Compaq ACMS for OpenVMS
Knowledge Modules

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This document provides an introduction to the *Compaq ACMS for OpenVMS* knowledge modules, which display information useful for managing an ACMS system.

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Preface

Intended Audience

This document describes the ACMS knowledge modules, which display information about the performance of an ACMS system.

This document is intended for anyone responsible for managing an ACMS system. This document assumes that the reader is familiar with ACMS remote systems management features. This document also assumes that the reader is familiar with the PATROL® product. Refer to the PATROL documentation for information about using PATROL consoles, loading knowledge modules, and connecting to PATROL agents (also known as hosts).

Document Structure

This document is organized as follows:

Chapter 1	Provides an overview of ACMS knowledge modules.
Chapter 2	Lists the knowledge modules that are included in *Compaq ACMS for OpenVMS* briefly describes their functions, and describes how to install the knowledge modules.
Chapter 3	Describes the stages of knowledge module operation.
Chapter 4	Describes the conventions used to identify the icons, collectors, and parameters of the ACMS knowledge modules.
Chapter 5	Describes briefly how the ACMS knowledge modules operate.
Chapter 6	Contains tables that list all ACMS knowledge module commands.
Chapter 7	Provides guidelines for modifying ACMS knowledge modules.
Chapter 8	Lists common problems and typical solutions.

Knowledge Module Documentation

The following table lists the formats and locations in which the latest version of this document can be found:

Format	Location
PostScript	http://www.openvms.digital.com:8000/#acms
PDF	http://www.openvms.digital.com:8000/#acms
HTML	http://www.openvms.digital.com:8000/#acms

After you install ACMS on your PC, you can access the HTML and PDF versions of this document by clicking **ACMS PATROL KMs** on the Start menu.

ACMS Help

ACMS and its components provide extensive online help.

Note

Online Help for the ACMS knowledge modules is not available from
within PATROL. Please refer to this document, which is available
in PostScript, HTML, and PDF formats (see Knowledge Module
Documentation).

- DCL level help

  Enter HELP ACMS at the DCL prompt for complete help about the ACMS
  command and qualifiers, and for other elements of ACMS for which
  independent help systems do not exist. DCL level help also provides
  brief help messages for elements of ACMS that contain independent help
  systems (such as the ACMS utilities) and for related products used by ACMS
  (such as DECforms or Oracle CDD/Repository).

- ACMS utilities help

  Each of the following ACMS utilities has an online help system:

  > ACMS Debugger
  > ACMSGEN Utility
  > ACMS Queue Manager (ACMSQUEMGR)
  > Application Definition Utility (ADU)
  > Application Authorization Utility (AAU)
  > Device Definition Utility (DDU)
  > User Definition Utility (UDU)
  > Audit Trail Report Utility (ATR)
  > Software Event Log Utility Program (SWLUP)

  The two ways to get utility-specific help are:

  - Run the utility and type HELP at the utility prompt.

  - Use the DCL HELP command. At the "Topic?" prompt, type @ followed by
    the name of the utility. Use the ACMS prefix, even if the utility does not
    have an ACMS prefix (except for SWLUP). For example:

    ```
    Topic? @ACMSQUEMGR
    ```

    ```
    Topic? @ACMSADU
    ```

    However, do not use the ACMS prefix with SWLUP:

    ```
    Topic? @SWLUP
    ```

  Note that if you run the ACMS Debugger Utility and then type HELP, you
  must specify a file. If you ask for help from the DCL level with @, you do not
  need to specify a file.

- ACMSPARAM.COM and ACMEXCPAR.COM help

  Help for the command procedures that set parameters and quotas is a subset
  of the DCL level help. You have access to this help from the DCL prompt, or
  from within the command procedures.

- LSE help

  ACMS provides ACMS-specific help within the LSE templates that assist in the creation of applications, tasks, task groups, and menus. The ACMS-specific LSE help is a subset of the ADU help system. Within the LSE templates, this help is context-sensitive. Type HELP/IND (PF1-PF2) at any placeholder for which you want help.

- Error help

  ACMS and each of its utilities provide error message help. Use HELP ACMS ERRORS from the DCL prompt for ACMS error message help. Use HELP ERRORS from the individual utility prompts for error message help for that utility.

- Terminal user help

  At each menu within an ACMS application, ACMS provides help about terminal user commands, special key mappings, and general information about menus and how to select tasks from menus.

- Forms help

  For complete help for Compaq DECforms or Compaq TDMS, use the help systems for these products.

Related Documents

The following table lists the books in the *Compaq ACMS for OpenVMS* documentation set.

ACMS Information	Description
Compaq ACMS Version 4.3 for OpenVMS Release Notes†	Information about the latest release of the software
Compaq ACMS Version 4.3 for OpenVMS Installation Guide	Description of installation requirements, the installation procedure, and postinstallation tasks.
Compaq ACMS for OpenVMS Getting Started	Overview of ACMS software and documentation. Tutorial for developing a simple ACMS application. Description of the AVERTZ sample application.
Compaq ACMS for OpenVMS Concepts and Design Guidelines	Description of how to design an ACMS application.
Compaq ACMS for OpenVMS Writing Applications	Description of how to write task, task group, application, and menu definitions using the Application Definition Utility. Description of how to write and migrate ACMS applications on an OpenVMS Alpha system.
Compaq ACMS for OpenVMS Writing Server Procedures	Description of how to write programs to use with tasks and how to debug tasks and programs. Description of how ACMS works with the APPC/LU6.2 programming interface to communicate with IBM CICS applications. Description of how ACMS works with third-party database managers, with Oracle used as an example.
Compaq ACMS for OpenVMS Systems Interface Programming	Description of using Systems Interface (SI) Services to submit tasks to an ACMS system.
Compaq ACMS for OpenVMS ADU Reference Manual	Reference information about the ADU commands, phrases, and clauses.
Compaq ACMS for OpenVMS Quick Reference	List of ACMS syntax with brief descriptions.

†Available on line only.

ACMS Information	Description
Compaq ACMS for OpenVMS Managing Applications	Description of authorizing, running, and managing ACMS applications, and controlling the ACMS system.
Compaq ACMS for OpenVMS Remote Systems Management Guide	Description of the features of the Remote Manager for managing ACMS systems, how to use the features, and how to manage the Remote Manager.
Online help†	Online help about ACMS and its utilities.

†Available on line only.

For additional information on the compatibility of other software products with this version of ACMS, refer to the *Compaq ACMS for OpenVMS Software Product Description* (SPD 25.50.xx).

For additional information about the Open Systems Software Group (OSSG) products and services, access the following OpenVMS World Wide Web address:

```
http://www.compaq.com/openvms
```

Reader's Comments

Compaq welcomes your comments on this manual.

Print or edit the online form SYS$HELP:OPENVMSDOC_COMMENTS.TXT and send us your comments by:

Internet	**openvmsdoc@compaq.com**
Fax	603 884-0120, Attention: OSSG Documentation, ZKO3-4/U08
Mail	Compaq Computer Corporation OSSG Documentation Group, ZKO3-4/U08 110 Spit Brook Rd. Nashua, NH 03062-2698

How To Order Additional Documentation

Use the following World Wide Web address for information about how to order additional documentation:

```
http://www.compaq.com/openvms
```

To reach the OpenVMS documentation website, click the Documentation link.

If you need help deciding which documentation best meets your needs, call 1–800–ATCOMPA.

