect, users must log off OMEGAMON II and log back on.
Profile Security
Chapter Overview

This chapter will guide you through the installation verification of your OMEGAMON II CUA system.

Note: References to OMEGAMON II in this chapter are to the CUA interface, unless we specify otherwise.

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- Start the OMEGAMON II CUA System .......................................... 211
- Log on to the OMEGAMON II CUA System ..................................... 212
- Stop the OMEGAMON II CUA Interface .......................................... 213
CUA Installation Verification Checklist

The steps below outline the installation verification of your OMEGAMON II CUA system. You will find detailed descriptions of these activities in this chapter.

Review the entire procedure before you begin verifying your installation.

CUA installation verification checklist

The following checklist lists the steps you should follow to verify your CUA system installation. You should perform these steps in sequence.

Use the ✔ column to check off steps as you complete them.

Table 16. CUA Installation Verification Checklist

<table>
<thead>
<tr>
<th>✔</th>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Start your OMEGAMON II CUA system.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Log on to your OMEGAMON II CUA system.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Stop the OMEGAMON II CUA interface.</td>
</tr>
</tbody>
</table>
Start the OMEGAMON II CUA System

This section explains how to start your OMEGAMON II CUA system.

Starting your OMEGAMON II CUA system

To start your OMEGAMON II CUA system:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Activate the VTAM major node containing the VTAM applids for your CUA system. Issue the following command from an MVS console:  

```
VARY NET,ACT,ID=cccccccc,E
```
where cccccccc is the member name in the VTAM system definition library, which contains your VTAM applids.  

**Note:** This information should be available from earlier when you or the VTAM systems programmer copied rhilev.RKANSAM(ccccccccc) to the VTAM system definition library. |
| 2    | Issue the following command from an MVS console:  

```
START jobname
```
where jobname is the member name in the system JCL library, which contains your startup JCL procedure.  

**Note:** This information should be available from earlier when you or the MVS systems programmer copied rhilev.RKANSAM(ccccccccc) to the system JCL procedure library. |
Log on to the OMEGAMON II CUA System

This section explains how to log on to your OMEGAMON II CUA system.

Logging on to your OMEGAMON II CUA system

To log on to your OMEGAMON II CUA system:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1    | Issue the following command from any 3270 SNA device that you have connected to your network:  

```
LOGON APPLID(cccccccccc)
```

where `cccccccc` is the VTAM applid you specified for your CUA system logon applid using CICAT.  
The OMEGAMON II logon screen displays.  
**Note:** If you are running a stand-alone OMEGAMON II product (no OMEGAVIEW), the logo screen will always be OMEGAMON II for IMS. This is true even if you are running OMEGAMON II for DBCTL. There are no negative effects resulting from this.  
| 2    | From the OMEGAMON II logo screen, press Enter to display the user signon screen. |
| 3    | To validate that your security system is working properly, attempt to logon with both valid and invalid userid and password combinations.  
**Note:** To continue to step 4, enter a valid userid and password. Once you enter a valid userid and password, the Reconnection Confirmation panel displays. |
| 4    | From the Reconnection Confirmation panel:  
1. Select option 2 to view the Modify Configuration Values panel.  
2. Move your cursor to the APPLICATION ID field and press PF4. A pop-up displays containing a list of all the IMS systems you defined using the IMSDEF command. Move your cursor to the IMS system you want to monitor and press Enter.  
**Note:** This pop-up is scrollable, so you may need to scroll to the following pages to find the IMS system you want to monitor.  
After pressing Enter on the pop-up panel, the Modify Configuration Values panel redisplays with the values you selected for APPLICATION ID.  
| 5    | Press Enter from the Modify Configuration Values panel, to start the initialization of your OMEGAMON II CUA environment. The INITIALIZATION pop-up highlights the current initialization step during the process.  
Once initialization completes, the OMEGAMON II System Overview panel displays. |
Stop the OMEGAMON II CUA Interface

This section explains how to stop the OMEGAMON II CUA interface.

Stopping the OMEGAMON II CUA interface

To stop the OMEGAMON II CUA interface address space, issue the MVS command:

```
P jobname
```

where `jobname` is the MVS jobname or started task name of the OMEGAMON II CUA address space.
Stop the OMEGAMON II CUA Interface
Section 5.
Appendixes
Appendix Overview

The OMEGAMON II product interface is a set of MVS console commands and associated displays that you can use to communicate with or control OMEGAMON II’s various tasks.

During normal operation, the interface is transparent. Once you start your system, the system defaults to take all necessary actions automatically.

This chapter will acquaint you with the functions and facilities of the product interface, including:

- OMEGAMON II startup operation of the interface
- commands to the interface

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- Interface Commands .............................................. 221
- Comment .............................................................. 222
- DISPLAY ............................................................... 223
- EXEC ................................................................. 224
- HELP ................................................................. 226
- IF ...................................................................... 227
- LIST ................................................................. 229
- LOG ................................................................. 230
- MODIFY MERGE .................................................. 231
- START .............................................................. 232
- STOP ............................................................... 239
Startup Operation

The startup parameters to KOIIA00 (the product interface) determine how the interface will run and which IMS system the interface will monitor based on the IMSID.

When you start OMEGAMON II, it checks the dispatching priority to ensure that OMEGAMON II's priority is higher than IMSs. If it is not, OMEGAMON II issues a warning message to the console.

**Note:** DEXAN values may be inaccurate when OMEGAMON II has a lower priority than IMS does.

Interface MVS IDs

The product interface has two MVS IDs:

- stepname
- internal ID

**Important**

These two MVS IDs cannot be the same.

Note that the task name is used as the stepname, unless you override it.

The MVS console operator can address the stepname MVS ID and issue MVS STOP and MODIFY commands. These commands terminate the OMEGAMON II address space.

The internal ID, which the interface uses to communicate with the OMEGAMON, DEXAN, and EPILOG components, accepts only MVS MODIFY commands from an MVS operator. The interface does not accept MVS STOP commands.

**Note:** The security routines may restrict the MVS Modify command. Contact your security administrator for assistance.
Creating an internal MVS ID

To create an internal ID for itself, the product interface prefixes two characters to the IMSID of the IMS system it is monitoring.

The product interface notifies MVS that it will accept MVS MODIFY commands addressed to that ID. The default prefix is M0.

Use the MPREFIX= parameter to specify the prefix in the M0 startup JCL. When OMEGAMON II initializes, it displays the following message on the MVS console:

```
OIB425i MODIFY ID ASSIGNd 15: M0IMSA
```

For example, if you run the IMS control region with an IMSID of IMSA, the interface asks MVS to pass it all MVS MODIFY commands you enter for ID M0IMSA.

The interface processes only MVS MODIFY commands; the interface rejects MVS STOP commands for the internal ID with an error message.

Starting the interface

When the interface starts, it first executes a series of commands automatically. These commands are in member KOIM0P00. in the rhilew.RKANPAR library. KOIM0P00. is the default.

Note: Candle supplies a default series of commands with OMEGAMON II. You can tailor these commands for your installation.

For the interface to operate automatically, the interface issues its first command to execute the default startup member, KOIM0P00., for example:

```
EXEC KOIM0P00.
```

The startup member processes automatically only at initial region startup.

After the interface performs all actions that KOIM0P00. defines, you can issue more interface commands using the special internal ID of the interface and the MVS MODIFY command.

Example using the MODIFY command

Here is an example of a MODIFY command with an IMSID of IMSA and the default prefix:

```
MODIFY M0imsa,START SESSION,UNIT=560
```

This command starts a dedicated session.

Showing Identifiers for the Candle monitor job

Once you start the interface, the system command D A,L displays a line that shows identifiers for the Candle monitor job and internal MODIFY ID that the interface uses.
Displaying identifiers for an interface started as a started task

If you start the interface as a started task, modify the STEPname to produce a unique MVS MODIFY ID (for example, IMSMON) as follows:

```
START OMIMS.IMSMON
```

Now `D A,L` shows the following:

```
JOBname       STEPname       PROCSTEPname
------------   ------------   ------------
OMIMS         IMSMON         IMSPROD      NSW S
OMIMS         M0IMSA         IMSMON      NSW S
```

In this case the interface MODIFY ID is M0IMSA and the MVS MODIFY ID is IMSMON. The second line is the internal MODIFY ID that the interface builds.

Displaying identifiers for an interface started as a batch job

Suppose you start the interface as a batch job, with an IMSID of IMSA and JOBname MONIMS. The display active command (`D A,L`) shows the following:

```
JOBname       STEPname       PROCSTEPname
------------   ------------   ------------
MONIMS         IMS           IMSPROD      NSW J
M0IMSA         M0IMSA        IMSMON      NSW J
```

In this case, the MVS modify ID is MONIMS, and the interface MODIFY ID is M0IMSA. The second line is the internal MODIFY ID that the interface builds.

In this started task example, you can terminate the interface with any of the following MODIFY or STOP commands.

```
STOP MONIMS
P MONIMS
MODIFY MONIMS,STOP
F MONIMS,STOP
```
Interface Commands

The interfaces support the following commands:

<table>
<thead>
<tr>
<th>Interface Command</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>Comment</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>Displays active interface subtasks</td>
</tr>
<tr>
<td>EXEC</td>
<td>Executes the interface commands in a member</td>
</tr>
<tr>
<td>HELP</td>
<td>Displays help for interface commands</td>
</tr>
<tr>
<td>IF</td>
<td>Conditionally processes an EXEC, START, or STOP command</td>
</tr>
<tr>
<td>LIST</td>
<td>Displays active interface subtasks</td>
</tr>
<tr>
<td>LOG</td>
<td>Sends a message to the MVS console</td>
</tr>
<tr>
<td>MODIFY MERGE</td>
<td>Starts VSAM message logging</td>
</tr>
<tr>
<td>P</td>
<td>Stops an interface subtask</td>
</tr>
<tr>
<td>S</td>
<td>Starts an interface subtask</td>
</tr>
<tr>
<td>START</td>
<td>Starts an interface subtask</td>
</tr>
<tr>
<td>STOP</td>
<td>Stops an interface subtask</td>
</tr>
</tbody>
</table>

The MODIFY command and the MODIFY ID must precede all commands from the console.

The commands in the EXEC members can start in any column as long as the command word completes before column 72. To continue a command, place any character in column 72.

The following sections describe the interface commands and their parameters.
Comment

Purpose
The COMMENT command places comments in the members of the thilev.TKANPAR library. The interface ignores these comments.

Format
The format is

*<comment>

A non-blank character in column 72 indicates a continuation of the comment.

Example
The following example shows a sample comment line in an EXEC member.

* THIS COMMENT CAN SAY ANYTHING YOU WISH.
DISPLAY

Purpose

The DISPLAY command displays the program name and internal ID of all tasks that are currently active.

Use the ID shown with the STOP command to stop an active task (see “STOP” on page 239).

Format

The format is

```
F M01MSA,DISPLAY
```

Synonym

LIST is a synonym for DISPLAY.

Example output

The example output from the DISPLAY command is shown below.

```
OIR043: OMEGAMON - THE FOLLOWING TASK IDS ARE ACTIVE:
OIR044  ID=OMU448   PROGRAM=KOIOICR
OIR044  ID=CTDOI   PROGRAM=KOBTAM
OIR047  VTAM APPLID=CTDOI
OIR048  SLU=R08A03
OIR048  SLU=L566
OIR044  ID=DX   PROGRAM=KOIDXCR
OIR044  ID=MR   PROGRAM=KOIMRAR
```

IMS task IDs and DISPLAY

OMEGAMON II builds each task with a unique ID.

The OMEGAMON II sessions that run under OMEGAMON II VTAM support do not have a separate ID; the OMEGAMON II VTAM support ID controls all of the sessions.

OMEGAMON II in dedicated mode has the task ID of OMUcuu where cuu is the dedicated terminal address.

The DEXAN component collector’s task ID is DX.

When OMEGAMON II VTAM support is active, the interface DISPLAY command shows its VTAM application ID and the secondary logical unit (SLU) names of all active tasks that use it.

You cannot use SLU names to terminate individual sessions using interface commands. You may, however, use them in VTAM commands you issue from an MVS console to stop an active session. See “STOP” on page 239.
Purpose

The EXEC command processes a member in either the rhilev.RKANPAR or the thilev.TKANPAR library that contains a predefined set of commands.

You can enter this command using MODIFY or as a command in an EXEC member to process another predefined set of commands.

Format

The format is

```
EXEC member_name
```

Example

These examples all assume that the internal modify ID is M0IMSA.

If you enter this command at the console:

```
F M0IMSA,EXEC member_a
```

and if `member_a` contains these commands:

```
START SESSION,UNIT=53E,...
EXEC member_b
START DEXAN,GLOBAL=mp
```

and `member_b` contains these commands:

```
LOG *** OM/IMS VTAM interface START - APPLID=CTDOI ***
START cccccccc,APPLID=cccccccc,UMAX=05
```

where `cccccccc` is the logon applid for OMEGAMON II to VTAM that you specified using CICAT.

The effect of the EXEC `member_a` is the same as if you entered the following commands at the console:

```
F M0IMSA,START SESSION,UNIT=53E,...
F M0IMSA,LOG *** OM/IMS VTAM interface START - APPLID=cccccccc
F M0IMSA,START cccccccc,APPLID=cccccccc,UMAX=05
F M0IMSA,START DEXAN,GLOBAL=mp
```

where `ccccccc` is the logon applid for OMEGAMON II to VTAM that you specified using CICAT.
Limitations
You cannot nest EXEC commands more than ten deep at any one command invocation. This prevents EXEC loops where A EXECs B and B EXECs A.

