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User's Guide

Meta-View Performance Manager

Meta-View Agent and Host for Solaris

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Meta-View Performance Manager for Solaris version D.05d

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TABLE OF CONTENTS

Chapter 1	Meta-View Agent and Host for Solaris	1
	Introduction	1
	Package Contents	3
	Installing Meta-View Agent and Host for UNIX.	3
	Installing Meta-View Clients	3
	Product Support	4
	Product Documentation	6
	User's Guide	6
	Online Help System	6
Chapter 2	Installation and Setup Instructions	7
	Installation and Setup for Solaris	7
	Startup	10
	Automatic Startup and Shutdown	10
Chapter 3	Technical Overview	13
	Meta-View Performance Manager Architecture	13
	OSF/1 Directory Hierarchy	14
	Directories	15
	Subdirectories	15
	Files	17
	Security	19
Chapter 4	Environment Variables and Workload Groups	21
	Environment Variables	21
	Setting the Environment Variables	21
	Setting the Localization Environment Variables	23
	Workload Groups	23
	Identifying and Characterizing Workload Groups	24
	Creating a Workload Group Definition File	24

- Chapter 5 MVHOST 27**
 - The Real-time Performance Data Utility 27
 - Data Screens 27
 - Screen Conventions 28

- Chapter 6 MVHOST Main Commands 29**
 - The Main Commands Screen 29
 - Main Commands 30
 - Navigation Keys 30
 - Detail Screen Quick Keys 30
 - Action Keys 31
 - Configuration Keys 32
 - Other Keys 32
 - Screen-Specific Commands 33
 - Screen-Specific Navigation Commands 34
 - Screen-Specific Configuration Commands 34
 - Screen-Specific Help Commands 34
 - Screen-Specific Action Commands 35

- Chapter 7 MVHOST Screen Selection Menu 37**
 - Screen Selection Menu Screen 37
 - Screen Selection Commands 37

- Chapter 8 MVHOST Main Option Menu 41**
 - MVHOST Main Option Menu Screen 41
 - Main Option Commands 42
 - Detail Display Options 46
 - Detail display options Submenu Screen 46
 - Detail display option Commands 47
 - Global Display Options 48
 - Global display options Submenu Screen 48
 - Global display option Commands 48
 - Process Display Options 54
 - Process display options Submenu Screen 54
 - Process display option Commands 55
 - Pulse Points display options 60
 - Pulse Points display options Submenu Screen 60

Pulse Points display option Commands 60

User Display Options 63

 User display options Submenu Screen 63

 User display option Commands 64

Terminal Display Options 66

 Terminal display options Submenu Screen 66

 Terminal display option Commands 67

Chapter 9 MVHost-specific Configuration Files 69

MVHOST advice File 69

 MVHOST advice File Configuration 69

 SNMP Traps 73

MVHOST holidays File 74

 Configuration Rules 75

MVHOST ppoints File 76

 MVHOST ppoints File Configuration 77

MVHOST kip File 80

 Configuration Rules 80

Chapter 10 MVHOST Global Summary 83

The Global Summary Screen 83

 Graphical Format 84

Global Summary Screen Display Items 86

 MVHOST Banner 86

 Key Indicators of Performance (KIP) Line 87

 GLOBAL 88

 PROCESS SUMMARY 90

 WORKLOAD SUMMARY 95

 CPU UTILIZATION 96

 CPU MISC 98

 MEM/VM 99

 MISC 100

 DISK 101

 SYSTEM PERFORMANCE ADVICE 103

Chapter 11 MVHOST CPU Summary 107

The CPU Summary Screen 107

- CPU Summary Display Items 108
 - Graphical Format 108
 - Tabular Format 109
- Chapter 12 MVHOST Memory Summary 113**
 - The Memory Summary Screen 113
 - Memory Summary Screen Display Items 114
- Chapter 13 MVHOST Disk I/O Summary 117**
 - The Disk I/O Summary Screen 117
 - Disk I/O Summary Screen Display Items 118
 - Graphical Format 118
 - Tabular Format 119
- Chapter 14 MVHOST Disk Controller I/O Summary 121**
 - The Disk Controller I/O Summary Screen 121
 - Disk Controller I/O Summary Screen Display Items 122
- Chapter 15 MVHOST File System I/O Summary 123**
 - The File System I/O Summary Screen 123
 - File System I/O Summary Screen Display Items 124
- Chapter 16 MVHOST File System Space Summary 125**
 - The File System Space Summary Screen 125
 - File System Space Summary Screen Display Items 126
- Chapter 17 MVHOST Network Summary 127**
 - The Network Summary Screen 127
 - Network Summary Screen Display Items 128
- Chapter 18 MVHOST NFS Summary 131**
 - The NFS Summary Screen 131
 - Additional Command Keys for the NFS Summary Screen 132
 - NFS Summary Screen Display Items 132
 - NFS Server Summary Screen Display Items 137

Chapter 19	MVHOST Swap Summary	141
	The Swap Summary Screen	141
	Swap Summary Screen Display Items	142
Chapter 20	MVHOST User Summary	145
	The User Summary Screen	145
	User Summary Screen Display Items	146
Chapter 21	MVHOST Terminal Summary	147
	The Terminal Summary Screen	147
	Terminal Summary Screen Display Items	148
Chapter 22	MVHOST System Table Summary	149
	The System Table Summary Screen	149
	System Table Summary Screen Display Items	150
	Graphical Format	150
	Tabular Format	151
Chapter 23	MVHOST System Configuration Summary	157
	The System Configuration Screen	157
	System Configuration Screen Display Items	158
Chapter 24	MVHOST Pulse Points Summary	163
	The Pulse Points Screen	163
	Pulse Points Screen Display Items	164
	Pulse Points Screen Column Headings	164
Chapter 25	MVHOST Workload Definitions	165
	The Workload Definitions Screen	165
	Workload Definitions Screen Display Items	166
Chapter 26	MVHOST Process Detail	167
	The Process Detail Screen	167
	Process Detail Screen Display Items	168
Chapter 27	MVHOST Process File Usage	173
	The Process File Usage Screen	173

Process File Usage Screen Display Items 174

Chapter 28 MVHOST Process Memory Regions 177

The Process Memory Regions Screen 177

Process Memory Regions Screen Display Items 178

Chapter 29 MVHOST Workload Detail 181

The Workload Detail Screen 181

Workload Detail Display Items 182

Chapter 30 MVHOST Oracle Main 187

The Oracle Main Screen 187

 Adding an Oracle Instance 188

 Deleting an Oracle Instance 188

Oracle Main Display Items 188

Chapter 31 MVHOST Oracle Detail Latches 191

The Oracle Detail Latches Screen 191

Oracle Detail Latches Display Items 192

Chapter 32 MVHOST Oracle Detail Database Activity 195

The Oracle Detail Database Activity Screen 195

Oracle Detail Database Activity Display Items 196

Chapter 33 MVHOST Oracle Detail Memory and Network 199

The Oracle Detail Memory and Network Screen 199

Oracle Detail Memory and Network Display Items 200

Chapter 34 MVHOST Oracle Detail Rollback Segments 203

The Oracle Detail Rollback Segments Screen 203

Oracle Detail Rollback Segments Display Items 204

Chapter 35 MVHOST Oracle Detail Cache 205

The Oracle Detail Cache Screen 205

Oracle Detail Cache Display Items 206

Chapter 36	MVHOST Oracle Detail Events	209
	The Oracle Detail Events Screen	209
	Oracle Detail Events Display Items	210
Chapter 37	MVHOST Oracle Detail DBWR	213
	The Oracle Detail DBWR Screen	213
	Oracle Detail DBWR Display Items	214
Chapter 38	MVHOST Oracle Detail Datafiles	217
	The Oracle Detail Datafiles Screen	217
	Oracle Detail Datafiles Display Items	218
Chapter 39	MVLOGD	219
	The Historical Performance Data Logging Utility	219
	SL Files	219
	Starting the Logging Process	219
	Command Line Switches	220
	Viewing Default Configuration Parameters	220
	Setting Advanced Configuration Parameters	221
	Configuration Variables	221
Chapter 40	MVLOGX	223
	The Historical Performance Data Extraction Utility	223
	Getting Started	223
	Command Line Switches	224
	Browsing MVLOGX Reports	225
	Preparing Logged Data for Export	225
	Exporting Data to Performance Gallery Gold	226
	Exporting Data to Third-party Applications	226
	Creating Custom Reports	227
	MVLOGX Report Configuration Rules	228
	MVLOGX Report File Example	231
Chapter 41	MVLOGX Menus and Options	235
	The MVLOGX Main Commands Screen	235
	Main Commands	235
	Additional Commands	237

	The MVLOGX Report Format Selection Menu	238
	The MVLOGX Main Option Menu	242
	Main Options.	242
Chapter 42	MVLOGX Reports	255
	MVLOGX CPU Summary Chart	255
	MVLOGX Global Summary.	256
	MVLOGX Memory Summary Chart	257
	MVLOGX Memory Summary	258
	MVLOGX Disk Summary	259
	MVLOGX Disk Summary Chart	260
	MVLOGX Network Summary	261
	MVLOGX Net If (Network Interface) Summary.	262
	MVLOGX NFS Client Summary	263
	MVLOGX Workload Summary	264
	MVLOGX Workload Detail	265
	MVLOGX Response Time Chart.	266
	MVLOGX FS Space Summary	267
	MVLOGX DNLC Summary	268
	MVLOGX System Configuration	269
	MVLOGX ORACLE Detail Cache	270
	MVLOGX ORACLE Database Activity	271
	MVLOGX ORACLE DBWR Activity	272
	MVLOGX ORACLE Detail Events.	273
	MVLOGX ORACLE LRU Latches.	274
	MVLOGX ORACLE Memory and Network	275
	MVLOGX ORACLE Detail Datafiles	276
	MVLOGX ORACLE Detail Rollback Segments.	277
Appendix A	Meta-View for Solaris Pulse Points	279
Appendix B	Wait States	283
	Overview.	283
	Wait State Descriptions.	283

Appendix C File Changes in Meta-View **285**
 Wait State Codes 292

Index of Data Items **295**

Index **303**

LIST OF FIGURES

Chapter 1	Meta-View Agent and Host for Solaris	1
Chapter 2	Installation and Setup Instructions	7
Chapter 3	Technical Overview	13
	Meta-View Performance Manager for Solaris relationships between key processes and files. . .	13
Chapter 4	Environment Variables and Workload Groups	21
Chapter 5	MVHOST	27
	MVHOST Global Summary screen.	27
Chapter 6	MVHOST Main Commands	29
	MVHOST Main Commands screen	29
	MVHOST Additional Commands screen (example)	33
Chapter 7	MVHOST Screen Selection Menu	37
	MVHOST Screen Selection Menu	37
Chapter 8	MVHOST Main Option Menu	41
	MVHOST Main Option Menu	41
	MVHOST banner: current interval (I: 01:00)	42
	MVHOST banner: current interval after update (I: 00:39)	43
	MVHOST Disk I/O Summary screen (tabular display) with cumulative stats	44
	MVHOST Key Indicators of Performance (KIP) line	44
	MVHOST Company Name example (Lund Performance Solutions)	45
	MVHOST Detail display options submenu screen	47
	MVHOST Global display options submenu screen.	48
	MVHOST Global Summary screen: SYSTEM PERFORMANCE ADVICE messages	49
	MVHOST Global Summary screen: CPU statistics	50
	MVHOST Global Summary screen: MEM/VM statistics	50
	MVHOST Global Summary screen: MISC statistics	51
	MVHOST Global Summary screen: DISK statistics	51

	MVHOST Global Summary screen: PROCESS SUMMARY	52
	MVHOST Global Summary screen: WORKLOAD SUMMARY	53
	MVHOST Process display options submenu screen	54
	MVHOST Global Summary screen: wait states headings & extended process lines	55
	MVHOST PROCESS SUMMARY column headings (alternative)	56
	MVHOST Pulse Points display options submenu screen	60
	MVHOST Pulse Points screen	61
	MVHOST User display options submenu screen	63
	MVHOST Terminal display options submenu screen	67
Chapter 9	MVHost-specific Configuration Files	69
	MVHOST advice configuration file (example)	69
	MVHOST holidays configuration file (example)	75
	MVHOST ppoints configuration file (example)	76
	MVHOST Pulse Points screen (example)	77
	kip configuration file (example)	80
Chapter 10	MVHOST Global Summary	83
	MVHOST Global Summary screen (graphical format)	84
	MVHOST Global Summary screen (tabular format)	85
	MVHOST Global Summary screen: MVHOST banner	86
	MVHOST Global Summary screen: Key Indicators of Performance (KIP) line	87
	MVHOST Global Summary screen: GLOBAL (left column)	89
	MVHOST Global Summary screen: GLOBAL (right column)	90
	MVHOST Global Summary screen: PROCESS SUMMARY	91
	MVHOST Global Summary screen: WORKLOAD SUMMARY	95
	MVHOST Global Summary screen: CPU UTILIZATION	96
	MVHOST Global Summary screen: CPU MISC	98
	Global Summary screen: MEM/VM	99
	MVHOST Global Summary screen: MISC	100
	MVHOST Global Summary screen: SYSTEM PERFORMANCE ADVICE	103
Chapter 11	MVHOST CPU Summary	107
	MVHOST CPU Summary screen (graphical format)	108
	MVHOST CPU Summary screen (tabular format)	110

Chapter 12	MVHOST Memory Summary	113
	MVHOST Memory Summary screen	113
Chapter 13	MVHOST Disk I/O Summary	117
	MVHOST Disk I/O Summary screen (graphical format)	118
	MVHOST Disk I/O Summary screen (tabular format)	119
Chapter 14	MVHOST Disk Controller I/O Summary	121
	MVHOST Disk Controller I/O Summary screen	121
Chapter 15	MVHOST File System I/O Summary	123
	MVHOST File System I/O Summary screen	123
Chapter 16	MVHOST File System Space Summary	125
	MVHOST File System Space Summary screen	125
Chapter 17	MVHOST Network Summary	127
	MVHOST Network Summary screen	127
Chapter 18	MVHOST NFS Summary	131
	MVHOST NFS CLIENT Summary screen	131
	MVHOST NFS Summary screen: NFS SERVER SUMMARY	137
Chapter 19	MVHOST Swap Summary	141
	MVHOST Swap Summary screen	141
Chapter 20	MVHOST User Summary	145
	MVHOST User Summary screen	145
Chapter 21	MVHOST Terminal Summary	147
	MVHOST Terminal Summary screen	147
Chapter 22	MVHOST System Table Summary	149
	MVHOST System Table Summary screen (graphical format)	150
	MVHOST System Table Summary screen (tabular format)	151
Chapter 23	MVHOST System Configuration Summary	157
	MVHOST System Configuration screen	157

Chapter 24	MVHOST Pulse Points Summary	163
	MVHOST Pulse Points screen	163
Chapter 25	MVHOST Workload Definitions	165
	MVHOST Workload Definitions screen	165
Chapter 26	MVHOST Process Detail	167
	MVHOST Process Detail screen	167
Chapter 27	MVHOST Process File Usage	173
	MVHOST Process File Usage screen	173
Chapter 28	MVHOST Process Memory Regions	177
	MVHOST Process Memory Regions screen	177
Chapter 29	MVHOST Workload Detail	181
	MVHOST Workload Detail screen	181
Chapter 30	MVHOST Oracle Main	187
	MVHOST Oracle Main screen	187
Chapter 31	MVHOST Oracle Detail Latches	191
	MVHOST Oracle Detail Latches screen	191
Chapter 32	MVHOST Oracle Detail Database Activity	195
	MVHOST Oracle Detail Database Activity screen	195
Chapter 33	MVHOST Oracle Detail Memory and Network	199
	MVHOST Oracle Detail Memory and Network screen	199
Chapter 34	MVHOST Oracle Detail Rollback Segments	203
	MVHOST Oracle Detail Rollback Segments screen	204
Chapter 35	MVHOST Oracle Detail Cache	205
	MVHOST Oracle Detail Cache screen	205
Chapter 36	MVHOST Oracle Detail Events	209
	MVHOST Oracle Detail Events screen	209

Chapter 37	MVHOST Oracle Detail DBWR	213
	MVHOST Oracle Detail DBWR screen	213
Chapter 38	MVHOST Oracle Detail Datafiles	217
	MVHOST Oracle Detail Datafiles screen	217
Chapter 39	MVLOGD	219
Chapter 40	MVLOGX	223
	MVLOGX initial screen	224
Chapter 41	MVLOGX Menus and Options	235
	MVLOGX MAIN COMMANDS screen	235
	MVLOGX Additional Commands screen (example)	238
	MVLOGX Report Format Selection Menu screen	239
	MVLOGX MAIN OPTION MENU	242
	MVLOGX Data break configuration submenu	245
	MVLOGX Log information exclusions submenu	246
	MVLOGX Export file configuration submenu	248
	MVLOGX Performance Gallery configuration submenu	250
	MVLOGX Export Data configuration submenu	251
	MVLOGX Export Thresholds configuration submenu	253
Chapter 42	MVLOGX Reports	255
	MVLOGX CPU Summary Chart report	255
	MVLOGX Global Summary report	256
	MVLOGX Memory Summary Chart report	257
	MVLOGX Memory Summary report	258
	MVLOGX Disk Summary report	259
	MVLOGX Disk Summary Chart report	260
	MVLOGX Network Summary report	261
	MVLOGX Net If Summary report	262
	MVLOGX NFS Client Summary report	263
	MVLOGX Workload Summary report	264
	MVLOGX Workload Detail report	265
	MVLOGX Response Time Chart report	266

META-VIEW PERFORMANCE MANAGER FOR SOLARIS

User's Guide

	MVLOGX FS Space Summary report	267
	MVLOGX DNLC Summary report	268
	MVLOGX System Configuration report	269
	MVLOGX ORACLE Detail Cache report	270
	MVLOGX ORACLE Database Activity report	271
	MVLOGX ORACLE DBWR Activity report	272
	MVLOGX ORACLE Detail Events report	273
	MVLOGX ORACLE LRU Latches report	274
	MVLOGX ORACLE Memory and Network report	275
	MVLOGX ORACLE Detail Datafiles report	276
	MVLOGX ORACLE Detail Rollback Segments report	277
Appendix A	Meta-View for Solaris Pulse Points	279
Appendix B	Wait States	283
Appendix C	File Changes in Meta-View	285

META-VIEW AGENT AND HOST FOR SOLARIS

Introduction

Meta-View is the successor to Lund's SOS product on all platforms on which SOS is supported: MPE/iX, HP-UX and Solaris. Meta-View also supports two new host platforms: Linux and Windows. Meta-View retains the powerful collectors and host-based capabilities of SOS, and adds two powerful Java clients. Meta-View Web runs on Windows and UNIX systems, and Meta-View Alert runs on Windows systems. Lund's popular graphic reporting tool, Performance Gallery Gold, is available as an add-on to the Meta-View suite.

Meta-View for Solaris comprises the following components:

1 **Meta-View Agent for Solaris**

Meta-View Agent is the software that resides on a host to collect data, store it into SL files, and serve it on demand to Meta-View clients. In SOS it is the SOSLOGD daemon that collects data and stores it into SL files. In Meta-View Agent for HP-UX, that function is performed by the MVLOGD daemon, and there is a new `mvdatad` daemon to read the data and serve it to clients.

2 **Meta-View Host for Solaris**

Meta-View Host is the interactive, terminal-based program that runs on a host and displays data for that host in real time. It is typically used for performance troubleshooting. In SOS, the program is named `sos` and located in `/opt/lps/bin` by default. In Meta-View for Solaris it is `mvhost`, located in `/opt/lund/bin` by default.

3 **Meta-View Web**

Meta-View Web is the graphical client program that runs on a Java virtual machine. This is currently available for Windows PC and UNIX clients.

4 **Meta-View Alert**

This is an alerting program that runs on a Java virtual machine on a Windows system.

Meta-View Agent and Host for Solaris

The components of Meta-View that reside on the server are Meta-View Agent and Host for HP-UX. Together these components are the former SOS Performance Advisor product with the following significant enhancements and changes:

- 1 The `mvdatad` daemon has been added to serve up data over the network for the new clients.
- 2 File names have been changed to remove the "SOS" name. For instance, the online SOS program is now called `mvhost`.
- 3 Programs have also been modified to look for files by their new names.
- 4 The comments and commands in the configuration files have been modified appropriately to accommodate these changes.
- 5 As of version D.04c the default installation locations have changed from `*/lps/*` to `*/lund/*` and the environment variables used to indicate custom installation locations have changed from `LPS_??_PATH` to `LUND_??_PATH`.

The following three directories are created as the previous default locations for Meta-View (and SOS) installation:

```
/opt/lps/
/etc/opt/lps/
/var/opt/lps/
```

These are changing to:

```
/opt/lund/
/etc/opt/lund/
/var/opt/lund/
```

For each directory:

- If you installed Meta-View in a default directory in the past, accept the default when prompted during this install. The old directory will be renamed to the new default and then the upgrade will be installed. You will need to change your system startup script and any other scripts that refer to the Meta-View software accordingly.
- If you installed Meta-View into a custom directory in the past, re-use the same custom location. The `LPS_??_PATH` variables are now `LUND_??_PATH`. You will need to change the corresponding environment variable(s) accordingly.

You will be prompted for the locations during the installation and instructed regarding exporting of the correct environment variables.

Examples of file name changes are: `sos` has become `mvhost`; `soslogx` has become `mvlogx`. Appendix C contains a table showing all of the name changes. See "File Changes in Meta-View" on page 285.

We hope that the inconvenience you may experience from these changes will be far outweighed by the exceptional value you will realize from the added features in Meta-View. We have tried to minimize the inconvenience by carefully documenting the changes and by providing scripts to automate the transition as much as possible.

Package Contents

The package you received from Lund contains all that you need to install the Agent, Host, Web, and Alert components of Meta-View Performance Manager for UNIX. The following items are included in this package:

- 1 Printed documentation:**
 - Cover Letter
 - Release Notes for Meta-View Agent and Host for HP-UX
 - Release Notes for Meta-View Agent and Host for Linux
 - Release Notes for Meta-View Agent and Host for Solaris
 - Release Notes for Meta-View Web
 - Supplemental Notes for Meta-View Performance Manager for UNIX
 - Installation and Setup Instructions for Meta-View Agent and Host for UNIX
 - Installation and Setup Instructions for Meta-View Web
 - Installation and Setup Instructions for Meta-View Alert as contained in the User's Guide
- 2 The Meta-View Performance Manager Product CD** containing the Meta-View Web and Meta-View Alert component and all Meta-View Performance Manager documentation, including a user's guide for each supported platform.

Installing Meta-View Agent and Host for UNIX

The Meta-View Performance Manager for UNIX Installation and Setup Instructions provide detailed information to guide you in installing Meta-View Agent and Host for UNIX onto your HP 9000, Linux, or Sun system.

To install your product(s) you will need the product CD and the installation instructions. If you are updating to Meta-View from SOS Performance Advisor, please read the Supplemental Notes.

For more information about installation and setup instructions for HP-UX, see "Installation and Setup for Solaris" on page 7.

Installing Meta-View Clients

The Installation and Setup Instructions for the Meta-View clients provide detailed information to guide you in installing Meta-View. You can install the clients on as many workstations as you require.

No license code is required to run the Meta-View clients.

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When you call, please be at your computer, have the product documentation in hand, and be prepared to provide the following information:

- Product name and version number.
- Type of computer hardware you are using.
- Software version number of your operating system(s).
- Exact wording of any messages that appear on your screen.
- What you were doing when the problem occurred.
- How you tried to solve the problem.

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Product Documentation

User's Guide

This document accompanies the Meta-View Performance Manager for Solaris software as a guide for the new user and as a quick reference for experienced users. This guide assumes that you have a working knowledge of the Solaris operating environment.

Online Help System

In the online Help system, you will find explanations of the many features of Meta-View Performance Manager, as well as tips to guide you through the program's basic functionality.

INSTALLATION AND SETUP INSTRUCTIONS

Installation and Setup for Solaris

The following instructions will guide you through the installation and setup of Meta-View Agent and Host on your Solaris system.

Extracting the Setup Program from the Product CD (Solaris)

To extract the Meta-View Agent and Host for Solaris setup program:

- 1 Login as the root user. If you do not have the ability to login as the root user, please ask your system administrator for assistance.
- 2 Insert the Meta-View Performance Manager Product CD into the CD-ROM drive.
- 3 Mount the product CD under the `/cdrom` directory. This can be done using the following steps:

- a Check to see if the `/cdrom` directory exists:

```
1s /cdrom
```

If it does not exist, the CD must be mounted manually.

- b If the `/cdrom` directory exists, check to see if the `/cdrom/Meta-View` directory exists:

```
1s /cdrom/Meta-View
```

If it does not exist, check the default `cdrom0` directory:

```
1s /cdrom/cdrom0
```

If neither of these exist, the CD must be mounted manually.

To mount the CD manually, use the following steps:

- a Check to see if the `/cdrom` directory exists:

```
1s /cdrom
```

- b If the `/cdrom` directory does not exist, create it:

```
mkdir /cdrom
```

- c Mount the CD using the device file for the CD-ROM drive:

```
mount -F hsfs -o ro <device file name> /cdrom
```

The device file is usually `/dev/dsk/c0t2d0s2`.

For more information about the mount command, please refer to your system documentation.

- 4 Change the current working directory to `/tmp`:

```
cd /tmp
```

- 5 Make a new directory under `/tmp` named "lund":

```
mkdir lund
```

- 6 Change the current working directory to `/tmp/lund`:

```
cd lund
```

- 7 Use the tar command to extract the setup program from the product CD:

(If you manually mounted the CD, replace `/cdrom/Meta-View` with the correct mount path in this and following instruction steps.)

```
tar xf /cdrom/Meta-view/mvAgent_Solaris/mvAgent-Solaris-?.???tar  
./lpsetup
```

- 8 Congratulations! Now the setup and installation script is ready to start.

Running the Setup and Installation Script (Solaris)

The installation script is contained in the `lpsetup` file. The script is interactive and will ask questions to set up the group file and provide the locations to install the application files, configuration files, and dynamic files.

The following instructions are a continuation of the previous section, "Extracting the Setup Program from the Product CD (Solaris)." The current user login should be the root user, the current working directory should be `/tmp/lund`, the `lpsetup` file should be present in the directory, and the Meta-View Performance Manager Product CD should still be mounted in the CD-ROM drive.

To set up Meta-View Agent and Host for Solaris using the `lpsetup` installation script:

- 1 Stop all Lund Performance Solutions programs that are running on the system. If any of these programs are left running during the setup process, the installation may be incomplete.

- 2 Run the `lpsetup` script:

```
./lpsetup /cdrom/Meta-view/mvAgent_Solaris/mvAgent-Solaris-  
?.???tar
```

- 3 If this is the first Lund product to be installed on the system, the script will ask for the fully qualified path of the group file. The default location is `/etc/group`.

After that, the script will create a new group called "lund" and ask what number to set the group ID to. The default will be the highest existing group ID plus one. If Meta-View will be installed on multiple hosts, you may want to override the default and use the same group ID across all installations.

If the host system is part of a network information service (NIS), you should exit the `lpssetup` script, create the "lund" group in NIS, then restart the installation process from step 2, above.

- 4 The script will now prompt for the fully qualified path to install the host-independent application files. These include the program binaries and contributed files.

If the default (`/opt/lund`) is not used, the `LUND_OPT_PATH` environment variable must be set to run the application.

- 5 The next prompt will be for the fully qualified path to install the host-specific configuration files.

If the default (`/etc/opt/lund`) is not used, the `LUND_ETC_PATH` environment variable must be set so that the application can find the configuration files.

- 6 The final file location prompt will be to set the fully qualified path to install the host-specific dynamic files. These include temporary files as well as log files.

If the default (`/var/opt/lund`) is not used, the `LUND_VAR_PATH` environment variable must be set to allow the application to run correctly and log data.

- 7 The Meta-View installer will prompt during install time whether you would like the `rc` init file installed on your system. Type a 'y' or 'Y' followed by Return to choose this option. To install the script manually, simply follow the steps as outlined for the appropriate operating environment, below.

- 8 The command prompt will be returned and now the installation files may be removed.

Use the `rm` command with the `-r` parameter (`rm -r`) to remove the temporary `lund` folder and its contents. Add the `-f` parameter (`rm -rf`) to disable the confirmation prompts for removing individual files. For example:

- a Change out of the directory that will be deleted:

```
cd
```

- b Remove the directory:

```
rm -rf /tmp/lund
```

- 9 When the script has finished, you can unmount the Meta-View Performance Manager Product CD by using the `umount` command. If the CD was auto mounted, use:

```
eject cdrom
```

If the CD was mounted manually, use:

```
umount /cdrom
```

- 10 Congratulations! Meta-View Agent and Host for Solaris are now installed and ready to run! Please continue with the Startup section on the next page.



NOTE In cases where Meta-View Performance Manager or SOS Performance Advisor was installed previously on the system and that version is compatible with the current version, the previous contents of `/etc/opt/lps` will be moved to `/etc/opt/lps/old`.

Startup

To run the Meta-View Performance Manager for Solaris program, add `LUND_OPT_PATH/bin` (`/opt/lund/bin` by default) to your `PATH`.

For `ksh`, `sh`, and similar shells, use:

```
$ PATH=$PATH:/opt/lund/bin
```

```
$ export PATH
```

for `csh` and similar shells use:

```
% setenv path $path:/opt/lund/bin
```

You can now run the "mvlogd" collector daemon, the "mvdad" data daemon, the interactive "mvhost" program, and the "mvlogx" historical performance data extraction utility from the command line. For example:

```
$ mvlogd -c
```

```
$ mvdad
```

```
$ mvhost
```

```
$ mvlogx
```



NOTE Before viewing system performance data with the Meta-View Web or Alert clients, both the `mvlogd` and `mvdad` daemons must be started on the host system.



NOTE We recommend running the "mvlogd" daemon with the `-c` (continuous) flag which causes the daemon to restart itself every night just after 12:00 A.M. creating a new log file.

Automatic Startup and Shutdown

Lund Performance Solutions Meta-View agent software for Unix now features automatic starting and stopping via a "rc" initialization script. This script can be installed with the rest of the Meta-

View software during the initial installation or at any later time by copying the script from the `$LPS_OPT_PATH/contrib/bin` (normally `/opt/lund/contrib/bin`) directory.

If the install option is selected, the rc init script, `$LPS_OPT_PATH/contrib/bin/lund.rc.solaris` (normally `/opt/lund/contrib/bin/lund.rc.solaris`) will be copied to the `/etc/init.d` directory as `/etc/init.d/lund.rc`.

Permissions will be set to 744 (read-write-execute for owner, read-only group/all) on the `lund.rc` file.

Ownership will be assigned to owner "root" and group "sys".

The installer will then make symlinks from the `/etc/init.d/lund.rc` file to `/etc/rc3.d/S99lund.rc`, `/etc/rc1.d/K01lund.rc`, `/etc/rc0.d/K01lund.rc`, and `/etc/rcS.d/K01lund.rc` so that the Meta-View software will be the last to start on the system and the first to be shut down.

Consult your system manual for changing the startup and shutdown order of your system software.

TECHNICAL OVERVIEW

Meta-View Performance Manager Architecture

Meta-View Performance Manager is comprised of several programs and files. The relationships between the most significant programs and files are illustrated in Figure 3.1 and described on page 14.