Conventions

The following conventions are used in this manual:

Ctrl/*x*	A sequence such as Ctrl/*x* indicates that you must press and hold the key labeled Ctrl while you press another key or a pointing device button.
PF1 *x*	A sequence such as PF1 *x* indicates that you must first press and release the key labeled PF1 and then press and release another key or a pointing device button.

Return	In examples, a key name enclosed in a box indicates that you press a key on the keyboard. (In text, a key name is not enclosed in a box.)
	In the HTML version of this document, this convention appears as brackets rather than a box.
...	A horizontal ellipsis in examples indicates one of the following possibilities:
	• Additional optional arguments in a statement have been omitted.
	• The preceding item or items can be repeated one or more times.
	• Additional parameters, values, or other information can be entered.
. . .	A vertical ellipsis indicates the omission of items from a code example or command format; the items are omitted because they are not important to the topic being discussed.
Monospace text	Monospace type indicates code examples and interactive screen displays.
	In the C programming language, monospace type in text identifies the following elements: keywords, the names of independently compiled external functions and files, syntax summaries, and references to variables or identifiers introduced in an example.
	In the HMTL version of this document, this text style may appear as italics.
-	A hyphen at the end of a command format description, command line, or code line indicates that the command or statement continues on the following line.
numbers	All numbers in text are assumed to be decimal unless otherwise noted. Nondecimal radixes—binary, octal, or hexadecimal—are explicitly indicated.
bold text	Bold text represents the introduction of a new term or the name of an argument, an attribute, or a reason.
	In the HMTL version of this document, this text style may appear as italics.
italic text	Italic text indicates important information, complete titles of manuals, or variables. Variables include information that varies in system output (Internal error *number*), in command lines (/PRODUCER=*name*), and in command parameters in text (where *dd* represents the predefined code for the device type).
UPPERCASE	Uppercase text indicates the name of a routine, the name of a file, the name of a file protection code, or the abbreviation for a system privilege.
	In command format descriptions, uppercase text is an optional keyword.
<u>UPPERCASE</u>	In command format descriptions, uppercase text that is underlined is required. You must include it in the statement if the clause is used.

lowercase	In command format descriptions, a lowercase word indicates a required element.
<lowercase>	In command format descriptions, lowercase text in angle brackets indicates a required clause or phrase.
( )	In command format descriptions, parentheses indicate that you must enclose the options in parentheses if you choose more than one.
[| |]	In command format descriptions, vertical bars within square brackets indicate that you can choose any combination of the enclosed options, but you can choose each option only once.
{ | | }	In command format descriptions, vertical bars within braces indicate that you must choose one of the options listed, but you can use each option only once.

References to Products

The ACMS documentation set to which this manual belongs often refers to certain products by abbreviated names:

Abbreviation	Product
ACMS	*Compaq ACMS for OpenVMS* Alpha, and *Compaq ACMS for OpenVMS* VAX
Ada	DEC Ada for OpenVMS Alpha Systems, and DEC Ada for OpenVMS VAX Systems
BASIC	DEC BASIC for OpenVMS, and VAX BASIC
C	DEC C for OpenVMS Alpha Systems, and DEC C for OpenVMS VAX Systems
CDD	Oracle CDD/Administrator, and Oracle CDD/Repository
COBOL	DEC COBOL for OpenVMS Alpha Systems, and VAX COBOL for OpenVMS VAX Systems
DATATRIEVE	DEC DATATRIEVE for OpenVMS Alpha, and DEC DATATRIEVE for OpenVMS VAX
DBMS	Oracle CODASYL DBMS
DECforms	Compaq DECforms
FORTRAN	DEC Fortran for OpenVMS Alpha Systems, and DEC Fortran for OpenVMS VAX Systems
OpenVMS	The Compaq OpenVMS Alpha operating system, and the Compaq OpenVMS VAX operating system
Pascal	DEC Pascal, and VAX Pascal
PL/I	PL/I for VAX VMS
PATROL	BMC® PATROL
Rdb	Oracle Rdb
SQL	The SQL interface to Oracle Rdb
TDMS	Compaq TDMS

1
Overview

This chapter provides an overview of the ACMS knowledge modules (KMs), which graphically display information about the performance of an ACMS system. KMs provide a simpler and faster way to perform ACMS functions that are also provided by ACMS Remote Manager commands.

The KMs run on PATROL® (developed by BMC® Software), which contains a generic GUI management console that uses a customized knowledge module to collect and display information about a particular application. *Compaq ACMS for OpenVMS* supplies sample KMs for monitoring ACMS processes. By using a PATROL console, ACMS customers can monitor and manage many aspects of the ACMS environment. With the PATROL Developer Console, customers can customize portions of the ACMS knowledge modules to suit their needs. For customers already familiar with PATROL, there is a short learning curve for using the ACMS knowledge modules.

PATROL consoles connect to one or more PATROL agents. The PATROL agent connects to one or more ACMS front-end or back-end nodes. Although PATROL runs on several platforms, the ACMS KMs have been designed for and tested on Windows NT® 4.0 systems only. The PATROL agent does not have to be running on the same Windows NT system as the PATROL console. However, for simplicity, the rest of this document assumes that the console and agent are on the same system and that the console is connected to only one agent.

1.1 Requirements

In order to monitor ACMS systems, the OpenVMS system must meet the following requirements:

- ACMS Version 4.3 or later must be installed.
- Compaq TCP/IP Services V4.2-0 for OpenVMS or later must be installed.
- The ACMS Remote Manager must be configured and running.
- The ACMS Remote Manager SNMP interface must be enabled.

The Windows NT system must have the following software installed:

- Windows NT 4.0
- PATROL Agent Version 3.3
- PATROL Console Version 3.3 or PATROL Developer Console Version 3.3