EXEC members are a procedure
You can think of these members as a JCL procedure or as a TSO CLIST. The EXEC member may contain any interface command, including another EXEC command.
When an EXEC command processes while inside another EXEC member, it is as if the calling EXEC places all the commands of the called EXEC member into itself in the same position as they were in the called member.
Purpose
The HELP command
- displays the commands the interface supports
- finds information about a specific command, typed as an operand.

Format
The format is

HELP <command-name>

Example
This example assumes that the internal modify ID is M0IMSA.
Type the following command to display help about all of the available interface commands.

F M0IMSA,HELP

The result of this command looks similar to the following figure.

<table>
<thead>
<tr>
<th>LOG 'HELP' Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syntax: HELP &lt;command-name&gt;</td>
</tr>
<tr>
<td>Description: The 'HELP' command is used to display the help information available on</td>
</tr>
<tr>
<td>the commands that are used to control the OMEGAMON for IMS interface.</td>
</tr>
<tr>
<td>HELP is available for all the commands below:</td>
</tr>
<tr>
<td>*</td>
</tr>
<tr>
<td>EXEC</td>
</tr>
<tr>
<td>DISPLAY</td>
</tr>
<tr>
<td>HELP</td>
</tr>
<tr>
<td>commands</td>
</tr>
<tr>
<td>LIST</td>
</tr>
<tr>
<td>subtasks</td>
</tr>
<tr>
<td>LOG</td>
</tr>
<tr>
<td>START</td>
</tr>
<tr>
<td>STOP</td>
</tr>
</tbody>
</table>

Follow HELP with the name of a command to obtain information about that command.
If you don’t specify a command name or if OMEGAMON II doesn’t recognize the |
command name you specify, then the help text for HELP appears at the console.
IF

Purpose

The IF command conditionally processes the EXEC, START, or STOP command that follows it on the same command input.

IF is especially useful when you want to use the same members of the rhilev.RKANPAR library to control copies of OMEGAMON II that run with different IMS systems. This is a convenient way to cut down on the maintenance effort in certain environments.

Format

The format is as follows:

```
IF <IMSID=cccc>   Then <EXEC ...>
<SMFID=cccc> <P ...>
<CPUID=cccccccccccc> <S ...>
<IMSTYPE=ccc> <START ...>
<STOP ...>
```

Test values and their descriptions

IF lets you test several different values to determine whether the command that follows its THEN keyword will execute.

The following table shows the various IF test values you can specify.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPUID</td>
<td>ccccccccccccc</td>
<td>The 12-character hardware CPUID of the machine. (See the title line on the first page of a dump.)</td>
</tr>
<tr>
<td></td>
<td>cccccc</td>
<td>The 6-character hardware CPU serial number of the machine. It is available from the RMF CPU report. For a multiprocessor, OMEGAMON II compares the CPUID with all those within the multiprocessing complex.</td>
</tr>
<tr>
<td>IMSID</td>
<td>cccc</td>
<td>IMS ID of the IMS or DBCTL system you are measuring.</td>
</tr>
<tr>
<td>SMFID</td>
<td>cccc</td>
<td>SMF ID of the MVS system you are executing upon. This information is in SYS1.PARMLIB(SMFPRMnn).</td>
</tr>
<tr>
<td>IMSTYPE</td>
<td>CTL</td>
<td>Determines the set of interface commands that will be executed, depending on whether the IMS environment is a DB/DC (CTL) or a DBCTL (DBC) environment.</td>
</tr>
</tbody>
</table>

If the test is successful, OMEGAMON II issues the normal messages for the conditionally processed command. If the test fails because of an invalid value in the command, OMEGAMON II issues a message indicating this.
IF

IF lets you test several different values to determine whether the command that follows its THEN keyword will execute.

Output

The output of the IF command depends upon the success of its tests.
LIST

Purpose

The LIST command displays the program name and internal ID of each currently active task. The LIST command is an alternate name for the DISPLAY command. For a description of the DISPLAY command see “DISPLAY” on page 223.

Format

The format of the LIST command is:

F M0IMSA,LIST
LOG

Purpose

The LOG command displays a message at the system console.
Use this command in your EXEC members to indicate what commands you process in that member.

Format

The format is

LOG OMEGAMON sends this message to the system console

Example 1

You can use log messages to display the name of the currently processing member, such as:

LOG *** Processing KOIM0P00. ***

Example 2

Another typical use is to indicate the start of a task such as the Bottleneck Analysis (DEXAN) collector. For example:

LOG *** Starting DEXAN ***

Output

The output from the LOG command looks exactly like its input.
MODIFY MERGE

Purpose
The MODIFY MERGE command merges and chronologically sorts a copy of IMS messages going to the MVS console and to the Master Terminal Operator (MTO) console. The command writes the messages to a VSAM dataset for viewing in the OMEGAMON II CUA interface.

Format
The format is

\[ F \text{ M0IMSA, MODIFY MERGE DSN='rhilev',ARCH=prefix} \]

where:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ims</td>
<td>The imsid being monitored.</td>
</tr>
<tr>
<td>'rhilev'</td>
<td>The high-level qualifier of the VSAM dataset to which messages will be logged. This high-level qualifier may be different from the high-level qualifier for other OMEGAMON II datasets.</td>
</tr>
<tr>
<td>prefix</td>
<td>The prefix of the archive job to copy a full VSAM dataset to a backup dataset. OMEGAMON II appends 1 or 2 to the job name specified. It uses prefix1 to archive rhilev.ims.LOG1, and prefix2 to archive rhilev.ims.LOG2. KI2ARCH is the default name for prefix. If you use a different name, it must not exceed 7 characters.</td>
</tr>
</tbody>
</table>

This syntax assumes that M0IMSA is the internal modify ID.

How MODIFY MERGE works
The MERGE task sets up a pair of VSAM datasets (rhilev.ims.LOG1 and rhilev.ims.LOG2) for logging. When one of the datasets fills, OMEGAMON II automatically switches to the second dataset, and archives and reinitializes the first dataset.

Another way to execute MODIFY MERGE
You can also execute MODIFY MERGE by entering the EXEC KI2VSMmp interface command, because the KI2VSMmp member contains the MODIFY MERGE command.

For information on how to customize this member for your installation, see “START Command Parameters”, as shown in Table 10: START Command Parameters on page 61.
## Purpose

The `START` command starts the following tasks under the interface:

- response time analysis (RTA) component
- RTA data collector
- display controller session
- DEXAN collector
- OMEGAMON II VTAM support
- EPILOG collector
- SAP support
- TRF support
- ATF support

<table>
<thead>
<tr>
<th>Description</th>
<th>Format of the START Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Response Time Analysis (RTA)</td>
<td><code>START RTA</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,IRTA=ON&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,CMPAT=YES/NO&gt;</code></td>
</tr>
<tr>
<td>Start the RTA data collector</td>
<td><code>START DATACOL</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,BUFNO=nnn&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,CMPAT=YES/NO&gt;</code></td>
</tr>
<tr>
<td>Start the DEXAN for IMS collector</td>
<td><code>START DEXAN</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,GLOBAL=mp&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,IDEG=BEGN&gt;</code></td>
</tr>
<tr>
<td>Start dedicated controller session</td>
<td><code>START SESSION</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,COLS=nnn&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,DIR=cccc&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,GLOBAL=cc&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,LROWS=nnn&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,MODE=cc&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,ROWS=nn&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,SYS=cccc&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,UNIT=uu&gt;</code></td>
</tr>
<tr>
<td></td>
<td><code>&lt;,USER=cc&gt;</code></td>
</tr>
<tr>
<td>Description</td>
<td>Format of the START Command</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Start OMEGAMON II VTAM support</td>
<td>START ccccccccc &lt;,COLS=nnn&gt; &lt;,GLOBAL=cc&gt; &lt;,LROWS=nnn&gt; &lt;,ROWS=nnn&gt; &lt;,SYS=cccc&gt; &lt;,USER=cc&gt; &lt;,APPL=cccccccc&gt; &lt;,AUP=YES/NO&gt; &lt;,PRTCT=cccccccc&gt; &lt;,PSWD=cccccccc&gt; &lt;,UMAX=nn&gt; &lt;,DATA=nn&gt; &lt;,TIMOUT=NN&gt;</td>
</tr>
<tr>
<td>Start SAP support</td>
<td>START SAP</td>
</tr>
<tr>
<td>Start TRF support</td>
<td>START ITR                   &lt;,ITRF=ON</td>
</tr>
<tr>
<td>Online TRF</td>
<td></td>
</tr>
<tr>
<td>Start ATF support</td>
<td>START ATF                   &lt;,ATFACT=ON</td>
</tr>
</tbody>
</table>
Format

The formats are as follows.

- **START RTA** `<,IRTA=ON>` (start RTA)
  `<,CMFAT=YES/NO>`

- or -

- **START DATACOL** `<,BUFNO=nnn>` (start RTA data collector)
  `<,CMFAT=YES/NO>`

- or -

- **START DEXAN** `<,GLOBAL=mp>` (start the DEXAN for IMS collector)
  `<,IDEG=BEGN>`

- or -

- **START SESSION** `<,COLS=nnn>` (start dedicated controller session)
  `<,DIR=cccc>`
  `<,GLOBAL=cc>`
  `<,LROWS=nnn>`
  `<,MODE=cc>`
  `<,ROWS=nn>`
  `<,SYS=cccc>`
  `<,UNIT=<uu>`
  `<,USER=cc>`

- or -

- **START cccccc** `<,COLS=nnn>` (start OMEGAMON II VTAM support)
  `<,GLOBAL=cc>`
  `<,LROWS=nnn>`
  `<,ROWS=nn>`
  `<,SYS=cccc>`
  `<,USER=cc>`
  `<,APPL=cccccccc>`
  `<,AUP=YES/NO>`
  `<,PRTCT=cccccccc>`
  `<,PSWD=cccccccc>`
  `<,UMAX=nn>`
  `<,DATA=nn>`
  `<,TIMEOUT=NN>`

- or -

- **START SAP** (start SAP support)

- or -

- **START ITR** `<,ITRF=ON|OFF>` (start TRF support)
  `<,ONLDIS=ON|OFF>`
  `<,SIZE=nnn>`
  `<,DBI=ON|OFF>`
  `<,DL1=ON|OFF>`
  `<,BP=ON|OFF>`
  `<,FP=ON|OFF>`
  `<,LOGS=INS|SMF>`
  `<,RECID=nnn>`
  `<,DBD=nnn>`
  `<,OL=ON|OFF>` (online TRF)

- or -

- **START ATF** `<,ATFACT=ON|OFF>` (start ATF support)
  `<,TDUR=nnn>`
  `<,SIZE=nnn>`
START command parameters

The figure above and in Table 10: START Command Parameters on page 61 use the following notation conventions:

- $n$ denotes operands which are numeric only
- $c$ denotes operands which are character data
- $cuu$ denotes a control unit address

Numbers are allowed in character data, however, for some operands the first character must be a letter.

The length of the strings of $n$ or $c$ show you the maximum length of the operand.

Operands can be shorter than the figure shows, if that is appropriate in the individual case.

For example, you can code the UMAX= parameter as UMAX=1 or UMAX=01 to limit the number of VTAM terminals which can access OMEGAMON II.

Items enclosed in angle brackets (< >) can be written in any order and can have defaults. OMEGAMON II does not require you to specify those parameters that have defaults.

You can enter the parameters marked with an asterisk (*) in Table 10: START Command Parameters on page 61 in the VTAM logon data stream to override the setting in the VTAM START procedure.

Most of the parameters that you can specify have defaults taken from the interface or from the started task. You can change some of these defaults if you use an installation or user profile.

See the table describing START command parameters on page 61.

Synonym

S is a synonym for START.
Starting OMEGAMON II VTAM support

Start OMEGAMON II VTAM support with the START command.

The parameters you specify with the START command become the defaults for any OMEGAMON II sessions that OMEGAMON II VTAM support creates in response to LOGON requests.

If you want to change a default value or any other command at logon time, use the DATA keyword of the VTAM LOGON command to override it.

The following example shows the DATA parameter in the LOGON command:

```
LOGON APPLID(cccccccc) DATA('USER=01')
```

where cccccccc is the logon applid for OMEGAMON II to VTAM that you specified using CICAT.
What to do if you stop OMEGAMON II VTAM support

If you stop OMEGAMON II VTAM support, any OMEGAMON II display controller sessions that run underneath it also stop, and you must restart them manually. The EPILOG collector, however, continues to collect data, even if you stop the EPILOG display controller session or OMEGAMON II VTAM support.

Examples

The following examples all assume that M0IMSA is your OMEGAMON II installation modify ID. For more information on the modify ID, see pages page 219 through page 221 in this chapter.

Type these commands at the SDSF MVS console to restart sessions:

- To start a Bottleneck Analysis (DEXAN) collector with a global module of KOIGBL24, type
  
  /F M0IMSA, START DEXAN,GLOBAL=24

- To start a display controller to the dedicated terminal at 53E using global module KOIGLBL.24, enter:
  
  /F M0IMSA, START SESSION,UNIT=53E,GLOBAL=24

- To start a display controller to the dedicated terminal at 53A with 43 physical rows and 255 logical rows, enter:
  
  /F M0IMSA, START SESSION,ROWS=43,LROWS=255,UNIT=53A

- To start VTAM support, enter:
  
  /F M0IMSA, START cccccccc APPL=OIAPPLID,UMAX=05
  
  where cccccccc is the logon applid for OMEGAMON II to VTAM that you specified using CICAT.

- To start a display controller in cross system mode, enter:
  
  /F M0IMSA, START SESSION,MODE=XS,LROWS=255,SYS=IMSA,DIR=* 
  
  where * implies use of cross system mode using a collector ID of IMSA.