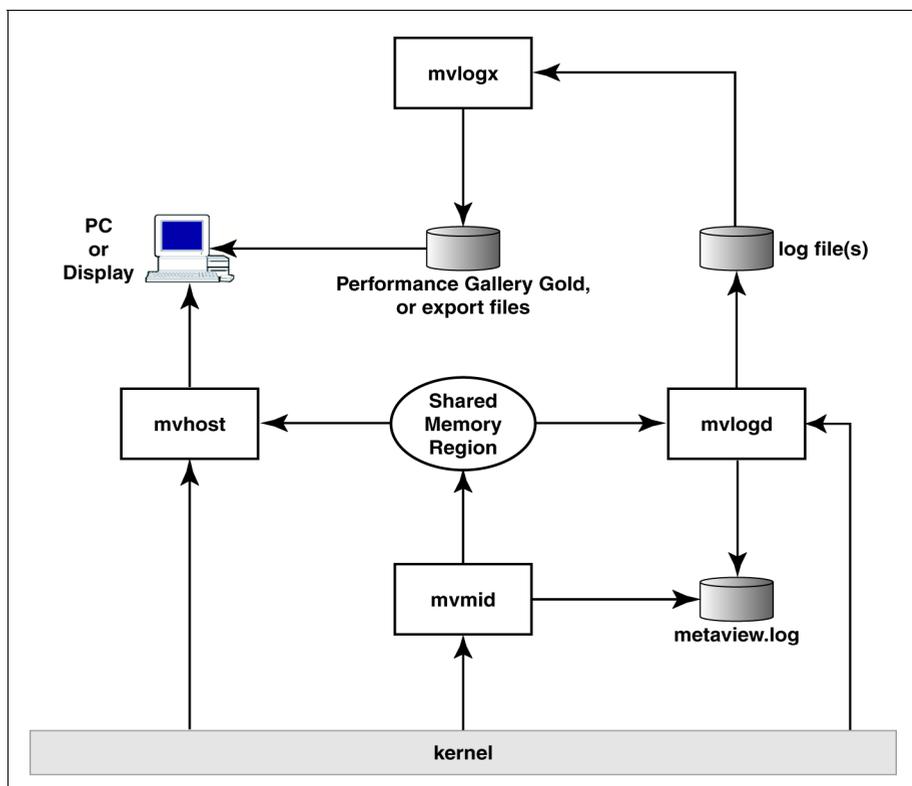


Figure 3.1 *Meta-View Performance Manager for Solaris relationships between key processes and files*

Meta-View Performance Manager utilizes the following executable programs: MVHOST, MVLOGD, MVMID, and MVLOGX.

MVHOST displays system performance data online in real time "snapshots" on a character-mode terminal.

MVLOGD is a daemon process. Its function is to periodically write performance data to log files for later historical analysis. Since it's a daemon process, it also stores informational, warning, and error messages in the metaview.log file.

The MVMID process is responsible for retrieving much of the performance data from the kernel and providing it to other processes. The user does not have to execute MVMID, it will be executed automatically by any process that requires it. MVMID is a daemon process, so it executes in the background and does not interact with the user. Any informational, warning, and error messages from MVMID will be stored in the metaview.log file.

The MVMID process uses a shared memory segment to deliver the performance data to other processes, which include MVHOST and MVLOGD. In addition to the data provided by MVMID, these processes retrieve some data from the kernel directly.

The MVLOGX process reads the log files created by MVLOGD. MVLOGX displays this information to the user, and also allows the user to convert that information to other file formats:

- *.txt, ASCII text, to export data to spreadsheet applications, such as MS Excel.
- *.pfg, to export data to Performance Gallery (B.0x and higher), a trend analysis and graphical reporting applications by Lund Performance Solutions.

For information about Performance Gallery Gold, please refer to the Performance Gallery Gold User's Guide or contact your Lund account manager (see "Lund Performance Solutions Sales Team" on page 4).



IMPORTANT MVMID, MVHOST, and MVLOGD should not run longer than 24 continuous hours. MVHOST (with MVMID) is an interactive program and it should be shut down daily. MVLOGD can be configured to run repeatedly using the -c command line switch (see "-c Command Line Switch" on page 232) or cron.

OSF/1 Directory Hierarchy

Meta-View Performance Manager version D.05 and later uses the OSF/1 directory hierarchy.



IMPORTANT A directory other than the default directory can be assigned during the installation process. Please be aware that every user of this software package will need the same directory in their path.

Directories



IMPORTANT The LUND directory statements that include the default directory and the corresponding environment variable must be set if the default location is not used.

For example:

```
LUND_OPT_PATH=/opt/lund
```

Where:

- LUND_OPT_PATH is the environment variable
- /opt/lund is the default directory location

In the past, all Lund Performance Solutions files (lps files) associated with the Meta-View Performance Manager application could be found in one directory (LPSPATH=/opt/lps). In accordance with the OSF/1 standard, Lund Performance Solutions files are now located in three different directories, which are described in the next table.

Table 3.1 *Meta-View Performance Manager directory locations*

Directory	Description
LUND_ETC_PATH=/etc/opt/lund	Contains host-specific configuration files that can be modified by the user.
LUND_OPT_PATH=/opt/lund	Contains host-specific, third-party files that do not generally change.
LUND_VAR_PATH=/var/opt/lund	Contains host-specific files that are dynamic in nature, including temporary files and files that grow in size.

Subdirectories

The subdirectories of each directory are listed and described in the next table (it is assumed the default directory is used).

Table 3.2 *Meta-View Performance Manager subdirectory listings*

Directory	Subdirectory	Description
/etc/opt/lund/	cfg	Contains configuration files used by the Lund Performance Solutions products. Initially, these will be the same files found under /opt/lund/newcfg, except they are actually used by the product and can be modified by the user.
	rpt	Contains MVLOGX report files.
/opt/lund/	bin	Contains the lund binary files.
	contrib	Contains contributed files (helpful files that are not necessary to run Lund Performance Solutions products).
	lib	Contains the lund library files.
	newcfg	Contains the configuration files as distributed by Lund Performance Solutions (before user customization). These files are meant to be used as a reference point. They are not actually used by the product. See /etc/opt/lund for more information.
/var/opt/lund/	log	Contains log files.
	tmp	Contains temporary files.

Files

The following file listings are grouped by directory location.

Table 3.3 *Meta-View Performance Manager file listings*

Location	File	Description
/etc/opt/lund/cfg/	advice	Contains configurations for the SYSTEM PERFORMANCE ADVICE messages in the Global Summary screen.
	holidays	Contains the configurations for holidays (predetermined days to be excluded from data collections).
	ppoints	Contains configurations for pulse points.
	kip	Contains configurations for the KIP (key indicators of performance) line.
	orainst.cfg	Contains configurations for Oracle instances.
	workdefs	Contains workload definitions.
/etc/opt/lund/rpt/	reprtdef	Contains compiled MVLOGX reports.
	*.rpt	Contains MVLOGX reports.
/opt/lund/bin/	kiclean	An executable program that turns off kernel measurements and cleans up the interprocess communication (IPC) structures created by MVMID.
	lpscheck	A program that checks the license status.
	lpsextnd	An executable program used to extend the demonstration license expiration date.
	lpskill	An executable program that kills any Meta-View daemon.
	mvmid	A daemon that periodically reads process information from pstat and saves it.

Location	File	Description
/opt/lund/bin/	lpstrap	A script to send SNMP traps from the advice module to an event browser.
	mvhost	The character-based real-time performance tool.
	mvlogd	A daemon that creates historical performance files.
	mvlogx	A character-based tool to view the historical files and extract them for other formats (such as Performance Gallery Gold data files (*.pfg)).
	mvcrom	The MVLOGX report compiler.
/opt/lund/lib/	itemlist	A list of all data items logged in historical files and usable by kip, advice, and ppoints.
	alert_config	The configuration file for Meta-View alert data and alert messages.
	fcastitems	A list of data items that can be extracted for use in Forecast Capacity Planner
	license	A new version of license file.
	logxhelp	The MVLOGX online help file.
	license.old	The old version of license file.
	pfgitems	A list of Performance Gallery B.0x extraction items.
	pfgitems2	A list of Performance Gallery Gold (C.0x and higher) extraction items.
	mvhelp	The MVHOST online help file.
	oraextr.xml	The XML file for Oracle instances.
	pwsalias	A list of all stored item class and names.
pwsitems	A list of data items returned to mvdatad clients.	

Location	File	Description
/opt/lund/newcfg/	cfg	The advice, ppoints, kip, and holidays configuration files as distributed by Lund Performance Solutions (before user customization). See /etc/opt/lund/cfg for descriptions.
	rpt	The reptdef and *.rpt files as distributed by Lund Performance Solutions (before user customization). See /etc/opt/lund/rpt for descriptions.
/var/opt/lund/log/	SLLOGCAT	The log file catalog.
	SL*	Contains historical log files.
/var/opt/lund/tmp/	*unix.ino	Contains kernel inode to help determine if rebuild of ksymbols.db is necessary.
	ksymbols.db	Contains mapping of kernel symbols and addresses.
	metaview.log	Contains messages from Meta-View daemons.
	mvmid.pid	Contains the MVMID process ID.
	mvlogd.pid	Contains MVLOGX process ID.

Security

UNIX software products from Lund Performance Solutions utilize a system group for security purposes. The "lund" group is created during the software installation process.

Members of the **lund** group can execute the following task:

- Modify existing Meta-View Performance Manager reports.
- Execute kclean to remove unnecessary overhead and used memory by MVMID when it is not able to perform cleanup prior to the last exit (when MVMID is killed using the 9 signal (kill -9 PID)).

The LUND group is also used to enforce security for log files, the log catalog and the lund directories.

ENVIRONMENT VARIABLES AND WORKLOAD GROUPS

Environment Variables

Each of the environment variables are outlined in Table 4.1. Instructions to set the environment variables are provided in the next section, "Setting the Environment Variables."

Table 4.1 *Meta-View Performance Manager environment variables*

Variable Name	Default Value	Accepted Value
PATH	\$PATH:/opt/lund/bin	\$PATH:/<custom directory name>/bin
TERM	N/A	N/A
LUND_OPT_PATH	/opt/lund	An existing, fully-qualified directory
LUND_ETC_PATH	/etc/opt/lund	
LUND_VAR_PATH	/var/opt/lund	
LUND_TIME_SEP	: (colon)	Any single alpha-numeric character
LUND_DATE_SEP	/ (forward slash)	
LUND_DECIMAL_INDICATOR	. (period)	
LUND_DATE_FMT	MDY (month day year)	MDY, DMY, or YMD

Setting the Environment Variables

Prior to running the Meta-View Performance Manager programs, set the appropriate environment variables:

- PATH
- TERM
- LUND_OPT_PATH

Set only if the host-independent application files were placed in a custom directory during installation.

- LUND_ETC_PATH

Set only if the host-specific configuration files were placed in a custom directory.

- LUND_VAR_PATH

Set only if the host-specific dynamic files were placed in a custom directory.

- Localization environment variables (optional).

Setting the PATH Environment Variable

Prior to running Meta-View Performance Manager, it is necessary to set the PATH environment variable:

- If the Meta-View Performance Manager application files were placed in the default directory (/opt/lund) during installation, add the following line to your .profile:

```
PATH=$PATH:/opt/lund/bin
```

- If the Meta-View Performance Manager application files were placed in a custom directory, add the following line to your .profile:

```
PATH=$PATH:<custom directory name>/bin
```

If you are not sure how to set the PATH environment variable for the shell used when running Meta-View Performance Manager, please ask your system administrator for assistance.

Setting the TERM Environment Variable

Prior to running Meta-View Performance Manager, it might be necessary to set the TERM environment variable equal to the appropriate device name of your terminal. For example:

```
TERM=vt100
```

For more information about the TERM environment variable, please refer to your system documentation.

Setting LUND_OPT_PATH, LUND_ETC_PATH, and LUND_VAR_PATH

In the past, all Lund Performance Solutions files (lps files) associated with the Meta-View Performance Manager application could be found in one directory (/opt/lps). In accordance with the OSF/1 standard, Lund Performance Solutions files are now located in three different directories, which are listed in Table 4.2.

If the Meta-View Performance Manager application files were placed in a custom directory during installation, it will be necessary to set the corresponding environment variable equal to the custom directory destination prior to running the application.

Table 4.2 *Meta-View Performance Manager custom directory PATH environment variables*

Variable Name	Accepted Value	Default Value
LUND_OPT_PATH	An existing, fully-qualified directory	/opt/lund
LUND_ETC_PATH		/etc/opt/lund
LUND_VAR_PATH		/var/opt/lund

Setting the Localization Environment Variables

Four specific environment variables are available in Meta-View Performance Manager to customize certain date, time, and numerical characteristics of the application for use in different countries or languages. These environment variables, including their acceptable ranges and default values, are outlined in the next table.

Table 4.3 *Meta-View Performance Manager localization environment variables*

Variable Name	Accepted Value	Default Value
LUND_TIME_SEP	Any single alpha-numeric character	: (colon)
LUND_DATE_SEP		/ (forward slash)
LUND_DECIMAL_INDICATOR		. (period)
LUND_DATE_FMT	MDY, DMY, or YMD	MDY (month day year)

Workload Groups

A workload group is a set of similar, identifiable transactions on the host system performed by individual users and programs. Workload groups can be organized by:

- Applications
- User login
- Departmental processes

A workload group may be as simple as one user running one program, or as complex as entire departments running many programs.

Identifying and Characterizing Workload Groups

Make sure workload groups are homogeneous. A homogeneous workload group consists of processes of a similar type, function, and priority.

Averaging is meaningless for workload groups made up of dissimilar transactions. For example, if an average accounts receivable transaction takes 200 milliseconds of the CPU's time, while general ledger transactions average 500 milliseconds, taking an average of the two does not provide a meaningful average for either transaction.

Identifying Workload Groups

Input from management and system users is essential in identifying and defining workload groups. Interview managers and users to determine how the system is used and to identify distinct functions, such as order entry, telemarketing, or accounting. Break down the various departmental functions into essential components, based on your desired result. Identify groupings that will provide you with the needed information. These arranged components make up your workload groups.

Characterizing Workload Groups

Once you have identified your workload groups, use the following guidelines to further refine your definitions:

- 1 Limit the components of any workload group to users or transactions with service demands of comparable magnitude and similar balance across the system. Do not mix heavy-CPU/low-I/O transactions with light-CPU/heavy-I/O transactions.
- 2 Do not mix interactive processes and batch processes in the same workload group. System resources, priorities, and think times are different for interactive and batch processes.
- 3 Use separate workload groups for specific divisions, branches, or departments as needed.
- 4 Identify workload groups by user logon, if possible.

Creating a Workload Group Definition File

Once you have identified and refined your workload groups, enter the data in a workload group definition file.

Workload Group Definition File

User-defined workload groups are created in `/etc/opt/lund/cfg/workdefs`.

Workload Groups

Four workload groups are defined by default (see Table 4.4). These four workload groups should always exist.

Table 4.4 *Meta-View Performance Manager default workload groups*

Workload Group	Description
INTERACT	The INTERACT workload group contains any processes attached to a terminal (interactive processes). The INTERACT workload group should be configured by the user.
DAEMON	The DAEMON workload group contains any daemon processes. By default, this workload group is configured to include any process not attached to a terminal and owned by the root user. The DAEMON workload group should be configured by the user to reflect the system.
BATCH	The BATCH workload group contains any batch job processes. By default, this is configured to include any process outside of the DAEMON workload group that is not attached to a terminal. The BATCH workload group should be configured by the user to reflect the system.
DEFAULT	The DEFAULT workload group contains any process that does not match any other workload group definition. Note that initially, this will be an empty workload group (no processes will match), because at least one of the other defaults will include any possible process. However, since those workload groups are configurable, this workload group must exist. The DEFAULT workload group cannot be modified. It guarantees a process will fall into at least one workload group by matching any process that does not fall into any other workload group definition.

Workload Group Definition Requirements

The workdefs file requires the following information for each workload group:

- 1 The name of the workload group, up to ten characters.
- 2 The type of process or processes included in the workload group, such as INTERACT, DAEMON or BATCH.
- 3 The user or program specification, including one or more of the following:
 - USER (your user ID or logon ID)
 - PROG (the name of the executable program file)
 - TTY (the device name of your terminal)

- GROUP (the user group identification)

Workload Group Definition File Configuration Guidelines

Use the following guidelines to create or edit workload group definition files:

- 1 Separate workload groups by one or more blank lines.
- 2 Include comments on any line, if desired, preceded by an exclamation character (!).
- 3 A workload group type specification is needed to indicate the types of processes to include or exclude from the workload group definition. This makes it possible to create two workload groups for processes that run in both interactive and batch modes. (Refer to Table 4.4.)
- 4 Program and user specifications are specified by:
 - PROG=program name
 - USER=user name/group name

System group names are valid specifications. Check the `/etc/group` file for a list of existing group names.

For more information about group names, refer to your system documentation or the manpage for *regex* (Regular Expressions).

- 5 Device file specifications, such as `TTY=ty0p2`, are also valid. You can capture activity on a terminal-by-terminal basis, or for multiple terminals.
- 6 There is no limit to the number of user, program, and tty specifications allowed for each workload group.
- 7 Name and type specification lines are required. All other lines are optional.
- 8 To be included in a workload group, a process must satisfy the program, user, and tty specifications, if all three are present.
 - If one or more program specification lines are included, a program needs to satisfy only one of these to be included in the group.
 - If no program specifications are entered, all process programs are included in the group, unless the process is somehow disqualified by the user or tty specifications.
- 9 A process can belong to only one workload group. If it fits the criteria for two or more groups, it is assigned to the first workload group in the file for which it qualifies.
- 10 Four workload groups appear by default: INTERACT, DAEMON, BATCH, and DEFAULT. Processes that do not fit into user-defined workload groups will be included in one of these pre-defined workload groups.

MVHOST

The Real-time Performance Data Utility

MVHOST is the character-based tool that will monitor and report system performance on-line and in real time. To start MVHOST, type **mvhost** from the command prompt.

Figure 5.1 shows the Global Summary screen, the initial data screen displayed in Meta-View.

```

Meta-View D.05e1 firefly          WED, 29 JUN 2005, 11:41      E: 00:02:02  I: 00:59
-----
GLOBAL
-----
CPU%      2  10  20  30  40  50  60  70  80  90 100 |          2  10  20
Pg Res    |          600.0> | Sw Out/s
I/O/s     |          | I/O QLen
-----
PROCESS SUMMARY
-----
PID  Name      User Name TTY      CPU% Nice Pri  RSS/Size #Rd #Wr State Res
3    fsflush    root     ---      <  0  60   0/  0   0  28 SLEEP <
13253 mlogd      gabi     ---      < 20  60 3344/4552 0  7 SLEEP <
13964 mvhost     rodica   pts/2    0.1  20  58 4112/5304 0  6  RUN  <
27238 nmuid      root     ---      0.2  RT 129 2312/2904 0  0 SLEEP <
13254 nmuid      gabi     ---      0.2  RT 129 2328/2864 0  0  CPU  <
-----
SYSTEM PERFORMANCE ADVICE
-----
The CPU was used a total of .6 of its capacity during this interval      <CI01>
This interval's 'hog' process is (PID 13254) with .2% of the CPU          <PI01>
This interval's highest disk I/O user was (PID 3) with 28 I/O's           <PI02>

Enter command: _

```

Figure 5.1 *MVHOST Global Summary screen*

Data Screens

The MVHOST application generates a variety of useful data screens. Each screen is listed in “MVHOST Screen Selection Menu” on page 37, then described in detail in Chapters 10 through 38.

Screen Conventions

The conventions used in MVHOST data screens are listed and described in the next table.

Table 5.1 *Meta-View screen conventions*

Convention	Description
/	A forward slash character (/) indicates a rate. For example, "Packet In /s" denotes "Packets In per second".
***	Three consecutive asterisk characters (***) indicates a data value that cannot be converted by Meta-View, because the value is less than or greater than the eligible range.
[nnn.n]	When applicable and possible, cumulative averages are displayed in brackets ([]) next to the current interval values. For further information about cumulative averages, see "Displaying Cumulative Statistics" on page 46.
B	A "B" indicates the corresponding value is measured in bytes.
K	A "KB" indicates the corresponding value is measured in KiloBytes.
M	An "M" indicates the corresponding value is measured in MegaBytes.
G	A "G" indicates the corresponding value is measured in gigabytes.
ms	"ms" indicates the corresponding value is measured in milliseconds.
s	An "s" indicates the corresponding value is measured in seconds.
min	"min" indicates the corresponding value is measured in minutes.

MVHOST MAIN COMMANDS

The Main Commands Screen

The Main Commands screen in MVHOST contains a list of single-key shortcut commands that can be entered from any MVHOST display screen.

To access the Main Commands screen from any MVHOST display screen, type ? at the command prompt.

```

                                MAIN COMMANDS
Navigation Keys:
  g - Go to screen
                                s - Screen menu
Detail Screen Quick Keys:
  P - Process detail
  M - Process memory usage
  U - Volume group detail
  Z - Hog process zoom
                                F - Process file usage
                                W - Workload detail
                                D - Disk detail
Action Keys:
  u - Update interval data
  p - Print screen
                                r - Reset totals to zero
                                f - Toggle update intervals on/off
Other:
  H - Main on-line help
  o - Main option menu
  ^L - Refresh screen
                                h - Context sensitive help
                                ? - Command help (this screen)
                                e - Exit program

[Press any key to view additional commands or ESC to return to program]_

```

Figure 6.1 *MVHOST Main Commands screen*

To return to the MVHOST program from the Main Commands screen, press the Esc key.

To invoke a specific command displayed on the Main Commands screen, type the corresponding command key(s) from any MVHOST display screen.



NOTE All command keys are case-sensitive.

Main Commands

Each of the MVHOST commands is listed and explained in the following tables.

Navigation Keys

Table 6.1 *MVHOST navigation command keys*

Key	Command	Description
g	Go to screen	Type g from any MVHOST display screen to go to another screen of your choice. At the secondary command prompt, enter the screen option code or press the ? key for a list of valid options. For instance, type c to display the CPU Summary screen.
s	Screen menu	Type s from any MVHOST display screen to view the Screen Selection Menu.

Detail Screen Quick Keys

Table 6.2 *MVHOST Detail screen command keys*

Key	Command	Description
P	Process detail	Type P (upper case) from any MVHOST display screen to view the Process Detail screen for a specific process. At the secondary command prompt, specify the process's identification number (shown in the PID column of the PROCESS SUMMARY section in the Global Summary screen) or press the Enter key to accept the default (shown in brackets).

Key	Command	Description
F	Process file usage	Type F (upper case) from any MVHOST display screen to view the Process File Usage screen for a specific process. At the secondary command prompt, specify the process's identification number (shown in the PID column of the PROCESS SUMMARY section in the Global Summary screen) or press the Enter key to accept the default (shown in brackets).
M	Process memory usage	Type M (upper case) from any MVHOST display screen to view the Process Memory Regions screen for a specific process. Select the specific process at the secondary prompt.
W	Workload detail	Type W (upper case) from any MVHOST display screen to view the Workload Detail screen. Select the workload from the choices displayed in the dialog box (for example, INTERACT, BATCH, SYS, or DEFAULT).
V	Volume group detail	Type V (upper case) from any MVHOST display screen to view the Volume Detail screen for a specific volume. Select the volume from the choices displayed in the dialog box.
D	Disk detail	Type D (upper case) from any MVHOST display screen to view the Disk I/O Detail screen for a specified disk device. Select the physical disk ID from the choices displayed in the dialog box.
Z	Hog process zoom	Type Z (upper case) from any MVHOST display screen to view the "hog" process (the process that consumes the most CPU during the current interval) in the Process Detail screen.

Action Keys

Table 6.3 *MVHOST action command keys*

Key	Command	Description
u	Update interval data	Type u from any MVHOST display screen to start a new screen refresh and sample interval and update all performance indicator values. For an example, see "Updating Interval Data" on page 45.

Key	Command	Description
r	Reset totals to zero	Type r from any MVHOST display screen to (1) reset all cumulative values (shown in brackets), (2) reset the elapsed time to zero, and (3) update the interval data. For an example, see "Resetting Cumulative Statistics" on page 46.
p	Print screen	Type p from any MVHOST display screen to send the current screen display to a specified printer or a default printer, or to print the screen display to a specified file.
f	Toggle update intervals on/off	Type f from any MVHOST display screen to postpone (freeze) data updates for all MVHOST screens until the f key is pressed again (to unfreeze).

Configuration Keys

Table 6.4 *MVHOST configuration command keys*

Key	Command	Description
o	Main option menu	Type o from any MVHOST display screen to display the MVHOST Main Option Menu.

Other Keys

Table 6.5 *MVHOST (other) command keys*

Key(s)	Command	Description
H	Main on-line help	Type H (upper case) from any MVHOST display screen to display the main online help facility for MVHOST. Follow the instructions provided on the Welcome to the MVHOST Help Facility screen to navigate throughout the help system.
h	Context-sensitive on-line help	Type h (lower case) from any MVHOST display screen to display the context-sensitive online help for the current screen or menu.
?	Command help	Type ? (a question mark) from any MVHOST display screen to display a list of main command keys in the Main Commands screen.

Key(s)	Command	Description
!	UNIX shell	Suspends execution of MVHOST and executes a UNIX shell. To return to the MVHOST application, type exit .
Ctrl+I	Refresh screen	Press the Ctrl+I shortcut keys from any MVHOST display screen to refresh the screen.
e	Exit program	Type e from any MVHOST display screen to exit the MVHOST program.

Screen-Specific Commands

A second screen of commands, the Additional Commands screen, can be viewed by pressing any key from the Main Commands screen *when additional commands are available* for the active MVHOST display screen.

```

                                ADDITIONAL COMMANDS

Help:
    % - Function key mapping

Other:
    0 - Options for this screen
    t - Toggle graphic/tabular display
    y - Toggle extended process display

    [Press any key to view additional commands or ESC to return to program]

```

Figure 6.2 *MVHOST Additional Commands screen (example)*

To return to the Main Commands screen from the Additional Commands screen, press any key. To return to the MVHOST program, press the Esc key.

To invoke a specific command displayed on the Additional Commands screen, type the corresponding command key(s) from any MVHOST display screen.

Screen-Specific Navigation Commands

Table 6.6 *MVHOST screen-specific navigation command keys*

Key(s)	Command	Description
-	Move up in scrollable area	Type the hyphen character (-) from any MVHOST display screen to scroll back to the previous line in the screen display, if additional lines are available. The Up Arrow key can be used on terminals that support navigation keyboard keys.
+	Move down in scrollable area	Type the plus character (+) from any MVHOST display screen to scroll to the next line in the screen display, if additional lines are available. The Down Arrow key can be used on terminals that support navigation keyboard keys.

Screen-Specific Configuration Commands

Table 6.7 *MVHOST screen-specific configuration command keys*

Key	Command	Description
O	Options for this screen	Type O (upper case) from any of the following screens to display the MVHOST Main Option Menu screen.

Screen-Specific Help Commands

Table 6.8 *MVHOST screen-specific configuration command keys*

Key	Command	Description
%	Function key mapping	If function keys are available, type the percent character (%) from any MVHOST display screen to display function key mapping.

Screen-Specific Action Commands

Table 6.9 *MVHOST screen-specific action command keys*

Key	Command	Description
c	Toggle NFS client/server display	Type c from the NFS Summary screen to toggle between NFS client data and NFS server data..
n	Select new...	<ul style="list-style-type: none"> Type n from the Process Detail screen to select a new process. Type n from the Workload Detail screen to select a new workgroup.
t	Toggle graphic/tabular display	Type t from most MVHOST display screens to display screen information in either a graphical or tabular format (if the alternative format is available).
x	Toggle NFS call rates/percentages display	Type x from the NFS Summary screen to toggle between NFS call rates and NFS call percentages.
y	Toggle extended process display	Type y from the Global or the Workload Detail screen to turn the Extended Process line display on or off.

MVHOST SCREEN SELECTION MENU

Screen Selection Menu Screen

To access the Screen Selection Menu screen from any MVHOST display screen, type **s** at the MVHOST Enter command: prompt.

```

                                SCREEN SELECTION MENU

g Global Summary                u User Summary
c CPU Summary                  t Terminal Summary
m Memory Summary              b System Table Summary
d Disk I/O Summary            y System Configuration
r Disk Controller I/O Summary p Pulse Points
f File System I/O Summary     k Workload Definitions
s File System Space Summary   P Process Detail
l Network Summary            F Process File Usage
n NFS Summary                M Process Memory Regions
w Swap Summary               W Workload Detail

O Oracle Main Screen          C Oracle Detail - Cache
L Oracle Detail - Latches     E Oracle Detail - Events
A Oracle Detail - Database    B Oracle Detail - DBWR
N Oracle Detail - Memory and Network S Oracle Detail - Datafiles
K Oracle Detail - Rollback Segments

Enter screen ID:

```

Figure 7.1 *MVHOST Screen Selection Menu*

To return to the MVHOST program from the Screen Selection Menu screen, press the Enter key.

Screen Selection Commands

To view one of the screens listed in the Screen Selection Menu, type the screen's corresponding command key at the Enter screen ID: command prompt. Each screen is described briefly in Table 7.1. More detailed explanations are presented later.



NOTE All command keys are case-sensitive.

Table 7.1 *MVHOST Screen Selection Menu command keys*

Key	Screen Title	Description
g	Global Summary	Displays a basic, overall picture of your system's performance. See "MVHOST Global Summary" on page 83.
c	CPU Summary	Reports the general state of one or more CPUs. See "MVHOST CPU Summary" on page 107.
m	Memory Summary	Provides a more detailed look at memory performance data. See "MVHOST Memory Summary" on page 113.
d	Disk I/O Summary	Displays a summary of performance data for all disks on the system. See "MVHOST Disk I/O Summary" on page 117.
r	Disk Controller I/O Summary	Provides a summary of the different kinds of disk read and write actions performed per second for each disk controller. The read and write actions are categorized as physical, user, system, virtual memory, or raw. See "MVHOST Disk Controller I/O Summary" on page 121.
f	Files System I/O Summary	Displays the logical and physical read and write rates for each file system. See "MVHOST File System I/O Summary" on page 123.
s	File System Space Summary	Shows the block and fragment size, space usage, and inode usage for each file system. See "MVHOST File System Space Summary" on page 125.
l	Network Summary	Displays network performance information, including protocol data and network interface information. See "MVHOST Network Summary" on page 127.
n	NFS Summary	Provides information about the Network File System (NFS). See "MVHOST NFS Summary" on page 131.

Key	Screen Title	Description
w	Swap Summary	Provides information on system swap space utilization. See "MVHOST Swap Summary" on page 141.
u	User Summary	Reveals how each user is utilizing system resources. See "MVHOST User Summary" on page 145.
t	Terminal Summary	Displays information about the activity of the individual terminals. See "MVHOST Terminal Summary" on page 147.
b	System Table Summary	Reports the configuration and utilization of several system tables and caches. See "MVHOST System Table Summary" on page 149.
y	System Configuration	Shows significant system configuration parameters. See "MVHOST System Configuration Summary" on page 157.
p	Pulse Points	Lists the key indicators of performance that appear on the Global Summary screen and categorizes each level of performance as acceptable, questionable, or unacceptable. See "MVHOST Pulse Points Summary" on page 163.
k	Workload Definitions	Displays the application workload definitions (workdefs) file. See "MVHOST Workload Definitions" on page 165.
P	Process Detail	Displays the performance of one process in detail. See "MVHOST Process Detail" on page 167.
F	Process File Usage	Lists all of the files currently accessed by a process. See "MVHOST Process File Usage" on page 173.
M	Process Memory Regions	Displays information about the process' memory and virtual memory address space usage. See "MVHOST Process Memory Regions" on page 177.

Key	Screen Title	Description
W	Workload Detail	Provides detailed information about a specific workload. See "MVHOST Workload Detail" on page 181.
O	Oracle Main	Lists all Oracle instances, and shows some important metrics for each, as well as some aggregate statistics (summed over all instances). See "MVHOST Oracle Main" on page 187.
L	Oracle Detail Latches	Provides latches statistics. See "MVHOST Oracle Detail Latches" on page 191.
A	Oracle Detail Database Activity	Shows statistics related to database activity, locking, sorts, table scans, and changes. See "MVHOST Oracle Detail Database Activity" on page 195.
N	Oracle Detail Mem and Net	Contains statistics about memory allocation and network transfers. See "MVHOST Oracle Detail Memory and Network" on page 199.
K	Oracle Detail Rollback	Provides statistics about rollback segments. See "MVHOST Oracle Detail Rollback Segments" on page 203.
C	Oracle Detail Cache	Displays the most important statistics related to Oracle cache management. See "MVHOST Oracle Detail Cache" on page 205.
E	Oracle Detail Events	Shows statistics related to database events. See "MVHOST Oracle Detail Events" on page 209.
B	Oracle Detail DBWR	Shows statistics about DBWR, the process that writes the modified buffers into a database. See "MVHOST Oracle Detail DBWR" on page 213.
S	Oracle Detail Datafiles	Displays the first 10 data files in order of their activity (the most active first). See "MVHOST Oracle Detail Datafiles" on page 217.