_____ **Note** _____
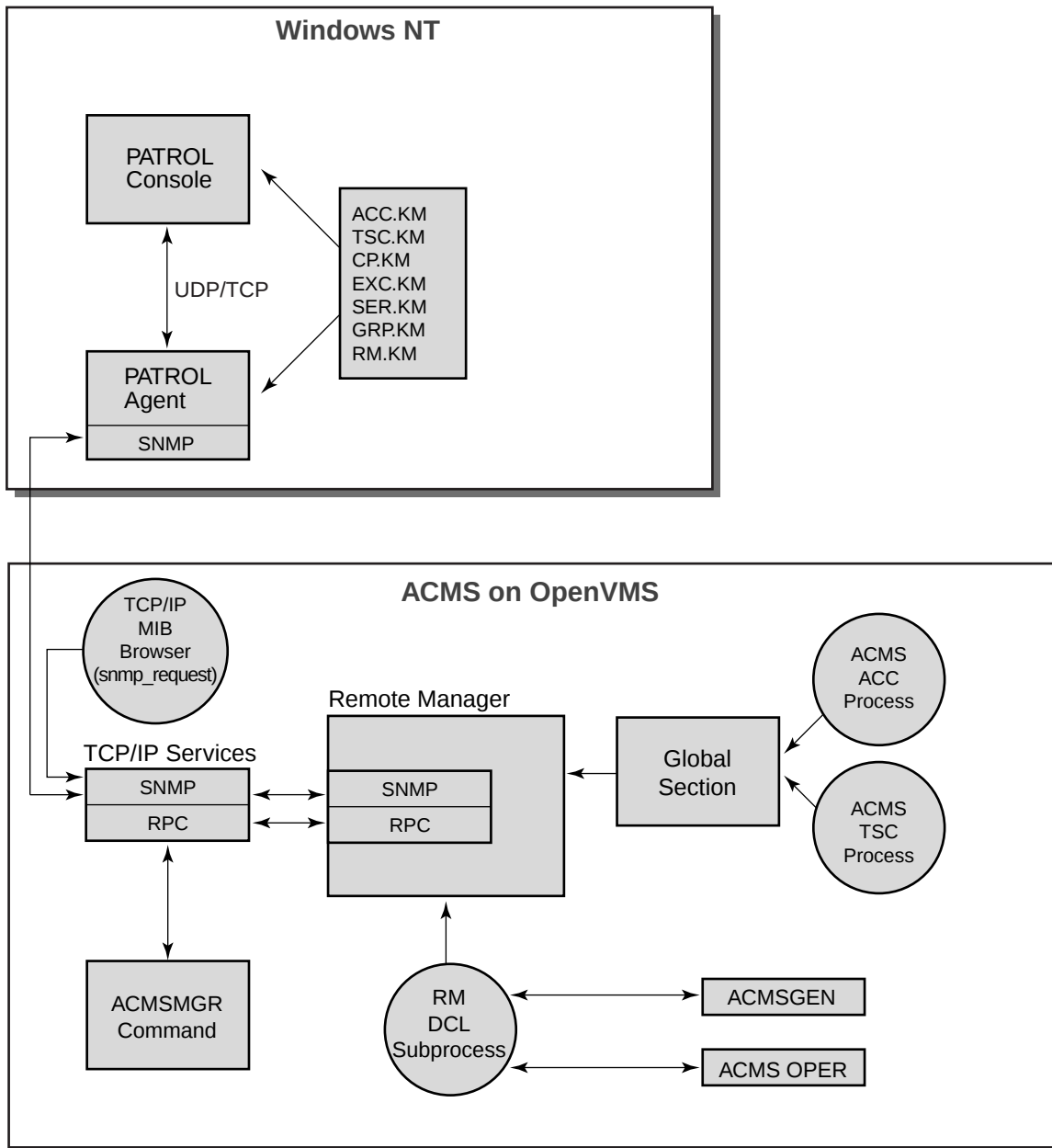
Because the ACMS KMs use the SNMP interface to connect to OpenVMS systems, PATROL does not need to be installed or running on OpenVMS.

_____

Overview
1.1 Requirements

Figure 1–1 shows the architecture of a system in which KMs on a Windows NT system are monitoring an ACMS system that is running on an OpenVMS system. Note that this document discusses only the KMs on the Windows NT system.

Figure 1–1   ACMS Remote Manager Architecture

VM-0450A-AI

See the *Compaq ACMS for OpenVMS Remote Systems Management Guide* for information about enabling the Remote Manager SNMP interface and for general information about SNMP.

2

Installing the ACMS Knowledge Modules

Eight knowledge modules (KMs) are available for monitoring ACMS systems. The KMs can be used with PATROL consoles or modified with the PATROL Developer Console. A PATROL Developer Console is required in order to tune the KMs for your environment. Once modified, the updated KMs can be loaded by any PATROL agent and accessed by standard PATROL consoles.

The following ACMS entity KMs are available:

ACMS-RM.KM	Monitors the Remote Manager process.
ACMS-ACC.KM	Monitors the ACC process.
ACMS-TSC.KM	Monitors the TSC process.
ACMS-CP.KM	Monitors the CP processes.
ACMS-QTI.KM	Monitors the QTI process.
ACMS-EXC.KM	Monitors the EXC processes.
ACMS-SER.KM	Monitors the server types for an EXC process.
ACMS-GRP.KM	Monitors the task groups for an EXC process.

You do not need to load all of the KMs. Rather, you can load the KMs for only the entities you want to monitor. Note the following dependencies:

ACMS-RM.KM:	Always required.
ACMS-ACC.KM:	Always required.
ACMS-TSC.KM:	Optional.
ACMS-CP.KM:	Optional. If used, then ACMS-TSC is required.
ACMS-QTI.KM:	Optional.
ACMS-EXC.KM:	Optional.
ACMS-SER.KM:	Optional. If used, then ACMS-EXC is required.
ACMS-GRP.KM:	Optional. If used, then ACMS-EXC is required.

To load all the knowledge modules, load the file ACMS.KML.

2.1 Installation

The installation procedure installs ACMS knowledge modules and documentation in any directory that you specify.

In order to use the knowledge modules with a PATROL console, you must copy the files from the installation directory to the PATROL agent directory (%PATROL_HOME%\lib\knowledge) or to the PATROL developer console Library Directory.

See the PATROL documentation for more information about loading and using knowledge modules.

2.2 Documentation

After you install ACMS on your PC, you can access the HTML and PDF versions of this document by clicking **ACMS PATROL KMs** on the Start menu.

3

Components of a Standard ACMS Knowledge Module

An ACMS knowledge module (KM) contains the following components:

Prediscovery code

Runs once when a KM is loaded or when a PATROL agent connection is established.

Discovery code

Runs at a customizable interval once the prediscovery code has completed.

Parameter collectors

Run at customizable intervals whenever an application instance is active.

_____ Note _____

In PATROL terminology, **application** refers to a KM and not to an ACMS application.

_____

Parameter definitions

Define each data item that can be viewed. Parameters are defined as PATROL types, including:

      gauges
      text
      booleans
      graphs

These parameters contain the data that is populated by the parameter collectors.

Info boxes

Display a group of parameters all at once in a table. Each ACMS KM implements an info box that displays selected fields for an particular entity.

Knowledge module commands

Allow a user to modify the PATROL environment specific to ACMS KMs or to control the ACMS system that is being monitored. Each ACMS KM implements commands specific to that particular entity.

_____ Note _____

You select info boxes and KM commands from the popup menu that is displayed when you right-click the entity icon.

_____

4

Naming Conventions

This chapter describes the naming conventions for the entity icons, parameter collectors, and individual parameters for ACMS knowledge modules (KM).

4.1 Entity Icons

ACMS-RM, ACMS-ACC, ACMS-TSC, ACMS-CP, and ACMS-QTI entity icon names have the following format:

<node_name> <KM_name><instance_number>

The instance number is included on ACMS-CP entities only and represents the same instance number that is found in the Command Process (CP) name. That is, if the process name is ACMS01CP002000, the instance number is 002. For example, if you are connected to an ACMS node named warp with two CPs running, the entity icons would be named as follows:

> warp RM
> warp ACC
> warp TSC
> warp CP001
> warp CP002
> warp QTI

ACMS-EXC, ACMS-SER, ACMS-GRP entity icons have the following format:

<node_name> <KM_name> <appl_name> <group_name | server_type>

If an ACMS node named warp is running an application named employee_info_appl that contains task groups group_a and group_b, and servers server_a and server_b, the following entity icon names are generated:
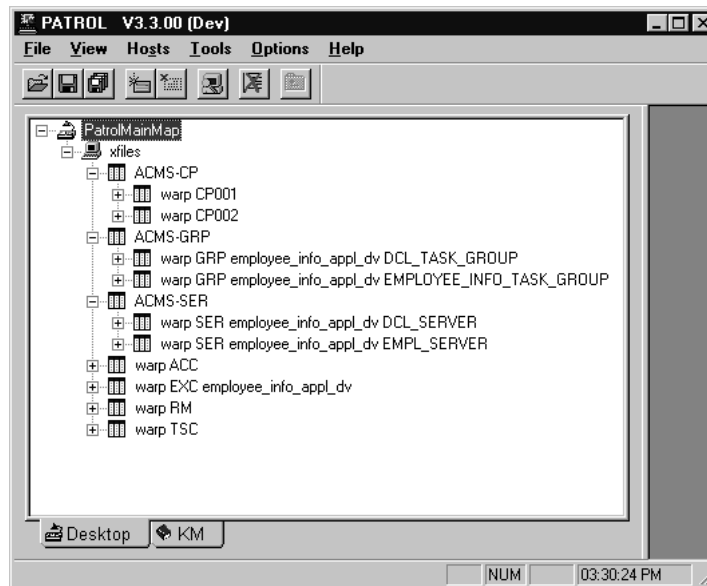
> warp EXC employee_info_appl
> warp GRP employee_info_appl GROUP_A
> warp GRP employee_info_appl GROUP_B
> warp SER employee_info_appl SERVER_A
> warp SER employee_info_appl SERVER_B

Figure 4–1 shows the hierarchy of node and entity icons on the Desktop tree of the PATROL Developer Console.
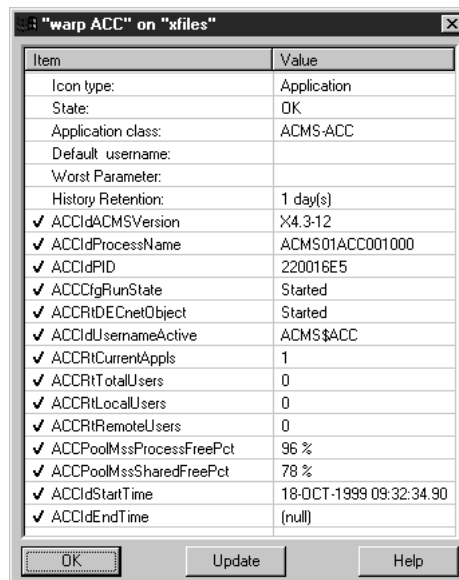
Figure 4–1 PATROL Icon Hierarchy

Clicking an icon displays the parameters for the entity represented by that icon. Right-clicking an icon displays a popup menu. Figure 4–2 shows the display that results from clicking **InfoBox...** on the popup menu after right-clicking warp ACC in Figure 4–1.

Figure 4–2 Info Box Display

4.2 Parameter Collectors

Parameter collector names have the following format:

<KM_name><class>Collector

The ACMS-RM contains collectors for the following classes:

Interface (IF)
Parameter (Par)

All other entities contain one or more of the following classes:

Configuration (Cfg)
Runtime (Rt)
Pool (Pool)

The following are examples of parameter collector names:

RMIfCollector: Remote Manager Interface Class Collector
ACCCfgCollector: ACC Configuration Class Collector
TSCRtCollector: TSC Runtime Class Collector

4.3 Parameters

Parameter names have the following format:

<KM_name><class><parameter_id>

The ACMS-RM contains the following classes:

Status (Sts)
Interface (IF)
Parameter (Par)

All other entities contain one or more of the classes:

Identification (Id)
Configuration (Cfg)
Runtime (Rt)
Pool (Pool)

The parameter_id is a unique and descriptive name that identifies the data item it represents. The parameter_id is similar to the names of the table parameters described in the *Compaq ACMS for OpenVMS Remote Systems Management Guide*. Examples of parameter names are:

ACCCfgRunState: Running State of the ACC (and ACMS system)
TSCRtCurrentUsers: Total Current CP Users handled by the TSC
QTIPoolMssProcessFree: QTI MSS Process Pool Free
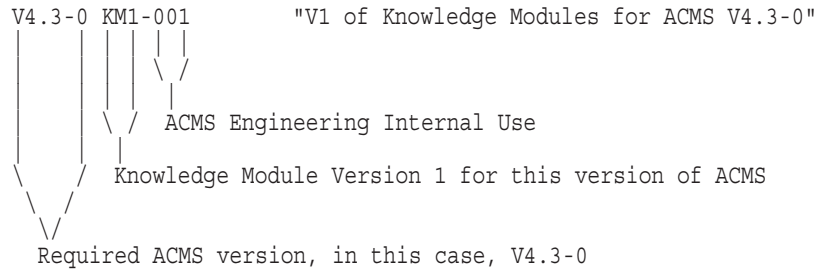
Each parameter has a title property associated with it. The title contains a short description of what the parameter represents. You can always view the title by checking the properties of a parameter in the KM display. For parameter types such as booleans, graphs, and gauges, the title is shown in the parameter output display. For text parameters, you can see the title only in the properties display for the parameter.

4.4 Version Control

Each ACMS KM file has a version number that specifies the ACMS version that it supports. The version number is defined as follows:

```
V4.3-0 KM1-001          "V1 of Knowledge Modules for ACMS V4.3-0"
 |   |  | | | | |
 |   |  | | | \ /
 |   |  | | |  |
 |   |  \ /  ACMS Engineering Internal Use
 |   |   |
 \   /   Knowledge Module Version 1 for this version of ACMS
  \ /
   \/
  Required ACMS version, in this case, V4.3-0
```

The version number is stored in a KM standard parameter with a name of <entity>_KM_Version. For example, the ACC version parameter is named ACC_ KM_Version. You can display the version number from the KM info box or by entering the Show KM Version Command.

5

How the ACMS Knowledge Modules Operate
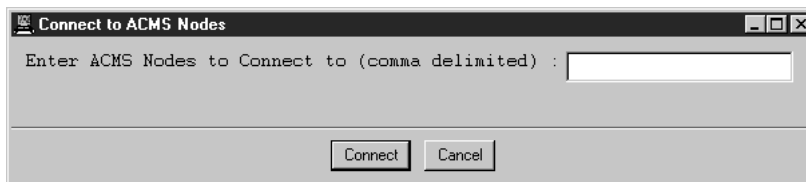
This chapter assumes that you have loaded all ACMS knowledge modules (KMs) and that each ACMS node being monitored has ACMS started and the Remote Manager started with the SNMP interface enabled.

5.1 Prediscovery and Discovery Cycles

Prediscovery code is discovery code that is forced to execute immediately. You can customize the discovery cycle intervals. For more information about modifying the discovery intervals, see Chapter 7.

When the ACMS-RM KM is loaded initially, or when you choose Update Connection from the PATROL agent icon on the Desktop, a dialog box prompts you to enter one or more ACMS nodes that you want to monitor from this console. There may be a short delay (determined by the ACMS-RM discovery interval) between the selection of the command and the display of the dialog box. Enter the node names, delimited by commas, and click Connect to continue. Figure 5–1 shows the Connect to ACMS Nodes screen.

Figure 5–1 Connect to ACMS Nodes Screen

An ACMS-RM icon is created for each node during the ACMS-RM discovery cycle. Shortly after the ACMS-RM discovery cycle, the ACMS-ACC discovery cycle creates an ACMS-ACC icon for each node. During the ACMS-QTI discovery cycle an ACMS-QTI icon is created for each node on which the QTI is started.

During the ACMS-TSC discovery cycle, an ACMS-TSC icon is created for each node on which the terminal subsystem is started. During the ACMS-CP discovery cycle, if an ACMS-TSC icon exists for a node, then an ACMS-CP icon is created for each CP that is running on that node.

During the ACMS-EXC discovery cycle, an ACMS-EXC icon is created for each application that is running on each node. By default, the ACMS-EXC entity is set to the OFFLINE state. Use the Enable EXC Display command or the Enable EXC, SER, GRP Displays commands to set the state to ONLINE and to start populating the EXC parameters.