- To start a display controller in cross memory mode with an ID of SYSA, enter
  
  /F M0IMSA, START SESSION,MODE=XM,LROWS=255,SYS=IMSA,DIR=SYSA
Location of sample START command

The `rhilev.RKANPAR(KOImpP00)` contains a sample START command for OMEGAMON II for your installation.
STOP

**Purpose**

The STOP command stops any interface subtask (for example, OMEGAMON II VTAM support) that may not be functioning, due to a problem such as a terminal error.

The system console operator usually enters the STOP command using the MVS MODIFY command. The STOP command needs a task ID to know which task to stop. To find this ID, use the DISPLAY or LIST command.

**Format**

The format is:

```
F M0IMSA,STOP ID=cccccccc
```

where cccccc is the logon applid for OMEGAMON II to VTAM that you specified using CICAT.

**Synonym**

P is a synonym for STOP.

**Output**

The output from the STOP command is one or more task termination messages followed by a task detached message. If the task does not promptly honor the interface request for termination, the interface detaches it.
Stopping VTAM tasks

Sessions that run under OMEGAMON II VTAM support do not have an interface task ID that you can use to stop them. You can use VTAM commands to detach an individual session that runs under OMEGAMON II VTAM support.

The commands you enter from an MVS console are:

\[
\text{V NET,INACT,I,ID=sluname}
\]

and

\[
\text{V NET,ACT,I,ID=sluname}
\]

The first command causes OMEGAMON II VTAM support to stop the task running at that secondary logical unit (or terminal). The message NODE NOW INACTIVE appears to indicate that OMEGAMON II VTAM support has removed the task.

Wait until OMEGAMON II VTAM support removes the task before you issue the second command. The second command makes the terminal available for use again by VTAM.

**Note:**

If you use the STOP command in the above format for RTA, the buckets are not cleared.
Appendix Overview

To provide support for OMEGAMON II sessions under more than one TSO (or ISPF), you must install VTM1 in every VTAM domain that controls a TSO.

What VTPOOL does

VTM1 uses a virtual terminal for each OMEGAMON II session.

VTPOOL defines this virtual terminal pool. Normally, each installation of VTM1 includes a VTPOOL definition.

The following sections describe how multiple VTM1 installations can share a single VTPOOL definition.

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Defining the Virtual Terminal Pool (VTPOOL) to VTAM .......... 244
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Assume that the network looks like this:

In this example, there are two VTAM domains:

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

Host Subarea A runs OMEGAMON II and TSO (TSOA).

Host Subarea B runs TSO (TSOB).

Assume that OMEGAMON II users who use ISPF or TSO mode must use the local TSO. This means that users whose terminals are controlled by VTAM domain HSAA must log on to TSOA, and users whose terminals are controlled by VTAM domain HSAB must log on to TSOB.
Defining the Virtual Terminal Pool to VTM1

In the sample network described in the example network configuration map, assume that a pool of 10 virtual terminals is required for each host subarea.

The following figure contains the $VTAPPL statement required to define this virtual terminal pool (VTPOOL) to VTM1.

```
$VTAPPL APPL#=10, VTAPPL=OBVTM1
```
Defining the Virtual Terminal Pool (VTPOOL) to VTAM

After defining VTPOOL to VTM1, you must define the virtual terminals in VTPOOL to each VTAM domain.

To do so, take advantage of the capability to define the local name and the network name separately.

The ACBNAME keyword in the VTAM APPL definition statement defines the local name.

The name field in the VTAM APPL definition statement defines the network name.

In the sample VTAPPL definitions that follow, the HSAA network names differ from those of HSAB, but the local names for each virtual terminal are the same in both host subareas.

VTAM definition statements for Host Subarea A

The following figure shows the 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
```

VTAM definition statements for Host Subarea B

The following figure shows the definition statements for 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
```
Providing Access to VTPOOL

Once you have defined VTPOOL and the virtual terminals in VTPOOL to VTAM, you must assemble and linkedit the VTPOOL definition statements to produce the module KOBVTPL, using the JCL in TKANSAM dataset member KOBVTPLX.

KOBVTPL is used by VTM1 at run time to select a virtual terminal for use prior to starting an OMEGAMON II session.

Given the sample network described in this section, you must install VTM1 execution-time modules, including the linkedited KOBVTPL module, so that they are available to TSOA and TSOB users.

The most convenient method is to place the modules in a library on DASD shared by both host subareas.

If this is not possible, you must use separate libraries with identical modules for both systems.

You can still perform VTPOOL maintenance from a single master library.
Providing Access to VTPOOL
About this Appendix

This appendix contains the Exceptions Table, which lists all of the OMEGAMON II exceptions in alphabetical order, a description of what activity each monitors, its default setting, its default threshold, and the name of its exception group.

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Exceptions Table

This unit lists the OMEGAMON II exceptions and their descriptions.

**Note:** For information about updating exceptions, see the *OMEGAMON II for DBCTL User’s Guide* or the *OMEGAMON II for IMS User’s Guide*, as appropriate.

Exceptions table

The following table lists all OMEGAMON II exceptions.

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABUF</td>
<td>Displays when sequential buffering storage utilization is &gt; nn%.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>ACBH</td>
<td>Displays when ACBLIB dataset I/O rate is &gt; nn per second.</td>
<td>ON</td>
<td>100</td>
<td>I/O Rates (Dataset)</td>
</tr>
<tr>
<td>ACEA</td>
<td>Displays when utilization is &gt; nn% for the communication external subsystem pool.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (CES)</td>
</tr>
<tr>
<td>ACES</td>
<td>Displays when IMS is in selective dispatching for the communication external subsystem pool.</td>
<td>ON</td>
<td>n/a</td>
<td>Pools (Alerts)</td>
</tr>
<tr>
<td>ACEW</td>
<td>Displays when pool extension IWAITs are &gt; nn for communication external subsystem pool.</td>
<td>OFF</td>
<td>5</td>
<td>Pools (CES)</td>
</tr>
<tr>
<td>ACEX</td>
<td>Displays when pool extension size is &gt; nn for communication external subsystem pool.</td>
<td>OFF</td>
<td>65535</td>
<td>Pools (CES)</td>
</tr>
<tr>
<td>ACIO</td>
<td>Displays when the communications I/O pool (CIOP) utilization is &gt; nn%.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (CIO)</td>
</tr>
<tr>
<td>ACIS</td>
<td>Displays when IMS is in selective dispatching for the communications I/O pool (CIOP).</td>
<td>ON</td>
<td>n/a</td>
<td>Pools (Alerts)</td>
</tr>
<tr>
<td>ACIW</td>
<td>Displays when the pool extension IWAITs is &gt; nn for the communications I/O pool (CIOP).</td>
<td>OFF</td>
<td>5</td>
<td>Pools (CIO)</td>
</tr>
<tr>
<td>ACIX</td>
<td>Displays when the pool extension size is &gt; nn for the communications I/O pool (CIOP).</td>
<td>ON</td>
<td>65535</td>
<td>Pools (CIO)</td>
</tr>
<tr>
<td>ACWA</td>
<td>Displays when the communications work area pool (CWAP) utilization is &gt; nn%.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (CWA)</td>
</tr>
<tr>
<td>ACWS</td>
<td>Displays when IMS is in selective dispatching for the communications work area pool (CWAP).</td>
<td>ON</td>
<td>n/a</td>
<td>Pools (Alerts)</td>
</tr>
<tr>
<td>ACWW</td>
<td>Displays when the pool extension IWAITs is &gt; nn for the communications work area pool (CWAP).</td>
<td>OFF</td>
<td>5</td>
<td>Pools (CWA)</td>
</tr>
<tr>
<td>ACWX</td>
<td>Displays when the pool extension size is &gt; nn for the communications work area pool (CWAP).</td>
<td>OFF</td>
<td>65535</td>
<td>Pools (CWA)</td>
</tr>
</tbody>
</table>
### Table 17. OMEGAMON II Exceptions

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADBW</td>
<td>Displays when database work pool utilization is &gt; nn%.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>ADHI</td>
<td>Displays when area DASD I/O per second is &gt; nn. The value of nn is the average DASD read + write rate for a DEDB area within a dataspace.</td>
<td>OFF</td>
<td>10</td>
<td>Fast Path (High)</td>
</tr>
<tr>
<td>ADLO</td>
<td>Displays when area DASD I/O per second is &lt; nn. The value of nn is the average DASD read + write rate for a DEDB area within a dataspace.</td>
<td>OFF</td>
<td>1</td>
<td>Fast Path (Low)</td>
</tr>
<tr>
<td>ADMB</td>
<td>Displays when database management block (DMB) pool utilization is &gt; nn%.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (DMB)</td>
</tr>
<tr>
<td>ADSU</td>
<td>Displays if the data entry database (DEDB) area is unavailable.</td>
<td>ON</td>
<td>n/a</td>
<td>Fast Path (Alerts)</td>
</tr>
<tr>
<td>AEPC</td>
<td>Displays if the extended PCB pool utilization is &gt; nn%. AEPC applies only to those IMS systems that were generated with Fast Path.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>AFRE</td>
<td>Displays when the fetch request element (FRE) pool utilization is &gt; nn%. <strong>Note:</strong> There is really no such thing as an FRE pool, but for convenience you can think of FRE that way. Use the IMS FRE= parameter to specify the number of fixed FREs to allocate when IMS builds the message format block pool (MFP). If all of the fixed FREs are ever in use at the same time, the AFRE exception shows the pool as 100% utilized. For more FREs, IMS must carve space out of the MFP buffer pool. These FREs are dynamic and are available as long as IMS is using them. <strong>Note:</strong> The FREP command displays the number of dynamic FREs that IMS currently has allocated.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>AHIO</td>
<td>Displays when the high I/O pool (HIOP) utilization is &gt; nn%.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>ALMD</td>
<td>Displays when the long message dataset utilization is &gt; nn%.</td>
<td>ON</td>
<td>85%</td>
<td>Pools (Dataset Util-ization)</td>
</tr>
<tr>
<td>AMFS</td>
<td>Displays when the message format services (MFS) pool utilization is &gt; nn%.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>Exception</td>
<td>Description</td>
<td>Default Setting</td>
<td>Default Threshold</td>
<td>CUA Group</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>----------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>AMSG</td>
<td>Displays when the message queue buffer pool utilization is &gt; ( nn )%</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>APIE</td>
<td>Displays if the program isolation (PI) pool utilization is &gt; ( nn )%&lt;br&gt;The CORE parameter of the IMSCTF macro specifies the size of the PI enqueue pool at IMS generation time. Because the pool can grow, you specify a growth increment and a maximum size. IMS starts out with one increment of space and then adds more increments as it requires until it reaches the maximum. APIE displays the percentage of the theoretical maximum which is currently in use. This maximum value is not necessarily achievable; if there is not enough CSA to satisfy the request for more increments, the PI pool can fill up before it reaches 100%</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>APSB</td>
<td>Displays if the active program specification block (PSB) pool utilization is &gt; ( nn )%</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (PSB)</td>
</tr>
<tr>
<td>APSW</td>
<td>Displays if the PSB work pool (PSBW) utilization is &gt; ( nn )%</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (PSB)</td>
</tr>
<tr>
<td>AQBD</td>
<td>Displays when the queue blocks dataset utilization is &gt; ( nn )%</td>
<td>ON</td>
<td>85%</td>
<td>Pools (Dataset Utilization)</td>
</tr>
<tr>
<td>ARAU</td>
<td>Displays when the receive any pool utilization is &gt; ( nn )%</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (CIO)</td>
</tr>
<tr>
<td>ARCB</td>
<td>Displays when the receives any buffers in use is &gt; ( nn )</td>
<td>OFF</td>
<td>10</td>
<td>Pools (CIO)</td>
</tr>
<tr>
<td>ARSP</td>
<td>Displays when the system exceeds the critical time threshold set with the RTA ISET command. <strong>Note:</strong> This exception does not apply to OMEGAMON II for DBCTL.</td>
<td>ON</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>ASAP</td>
<td>Displays if the save area prefix (SAP) pool utilization is &gt; ( nn )%</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>ASHI</td>
<td>Displays when the area dataspace I/O per second is &gt; ( nn )&lt;br&gt;The value of ( nn ) is the average dataspace read + write rate for a DEDB area within a dataspace.</td>
<td>OFF</td>
<td>20</td>
<td>Fast Path (High)</td>
</tr>
<tr>
<td>ASLO</td>
<td>Displays when the area dataspace I/O per second is &lt; ( nn )&lt;br&gt;The value of ( nn ) is the average dataspace read + write rate for a DEDB area within a dataspace.</td>
<td>OFF</td>
<td>5</td>
<td>Fast Path (Low)</td>
</tr>
</tbody>
</table>
### Table 17. OMEGAMON II Exceptions