MVHOST MAIN OPTION MENU

MVHOST Main Option Menu Screen

The MVHOST Main Option Menu screen contains a set (and several subsets) of options that enable the user to configure the MVHOST program.

To access the MVHOST Main Option Menu screen, enter **o** from any MVHOST display screen.

```
MAIN OPTION MENU

  1) Screen refresh interval in seconds (60)
  2) Display cumulative stats (N)
  3) Display Key Indicators of Performance (N)
  4) Display option (1-Graphic)
  5) Company name ( )
  6) Detail display options (SUBMENU)

Which Option: _
```

Figure 8.1 *MVHOST Main Option Menu*

Main Option Commands

To modify a main option, either temporarily or permanently:

- 1 Type the option command key from the MVHOST Main Option Menu screen and press the Enter key.
- 2 Enter a new parameter at the secondary command prompt. Press the Enter key.
- 3 Press Enter again to exit the MVHOST Main Options Menu screen.
- 4 At the **Should these options be saved permanently?** prompt:
 - Press the Enter key to return to the MVHOST program without saving the modifications permanently.
 - Type **Y** (Yes) to save the changes permanently and then press the Enter key.

Information about each of the main options is provided to assist you.



NOTE All command keys are case-sensitive.

Screen refresh interval in seconds

The MVHOST banner shows the length of the current interval (I: mm:ss) in minutes (mm) and seconds (ss). In the following example, the banner indicates the measurements reported in the screen are updated every minute (60 seconds).



Figure 8.2 *MVHOST banner: current interval (I: 01:00)*

Setting the Length of the Interval

The MVHOST program refreshes (updates) the performance measurement data every 60 seconds. This default can be changed to an interval ranging from 10 to 3600 seconds.



IMPORTANT MVHOST runs at a very high priority. Setting a short refresh interval or updating the screen too frequently may burden the system and result in skewed performance measurements. The default setting of 60 seconds is recommended for most systems.

To adjust the length of the interval:

- 1 From the MVHOST Main Options Menu screen, select the Screen refresh interval in seconds option. Press the Enter key.
- 2 At the next prompt, enter a positive integer from 10 to 3600 (seconds). Press the Enter key.

Updating Interval Data

To update interval data at any time, from any MVHOST display, type **u** at the prompt.

The current interval indicator in the MVHOST banner (I: mm:ss) marks the time that passed from the beginning of the interval to the second the data update occurred. The example in Figure 8.3 shows that the interval data was updated after the first 39 seconds (I: 00:39) of the interval. The interval data will be updated again according to the refresh interval rate set in the MVHOST Main Options Menu (refer to “Setting the Length of the Interval” on page 42).



Figure 8.3 *MVHOST banner: current interval after update (I: 00:39)*

Display cumulative stats

Cumulative statistics are accumulated from the instant the MVHOST program is started or reset until the program is either stopped or reset. By default, cumulative statistics are suppressed—only the statistics for the most recent interval are displayed.

When cumulative statistics are enabled from the MVHOST Main Option Menu, they will be placed in brackets ([]) next to their corresponding current statistics in all tabular screens. For an example, see the Disk I/O Summary screen in Figure 8.4 on the next page.

```

Meta-View D.05e1 firefly      WED, 29 JUN 2005, 12:01      E: 00:04:51 I: 01:00
----- DISK I/O SUMMARY -----
Dev      I/O%   Qlen  Util%  Wait    Service  Rates (/s)  Avg Size (KB)
          [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0]
          [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0]
c0t2d0   0      0      0      0      0      0      0      0      0      0
          [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0]
fd0      0      0      0      0      0      0      0      0      0      0
          [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0] [ 0]
c0t0d0  100    <      <      5.4    14.6    0      0.7    0      6
          [100] [ <] [ <] [ 57] [ 134] [ <] [ <] [ 8] [ 6]
-----
TOTALS  100    <      <      5.4    14.6    0      0.7    0      6
          [100] [ <] [ <] [ 57] [ 134] [ <] [ <] [ 8] [ 6]
-----
Enter command: _

```

Figure 8.4 MVHOST Disk I/O Summary screen (tabular display) with cumulative stats

In instances where a cumulative statistic is greater than zero, but its closest rounding value (to the tenth) is less than 0, a less than character ([<]) will be displayed instead of an integer.

Displaying Cumulative Statistics

To display cumulative statistics in all tabular displays:

- 1 From the MVHOST Main Options Menu screen, select the Display cumulative stats option. Press the Enter key.
- 2 At the next prompt, enter Y (Yes). Press the Enter key.

Resetting Cumulative Statistics

To reset the cumulative statistics in all tabular displays to zero (0), enter r at the MVHOST Enter command: prompt from any MVHOST screen. This reset function also updates the current interval (see “Updating Interval Data” on page 43).

Display Key Indicators of Performance

The KIP line can be displayed just below the MVHOST banner in all MVHOST screens.

KIP Line

```

Meta-View D.05e1 firefly      WED, 29 JUN 2005, 12:03      E: 00:06:51 I: 01:00
Total Busy:      .5      Avg Pg Res Time: 600.0      Disk Serv Time: 15.6

```

Figure 8.5 MVHOST Key Indicators of Performance (KIP) line

The configuration of the KIP line is discussed in “Key Indicators of Performance (KIP) Line” on page 87.

Displaying Key Indicators of Performance

By default, the key indicators of performance are suppressed. To show the key indicators of performance (KIP) line in all screen displays:

- 1 From the MVHOST Main Options Menu screen, select the Display Key Indicators of Performance option. Press the Enter key.
- 2 At the next prompt, enter **Y** (Yes). Press the Enter key.

Display option

The Display option determines how the GLOBAL statistics portion of the Global Summary screen is formatted. Two choices are available: graphical or tabular. You can press the **t** key from any data display screen to toggle between graphical and tabular displays, when both formats are available for that particular screen. Or, you can change the Display option.

Changing Display Formats

To toggle the GLOBAL statistics display formats between graphic/tabular:

- 1 From the MVHOST Main Options Menu screen, select Display option. Press the Enter key.
- 2 Enter the option number (1 or 2):
 - To view a graphical display, type **1** (1-Graphic). Press the Enter key.
 - To view a tabular display, type **2** (2-Tabular). Press the Enter key.

Company name

By default, the company name is not included in the MVHOST screens, reports or output. It can be added.

Adding a Company Name to the MVHOST Banner

- 1 From the MVHOST Main Options Menu screen, select the Company name option. Press the Enter key.
- 2 At the next prompt, type a company name or system name (up to 43 alpha-numeric characters) to display just below the MVHOST banner.

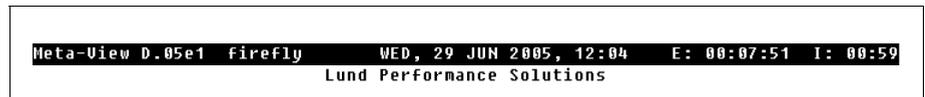


Figure 8.6 MVHOST Company Name example (Lund Performance Solutions)

Detail display options (SUBMENU)

To access the Detail display options submenu screen:

- 1 From the MVHOST Main Options Menu screen, enter the command key for Detail display options. Press the Enter key.
- 2 Select one of the following submenu options:
 - 1) Global display options (SUBMENU)
 - 2) Process display options (SUBMENU)
 - 3) Pulse Points display options (SUBMENU)
 - 4) User display options (SUBMENU)
 - 5) Terminal display options (SUBMENU)

Each of these submenus is discussed further in the next section, “Detail Display Options” on page 46.

Detail Display Options

Detail display options Submenu Screen

To access the Detail display options submenu screen from any MVHOST display screen:

- 1 Type **o** from the MVHOST Enter command: prompt to view the MVHOST Main Option Menu screen.
- 2 From the MVHOST Main Option Menu screen, select Detail display options and press the Enter key. The Detail display options submenu screen will display.

```
MAIN OPTION MENU
Detail display options

1) Global display options (SUBMENU)
2) Process display options (SUBMENU)
3) Pulse Points display options (SUBMENU)
4) User display options (SUBMENU)
5) Terminal display options (SUBMENU)

Which Option: _
```

Figure 8.7 MVHOST Detail display options submenu screen

Detail display option Commands

To open one of the Detail display submenus, use the following procedure.

- 1 From the Detail display options submenu screen, enter the command key number of the submenu to open.
 - Global display options (SUBMENU)
For information about this screen, see “Global display options Submenu Screen” on page 48.
 - Process display options (SUBMENU)
For information about this screen, see “Process display options Submenu Screen” on page 54.
 - Pulse Points display options (SUBMENU)
For information about this screen, see “Pulse Points display options” on page 60.
 - User display options (SUBMENU)
For information about this screen, see “User Display Options” on page 63.
 - Terminal display options (SUBMENU)
For information about this screen, see “Terminal Display Options” on page 66.
- 2 Press the Enter key.

Global Display Options

Global display options Submenu Screen

To access the Global display options submenu screen from any MVHOST display screen:

- 1 Type **o** from the MVHOST Enter command: prompt to view the MVHOST Main Option Menu screen.
- 2 From the MVHOST Main Option Menu screen, select Detail display options and press the Enter key.
- 3 From the Detail display options submenu screen, select Global display options and press the Enter key. The Global display options submenu screen will display (Figure 8.8).

```

MAIN OPTION MENU
  Detail display options
    Global display options

    1) Display advice messages (Y)
    2) Display informational advice messages (Y)
    3) Display CPU information on global screen (Y)
    4) Display memory information on global screen (Y)
    5) Display miscellaneous information on global screen (Y)
    6) Display disk information on global screen (Y)
    7) Maximum number of disks to display (0=ALL) (3)
    8) Display process information (Y)
    9) Display workload information (N)
    --- Display only active workloads
    --- CPU percentage required for workload display

Which Option:
  
```

Figure 8.8 *MVHOST Global display options submenu screen*

Global display option Commands

To modify a global display option, either temporarily or permanently:

- 1 Type the option command key from the Global display options submenu screen and press the Enter key.
- 2 Enter a new parameter at the secondary command prompt. Press the Enter key.
- 3 Press Enter to exit the Global display options submenu screen.
- 4 Press Enter to exit the Detail display options submenu screen.

- 5 Press Enter to exit the MVHOST Main Options Menu screen.
- 6 At the **Should these options be saved permanently?** prompt:
 - Press the Enter key to return to the MVHOST program without saving the modifications permanently.
 - Type **Y** (Yes) to save the changes permanently and then press the Enter key.

Information about each of the global display options is provided to assist you.

Display advice messages

SYSTEM PERFORMANCE ADVICE messages displayed in the Global Summary screen deliver a basic interpretation of significant system performance events.

```
----- SYSTEM PERFORMANCE ADVICE -----  
The CPU was used a total of .5 of its capacity during this interval <CI01>  
This interval's 'hog' process is (PID 13254) with .2% of the CPU <PI01>  
This interval's highest disk I/O user was (PID 3) with 59 I/O's <PI02>
```

Figure 8.9 MVHOST Global Summary screen: SYSTEM PERFORMANCE ADVICE messages

Advice messages are discussed further in “SYSTEM PERFORMANCE ADVICE” on page 103.

Suppressing All Advice Messages

To suppress all advice messages in the Global Summary screen:

- 1 From the Global display options submenu screen, select the Display advice messages option. Press the Enter key.
- 2 At the next prompt, enter **N** (No). Press the Enter key.

Display informational advice messages

By default, MVHOST provides both informational and excessive use advice messages in the SYSTEM PERFORMANCE ADVICE section of the Global Summary screen.

- An "I" in the message ID code (for example, CI01) denotes an *informational* advice message. Informational messages usually state current performance levels for the current interval.
- An "E" in the message ID code (for example, ME01) denotes an *excessive use* advice message. This type of advice message alerts the user to a situation where system resources are overtaxed.

Suppressing Informational Advice Messages

To suppress informational advice messages from the Global Summary screen:

- 1 From the Global display options submenu screen, select the Display informational advice messages option.

This option is available only when advice messages are displayed in the Global Summary screen. Press the Enter key.
- 2 At the next prompt, enter **N** (No). Press the Enter key.

Display CPU information on global screen

By default, the GLOBAL section of the Global Summary screen includes CPU statistics. These statistics can be suppressed in the tabular display.

```

----- CPU UTILIZATION ----- CPU MISC -----
      TOTAL BUSY:  0.4[ <]      | Capture Ratio:          0.5[ <]
      | RunQ Avg:          0[ 0]
User:  0.1[ <]   Sys:  0.3[ <] | 5/15 Min Runq Avg:      0/  0
Wait:  0.5[ <]   Idle: 99.1[ 99] | RunQ Busy %:           0[ 0]

```

Figure 8.10 *MVHOST Global Summary screen: CPU statistics*

Global CPU statistics are discussed in “CPU UTILIZATION” on page 96 and “CPU MISC” on page 98.

Suppressing CPU Statistics

To suppress CPU statistics from the Global Summary screen:

- 1 From the Global display options submenu screen, select the Display CPU information on global screen option, which is available only when the Global Summary screen is displayed in tabular format. Press the Enter key.
- 2 At the next prompt, enter **N** (No). Press the Enter key.

Display memory information on global screen

By default, the GLOBAL section of the Global Summary screen includes memory and virtual memory statistics. These statistics can be suppressed.

```

----- MEM/VM -----
Pg Scans :    0[ 0]/s   Pg Reclaims:    0[ <]/s   Page Outs:    0[ <]/s
Pg Res Tm: 600.0[600]   Swap Outs:    0[ 0]/s

```

Figure 8.11 *MVHOST Global Summary screen: MEM/VM statistics*

Global memory statistics are discussed in “MEM/VM” on page 99.

Suppressing Memory Statistics

To suppress memory statistics from the Global Summary screen:

- 1 From the Global display options submenu screen, select the Display memory information on global screen option, which is available only when the Global Summary screen is displayed in tabular format. Press the Enter key.
- 2 At the next prompt, enter **N** (No). Press the Enter key.

Display miscellaneous information on global screen

Miscellaneous global information is provided in the GLOBAL section of the Global Summary screen. These statistics can be suppressed.

----- MISC -----							
#Sessions:	1	#Procs:	44	#Wait I/O:	0	Transactions:	103.6[79.1]/s
#Active:	1	#Active:	5	#Swap:	0	Avg Response Time:	<

Figure 8.12 *MVHOST Global Summary screen: MISC statistics*

Global miscellaneous statistics are discussed further in “MISC” on page 100.

Suppressing Miscellaneous Global Statistics

To suppress miscellaneous global statistics from the Global Summary screen:

- 1 From the Global display options submenu screen, select the Display miscellaneous information on global screen option, which is available only when the Global Summary screen is displayed in tabular format. Press the Enter key.
- 2 At the next prompt, enter **N** (No). Press the Enter key.

Display disk information on global screen

Disk information is provided in the GLOBAL section of the Global Summary screen. This information can be suppressed.

----- DISK -----													
Disk	I/O/s	I0%	QLen		Disk	I/O/s	I0%	QLen		Disk	I/O/s	I0%	QLen
c0t0d0	1	100	0		c0t2d0	0	0	0		fd0	0	0	0

Figure 8.13 *MVHOST Global Summary screen: DISK statistics*

Global disk statistics are discussed further in “DISK” on page 101.

Suppressing Disk Statistics

To suppress disk statistics from the Global Summary screen:

- 1 From the Global display options submenu screen, select the Display disk information on global screen option, which is available only when the Global Summary screen is displayed in tabular format. Press the Enter key.
- 2 At the next prompt, enter **N** (No). Press the Enter key.

Maximum number of disks to display

To set the maximum number of disks to display in the DISK portion of the Global Summary screen:

- 1 From the Global display options submenu screen, select the Maximum number of disks to display option, which is available only when the Global Summary screen is displayed in tabular format. Press the Enter key.
- 2 At the next prompt, enter the maximum number of disks to display (0=ALL, or a number from 1 to 196612). Press the Enter key.

Display process information

Process information is provided in the PROCESS SUMMARY section of the Global Summary screen. This information can be suppressed.

----- PROCESS SUMMARY -----												
PID	Name	User	Name	TTY	CPU%	Nice	Pri	RSS/Size	#Rd	#Wr	State	Res
13964	mghost	rodica	pts/2		<	20	60	4128/5304	0	6	RUN	<
27238	mvmid	root	---		0.2	RT	129	2312/2904	0	0	SLEEP	<
13254	mvmid	gabi	---		0.2	RT	129	2328/2864	0	0	CPU	<

Figure 8.14 *MVHOST Global Summary screen: PROCESS SUMMARY*

Global process statistics are discussed further in "PROCESS SUMMARY" on page 90.

Suppressing PROCESS SUMMARY

To suppress the PROCESS SUMMARY section of the Global Summary screen:

- 1 From the Global display options submenu screen, select the Display process information option. Press the Enter key.
- 2 At the next prompt, enter **N** (No). Press the Enter key.

Display workload information

By default, information about application workloads is not included in the Global Summary screen graphical display. This information can be displayed.

----- WORKLOAD SUMMARY -----						
Num	Name	CPU %	User CPU %	Disk I/O %	Resp Time	Trans/min
1	INTERACT	0.1[0.1]	57.1[59.3]	16.2[19.3]	<[<]	5730[5118]
2	BATCH	0[0]	0[0]	0[0]	0[0]	0[0]
3	DAEMON	0.5[0.5]	0.1[0.1]	83.8[80.7]	<[<]	618[618]
4	DEFAULT	0[0]	0[0]	0[0]	0[0]	0[0]

Figure 8.15 MVHOST Global Summary screen: WORKLOAD SUMMARY

Workload statistics are discussed further in “WORKLOAD SUMMARY” on page 95.

Displaying Workload Summary Information

To display workload information:

- 1 From the Global display options submenu screen, select the Display workload information option. Press the Enter key.
- 2 At the next prompt, enter **Y** (Yes). Press the Enter key.

Display only active workloads

This Display only active workloads option is available only when workload information is displayed in the Global Summary screen.

By default, all workloads defined in the workdefs (workload definitions) file are included in the WORKLOAD SUMMARY section of the Global Summary screen, even if they used 0.0% of the total CPU time in the current sample interval. The display can be configured to show only active workloads (workloads that used more than 0.0% of the total CPU time).

Displaying Only Active Workloads

To display active workloads and suppress inactive workloads in the Global Summary screen:

- 1 From the Global display options submenu screen, select the Display only active workloads option. Press the Enter key.
- 2 At the next prompt, enter **Y** (Yes). Press the Enter key.

CPU percentage required for workload display

This option is available only when workload information is displayed in the Global Summary screen and eligibility is restricted to active workloads.

When this option is disabled (default setting), all workloads that consumed 0.1% or more of the total CPU time in the current sample interval will be included in the WORKLOAD SUMMARY section of the Global Summary screen. A higher minimum CPU percentage can be specified.

Resetting the Minimum CPU Requirement

To set a new minimum CPU percentage requirement:

- 1 From the Global display options submenu screen, select the CPU percentage required for workload display option. Press the Enter key.
- 2 At the next prompt, enter a value from 0.1 to 100 percent. Press the Enter key.

Process Display Options

Process display options Submenu Screen

To access the Process display options submenu screen from any MVHOST screen:

- 1 Type **o** from the MVHOST Enter command: prompt to view the MVHOST Main Option Menu screen.
- 2 Ensure the Display process information option is enabled.
- 3 From the MVHOST Main Option Menu screen, select Detail display options and press the Enter key.
- 4 From the Detail display options submenu screen, select Process display options and press the Enter key. The Process Display Options submenu screen will display.

```

MAIN OPTION MENU
  Detail display options
    Process display options

  1) Display extended process line (N)
  2) Display total and I/O percentage instead of read/write counts (N)
  3) Display only active processes (Y)
  4) CPU percentage required for process display (.0)
  5) Display interactive processes (Y)
  6) Display non-interactive processes (Y)
  7) Display processes which have died (Y)
  8) Process logon filter (.* )
  9) Process sort option (4-CPU time)
 10) Display processes sorted in ascending order (Y)
 11) Maximum number of processes to display (0=ALL) (0)

Which Option:

```

Figure 8.16 *MVHOST Process display options submenu screen*

Process display option Commands

To modify a process display option, either temporarily or permanently:

- 1 Type the option command key from the Process display options submenu screen and press the Enter key.
- 2 Enter a new parameter at the secondary command prompt. Press the Enter key.
- 3 Press Enter to exit the Process display options submenu screen.
- 4 Press Enter to exit the Detail display options submenu screen.
- 5 Press Enter to exit the MVHOST Main Options Menu screen.
- 6 At the **Should these options be saved permanently?** prompt:
 - Press the Enter key to return to the MVHOST program without saving the modifications permanently.
 - Type **Y** (Yes) to save the changes permanently and then press the Enter key.

Information about each of the process display options is provided to assist you.

Display extended process line

Additional process information can be displayed in the PROCESS SUMMARY section of the Global Summary screen. The extended PROCESS SUMMARY display includes:

- An extended process line below each process line, which shows the percentage of time the corresponding process spent in each wait state.
- The wait states column headings for the wait state statistics displayed in the extended process lines.

Wait States
Headings

Process Line
Extended
Process Line

----- PROCESS SUMMARY -----													
PID	Name	User Name			TTY	CPU%	Nice	Pri	RSS/Size	#Rd	#Wr	State	Res
{PRI	TPG	DPG	KPG	ULCK	JOB	OTH}	Group	Name	wchan	nlpw	nswap	CPU(ms)	<
13254	mvmid	gabi			---	0.2	RT	129	2328/2864	0	0	CPU	<
{	<	0	0	0	0	0	100}	DAEMON	0x00000000	5	0		140

Figure 8.17 MVHOST Global Summary screen: wait states headings & extended process lines

The wait states headings line includes all possible wait states in which the current processes can spend CPU time ({PRI TPG DPG...}). For detailed information about each wait state, see Appendix B, "Wait States" on page 283.

Extending the PROCESS SUMMARY

To extend the PROCESS SUMMARY portion of the Global Summary screen:

- 1 From the Process display options submenu screen, select the Display extended process line option. Press the Enter key.
- 2 At the next prompt, enter **Y** (Yes). Press the Enter key.

Display total and I/O percentage instead of read/write counts

The default column headings for the PROCESS SUMMARY section of the Global Summary screen are shown in Figure 8.17. I/O information can be displayed, by switching to an alternative set of column headings (see Figure 8.18).

----- PROCESS SUMMARY -----												
PID	Name	User	Name	TTY	CPU%	Nice	Pri	RSS/Size	#IO	I/O%	State	Res

Figure 8.18 *MVHOST PROCESS SUMMARY* column headings (alternative)

Switching the PROCESS SUMMARY Column Headings

To replace total reads (#Rd) with total I/O's (#IO) and total writes (#Wr) with I/O percentage (I/O%):

- 1 From the Process display options submenu screen, select the Display total and I/O percentage instead of read/write counts option. Press the Enter key.
- 2 At the next prompt, enter **Y** (Yes). Press the Enter key.

Display only active processes

An *active* process is defined as a process that used more than 0.0 percent of total CPU time during the current sample interval.

By default, only active processes are included in the PROCESS SUMMARY section of the Global Summary screen. Inactive processes can be included.



RECOMMENDATION The default setting, Y (display only active processes), is recommended.

Displaying Both Active and Inactive Processes

To display all processes currently on the system, both active and inactive:

- 1 From the Process display options submenu screen, select the Display only active processes option. Press the Enter key.
- 2 At the next prompt, enter **N** (No). Press the Enter key.

CPU percentage required for process display

The CPU percentage required for process display option is possible when only active processes are included in the PROCESS SUMMARY portion of the Global Summary screen. This option enables you to set a minimum threshold value (a minimum percentage of CPU time) that a process must meet or exceed to be included in the PROCESS SUMMARY section of the Global Summary screen.

The default parameter of 0.0 percent will allow all active processes in the current sample interval to be displayed, including processes in the run queue (even though they did not use any CPU time). Entering a greater threshold value, for example 10 percent, will exclude all active processes that used less than 10 percent of the total CPU time.



RECOMMENDATION If you are doing general system monitoring, a CPU threshold value of less than 5.0 percent is recommended. If you are trying to pinpoint the top CPU "hog" processes, a value of 5.0 to 15.0 percent is recommended.

Setting the CPU Percentage Required for a Process to Display

To set the minimum CPU percentage:

- 1 From the Process display options submenu screen, select the CPU percentage required for process display option. Press the Enter key.
- 2 At the next prompt, enter a value between 0.0 and 100. Press the Enter key.

Display interactive processes

Interactive processes (processes attached to a terminal) are listed in the PROCESS SUMMARY section of the Global Summary screen. These processes can be suppressed.

Suppressing Interactive Processes

To exclude interactive processes from the screen display:

- 1 From the Process display options submenu screen, select the Display interactive processes option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Display non-interactive processes

Batch and daemon processes (non-interactive processes) are listed in the PROCESS SUMMARY section of the Global Summary screen. These processes can be suppressed.

Suppressing non-interactive Processes

To exclude non-interactive processes from the screen display:

- 1 From the Process display options submenu screen, select the Display non-interactive processes option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Display processes which have died

The PROCESS SUMMARY section displays all processes which have died. These processes are labeled "Dead" under the column heading, "Wait." These processes can be suppressed.

Suppressing Dead Processes

To exclude dead processes from the screen display:

- 1 From the Process display options submenu screen, select the Display processes which have died option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Process login filter

The default login filter (.*) allows all users and all processes to be displayed on the MVHOST screens.

Specifying a Process Login Filter

To limit displayed processes to those of just one login:

- 1 From the Process display options submenu screen, select the Process login filter option. Press the Enter key.
- 2 At the next prompt, enter the logon using any acceptable regular expression. For example, to match the login, "root," you would type **root** at the next prompt. Press the Enter key.

For information about regular expressions, refer to the Unix manpage, "regex," by typing **man regex** at the shell prompt.

Process sort option

The process sort option enables the user to select the order in which the qualifying processes will be displayed. By default, the processes are sorted by the amount of CPU time they utilized in the current sample interval.

Selecting a Process Sort Option

- 1 From the Process display options submenu screen, select Process sort option. Press the Enter key.
- 2 At the next prompt, type the key command that corresponds to the desired sort option (described in Table 8.1). Press the Enter key.

Table 8.1 *MVHOST process sort options*

Option	Sort Option Description	Column
1-PID#	Sort by process identification number.	PID
2-Logon terminal	Sort by terminal logon.	Tty
3-Workload group	Sort by the application workload group to which the process belongs. (Displays in the WORKLOAD SUMMARY section of the Global Summary screen.)	N/A
4-CPU time	Sort by the percentage of CPU time utilized by the process in the current sample interval.	CPU%
5-Disk I/O	Sort by the total number of disk I/O's incurred by the process.	#IO
6-Priority	Sort by process priority.	Pri
7-State	Sort by the activity or sleep state a process is in during the current sample interval.	State

Display processes sorted in ascending order

By default, the processes displayed will be sorted in ascending order.

Displaying Processes in Descending Order

To sort and display processes in descending order:

- 1 From the Process display options submenu screen, select the Display processes sorted in ascending order option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Maximum number of processes to display

To specify a maximum number of processes to be displayed:

- 1 From the Process display options submenu screen, select the Maximum number of processes to display option. Press the Enter key.
- 2 At the next prompt, enter a whole numeric value between 0 and 999.

For example, to show the ten processes that consume the most CPU time, set the following three parameters:

- 1 Set the Process sort option to **4-CPU** time to sort the processes by CPU time utilized.
- 2 Set the Display processes sorted in ascending order option to **N**, to display the processes in descending order.

- 3 Set the Maximum number of processes to **10**, to display the ten processes using the most CPU time. (The default value, 0, will allow all eligible processes to be displayed.)

Pulse Points display options

Pulse Points display options Submenu Screen

To access the Pulse Points display options submenu screen from any MVHOST display screen:

- 1 Type **o** from the MVHOST Enter command: prompt to view the MVHOST Main Option Menu screen.
- 2 Ensure the Display process information option is enabled.
- 3 From the MVHOST Main Option Menu screen, select Detail display options and press Enter.
- 4 From the Detail display options submenu screen, select Pulse Points display options and press Enter. The Pulse Points display options submenu screen will display (Figure 8.19).

```
MAIN OPTION MENU
  Detail display options
    Pulse Points display options

    1) Display CPU stats (Y)
    2) Display memory stats (Y)
    3) Display disk I/O stats (Y)
    4) Display network stats (Y)
    5) Display miscellaneous stats (Y)

Which Option:
```

Figure 8.19 *MVHOST Pulse Points display options submenu screen*

Pulse Points display option Commands

To modify a pulse points display option, either temporarily or permanently:

- 1 Type the option command key from the Pulse Points display options submenu screen and press the Enter key.
- 2 Enter a new parameter at the secondary command prompt. Press the Enter key.
- 3 Press Enter to exit the Pulse Points display options submenu screen.
- 4 Press Enter to exit the Detail display options submenu screen.
- 5 Press Enter to exit the MVHOST Main Options Menu screen.
- 6 At the **Should these options be saved permanently?** prompt:
 - Press the Enter key to return to the MVHOST program without saving the modifications permanently.
 - Type **Y** (Yes) to save the changes permanently and then press the Enter key.

Information about each of the pulse points display options is provided to assist you.

Display CPU stats

CPU statistics are displayed in the Pulse Points screen.

Meta-View D.05e1 firefly		WED, 29 JUN 2005, 12:23		E: 00:27:36 I: 01:26	
PULSE POINTS					
Indicator	Green	Yellow	Red	Comments	
--- CPU ---					
CPU Busy %	0.5	[0.5]			
Queue Busy %	0	[0.1]			
Run-Q Average	0	[0]			
--- Memory ---					
Ave Page Residence	600.0	[600.0]			secs
Page Scan Rate	0	[0]			/sec
Page Out Rate	0	[0]			/sec
Swap Out Rate	0	[0]			/sec
--- Disk I/O ---					
Average Wait Time	8.2	[7.0]			System Wide
Average Q-Length	0	[0]			System Wide
Disk Utilization %	0	[0]			System Wide
Disk I/O Rate (/sec)	1	[1]			System Wide
--- Network ---					
Defer %	0	[0]			System Wide
Collision %	0	[0]			System Wide

Enter command: _					

Figure 8.20 MVHOST Pulse Points screen

Suppressing CPU Statistics

To suppress CPU statistics from the Pulse Points screen:

- 1 From the Pulse Points display options submenu screen, select the Display CPU stats option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Display memory stats

Memory statistics are displayed in the Pulse Points screen (refer to Figure 8.20).

Suppressing Memory Statistics

To suppress memory statistics from the Pulse Points screen:

- 1 From the Pulse Points display options submenu screen, select the Display memory stats option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Display disk I/O stats

Disk I/O statistics are displayed in the Pulse Points screen. To see an example of this screen, refer to Figure 8.20 on page 61.

Suppressing Disk I/O Statistics

To suppress disk I/O statistics from the Pulse Points screen:

- 1 From the Pulse Points display options submenu screen, select the Display disk I/O stats option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Display network stats

Network statistics are displayed in the Pulse Points screen.

Suppressing Network Statistics

To suppress network statistics from the Pulse Points screen:

- 1 From the Pulse Points display options submenu screen, select the Display network stats option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Display miscellaneous stats

Miscellaneous statistics, when available, are displayed in the Pulse Points screen. (Miscellaneous statistics are not displayed in the example in Figure 8.20 on page 61.)