During the ACMS-SER discovery cycle, for each ACMS-EXC icon that exists, is on line, and has EXCDisplayServerTypes enabled, an ACMS-SER icon is created for each server type that is defined in that application. The EXCDisplayServerTypes parameter can be viewed normally and is also displayed in the ACMS-EXC info box. The EXCDisplayServerTypes parameter can be enabled with the Enable EXC, SER, GRP Displays or the ACMS-EXC KM Server Types->Enable Display command.

During the ACMS-GRP discovery cycle, for each ACMS-EXC icon that exists, is on line, and has EXCDisplayTaskGroups enabled, an ACMS-GRP icon is created for each task group defined in that application. The EXCDisplayTaskGroups parameter can be viewed normally and is also displayed in the ACMS-EXC info box. The EXCDisplayTaskGroups parameter can be enabled with the Enable EXC, SER, GRP Displays or the ACMS-EXC KM Task Groups->Enable Display commands.

Note

The ACMS-EXC entities are all created and set to OFFLINE to prevent collection of unwanted data. If you want to monitor one or more applications, you can enable their display. Similarly, the icons for the ACMS-SER and ACMS-GRP entities are not created until their respective enable parameters have been set.

During the discovery cycle for each entity, the Identification (ID) parameters are updated. The one exception is for the ACMS-RM discovery cycle, in which the Status parameters are updated. In subsequent discovery cycles, if the running state of the entity on the ACMS system is not started (or cannot be determined), the entity's icon is set to OFFLINE. The entity is then unavailable as indicated by a grayed icon. This also means that if an entity has been stopped, and a new one with the same name has not been re-created, the icon remains even though the entity is unavailable.

5.2 Parameter Collector Cycles

The parameters defined in each KM represent the same fields described for each entity in the tables chapter of the *Compaq ACMS for OpenVMS Remote Systems Management Guide*. In addition, a few parameters are local to the PATROL session and are used internally by the KMs.

Each KM contains one or more parameter collectors that populate a class of parameters. The following are the parameter collectors for each KM:

ACMS-RM	RMIfCollector, RMParCollector
ACMS-ACC	ACCCfgCollector, ACCRtCollector, ACCPoolCollector
ACMS-TSC	TSCCfgCollector, TSCRtCollector, TSCPoolCollector
ACMS-CP	CPCfgCollector, CPRtCollector, CPPoolCollector
ACMS-QTI	QTICfgCollector, QTIRtCollector, QTIPoolCollector
ACMS-EXC	EXCCfgCollector, EXCRtCollector, EXCPoolCollector
ACMS-SER	SERCfgCollector, SERRtCollector
ACMS-GRP	GRPPoolCollector

All of the parameter collectors run at a customizable interval. Note that parameter collectors are scheduled only for entities that are on line. If an entity is off line (unavailable), the collectors cannot update parameter values. If an individual parameter is unavailable, it means that the parameter has never been populated and cannot be displayed. If the entity is off line and an individual parameter icon below it is still available, then the value can be displayed; however, it represents the value at the last time the collector ran and may not reflect the current value. Each parameter has an associated info box that indicates when the last update was made. For more information about modifying collector intervals, see Chapter 7.

To collect a class of parameters, the class must be enabled on the ACMS system. Each collector first checks whether its corresponding class is enabled; if it is, the collector gets the rest of the parameters for the class. For example, if the Runtime class has never been enabled for the ACC, then all the ACC run-time parameters will be unavailable. If the class was at one time enabled and then was disabled after the collector ran, parameters will be populated but no further updates will be made to them.

5.3 Icon Classes

Two types of icons are created for ACMS entities: entity instance icons and class icons. Some entities may have many instances on a single node, such as 127 CPs. In this case, a generic class icon named ACMS-CP is created, adding another level of hierarchy to the PATROL Desktop tree. The entity instance icons for each CP are created in the next lower level. This allows for a cleaner display that can be expanded as needed.

ACMS-CP, ACMS-SER, and ACMS-GRP entities use the class icon method. All other ACMS entities have entity instance icons. Figure 4–1 shows the class icons of ACMS-CP, ACMS-SER, and ACMS-GRP, and the entity instance icons of the other KMs. The user can easily modify this behavior. For more information, see Chapter 7.

6

ACMS Knowledge Module Commands

Each ACMS knowledge module (KM) provides at least one command. To access commands, right-click the entity icon and choose **KM Commands** from the popup menu. A few commands affect only the PATROL display or operation. For example, every entity has a DISCONNECT command that removes the entity from the PATROL display but has no effect on the process that is running on the ACMS system.

Most KM commands affect the ACMS system and are a subset of the ACMSMGR commands. For full descriptions of ACMSMGR commands, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide*.

Because some commands translate directly into ACMS OPER commands, they can take quite a while to complete. Using SNMP, it is impossible to guarantee that a command will complete prior to incurring an SNMP timeout. The default SNMP session timeout is 20 seconds. (See Chapter 7 for information about changing this value.) Because of the timeout restriction, commands may complete with a message indicating that the command was issued but that the result is unknown. You can usually determine the status of the command when the PATROL display is updated.

Some equivalent commands are available from more than one entity KM Command menu. This is because all KMs may not be loaded, or because instances of an entity have not yet been created. For instance, START QTI and STOP QTI commands are available from both the ACMS-ACC KM menu and from the ACMS-QTI KM menu after those KMs have been created.

Table 6–1 shows the commands available for each knowledge module.

Table 6–1   ACMS-RM Commands

Command	Subcommand or Parameter†	Function
Connect ACMS Remote Manager		Allows you to connect to another ACMS node after an initial connection has been completed.
Set Parameter		Equivalent to ACMSMGR SET PARAMETER.
	DCL Manager Audit Level	
	Login Credentials Lifetime	
	MSS Collection Interval	
	Manager Process Audit Level	
	Max RPC Return Records	

†For details about subcommands and parameters, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide*.

(continued on next page)

ACMS Knowledge Module Commands

Table 6–1 (Cont.)   ACMS-RM Commands

Command	Subcommand or Parameter†	Function
	Max Remote Manager Logins	
	Message Processor Audit Level	
	Process Monitor Audit Level	
	Process Monitor Interval	
	Proxy Credentials Lifetime	
	RPC Audit Level	
	RPC Priority	
	RPC Stacksize	
	SNMP Agent Timeout	
	SNMP Are You There	
	SNMP Audit Level	
	SNMP Priority	
	SNMP Select Timeout	
	SNMP Stacksize	
	Security Audit Level	
	Timer Audit Level	
	Timer Interval	
	Trace Message Wait Time	
	Trace Start Wait Time	
	Trap Audit Level	
	Workspace Collection Interval	
RPC		Equivalent to ACMSMGR SET INTERFACE
	Enable	
	Disable	
Stop Remote Manager		Equivalent to ACMSMGR STOP MANAGER. Once this command is executed, PATROL can no longer communicate with the ACMS system.
Disconnect Remote Manager		Removes the ACMS-RM entity from the display. This can be useful for refreshing the display. Note that ACMS-RM and ACMS-ACC entities always exist in pairs, so the ACMS-RM is re-created during its next discovery cycle if the ACMS-ACC entity exists.
Disconnect All for this Node		Removes all entities for the specified node name from the display. Some entities are removed immediately and others are removed during their next discovery cycle.
Show KM Version		Displays the version number of the Remote Manager knowledge module.