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ASMD</td>
<td>Displays when the short message dataset utilization is &gt; ( nn ).</td>
<td>ON</td>
<td>85%</td>
<td>Pools (Dataset Util-ization)</td>
</tr>
<tr>
<td>AWKP</td>
<td>Displays if the IMS general work pool utilization is &gt; ( nn ). %</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>BLGH</td>
<td>Displays when the balancing group input is &gt; ( nn ).</td>
<td>OFF</td>
<td>20</td>
<td>Fast Path (High)</td>
</tr>
<tr>
<td>BQHI</td>
<td>Displays if the number of Fast Path available buffers for new PST use is &gt; ( nn ).</td>
<td>OFF</td>
<td>20</td>
<td>Fast Path (High)</td>
</tr>
<tr>
<td>BQLO</td>
<td>Displays if the Fast Path available buffers for new PST use are &lt; ( nn ).</td>
<td>OFF</td>
<td>10</td>
<td>Fast Path (Low)</td>
</tr>
<tr>
<td>CBHI</td>
<td>Displays when BMP region CPU utilization is &gt; ( nn ). %</td>
<td>OFF</td>
<td>40%</td>
<td>CPU (High)</td>
</tr>
<tr>
<td></td>
<td>CPU utilization is the percentage of the total CPU that the region has used over the last OMEGAMON cycle for all online processors in the complex.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBLO</td>
<td>Displays when BMP region CPU utilization is &lt; ( nn ). %</td>
<td>OFF</td>
<td>5%</td>
<td>CPU (Low)</td>
</tr>
<tr>
<td></td>
<td>CPU utilization is the percentage of the total CPU that the region has used over the last OMEGAMON cycle for all online processors in the complex.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCHI</td>
<td>Displays when control region CPU utilization is &gt; ( nn ). %</td>
<td>OFF</td>
<td>40%</td>
<td>CPU (High)</td>
</tr>
<tr>
<td></td>
<td>CPU utilization is the percentage of the total CPU that the region has used over the last OMEGAMON cycle for all online processors in the complex.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCLO</td>
<td>Displays when control region CPU utilization is &lt; ( nn ). %</td>
<td>OFF</td>
<td>5%</td>
<td>CPU (Low)</td>
</tr>
<tr>
<td></td>
<td>CPU utilization is the percentage of the total CPU that the region has used over the last OMEGAMON cycle for all online processors in the complex.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CILO</td>
<td>Displays when the number of free control intervals in independent overflow for a DEDB area is &lt; ( nn ). This may mean that you need to reorganize the database.</td>
<td>ON</td>
<td>30</td>
<td>Fast Path (Low)</td>
</tr>
</tbody>
</table>

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## Exceptions Table

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<table>
<thead>
<tr>
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<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>CLHI</td>
<td>Displays when IRLM region CPU utilization is ( &gt; mn )%.&lt;br&gt;CPU utilization is the percentage of the total CPU that the region has used over the last OMEGAMON cycle for all online processors in the complex.</td>
<td>OFF</td>
<td>40%</td>
<td>CPU (High)</td>
</tr>
<tr>
<td>CLLLO</td>
<td>Displays when IRLM region CPU utilization is ( &lt; mn )%.&lt;br&gt;CPU utilization is the percentage of the total CPU that the region has used over the last OMEGAMON cycle for all online processors in the complex.</td>
<td>OFF</td>
<td>5%</td>
<td>CPU (Low)</td>
</tr>
<tr>
<td>CMHI</td>
<td>Displays when MPP region CPU utilization is ( &gt; mn )%.&lt;br&gt;CPU utilization is the percentage of the total CPU that the MPP region has used over the last OMEGAMON cycle. CPU utilization ranges from 0% to 100% for all online processors in the complex. The default OMEGAMON cycle is five seconds.</td>
<td>OFF</td>
<td>40%</td>
<td>CPU (High)</td>
</tr>
<tr>
<td>CMLO</td>
<td>Displays when MPP region CPU utilization is ( &lt; mn )%.&lt;br&gt;CPU utilization is the percentage of the total CPU that the MPP region has used over the last OMEGAMON cycle. CPU utilization ranges from 0% to 100% for all online processors in the complex. The default OMEGAMON cycle is five seconds.</td>
<td>OFF</td>
<td>5%</td>
<td>CPU (Low)</td>
</tr>
<tr>
<td>COMW</td>
<td>Displays when IMS has ( nn ) ITASKS waiting for pool space and IMS is in selective processing.</td>
<td>ON</td>
<td>20</td>
<td>Pools (Other)</td>
</tr>
<tr>
<td>CPUA</td>
<td>Displays if the IMS CPU utilization is less than or equal to ( nn )%.&lt;br&gt;This CPU utilization is the fraction of the total CPU left over for use by IMS. OMEGAMON calculates it as 100% minus the sum of the CPU utilization for all the IMS control and dependent regions. Assuming the IMS system being monitored is the highest priority work in the CPU, this should be the amount of additional CPU resource available for IMS.</td>
<td>OFF</td>
<td>10%</td>
<td>CPU (Low)</td>
</tr>
<tr>
<td>Exception</td>
<td>Description</td>
<td>Default Setting</td>
<td>Default Threshold</td>
<td>CUA Group</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>----------------</td>
<td>------------------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| CRHI      | Displays if the DBRC region CPU utilization is > nn%.
This CPU utilization is the percentage of the total CPU the region used over the last OMEGAMON cycle for all online processors in the complex. | OFF | 40% | CPU (High) |
| CRLO      | Displays if the DBRC region CPU utilization is < nn%.
This CPU utilization is the percentage of the total CPU the region used over the last OMEGAMON cycle for all online processors in the complex. | OFF | 5% | CPU (Low)  |
| CSHI      | Displays if the DLS region CPU utilization is > nn%.
This CPU utilization is the percentage of the total CPU the region used over the last OMEGAMON cycle for all online processors in the complex. | OFF | 40% | CPU (High) |
| CSLO      | Displays if the DLS region CPU utilization is < nn%.
This CPU utilization is the percentage of the total CPU the region used over the last OMEGAMON cycle for all online processors in the complex. | OFF | 5% | CPU (Low)  |
## Exceptions Table

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<table>
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</tr>
</thead>
</table>
| CSVC      | Displays when IMS control task is waiting in SVC code.  
The CSVC analysis produces a warning when the IMS control task is in an OS WAIT in non-PRB code for at least two consecutive OMEGAMON cycles. This means that the task is doing something other than executing actual IMS modules, such as running a supervisor call (SVC). If the control task is found waiting inside an SVC, it is possible that IMS became nonfunctional while trying to perform some MVS service (such as dynamic allocation).  
CSVC recognizes some of the more common SVC numbers and can describe them: OPEN, CLOSE, EOV, DYNALLOC. CSVC indicates other SVCs by a decimal SVC number (such as SVC 119). If possible, the PSW where the SVC was invoked and the current module name also appears.  
In rare cases IMS is found waiting in neither IMS code nor an SVC. Other possibilities include IRBs (ESTAE recovery routines), SIRBs (STIMER exit routines), and so on. CSVC produces appropriate messages if this the case. | ON | n/a | IMS Status (Alerts) |
| CVAH      | Displays when LU 6.2 total active asynchronous conversations equal or exceed thresholds. | OFF | 30 | IMS Status (Other) |
| CVHI      | Displays when LU 6.2 total active conversations equal or exceed thresholds. | OFF | 60 | IMS Status (Other) |
| CVSH      | Displays when LU 6.2 total active synchronous conversations equal or exceed thresholds. | OFF | 30 | IMS Status (Other) |
| CUOW      | Displays when one Fast Path region is in unit-of-work contention with another Fast Path region.  
The Fast Path region that is waiting appears first; the Fast Path region which has the UOW follows. | ON | n/a | Fast Path (Alerts) |
| DBWE      | Displays when an I/O error against a database has occurred. | ON | n/a | Databases (Alerts) |
| DCMN      | Displays when IMS DC monitor is active.  
The DC monitor has a high overhead and can potentially impact IMS performance. | ON | n/a | Traces (Alerts) |
Table 17. OMEGAMON II Exceptions

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<tr>
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<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDHI</td>
<td>Displays when the dataspace DASD I/O per second is &gt; (nn). The value of (nn) is the average read + write rate for a dataspace.</td>
<td>OFF</td>
<td>20</td>
<td>Fast Path (High)</td>
</tr>
<tr>
<td>DDLO</td>
<td>Displays when the dataspace DASD I/O per second is &lt; (nn). The value of (nn) is the average read + write rate for a dataspace.</td>
<td>OFF</td>
<td>5</td>
<td>Fast Path (Low)</td>
</tr>
<tr>
<td>DISP</td>
<td>Displays when the dispatching priority of OMEGAMON is less than or equal to the dispatching priority of IMS. OMEGAMON’s dispatching priority must be higher than IMS’s dispatching priority. If you can, put the collectors in the SYSSSTC class and the reporting address spaces in the same service class as the monitored objects (DB2). If SYSSSTC is not appropriate or acceptable, the address space (menu/command interface or CUA collector) should be placed at a velocity goal above the spaces it is monitoring (DB2). If neither of these is acceptable, you can turn the exception off.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>DLTR</td>
<td>Displays when the DL/I trace table is on. The DL/I trace table can be a source of overhead. The DLTR analysis detects whether the DL/I trace table is on, alerting you to a potential cause of any such overhead the system might be incurring.</td>
<td>ON</td>
<td>n/a</td>
<td>Traces (Alerts)</td>
</tr>
<tr>
<td>DMBE</td>
<td>Displays the names of the databases that have dynamic backout errors. The error against the database is a dynamic backout error and has occurred for a PSB’s database which has stopped its DMB.</td>
<td>ON</td>
<td>n/a</td>
<td>Databases (Alerts)</td>
</tr>
<tr>
<td>DMER</td>
<td>Displays when a Fast Path DEDB area has an I/O error.</td>
<td>ON</td>
<td>n/a</td>
<td>Fast Path (Alerts)</td>
</tr>
<tr>
<td>DMFF</td>
<td>Displays when free space in DMB pool is fragmented. Free space in the DMB pool is fragmented whenever there is more than one free block. This situation occurs when there are database opens and closes. A DMB pool shortage might cause database closes.</td>
<td>ON</td>
<td>n/a</td>
<td>Pools (Alerts)</td>
</tr>
</tbody>
</table>
## Exceptions Table

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<tr>
<th>Exception</th>
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<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNRS</td>
<td>Displays if an I/O issued to a DASD device allocated to the IMS control region took longer than one OMEGAMON cycle to complete. As long as this I/O fails to complete, the message displays and the has-not-responded time increases. When the I/O finally completes, OMEGAMON removes the message. OMEGAMON can only state a RESERVE as a possible reason for the delay; the reason can also be head-of-string contention, because MVS I/O architecture makes it impossible to distinguish between the two. However, if a delay lasts long enough for DNRS to see it, it is more likely to be shared DASD contention. DNRS also detects a problem if IMS tried to issue an I/O to a device that dropped ready. Note that the DRDY exception analysis also produces a message in this case. While IMS also spots temporary I/O problems in addition to full-fledged lockouts, keep in mind that it does not spot a problem unless the I/O takes longer than one OMEGAMON cycle.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>DRDY</td>
<td>Displays when DASD device drops ready. If any I/O was in progress on this device at the time of failure, the DNRS exception usually produces an additional warning.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>DSHI</td>
<td>Displays when the dataspace I/O per second is &gt; nn. The value of nn is the average dataspace read + write rate.</td>
<td>OFF</td>
<td>80</td>
<td>Fast Path (High)</td>
</tr>
<tr>
<td>DSLO</td>
<td>Displays when the dataspace I/O per second is &lt; nn. The value of nn is the dataspace average read + write rate.</td>
<td>OFF</td>
<td>15</td>
<td>Fast Path (Low)</td>
</tr>
<tr>
<td>DSPI</td>
<td>Displays when no areas are loaded in the dataspace.</td>
<td>ON</td>
<td>n/a</td>
<td>Fast Path (Alerts)</td>
</tr>
<tr>
<td>DSTR</td>
<td>Displays when dispatcher trace is on. The dispatcher trace can be a source of overhead. The DSTR analysis detects when the dispatcher trace is on, alerting you to a potential cause of any such overhead your system might be incurring.</td>
<td>ON</td>
<td>n/a</td>
<td>Traces (Alerts)</td>
</tr>
<tr>
<td>Exception</td>
<td>Description</td>
<td>Default Setting</td>
<td>Default Threshold</td>
<td>CUA Group</td>
</tr>
<tr>
<td>-----------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>DSWP</td>
<td>Displays when a dependent region is swapped out.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td></td>
<td>Under ordinary circumstances, IMS dependent regions are marked nonswappable.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>It is possible that through a user error or deliberate circumvention, these</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>regions might become swappable; the DSWP analysis warns when any of these</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>regions are actually swapped out.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESNC</td>
<td>Displays when an external subsystem is defined to the control region, but</td>
<td>ON</td>
<td>n/a</td>
<td>External Subsystem</td>
</tr>
<tr>
<td></td>
<td>not to any dependent region.</td>
<td></td>
<td></td>
<td>(Alerts)</td>
</tr>
<tr>
<td>ESND</td>
<td>Displays when an external subsystem is defined to a dependent region, but</td>
<td>ON</td>
<td>n/a</td>
<td>External Subsystem</td>
</tr>
<tr>
<td></td>
<td>not to the control region.</td>
<td></td>
<td></td>
<td>(Alerts)</td>
</tr>
<tr>
<td>ESTH</td>
<td>Displays when the number of active threads for an external DB2 subsystem is</td>
<td>OFF</td>
<td>3</td>
<td>External Subsystem</td>
</tr>
<tr>
<td></td>
<td>&gt; nn.</td>
<td></td>
<td></td>
<td>(High)</td>
</tr>
<tr>
<td>FCIO</td>
<td>Displays when the communications I/O pool’s (CIOP) largest free block is</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td></td>
<td>&lt; nn bytes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FCWA</td>
<td>Displays when the communications work area pool’s (CWAP) largest free block</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td></td>
<td>is &lt; nn bytes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDBW</td>
<td>Displays if the database work pool largest free block is &lt; nn bytes.</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td>FDMB</td>
<td>Displays if the database management block (DMB) pool largest free block is</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td></td>
<td>&lt; nn bytes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FEPC</td>
<td>Displays if the extended PCB pool largest free block is &lt; nn bytes.</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td></td>
<td>FEPC applies only to those IMS systems that were generated with Fast Path.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FHOI</td>
<td>Displays when the high I/O pool’s (HIOP) largest free block is &lt; nn bytes.</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td>FMFS</td>
<td>Displays when the message format services (MFS) pool’s largest free block is</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td></td>
<td>&lt; nn bytes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FPSB</td>
<td>Displays if the PSB pool’s largest free block is &lt; nn bytes.</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td>FPSW</td>
<td>Displays if the PSBW largest free block is &lt; nn bytes.</td>
<td>ON</td>
<td>4096</td>
<td>Fragmentation (Low)</td>
</tr>
<tr>
<td>FPTR</td>
<td>Displays if there is a Fast Path region, there is activity in the FP region,</td>
<td>ON</td>
<td>n/a</td>
<td>Traces (Alerts)</td>
</tr>
<tr>
<td></td>
<td>and the Fast Path trace is on.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 17. OMEGAMON II Exceptions