Suppressing Miscellaneous Statistics

To suppress miscellaneous statistics from the Pulse Points screen:

- 1 From the Pulse Points display options submenu screen, select the Display miscellaneous stats option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

User Display Options

User display options Submenu Screen

To access the User display options submenu screen from any MVHOST display screen:

- 1 Type **o** from the MVHOST Enter command: prompt to view the MVHOST Main Option Menu screen.
- 2 Ensure the Display process information option is enabled.
- 3 From the MVHOST Main Option Menu screen, select Detail display options and press the Enter key.
- 4 From the Detail display options submenu screen, select User display options and press the Enter key. The User display options submenu will appear (Figure 8.21).

```
MAIN OPTION MENU
Detail display options
  User display options

  1) CPU percentage required for user display (.0)
  2) User logon filter (.* )
  3) User sort option (3-CPU time)
  4) Display users sorted in ascending order (N)
  5) Maximum number of users to display (0=ALL) (0)

Which Option:
```

Figure 8.21 MVHOST User display options submenu screen

User display option Commands

The purpose of the user display options is to fine tune the information in the User Summary screen (discussed in “MVHOST User Summary” on page 145).

To modify a user display option, either temporarily or permanently:

- 1 Type the option command key from the User display options submenu screen and press the Enter key.
- 2 Enter a new parameter at the secondary command prompt. Press the Enter key.
- 3 Press Enter to exit the User display options submenu screen.
- 4 Press Enter to exit the Detail display options submenu screen.
- 5 Press Enter to exit the MVHOST Main Options Menu screen.
- 6 At the **Should these options be saved permanently?** prompt:
 - Press the Enter key to return to the MVHOST program without saving the modifications permanently.
 - Type **Y** (Yes) to save the changes permanently and then press the Enter key.

Information about each of the user display options is provided to assist you.

CPU percentage required for user display

The CPU percentage required for user display option is used to filter out less-active users from the User Summary display. The option is specified as a percentage (0.0-100). The default setting is .0 (zero) percent, which means that processes that use 0 percent or more of CPU time will be displayed and no users will be filtered out.



RECOMMENDATION If you are performing general system monitoring, a CPU threshold value of less than 5.0 percent is recommended. If you are trying to pinpoint the top CPU "hog" processes, a value of 5.0 to 15.0 percent is recommended.

Setting the CPU Percentage Required for a User Name to Display

To set the minimum CPU percentage:

- 1 From the User display options submenu screen, select the CPU percentage required for user display option. Press the Enter key.
- 2 At the next prompt, enter a value between 0.0 and 100. Press the Enter key.

User logon filter

The User logon filter is used to sort out specific users from the User Summary display. The default setting, .* (meaning match any number of any character), will allow all user names to be listed in the User Summary screen.

Specifying a User Login Filter

To limit displayed users to those of a single login:

- 1 From the User display options submenu screen, select the User login filter option. Press the Enter key.
- 2 At the next prompt, type that user name logon filter (using Unix regular expression syntax) at the User logon filter prompt. For example, to limit the eligible user process to root users, type **root**. Press the Enter key.

For information about regular expressions, refer to the Unix manpage, "regex," by typing **man regex** at the shell prompt.

User sort option

The User sort option applies a specific sort option to the users displayed in the User Summary screen. The default, 3-CPU time, sorts the report lines on the screen by the percentage of CPU time utilized by each process in the most-recent interval.

Selecting a User Sort Option

- 1 From the User display options submenu screen, select User sort option. Press the Enter key.
- 2 At the next prompt, type the key command that corresponds to the desired sort option (described in Table 8.2). Press the Enter key.

Table 8.2 *MVHOST user sort options*

Sort Option	Description
1-User Name	Sort users alphabetically by the login name of the user.
2-UID	Sort users by the user ID number from /etc/passwd.
3-CPU time	Sort users by the amount of CPU time utilized during the last interval.
4-Phys I/O	Sort users by the number of physical I/O's accumulated in the last interval.
5-Term I/O	Sort users by the number of terminal I/O's accumulated in the last interval.
6-Processes	Sort users by process name.
7-Real Memory	Sort users according to real memory usage.
8-Virtual Memory	Sort users according to virtual memory usage.

Display users sorted in ascending order

This parameter determines whether the sort order for the sort option applied in Option 3 is ascending or descending. By default, the users will be sorted and displayed in descending order.

Displaying Users in Ascending Order

To sort and display processes in ascending order:

- 1 From the Process display options submenu screen, select the Display users sorted in ascending order option. Press the Enter key.
- 2 At the next prompt, type **Y** (Yes). Press the Enter key.

Maximum number of users to display

This setting determines the maximum number of users to be listed in the User Summary screen. The default setting, 0 (zero), allows all users to be displayed.

To specify a maximum number of processes to be displayed in the User Summary screen:

- 1 From the User display options submenu screen, select the Maximum number of users to display option. Press the Enter key.
- 2 At the next prompt, enter a whole numeric value between 0 and 999.

Terminal Display Options

Terminal display options Submenu Screen

To access the Terminal display options submenu screen from any MVHOST display screen:

- 1 Type **o** from the MVHOST Main Option Menu screen.
- 2 Ensure the Display process information option is enabled.
- 3 From the MVHOST Main Option Menu screen, select Detail display options and press the Enter key.
- 4 From the Detail display options submenu screen, select Terminal display options and press the Enter key. The Terminal Display Options submenu screen will display (Figure 8.22).

```
MAIN OPTION MENU
  Detail display options
    Terminal display options

    1) Filter getty processes from terminal display (Y)
    2) Terminal sort option (1-Terminal)
    3) Display terminals sorted in ascending order (N)
    4) Maximum number of terminals to display (0=ALL) (0)

Which Option: _
```

Figure 8.22 MVHOST Terminal display options submenu screen

Terminal display option Commands

The purpose of the terminal display options is to fine-tune the information in the Terminal Summary screen (discussed in “MVHOST Terminal Summary” on page 147).

To modify a terminal display option, either temporarily or permanently:

- 1 Type the option command key from the Terminal display options submenu screen and press the Enter key.
- 2 Enter a new parameter at the secondary command prompt. Press the Enter key.
- 3 Press Enter to exit the Terminal display options submenu screen.
- 4 Press Enter to exit the Detail display options submenu screen.
- 5 Press Enter to exit the MVHOST Main Options Menu screen.
- 6 At the **Should these options be saved permanently?** prompt:
 - Press the Enter key to return to the MVHOST program without saving the modifications permanently.
 - Type **Y** (Yes) to save the changes permanently and then press the Enter key.

Information about each of the terminal display options is provided to assist you.

Filter getty processes from terminal display

A *getty process* is a process that waits for a login, which corresponds to an inactive terminal. The default setting, **Y**, filters out the getty processes and displays only the active terminals in the Terminal Summary screen.

Including Getty Processes

To include getty processes as well as active terminals in the Terminal Summary screen:

- 1 From the Terminal display options submenu screen, select the Filter getty processes from the terminal display option. Press the Enter key.
- 2 At the next prompt, type **N** (No). Press the Enter key.

Terminal sort option

This setting applies a specific sort option to the terminals displayed in the Terminal Summary screen. The default setting, 1-Terminal, sorts the report lines on the screen by terminal device name.

Selecting a Terminal Sort Option

- 1 From the Terminal display options submenu screen, select Terminal sort option. Press the Enter key.
- 2 At the next prompt, type the key command that corresponds to the desired sort option (described in Table 8.3). Press the Enter key.

Table 8.3 *MVHOST terminal sort options*

Sort Option	Description
1-Terminal	Sort terminals by the terminal device name.
2-User Name	Sort terminals by the login user name.
3-Login Time	Sort terminals according to the time of login.
4-Idle Time	Sort terminals according to the current idle time.
5-Processes	Sort terminals according to the number of processes attached to the terminal.
6-TTY Ins	Sort terminals according to the number of characters input on the terminal.
7-TTY Outs	Sort terminals according to the number of characters output on the terminal.

MVHOST-SPECIFIC CONFIGURATION FILES

MVHOST advice File

In the SYSTEM PERFORMANCE ADVICE portion of the Global Summary screen, advice messages are displayed based upon system activity that occurred during the current interval. The advice messages and display criteria are maintained in the MVHOST advice file (a portion of which is shown below) located in the /etc/opt/lund/cfg directory.

```
User          #####
Notification  ——— echo >/dev/console
Command
Comments     ——— #lpstrap
              #uncomment the above line to start sending snmp trap messages with
              #notify information. You must configure lpstrap for you environment also.
              #See lpstrap for more info.

Default      ——— <CI01>The CPU was used a total of %s of its capacity during this interval
Advice
Specification ALWAYS
Block       CPU-BUSY%
```

Figure 9.1 *MVHOST advice configuration file (example)*

MVHOST advice File Configuration

The MVHOST program can display a single-line message for each item-name variable (a data item selected from the /opt/lund/lib/itemlist file) placed in the advice file. For a list of the data items in the itemlist file, see Appendix B.

During each current interval, MVHOST compares the value of each variable being monitored to the threshold criteria placed in the advice file. If the monitored value meets its threshold criteria, the message associated with that variable is displayed in the SYSTEM PERFORMANCE ADVICE portion of the Global Summary screen.



NOTE Please note that the lower and upper bounds of the thresholds for the moderate, HEAVY, and EXCESSIVE categories of each default advice message in the advice file are suggested values. It may be appropriate to adjust these values to reflect your system's performance criteria.

Advice Message Specification Blocks

Advice message specification blocks are constructed in accordance with specific configuration rules and syntax. The rules for configuring advice message specification blocks within the advice file are listed in “Configuration Rules” on page 71. The syntax of the specification blocks is outlined below using the default ME01 advice message as an example.

Example

```
<ME01>Page out rate reveals %s %s memory load
VM-PAGE-OUT-RATE (10-50)
VM-PAGE-OUT-RATE | 20 an | 15 a | 10 a |
VM-PAGE-OUT-RATE | 20 EXCESSIVE | 15 HEAVY | 10 moderate |
```

Syntax

```
<message-id><message-text>
item-name (min-max)
item-name [ |<value1><string1>|<value2><string2>|<value3><string3>| ]
item-name [ |<value1><string1>|<value2><string2>|<value3><string3>| ]
```

Where:

- <message-id> is a unique, four-character message identification code.
- <message-text> is the actual advice message text.
- item-name is the itemlist value to be used to determine the text string.
- (min-max) is the minimum and maximum item threshold values required for the message to display.
- The last two lines in the example are each single-line text qualifiers that correspond to the text place-holder(s) (%s) in the message-text.
 - The first place-holder in the message-text corresponds to the first text qualifier in the specification block.

In the example, the first place-holder in the message-text line:

```
<ME01>Page out rate reveals %s %s memory load
```

is determined by the value thresholds in the corresponding text-qualifier:

```
VM-PAGE-OUT-RATE | 20 an | 15 a | 10 a |
```

- The second conversion specifiers in the <message-text> corresponds to the second text qualifier line in the block, and so on.

In the example, the first place-holder in the message-text line:

```
<ME01>Page out rate reveals %s %s memory load
```

is determined by the value thresholds in the corresponding text-qualifier:

```
VM-PAGE-OUT-RATE | 20 EXCESSIVE | 15 HEAVY | 10 moderate |
```

The item-name <value> determines which <string> text is inserted into the printed advice message.

Configuration Rules

- 1 Comment lines must be preceded by a number sign character (#).
- 2 The first line of the MVHOST advice file is followed by any number of user-notification commands, terminated by one or more blank lines.

User-notification commands can be used to redirect copies of advice messages to another output device. No validation is done to confirm the syntax of these lines. The actual message text should not be included in the command. Instead, the advice message will be appended to the end of it.

Example

```
echo>/dev/console7
```

- 3 The rest of the file contains any number of message advice specification blocks separated by one or more blank lines. Each advice specification block must contain a message-id code followed by the actual advice message-text on the first line. Subsequent lines contain threshold criteria.
- 4 The message-id code is made up of the following components:
 - A type code, which denotes the specific system activity monitored.
 - B for buffer cache activity
 - C for CPU activity
 - D for disk activity
 - G for global activity
 - M for memory activity
 - L for network activity
 - P for process activity
 - A user-defined priority code assigned to the <variable>
 - I indicates the advice message is informational.
 - E indicates the performance level is exceptional or excessive.
 - A unique two-digit identification number (00-99)

- 5 The <message-id> code is followed by the message text (<message-text>).

Example

```
<CE01> The CPU Queue length indicates %s %s CPU bottleneck
```

The message identification code precedes the message text in the specification file, but follows the message text in the actual advice message display.

- 6 Conversion specifications in the <message-text> specification must be introduced by the percent sign character (%). After the % character, a conversion character (either s or %) will indicate the type of conversion to be applied.

- %s (percent sign followed immediately by a lower-case s) indicates the argument is a string and characters from the string will be printed until the end of the string.
- %% (percent sign followed immediately by a percent sign) will print a % character; no argument is converted.

For *each variable text or value* to be included in the message text, a single-line text qualifier must follow the basic advice specification.

- 7 If the advice message should always be displayed, the second line of the advice specification block can be replaced with the word ALWAYS to specify the message should always be generated. The <item-name> from the .itemlist file would then be the only entry on the third line of the block.

Example

```
<PI01>This interval's 'hog' process is %s with %s%% of the CPU
ALWAYS
%CPUPCT -PID
%CPUPCT
```

- 8 The item-name specification used to determine the text string is usually, but not necessarily, the same as the advice threshold item. An item-name can be selected from block types 0, 6, 7, 8, 10, 12, 14, or 15 in the itemlist file. Or, it can be one of six special item-names preceded by a percent sign (%item-name).

The following three items can only be used as variable text item-names. They will be replaced with a string of the form #nnn (nnn=PIN) to identify the appropriate process:

- %CPU-HOG, which identifies the CPU hog process
- %DISC-HOG, which identifies the disk hog process
- %TERM-HOG, which identifies the terminal read hog process

The next three special items can be used anywhere as a regular item-name can be used:

- %HOG-CPU, the CPU percentage used by %CPU_HOG
- %HOG-DISK, the disk I/O's performed by %DISC_HOG
- %HOG-TERM, the terminal reads performed by %TERM_HOG

- 9 An item-name preceded by an exclamation character (!item-name), specifies that all occurrences of this advice message will be sent through user-notification commands.

SNMP Traps

Meta-View Performance Manager provides the ability to send SNMP (Simple Network Management Protocol) traps to an SNMP event browser, such as OpenView Network Node Manager Alarm Browser. The executable program used to accomplish this, `snmptrap`, comes with the event browser—it is not shipped with the Meta-View Performance Manager product.

Installing the `lpstrap` File

Before enabling SNMP traps, you must first install the `lpstrap` file on your host system.

- 1 Save the following file as `/opt/lund/bin/lpstrap` on your host system:

```
#!/bin/ksh -f

MGR_HOST=<host-systemname>

SNMPTRAP_PATH=/opt/OV/bin

$SNMPTRAP_PATH/snmptrap "" .1.3.6.1.4.1.11.2.17.1

$MGR_HOST 6 58916872""\

.1.3.6.1.4.1.11.2.17.2.1.0 Integer 14 \

.1.3.6.1.4.1.11.2.17.2.5.0 octetstringascii "Major" \

.1.3.6.1.4.1.11.2.17.2.4.0 octetstringascii \

"Meta-View Performance Manager: $@"
```

- 2 Change the file permissions as executable:

```
chmod 755 lpstrap
```

Enabling the SNMP Traps

To enable SNMP traps, perform the following steps.

- 1 Modify `MGR_HOST` in `/opt/lund/bin/lpstrap` to reflect the host that will receive the traps (the system running the browser).
- 2 Modify `SNMPTRAP_PATH` in `/opt/lund/bin/lpstrap` to reflect the path for `snmptrap` on the host executing Meta-View Performance Manager. By default, `lpstrap` uses `/opt/OV/bin/`.
- 3 Modify the `/etc/opt/lund/cfg/advice` file to enable `lpstrap` by removing the number sign character (`#`) in the line: `#lpstrap`.
- 4 Modify the `/etc/opt/lund/cfg/advice` file to specify which messages you wish to be sent as SNMP traps by preceding the threshold specification with a greater than sign (`>`).

For example, the advice message specification block:

```
<CE01>CPU Queue length indicates %s %s CPU bottleneck
CPU-QUEUE-LEN (5-9999)
```

```
CPU-QUEUE-LEN | 10 an | 5 a | 2 a
```

```
CPU-QUEUE-LEN | 10 EXCESSIVE | 5 HEAVY | 2 moderate
```

will become:

```
<CE01>CPU Queue length indicates %s %s CPU bottleneck
```

```
>CPU-QUEUE-LEN (5-9999)
```

```
CPU-QUEUE-LEN | 10 an | 5 a | 2 a
```

```
CPU-QUEUE-LEN | 10 EXCESSIVE | 5 HEAVY | 2 moderate
```



NOTE Although you can enable traps for all advice messages, this feature was designed to notify personnel of exceptional performance levels. For instance, enabling an SNMP trap for an advice message that is ALWAYS generated could be excessive and is not recommended.

- 5 Start the Meta-View Performance Manager executable program (MVHOST or MVLOGD) to which you want to send the traps, and enable advice messages within that program.
 - For instructions to enable advice messages in MVHOST, refer to “Display advice messages” on page 49.
 - For instructions to enable advice messages in MVLOGD, see “Setting Advanced Configuration Parameters” on page 221.



NOTE If advice messages are enabled in more than one executable program or more than one occurrence of the same program, each program will create SNMP traps. To avoid duplication, enable the advice messages in MVLOGD only.

MVHOST holidays File

The `/etc/opt/lund/cfg/holidays` file contains a list of dates to be ignored by MVLOGX. By default, the file contains exclusion dates for the following holidays in the years 1996 through 2010:

- New Years Day (January 1)
- Presidents Day (3rd Monday in February)
- Memorial Day (last Monday in May)
- Independence Day (July 4)
- Labor Day (1st Monday in September)
- Veterans' Day (November 11)
- Thanksgiving Day (4th Thursday in November)
- Christmas Day (December 25)

The portion of the `/etc/opt/lund/cfg/holidays` file that excludes holidays for the year 2000 is provided as an example:

```
! 2000 Holidays
!  
01/01/00    New Year's  
02/21/00    President's Day  
05/29/00    Memorial Day  
07/04/00    Independence Day  
09/04/00    Labor Day  
11/11/00    Veteran's Day  
11/23/00    Thanksgiving  
12/25/00    Christmas
```

Figure 9.2 *MVHOST holidays configuration file (example)*

The purpose of the holidays file is to eliminate atypical computer performance data from the statistical analysis done by MVLOGX. To add, delete, or modify the contents of this file, use the configuration rules listed below.

Configuration Rules

When you know in advance that computer resources used on particular date will not be typical and do not want that day's performance to skew performance statistics, you can exclude that date from MVLOGX's computations by doing the following:

- 1 Add the date to the `/etc/opt/lund/cfg/holidays` file.
 - a Use the format MM/DD/YY.
 - b Precede any comment lines with an exclamation character (!).
- 2 Enable Exclusions in MVLOGX.
- 3 Enable Holiday Exclusions in MVLOGX.

MVHOST ppoints File

The `/etc/opt/lund/cfg/ppoints` file contains the configuration information for the Pulse Points screen. For information about pulse points, see "MVHOST Pulse Points Summary" on page 163.

```
#####
CPU Pulse  ——— $PP_CPU   CPU-BUSY%      "CPU Busy %"      60,85   ""
Points
Indicator  $PP_CPU   CPU-QUEUE-BUSY% "Queue Busy %"    75,90   ""
Lines      $PP_CPU   CPU-QUEUE-LEN   "Run-Q Average"   5,10    ""

Memory     ——— $PP_MEMORY  VM-AVE-PG-RES-TIME "Ave Page Residence" 40,20   "secs"
Pulse Points
Indicator  $PP_MEMORY VM-PG-SCAN-RATE  "Page Scan Rate"    150,200 "/sec"
Lines      $PP_MEMORY VM-PAGE-OUT-RATE "Page Out Rate"     15,20   "/sec"
           $PP_MEMORY VM-SWAP-OUT-RATE "Swap Out Rate"     1, 2    "/sec"

Disk Pulse  ——— $PP_DISC   DISC-AVG-WAIT-TIME "Average Wait Time" 30,40   "System Wide"
Points
Indicator  $PP_DISC   DISC-QUEUE-LEN   "Average Q-Length"  1, 3    "System Wide"
Lines      $PP_DISC   DISC-UTIL%       "Disk Utilization %" 40,60   "System Wide"
           $PP_DISC   DISC-IO-RATE     "Disk I/O Rate (/sec)" 40,60   "System Wide"

Network     ——— $PP_NET    NETIF-DEFER%      "Defer %"          1,10    "System Wide"
Pulse Points
Indicator Line $PP_NET    NETIF-COLLISION%  "Collision %"      15,30   "System Wide"
```

Figure 9.3 *MVHOST ppoints configuration file (example)*

MVHOST ppoints File Configuration

An example of the Pulse Points screen is shown in Figure 9.4.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:23 E: 00:27:36 I: 01:26
----- PULSE POINTS -----
Indicator | Green | Yellow | Red | Comments
-----|-----|-----|-----|-----
CPU
--- CPU ---
CPU Busy %          0.5[ 0.5]
Queue Busy %        0[ 0.1]
Run-Q Average       0[ 0]
--- Memory ---
Ave Page Residence  600.0[600.0]          secs
Page Scan Rate      0[ 0]          /sec
Page Out Rate       0[ 0]          /sec
Swap Out Rate       0[ 0]          /sec
--- Disk I/O ---
Average Wait Time   8.2[ 7.0]          System Wide
Average Q-Length    0[ 0]          System Wide
Disk Utilization %  0[ 0]          System Wide
Disk I/O Rate (/sec) 1[ 1]          System Wide
--- Network ---
Defer %             0[ 0]          System Wide
Collision %         0[ 0]          System Wide
-----
Enter command: _

```

Figure 9.4 MVHOST Pulse Points screen (example)

By default, the pulse point thresholds and messages are configured for you. You can edit the `/etc/opt/lund/cfg/ppoints` file in order to:

- Add, delete, or reorder the pulse point indicators (variables) that appear in each section
- Modify the Green (normal), Yellow (problematic), and Red (unacceptable) threshold values
- Modify the comments associated with each pulse point indicator.

Pulse Point Indicator Lines

Example

```
$PP_MEMORY VM-DEACT-BPS "Deactivate Byte Rate" 1,200 "bytes/sec"
```

Syntax

```
<section><value-spec><label><yellow-threshold, red-threshold><comment>
```

Configuration Rules

Use the following configuration rules when editing the ppoints file.

- 1 Any pulse points variable that you want to display in the Pulse Points screen must be defined in the `/etc/opt/lund/cfg/ppoints` file.
- 2 The first four specification fields in the pulse points indicator line must be completed. The `<comments>` field may be omitted.
- 3 Commas, spaces, or tabs must separate the specification fields in the pulse points indicator line to allow for "white space" in the display.
- 4 Each indicator line must begin with the name of the section in which the variable will appear in the Pulse Points screen. The section name in the `<section>` field must be preceded by "\$PP_". The valid section names are:
 - \$PP_CPU (CPU section)
 - \$PP_MEMORY (Memory section)
 - \$PP_DISC (Disc I/O section)
 - \$PP_NET (Network section)
 - \$PP_MISC (Miscellaneous section)
- 5 The `<value-spec>` field is composed of a variable and an (optional) operator in the format:


```
<variable>[<operator><variable>]...[<operator><variable>]
```

Where:

- `<variable>` is either the MVHOST variable name being monitored and displayed in the Pulse Points screen, or the MVHOST variable being used after the operator. A variable name must meet the following qualifications:
 - It must be included in the `/opt/lund/lib/itemlist` file.
 - It must have block numbers 1, 2, 3, 6, 7, 8, or 9.
 - It must have item types less than 1000.
- `<operator>` is either the addition (+) or subtraction (-) function applied to the corresponding variable within the indicator line. White space (achieved by inserting a comma, a space, or a tab) must exist on both sides of the operator within the indicator line.

Example

To subtract CPU-USER-BUSY% from CPU-HIGH-PRI-BUSY%, the indicator line would be:

```
$PP_CPU CPU-HIGH-PRI-BUSY% - CPU-USER-BUSY% 60,85 ""
```

- 6 The `<label>` field is the text that describes the `<variable>` on the Pulse Points screen. For example, in the indicator line:

```
$PP_MEMORY VM-DEACT-BPS "Deactivate Byte Rate" 1,200 "bytes/sec"
```

"Deactivate Byte Rate" is the `<label>` that describes the `<variable>`, VM-DEACT-BPS.

- 7 The <yellow-threshold, red-threshold> field follows the <label> field in a pulse points indicator line. The values entered for the yellow- and red-thresholds should be in the scale or unit appropriate for the <variable>.
- Green

To display in the Green (normal) column in the Pulse Points screen, the value of the <variable> must be less than the value for the yellow-threshold when the scale is from low to high (the yellow-threshold value is less than the red threshold value). See Example 1 page 79.

When the scale is from high to low (the yellow-threshold value is greater than the red-threshold value), the value of the <variable> must be greater than the value for the yellow threshold. See Example 2 on page 79.
 - Yellow

To display in the Yellow (problematic) column in the Pulse Points screen, the value of the <variable> must be equal to or greater than the yellow threshold value and less than the red threshold value when the scale is low to high. See Example 1.

When the scale is from high to low, the <variable> must be equal to or less than the yellow threshold value and greater than the red threshold value. See Example 2.
 - Red

To display in the Red (unacceptable) column in the Pulse Points screen, the value of the <variable> must be equal to or greater than the red threshold value when the scale is set from low to high. See Example 1.

When the scale is from high to low, the <variable> must be equal to or less than the red threshold value. See Example 2.

Example 1

```
$PP_CPU CPU-HIGH-PRI-BUSY% "Hi-Pri CPU %" 60,85 ""
```

The pulse points for this example indicator line would be interpreted as:

- CPU-HIGH-PRI-BUSY% data values less than 60 will appear in the Green column in the Pulse Points screen.
- CPU-HIGH-PRI-BUSY% data values equal to or greater than 60 and less than 85 will appear in the Yellow column in the Pulse Points screen.
- CPU-HIGH-PRI-BUSY% data values greater than 85 will appear in the Red column in the Pulse Points screen.

Example 2

```
$PP_MEMORY BC-RHIT% "Read Hit %" 90,80 ""
```

The pulse points for this second example would be interpreted as:

- BC-RHIT% data values greater than 90 will appear in the Green column in the Pulse Points screen.

- BC-RHIT% data values equal to or less than 90 and greater than 80 will appear in the Yellow column in the Pulse Points screen.
 - BC-RHIT% data values less than 80 will appear in the Red column in the Pulse Points screen.
- 8 The <comment> field (optional) can be used to assist in the interpretation of the pulse points indicator. Any comments must be enclosed in quotation characters (" "). For example, in the indicator line:

```
$PP_MEMORY VM-DEACT-BPS "Deactivate Byte Rate" 1,200 "bytes/sec"
```

The comment, "bytes/sec", tells the user the Deactivate Byte Rate is calculated in bytes per second.

MVHOST kip File

The `/etc/opt/lund/cfg/kip` file contains the configuration information for the KIP (Key Indicators of Performance) line displayed in all MVHOST screens. For information see "Key Indicators of Performance (KIP) Line" on page 87.

```
# Var_name          row,column,width
CPU-BUSY%          ROW,13,WIDTH
CPU-HIGH-PRI-BUSY% ROW,31,WIDTH
BC-RHIT%           ROW,49,WIDTH
```

Figure 9.5 *kip configuration file (example)*

Configuration Rules

The kip configuration file requires one text line for each data item displayed in the KIP line.

Example

```
CPU-BUSY%          ROW,13,WIDTH
```

Syntax

```
<variable>        row,column,width
```

Where <variable> is the MVHOST variable name being monitored and displayed in the KIP line.

All kip variable items:

- Must be found in `/opt/lund/lib/itemlist`.
- Must have block numbers: 6,7,8,10,12, or 14.
- Must have item types less than 1000.

Attribute Commands

The following attribute commands can be applied when editing the kip file. The default setting is \$LEFT, \$INVERSE, \$UNDERLINE.

Table 9.1 *MVHOST kip attribution commands*

Command	Description
\$TEXT	A required line and \$END is a required line. Blank lines are not ignored between \$TEXT and \$END.
\$BLINK	Makes the KIP line flash.
\$INVERSE	Displays the KIP line in reverse video.
\$UNDERLINE	Underlines the KIP line.
\$HALF	Displays the line in half bright mode.
\$NORMAL	Displays the line in normal text mode (overrides all previous attribute commands).
\$LEFT	Left-justifies text lines.
\$RIGHT	Right-justifies text lines.
\$CENTER	Centers text lines.

MVHOST GLOBAL SUMMARY

The Global Summary Screen

The MVHOST Global Summary screen provides a summary of activity system-wide:

- Product version and collection interval information
- Key indicators of performance data
- Global statistics
- CPU utilization statistics
- CPU miscellaneous statistics
- Memory and virtual memory statistics
- Miscellaneous statistics
- Disk statistics
- Process statistics
- Workload statistics
- System performance advice

The Global Summary screen is the first screen to display when you start MVHOST and the usual starting point for any review of system activity and performance. The screen can be displayed in either graphical or tabular format.

To access the Global Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **g** (Global Summary). The Global Summary screen will display.
- 3 Type **t** from the Global Summary screen to toggle between the graphical and tabular formats.

Tabular Format

To toggle between the graphical and tabular format options, press the **t** key from the Global Summary screen. Figure 10.2 shows an example of the Global Summary screen in tabular format.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:28 E: 00:31:50 I: 01:00
----- CPU UTILIZATION ----- CPU MISC -----
      TOTAL BUSY: 0.6[ 1] | Capture Ratio: 0.2[ <]
                        | RunQ Avg: 0[ 0]
User: 0.1[ <] Sys: 0.5[ <] | 5/15 Min Runq Avg: 0/ 0
Wait: 0.3[ <] Idle: 99.1[ 99] | RunQ Busy %: 0[ <]
----- MEM/VM -----
Pg Scans : 0[ 0]/s Pg Reclaims: 0[ <]/s Page Outs: 0[ <]/s
Pg Res Tm: 600.0[600] Swap Outs: 0[ 0]/s
----- MISC -----
#Sessions: 1 #Procs: 44 #Wait I/O: 0 Transactions: 107.7[78.7]/s
#Active: 1 #Active: 5 #Swap: 0 Avg Response Time: <
----- DISK -----
Disk IO/s IO% QLen | Disk IO/s IO% QLen | Disk IO/s IO% QLen
c0t0d0 1 100 0 | c0t2d0 0 0 0 | fd0 0 0 0
----- PROCESS SUMMARY -----
PID Name User Name TTY CPU% Nice Pri RSS/Size #Rd #Wr State Res
{PRI TPG DPG KPG ULCK JOB OTH} Group Name wchan nlpw nswap CPU(ms)
The CPU was used a total of .6 of its capacity during this interval <CI01>
This interval's 'hog' process is (PID 13254) with .2% of the CPU <PI01>
This interval's highest disk I/O user was (PID 3) with 27 I/O's <PI02>

Enter command: (Showing lines 18 - 21 of 21)

```

Figure 10.2 MVHOST Global Summary screen (tabular format)

The tabular Global Summary screen can show the following information:

- The MVHOST banner
- CPU UTILIZATION statistics (including cumulative statistics)
- CPU MISC statistics
- MEM/VM statistics (optional)
- MISC global statistics (optional)
- DISK statistics (optional)
- PROCESS SUMMARY (optional)
- SYSTEM PERFORMANCE ADVICE messages (optional)

Each of these components is described in detail in “Global Summary Screen Display Items” on page 86.

Global Summary Screen Display Items

MVHOST Banner

The MVHOST banner is always displayed at the top of all MVHOST data display screens.

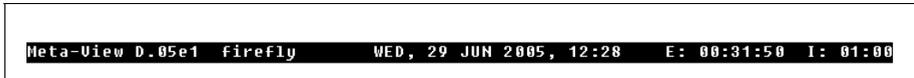


Figure 10.3 *MVHOST Global Summary screen: MVHOST banner*

The banner contains information about the MVHOST program, the host system, the elapsed interval, and the current interval.