†For details about subcommands and parameters, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide*.

Table 6–2 ACMS-ACC Commands

Command	Subcommand or Parameter†	Function
Set Active Parameter		Equivalent to ACMSMGR SET ACC/ACTIVE.
	Username Default	
	MSS Net Retry Timer	
Set Stored Parameter		Equivalent to ACMSMGR SET ACC/STORED.
	ACC Username	
	ACC Priority	
	Node Name	
	Max Appl	
	Username Default	
	MSS Max Objects	
	MSS Max Buf	
	MSS Net Retry Timer	
	MSS Process Pool	
	MSS Poolsize (shared pool)	
	WS Poolsize (group and user)	
	WSC Poolsize (group and User)	
	TWS Poolsize (task instance)	
	TWSC Poolsize (task instance)	
Start System/NoTerminals		Equivalent to ACMSMGR START SYS/NOTERM.
Stop System/Cancel		Equivalent to ACMSMGR STOP SYS/CANCEL.
Start Terminals		Equivalent to ACMSMGR START TERMINALS.
Stop Terminals/Cancel		Equivalent to ACMSMGR STOP TERMINALS/CANCEL.
Start QTI		Equivalent to ACMSMGR START QTI.
Stop QTI/NoCancel		Equivalent to ACMSMGR START QTI. Note that the ACMSMGR START QTI command does not have a /[NO]CANCEL switch; however, the default action is NOCANCEL.
Start Application		Equivalent to ACMSMGR START EXC/APPL. This command prompts for the application name.
Stop Application/Cancel		Equivalent to ACMSMGR STOP EXC/CANCEL/APPL. This command prompts for the application name.
Enable System Auditing		Equivalent to ACMSMGR SET ACC/AUDIT_STATE=ENABLED.
Disable System Auditing		Equivalent to ACMSMGR SET ACC/AUDIT_STATE=DISABLED.

†For details about subcommands and parameters, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide.*

ACMS Knowledge Module Commands

Table 6–2 (Cont.)   ACMS-ACC Commands

Command	Subcommand or Parameter†	Function
Disconnect		Removes the ACMS-ACC entity from the display. This can be useful for refreshing the display. Note that ACMS-RM and ACMS-ACC entities always exist in pairs, so the ACMS-ACC is re-created during its next discovery cycle if the ACMS-RM entity exists.
Show KM Version		Displays the version number of the ACC knowledge module.

†For details about subcommands and parameters, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide.*

Table 6–3   ACMS-TSC Commands

Command	Subcommand or Parameter†	Function
Set Active Parameter		Equivalent to ACMSMGR SET TSC/ACTIVE.
	Perm CPs	
	Min CPIs	
	Max Logins	
	Max TTs/CP	
Set Stored Parameter		Equivalent to ACMSMGR SET TSC/STORED.
	TSC Username	
	TSC Priority	
	CP Username	
	CP Priority	
	CP Slots	
	Perm CPs	
	Min CPIs	
	Max Logins	
	Max TTs/CP	
Start Terminals		Equivalent to ACMSMGR START TERMINALS.
Stop Terminals/Cancel		Equivalent to ACMSMGR STOP TERMINALS/CANCEL.
Disconnect		Removes the ACMS-TSC entity from the display. If the ACMS-ACC entity exists and the TSC is started on the ACMS system, then the entity is re-created during the next ACMS-TSC discovery cycle.
Show KM Version		Displays the version number of the TSC knowledge module.

†For details about subcommands and parameters, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide.*

Table 6–4 ACMS-CP Commands

Command	Function
Disconnect	Removes the ACMS-CP*xxx* entity from the display. If the ACMS-ACC entity exists and the TSC is started on the ACMS system, then the entity re-created during the next ACMS-CP discovery cycle.
Show KM Version	Displays the version number of the CP knowledge module.

Table 6–5 ACMS-QTI Commands

Command	Subcommand or Parameter†	Function
Set Active Parameter		Equivalent to ACMSMGR SET QTI/ACTIVE.
	QTI Submitter Timeout	
	QTI Retry Timer	
	QTI Polling Timer	
Set Stored Parameter		Equivalent to ACMSMGR SET QTI/STORED.
	QTI Username	
	QTI Priority	
	QTI Submitter Timeout	
	QTI Retry Timer	
	QTI Polling Timer	
Start QTI		Equivalent to ACMSMGR START QTI.
Stop QTI/NoCancel		Equivalent to ACMSMGR START QTI. Note that the ACMSMGR START QTI command does not have a /[NO]CANCEL switch; however, the default action is NOCANCEL.
Disconnect		Remove the ACMS-QTI entity from the display. If the ACMS-ACC entity exists and the QTI is started on the ACMS system then the entity will be re-created during the next ACMS-QTI discovery cycle.
Show KM Version		Displays the version number of the QTI knowledge module.

†For details about subcommands and parameters, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide*.

Table 6–6 ACMS-EXC Commands

Command	Subcommand or Parameter†	Function
Enable EXC Display		Enables the display for this EXC but not for its associated SER and GRP entities. The default at entity creation is for the displays to be disabled.
Enable EXC, SER, GRP Displays		Enables the display for this EXC and its associated SER and GRP entities. The default at entity creation is for the displays to be disabled.

†For details about subcommands and parameters, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide*.

Table 6–6 (Cont.)   ACMS-EXC Commands

Command	Subcommand or Parameter†	Function
Disable EXC, SER, GRP Displays		Disables the display for this EXC and its associated SER and GRP entities. This is the default state for all entities.
Modify Appl		Equivalent to ACMSMGR SET EXC/APPL for the application name in the current entity.
	Enable Audit State	
	Disable Audit State	
	Max Tasks	
	Max Servers	
	Server Monitor Interval	
	Transaction Timeout	
Server Types		Enables or disables the display for server types associated with the current EXC. The default is to disable the display.
	Enable Display	
	Disable Display	
Task Groups		Enables or disables the display for task groups associated with the current EXC. The default is to disable the display.
	Enable Display	
	Disable Display	
Stop Application/Cancel		Equivalent to ACMSMGR STOP EXC/CANCEL/APPL for the application name of the current entity.
Disconnect		Removes the ACMS-EXC entity from the display. If the ACMS-ACC entity exists and the application is started on the ACMS system, then the entity is re-created during the next ACMS-EXC discovery cycle.
Show KM Version		Displays the version number of the EXC knowledge module.

†For details about subcommands and parameters, see the *Compaq ACMS for OpenVMS Remote Systems Management Guide*.

Table 6–7   ACMS-SER Commands

Command	Function
Replace Servers	Equivalent to ACMSMGR REPLACE SERVER/APPL for the application name of the current entity.
Max Instances	Equivalent to ACMSMGR SET SERVER/MAX_INSTANCE for the server name of the current entity.
Min Instances	Equivalent to ACMSMGR SET SERVER/MIN_INSTANCE for the server name of the current entity.
Creation Delay	Equivalent to ACMSMGR SET SERVER/CREATION_DELAY for the server name of the current entity.