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSBH</td>
<td>Displays if the HSSP private area buffer pool usage is &gt; nn%</td>
<td>ON</td>
<td>85%</td>
<td>Fast Path (High)</td>
</tr>
<tr>
<td>HSBL</td>
<td>Displays if the HSSP private area buffer pool usage is &lt; nn%</td>
<td>OFF</td>
<td>10%</td>
<td>Fast Path (Low)</td>
</tr>
<tr>
<td>IBHI</td>
<td>Displays if the BMP region I/O rate is &gt; nn EXCPs per second over the last OMEGAMON cycle</td>
<td>OFF</td>
<td>5</td>
<td>I/O Rates (Regions High)</td>
</tr>
<tr>
<td>IBLO</td>
<td>Displays if the BMP region I/O rate is &lt; nn EXCPs per second over the last OMEGAMON cycle</td>
<td>OFF</td>
<td>1</td>
<td>I/O Rates (Regions Low)</td>
</tr>
<tr>
<td>ICFX</td>
<td>Displays if the I/CF is not connected to the monitored IMS. The exception only trips when you have defined an I/CF console as an I/CF Master Console for the monitored IMS ID. ICFX is a CUA exception only. Note: This exception does not apply to DBCTL.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>ICHI</td>
<td>Displays if the control region I/O rate is &gt; nn EXCPs per second over the last OMEGAMON cycle</td>
<td>OFF</td>
<td>3</td>
<td>I/O Rates (Regions High)</td>
</tr>
<tr>
<td>ICLO</td>
<td>Displays if the control region I/O rate is &lt; nn EXCPs per second over the last OMEGAMON cycle</td>
<td>OFF</td>
<td>1</td>
<td>I/O Rates (Regions Low)</td>
</tr>
<tr>
<td>ILHI</td>
<td>Displays if the IRLM region I/O rate is &gt; nn EXCPs per second over the last OMEGAMON cycle</td>
<td>OFF</td>
<td>3</td>
<td>I/O Rates (Regions High)</td>
</tr>
<tr>
<td>ILLO</td>
<td>Displays if the IRLM region I/O rate is &lt; nn EXCPs per second over the last OMEGAMON cycle</td>
<td>OFF</td>
<td>1</td>
<td>I/O Rates (Regions Low)</td>
</tr>
<tr>
<td>IMHI</td>
<td>Displays when the message processing region I/O rate is &gt; nn EXCPs per second, during the last OMEGAMON cycle. The default OMEGAMON cycle is five seconds.</td>
<td>OFF</td>
<td>100</td>
<td>I/O Rates (Regions High)</td>
</tr>
<tr>
<td>IMLO</td>
<td>Displays when the message processing region I/O rate is &lt; nn EXCPs per second, during the last OMEGAMON cycle. The default OMEGAMON cycle is five seconds.</td>
<td>OFF</td>
<td>1</td>
<td>I/O Rates (Regions Low)</td>
</tr>
</tbody>
</table>
INAC Displays when IMS is inactive.
The INAC analysis detects when IMS is starting up or shutting down. IMS is considered inactive at these times and OMEGAMON cannot always report valid data. XIMS, by default, issues INAC as its first command. Because this an important condition, do not change the order of the commands issued by XIMS.

OMEGAMON can be active before IMS has taken its first checkpoint and can stay active as IMS is being shut down. In either of these cases, some OMEGAMON commands might get a program check. If this happens, the system displays **OB0910 PROGRAM CHECK RECOVERY SUCCESSFUL**. This means OMEGAMON recovered and continued normally.

The exception message indicating that IMS is initializing is **IMS INITIALIZATION IS IN PROGRESS**. The exception message indicating that IMS is being shut down is **IMS SHUTDOWN IS IN PROGRESS**. One of the last shutdown steps IMS takes is to free the SCD. In the short interval between the time IMS frees its SCD and OMEGAMON automatically shuts down, the message **IMS SHUTDOWN IS IN PROGRESS - SCD HAS BEEN FREED** might appear. At this point, IMS has destroyed its internal structure and any OMEGAMON command could receive a program check.

IORC Displays if a device allocated to IMS is in I/O error recovery.

IRCS Displays if the IRLM’s CSA usage is > nm% of MAXCSA.
Enter the threshold value (nm) as a percentage of the MAXCSA= parameter value. For example, if the MAXCSA= value is 30K and IRLM’s current CSA usage is 25K, the percentage of CSA used is 83%. You can find the MAXCSA= value in the IRLM startup JCL.

OMEGAMON displays the MAXCSA= and CSA usage values as well as the percentage of MAXCSA used when IRCS trips.

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>INAC</td>
<td>Displays when IMS is inactive. The INAC analysis detects when IMS is starting up or shutting down. IMS is considered inactive at these times and OMEGAMON cannot always report valid data. XIMS, by default, issues INAC as its first command. Because this an important condition, do not change the order of the commands issued by XIMS. OMEGAMON can be active before IMS has taken its first checkpoint and can stay active as IMS is being shut down. In either of these cases, some OMEGAMON commands might get a program check. If this happens, the system displays <strong>OB0910 PROGRAM CHECK RECOVERY SUCCESSFUL</strong>. This means OMEGAMON recovered and continued normally. The exception message indicating that IMS is initializing is <strong>IMS INITIALIZATION IS IN PROGRESS</strong>. The exception message indicating that IMS is being shut down is <strong>IMS SHUTDOWN IS IN PROGRESS</strong>. One of the last shutdown steps IMS takes is to free the SCD. In the short interval between the time IMS frees its SCD and OMEGAMON automatically shuts down, the message <strong>IMS SHUTDOWN IS IN PROGRESS - SCD HAS BEEN FREED</strong> might appear. At this point, IMS has destroyed its internal structure and any OMEGAMON command could receive a program check.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>IORC</td>
<td>Displays if a device allocated to IMS is in I/O error recovery.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>IRCS</td>
<td>Displays if the IRLM’s CSA usage is &gt; nm% of MAXCSA. Enter the threshold value (nm) as a percentage of the MAXCSA= parameter value. For example, if the MAXCSA= value is 30K and IRLM’s current CSA usage is 25K, the percentage of CSA used is 83%. You can find the MAXCSA= value in the IRLM startup JCL. OMEGAMON displays the MAXCSA= and CSA usage values as well as the percentage of MAXCSA used when IRCS trips.</td>
<td>OFF</td>
<td>60%</td>
<td>Resources (High)</td>
</tr>
</tbody>
</table>
## Table 17. OMEGAMON II Exceptions

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
</table>
| IRFC      | Displays when the false contention rate is > 70 per second.  
**Note:** This only applies to IRLM version 2.1 and above. | ON | 70 | Resources (High) |
| IRGC      | Displays when IRLM is not connected to a data sharing group.  
**Note:** This only applies to MVS version 5.1, 5.2 and OS/390. | ON | n/a | Resources (Alerts) |
| IRIN      | Displays when the required IRLM is not available for IMS.  
**Note:** This applies only to IRLM version 2.1 and above. | ON | n/a | Resources (Alerts) |
| IRHI      | Displays if the DBRC region I/O rate is > \(nn\) EXCPs per second during the last OMEGAMON cycle. | OFF | 3 | I/O Rates (Regions High) |
| IRLO      | Displays if the DBRC region I/O rate is < \(nn\) EXCPs per second during the last OMEGAMON cycle. | OFF | 1 | I/O Rates (Regions Low) |
| IRQH      | Displays when the number of IRLM locks by region exceeds the threshold. | ON | 50 | Locks |
| IRRC      | Displays when the real contention rate is > 70 per second.  
**Note:** This only applies to IRLM version 2.1 and above. | ON | 70 | Resources (High) |
| IRRU      | Displays when IRLM RLE usage is > 70%.  
**Note:** This only applies to IRLM version 2.1 and above. | ON | 70% | Resources (High) |
| IRTP      | Displays when the IRLM pass-the-buck (PTB) trace is active. | ON | n/a | Traces (Alerts) |
| IRTR      | Displays when the IRLM resource handler (RH) trace is active. | ON | n/a | Traces (Alerts) |
| ISHI      | Displays if the DLS region I/O rate is > \(nn\) EXCPs per second during the last OMEGAMON cycle. | OFF | 3 | I/O Rates (Regions High) |
| ISLO      | Displays if the DLS region I/O rate is < \(nn\) EXCPs per second during the last OMEGAMON cycle. | OFF | 1 | I/O Rate (Regions Low) |
| ITWH      | Displays when the ITASKS waiting for dynamic SAPs are > \(nn\). | ON | 50 | Pools (Other) |
### Table 17. OMEGAMON II Exceptions

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>LALO</td>
<td>Displays if the LSQA storage assurance is &lt; nn K.</td>
<td>OFF</td>
<td>50</td>
<td>Virtual Storage (Low)</td>
</tr>
<tr>
<td></td>
<td>The LSQA assurance area is between the lowest allocated LSQA area and the IEALIMIT line of the control region. This indicates that insufficient space is allocated for LSQA, and may require moving the IEALIMIT line downward.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LDMB</td>
<td>Displays if the DMB pool blocks loaded greater than or equal to nn%.</td>
<td>OFF</td>
<td>60%</td>
<td>Pools (DMB)</td>
</tr>
<tr>
<td>LKTR</td>
<td>Displays if the lock trace is on.</td>
<td>ON</td>
<td>n/a</td>
<td>Traces (Alerts)</td>
</tr>
<tr>
<td>LLBR</td>
<td>Displays if the OLDS buffer waits per second are &gt; nn.</td>
<td>OFF</td>
<td>90</td>
<td>Logging (OLDS)</td>
</tr>
<tr>
<td>LLCH</td>
<td>Displays if the WADS checkwrite requests per second are &gt; nn.</td>
<td>OFF</td>
<td>10</td>
<td>Logging (WADS High)</td>
</tr>
<tr>
<td></td>
<td>LLCH is the number of checkwrite requests to the WADS counted by the logical logger. If the WADS is not available, the requests go to the OLDS.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LMGH</td>
<td>Displays when the long message dataset I/O rate is &gt; nn per second.</td>
<td>ON</td>
<td>100</td>
<td>I/O Rates (Datasets)</td>
</tr>
<tr>
<td>LMLO</td>
<td>Displays if the LSQA maximum free block size is &lt; nn K.</td>
<td>OFF</td>
<td>50</td>
<td>Virtual Storage (Low)</td>
</tr>
<tr>
<td></td>
<td>This indicates that too little space is available within the LSQA area above the IEALIMIT line of the control region, and may require moving the IEALIMIT line downward.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPEX</td>
<td>Displays if the number of writes to WADS is &gt; nn per second.</td>
<td>OFF</td>
<td>10</td>
<td>Logging (WADS High)</td>
</tr>
<tr>
<td></td>
<td>LPEX is the number of writes to the WADS. LPEX (writes) may be less than LLCH (requests) because several requests can be received and queued before the actual write occurs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPOQ</td>
<td>Displays when all logical terminals, except video-type, have an output queue length &gt; nn.</td>
<td>OFF</td>
<td>60</td>
<td>LTERMS</td>
</tr>
<tr>
<td>LPOR</td>
<td>Displays if the OLDS reads (dynamic backout) are &gt; nn per second.</td>
<td>OFF</td>
<td>10</td>
<td>Logging (OLDS)</td>
</tr>
<tr>
<td>LPOW</td>
<td>Displays if the OLDS writes are &gt; nn per second.</td>
<td>OFF</td>
<td>10</td>
<td>Logging (OLDS)</td>
</tr>
<tr>
<td>LPSB</td>
<td>Displays if the PSB pool blocks loaded greater than or equal to nn%.</td>
<td>OFF</td>
<td>60</td>
<td>Pools (PSB)</td>
</tr>
</tbody>
</table>
### Table 17. OMEGAMON II Exceptions