Product Version Number (Meta-View V.nnx)

The first item displayed in the MVHOST banner (reading left to right) is the product version number (Meta-View V.nnx). The version number denotes the following about the product:

- **Meta-View** is the name of the product.
- **V** denotes the major version level.
- **nn** denotes the minor version level.
- **x** denotes the fix level.

The Meta-View version number displayed in the example (refer to Figure 10.3) is D.05e1. When contacting technical support, please provide the product version number of the software installed on your system.

System Name

The second item displayed in the MVHOST banner is the name of the system given during the installation of the operating system. The name of the system used in the example shown in Figure 10.3 is "firefly".

Current Date and Time (DDD, DD MMM YYYY, HH:MM)

The third item in the MVHOST banner is the current date and time:

- **DDD** denotes the day of the week.
- **DD** denotes the day of the month.
- **MMM** denotes the month.
- **YYYY** denotes the year.
- **HH:MM** denotes the hour and minutes.

Elapsed Time (E: HH:MM:SS)

The fourth item displayed in the MVHOST banner is the elapsed time (E:HH:MM:SS), which is the time counted in hours, minutes, and seconds that has passed since you started the current session of MVHOST. This elapsed time measurement is especially valuable when viewing cumulative statistics. For further information, refer to “Display cumulative stats” on page 43.

To reset the elapsed time to zero, type **r** from any MVHOST display screen.

Current Interval (I: MM:SS)

The last item displayed in the MVHOST banner is the current interval (I: MM:SS). The current interval is the amount of time in minutes and seconds accumulated since MVHOST last updated the screen. The measurements reported on any MVHOST display screen are valid for the current interval.

By default, the interval refresh rate is 60 seconds. You can adjust this rate from the Main Options Menu screen. For further information, refer to “Screen refresh interval in seconds” on page 42.

Assuming the interval refresh rate is 60 seconds, the current interval displayed in the MVHOST banner should be I: 01:00. However, if at some point during the measurement interval the program has to wait for user input, the interval update will be delayed. For example, when the **f** key is pressed from a MVHOST display screen to “freeze” the current interval, the next update is delayed until the user enters the command to “unfreeze” the interval.

If the current interval displayed is less than the interval refresh rate, the user pressed the **u** key from a MVHOST display screen to update the performance data mid-interval.

Current Interval Metrics vs. Cumulative Averages

The statistical values expressed in the format “nnn.n” represent measurements for the current interval (I: MM:SS). The values in brackets, [nnn.n], represent cumulative averages for the elapsed interval (E: HH:MM:SS).

Key Indicators of Performance (KIP) Line

The Key Indicators of Performance (KIP) line can be displayed just below the MVHOST banner. This option is invoked when the Display Key Indicators of Performance option is enabled from the MVHOST Main Option Menu screen.

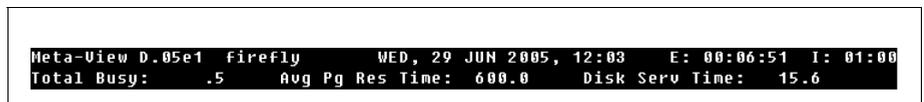


Figure 10.4 MVHOST Global Summary screen: Key Indicators of Performance (KIP) line

The purpose of the KIP line is to display statistics associated with the primary indicators of system performance.

Total Busy

The Total Busy value displayed in the KIP line is the percentage of time the CPU spent executing the following activities instead of being in a pause or idle state:

- Processing user and system process code
- Processing interrupts
- Processing context switches
- Managing main memory
- Managing traps

Avg Pg Res Time

The Avg Pg Res Time value displayed in the KIP line is the average response time in seconds of the corresponding process during the current interval.

Disk Serv Time

The Disk Serv Time value displayed in the KIP line is the average number of milliseconds an I/O request takes to be serviced once it begins to be processed by the disk (removed from the disk queue). This value does not include wait time.



NOTE By editing the kip text file located in the `/etc/opt/lund/cfg` directory, you can redefine the variables to display in the KIP line. For information about editing the kip file, see "MVHOST kip File" on page 80.

GLOBAL

The GLOBAL statistics portion of the Global Summary screen contains a simple bar graph that summarizes activity levels system-wide.

GLOBAL (Left Column)

CPU%

The CPU% bar graph (the left portion of the GLOBAL statistics) shows the percentage of CPU time expended during the current measurement interval on various activities.

Table 10.2 Physical I/Os

Code	Physical I/O	Description
R	Physical Reads	The number of physical reads per second.
W	Physical Writes	The number of physical writes per second.

GLOBAL (Right Column)

The scale for the next four global statistics ranges from 2 to 20. A value greater than 20 is represented by a trailing greater than character (>).



```

-----
                2  10  20
RunQ Len
Sw Out/s
I/O QLen

```

Figure 10.6 *MVHOST Global Summary screen: GLOBAL (right column)*

Each data item in the right column of the GLOBAL statistics is described in Table 10.3.

Table 10.3 *MVHOST Global data items*

Data Items	Description
RunQ Len	The average number of processes in the CPU run queue during the current interval.
Swap Out/s	The number of processes swapped out per second.
I/O QLen	The average number of disk I/O requests pending for all disks during the current interval.

PROCESS SUMMARY

After reviewing the general state of global resources, the next logical step in analyzing a system's performance is to observe individual processes. It is important to find out which users are running which programs and what kinds of resources those programs are consuming. The primary purpose of the PROCESS SUMMARY portion of the Global Summary screen is to help you to identify key resources consumed by various processes on the system.

To examine the CPU usage and disk I/O usage information for a process, open the Process Detail screen. For further information, see "MVHOST Process Detail" on page 167.

PROCESS SUMMARY Display Options

The PROCESS SUMMARY section is included in the Global Summary screen by default when the MVHOST program is started. However, this information can be suppressed. For instructions, refer to “Display process information” on page 52.

You can configure the PROCESS SUMMARY display in the following ways:

- Display or suppress the extended process line.
- Display either the total and I/O percentages or the read and write counts.
- Display all processes or only the active processes.
- Display or suppress attached processes.
- Display or suppress detached processes.
- Display or suppress system processes.
- Display or suppress processes that have died.
- Apply a process logon filter.
- Apply a process sort option.
- Display sorted processes in either ascending or descending order.
- Set a maximum number of processes to display.

For information about these options, please refer to “Process Display Options” on page 54.

PROCESS SUMMARY Data Items

----- PROCESS SUMMARY -----												
PID	Name	User Name	TTY	CPU%	Nice	Pri	RSS/Size	#Rd	#Wr	State	Res	
13964	mvhost	rodica	pts/2	<	20	60	4128/5304	0	6	RUN	<	
27238	nmuid	root	---	0.2	RT	129	2312/2904	0	0	SLEEP	<	
13254	nmuid	gabi	---	0.2	RT	129	2328/2864	0	0	CPU	<	

Figure 10.7 MVHOST Global Summary screen: PROCESS SUMMARY

The contents of each PROCESS SUMMARY column (shown in Figure 10.7) are described in the next table.

Table 10.4 MVHOST Process Summary data items

Data Item	Description
PID	The process identification number that uniquely identifies each process running on the system.
Name	The name of each process running on the system.
User Name	The name of the user that owns (or creates) each process running on the system.

Data Item	Description
TTY	<p>"TTY" is defined in MVHOST as the special device file of the terminal to which the process is attached. The TTY column will show three dashes (- -) for processes that are not attached to a terminal (processes such as daemons and batch jobs).</p>
CPU%	<p>The CPU% column shows the percentage of CPU time that was used by each process during the current interval. This is normalized for multiple-processors. In other words, all CPU% values added together should never exceed 100 (percent).</p>
Nice	<p>The Nice column displays the nice value associated with each process. This value, ranging from 0 to 39 (the default is 20), is a determining factor when a process's priority is recalculated.</p> <ul style="list-style-type: none"> • A process with a larger nice value will receive a higher priority (resulting in a lower-priority status). • A process with a smaller nice value will receive a lower priority (resulting in a higher-priority status). <p>A process that slows system response time can be "niced" to lower its priority and allow other processes to be executed more quickly.</p>
Pri	<p>The Pri column shows the most recent priority that each process was given.</p> <p>As explained earlier, high priority numbers indicate low-priority status, and vice versa. The priority numbers between 0 and 127 indicate high-priority status and are reserved for certain system daemons or real-time processes. The majority of processes are given numbers between 128 and 255, which indicate timeshare-priority status. A typical timeshare process will fluctuate within this priority range, based on the process's CPU demands and the system's load. Processes executing at nice priorities typically have larger numbers (lower priorities).</p> <p>The system scheduler dynamically sets the priority by considering several factors, such as CPU utilization. Because the scheduler tries to allocate CPU time fairly among the processes, it will lower the scheduling priority of process that require a lot of CPU time. This means that as a process's CPU usage grows, its priority number in the Pri column will increase.</p>

Data Item	Description
RSS/Size	<p>The RSS/Size column presents two data items for each process running on the system. The RSS value represents the resident set size—the amount of RAM used by the process. The Size value represents the size in KiloBytes of the core image of the process. This includes text, data, and stack space. In other words, the amount of swap or virtual memory the process has reserved.</p> <p>Performance Tip</p> <p>Large values in the RSS/Size column indicates the corresponding process uses a lot of memory. Processes in this category may need to be checked for memory usage problems.</p>
#Rd	<p>The #Rd column lists the number of physical reads performed by each process during the current interval.</p>
#Wr	<p>The #Wr column shows the number of physical writes performed by each process during the current interval.</p> <p>Performance Tip</p> <p>The #Wr values are important because they can point to processes that are performing excessive disk I/Os. To confirm, check the SYSTEM PERFORMANCE ADVICE portion of the Global Summary screen for a message that reports the high I/O process for the current interval. When high #Rd and #Wr values are evident, determine whether the I/Os are necessary or unnecessary.</p>
State	<p>The State column in the PROCESS SUMMARY portion of the Global Summary screen shows which wait state the corresponding process was in at the end of the current interval. Each wait state is described in Appendix B, “Wait States” on page 283.</p> <p>Performance Tip</p> <p>Wait state information is helpful when you want to determine why a process is "stuck." Keep in mind, however, that the wait state of a process can change radically in a manner of seconds. If you suspect a problem, check the information provided for that process in the Process Detail screen.</p>

Extended Process Statistics Lines

The PROCESS SUMMARY portion of the Global Summary screen can be expanded to show the percentage of time each process spent in one or more wait states during the current interval. This

additional process information is displayed below each corresponding process statistics line in an extended process line.

Process Line
Extended
Process Line

```

----- PROCESS SUMMARY -----
PID Name User Name TTY CPU% Nice Pri RSS/Size #Rd #Wr State Res
{PRI TPG DPG KPG ULCK JOB OTH} Group Name wchan nlwp nswap CPU(ms)
13254 mvmid gabi --- 0.2 RT 129 2328/2864 0 0 CPU <
{ < 0 0 0 0 100} DAEMON 0x00000000 5 0 140

```

Figure 10.8 *MVHOST Global Summary screen: extended process column headings and lines*

The extended process lines together with the extended process headings line can be enabled from the Process Display Options submenu of the MVHOST Main Options Menu or by typing the **y** key from the Global Summary screen (toggles the extended process lines on and off).

The statistics in the extended process lines correspond with the column headings in the extended process headings line. Each column heading is described in Table 10.5.

Table 10.5 *Extended process column headings*

Heading	Description
PRI	The percentage of the process' time spent in the PRI state during the current interval. See "Wait State Descriptions" on page 283.
TPG	The percentage of the process' time spent in the TPG state during the current interval. See "Wait State Descriptions" on page 283.
DPG	The percentage of the process' time spent in the DPG state during the current interval. See "Wait State Descriptions" on page 283.
KPG	The percentage of the process' time spent in the KPG state during the current interval. See "Wait State Descriptions" on page 283.
ULCK	The percentage of the process' time spent in the ULCK state during the current interval. See "Wait State Descriptions" on page 283.
JOB	The percentage of the process' time spent in the JOB state during the current interval. See "Wait State Descriptions" on page 283.
OTH	The percentage of the process' time spent in the OTH state during the current interval. See "Wait State Descriptions" on page 283.
Group Name	The name of the group that owns the process.
wchan	The address at which the process is sleeping.
nlwp	The number of threads for which the current process is the parent.
nswap	The number of times the process was swapped in the current interval.

Heading	Description
CPU (ms)	The total CPU time in milliseconds used by the process during the current interval.

The percentage of time the process spent in a wait state is represented by one of the following:

- A number between 0 and 100 (percent).
- A less than character (<), which represents a value less than 0.1 percent.
- An asterisk character (*), which represents a value greater than 100.0 percent.

For example, the extended process line for PID 29983 shown in Figure 9.8 provides the following information:

- Process 29983 spent 100 percent of the current interval in the OTH wait state.
- Process 29983 is in the DETACH workload group. It's address is 0xef007e84.
- Process 29983 has 5 threads. It was swapped 0 (zero) times.
- Process 29983 consumed 150 ms of the CPU time during the current interval.

Additional information about a process can be viewed in the Process Detail screen, which is discussed in "MVHOST Process Detail" on page 167.

WORKLOAD SUMMARY

The MVHOST program is able to track process statistics by application workloads. Workloads was discussed in "Workload Groups" on page 25. Workload statistics can be displayed in the WORKLOAD SUMMARY portion of the Global Summary screen.

WORKLOAD SUMMARY Display Options

To display the WORKLOAD SUMMARY statistics in the Global Summary screen, first enable the Display workload information option from the MVHOST Main Options Menu screen.

----- WORKLOAD SUMMARY -----						
Num	Name	CPU %	User CPU %	Disk I/O %	Resp Time	Trans/min
1	INTERACT	0.1[0.1]	57.1[59.3]	16.2[19.3]	<[<]	5730[5118]
2	BATCH	0[0]	0[0]	0[0]	0[0]	0[0]
3	DAEMON	0.5[0.5]	0.1[0.1]	83.8[80.7]	<[<]	618[618]
4	DEFAULT	0[0]	0[0]	0[0]	0[0]	0[0]

Figure 10.9 MVHOST Global Summary screen: WORKLOAD SUMMARY

By default, all workloads running on the system are included in this process summary. To show only the active workloads, enter **Y** (Yes) for the Display only active workloads option in the MVHOST Main Options Menu screen, then set the minimum CPU time required for workload display to a value between 0.1 and 99.9 percent.

WORKLOAD SUMMARY Data Items

The data items presented in the WORKLOAD SUMMARY portion of the Global Summary screen are described in the following table.

Table 10.6 *MVHOST Workload Summary data items*

Data Item	Description
Num	The Num column lists the workload numbers in ascending order as they appear in the workload definition file.
Name	The Name column lists the name assigned to each workload as it appears in the workload definition file.
CPU%	The CPU% column presents the percentage of CPU time used by each workload during the current interval and the elapsed interval.
User CPU%	The User CPU% column shows the percentage of system-wide I/Os performed by this workload.
Disk I/O%	The Disk I/O% column shows the percentage of each workload's CPU percentage that was spent on disk I/O during the current and elapsed intervals.
Resp Time	The values displayed in the Resp Time column represent the average response times (seconds) calculated for each workload during the current and elapsed intervals.
Trans/min	The values displayed in the Trans/min column represent the total number of transactions per minute counted for each workload during the current and elapsed intervals.

CPU UTILIZATION

Information presented in the CPU UTILIZATION portion of the tabular Global Summary screen will help you to evaluate your system's CPU performance by showing you how global activities are expending CPU time.

```

----- CPU UTILIZATION -----
      TOTAL BUSY:  0.5[ 1]

User:  0.1[ <]  Sys:  0.4[ <]
Wait:  0.2[ <]  Idle: 99.3[ 99]

```

Figure 10.10 *MVHOST Global Summary screen: CPU UTILIZATION*

The statistical values expressed in the format "nnn.n" represent measurements for the current interval. The values in brackets, [nnn.n], represent cumulative averages for the elapsed interval.

CPU UTILIZATION Data Items

The data items presented in the CPU Utilization portion of the Global Summary screen are described in the next table.

Table 10.7 *MVHOST CPU Utilization data items*

Data Item	Description
TOTAL BUSY	<p>The percentage of time the CPU was busy (not idle) during the current (nn.n) and elapsed intervals ([nn]). The TOTAL BUSY value is the sum of the values reported for User, Real, Nice, NNice, Sys, Intr, C SW, Trap, and Mem values reported in the same area of the Global Summary screen.</p> <p>Performance Tip</p> <p>When the TOTAL BUSY value is consistently greater than 75 or 80 percent and the majority of this resource is consumed by high-priority interactive user processing, it is possible that the CPU is a bottleneck on your system. It is important to observe this data over time and not base your diagnosis on a brief spike in CPU activity.</p> <p>If the TOTAL BUSY value is excessive due to batch job activity, there is usually ample CPU capacity for interactive users. To confirm your diagnosis, investigate the average length of the CPU queue (see "RunQ Avg" on page 99).</p>
User	<p>The percentage of time the CPU spent executing user code with a nice value of 20 and without any special priority status.</p> <p>Performance Tip</p> <p>It is usually advantageous to allow the majority of CPU time to be spent processing user code (including real- and nice-level code). To get a feel for the relative impact of productive or nonproductive work, monitor the Capture Ratio value (see "Capture Ratio" on page 99).</p>

Data Item	Description
Sys	<p>The Sys value in the CPU UTILIZATION portion of the Global Summary screen represents the percentage of time the CPU spent in system (kernel) mode.</p> <p>Performance Tip</p> <p>All processes spend some time executing system code. A large Sys value may indicate a problem with programs making unnecessary or inefficient system calls. You may want to identify all system processes and sort them by CPU usage to see which process(es) is (are) causing the problem.</p>
Wait	<p>The Wait value represents the amount of idle time the CPU was waiting for a disk I/O to complete.</p>
Idle	<p>The Idle value represents the percentage of time the CPU was not in use.</p> <p>Performance Tip</p> <p>A consistently high Idle value means your CPU is "on vacation" most of the time. Although it is not desirable to swamp the processor, it should "earn its keep" by performing at or near capacity.</p> <p>If the Idle value is consistently low and the lack of idle time is primarily due to session activity, the system may be overloaded. Either reduce such processing or obtain more CPU horsepower via an upgrade. It is best to observe entire days of idle time values. You may see plenty of idle time at noon, but no idle time between 3:00 and 4:00 P.M. Shifting workloads (batch scheduling, users work hours, etc.) will help bring this type of peak-period utilization down.</p>

CPU MISC

The CPU MISC portion of the tabular Global Summary screen provides statistics to further analyze the condition of your system.

```

----- CPU MISC -----
  Capture Ratio:                0.3[ < ]
  RunQ Avg:                      0[ 0]
  5/15 Min Runq Avg:            0/ 0
  RunQ Busy %:                   0[ < ]

```

Figure 10.11 *MVHOST Global Summary screen: CPU MISC*

CPU MISC Data Items

The data items presented in the CPU MISC portion of the Global Summary screen are described in Table 10.8.

Table 10.8 *MVHOST CPU Miscellaneous data items*

Data Item	Description
Capture Ratio	<p>The Capture Ratio value is calculated as:</p> $\text{Capture Ratio} = (\text{User} + \text{Real} + \text{Nice} + \text{NNice}) / (\text{Sys} + \text{Intr} + \text{C SW} + \text{Trap} + \text{Vflt})$ <p>Performance Tip</p> <p>A Capture Ratio value equal to one or greater indicates the system is spending more than half it's time on useful system work. A value of less than one means the system is spending more than half it's time on overhead.</p>
RunQ Avg	<p>The average number of processes present in the CPU run queue during the current interval. The value reported in brackets is the cumulative run queue average for the elapsed interval.</p> <p>The RunQ Avg values reported in the Global Summary screen are similar to the system load average values retrieved by typing the uptime command at the Unix command prompt.</p>
5/15 Min RunQ Avg	<p>The 5/15 Min RunQ Avg values show the load average in the last five minutes and the last 15 minutes, respectively.</p>
RunQ Busy%	<p>The percentage of time that at least one process was waiting for the CPU. A high percentage is not uncommon, but 100 percent is not desirable.</p>

MEM/VM

The MEM/VM statistics reported in the Global Summary screen provide a general overview of memory and virtual memory activities. To view specific memory statistics, refer to the Memory Summary screen. For further information, see “MVHOST Memory Summary” on page 113.

----- MEM/VM -----			
Pg Scans :	0[0]/s	Pg Reclaims:	0[<]/s
Pg Res Tn:	600.0[600]	Page Outs:	0[<]/s
		Swap Outs:	0[0]/s

Figure 10.12 *Global Summary screen: MEM/VM*

MEM/VM Display Options

To display or suppress the MEM/VM statistics in the Global Summary screen, enable/disable the Display memory information on global screen option from the MVHOST Main Options Menu screen.

MEM/VM Data Items

The data items presented in the MEM/VM portion of the Global Summary screen are described in Table 10.9.

Table 10.9 *MVHOST Memory/Virtual Memory data items*

Data Item	Description
Pg Scans	The number of pages scanned by the page scanner per second.
Pg Reclaims	The number of pages reclaimed per second.
Page Outs	The number of page outs per second.
Pg Res Tm	The average page residence time in milliseconds. This is the average amount of time a page is able to reside in memory. The default Pg Res Tm value is 600.0, which means that pages are not being forced out of memory. Values less than 600.0 mean that pages are being forced from memory.
Swap Outs	The number of swap outs per second.

MISC

The MISC portion of the tabular Global Summary screen displays several miscellaneous data items such as the number of sessions, the number of processes, the number of I/Os in a wait state, the number of transactions, and the average response time. These statistics provide a good overview of the system's general workload.

```

----- MISC -----
#Sessions:    1  #Procs:    44  #Wait I/O:    0  Transactions: 103.6[79.1]/s
#Active:     1  #Active:    5  #Swap:        0  Avg Response Time: <

```

Figure 10.13 *MVHOST Global Summary screen: MISC*

MISC Display Options

To display or suppress the MISC statistics in the Global Summary screen, enable/disable the Display miscellaneous information on global screen option from the MVHOST Main Options Menu screen.

MISC Data Items

The data items presented in the MISC portion of the Global Summary screen are described in the next table.

Table 10.10 *MVHOST Miscellaneous data items*

Data Item	Description
#Sessions	The current number of sessions logged on the system.
#Active	The #Active value (displayed below the #Sessions value) represents the current number of active sessions (sessions that used at least 0.0 percent of CPU time).
#Procs	The current number of processes present on the system.
#Active	The #Active value (displayed below the #Procs value) represents the current number of active processes (processes that used at least 0.0 percent CPU).
#Wait I/O	The current number of processes that waited on disk I/O.
#Swap	The current number of processes that were swapped.
Transactions	The number of transactions per second that occurred during the current interval. A transaction is defined as a character read or write, or a death process.
Avg Response Time	<p>The average response time for all terminals during the current interval.</p> <p>Response time is a difficult number to obtain from the Unix operating system. It is defined (as calculated by MVHOST) as the average number of requests in the system (average number of processes) divided by throughput (the transaction rate).</p> <p style="text-align: center;"><i>Response Time = Number of Requests x Throughput</i></p>

DISK

The DISK portion of the tabular Global Summary screen presents a few statistics for each configured disk drive on the system (see Figure 10.14). This information can help answer:

- How balanced are the I/Os between disks?
- Is one disk accessed more than others?
- Is the number of disk I/Os exceeding acceptable limits?

```

----- DISK -----
Disk      IO/s IO% QLen | Disk      IO/s IO% QLen | Disk      IO/s IO% QLen
c0t0d0    1 100  0 | c0t2d0    0  0  0 | fd0      0  0  0

```

Figure 10.14 *MVHOST Global Summary screen: DISK*

DISK Display Options

To display or suppress the DISK statistics in the Global Summary screen, enable/disable the Display disk information on global screen option from the MVHOST Main Options Menu screen.

DISK Data Items

The data items presented in the DISK portion of the Global Summary screen are described in this section.

Table 10.11 *MVHOST Disk data items*

Data Item	Description
Disk	The disk drive in the system's configuration.
IO/s	The number of physical disk reads and writes per second that occurred in the current interval.
IO%	The percentage of disk I/Os performed by the disk compared to all other disks on the system.
QLen	<p>The average length of the disk's queue.</p> <p>Performance Tip</p> <p>An average queue length of 1.0 or greater is not a good sign. While a typical system may experience "rush hour" situations, it is the consistently long queues that are suspect. If the QLen value for a particular drive is consistently high, explore the following possible causes:</p> <ul style="list-style-type: none"> Excessive disk arm movement due to heavily hit files. You might achieve better I/O balance by placing complementary files on separate drives. Database inefficiencies. Implement better database maintenance. Hardware issues. Upgrade slow disk drives.

SYSTEM PERFORMANCE ADVICE

The final portion of the Global Summary screen contains the SYSTEM PERFORMANCE ADVICE messages. These advice messages are designed to provide current performance information in plain-English "one-liners" in order to help system administrators zero-in on potential performance problems.

```
----- SYSTEM PERFORMANCE ADVICE -----  
The CPU was used a total of .5 of its capacity during this interval <CI01>  
This interval's 'hog' process is (PID 13254) with .2% of the CPU <PI01>  
This interval's highest disk I/O user was (PID 3) with 59 I/O's <PI02>
```

Figure 10.15 MVHOST Global Summary screen: SYSTEM PERFORMANCE ADVICE

At the end of each advice message, there is a four-character message identification code (for example, <CI01> or <ME01>). The identification code of any standard advice message can be referenced in "System Performance Advice Message Interpretations" on page 104 to obtain a more detailed explanation of the described event.

Two types of advice messages can be generated: informational and excessive.

- An informational message (denoted by an uppercase I in the message identification code) summarizes a particular aspect of the system's performance during the current interval.
- An excessive message (denoted by an uppercase E) alerts the user to an excessive condition—a situation or problem that could require immediate action.

To get more information about a situation described in an advice message, refer to the GLOBAL or PROCESS SUMMARY portions of the Global Summary screen.

SYSTEM PERFORMANCE ADVICE Display Options

To enable SYSTEM PERFORMANCE ADVICE messages, enter **Y** for the Display advice messages option in the MVHOST Main Options Menu screen.

By default, the SYSTEM PERFORMANCE ADVICE messages include both informational messages and excessive use messages. To suppress the informational messages, enter **N** for the Display informational advice messages option in the MVHOST Main Options Menu screen.

SYSTEM PERFORMANCE ADVICE Message Configuration

The SYSTEM PERFORMANCE ADVICE messages are located in the MVHOST advice configuration file. This file can be edited by the user to add custom advice messages. For example, adding a message to alert personnel when the average system utilization exceeds 90 percent can be accomplished by following the instructions presented in "MVHOST advice File" on page 69.

System Performance Advice Message Interpretations



RECOMMENDATION The standard SYSTEM PERFORMANCE ADVICE messages that are contained in the MVHOST advice file (described below) are generic. These messages should be customized for the system using the instructions found in "MVHOST advice File" on page 69.

<BE01> Buffer cache read hit percent low, increase %s

Advice message BE01 is generated to alert the user when the buffer cache read-hit percentage is equal to or less than 90 percent.

- If the number of virtual memory page outs for the current interval is equal to or greater than 5, the message will advise the user to increase memory.
- If the virtual memory page outs number is greater than 0 and less than 5, the message will advise the user to increase the buffer cache size.

<BE02> Buffer cache read write hit percent low, increase %s

Advice message BE02 is generated to alert the user when the buffer cache write-hit percentage is equal to or less than 65 percent.

- When the number of virtual memory page outs counted in the current interval is equal to or greater than 5, the message will advise the user to increase memory.
- When the virtual memory page outs number is greater than 0 and less than 5, the message will advise the user to increase the buffer cache size.

<CE01> CPU Queue length indicates %s %s CPU bottleneck

Advice message CE01 is generated to alert the user when the CPU queue length for the current interval is equal to or greater than 5 processes.

- A CPU queue length equal to or greater than 5 and less than 10 during the current interval is HEAVY.
- A CPU queue length equal to or greater than 10 is EXCESSIVE.

<CI01> The CPU was used a total of %s of its capacity during this interval

Advice message CI01 is always generated to inform the user of the CPU busy percentage for the current interval.

<DE01> Average disk service time indicates possible disk bottleneck

Advice message DE01 is generated to alert the user when the average disk service time for the current interval is equal to or greater than 30 milliseconds, which can indicate a disk bottleneck.

<GE01> Global average response time during this interval was %s

Advice message GE01 is generated to alert the user when the global average response time for the current interval is equal to or greater than 10 milliseconds.

- A global average response time in the range of 10-14 ms is moderate.
- A global average response time in the range of 15-19 ms is HEAVY.
- A global average response time equal to or greater than 20 ms is EXCESSIVE.

<LE01> Collision percent indicates %s %s network bottleneck

Advice message LE01 is generated to alert the user when the collision percentage for the current interval is equal to or greater than 5 percent, which indicates a possible network bottleneck.

- A collision percentage in the range of 5-14 percent is moderate.
- A collision percentage in the range of 15-29 percent is HEAVY.
- A collision percentage equal to or greater than 30 percent is EXCESSIVE.

<ME01> Page out rate reveals %s %s memory load

Advice message ME01 is generated to alert the user when the virtual memory page out rate for the current interval is in the range of 10-50 page outs per second.

- A virtual memory page out rate in the range of 10-14 is moderate.
- A virtual memory page out rate in the range of 15-19 is HEAVY.
- A virtual memory page out rate equal to or greater than 20 is EXCESSIVE.

<ME02> CPU consumption due to memory mgt overhead during this interval was %s

Advice message ME02 is generated to alert the user when the page fault percentage for the current interval is equal to or greater than 10 percent.

- A page fault percentage of 3-4 percent is moderate.
- A page fault percentage of 5-6 is HEAVY.
- A page fault percentage equal to or greater than 7 is EXCESSIVE.

<PI01> This interval's 'hog' process is %s with %s%% of the CPU

Advice message PI01 is always generated to inform the user of the current interval's largest CPU consumer. The message provides the process PID number and the process's CPU busy percentage.

<PI02> This interval's highest disk I/O user was %s with %s I/Os

Advice message PI02 is generated to inform the user of the current interval's largest disk I/O user. The message provides the disk PID number and the disk I/O percentage.

MVHOST CPU SUMMARY

The CPU Summary Screen

The CPU Summary screen reports the general state of one or more CPUs in graphical and tabular formats.

To access the CPU Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **c** (CPU Summary). The CPU Summary screen will display.
- 3 Type **t** to toggle between the graphical and tabular displays.

Examples of the CPU Summary screen are provided in “Graphical Format” on page 108 (next page) and “Tabular Format” on page 109.

CPU Summary Display Items

Graphical Format

The graphical CPU Summary screen contains a horizontal bar graph of the CPU utilization statistics for each CPU on the system. Figure 11.1 shows an example of the screen.

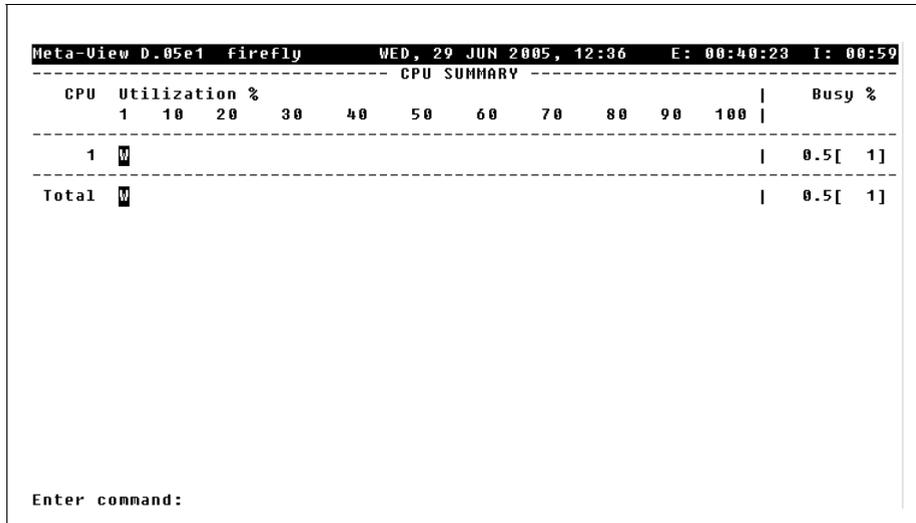


Figure 11.1 *MVHOST CPU Summary screen (graphical format)*

CPU SUMMARY

Each CPU SUMMARY data item is described in the next table.