Table 6–7 (Cont.)   ACMS-SER Commands

Command	Function
Creation Interval	Equivalent to ACMSMGR SET SERVER/CREATION_INTERVAL for the server name of the current entity.
Deletion Delay	Equivalent to ACMSMGR SET SERVER/DELETION_DELAY for the server name of the current entity.
Deletion Interval	Equivalent to ACMSMGR SET SERVER/DELETION_INTERVAL for the server name of the current entity.
Enable Process Dumps	Equivalent to ACMSMGR SET SERVER/SP_DUMP_FLAG=ENABLED for the server name of the current entity.
Disable Process Dumps	Equivalent to ACMSMGR SET SERVER/SP_DUMP_FLAG=DISABLED for the server name of the current entity.
Disconnect	Removes the ACMS-SER entity from the display. If the parent ACMS-SER exists, is started, is on line, and has the EXCDisplayServerTypes parameter enabled, then the entity is re-created during the next ACMS-SER discovery cycle.
Show KM Version	Displays the version number of the SER knowledge module.

Table 6–8   ACMS-GRP Commands

Command	Function
Disconnect	Removes the ACMS-GRP entity from the display. If the parent ACMS-EXC exists, is started, is on line, and has the EXCDisplayTaskGroups parameter enabled, the entity is re-created during the next ACMS-GRP discovery cycle.
Show KM Version	Displays the version number of the GRP knowledge module.

7

Customizing ACMS Knowledge Modules

The ACMS knowledge modules (KMs) allow you to customize the amount of data being collected and the frequency of the data collection. In this way, you can control the data being displayed and the amount of network usage to suit your needs. In general, you must use the PATROL Developer Console environment to customize the ACMS KMs.

The most important consideration is which ACMS entities you need to monitor. You must load the ACMS-ACC KM and ACMS-RM KM for each ACMS node you want to monitor; however, all the other KMs are optional. The dependencies are described in Chapter 2. Pay particular attention to the ACMS-CP KM; if you have a large number of CP slots, the KM may collect more data than you require. In this case, consider modifying the discovery interval and the parameter collector intervals.

7.1 Customizing Discovery Intervals

Each ACMS KM has a default discovery interval of 30 seconds. This allows entities to appear quickly at startup and to reflect process changes on the ACMS system quickly. However, this can generate a lot of network traffic at initial startup, depending on how many systems you are monitoring simultaneously. You can modify each KM to operate at a unique interval.
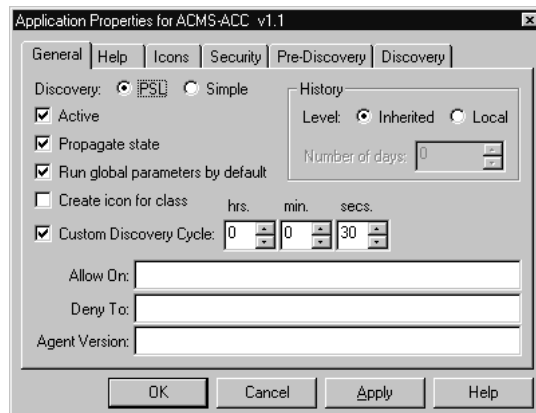
To modify the discovery interval, right-click the KM icon in the PATROL KM tree on the PATROL Developer Console and choose **Properties...** from the popup menu. The Application Properties dialog box is displayed. The Custom Discovery Cycle option on the General tab is already checked and set to 30 seconds. Set the value to the desired interval and click OK.

Figure 7–1 shows how to use the Application Properties dialog box to customize the discovery interval for ACMS-ACC.

Figure 7–1   Setting the Custom Discovery Interval

7.2 Customizing Parameter Collector Intervals

Each parameter collector interval has a default of 30 seconds. You can customize
this interval. Figure 7–2 shows the PATROL Developer Console with the
EXCRtCollector parameter collector highlighted.

**Figure 7–2   Selecting the Parameter Collector from the PATROL Developer
Console**

To change the discovery interval, right-click the parameter collector name and
choose **Properties...** from the popup menu. The Application Properties dialog
box is displayed.
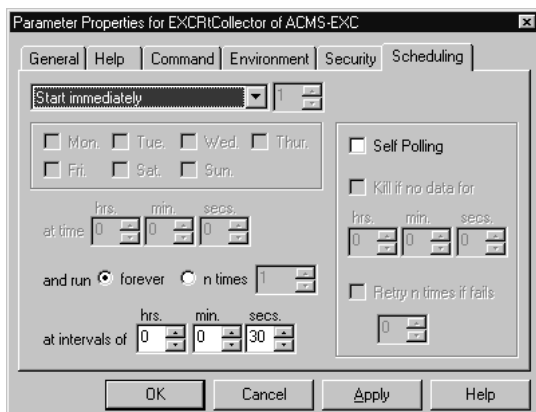
Figure 7–3 shows the Parameter Properties dialog box for the EXCRtCollector
parameter collector of the ACMS-EXC KM.

On the Scheduling tab, the "at intervals of" is set to 30 seconds. Set the value to the desired interval and click OK. See Section 5.2 for the names of all of the individual parameter collectors.

Figure 7–3 Parameter Properties Dialog Box

Modifying the Interval for All Parameter Collectors

You can modify the interval for all parameter collectors at once. The ACMS-RM KM has a standard parameter named RMCustomerInterval. By default, this parameter is set to zero, which causes all the collectors to use the interval set for them using the dialog box shown in Figure 7–1. If the RMCustomerInterval parameter is a nonzero value, then all of the ACMS KM parameter collectors will use that value for their next interval.

To set the RMCustomerInterval parameter to a new value, right-click the RMCustomerInterval parameter shown in Figure 7–4 and select **Properties...** from the popup menu. Then click the Command tab (Figure 7–5) to display the Editing - Command screen (Figure 7–6).

Figure 7–4 Selecting RMCustomerInterval from the PATROL Developer Console
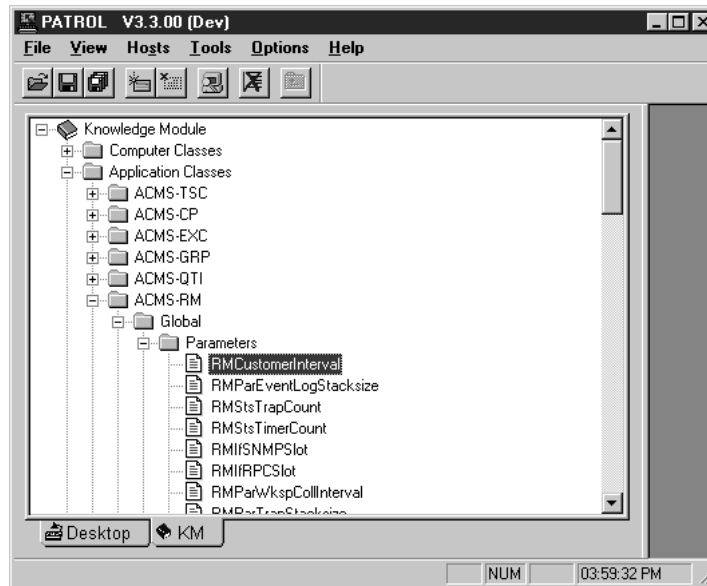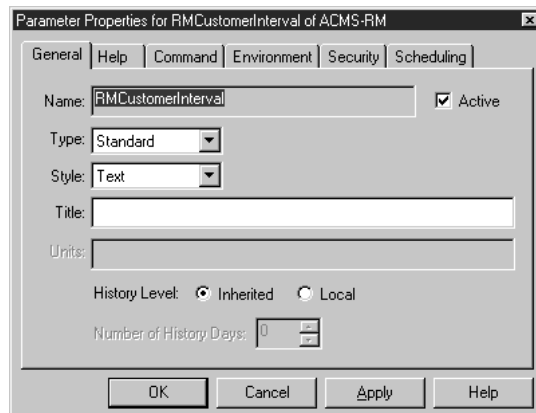
Figure 7–5 RMCustomerInterval Parameter Properties Dialog Box

Figure 7–6 shows the RMCustomerInterval parameter code.