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSLO</td>
<td>Displays if the LSQA total free storage is &lt; nn K. This indicates that too little space is available in the LSQA area above the IEALIMIT line of the control region, and may require moving the IEALIMIT line downward.</td>
<td>OFF</td>
<td>50</td>
<td>Virtual Storage (Low)</td>
</tr>
<tr>
<td>LTOQ</td>
<td>Displays when a video-type, logical terminal has an output queue length &gt; nn.</td>
<td>OFF</td>
<td>20</td>
<td>LTERMS</td>
</tr>
<tr>
<td>LTWA</td>
<td>Displays if the log tape write-ahead is not active.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>LVOQ</td>
<td>Displays when a video-type, virtual terminal has an output queue length &gt; nn.</td>
<td>OFF</td>
<td>3</td>
<td>LTERMS</td>
</tr>
<tr>
<td>Mnnn</td>
<td>These are dynamic exceptions you create using the MSGD command. They display when they detect special IMS message numbers on the log. <strong>Note:</strong> You can see these exceptions only in the menu/command interface. For more information, see the MSGD command in the <em>OMEGAMON II Realtime Commands Reference Manual</em>.</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>MDHI</td>
<td>Displays when the message dequeue rate is &gt; nn per second.</td>
<td>OFF</td>
<td>10</td>
<td>Message Processing (High)</td>
</tr>
<tr>
<td>MDLO</td>
<td>Displays when the message dequeue rate is &lt; nn per second.</td>
<td>OFF</td>
<td>1</td>
<td>Message Processing (Low)</td>
</tr>
<tr>
<td>MFSH</td>
<td>Displays when the MFS dataset I/O rate is &gt; nn per second.</td>
<td>ON</td>
<td>100</td>
<td>I/O Rates (Datasets)</td>
</tr>
<tr>
<td>MIRT</td>
<td>Displays the number of message inserts that the specified region did to the message queue. A sample MIRT message is <strong>MSG INSERT COUNT FOR REGION xxxxxxxxx = nn</strong>, where xxxxxxxxx is the transaction and nn is the count. The count field displays the number of get calls the region did to the message queue. If the count field remains constant and the nn value increases, this may indicate that the application program is in a loop.</td>
<td>OFF</td>
<td>20</td>
<td>Message Processing (High)</td>
</tr>
<tr>
<td>MPCH</td>
<td>Displays when the MPP region database calls are &gt; nn.</td>
<td>OFF</td>
<td>20</td>
<td>Message Processing (High)</td>
</tr>
<tr>
<td>Exception</td>
<td>Description</td>
<td>Default Setting</td>
<td>Default Threshold</td>
<td>CUA Group</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>-------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>MSDI</td>
<td>Displays when an MSDB has an invalid packed field.</td>
<td>ON</td>
<td>n/a</td>
<td>Fast Path (Alerts)</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> IMS only resets the packed field when IMS restarts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MSDO</td>
<td>Displays when an MSDB has an overflowing field. The IMS resets the overflowing field at the next synchronization point.</td>
<td>ON</td>
<td>n/a</td>
<td>Fast Path (Alerts)</td>
</tr>
<tr>
<td>MSGE</td>
<td>Displays when the ICNS command has not been issued. The ICNS command starts message exception analysis. For more information on message exception analysis, see the MSGD immediate command.</td>
<td>OFF</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>NDIR</td>
<td>Displays when the systems programmer has not defined the $$IMSDIR table. The NDIR analysis detects an undefined $$IMSDIR table and alerts you to the potential cause of any MFS overhead your system may be incurring.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>NACB</td>
<td>Displays when the VTAM ACB is not open.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status</td>
</tr>
<tr>
<td>NDRE</td>
<td>Displays when the $$IMSDIR table entry is not in the MFS format library. OMEGAMON did not find a $$IMSDIR table entry in the MFS format library; you are using critical storage incorrectly.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>NILU</td>
<td>Displays when the IMSLU connection with APPC/MVS is not enabled. This exception trips only on START and FAILED.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>NLOQ</td>
<td>Displays when there are unavailable video-type, logical terminals with an output queue length &gt; nn.</td>
<td>ON</td>
<td>20</td>
<td>LTERMS</td>
</tr>
<tr>
<td>NOFB</td>
<td>Displays when a region is in buffer wait due to a lack of available Fast Path buffers.</td>
<td>ON</td>
<td>n/a</td>
<td>Fast Path (Alerts)</td>
</tr>
<tr>
<td>NOOT</td>
<td>Displays when all output threads are in use and there are buffers queuing up for OTHR. The message also displays the number of buffers waiting for OTHR scheduling.</td>
<td>ON</td>
<td>n/a</td>
<td>Fast Path (Alerts)</td>
</tr>
</tbody>
</table>
### Table 17. OMEGAMON II Exceptions

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
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</tr>
</thead>
<tbody>
<tr>
<td>NPDL</td>
<td>Displays when there is no parallel DL/I. If you do not specify an IMS system running with VSAM locally shared resources (LSR) and LSO=Y in the IMS startup parameters, IMS is unable to use parallel DL/I when processing database I/Os.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>NPOQ</td>
<td>Displays when there are unavailable non-video-type, logical terminals with an output queue length &gt; nn.</td>
<td>OFF</td>
<td>60</td>
<td>LTERMS</td>
</tr>
<tr>
<td>NQRE</td>
<td>Displays when a RECON dataset is enqueued by another job.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>NSDC</td>
<td>Displays when IMS does not perform START DC.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>NTIQ</td>
<td>Displays non-competing transactions with an input queue length &gt; nn. A non-competing transaction is a transaction that is unable to run for some reason other than the competition for IMS resources. Examples are a transaction where you stopped the transaction code or a transaction that requires the use of a stopped database.</td>
<td>OFF</td>
<td>20</td>
<td>Trans-actions</td>
</tr>
<tr>
<td>NVAP</td>
<td>Displays when there is no VTAM authorized path.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status</td>
</tr>
<tr>
<td>NVOQ</td>
<td>Displays when there is an unavailable virtual video-type terminal with an output queue length &gt; nn.</td>
<td>OFF</td>
<td>10</td>
<td>LTERMS</td>
</tr>
<tr>
<td>OBAU</td>
<td>Displays when a region is currently using the Fast Path overflow buffer allocation. Because the OBA is a serialized resource, other regions may be waiting to use it.</td>
<td>ON</td>
<td>n/a</td>
<td>Fast Path (Alerts)</td>
</tr>
<tr>
<td>ODIE</td>
<td>Displays when &lt; 3 OLDS are still active. The other OLDS were stopped or encountered I/O errors.</td>
<td>OFF</td>
<td>n/a</td>
<td>Logging (Alerts)</td>
</tr>
<tr>
<td>OHLO</td>
<td>Displays when the ISAM/OSAM hit ratio is &lt;nn%.</td>
<td>Buffer Pools</td>
<td>Bufr. Pools</td>
<td></td>
</tr>
<tr>
<td>OLER</td>
<td>Displays when OLDS nn has encountered a write I/O error.</td>
<td>ON</td>
<td>n/a</td>
<td>Logging (Alerts)</td>
</tr>
<tr>
<td>OLNA</td>
<td>Displays when OLDS auto archiving is not active.</td>
<td>ON</td>
<td>n/a</td>
<td>Logging (Alerts)</td>
</tr>
<tr>
<td>OLST</td>
<td>Displays when OLDS nn is stopped.</td>
<td>ON</td>
<td>n/a</td>
<td>Logging (Alerts)</td>
</tr>
</tbody>
</table>
## Table 17. OMEGAMON II Exceptions

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<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONLC</td>
<td>Displays when an online change is in progress.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>ONLO</td>
<td>Displays when an online change has occurred.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>ORER</td>
<td>Displays when the number of OLDS with I/O errors is &gt; nn.</td>
<td>ON</td>
<td>1</td>
<td>Logging (Alerts)</td>
</tr>
<tr>
<td>ORIP</td>
<td>Displays when the number of OLDS inactive is &gt; nn. The OLDS are inactive because they are stopped or I/O errors occurred.</td>
<td>ON</td>
<td>1</td>
<td>Logging (OLDS)</td>
</tr>
<tr>
<td>ORST</td>
<td>Displays when the number of OLDS that have been stopped is &gt; nn. The /STO OLDS command stopped the OLDS.</td>
<td>ON</td>
<td>1</td>
<td>Logging (OLDS)</td>
</tr>
<tr>
<td>OSBL</td>
<td>If there are any ISAM/OSAM database buffer pools locked due to a write error, OSBL displays the number that are locked.</td>
<td>ON</td>
<td>n/a</td>
<td>Pools (Alerts)</td>
</tr>
<tr>
<td>OSDN</td>
<td>Displays when there is only one OLDS available. The rest of the OLDS have been stopped or have write I/O errors. Displays when IMS is terminating because the last available OLDS is damaged.</td>
<td>ON</td>
<td>n/a</td>
<td>Logging (Alerts)</td>
</tr>
<tr>
<td>OXHI</td>
<td>Displays when the OSAM database dataset EXCP rate is &gt; the user-specified limit. <strong>Note:</strong> This applies to all OSAM databases.</td>
<td>OFF</td>
<td>80</td>
<td>Databases (Alerts)</td>
</tr>
<tr>
<td>OXLO</td>
<td>Displays when the OSAM database dataset EXCP rate is &lt; the user-specified limit. <strong>Note:</strong> This applies to all OSAM databases.</td>
<td>OFF</td>
<td>10</td>
<td>Databases (Alerts)</td>
</tr>
<tr>
<td>PBTR</td>
<td>Displays when PSB trace facility is on.</td>
<td>ON</td>
<td>n/a</td>
<td>Traces (Alerts)</td>
</tr>
<tr>
<td>PIBC</td>
<td>Displays if the BMP common area page-in rate is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
</tr>
<tr>
<td>PIBP</td>
<td>Displays if the BMP private area page-in rate is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
</tr>
<tr>
<td>PICC</td>
<td>Displays if the common area page-in rate for the control region is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>ON</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
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</table>
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<tr>
<td>PICP</td>
<td>Displays if the private area page-in rate for the control region is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>ON</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
</tr>
<tr>
<td>PIDC</td>
<td>Displays if the common area page-in rate for DBRC region is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
</tr>
<tr>
<td>PIDP</td>
<td>Displays if the private area page-in rate for DBRC region is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
</tr>
<tr>
<td>PILC</td>
<td>Displays if the common area page-in rate for IRLM region is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
</tr>
<tr>
<td>PILP</td>
<td>Displays if the private area page-in rate for IRLM region is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
</tr>
<tr>
<td>PIMC</td>
<td>Displays when the message processing region common area page-in rate is &gt; n per second during the last OMEGAMON cycle. The default OMEGAMON cycle is five seconds.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rate)</td>
</tr>
<tr>
<td>PIQH</td>
<td>Displays if the number of PI enqueue locks held by the indicated thread is &gt; nn. The PIQH exception is only valid if Program Isolation (PI) is used for resource serialization. A PI request is created when a processing option other than E (exclusive) or GO (get only) is made by an application program. The request results in either ownership or a waiting condition for a database record. A waiting condition inhibits other applications from being served by the region while the waiting program remains in IWAIT state. However, if the processing option is E (exclusive) in the PSB, then IMS will not schedule the program unless it can get exclusive control of the entire database, allowing other programs to be served by the same region.</td>
<td>ON</td>
<td>10</td>
<td>Locks</td>
</tr>
<tr>
<td>PIRP</td>
<td>Displays when the message processing region private area page-in rate is &gt; n per second during the last OMEGAMON cycle. The default OMEGAMON cycle is five seconds.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rates)</td>
</tr>
<tr>
<td>PISC</td>
<td>Displays if the common area page-in rate for the DLS region is &gt; nn per second during the last OMEGAMON cycle.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rates)</td>
</tr>
</tbody>
</table>
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<tr>
<td>PISP</td>
<td>Displays if the private area page-in rate for the DLS region is ( &gt; nn ) per second during the last OMEGAMON cycle.</td>
<td>OFF</td>
<td>3</td>
<td>Virtual Storage (Page-In Rates)</td>
</tr>
<tr>
<td>PITR</td>
<td>Displays when the program isolation trace facility is on.</td>
<td>ON</td>
<td>n/a</td>
<td>Traces (Alerts)</td>
</tr>
<tr>
<td>PROQ</td>
<td>Displays when the printer is unable to receive output.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>PSVC</td>
<td>Displays when IMS physical logger task waiting in SVC code. The PSVC analysis produces a warning when it sees that the IMS physical logger task is in an OS WAIT in non-PRB code for at least two consecutive OMEGAMON cycles. This means that the task is doing something other than executing actual IMS modules, such as running a supervisor call (SVC). If the IMS physical logger task is found waiting inside an SVC, IMS might have become nonfunctional while trying to perform some MVS service (dataset OPEN, for example). PSVC recognizes some of the more common SVC numbers and can describe them; other SVCs by a decimal SVC number (such as SVC 119). If possible, PSVC also indicates the PSW where the SVC was invoked and the current module name. In rare cases, IMS is found waiting in neither IMS code nor in an SVC. Other possibilities include IRBs (ESTAE recovery routines), SIRBs (STIMER exit routines), and so on; PSVC produces appropriate messages if this the case.</td>
<td>ON</td>
<td>n/a</td>
<td>Resources (Alerts)</td>
</tr>
<tr>
<td>QBKH</td>
<td>Displays when the queue blocks dataset I/O rate is ( &gt; n ) per second.</td>
<td>ON</td>
<td>100</td>
<td>I/O Rates (Datasets)</td>
</tr>
<tr>
<td>RDSH</td>
<td>Displays if the restart dataset I/O rate is ( &gt; nn ) per second.</td>
<td>ON</td>
<td>100</td>
<td>I/O Rates (Datasets)</td>
</tr>
<tr>
<td>RGNW</td>
<td>Displays when region waiting time is ( &gt; nn ) minutes.</td>
<td>OFF</td>
<td>1</td>
<td>Regions</td>
</tr>
<tr>
<td>RGSH</td>
<td>Displays when checkpoints taken for an IMS BMP are ( &gt; nn ).</td>
<td>ON</td>
<td>50</td>
<td>Regions</td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>RGSI</td>
<td>Displays when the region sync point interval is &gt; nn minutes. The RGSI alerts the customer when current time minus time of the latest system checkpoint is greater than nn minutes and the region has insert and/or update activity.</td>
<td>ON</td>
<td>10</td>
<td>Regions</td>
</tr>
<tr>
<td>ROHI</td>
<td>Displays when the message region occupancy is &gt; nn%. OMEGAMON calculates the occupancy factor by sampling each message region once every OMEGAMON cycle, to see if OMEGAMON has scheduled a transaction. Since this is a statistical method, the data is not significant until there is a relatively large number of samples. OMEGAMON bypasses this exception until it takes at least 120 samples. <strong>Note:</strong> If OMEGAMON’s interval setting is five seconds, there is a ten minute delay for OMEGAMON to calculate occupancy. OMEGAMON does not automatically treat WFI region occupancy as 100%, and only considers a WFI region occupied if the region is not in the waiting for input state. For the occupancy factor calculation, OMEGAMON only maintains samples less than 60 minutes old. Therefore, the region occupancy is an average over the preceding hour. As message regions stop and restart, OMEGAMON begins the calculation again. A sample exception message is <strong>ROHI MPP ‘MESSAGE’:</strong>  Region Occupancy = 93.84% (High).</td>
<td>OFF</td>
<td>65</td>
<td>Message Processing (High)</td>
</tr>
</tbody>
</table>
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<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROLO</td>
<td>Displays when the message region occupancy is &lt; nn%. OMEGAMON calculates the occupancy factor by sampling each message region once every OMEGAMON cycle, to see if OMEGAMON has scheduled a transaction. Since this is a statistical method, the data is not significant until there is a relatively large number of samples. OMEGAMON bypasses this exception until it takes at least 120 samples. Note: If OMEGAMON’s interval setting is five seconds, there is a ten minute delay for OMEGAMON to calculate occupancy. OMEGAMON does not automatically treat WFI region occupancy as 100%, and only considers a WFI region occupied if the region is not in the waiting for input state. For the occupancy factor calculation, OMEGAMON only maintains samples less than 60 minutes old. Therefore, the region occupancy is an average over the preceding hour. As message regions stop and restart, OMEGAMON begins the calculation again. A sample exception message is ROHI MPP ‘MESSAGE’: Region Occupancy = 6.72% (Low).</td>
<td>OFF</td>
<td>20</td>
<td>Message Processing (Low)</td>
</tr>
<tr>
<td>RSRV</td>
<td>Displays when there is no VTAM connection to the RSR Tracking System. The VTAM connection between the ACTIVE IMS and the TRACKING IMS is not available. This is only available from the ACTIVE IMS. Note: Because the TRACKING IMS can function for multiple ACTIVE IMS systems, we cannot identify an IMS that is not connected but should be.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>SAPW</td>
<td>Displays when IMS puts an ITASK into the IWAIT state because no dynamic SAPs (save area prefix sets) are available. The SAPW exception message may display with the SDSP (selective dispatching) message, since running out of dynamic SAPs is one reason why IMS actives selective dispatching.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
</tbody>
</table>
### Exceptions Table