Table 11.1 *MVHOST CPU SUMMARY (graphical format) data items*

Data Item	Description
CPU	The CPU column contains the sequential identification numbers assigned to the individual CPUs by MVHOST. If the system uses four processors, the graphical CPU summary would include four lines in the bar graph, and these lines would be numbered 1 through 4 in the CPU column.

Data Item	Description
Utilization%	<p>The Utilization% values provided in the CPU SUMMARY bar graph represent the percentage of CPU time expended during the current measurement interval on various activities.</p> <p>The CPU Utilization% data in the CPU Summary screen is reported exactly like the CPU% data in the Global Summary screen. For a description of each possible CPU activity, refer to "CPU%" on page 92.</p>
Busy%	<p>The Busy% value shown on the right portion of the CPU SUMMARY represents the total percentage of time the CPU was busy (not idle) during the current (nnn.n) and elapsed ([nnn]) intervals (if applicable).</p>
Total	<p>The Total value represents the average utilization percentage of all CPUs during the current interval.</p>

Tabular Format

The tabular CPU Summary screen contains CPU utilization information organized into four categories:

- Total CPU utilization statistics (CPU SUMMARY).
- CPU Run queue statistics (RUNQ STATISTICS).
- Miscellaneous CPU statistics (MISC STATISTICS).
- CPU utilization statistics for each CPU on the system (PER CPU UTILIZATION).

Figure 11.2 shows an example of the CPU Summary screen in tabular format.

```

Meta-View D.05e1 FireFly WED, 29 JUN 2005, 12:35 E: 00:39:23 I: 00:33
----- CPU SUMMARY -----
  BUSY      USER      SYS      WAIT      IDLE
  0.6       0.1       0.4       0.2       99.2
----- RUNQ STATISTICS -----
Interval Avg:  0[ <]  1/5/15 Min Avg:  </ </ <  Occ %:  0[ <]
----- MISC STATISTICS -----
Forks:      0[ <]/s      Sntx:      0.1[ <]/s      C Sws:     49.4[ 47]/s
Intrs:     400.0[ 404]/s  Traps:     0.1[ <]/s      Sys C:    244.2[ 235]/s
----- PER CPU UTILIZATION -----
  CPU      BUSY      USER      SYS      WAIT      IDLE
  1         0.6       0.1       0.4       0.2       99.2
           [ 1]      [ <]      [ <]      [ <]      [ 99]

Enter command: _

```

Figure 11.2 *MVHOST CPU Summary screen (tabular format)*

CPU SUMMARY

The CPU SUMMARY portion of the tabular CPU Summary screen displays the average percentage of CPU time expended on various activities during the current interval. Cumulative averages for the elapsed interval can also be displayed. For instructions, refer to “Display cumulative stats” on page 43. Each data item is described in the following table.

Table 11.2 *MVHOST CPU SUMMARY (tabular format) data items*

Data Item	Description
BUSY	The total percentage of time the CPU was busy.
USER	The percentage of time the CPU spent executing user program code with a nice value of 20 and without any special priority.
SYS	The percentage of time the CPU spent in system calls and code (in kernel mode). This value does not include time spent performing context switches or idle time.
WAIT	The percentage of idle time the CPU was waiting for a disk I/O to complete.
IDLE	The percentage of time the CPU was not in use.

RUNQ STATISTICS

The RUNQ STATISTICS portion of the tabular CPU Summary screen contains the CPU run queue statistics for the current interval (and the elapsed interval if cumulative statistics are shown). Each data item is described in the following table.

Table 11.3 *MVHOST RUNQ STATISTICS data items*

Data Item	Description
Internal Avg	The average number of processes in the run queue.
1/5/15 Min Avg	The average number of processes in the run queue during the current 1-, 5-, and 15-minute periods, respectively.
Occ %	The percentage of time there was one or more processes in the run queue.

MISC STATISTICS

The MISC STATISTICS portion of the tabular CPU Summary screen provides some miscellaneous CPU statistics for the current and/or elapsed interval(s). Each data item is described in the next table.

Table 11.4 *MVHOST MISC STATISTICS data items*

Data Item	Description
Forks	The number of forks per second.
Smtx	The number of CPU mutual exclusion locks per second. <i>Performance Tip</i> CPU mutual exclusion locks are used to limit access to certain kernel structures to one CPU at a time. An excessive rate could indicate the need for faster CPUs. More CPUs will make the problem worse.
C Sws	The number of context switches per second that occurred in the interval.
Intrs	The number of interrupts per second.
Traps	The number of traps per second.
Sys C	The number of system calls per second.

PER CPU UTILIZATION

The PER CPU UTILIZATION portion of the tabular CPU Summary screen displays the same data listed in the CPU SUMMARY portion of the screen for each CPU on the system. Please refer to "CPU SUMMARY" on page 110 for a description of each data item.

MVHOST MEMORY SUMMARY

The Memory Summary Screen

The Memory Summary screen provides a detailed look at memory and virtual memory performance.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:37 E: 00:41:23 I: 00:59
----- MEM/VM ALLOCATION ----- PROC MEM STATUS -----
      Size      Used      Free      |      Loaded      Run      Sleep      Total
Mem    128M     103M    25312K      |           1           43          44
VM     584M     39M     545M      |           0           0           0
----- PAGING -----
      In(/s)      Out(/s)      In(byte/s)      Out(byte/s)      #In      #Out
Pages      0[ <]      0[ <]      0[ <]      0[ <]      0[ 2]      0[ 4]
Swaps      0[ 0]      0[ 0]      0[ 0]      0[ 0]      0[ 0]      0[ 0]
Minor Pg Faults:      0[ <]/s      Major Page Faults:      0[ <]/s
----- PAGE SCANNER -----
Page Recs:      0[ <]/s      Page Scans:      0[ 0]/s      Ave Page Res:600.0[600]
----- MEMORY MANAGEMENT CONFIG -----
lotsfree: 1912K      throttlefree: 472K      page size: 8K
desfree: 952K      priority paging: 0      fastscan: 7657
minfree: 472K      maxpgio: 40      slowscan: 100
----- FSFLUSH CONFIGURATION -----
ufs_LW: 262      autoup: 30      doiflush: 1
ufs_HW: 393      t_fsflushr: 5      dopageflush: 1
-----
Enter command:

```

Figure 12.1 *MVHOST Memory Summary screen*

To access the Memory Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **m** (Memory Summary). Figure 12.1 shows an example of the screen.

Memory Summary Screen Display Items

MEM/VM ALLOCATION

The MEM/VM ALLOCATION portion of the Memory Summary screen shows how RAM and virtual memory are allocated on the system. The data items are described in the following table.

Table 12.1 *MVHOST MEM/VM ALLOCATION data items*

Data Item		Description
Mem	Size	The amount of RAM (MB) installed on the system.
	Used	The amount of RAM (MB) used during the interval.
	Free	The amount of RAM (MB) free (unused) on the system.
VM	Size	The amount of virtual memory (MB) enabled on the system.
	Used	The amount of virtual memory (MB) used during the interval.
	Free	The amount of virtual memory (MB) free (unused) on the system.

PROC MEM STATUS

The PROC MEM STATUS portion of the Memory Summary screen shows where processes are currently located from a memory viewpoint. Each data item is described in the next table.

Table 12.2 *MVHOST PROC MEM STATUS data items*

Data Item	Description
Run	The number of swapped processes that are ready to run. In other words, the length of the CPU run queue.
Sleep	The number of processes that are sleeping.
Total	The total number of processes swapped during the interval.

PAGING

The PAGING portion of the Memory Summary screen displays detailed statistics on paging activity for the interval. Each data item is described in the following table.

Table 12.3 *MVHOST PAGING data items*

Data item	Description
In (/s)	The number of swaps in per second.
Out (/s)	The number of swaps out per second.
In (byte/s)	The number of bytes swapped in per second.
Out (byte/s)	The number of bytes swapped out per second.
#In	The number of swaps in.
#Out	The number of swaps out.

PAGE SCANNER

The PAGE SCANNER portion of the Memory Summary screen displays data the page scanning process for the interval. Each data item is described in Table 12.4.

Table 12.4 *MVHOST PAGE SCANNER data items*

Data Item	Description
Page Recs	The number of pages reclaimed per second.
Page Scans	The number of pages scanned by the page scanner per second.
Avg Page Res	The average page residence time in milliseconds. The Ave Page Res value the average amount of time a page is able to stay in memory. The default value is 600, which means that pages are not being forced from memory. Lower numbers indicate that pages are being forced out of memory.

MEMORY MANAGEMENT CONFIG

The MEMORY MANAGEMENT CONFIG portion of the Memory Summary screen displays the values of key memory management variables. Each data item is described in the following table.

Table 12.5 *MVHOST MEMORY MANAGEMENT CONFIG data items*

Data Item	Description
lotsfree	The upper bound for paging. Once paging has started, it will continue until free memory (refer to "MEM/VM ALLOCATION" on page 114) is larger than lotsfree.

Data Item	Description
desfree	The lower bound for paging. When free memory drops below desfree, paging begins.
minfree	The threshold at which the system considers itself to be out of memory. At this point, the system will start deactivating processes.
throttlefree	The threshold at which any process that attempts to get another page will be suspended until the amount of free memory exceeds desfree.
priority paging	<p>The priority paging value is either 0 (zero) or 1.</p> <ul style="list-style-type: none"> • If 0, priority paging is not enabled. • If 1, priority paging is enabled. <p>Priority paging, when enabled, modifies the paging algorithm to page out data pages before text, heap, and stack.</p>
maxpgio	The maximum number of page I/O operations per second that the system will schedule.
page size	The size of pages, in bytes.
fastscan	The fastest scan rate in pages per second. This value corresponds to an empty free list.
slowscan	The initial scan rate in pages per second. The initial scan rate is measured when page scanning first starts.

MVHOST Disk I/O SUMMARY

The Disk I/O Summary Screen

The Disk I/O Summary screen provides a summary of performance data for all disks on the system. This screen is available in graphical and tabular formats.

To access the Disk I/O Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **d** (Disk I/O Summary). The Disk I/O Summary screen will display.
- 3 Type **t** to toggle between the graphical and tabular displays.

Examples of the Disk I/O Summary screen are provided in “Graphical Format” on page 118 (next page) and “Disk I/O Summary Screen Display Items” on page 118.

Disk I/O Summary Screen Display Items

Graphical Format

Figure 13.1 shows an example of the Disk I/O Summary screen in graphical format.

```

Meta-View D.05e1 firefly      WED, 29 JUN 2005, 12:40      E: 00:43:23      I: 01:00
-----
Device Percent Utilization          I/O's per second
      2      20      40      60      80      100 1      10      20      30      40
-----
c0t2d0
fd0
c0t0d0
-----
TOTALS
-----
Enter command:
  
```

Figure 13.1 *MVHOST Disk I/O Summary screen (graphical format)*

DISK I/O SUMMARY (graphical format)

The DISK I/O SUMMARY data items are described in the following table.

Table 13.1 *MVHOST DISK I/O SUMMARY data items*

Data Item	Description
Device	The identification number of the device file that corresponds to the disk.
Percent Utilization	The percentage of time the device was in use during the interval.

Data Item	Description
I/Os per second	The number of physical disk I/Os on the disk per second. Similarly to the IO/s bar graph in the Global Summary screen, specific code letters in the bar graph tell you how many of each type of physical I/Os were accumulated in the current interval. The code letters are: <ul style="list-style-type: none"> R represents the number of physical reads per second. W represents the number of physical writes per second.
TOTALS	The TOTALS line shows the total utilization and disk I/Os per second for all disks.

The tabular Disk I/O Summary screen is discussed on page 120.

Tabular Format

Figure 13.2 shows an example of the **Disk I/O Summary** screen in tabular format.

```

Meta-View D.05e1 firefly          WED, 29 JUN 2005, 12:39    E: 00:42:23  I: 00:59
-----
                DISK I/O SUMMARY
-----
Dev      I/O%  Qlen  Util%  Wait   Service  Rates (/s)  Avg Size (KB)
              Time(ms)  Time(ms)  Read  Write  Read  Write
-----
c0t2d0    0     0     0       0       0       0     0     0     0
fd0       0     0     0       0       0       0     0     0     0
c0t0d0   100    <    <       7.8     14.0     0     0.5   0     6
-----
TOTALS   100    <    <       7.8     14.0     0     0.5   0     6
-----

Enter command: _

```

Figure 13.2 *MVHOST Disk I/O Summary screen (tabular format)*

DISK I/O SUMMARY (tabular format)

The data items in the DISK I/O SUMMARY portion of the Disk I/O Summary screen are described in the following table.

Table 13.2 *MVHOST DISK I/O SUMMARY data items*

Data Item	Description
Dev	The device identification number for each disk on the system.
I/O%	The percentage of all disk I/Os on the system performed by each disk during the interval.
Qlen	The average number of disk requests waiting to be serviced by each disk.
Util%	The percentage of time each disk was in use during the interval.
Wait Time (ms)	The average number of milliseconds an I/O request had to wait in the disk queue before being serviced for each disk.
Service Time (ms)	The average number of milliseconds an I/O request takes to be serviced once it is removed from the disk queue and processed.
Read Rate (/s)	The number of physical reads from the disk per second.
Write Rate (/s)	The number of physical writes to the disk per second.
Avg Size (KB) Read	The average size of the physical reads from the disk.
Avg Size (KB) Write	The average size of the physical writes to the disk.
TOTALS	The totals for each column in the tabular DISK I/O SUMMARY.

MVHOST DISK CONTROLLER I/O SUMMARY

The Disk Controller I/O Summary Screen

The Disk Controller I/O Summary screen displays a tabular summary of I/O activity for each disk controller on the system.

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:40 E: 00:44:23 I: 00:59			
DISK CONTROLLER I/O SUMMARY			
Dev	I/O%	Physical Read/s	Physical Write/s
c0	100	<	0.9
fd0	0	0	0
TOTALS	100	<	0.9

Enter command: _

Figure 14.1 MVHOST Disk Controller I/O Summary screen

To access the Disk Controller I/O Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **r** (Disk Controller I/O Summary). The Disk Controller I/O Summary screen will display (refer to Figure 14.1).

Disk Controller I/O Summary Screen Display Items

DISK CONTROLLER I/O SUMMARY

The data items in the Disk I/O Summary screen are described in the following table.

Table 14.1 *MVHOST DISK CONTROLLER I/O SUMMARY data items*

Data Item	Description
Dev	The device identification number for each disk controller on the system.
I/O%	The percentage of all disk I/Os on the system performed by each disk controller during the interval.
Physical Read/s	The number of physical reads per second performed by each disk controller during the interval.
Physical Write/s	The number of physical writes per second performed by each disk controller during the interval.
TOTALS	Sums up the activities of all disk controllers for the interval.

MVHOST FILE SYSTEM I/O SUMMARY

The File System I/O Summary Screen

The File System I/O Summary screen displays a tabular summary of I/O activity for each file system on the system.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:41 E: 00:45:23 I: 00:59
----- FILE SYSTEM I/O SUMMARY -----
File System          Physical          Physical
                    Read/s           Write/s
-----
/                    0[ <]           0.6[ <]
/dev/fd              0[ 0]           0[ 0]
/lhone               0[ 0]           0[ 0]

Enter command: _

```

Figure 15.1 *MVHOST File System I/O Summary screen*

To access the File System I/O Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **f** (File System I/O Summary). The File System I/O Summary screen will display. Figure 15.1 shows an example of the screen.

File System I/O Summary Screen Display Items

FILE SYSTEM I/O SUMMARY

The data item presented in the File System I/O Summary screen is described in the following table.

Table 15.1 *MVHOST FILE SYSTEM I/O SUMMARY data item*

Data Item	Description
File System	The mount points from the file system.
Physical Read/s	The number of physical reads from the file system per second.
Physical Write/s	The number of physical writes to the file system per second.

MVHOST FILE SYSTEM SPACE SUMMARY

The File System Space Summary Screen

The File System Space Summary screen displays file system space information for each file system.

```

Meta-View D.05e1 firefly          WED, 29 JUN 2005, 12:42      E: 00:45:23  I: 00:59
----- FILE SYSTEM SPACE SUMMARY -----
File System      Block Frag      Size      Free Free(su) Used%  Total  Free
                  Size/Size
-----
/                8192/1024      6046M     1056M    1116M    82    781568 669959
/proc            512/ 512        0          0         0         0      1916   1869
/dev/fd         1024/1024       0          0         0         0       258    0
/var/run        8192/8192       543M      543M     543M     0     20467  20450
/tmp            8192/8192       543M      543M     543M     0     20467  20450
/home           8192/1024     12597M    11796M   11922M    5    1629184 1613614

Enter command: _

```

Figure 16.1 *MVHOST File System Space Summary screen*

To access the File System Space Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **s** (File System Space Summary). The File System Space Summary screen will display. Figure 16.1 shows an example of the screen.

File System Space Summary Screen Display Items

FILE SYSTEM SPACE SUMMARY

The data items in the File System Space Summary screen are described in the following table.

Table 16.1 *MVHOST FILE SYSTEM SPACE SUMMARY data items*

Data Item	Description
File System	The mount points from the file system.
Block Size	The file system block size in bytes.
Free	The number of file space Megabytes (M) available to non-super users.
Free (su)	The number of file space Megabytes (M) available to super users.
Used%	The percentage of the file system currently being used, based on the Free (su) value.
Total Inodes	The total number of inodes on the file system.
Free Inodes	The number of free inodes on the file system.

MVHOST NETWORK SUMMARY

The Network Summary Screen

The Network Summary screen displays network performance information.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:43 E: 00:46:23 I: 00:59
-----
NETWORK SUMMARY
-----
Protocol      Packets In/s   Packets Out/s   Errors In%      Errors Out%
-----
IP            0.5[ <]      0.5[ 1]         0[ 0]           0[ 0]
TCP/IP       0.4[ <]      0.5[ 1]         0[ 0]           0[ 0.07]
ICMP         0[ 0]        0[ 0]           0[ 0]           0[ 0]
UDP          0[ <]        0[ <]           0[ 0]           N/A[ N/A]
-----
NETWORK INTERFACES
-----
Interf  Packets In/s   Packets Out/s   Defer%   Coll%   Err In%   Err Out%   NoCan
-----
  lo0    0[ 0]      0[ 0]           0         0         0         0         0
  hme0   0.5[ 1]    0.6[ 1]         0         0         0         0         0
-----
TOTALS   0.5[ 1]    0.6[ 1]         0         0         0         0         0
-----

Enter command: _

```

Figure 17.1 MVHOST Network Summary screen

To access the Network Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **I** (Network Summary). The Network Summary screen will display. Figure 17.1 shows an example of the screen.

Network Summary Screen Display Items

NETWORK SUMMARY

The NETWORK SUMMARY portion of the screen displays the network traffic information from the perspective of each protocol. Each data item is described in the next table.

Table 17.1 *MVHOST NETWORK SUMMARY data items*

Data Item	Description
Protocol	The network protocols used for communication between systems.
Packets In/s	The number of packets received per second (the value in brackets is cumulative).
Packets Out/s	The number of packets sent per second.
Errors In%	The percentage of packets read during the interval that resulted in error.
Errors Out%	The percentage of packets written during the interval that resulted in error.

NETWORK INTERFACES

The NETWORK INTERFACES portion of the Network Summary screen displays performance information on a per-network-interface basis. Each data item is described in Table 17.2.

Table 17.2 *MVHOST NETWORK INTERFACES data items*

Data Item	Description
Interf	The name of the network interface.
Packets In/s	The number of packets received per second for the specific interface (the value in brackets is cumulative).
Packets Out/s	The number of packets sent per second for the specific interface.
Defer%	The percentage of output packets deferred during the interval. A packet is deferred when the LAN card is too busy with other incoming and outgoing packets.
Coll%	The percentage of output packets sent that resulted in a collision. A network collision occurs when the system sends a packet at the same time as another system. When collisions occur, the system dispatching them waits a random amount of time to retransmit the packet. Excessive collision percentages indicate a network bottleneck.

MVHOST NETWORK SUMMARY
Network Summary Screen Display Items

·
·
·

Data Item	Description
Err In%	The percentage of packets read during the interval that resulted in error.
Err Out%	The percentage of packets written during the interval that resulted in error.
Nocan	The count of incoming packets that were dropped per second.
TOTALS	Data values from a system-wide perspective.

MVHOST NFS SUMMARY

The NFS Summary Screen

The NFS Summary screen displays information about the network file system (NFS). A system can be a server (a system that provides its local disks to other systems), a client (a system that uses non-local disks), or both. An example of the NFS CLIENT SUMMARY display is shown in Figure 18.1.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:48 E: 00:51:23 I: 01:00
-----
NFS CLIENT SUMMARY
-----
Bad NFS Calls 0
-----
NFS U2 PERCENT
-----
NULL 0 GTATTR 0 STATTR 0 ROOT 0 LOOKUP 0 RDLINK 0
READ 0 WCACHE 0 WRITE 0 CREATE 0 REMOVE 0 RENAME 0
LINK 0 SLINK 0 MKDIR 0 RMDIR 0 RDDIR 0 STATFS 0
-----
NFS U3 PERCENT
-----
NULL 0 GTATTR 0 STATTR 0 LOOKUP 0 ACCESS 0 RDLINK 0
READ 0 WRITE 0 CREATE 0 MKDIR 0 SLINK 0 HKNOD 0
REMOVE 0 RMDIR 0 RENAME 0 LINK 0 RDDIR 0 RDDIRP 0
FSSTAT 0 FSINFO 0 PCONF 0 COMMIT 0
-----
RPC
-----
Calls 0 Bad Calls 0 Retrans 0 Timeouts 0 Badxids 0
-----
NFS SERVERS
-----
No Resp Rd Rate Wr Rate Wt Time Srv Time Avg QLen
-----
spot 0[ 5] 0 < 0 0 0
-----
Enter command: _

```

Figure 18.1 MVHOST NFS CLIENT Summary screen

To access the NFS Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **n** (NFS Summary). The NFS Summary screen will display.

Additional Command Keys for the NFS Summary Screen

In addition to the command keys listed in the Main Commands screen, the following commands keys can be used to modify the display of the NFS Summary screen:

- The **x** command key can be used to toggle between NFS call rates and NFS call percentages. The section headings indicate which data is shown.
- The **c** command key can be used to toggle between NFS client data and NFS server data. The screen title indicates which data is displayed.

NFS Summary Screen Display Items

The NFS CLIENT SUMMARY data items are described in this section. The data items for the NFS SERVER SUMMARY are described in the next section, "NFS Server Summary Screen Display Items" on page 137.

NFS CLIENT SUMMARY

The NFS CLIENT SUMMARY portion of the NFS Summary screen provides bad NFS call information associated with NFS client.

Bad NFS Calls

The Bad NFS Calls data item represents:

- The number of bad NFS calls accumulated during the current interval, when the screen is set to display NFS call rates (see "Additional Command Keys for the NFS Summary Screen" on page 132).
- The percentage of NFS calls that are bad NFS calls, when the screen is displaying NFS calls percentages.

NFS V2 RATE or PERCENT

The NFS V2 RATE/PERCENT portion of the NFS CLIENT SUMMARY provides rate and percentage information for the NFS V2 calls. To toggle between rates and percentage displays, type the **x** command key. Each data item is defined in the next table.

Table 18.1 *MVHOST (Client) NFS V2 RATE and PERCENT data items*

Data Item	RATE Definition	PERCENT Definition
NULL	The number of null calls per second.	The percentage of all NFS V2 calls that are null calls.
GTATTR	The number of getattr calls per second.	The percentage of all NFS V2 calls that are getattr calls.

Data Item	RATE Definition	PERCENT Definition
STATTR	The number of setattr calls per second.	The percentage of all NFS V2 calls that are setattr calls.
ROOT	The number of root calls per second.	The percentage of all NFS V2 calls that are root calls.
LOOKUP	The number of lookup calls per second.	The percentage of all NFS V2 calls that are lookup calls.
RDLINK	The number of readlink calls per second.	The percentage of all NFS V2 calls that are readlink calls.
READ	The number of read calls per second.	The percentage of all NFS V2 calls that are read calls.
WCACHE	The number of writecache calls per second.	The percentage of all NFS V2 calls that are writecache calls.
WRITE	The number of write calls per second.	The percentage of all NFS V2 calls that are write calls.
CREATE	The number of create calls per second.	The percentage of all NFS V2 calls that are create calls.
REMOVE	The number of remove calls per second.	The percentage of all NFS V2 calls that are remove calls.
RENAME	The number of rename calls per second.	The percentage of all NFS V2 calls that are rename calls.
LINK	The number of link calls per second.	The percentage of all NFS V2 calls that are link calls.
SLINK	The number of symlink calls per second.	The percentage of all NFS V2 calls that are symlink calls.
MKDIR	The number of mkdir calls per second.	The percentage of all NFS V2 calls that are mkdir calls.
RMDIR	The number of rmdir calls per second.	The percentage of all NFS V2 calls that are rmdir calls.
RDDIR	The number of readdir calls per second.	The percentage of all NFS V2 calls that are readdir calls.
STATFS	The number of statfs calls per second.	The percentage of all NFS V2 calls that are statfs calls.

NFS V3 RATE or PERCENT

The NFS V2 RATE/PERCENT portion of the NFS CLIENT SUMMARY provides rate and percentage information for the NFS V3 calls. Each data item is defined in the next table.

Table 18.2 *MVHOST (Client) NFS V2 RATE and PERCENT data items*

Data Item	RATE Definition	PERCENT Definition
NULL	The number of null calls per second.	The percentage of all NFS V3 calls that are null calls.
GTATTR	The number of getattr calls per second.	The percentage of all NFS V3 calls that are getattr calls.
STATTR	The number of setattr calls per second.	The percentage of all NFS V3 calls that are setattr calls.
LOOKUP	The number of lookup calls per second.	The percentage of all NFS V3 calls that are lookup calls.
ACCESS	The number of access calls per second.	The percentage of all NFS V3 calls that are access calls.
RDLINK	The number of readlink calls per second.	The percentage of all NFS V3 calls that are readlink calls.
READ	The number of read calls per second.	The percentage of all NFS V3 calls that are read calls.
WRITE	The number of write calls per second.	The percentage of all NFS V3 calls that are write calls.
CREATE	The number of create calls per second.	The percentage of all NFS V3 calls that are create calls.
MKDIR	The number of mkdir calls per second.	The percentage of all NFS V3 calls that are mkdir calls.
SLINK	The number of symlink calls per second.	The percentage of all NFS V3 calls that are symlink calls.
MKNOD	The number of mknod calls per second.	The percentage of all NFS V3 calls that are mknod calls.
REMOVE	The number of remove calls per second.	The percentage of all NFS V3 calls that are remove calls.
RMDIR	The number of rmdir calls per second.	The percentage of all NFS V3 calls that are rmdir calls.

Data Item	RATE Definition	PERCENT Definition
RENAME	The number of rename calls per second.	The percentage of all NFS V3 calls that are rename calls.
LINK	The number of link calls per second.	The percentage of all NFS V3 calls that are link calls.
RDDIR	The number of readdir calls per second.	The percentage of all NFS V3 calls that are readdir calls.
RDDIRP	The number of readdirplus calls per second.	The percentage of all NFS V3 calls that are readdirplus calls.
FSSTAT	The number of fsstat calls per second.	The percentage of all NFS V3 calls that are fsstat calls.
FSINFO	The number of fsinfo calls per second.	The percentage of all NFS V3 calls that are fsinfo calls.
PCONF	The number of pathconf calls per second.	The percentage of all NFS V3 calls that are pathconf calls.
COMMIT	The number of commit calls per second.	The percentage of all NFS V3 calls that are commit calls.

RPC

The RPC portion of the NFS CLIENT SUMMARY provides remote procedure call (RPC) information. Each RPC data item is described in the following table.

Table 18.3 *MVHOST (Client) RPC data items*

Data Item	Description
Calls	The number of client RPC calls made per second.
Bad Calls	The number per second of client RPC calls that returned with an error. This number includes time-outs and interruptions.
Retrans	The number per second of client RPC calls that were retransmitted. A call is retransmitted when no response is received from the server within the time-out period.
Timeouts	The number of RPC calls that timed-out per second. This number includes all retransmissions and timeouts that are counted as bad calls (with no retransmission).

Data Item	Description
Badxids	<p>The number of duplicate requests per second.</p> <p>A badxid is defined in MVHOST as a duplicate transmission. Every outgoing NFS request is assigned a unique sequential identifier. Requests are retransmitted if the server does not respond within a set time-out period. When the server eventually does respond, it is possible for the client to respond to the same request multiple times. Each duplicate transmission is counted as a badxid. Badxids are an indication that the server is not responding quickly enough.</p>

NFS SERVERS

The following data is provided for each NFS server in the NFS CLIENT SUMMARY. Each NFS SERVER data item is described in the following table.

Table 18.4 *MVHOST (Client) NFS SERVER data items*

Data Item	Description
No Resp	The number of major timeouts incurred by NFS servers per second. (A major time-out will not result in a retransmission.)
Rd Rate	The number of read requests per second.
Wr Rate	The number of write requests per second.
Wt Time	The average number of milliseconds consumed while a request waited in the outgoing requests queue before processing.
Srv Time	The average number of milliseconds taken to process an NFS request.
Avg QLen	The average number of client requests waiting for server response.

The NFS SERVER SUMMARY is discussed on page 131.

NFS Server Summary Screen Display Items

An example of the NFS SERVER SUMMARY screen display is shown in Figure 18.2.

```

Meta-View D.05e1 firefly      WED, 29 JUN 2005, 12:50   E: 00:53:26   I: 01:03
-----
                        NFS SERVER SUMMARY
-----
                        Bad NFS Calls      0
-----
                        NFS V2 RATES
-----
NULL      0 GTATTR    0 STATTR    0 ROOT      0 LOOKUP    0 RDLINK    0
READ      0 WCACHE    0 WRITE     0 CREATE    0 REMOVE    0 RENAME    0
LINK      0 SLINK     0 MKDIR     0 RMDIR     0 RDDIR     0 STATFS   0
-----
                        NFS V3 RATES
-----
NULL      0 GTATTR    0 STATTR    0 LOOKUP    0 ACCESS    0 RDLINK    0
READ      0 WRITE     0 CREATE    0 MKDIR     0 SLINK     0 MKNOD    0
REMOVE    0 RMDIR     0 RENAME    0 LINK      0 RDDIR     0 RDDIRP   0
FSSTAT    0 FSINFO    0 PCONF     0 COMMIT    0
-----
                        RPC
-----
Calls      0
                        Bad Calls      0

Enter command: _

```

Figure 18.2 *MVHOST NFS Summary screen: NFS SERVER SUMMARY*

NFS SERVER SUMMARY

The NFS SERVER SUMMARY portion of the NFS Summary screen provides bad NFS call information.

Bad NFS Calls

The Bad NFS Calls data item represents:

- The number of bad NFS calls accumulated during the current interval.
- The percentage of NFS calls that are bad NFS calls.

NFS V2 RATE or PERCENT

The NFS V2 RATE/PERCENT portion of the NFS SERVER SUMMARY provides rate and percentage information for the NFS V2 calls. To toggle between rates and percentage displays, type the **x** command key. Each data item is defined in Table 18.5.