Figure 7–6 Parameter Code

The Editing - Command screen includes the following line of executable code:

```
set("value", 0);
```

In the code, change the 0 to the number of seconds you want for the new interval, and click OK. Each parameter collector will now override its own value with the value of RMCustomerInterval.

7.3 Customizing the SNMP Connection

Two SNMP sessions are opened for each ACMS node that is being monitored from a PATROL console: one for ACMS-RM and one for ACMS-ACC. The ACMS-ACC session is shared by all other ACMS KMs. The KMs are designed to connect to the SNMP public community and to specify a timeout value of 20 seconds.

If you choose to use an SNMP private community, or if you want to modify the timeout value you must modify the snmp_open call in the code. For the ACMS-RM session you must modify the following line in both the prediscovery code and the discovery code:

```
 sessid = snmp_open(RMnode, "", "public", 20000);
```

For the ACMS-ACC session, you must to modify the following line in the discovery code:

```
 sessid = snmp_open(ACCnode, "", "public", 20000);
```

Because the timeout value is specified in milliseconds, a value of 20000 results in a 20-second timeout.

7.4 Customizing Icon Classes
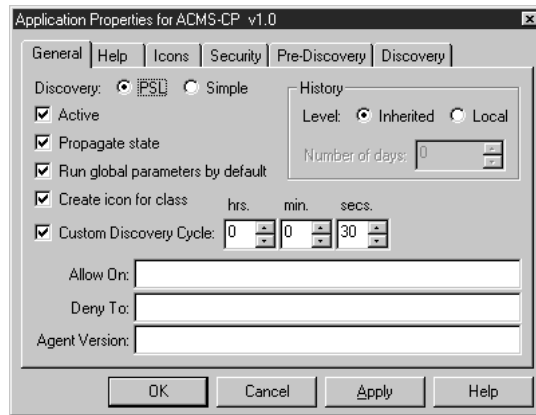
Section 5.3 describes the types of entity icons that are created for ACMS entities. You can customize the way icons are displayed for any of the ACMS KMs. To do so, right-click the entity icon on the PATROL Developer Console KM tree and select **Properties...** from the popup menu. Then click the General tab. If the "Create icon for class" option is checked (see Figure 7–7), then all instances of that entity type are located under an icon with the KM name in the PATROL Desktop tree. If the option is unchecked, then all entity icon instances are displayed at the top level of the hierarchy. This feature affects only the way entities are displayed; it does not affect the way parameters are collected.

Figure 7–7 shows how to use the Application Properties dialog box to customize icon classes.

Figure 7–7   Customizing Icon Classes

## 7.5 Gauge Ranges and Alarms

Gauge-type parameters have alarm range properties associated with them. Some gauges, such as ACCPoolMSSObjects, are set to default ranges and are enabled to automatically scale. You may want to customize the minimum and maximum values of the range to better display the range that is commonly in use on your systems.

You can modify the alarm ranges from the PATROL Developer Console. On the PATROL KM tree (Figure 7–8), right-click the KM name, and then choose **Properties...** from the popup menu. Click the Alarm Ranges tab. Enter the new values in the Range Limits group box and click OK. Figure 7–9 shows the Alarm Ranges tab of the Parameter Properties dialog box for the ACCPoolMssObject of the ACMS-ACC dialog box.

Figure 7–8 Selecting a KM on the PATROL KM Tree
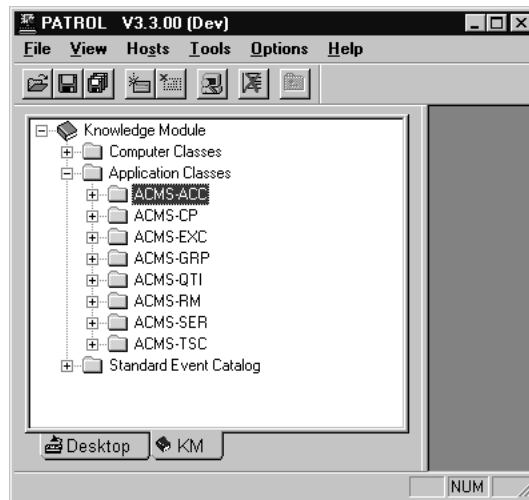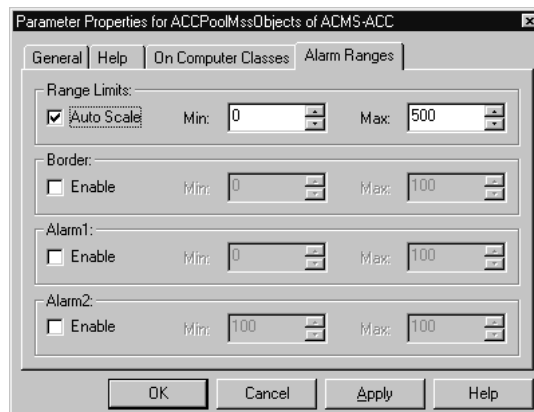
Figure 7–9 Changing Alarm Ranges in the Parameter Properties Dialog Box

You can also choose to be notified when particular values are at critical levels
by setting border and alarm values. See the PATROL online help for more
information about using alarms.

8
Troubleshooting ACMS Knowledge Modules

This chapter describes common knowledge module (KM) errors and their solutions.

Problem: After connecting to an ACMS node, the ACMS-RM and ACMS-ACC entities are created but both icons are unavailable (OFFLINE).

Explanation: The PATROL console cannot make an SNMP connection to the Remote Manager on the ACMS node.

Solution: To complete the connection the ACMS system must have a TCP/IP stack running with SNMP enabled and a public community defined. Also, the Remote Manager must be started on the ACMS node and its SNMP interface must be enabled with a running state of STARTED. Use the ACMSMGR SHOW INTERFACE command to verify the state.

Problem: After connecting to an ACMS node, the ACMS-RM and ACMS-ACC entities are created but the ACMS-ACC icon is unavailable (OFFLINE).

Explanation: The ACMS-ACC cannot find an ACC process running on the ACMS node.

Solution: Verify that ACMS is started and that the system is in the STARTED state. Use the ACMSMGR SHOW ACC command to ensure that the Remote Manager is able to collect data from the ACC process.

Problem: KM commands do not take effect on the ACMS system.

Explanation: KM commands that affect the ACMS system require SNMP sets to be enabled on the community.

Solution: Use the UCX SHOW CONFIG SNMP command to verify that the flags field has sets enabled.

It is also possible that the command is incurring an SNMP timeout. For instructions on increasing the timeout value, see Section 7.3.

Problem: Entity icons randomly become unavailable (OFFLINE) even though the processes on the ACMS system are running without interruption.

Explanation: The KM either cannot find an open SNMP session or cannot verify that the entity running state is STARTED. This usually indicates that an SNMP timeout occurred.

Solution: For instructions on increasing the timeout value, see Section 7.3.

Troubleshooting ACMS Knowledge Modules

This problem may also indicate that the ACMS node or network cannot handle all of the SNMP traffic. You may need to decrease the number of entities being monitored or to modify the discovery and parameter collector intervals. For more information, see Chapter 7.