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<tbody>
<tr>
<td>SCTR</td>
<td>Displays if the scheduler trace is active. The scheduler trace can be a source of overhead. The SCTR analysis detects when the scheduler trace is on, alerting you to a potential cause of any such overhead your system might be incurring.</td>
<td>ON</td>
<td>n/a</td>
<td>Traces (Alerts)</td>
</tr>
<tr>
<td>SDLO</td>
<td>Displays when the number of free CIs in the sequential dependent part of the DEDB area is $&lt; nn%$.</td>
<td>ON</td>
<td>10</td>
<td>Fast Path (Low)</td>
</tr>
<tr>
<td>SDSP</td>
<td>Displays when selective dispatching is active. IMS invokes selective dispatching, when there is a shortage of storage for some of the IMS internal resources. IMS must restrict the scheduling of new work until IMS relieves the shortage.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>SMGH</td>
<td>Displays when the short message dataset I/O rate is $&gt; nn$ per second.</td>
<td>ON</td>
<td>100</td>
<td>I/O Rates (Datasets)</td>
</tr>
<tr>
<td>SPAH</td>
<td>Displays when the SPA dataset I/O rate is $&gt; nn$ per second.</td>
<td>ON</td>
<td>100</td>
<td>I/O Rates (Datasets)</td>
</tr>
<tr>
<td>Tnnn</td>
<td>This is a dynamic exception that you create using the THIN command. This exception displays when it detects that a CCTL has exceeded its percentage of threads in use threshold. For more information, see the THIN command in the OMEGAMON II Realtime Commands Reference Manual.</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>TCOI</td>
<td>Displays when the Time Controlled Operations (TCO) is inactive.</td>
<td>ON</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>TCOT</td>
<td>Displays if the time controlled operations (TCO) trace is active.</td>
<td>ON</td>
<td>n/a</td>
<td>Traces (Alerts)</td>
</tr>
<tr>
<td>THHI</td>
<td>Displays if the number of active threads is $&gt; nn$.</td>
<td>OFF</td>
<td>127</td>
<td>Threads (High)</td>
</tr>
<tr>
<td>THHP</td>
<td>Displays if the number of active threads is $&gt; nn%$ of all available threads.</td>
<td>OFF</td>
<td>80%</td>
<td>Threads (High)</td>
</tr>
<tr>
<td>THLO</td>
<td>Displays if the number of active threads is $&lt; nn$.</td>
<td>OFF</td>
<td>1</td>
<td>Threads (Low)</td>
</tr>
<tr>
<td>THLP</td>
<td>Displays if the number of active threads is $&lt; nn%$ of all available threads.</td>
<td>OFF</td>
<td>50%</td>
<td>Threads (Low)</td>
</tr>
<tr>
<td>TMFH</td>
<td>Displays when the test MFS dataset I/O rate is $&gt; nn$ per second.</td>
<td>ON</td>
<td>100</td>
<td>I/I Rates (Datasets)</td>
</tr>
</tbody>
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</table>
| TMSI      | Displays when the Transport Manager Subsystem (TMS) is not active.  
**Note:** This will also cause a break in the VTAM connection.  
Without TMS, you cannot re-establish the VTAM connection from the ACTIVE IMS to the TRACKING IMS. | ON              | n/a              | IMS Status (Alerts)        |
| TNRS      | Displays if a tape device is not responding to an I/O request.  
As long as this I/O fails to complete, the message continues to display.  
TNRS also detects a problem if IMS tries to issue an I/O to a device that dropped ready. TRDY also displays a message in this case.  
While IMS also spots temporary I/O problems in addition to full-fledged lockouts, keep in mind that it does not spot a problem unless the I/O takes longer than one OMEGAMON cycle to complete. | OFF             | n/a              | Resources (Alerts)         |
| TPSB      | This is a dynamic exception that you create using the TTIM command. This exception displays when it detects that a PSB has exceeded a time threshold.  
**Note:** You can see this exception only in the command/menu interface.  
For more information, see the TTIM command in the *OMEGAMON II Realtime Commands Reference Manual*. | n/a             | n/a              |                            |
| TRDY      | Displays if a tape device drops ready.  
If any I/O was in progress on this device at the time of failure, TNRS produces an additional warning. | OFF             | n/a              | Resources (Alerts)         |
### Exceptions Table

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<tr>
<td>TXIQ</td>
<td>Displays when there are competing transactions with an input queue length &gt; nn. The TXIQ analysis examines all competing transactions to identify those with an input message queue length greater than or equal to the threshold n, which the user sets. <strong>Note:</strong> A transaction might queue if a message region of the appropriate class is not currently available to run the transaction. A non-competing transaction is a transaction that is unable to run for some reason other than the competition for IMS resources. Examples are a transaction where you stopped the transaction code or a transaction that requires the use of a stopped database.</td>
<td>OFF</td>
<td>10</td>
<td>Trans-Actions</td>
</tr>
<tr>
<td>VCAS</td>
<td>Displays when database VSAM control area splits are &gt; nn per minute.</td>
<td>ON</td>
<td>5</td>
<td>VSAM</td>
</tr>
<tr>
<td>VCIS</td>
<td>Displays when database VSAM control interval splits are &gt; nn per minute.</td>
<td>ON</td>
<td>5</td>
<td>VSAM</td>
</tr>
<tr>
<td>VHLO</td>
<td>Displays when the VSAM hit ratio is &lt;nn%.</td>
<td>Buffer Pools</td>
<td>Bufr. Pools</td>
<td></td>
</tr>
<tr>
<td>VMEX</td>
<td>Displays if the number of extents for the VSAM dataset is increasing.</td>
<td>ON</td>
<td>n/a</td>
<td>VSAM (Alerts)</td>
</tr>
<tr>
<td>VMLO</td>
<td>Displays when IMSCTL maximum private free block size is &lt; nn K. This indicates that too little virtual storage is available below the IEGALIMIT line of the region (including DBRC, DLISAS, IRLM, and the IMS control region), and may require moving the IEALIMIT line upward.</td>
<td>OFF</td>
<td>50</td>
<td>Virtual Storage (Low)</td>
</tr>
<tr>
<td>VROQ</td>
<td>Displays when logical terminal is unable to receive output.</td>
<td>OFF</td>
<td>n/a</td>
<td>IMS Status (Alerts)</td>
</tr>
<tr>
<td>VSLO</td>
<td>Displays when IMSCTL total private free block size is &lt; nn K. This indicates that too little virtual storage is available below the IEALIMIT line of the region (including DBRC, DLISAS, IRLM, and the IMS Control region), and may require moving the IEALIMIT line upward.</td>
<td>OFF</td>
<td>50</td>
<td>Virtual Storage (Low)</td>
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<tr>
<td>VTLO</td>
<td>Displays when IMSCTL top free block size is &lt; ( nn ) K. This indicates that too little virtual storage is available below the IEALIMIT line of the region (including DBRC, DLISAS, IRLM, and the IMS Control region), and may require moving the IEALIMIT line upward.</td>
<td>OFF</td>
<td>50</td>
<td>Virtual Storage (Low)</td>
</tr>
<tr>
<td>VWRC</td>
<td>Displays if the VSAM writecheck is ON for a database. The VWRC analysis produces a warning when any VSAM database is found with the WRITECHECK option turned on. This option reads every record written back in and compares it with the original as an integrity check. This option may have severe performance penalties.</td>
<td>ON</td>
<td>n/a</td>
<td>VSAM (Alerts)</td>
</tr>
<tr>
<td>VXHI</td>
<td>Displays when the VSAM database dataset EXCP rate is &gt; the user-specified limit. <strong>Note:</strong> This applies to all VSAM databases.</td>
<td>OFF</td>
<td>80</td>
<td>Databases (Alerts)</td>
</tr>
<tr>
<td>VXLO</td>
<td>Displays when the VSAM database dataset EXCP rate is &lt; the user-specified limit. <strong>Note:</strong> This applies to all VSAM databases.</td>
<td>OFF</td>
<td>10</td>
<td>Databases (Alerts)</td>
</tr>
<tr>
<td>WBHI</td>
<td>Displays when BMP working set size is &gt; ( nn ) K. The working set size is the number of real pages the region currently has in memory. Under MVS/ESA™, this includes expanded storage.</td>
<td>OFF</td>
<td>1500</td>
<td>Working Sets (High)</td>
</tr>
<tr>
<td>WBLO</td>
<td>Displays when BMP working set size is &lt; ( nn ) K.</td>
<td>OFF</td>
<td>50</td>
<td>Working Sets (Low)</td>
</tr>
<tr>
<td>WCHI</td>
<td>Displays when the control region working set size is &gt; ( nn ) K. The working set size is the number of real pages the region currently has in memory. Under MVS/ESA, this includes expanded storage.</td>
<td>OFF</td>
<td>2000</td>
<td>Working Sets (High)</td>
</tr>
<tr>
<td>WCLO</td>
<td>Displays when the control region working set size is &lt; ( nn ) K.</td>
<td>OFF</td>
<td>50</td>
<td>Working Sets (Low)</td>
</tr>
<tr>
<td>WDNA</td>
<td>Displays when the write-ahead datasets (WADS) are inactive. Log write-ahead is to the OLDS.</td>
<td>ON</td>
<td>n/a</td>
<td>Logging (Alerts)</td>
</tr>
<tr>
<td>WDNB</td>
<td>Displays when the number of spare WADS remaining is &lt; ( nn ).</td>
<td>ON</td>
<td>1</td>
<td>Logging (WADS Low)</td>
</tr>
<tr>
<td>Exception</td>
<td>Description</td>
<td>Default Setting</td>
<td>Default Threshold</td>
<td>CUA Group</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>----------------</td>
<td>-------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>WLHI</td>
<td>Displays when IRLM working set size is ( &gt; ) ( nn ) K. The working set size is the number of real pages the region currently has in memory. Under MVS/ESA, this includes expanded storage.</td>
<td>OFF</td>
<td>2000</td>
<td>Working Sets (High)</td>
</tr>
<tr>
<td>WLO</td>
<td>Displays when IRLM working set size is ( &lt; ) ( nn ) K.</td>
<td>OFF</td>
<td>50</td>
<td>Working Sets (Low)</td>
</tr>
<tr>
<td>WMHI</td>
<td>Displays when the message processing region working set size is ( &gt; ) ( nn )K. The working set size is the number of real pages the region currently has in memory. Under MVS/ESA, the working set size includes expanded storage.</td>
<td>OFF</td>
<td>1500</td>
<td>Working Sets (High)</td>
</tr>
<tr>
<td>WMLO</td>
<td>Displays when the message processing region working set size is ( &lt; ) ( nn )K. The working set size is the number of real pages the region currently has in memory. Under MVS/ESA, the working set size includes expanded storage.</td>
<td>OFF</td>
<td>50</td>
<td>Working Sets (Low)</td>
</tr>
<tr>
<td>WRHI</td>
<td>Displays when DBRC working set size is ( &gt; ) ( nn ) K. The working set size is the number of real pages the region currently has in memory. Under MVS/ESA, this includes expanded storage.</td>
<td>OFF</td>
<td>2000</td>
<td>Working Sets (High)</td>
</tr>
<tr>
<td>WRLO</td>
<td>Displays when DBRC working set size is ( &lt; ) ( nn ) K.</td>
<td>OFF</td>
<td>50</td>
<td>Working Sets (Low)</td>
</tr>
<tr>
<td>WSHI</td>
<td>Displays when DLS working set size is ( &gt; ) ( nn ) K. The working set size is the number of real pages the region currently has in memory. Under MVS/ESA, this includes expanded storage.</td>
<td>OFF</td>
<td>2000</td>
<td>Working Sets (High)</td>
</tr>
<tr>
<td>WSLO</td>
<td>Displays when DLS working set size is ( &lt; ) ( nn ) K.</td>
<td>OFF</td>
<td>50</td>
<td>Working Sets (Low)</td>
</tr>
<tr>
<td>XCNF</td>
<td>Displays when a Program Isolation (PI) or IMS/VS Resource Lock Manager (IRLM) resource conflict exists.</td>
<td>OFF</td>
<td>n/a</td>
<td>Locks (Alerts)</td>
</tr>
<tr>
<td>XRA</td>
<td>Displays when XRF automatic takeover is not active. XRA only applies to systems which were installed with XRF.</td>
<td>ON</td>
<td>n/a</td>
<td>XRF (Alerts)</td>
</tr>
</tbody>
</table>
### Table 17. OMEGAMON II Exceptions