Table 18.5 *MVHOST (Server) NFS V2 RATE and PERCENT data items*

Data Item	RATE Definition	PERCENT Definition
NULL	The number of null calls per second.	The percentage of all NFS V2 calls that are null calls.
GTATTR	The number of getattr calls per second.	The percentage of all NFS V2 calls that are getattr calls.
STATTR	The number of setattr calls per second.	The percentage of all NFS V2 calls that are setattr calls.
ROOT	The number of root calls per second.	The percentage of all NFS V2 calls that are root calls.
LOOKUP	The number of lookup calls per second.	The percentage of all NFS V2 calls that are lookup calls.
RDLINK	The number of readlink calls per second.	The percentage of all NFS V2 calls that are readlink calls.
READ	The number of read calls per second.	The percentage of all NFS V2 calls that are read calls.
WCACHE	The number of writecache calls per second.	The percentage of all NFS V2 calls that are writecache calls.
WRITE	The number of write calls per second.	The percentage of all NFS V2 calls that are write calls.
CREATE	The number of create calls per second.	The percentage of all NFS V2 calls that are create calls.
REMOVE	The number of remove calls per second.	The percentage of all NFS V2 calls that are remove calls.
RENAME	The number of rename calls per second.	The percentage of all NFS V2 calls that are rename calls.
LINK	The number of link calls per second.	The percentage of all NFS V2 calls that are link calls.
SLINK	The number of symlink calls per second.	The percentage of all NFS V2 calls that are symlink calls.
MKDIR	The number of mkdir calls per second.	The percentage of all NFS V2 calls that are mkdir calls.
RMDIR	The number of rmdir calls per second.	The percentage of all NFS V2 calls that are rmdir calls.

Data Item	RATE Definition	PERCENT Definition
RDDIR	The number of readdir calls per second.	The percentage of all NFS V2 calls that are readdir calls.
STATFS	The number of statfs calls per second.	The percentage of all NFS V2 calls that are statfs calls.

NFS V3 RATE or PERCENT

The NFS V2 RATE/PERCENT portion of the NFS SERVER SUMMARY provides rate and percentage information for the NFS V3 calls. Each data item is defined in the next table.

Table 18.6 *MVHOST (Server) NFS V3 RATE and PERCENT data items*

Data Item	RATE Definition	PERCENT Definition
NULL	The number of null calls per second.	The percentage of all NFS V3 calls that are null calls.
GTATTR	The number of getattr calls per second.	The percentage of all NFS V3 calls that are getattr calls.
STATTR	The number of setattr calls per second.	The percentage of all NFS V3 calls that are setattr calls.
LOOKUP	The number of lookup calls per second.	The percentage of all NFS V3 calls that are lookup calls.
ACCESS	The number of access calls per second.	The percentage of all NFS V3 calls that are access calls.
RDLINK	The number of readlink calls per second.	The percentage of all NFS V3 calls that are readlink calls.
READ	The number of read calls per second.	The percentage of all NFS V3 calls that are read calls.
WRITE	The number of write calls per second.	The percentage of all NFS V3 calls that are write calls.
CREATE	The number of create calls per second.	The percentage of all NFS V3 calls that are create calls.
MKDIR	The number of mkdir calls per second.	The percentage of all NFS V3 calls that are mkdir calls.
SLINK	The number of symlink calls per second.	The percentage of all NFS V3 calls that are symlink calls.

Data Item	RATE Definition	PERCENT Definition
MKNOD	The number of mknod calls per second.	The percentage of all NFS V3 calls that are mknod calls.
REMOVE	The number of remove calls per second.	The percentage of all NFS V3 calls that are remove calls.
RMDIR	The number of rmdir calls per second.	The percentage of all NFS V3 calls that are rmdir calls.
RENAME	The number of rename calls per second.	The percentage of all NFS V3 calls that are rename calls.
LINK	The number of link calls per second.	The percentage of all NFS V3 calls that are link calls.
RDDIR	The number of readdir calls per second.	The percentage of all NFS V3 calls that are readdir calls.
RDDIRP	The number of readdirplus calls per second.	The percentage of all NFS V3 calls that are readdirplus calls.
FSSTAT	The number of fsstat calls per second.	The percentage of all NFS V3 calls that are fsstat calls.
FSINFO	The number of fsinfo calls per second.	The percentage of all NFS V3 calls that are fsinfo calls.
PCONF	The number of pathconf calls per second.	The percentage of all NFS V3 calls that are pathconf calls.
COMMIT	The number of commit calls per second.	The percentage of all NFS V3 calls that are commit calls.

RPC

The RPC portion of the NFS SERVER SUMMARY provides remote procedure call (RPC) information. Each RPC data item is described in the following table.

Table 18.7 *MVHOST (Server) RPC data items*

Data Item	Description
Calls	The number of client RPC calls made per second.
Bad Calls	The number per second of client RPC calls that returned with an error. This number includes time-outs and interruptions.

MVHOST SWAP SUMMARY

The Swap Summary Screen

The Swap Summary screen displays information on system swap space utilization. Swap space is used for paging and deactivating.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:51 E: 00:55:26 I: 01:00
-----
SWAP SUMMARY
-----
Total: 587M Used: 33M Reserved: 39M Available: 545M
-----
PER SWAP UTILIZATION
-----
Dev/Mount Type Size(MB) Used(MB) Alloc(MB) Free(MB)
-----
/dev/dsk/c0t0d0s1 DEV 512 0 N/A 512

Enter command:
  
```

Figure 19.1 *MVHOST Swap Summary screen*

To access the Swap Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **w** (Swap Summary). The Swap Summary screen will display. Figure 19.1 shows an example of the screen.

Swap Summary Screen Display Items

SWAP SUMMARY

The SWAP SUMMARY portion of the Swap Summary screen provides information from a system-wide perspective.

Table 19.1 *MVHOST SWAP SUMMARY data items*

Data Item	Description
Total	The total swap space configured for the system (MegaBytes).
Used	The total amount of swap space used by all processes (MegaBytes).
Reserved	The total amount of swap space reserved by all processes (MegaBytes). When a process is created, it reserves enough space for itself to be completely paged-out in the swap space.
Available	The amount of swap space remaining that is not reserved (MegaBytes).

PER SWAP UTILIZATION

The PER SWAP UTILIZATION portion of the Swap Summary screen provides information for each swap device and file system. Each data item is described in the next table.

Table 19.2 *MVHOST PER SWAP UTILIZATION data items*

Data Item	Description
Dev/Mount	The device file or mount point for swap device or file system swap, respectively. If it is a memory swap, "PSEUDO" will be displayed.
Type	The type of swap: <ul style="list-style-type: none"> • DEV = device swap • MEM = memory swap • FS = file system swap
Size (MB)	The amount of swap space (MegaBytes) configured for the device/file system.
Used (MB)	The amount of swap space used in the device/file system.
Alloc (MB)	The amount of file system swap space (MegaBytes) allocated. This value is not applicable to device or memory swap.

MVHOST SWAP SUMMARY
Swap Summary Screen Display Items

·
·
·

Data Item	Description
Free (MB)	The amount of swap space (MegaBytes) currently not used. This value differs from the Available data. The Free value is the amount not actually used. The Available value is the amount not reserved.

MVHOST USER SUMMARY

The User Summary Screen

The User Summary screen displays information about resource usage on a per-user basis.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:52 E: 00:55:26 I: 01:00
-----
USER SUMMARY
-----
User Name      UID CPU%  Phys I/O  Tern I/O  Procs  Sess  RSS(KB)  USS(KB)
-----
root           0  0.2      24       974665   32     0     37       66
gabi          205  0.2       7      1167952   4     0     18       22
rodica        530  0.1       6      113014   2     1      6        7
nobody       60001  0         0         0       3     0      4        6
daemon        1   0         0         0       3     0      6       22

Enter command:
  
```

Figure 20.1 *MVHOST User Summary screen*

To access the User Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **u** (User Summary). The User Summary screen will display. An example of the screen is shown in Figure 20.1.

User Summary Screen Display Items

The data displayed in the User Summary screen is provided for each user on the system.

USER SUMMARY

Each data item presented in the USER SUMMARY is described in the following table.

Table 20.1 *MVHOST USER SUMMARY data items*

Data Item	Description
User Name	The name of the user.
UID	The Unix user identification number associated with the user.
CPU%	The total percentage of the CPU resources consumed by the user.
Phys I/O	The total number of physical I/Os by the user.
Term I/O	The total number of terminal I/Os by the user.
Procs	The number of processes owned by the user.
Sess	The number of sessions opened by the user.
RSS (KB)	The amount of RAM (KiloBytes) consumed by the user (this data may underestimate memory usage, because shared pages are not counted).
VSS (KB)	The amount of virtual memory (KiloBytes) consumed by the user.

MVHOST TERMINAL SUMMARY

The Terminal Summary Screen

The Terminal Summary screen displays information about resource usage for each terminal on the system.

```

Meta-View D.05e1 fireFly WED, 29 JUN 2005, 12:53 E: 00:56:26 I: 00:59
----- TERMINAL SUMMARY -----
Terminal      User Name      Login      Idle
              Time          Time          Processes      ioch/s
-----
pts/2         rodica         1:13:40    0:00:00        2[ 0]         1882.3[ 33.2]

Enter command:

```

Figure 21.1 *MVHOST Terminal Summary screen*

To access the Terminal Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **t** (Terminal Summary). The Terminal Summary screen will display. An example of the screen is shown in Figure 21.1.

Terminal Summary Screen Display Items

The data displayed in the Terminal Summary screen is provided for each active terminal on the system.

TERMINAL SUMMARY

Each data item presented in the TERMINAL SUMMARY is described in the following table.

Table 21.1 *MVHOST TERMINAL SUMMARY data items*

Data Item	Description
Terminal	The controlling terminal device file associated with the terminal.
User Name	The name of the user that is logged in at the terminal.
Login Time	The amount of time (hh:mm) passed since the oldest process on the terminal was started. The Login Time value for a process that was already running when MVHOST was started will equal the elapsed time (E: hh:mm) displayed in the MVHOST banner (the time elapsed since MVHOST was started).
Idle Time	The amount of time passed since the terminal has had a character read or write.
Processes	The number of processes attached to the terminal.
ioc/s	The number of characters read/write from/to the terminal per second.

MVHOST SYSTEM TABLE SUMMARY

The System Table Summary Screen

The System Table Summary screen reports configuration and utilization information of system tables and caches. The screen is available in graphical and tabular formats.

To access the System Table Summary screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **b** (System Table Summary). The System Table Summary screen will display.
- 3 Type **t** to toggle between the graphical and tabular formats.

Examples of the Disk I/O Summary screen are provided in “Graphical Format” on page 150 and “Tabular Format” on page 151.

System Table Summary Screen Display Items

Graphical Format

An example of the System Table Summary in graphical format is shown in Figure 22.1.

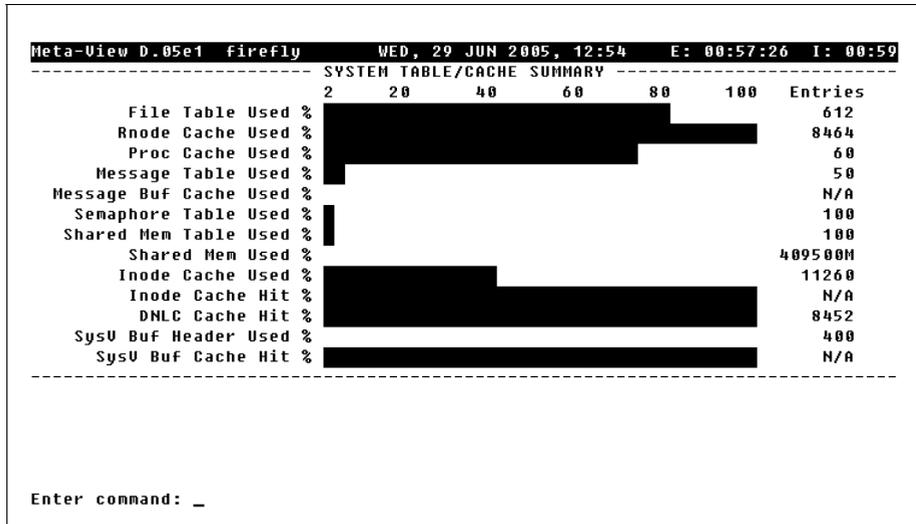


Figure 22.1 *MVHOST System Table Summary screen (graphical format)*

SYSTEM TABLE/CACHE SUMMARY

Table 22.1 *MVHOST SYSTEM TABLE/CACHE SUMMARY data items.*

Data Item	Description
File Table Used %	The percentage of the file table used.
Rnode Cache Used %	The percentage of rnode entries used.
Proc Cache Used %	The percentage of process table entries used.
Message Table Used %	The percentage of message table entries used.
Message Buf Cache Used %	The percentage of message buffer cache used.
Semaphore Table Used %	The percentage of SysV semaphore identifiers used.
Shared Mem Table Used %	The percentage of shared memory identifiers used.

MVHOST SYSTEM TABLE SUMMARY

System Table Summary Screen Display Items

Data Item	Description
Shared Mem Used %	The percentage of shared memory pool used.
Inode Cache Used %	The percentage of inode entries used.
Inode Cache Hit %	The number of inode entries found in memory instead of on disk.
DNLC Cache Hit %	The percentage of file name lookups satisfied in the dynamic name lookup cache (DNLC).
SysV Buf Header Used%	The percentage of buffer headers used.
SysV Buf Cache Hit%	The percentage of page faults satisfied in the buffer cache.

Tabular Format

An example of the System Table Summary in tabular format is shown in Figure 22.2.

```

Meta-View D.05e1 fireFly          WED, 29 JUN 2005, 12:54      E: 00:58:26  I: 01:00
----- IPC TABLE/CACHE SUMMARY -----
Message Table      Size      Entries  Used    Used %   High
                  N/A       50       2       4.0      2
Message Buffer Cache N/A       N/A       0       0        0
Semaphore Table   N/A       100      2       2.0      2
Shared Memory Table N/A       100      3       3.0      3
Shared Memory      399G     N/A       968K    0        968K
----- PROCESS CACHE SUMMARY -----
max_nproc: 1914   Size      Entries  Used    Used %   High
                  110K     60       44     73.3     60
----- INODE CACHE SUMMARY -----
ufs_ninode: 8452  Size      Entries  Used    Used %   High
Hit %:100.0      3782K    11260    4416    39.2     11260
ipf %: 0
----- DNLC CACHE SUMMARY -----
Entries           Hit %      Lookups/s
8452              99.9      84.4
----- SYSV BUFFER CACHE SUMMARY -----
bufhwm           nbuf      Hit %
2448             400      100.0
Enter command: _                               (Showing lines 5 - 25 of 25)

```

Figure 22.2 *MVHOST System Table Summary screen (tabular format)*

MISC TABLE/CACHE SUMMARY

This section provides information about miscellaneous caches and tables.

Table 22.2 *MVHOST MISC TABLE/CACHE SUMMARY data items*

Data Item		Description
File Table	Size	The configured size (bytes) of the file table.
	Entries	The configured number of entries for the file table.
	Used	The number of file table entries used.
	Used %	The percentage of file table entries used.
	High	The highest number of file table entries used.
Rnode Cache	Size	The configured size (bytes) of the rnode cache.
	Entries	The configured number of entries for the rnode cache.
	Used	The number of rnode cache entries used.
	Used %	The percentage of rnode cache entries used.
	High	The highest number of rnode cache entries used.

IPC TABLE/CACHE SUMMARY

Table 22.3 *MVHOST IPC TABLE/CACHE SUMMARY data items*

Data Item	Statistics	Description
Message Table	Size	Not applicable.
	Entries	The number of message queue entries configured.
	Used	The number of message queues used.
	Used %	The percentage of message queues used.
	High	The highest number of message queues used.
Message Buffer Cache	Size	The configured size (bytes) of the message buffer cache.
	Entries	Not applicable.
	Used	The amount of message buffer cache used.
	Used %	The percentage of message buffer cache used.
	High	The highest amount of message buffer cache used.

MVHOST SYSTEM TABLE SUMMARY
System Table Summary Screen Display Items

Data Item	Statistics	Description
Semaphore Table	Size	Not applicable.
	Entries	The number of SysV semaphore identifiers configured.
	Used	The number of SysV semaphore identifiers used.
	Used %	The percentage of SysV semaphore identifiers used.
	High	The highest number of SysV semaphore identifiers used.
Shared Memory Table	Size	Not applicable.
	Entries	The number of shared memory identifiers configured.
	Used	The number of shared memory identifiers used.
	Used %	The percentage of shared memory identifiers used.
	High	The highest number of shared memory identifiers used.
Shared Memory	Size	The configured size of shared memory pool, which can exceed the size of virtual memory.
	Entries	Not applicable.
	Used	The amount of shared memory pool used.
	Used %	The percentage of shared memory pool used.
	High	The highest amount of shared memory pool used.

PROCESS CACHE SUMMARY

The max_nproc data item in the System Table Summary screen represents the maximum number of entries possible in the process table. The size of the process table is dynamic.

Table 22.4 *MVHOST PROCESS CACHE SUMMARY data items*

max_nproc	Size	The configured size of the process table.
	Entries	The current configured number of entries in the process table.
	Used	The current number of process table entries used.
	Used %	The current percentage of process table entries used.
	High	The highest number of process table entries used.

INODE CACHE SUMMARY

The ufs_ninode data item in the System Table Summary screen represents the maximum possible number of entries in the inode cache. The size of the inode cache is dynamic.

Table 22.5 *MVHOST INODE CACHE SUMMARY data items*

ufs_ninode	Size	The current configured size (bytes) of the inode cache.
	Entries	The current configured number of inode cache entries.
	Used	The current number of inode cache entries used.
	Used %	The percentage of inode cache entries used.
	High	The highest number of inode cache entries used.
Hit %		The percentage of inode found in memory instead of on disk.
ipf %		The percentage of inode free that still had pages attached.

DNLC CACHE SUMMARY

The DNLC CACHE SUMMARY portion of the System Table Summary screen displays information about the DNLC (dynamic name lookup cache).

Table 22.6 *MVHOST DNLC CACHE SUMMARY data items*

Data Item	Description
Entries	The configured number of entries for DNLC.
Hit %	The percentage of file name lookups found in DNLC, thereby avoiding expensive lookup.
Lookups/s	The number of file name lookups per second.

SYSV BUFFER CACHE SUMMARY

The SYSV BUFFER CACHE SUMMARY portion of the System Table Summary screen displays information about the SysV buffer cache.

Table 22.7 *MVHOST SYSV BUFFER CACHE SUMMARY data items*

Data Item	Description
bufhwm	The maximum threshold number of buffers configured in the SysV buffer cache.
nbuf	The current number of buffers configured for the SysV buffer cache. The size of the SysV buffer cache is dynamic.
Hit %	The percentage of reads and writes satisfied in the SysV buffer cache instead of on disk. Note that the SysV buffer cache is only used for file metadata (not file data).

MVHOST SYSTEM CONFIGURATION SUMMARY

The System Configuration Screen

The System Configuration screen displays various configurable kernel parameters. Figure 23.1 shows an example of the screen.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:55 E: 00:59:28 I: 01:02
----- SYSTEM CONFIGURATION -----
system name: firefly      os version: 5.8          cpu type: sun4u
serial num: 2163755919   boot time: 15:38 30 MAR 2005  run level: 3
----- MEMORY MANAGEMENT CONFIG -----
lotsfree: 239            throttlefree: 59         page size: 8192
desfree: 119             priority paging: 0        fastscan: 7657
minfree: 59              maxpgio: 40              slowscan: 100
----- FSFLUSH CONFIGURATION -----
ufs_LW: 262K             autoup: 30               doiflush: 1
ufs_HW: 393K             t_fsflushr: 5           dopageflush: 1
----- CACHE/BUF CONFIGURATION -----
ufs_ninode: 8452         | nbuf: 400               | ncallout: 0
ncsize: 8452            | bufhwm: 2448            |             :
----- PROCESS CONFIGURATION -----
rlim_fd_cur: 256        rlim_fd_max: 1024        maxuprc: 1909           max_nproc: 1914
----- IPC CONFIGURATION -----
MESSAGES      msgmap: N/A | SEMAPHORES      semvmx: 32767 | SHARED MEM
msgmax: 2048   msgmni: 50 | semmap: N/A     senaem: 16384 | shmmax: 3G
msgmnb: 4096   msgseg: N/A | semmni: 100     semmnu: 30   | shmni: 100
msgssz: N/A    msgtql: 40 | semmns: 200    senume: 10   | shmseg: 10
-----
Enter command:

```

Figure 23.1 *MVHOST System Configuration screen*

To access the System Configuration screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **y** (System Configuration). The System Configuration screen will display.

System Configuration Screen Display Items

SYSTEM CONFIGURATION

The SYSTEM CONFIGURATION portion of the System Configuration screen displays system configuration parameters.

Table 23.1 *MVHOST SYSTEM CONFIGURAITON data items*

Data Item	Description
system name	The specific name of the system assigned during the system installation.
serial num	The serial number of the system.
os version	The version of the operating system.
boot time	The time of the last system reboot.
cpu type	The type of CPU hardware and model.
run level	The Unix state of operation. For information about run levels, please refer to the "inittab" Unix man page.

MEMORY MANAGEMENT CONFIG

The MEMORY MANAGEMENT CONFIG portion of the System Configuration screen displays memory management parameters.

Table 23.2 *MVHOST MEMORY MANAGEMENT data items*

Data Item	Description
lotsfree	The upper bound for paging. Once paging has started, it will continue until the amount of free memory is larger than the set lotsfree parameter.
desfree	The lower bound for paging. When the amount of free memory drops below the set desfree parameter, paging begins.
minfree	The threshold value at which the system considers itself to be out of memory. At this point, the system will start to deactivate processes.
throttlefree	The value at which the amount of free memory pages reaches throttlefree pages. At this point, any process that attempts to get another page will be suspended until the amount of free memory exceeds desfree.

Data Item	Description
priority paging	<p>The priority paging value indicates whether or not priority paging is enabled.</p> <ul style="list-style-type: none"> 0 indicates priority paging is disabled. 1 indicates priority paging is enabled. <p>When priority paging is enabled, the paging algorithm is modified to page out data pages before text, heap, and stack.</p>
maxpgio	The maximum number of page I/O operations per second that the system will schedule.
page size	The size (bytes) of the pages.
fastscan	The fastest scan rate (pages per second). The fastscan value corresponds to an empty free list.
slowscan	The initial scan rate (pages per second). This rate occurs when page scanning starts.

FSFLUSH CONFIGURATION

The FSFLUSH CONFIGURATION portion of the System Configuration screen displays information about the file system flush configuration.

Table 23.3 *MVHOST FSFLUSH CONFIGURATION data items*

Data Item	Description
usf_LW	<p>The minimum threshold value (kilobytes) for unflushed data.</p> <p>If the amount of data pending to be flushed to a file is less than the usf_LW value (kilobytes), the data will be flushed by fsflush.</p> <p>If the amount of data pending to be flushed to a file is between the usf_LW value and the usf_HW value (the maximum threshold), writes to disk are scheduled, bypassing fsflush.</p> <p>If the amount of data pending to be flushed is greater than the usf_LW value, any additional writes will result in suspension of the process until the amount pending drops below the usf_LW value.</p>
usf_HW	Refer to the description of usf_LW
autoup	The maximum number of seconds that a modified page will remain in memory without being written to disk by fsflush.
t_fsflushr	The set interval (number of seconds) between instances when fsflush scans 1/6 of RAM.

Data Item	Description
doiflush	The doiflush parameter indicates whether or not fsflush is enabled to flush the inode cache. <ul style="list-style-type: none"> 0 indicates inode cache flushing is disabled. 1 indicates inode cache flushing is enabled.
dopageflush	The dopageflush parameter indicates whether or not fsflush is enabled. <ul style="list-style-type: none"> 0 indicates page flushing is disabled. 1 indicates page flushing is enabled.

CACHE/BUF CONFIGURATION

The CACHE/BUF CONFIGURATION portion of the System Configuration screen displays information about the SYSV buffer cache parameters.

Table 23.4 *MVHOST CACHE/BUF CONFIGURATION data items*

Data Item	Description
ufs_ninode	The maximum possible number of entries in the inode cache. The size of the inode cache is dynamic.
ncsize	The configured number of entries for the DNLC cache.
nbuf	The configured number of buffer cache headers on the system. This number will change over time if the DBC (dynamic buffer cache) is configured.
bufhwm	The maximum threshold value for the number of buffers configured in the SYSV buffer cache.
ncallout	The number of callout structures configured.

PROCESS CONFIGURATION

The PROCESS CONFIGURATION portion of the System Configuration screen displays information about the process configuration parameters.

Table 23.5 *MVHOST PROCESS CONFIGURATION data items*

Data Item	Description
rlim_fd_cur	The soft limit maximum of open files allowed by a process.

Data Item	Description
rlim_fd_max	The hard limit maximum number of open files allowed by a process. Only processes with root privileges can exceed rlim_fd_cur and use rlim_fd_max.
maxuprc	The maximum number of processes any one user can own.
max_nproc	The maximum possible number of entries for the process table. The size of the process table is dynamic.

IPC CONFIGURATION

The IPC CONFIGURATION portion of the System Configuration screen displays information about the SYSV IPC (interprocess communication) configuration parameters.

Table 23.6 *MVHOST IPC CONFIGURATION data items*

Data Item	Description	
MESSAGES	msgmax	The maximum size (bytes) of a single message.
	msgmnb	The maximum number of bytes on the message queue (at one time).
	msgssz	The size (bytes) of each message segment. The message buffer cache size is calculated: Message Buffer Cache Size (bytes) = msgseg * msgssz
	msgseg	The number of segments allocated in the message buffer cache.
	msgmap	The configured number of message map entries.
	msgmni	The configured number of message queue identifiers.
	msgtql	The configured number of message headers. A message header is used for each message queued in the system.

Data Item		Description
SEMAPHORES	semmap	The configured number of SYSV semaphore map entries.
	semmni	The configured number of SYSV semaphore identifiers. A semaphore identifier may refer to multiple semaphores.
	semmns	The configured number of SYSV semaphores available.
	semvmx	The maximum value that a SYSV semaphore is allowed to reach.
	semaem	The maximum value by which a SYSV semaphore can be undone.
	semmnu	The configured number of "undo's" on system.
	semume	The maximum number of "undo's" entries per process.
SHARED MEM	shmmax	The maximum shared memory segment size (bytes).
	shmmni	The configured number of shared memory identifiers.
	shmseg	The maximum number of shared memory segments that can be attached to a process.

MVHOST PULSE POINTS SUMMARY

The Pulse Points Screen

The Pulse Points screen displays the current performance levels of key performance indicators. The performance level of each indicator is categorized as acceptable (Green), questionable (Yellow), or unacceptable (Red), based on criteria set in the ppoints configuration file.

```

Meta-View D.05e1 FireFly          WED, 29 JUN 2005, 12:23   E: 00:27:36   I: 01:26
----- PULSE POINTS -----
Indicator | Green | Yellow | Red | Comments
-----
--- CPU ---
CPU Busy %           0.5[ 0.5]
Queue Busy %         0[ 0.1]
Run-Q Average        0[ 0]
--- Memory ---
Ave Page Residence   600.0[600.0]          secs
Page Scan Rate       0[ 0]                /sec
Page Out Rate        0[ 0]                /sec
Swap Out Rate        0[ 0]                /sec
--- Disk I/O ---
Average Wait Time    8.2[ 7.0]            System Wide
Average Q-Length     0[ 0]                System Wide
Disk Utilization %   0[ 0]                System Wide
Disk I/O Rate (/sec) 1[ 1]                System Wide
--- Network ---
Defer %              0[ 0]                System Wide
Collision %          0[ 0]                System Wide
-----
Enter command: _

```

Figure 24.1 *MVHOST Pulse Points screen*

To access the Pulse Points screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **p** (Pulse Points). The Pulse Points screen will display. An example of the screen is shown in Figure 24.1.

Pulse Points Screen Display Items

Data items displayed in the Pulse Points screen are described elsewhere in this manual and in the online help, therefore, the pulse point indicators are not documented in this chapter. If the meaning of a pulse point indicator is unclear, please refer to the documentation for the indicator's corresponding MVHOST screen. For example, for information about the CPU Busy % indicator, refer to "MVHOST CPU Summary" on page 107.

The pulse points indicators are configurable. For configuration guidelines, refer to "MVHOST ppoints File" on page 76.

Pulse Points Screen Column Headings

Each of the column headings for the Pulse Points screen is described in the next table.

Table 24.1 *MVHOST Pulse Points screen column headings*

Heading	Description
Indicator	The Indicator column in the Pulse Points screen displays the name associated with each pulse point data item.
Green	All pulse point indicator values that are within the range configured as "acceptable" are displayed in the Green column.
Yellow	All pulse point indicator values that are within the range configured as "questionable" are displayed in the Yellow column.
Red	All pulse point indicator values that are within the range configured as "unacceptable" are displayed in the Red column.
Comments	Any comments provided for a pulse point indicator will be displayed in the Comments column.

MVHOST WORKLOAD DEFINITIONS

The Workload Definitions Screen

The Workload Definitions screen displays the application workload definitions. These definitions can also be found in the `/etc/opt/lund/cfg/workdefs` file.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:56 E: 01:00:28 I: 01:00
----- WORKLOAD DEFINITIONS -----
Number Name Type Specifications
-----
1 INTERACT INTERACT
2 BATCH BATCH NICE=21-39
3 DAEMON DAEMON
4 DEFAULT MIX

Enter command: _

```

Figure 25.1 *MVHOST Workload Definitions screen*

To access the Workload Definitions screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **k** (Workload Definitions). The Workload Definitions screen will display. An example of the screen is shown in Figure 25.1.

Workload Definitions Screen Display Items

WORKLOAD DEFINITIONS

The data items presented in the Workload Definitions screen are described in the following table.

Table 25.1 *MVHOST WORKLOAD DEFINITIONS data items*

Data Item	Description
Number	The unique, sequential identification number assigned to the workload.
Name	The name of the workload group.
Type	The type of workload (for information about workload types, refer to "Workload Groups" on page 25).
Specifications	The other specifications that define the workload (for information about workload types, refer to "Creating a Workload Group Definition File" on page 24).

MVHOST PROCESS DETAIL

The Process Detail Screen

The Process Detail screen displays detailed information about a specific process.

```

Meta-View D.05e1 Firefly WED, 29 JUN 2005, 12:57 E: 01:01:28 I: 00:59
----- PID ID ----- SCHEDULING ----- TERMINAL -----
Pid: 13254 | Cmd: mvmid | Nice: 0 | tty: ---
PPID: 13253 | User: gabi | Pri: 129 | State: DET
: | Group: swdev | Sched: RT | ioch/s: 656.7
: | : | wchan: 0x00000000 | :
----- CPU ----- MEMORY ----- LWP/CSW ----- DISK -----
CPU %: 0.2[ 0.2] | RSS: 2328 | nlwp: 5 | Physio in: 0
CPU ms: 130[ 7960] | USS: 2864 | csww/s: 0.2 | Physio out: 0
: | [ ] | State: LOAD | icsw/s: 0 | Physio in/s: 0
User %: 18.1[ 18.3] | Min/s: 0 | : | Physio out/s: 0
Sys %: 81.9[ 81.7] | Maj/s: 0 | : | IO%: 0
Trap %: 0[ <] | Sup/s: 0 | : | :
----- WAIT STATES -----
JOB: 0[ 0] CPU: 0[ 0] OTHR:100[100]
PRE: <[ <] TFLT: 0[ 0] DFLT: 0[ 0] KFLT: 0[ 0] ULCK: 0[ 0]
-----
Enter command:

```

Figure 26.1 MVHOST Process Detail screen

To access this screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **P** (Process Detail).
- 3 At the secondary prompt:
 - Press the Enter key to display the process detail information for the given process.
 - Or, enter the PID of another process.

Process Detail Screen Display Items

PID

The PID portion of the Process Detail screen displays process identification. Each data item is described in the following table.

Table 26.1 *MVHOST PID data items*

Data Item	Description
Pid	The identification number for the specified process.
PPID	The identification number for the parent process.

ID

The ID portion of the Process Detail screen displays additional identification information. Each data item is described in the following table.

Table 26.2 *MVHOST ID data items*

Data Item	Description
Cmd	The command that was invoked to create the process (does not include arguments).
User	The real user name of the user that owns the process.
Group	The name of the group that owns the process.

SCHEDULING

The SCHEDULING portion of the Process Detail screen displays scheduling information. Each data item is described in the following table.

Table 26.3 *MVHOST SCHEDULING data items*

Data Item	Description
Nice	The nice value. A value of R indicates the process has a real time priority—the nice value is not used. For information about the nice utility, see the Unix man page, "nice."
Pri	The priority of the process, depending on the scheduling policy.