<table>
<thead>
<tr>
<th>Exception</th>
<th>Description</th>
<th>Default Setting</th>
<th>Default Threshold</th>
<th>CUA Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>XRAV</td>
<td>Displays when XRF availability manager is not active. XRAV only applies to systems which were installed with XRF.</td>
<td>ON</td>
<td>n/a</td>
<td>XRF (Alerts)</td>
</tr>
<tr>
<td>XRIP</td>
<td>Displays when I/O prevention is in progress on the active IMS system. XRIP only applies to systems which were installed with XRF.</td>
<td>ON</td>
<td>n/a</td>
<td>XRF (Alerts)</td>
</tr>
<tr>
<td>XRTI</td>
<td>Displays when I/O toleration is in progress on the standby IMS system. XRTI only applies to systems which were installed with XRF.</td>
<td>ON</td>
<td>n/a</td>
<td>XRF (Alerts)</td>
</tr>
<tr>
<td>XRNS</td>
<td>Displays when XRF surveillance is not active. XRNS only applies to systems which were installed with XRF.</td>
<td>ON</td>
<td>n/a</td>
<td>XRF (Alerts)</td>
</tr>
<tr>
<td>XRPH</td>
<td>Displays when the number of PSTs held on the standby system is $&gt; mn$. XRPH only applies to systems which were installed with XRF.</td>
<td>OFF</td>
<td>3</td>
<td>XRF</td>
</tr>
<tr>
<td>XRSR</td>
<td>Displays when no secondary RDS is allocated. XRSR only applies to systems which were installed with XRF.</td>
<td>ON</td>
<td>n/a</td>
<td>XRF (Alerts)</td>
</tr>
<tr>
<td>XTO</td>
<td>Displays when an XRF takeover is in progress. XTO only applies to systems which were installed with XRF.</td>
<td>ON</td>
<td>n/a</td>
<td>XRF (Alerts)</td>
</tr>
</tbody>
</table>
Introduction

Candle Corporation is committed to producing top-quality software products and services. To assist you with making effective use of our products in your business environment, Candle is also committed to providing easy-to-use, responsive customer support.

Precision, speed, availability, predictability—these terms describe our products and Customer Support services.

Included in this Guide to Candle Customer Support is information about the following:

Base Maintenance Plan ........................................... 278
  - Telephone Support
  - eSupport
  - Description of Severity Levels
  - Service-level objectives
  - Recording and monitoring calls for quality purposes
  - Customer Support Escalations
  - Above and Beyond

Enhanced Support Services ...................................... 282
  - Assigned Support Center Representative (ASCR)
  - Maintenance Assessment Services (MAS)
  - Multi-Services Manager (MSM)

Customer Support Contact Information .......................... 283
  - Link to Worldwide Support Telephone and E-mail information
Base Maintenance Plan

Overview

Candle offers a comprehensive Base Maintenance Plan to ensure that you realize the greatest value possible from your Candle software investments. We have more than 200 technicians providing support worldwide, committed to being responsive and to providing expedient resolutions to support requests. Technicians are available worldwide at all times during the local business day. In the event of an after-hours or weekend emergency, our computerized call management and forwarding system will ensure that a technician responds to Severity One situations within one hour. For customers outside of North America, after-hours and weekend support is provided in English language only by Candle Customer Support technicians located in the United States.

Telephone support

Candle provides consistently reliable levels of service—thanks to our worldwide support network of dedicated experts trained for specific products and operating systems. You will always work with a professional who truly understands your problem.

We use an online interactive problem management system to log and track all customer-reported support requests. We give your support request immediate attention by routing the issue to the appropriate technical resource, regardless of geographic location.

**Level 0 Support** is where your call to Candle Customer Support is first handled. Your support request is recorded in our problem management system, then transferred to the appropriate Level 1 support team. We provide Level 0 manual interaction with our customers because we support more than 170 products. We feel our customers would prefer personal interaction to a complex VRU or IVR selection menu.

**Level 1 Support** is the service provided for initial support requests. Our Level 1 team offers problem determination assistance, problem analysis, problem resolutions, installation assistance, and preventative and corrective service information. They also provide product usage assistance.

**Level 2 Support** is engaged if Level 1 cannot provide a resolution to your problem. Our Level 2 technicians are equipped to analyze and reproduce errors or to determine that an error is not reproducible. Problems that cannot be resolved by Level 2 are escalated to Candle’s Level 3 R&D support team.

**Level 3 Support** is engaged if a problem is identified in Candle product code. At Level 3, efforts are made to provide error correction, circumvention or notification that a correction or circumvention is not available. Level 3 support provides available maintenance modifications and maintenance delivery to correct appropriate documentation or product code errors.
eSupport

In order to facilitate the support process, Candle also provides **eSupport**, an electronic full-service information and customer support facility, via the World Wide Web at [www.candle.com/support/](http://www.candle.com/support/). **eSupport** allows you to open a new service request and update existing service requests, as well as update information in your customer profile. New and updated service requests are queued to a support technician for immediate action. And we can respond to your request electronically or by telephone—it is your choice.

**eSupport** also contains a continually expanding knowledge base that customers can tap into at any time for self-service access to product and maintenance information.

The Candle Web Site and **eSupport** can be accessed 24 hours a day, 7 days a week by using your authorized Candle user ID and password.

**Description of Candle severity levels**

Responses to customer-reported product issues and usage questions are prioritized within Candle according to Severity Code assignment. Customers set their own Severity Levels when contacting a support center. This ensures that we respond according to your individual business requirements.

<table>
<thead>
<tr>
<th>Severity Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severity 1</strong></td>
<td>Crisis</td>
</tr>
<tr>
<td><strong>Severity 2</strong></td>
<td>High</td>
</tr>
<tr>
<td><strong>Severity 3</strong></td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Severity 4</strong></td>
<td>Low</td>
</tr>
<tr>
<td><strong>Severity 5</strong></td>
<td>Enhancement Request</td>
</tr>
</tbody>
</table>

**Candle has established the following service-level objectives:**

<table>
<thead>
<tr>
<th>Call Status</th>
<th>Severity 1 Goal</th>
<th>Severity 2 Goal</th>
<th>Severity 3 Goal</th>
<th>Severity 4 Goal</th>
<th>Severity 5 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Call Time to Answer</td>
<td>90% within one minute</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1 Response (Normal Business Hours)</td>
<td>90% within 5 minutes</td>
<td></td>
<td></td>
<td>90% within one hour</td>
<td></td>
</tr>
<tr>
<td>Level 2 Response (Normal Business Hours)</td>
<td>Warm Transfer</td>
<td>90% within two hours</td>
<td></td>
<td>90% within eight hours</td>
<td></td>
</tr>
</tbody>
</table>

The above information is for guideline purposes only. Candle does not guarantee or warrant the above service levels. This information is valid as of October 1999 and is subject to change without prior notice.
<table>
<thead>
<tr>
<th>Call Status</th>
<th>Severity 1 Goal</th>
<th>Severity 2 Goal</th>
<th>Severity 3 Goal</th>
<th>Severity 4 Goal</th>
<th>Severity 5 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled follow-up (status update)</td>
<td>Hourly or as agreed</td>
<td>Daily or as agreed</td>
<td>Weekly or as agreed</td>
<td>Notification is made when an enhancement is incorporated into a generally available product.</td>
<td>Notification is made when a fix is incorporated into a generally available product.</td>
</tr>
</tbody>
</table>

The above information is for guideline purposes only. Candle does not guarantee or warrant the above service levels. This information is valid as of October 1999 and is subject to change without prior notice.
Recording and Monitoring Calls for Quality Purposes

Candle is committed to customer satisfaction. To ensure that our customers receive high levels of service, quality and professionalism, we'll monitor and possibly record incoming and outgoing Customer Support calls. The information gleaned from these calls will help us serve you better. If you prefer that your telephone call with Candle Customer Support in North America not be monitored or recorded, please advise the representative when you call us at (800) 328-1811 or (310) 535-3636.

Customer Support Escalations

Candle Customer Support is committed to achieving high satisfaction ratings from our customers. However, we realize that you may occasionally have support issues that need to be escalated to Candle management. In those instances, we offer the following simple escalation procedure:

If you experience dissatisfaction with Candle Customer Support at any time, please escalate your concern by calling the Candle support location closest to you. Ask to speak to a Customer Support manager. During standard business hours, a Customer Support manager will be available to talk with you or will return your call. If you elect to hold for a manager, you will be connected with someone as soon as possible. If you wish a return call, please tell the Candle representative coordinating your call when you will be available. After contacting you, the Customer Support manager will develop an action plan to resolve your issue. All escalations or complaints received about support issues are logged and tracked to ensure responsiveness and closure.

Above and Beyond

What differentiates Candle’s support services from our competitors? We go the extra mile by offering the following as part of our Base Maintenance Plan:

- Unlimited multi-language defect, installation and operations support
- eSupport using the World Wide Web
- Regularly scheduled product updates and maintenance provided at no additional charge
- Over 200 specialized technicians providing expert support for your Candle products
Enhanced Support Services

Overview

Our Base Maintenance Plan provides a high level of software support in a packaged offering. However, in addition to this plan, we have additional fee-based support services to meet unique customer needs.

The following are some examples of our added-value support services:

- **Assigned Support Center Representative Services (ASCR)**
  - An assigned focal point for managing support escalation needs
  - Proactive notification of available software fixes
  - Proactive notification of product version updates
  - Weekly conference calls with your ASCR to review active problem records
  - Monthly performance reviews of Candle Customer Support service levels
  - Optional on-site visits (extra charges may apply)

- **Maintenance Assessment Service (MAS)**
  - On-site assessment services
  - Advice about product maintenance and implementation
  - Training your staff to develop efficient and focused procedures to reduce overall cost of ownership of your Candle software products
  - Analysis of your Candle product environment: versions, updates, code correction history, incident history and product configurations
  - Reviews to ensure that purchased Candle products and solutions are used effectively

- **Multi-Services Manager (MSM)**
  Multi-Services Manager provides highly valued services to customers requiring on-site full time expertise to complement their technical resources.
  - Dedicated on-site Candle resource (6 months or one year) at your site to help ensure maximum use and effectiveness of your Candle products
  - Liaison for all Candle product support activities, coordination and assistance with implementation of all product updates and maintenance releases
  - Works with your staff to understand business needs and systems requirements
  - Possesses technical and systems management skills to enhance your staff’s knowledge and expertise
  - Other projects as defined in Statement of Work for MSM services
Customer Support Contact Information

Link to Worldwide Support Telephone and E-mail information

To contact Customer Support, the current list of telephone numbers and e-mail addresses can be found on the Candle Web site, www.candle.com/support/.

Select Support Contacts from the list on the left of the page.
Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>$$IMSDIR table</td>
<td>263</td>
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<tr>
<td>$OIDEXAN macro</td>
<td>129</td>
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<tr>
<td>$OIGROUP FINAL</td>
<td>121</td>
</tr>
<tr>
<td>$OIGROUP FINAL macro</td>
<td>128</td>
</tr>
<tr>
<td>$OIGROUP ID</td>
<td>121</td>
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<tr>
<td>$OIGROUP ID macro</td>
<td>124</td>
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<tr>
<td>$OIGROUP INITIAL</td>
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</tr>
<tr>
<td>$OIGROUP INITIAL macro</td>
<td>123</td>
</tr>
<tr>
<td>$OIGROUP macro</td>
<td>122–??, 122, ??–125</td>
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<tr>
<td>$UCHECK macro</td>
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<td>.ASF immediate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>.BEL immediate</td>
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</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>.LOGOFF immediate</td>
<td></td>
</tr>
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<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>.LOGON immediate</td>
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</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
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<td>.SET command</td>
<td></td>
</tr>
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</tr>
<tr>
<td>.SMT immediate</td>
<td></td>
</tr>
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<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>.TSF immediate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>.XLF immediate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>.ZER immediate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>/ASF INFO-line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>/BELL INFO-line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>/LOG OFF INFO-line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>/LOG ON INFO-line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
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</tr>
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<td></td>
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</tr>
<tr>
<td>.TSF immediate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>.XLF INFO-line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
<tr>
<td>.ZER INFO-Line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>see OPTN immediate</td>
</tr>
</tbody>
</table>

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