Data Item	Description
Sched	The scheduling policy of the process. Possible values are: <ul style="list-style-type: none"> • TS - timeshare scheduling. • SYS - system process scheduling. • RT - real-time scheduling. • IA - interactive scheduling. For information about the scheduling, see the "prioctl" Unix man page.
wchan	The kernel address of the resource on which the process is waiting.

TERMINAL

The TERMINAL portion of the Process Detail screen displays terminal information related to the process. Each data item is described in the next table.

Table 26.4 *MVHOST TERMINAL data items*

Data Item	Description
tty	The device file associated with the terminal device. If the process is not attached to a terminal, three dashes (---) is displayed.
State	The terminal state: <ul style="list-style-type: none"> • DET - detached from a terminal. • ATT - attached to a terminal.
ioch /s	The number of character I/Os to or from the terminal, per second.

CPU

The CPU portion of the Process Detail screen displays process and workload CPU information. Using the **c** command key toggles between two sets of data: a detailed breakdown of CPU usage and a list of response and transaction data. Each data item is described in the following table.

Table 26.5 *MVHOST CPU data items*

Data Item	Description
CPU %	The percentage of the current interval that the process was executing. This value is normalized for multiple processors—the sum of the CPU% values should not exceed 100.
CPU ms	The number of milliseconds the process was executing. The value in brackets, [], is a cumulative value, not an averaged cumulative value.

Data Item	Description
User %	The percentage of the process' execution time spent in user mode. This includes real, nice, and negative nice time.
Sys %	The percentage of the process' execution time spent in system/kernel mode. This includes memory and trap time.
Trap %	The percentage of the process' execution time spent processing traps.

MEMORY

The MEMORY portion of the Process Detail screen displays process and workload memory information. Each data item is described in the following table.

Table 26.6 *MVHOST MEMORY data items*

Data Item	Description
RSS	The resident set size, which is equal to the amount of RAM the process is using. This value does not include shared memory.
VSS	The amount of virtual memory the process has reserved, which is equal to the size of the process' core image including text, data, and stack.
State	The process state with respect to memory (not applicable to workloads): <ul style="list-style-type: none"> • Dead - the process is dead. • LOAD - the process is loaded in memory. • DEACT - the process is deactivated.
Min /s	The number of minor page faults experienced by the process, per second.
Maj /s	The number of major page faults experienced by the process, per second.
Swp /s	The number of processes swapped out per second.

LWP/CSW

The LWP/CSW portion of the Process Detail screen displays information about lightweight processes and context switches. Each data item is described in the following table.

Table 26.7 *MVHOST DISK data items*

Data Item	Description
nwlp	Total number of lightweight processes (threads).

Data Item	Description
csw/s	Total number of voluntary context switches per second. A voluntary context switch will occur when a process' relinquishes the CPU and its time slice is not yet expired.
icsw/s	The number of involuntary context switches per second. Involuntary switches occur when a process' time slice expires.

DISK

The DISK portion of the Process Detail screen displays various process and workload disk statistics. Each data item is described in Table 26.8.

Table 26.8 *MVHOST DISK data items*

Data Item	Description
Phyio in	The number of physical disk reads.
Phyio out	The number of physical disk writes.
Phyio in/s	The number of physical disk reads per second.
Phyio out/s	The number of physical disk writes per second.
IO%	The percentage of I/Os performed on the disk, system-wide.

WAIT STATES

The WAIT STATES portion of the Process Detail screen displays various process and workload wait state information. Each data item is described in the following table.

Table 26.9 *MVHOST Wait States data items*

Data Item	Description
JOB	The percentage of a process' time spent in the JOB state, waiting for job control or tracing signals.
CPU	The percentage of a process' time spent in the CPU state.
OTHR	The percentage of a process' time spent in the OTHR state, waiting on all other resources and events.
PRI	The percentage of a process' time spent in the PRI state, waiting for the CPU.

Data Item	Description
TFLT	The percentage of a process' time spent in the TFLT state, waiting on text page faults.
DFLT	The percentage of a process' time spent in the DFLT state, waiting on data page faults.
KFLT	The percentage of a process' time spent in the KFLT state, waiting on kernel page faults.
ULCK	The percentage of a process' time spent in the UFLT state, waiting on user locks.

MVHOST PROCESS FILE USAGE

The Process File Usage Screen

The Process File Usage screen displays information about each file opened by a specific process.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:58 E: 01:02:34 I: 01:05
----- PROCESS FILE USAGE -----
PID: 13254 Name: mvmid User Name: gabi Tty: ---
----- OPEN FILES -----
Filename Type Access Offset Size Comp % #Refs
-----
/dev/kstat Char R 0 0 0 2
/dev/kmem Char R 0 0 0 2
/dev/mem Char R 0 0 0 2
/dev/kstat Char R 0 0 0 2
/dev/kmem Char R 0 0 0 2
/dev/mem Char R 0 0 0 2
/dev/kstat Char R 0 0 0 2
/dev/kmem Char R 0 0 0 2
/dev/mem Char R 0 0 0 2
/dev/kstat Char R 0 0 0 2
/dev/kmem Char R 0 0 0 2
/dev/mem Char R 0 0 0 2
/dev/kstat Char R 0 0 0 2
/dev/tcp Char RW 0 0 0 2
/dev/kstat Char R 0 0 0 1
Enter command: _ (Showing lines 192 - 207 of 207)

```

Figure 27.1 MVHOST Process File Usage screen

To access this screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **F** (Process File Usage).
- 3 At the secondary prompt:
 - Press the Enter key to display the process file usage information for the given process.
 - Or, enter the PID of another process.

An example of the screen is shown in Figure 27.1.

Process File Usage Screen Display Items

PROCESS FILE USAGE

The PROCESS FILE USAGE portion of the Process File Usage screen displays process identification information. Each data item is described in the next table.

Table 27.1 *MVHOST PROCESS FILE USAGE data items*

Data Item	Description
PID	The product identification number of the process.
Name	The name of the process—the command used to create the process.
User Name	The name of the user that owns the process.
Tty	The device file associated with the terminal to which the process is attached. If no terminal is associated with the process, three dashes (---) will display.

OPEN FILES

The OPEN FILES portion of the Process File Usage screen displays information about each open file. Each data item is described in Table 27.2.

Table 27.2 *MVHOST OPEN FILES data items*

Data Item	Description
Filename	The name of the open file. The MVHOST application searches the DNLC for the name of the file. If the name is not in the DNLC, "N/A" will display on the screen.

Data Item	Description
Type	<p>The Type data item denotes the type of file:</p> <ul style="list-style-type: none"> • Block (a block device file) • Char (a character device file) • Dir (a directory) • Door (a door) • FIFO (a FIFO (first in, first out) file) • Link (a symbolic link) • Proc (a process) • Regular (a regular file) • Socket (a socket)
Access	<p>The type of access the process has to the open file:</p> <ul style="list-style-type: none"> • R (read only) • W (write only) • RW (read and write)
Offset	The offset (bytes) into the file.
Size	The size of the file (bytes).
Comp %	<p>The percentage of offset into the file:</p> <p>Comp % = (Offset/Size) x 100</p>
#Refs	The current number of references to the open file.

MVHOST PROCESS MEMORY REGIONS

The Process Memory Regions Screen

The Process Memory Regions screen displays information about the memory regions accessed by a specific process.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 12:59 E: 01:02:34 I: 01:05
----- PROCESS MEMORY REGIONS -----
PID: 13254      Name: mvmid      User Name: gabi      Tty: ---
----- MEMORY REGIONS -----
Front Store File      Type      RSS      USS      Virtual Address
-----
/dev/rdisk/c0t0d0s0:380081      MMAP      16       16      0x00000000ff2d0000
<ANON>                      ANON       8         8      0x00000000ff2e0000
/dev/rdisk/c0t0d0s0:11211      MMAP      24       24      0x00000000ff2f0000
/dev/rdisk/c0t0d0s0:11211      MMAP       8         8      0x00000000ff306000
/dev/rdisk/c0t0d0s0:11186      MMAP     120      120     0x00000000ff310000
/dev/rdisk/c0t0d0s0:11186      MMAP       8         8      0x00000000ff33e000
/dev/rdisk/c0t0d0s0:11191      MMAP      16       16      0x00000000ff350000
/dev/rdisk/c0t0d0s0:11191      MMAP       8         8      0x00000000ff364000
/dev/rdisk/c0t0d0s0:11190      MMAP       8         8      0x00000000ff370000
/dev/rdisk/c0t0d0s0:11190      MMAP       8         8      0x00000000ff382000
/dev/rdisk/c0t0d0s0:11184      MMAP       8         8      0x00000000ff390000
<ANON>                      ANON       8         8      0x00000000ff3a0000
/dev/rdisk/c0t0d0s0:11069      MMAP     152      152     0x00000000ff3b0000
/dev/rdisk/c0t0d0s0:11069      MMAP       8         8      0x00000000ff3e6000
<STACK>                     STACK      16       16      0x00000000ffbec000

Enter command: _                               (Showing lines 26 - 41 of 41)

```

Figure 28.1 *MVHOST Process Memory Regions screen*

To access the Process Memory Regions screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **M** (Process Memory Regions).
- 3 At the secondary prompt:

- Press the Enter key to display the process memory regions information for the given process.
- Or, enter the PID of another process.

The Process Memory Regions screen will display. An example of the screen is shown in Figure 28.1.

Process Memory Regions Screen Display Items

PROCESS MEMORY REGIONS

The PROCESS MEMORY REGIONS portion of the Process Memory Regions screen contains identification information about the selected process. Each data item is described in the following table.

Table 28.1 *MVHOST PROCESS MEMORY REGIONS data items*

Data Item	Description
PID	The product identification number of the process.
Name	The name of the process—the command used to create the process.
User Name	The name of the user that owns the process.
Tty	The device file associated with the terminal to which the process is attached. If no terminal is associated with the process, three dashes (---) will display.

MEMORY REGIONS

The MEMORY REGIONS portion of the Process Memory Regions screen contains information pertaining to each memory region used by the specified process. Each data item is described in the following table.

Table 28.2 *MVHOST MEMORY REGIONS data items*

Data Item	Description
Front Store File	The file path that corresponds to the memory region. This is the program name for data and text regions and the library name for shared libraries. If a file name is not associated with the region, the type of region will be displayed. If the file name is not obtainable, the device and inode will be displayed. This information can be used with the ncheck (IM) command to look up the file name.

MVHOST PROCESS MEMORY REGIONS
Process Memory Regions Screen Display Items

Data Item	Description
Type	The type of memory region: <ul style="list-style-type: none">• HEAP (the region is a heap)• STACK (the region is a stack)• ANON (the region is anonymous; not associated with a file)• MMAP (the region is mapped in memory)
RSS	The size of region in RAM (KB).
VSS	The size of region in virtual memory (KB).
Virtual Address	The virtual address of memory region in hex format. This number represents the address of the space and space offset of the region.

MVHOST WORKLOAD DETAIL

The Workload Detail Screen

The Workload Detail screen displays detailed information about a specific workload. For information about workloads, refer to “Workload Groups” on page 25.

```

Meta-View D.05e1 firefly WED, 29 JUN 2005, 13:00 E: 01:03:35 I: 01:00
----- WORKLOAD DETAIL -----
Workload: INTERACT Proc Count: 3.0[ 3.0]
----- CPU ----- MEMORY ----- RESP TIME ----- DISK -----
CPU %: 1.0[ 0.1] | RSS: 8144K | Tran/s: 529.9 | Phyio in: 0
CPU ms: 590[ 3350] | USS: 10M | Resp T: < | Phyio out: 6
: [ ] | : | : | Phyio in/s: 0
User %: 28.9[ 47.8] | Min/s: 0 | : | Phyio out/s: 0.1
Sys %: 71.1[ 52.2] | Maj/s: 0 | : | IO%: 13.3
Trap %: 0[ 0] | Swp/s: 0 | : | :
----- WAIT STATES -----
JOB: 0[ 0] CPU: 0[ 0] OTHR:100[100]
PRI: <[ <] TFLT: 0[ <] DFLT: 0[ 0] KFLT: 0[ 0] ULCK: 0[ 0]
----- PROCESS SUMMARY -----
PID Name User Name TTY CPU% Nice Pri RSS/Size #Rd #Wr State Res
{PRI TPG DPG KPG ULCK JOB OTH} Group Name wchan n1wp nswap CPU(ms)
13964 mvhost rodica pts/2 1.0 20 58 4864/6008 0 6 RUN <
{ < 0 0 0 0 0 99} INTERACT 0x00000000 1 0 590
Enter command: _

```

Figure 29.1 *MVHOST Workload Detail screen*

To access the Workload Detail screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **W** (Workload Detail).
- 3 At the secondary prompt:
 - Press the Enter key to display the workload detail information for the given workload.

- Or, select another workload from the list.

The Workload Detail screen will display. An example of the screen is shown in Figure 29.1.

- 4 Use the **y** command key to toggle between the normal and extended process displays.

Workload Detail Display Items

WORKLOAD DETAIL

The WORKLOAD DETAIL portion of the Workload Detail screen displays workload identification information. The data items are described in the next table.

Table 29.1 *MVHOST WORKLOAD DETAIL data items*

Data Item	Description
Workload	The name of the workload group.
Proc Count	The average number of processes that exists within the workload.

CPU

The CPU portion of the Workload Detail screen displays process and workload CPU information. The data items are described in Table 29.2.

Table 29.2 *MVHOST CPU data items*

Data Item	Description
CPU %	The percentage of the current interval that the process was executing. This value is normalized for multiple processors—the sum of the CPU% values should not exceed 100.
CPU ms	The number of milliseconds the process was executing. The value in brackets, [], is a cumulative value, not an averaged cumulative value.
User %	The percentage of the process' execution time spent in user mode. This includes real, nice, and negative nice time.
Sys %	The percentage of the process' execution time spent in system/kernel mode. This includes memory and trap time.
Trap %	The percentage of the process' execution time spent processing traps.

MEMORY

The MEMORY portion of the Workload Detail screen displays process and workload memory information. The data items are described in the following table.

Table 29.3 *MVHOST MEMORY data items*

Data Item	Description
RSS	The resident set size, which is equal to the amount of RAM the process is using. This value does not include shared memory.
VSS	The amount of virtual memory the process has reserved, which is equal to the size of the process' core image including text, data, and stack.
State	The process state with respect to memory (not applicable to workloads). The possible values are: <ul style="list-style-type: none"> • Dead (the process is dead) • LOAD (the process is loaded in memory) • DEACT (the process is deactivated)
Min /s	The number of minor page faults experienced by the process, per second.
Maj /s	The number of major page faults experienced by the process, per second.
Swp /s	The number of processes swapped per second.

RESP TIME

The RESP TIME portion of the Workload Detail screen displays process and workload response time and transaction information. The data items are described in Table 29.4.

Table 29.4 *MVHOST RESP TIME data items*

Data Item	Description
Tran /s	The number of transactions per second.
Resp T	The average time (milliseconds) for a transaction to complete.

DISK

The DISK portion of the Workload Detail screen displays process and workload disk statistics. The data items are described in Table 29.5.

Table 29.5 *MVHOST DISK I/O USAGE data items*

Data Item	Description
Phyio in	The number of physical disk reads.
Phyio out	The number of physical disk writes.
Phyio in/s	The number of physical disk reads per second.
Phyio out/s	The number of physical disk writes per second.
IO%	The percentage of I/Os performed on the disk, system-wide.

WAIT STATES

The WAIT STATES portion of the Workload Detail screen displays various process and workload wait state information. The data items are described in the following table.

Table 29.6 *MVHOST WAIT STATES data items*

Data Item	Description
JOB	The percentage of a process' time spent in the JOB state, waiting for job control or tracing signals.
CPU	The percentage of a process' time spent in the CPU state.
OTHR	The percentage of a process' time spent in the OTHR state, waiting on all other resources and events.
PRI	The percentage of a process' time spent in the PRI state, waiting for the CPU.
TFLT	The percentage of a process' time spent in the TFLT state, waiting on text page faults.
DFLT	The percentage of a process' time spent in the DFLT state, waiting on data page faults.
KFLT	The percentage of a process' time spent in the KFLT state, waiting on kernel page faults.
ULCK	The percentage of a process' time spent in the ULCK state, waiting on user locks.

PROCESS SUMMARY

The PROCESS SUMMARY portion of the Workload Detail screen displays general information about the processes on the system. By default, any process that was active in the interval will be displayed. The information display can be reconfigured using the commands described in “Process display option Commands” on page 55. The data items are described in Table 29.7.

Table 29.7 *MVHOST WORKLOAD DETAIL data items*

Data Item	Description
PID	The product identification number of the process.
Name	The name of the process—the command used to create the process.
User Name	The name of the user that owns the process.
Tty	The device file associated with the terminal to which the process is attached. If no terminal is associated with the process, three dashes (---) will display.
CPU%	The percentage of system-wide CPU time that was used by the process. This value is normalized for multiple processors—the sum of the CPU% values should not exceed 100.
Nice	The nice value. A value of R indicates the process has a real time priority—the nice value is not used. For information about the nice utility, see the Unix man page, "nice."
Pri	The priority of the process. The value depends on the scheduling policy.
RSS/Size	The resident set size—the amount of RAM used by the process. The Size value represents the size in kilobytes of the core image of the process. This includes text, data, and stack space. In other words, the amount of swap or virtual memory the process has reserved.
#Rd	The number of physical reads performed by the process.
#Wr	The number of physical writes performed by the process.
State	The State data item shows the current state of the process. Possible values are: <ul style="list-style-type: none"> • CPU (the process is waiting for CPU) • RUN (the process is running on the CPU) • SLEEP (the process is waiting for a resource or event) • STOP (the process is suspended by job control because it is being traced) • ZOMB (the process is dead, but still contains a process table entry)

MVHOST ORACLE MAIN

The Oracle Main Screen

The Oracle Main screen provides lists all Oracle instances you have added and some important metrics for each instance, as well as some aggregate statistics (summed over all instances).

To access the Oracle Main screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **O** (upper case). An example of the screen is shown in Figure 30.1.

```

Meta-View D.05f firefly          MON, 18 JUL 2005, 04:07      E: 00:04:06  I: 01:00
                                Oracle Main Screen
-----
Sessions:           12                Locks:           9
Connections:       0 [                0]    Commits:       16 [                72]
Opened cursors:   28 [                115] Rollbacks:    0 [                0]
-----
No Instance LibHit DtaHit BFRHit Sess Conn Locks Cursr Comms Ribks RedoW PhsWr
0 devpx.lun100.00 100.00 91.37 12  0  9  28  16  0  16  0
-----
Enter command:

```

Figure 30.1 *MVHOST Oracle Main screen*

Adding an Oracle Instance

To add an Oracle instance to the data collection:

- 1 Type **R** from any MVHOST screen.
- 2 MVHOST will prompt for the instance connect string. Enter a net service name or a full connect string in the form host:port:SID (Oracle's listener port is usually 1521). If no instance name is entered, the default database instance on the local machine will be used.
- 3 Next, MVHOST will prompt for the user name. This user should have select rights on v\$ performance views, ts\$, and file\$. The user must also have rights to create, select, delete, and insert tables (for MVHOST temporary data).
- 4 Finally, MVHOST will ask for the user's password.

If more than one instance is configured, MVHOST will prompt you to select an instance each time you go to an Oracle detail screen.

Deleting an Oracle Instance

Instances may be deleted with the "T" command.

Oracle Main Display Items

The Oracle Main screen data items are described in the next two tables.

Table 30.1 *MVHOST Oracle Main data items: aggregate statistics*

Data Item	Description
Sessions	The number of active sessions.
Connections	The number of connections to Oracle.
Opened cursors	The number of cursors opened.
Locks	The number of locks currently held.
Commits	The number of commits.
Rollbacks	The number of rollbacks.

Table 30.2 *MVHOST Oracle Main display items: instance lines*

Data Item	Description
Instance	The instance connect string.
LibHit	The library hit ratio percentage.
DtaHit	The data dictionary hit percentage.
BfRHit	The row buffer hit percentage.
Sess	The number of active sessions.
Conn	The number of connections to this instance.
Locks	The number of locks entries.
Cursr	The number of cursors.
Comms	The number of commits.
Rlbks	The number of rollbacks.
RedoW	The number of redo writing.
PhsWr	The number of writes to disk.

MVHOST ORACLE DETAIL LATCHES

The Oracle Detail Latches Screen

The contention for various buffers in SGA is solved using latches. The MVHOST Oracle Detail Latches screen presents latches statistics.

To access the Oracle Detail Latches screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **L** (upper case). An example of the screen is shown in Figure 31.1.

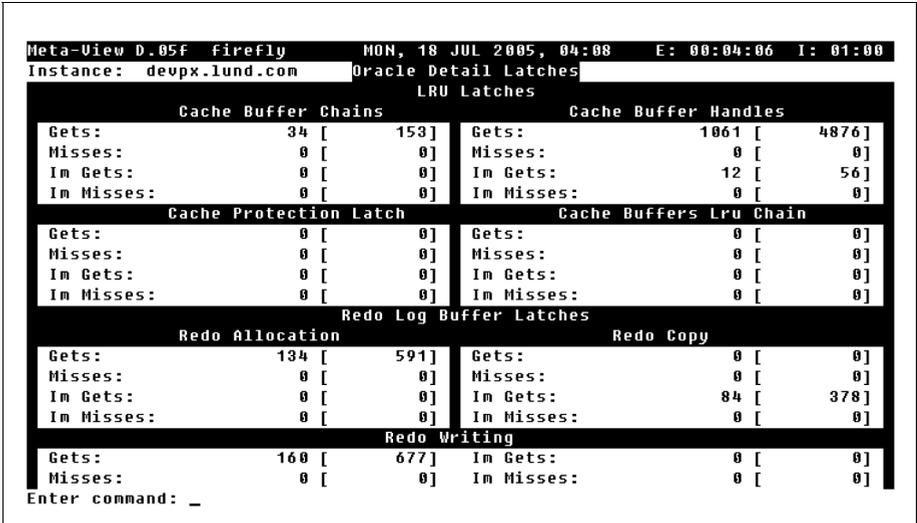


Figure 31.1 MVHOST Oracle Detail Latches screen

Oracle Detail Latches Display Items

The data values in each section of the Oracle Detail Latches screen are described in the next table. Unique data items are described in the following sections of this chapter.

Table 31.1 *MVHOST Oracle Detail Latches data items*

Data Item	Description
Gets	The number of successful gets.
Misses	The number of successful misses.
Im Gets	The number of successful immediate gets. A get is considered to be immediate if the requesting process specifies that it does not wish to wait for a latch on its data to be released.
Im Misses	The number of misses for immediate get requests.

LRU Latches

The LRU section has four sub-sections of data.

Table 31.2 *MVHOST Oracle Detail Latches data: LRU Latches*

Data Item	Description
Cache Buffer Chains	This latch is required when user processes try to scan the buffer cache from SGA. Adjusting DB_BLOCK_BUFFERS can reduce the contention for this latch.
Cache Buffer Handles	This latch protects the State Objects that are needed by a process to make a change to a block/buffer. Before the change a buffer handle is acquired either from the process' private pool or the global pool if none are present. The access to the global pool is protected by this latch.
Cache Protection Latch	During the cloning of a buffer, the buffer header is atomically updated to reflect the new position in the buffer cache. Only one buffer at the time may be cloned, as it is protected by this latch. A lot of contention on this latch would indicate that there is a lot of concurrent cloning going on.
Cache Buffer LRU Chain	This latch is required when the user processes try to scan the LRU chain that contains the dirty buffers from the buffer cache. Increasing DB_BLOCK_BUFFERS and DB_BLOCK_WRITE_BATCH can reduce the contention for this latch.

Redo Log Buffer Latches

An Oracle process has to obtain redo copy latch before the redo allocation latch. After it obtains both, it makes the allocation, and after that, it frees the redo allocation latch. Only after it makes the copy, it will free the redo copy latch. So the redo copy latch is kept more than the redo allocation latch.

You can reduce the conflict for this latch by reducing the copy time. To do that, you could reduce the LOG_SMALL_ENTRY_MAX_SIZE parameter. Usually the latch contention occurs on multi-processor machines. The LOG_SIMULTANEOUS_COPIES parameter, which determines the number of redo copy latch mechanisms, with the default value equal to the number of processors, should be increased if contention occurs.

MVHOST ORACLE DETAIL DATABASE ACTIVITY

The Oracle Detail Database Activity Screen

The Oracle Detail Database screen provides important statistics related to Oracle database activities.

To open the Oracle Detail Database screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **A** (upper case). An example of the screen is shown in Figure 32.1.

```

Meta-View D.05f firefly          MON, 18 JUL 2005, 04:08      E: 00:05:07  I: 01:01
Instance: deupx.lund.com Oracle Detail Database Activity
Transaction Management
Opened Cursors:      28 [      143]
User Commits:       16 [      88]
User Rollbacks:      0 [       0]

Sorts
Memory:             84 [      460]
Disk:               4 [       22]
Rows:               5782 [  31801]

Table Scans
Short Tables:       20 [      111]
Long Tables:        0 [       0]

Locking
Current Locks:      9
Enq Requests:       56 [     315]
Enq Releases:       56 [     315]
Enq Waits:          0 [       0]
Enqueue Timeouts   0 [       0]

Rollback
Gets:               82 [     458]
Waits:              0 [       0]
Writes:            11304 [  62148]

SUCCESSFULLY COLLECTED

Enter command: _

```

Figure 32.1 MVHOST Oracle Detail Database Activity screen

Oracle Detail Database Activity Display Items

Transaction Management

The Transaction Management portion of the Oracle Detail Database screen shows the amount of database activity.

Table 32.1 *MVHOST Oracle Detail Database Activity data items: Transaction Management*

Data Item	Description
Opened cursors	The number of opened cursors.
User commits	The number of user commits.
User rollbacks	The number of user rollbacks.

Locking

The Locking section of the screen shows statistics related to locking activity. Locking is managed in Oracle using an enqueue mechanism.

Table 32.2 *MVHOST Oracle Detail Database Activity data items: Locking*

Data Item	Description
Current Locks	The number of locks currently held.
Enq Requests	The number of enqueue requests.
Enq Releases	The number of enqueue releases.
Enq Waits	The number of waits for enqueue time-outs.
Enqueue Time-outs	The number of enqueue time-outs.

Performance Tip

The number of locks performed and still held can be calculated as: *(enq requests - enq releases - enq time-outs)*.

Sorts

The Sorts section of the Oracle Detail Database screen shows statistics related to sorts.

Table 32.3 *MVHOST Oracle Detail Database Activity data items: Sorts*

Data Item	Description
Memory	The number of sorts done in memory.
Disk	The number of sorts performed on disk.
Rows	The number of rows sorted.

Performance Tip

Most sorting should happen in memory, not on disk. Sorting on disk is a very slow operation and should be avoided.

Table Scans

The Table Scans section shows statistics related to sequential table access; accesses made directly, not through an index.

Table 32.4 *MVHOST Oracle Detail Database Activity data items: Table Scans*

Data Item	Description
Short tables	The number of short tables scanned.
Long tables	The number of long tables scanned.

Performance Tip

Long table scans should be avoided unless they return most of the scanned rows.

Rollback

The Rollback section provides statistics about database changes.

Table 32.5 *MVHOST Oracle Detail Database Activity data items: Rollback*

Data Item	Description
Gets	The number of gets.
Waits	The number of waits.

Data Item	Description
Writes	The number of writes.

MVHOST ORACLE DETAIL MEMORY AND NETWORK WORK

The Oracle Detail Memory and Network Screen

The Oracle Detail Memory and Network screen provides statistics about memory allocation and network transfers.

To access the Oracle Detail Memory and Network screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **N** (upper case). An example of the screen is shown in Figure 33.1.

```

Meta-View D.05f firefly          MON, 18 JUL 2005, 04:06      E: 00:03:06  I: 01:00
Instance: devp1.lund.com Oracle Detail Memory and Network
                                Memory
                                -----
                                SGA                                Session
Free Memory:                    42632k                        UGA Memory:           293982k
DB Buffers:                     16384k                        UGA Memory Max:      1149697k
Log Buffers:                    160k                          PGA Memory:           6236351k
Dict Cache:                     369k                          PGA Memory Max:      6236351k
SQL Area:                       1069k
Lib Cache:                      1522k

                                Network (SQL*Net)
                                -----
Bytes sent to client:            28517 [ 99783]
Bytes received from client:     23208 [ 81228]
Roundtrips (client):           96 [ 336]
Bytes sent to dblink:           0 [ 0]
Bytes received from dblink:     0 [ 0]
Roundtrips (dblink):           0 [ 0]

SUCCESSFULLY COLLECTED
Enter command: _

```

Figure 33.1 MVHOST Oracle Detail Memory and Network screen

Oracle Detail Memory and Network Display Items

SGA

The SGA section of the screen presents statistics related to the SGA.

Table 33.1 *MVHOST Oracle Detail Memory and Network data items: SGA*

Data Item	Description
Free Memory	The amount of memory available. If a large amount of free memory is available for long periods of time, consider increasing the sizes of other memory areas.
DB Block Buffers	The size of the buffer cache.
Log Buffers	The size of the redo log buffer area.
Dictionary Cache	The size of the data dictionary cache.
SQL Area	The shared SQL area size.
Lib Cache	The size of the library cache.

Session

The Session section of the screen contains memory statistics that show the amount of memory allocated to all users both inside and outside the global area.

Table 33.2 *MVHOST Oracle Detail Memory and Network data items: Session*

Data Item	Description
UGA Memory	The size of the User Global Area.
UGA Memory Max	The maximum size of the UGA.
PGA Memory	The size of the Program Global Area.
PGA Memory Max	The maximum size of the PGA.

Network

The Network section of the screen presents statistics for the network (SQL* Net).

Table 33.3 *MVHOST Oracle Detail Memory and Network data items: Network*

Data Item	Description
Bytes Received from Client	These two statistics show the traffic between SQL*NET clients and the server, in bytes.
Bytes Sent to Client	
Round-trips (client)	The number of times a message was sent and an acknowledgement was received.
Bytes Received from dblink	These two statistics show the SQL* Net traffic for database links, in bytes.
Bytes Sent to dblink	
Round-trips (dblink)	The number of times a message was sent and an acknowledgement was received for database links.

MVHOST ORACLE DETAIL ROLLBACK SEGMENTS

The Oracle Detail Rollback Segments Screen

Rollback segments are the segments in which Oracle puts the rollback data when data is modified during a transaction. It provides consistent data for the other readers and in case of a rollback it is used to bring the data to its previous state.

To view statistics related to Oracle rollback segments:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **K** (upper case) from any MVHOST display screen. An example of this screen is shown in Figure 34.1.

```

Meta-View D.05f firefly      MON, 18 JUL 2005, 04:09      E: 00:06:11  I: 01:03
Instance: deupx.lund.com Oracle Detail Rollback Segments
SUCCESSFULLY COLLECTED
Name           Waits      Gets      Writes    Hit Ratio
RBS4           0          12        2700     100.00
RBS0           0          11        2570     100.00
RBS5           0          12        1558     100.00
RBS1           0          10        1432     100.00
RBS6           0          11        1394     100.00
RBS3           0          10        1394     100.00
RBS2           0          10        256      100.00
SYSTEM        0           6          0        100.00

Enter command:

```

Figure 34.1 MVHOST Oracle Detail Rollback Segments screen

Oracle Detail Rollback Segments Display Items

The Oracle Detail Rollback Segments data items are described in the next table.

Table 34.1 MVHOST Oracle Detail Rollback Segments data items

Data Item	Description
Waits	The number of waits for data from a rollback segment.
Gets	The number of readings from a rollback segment.
Writes	The number of writes in the rollback segment.
Hit Ratio	$\{(1 - \text{waits} / \text{gets}) * 100\}$

MVHOST ORACLE DETAIL CACHE

The Oracle Detail Cache Screen

The Oracle Detail Cache screen displays the most important statistics related to Oracle cache management. All of these statistics refer to the Shared Global Area (SGA). Since memory access is much faster than disk access, tuning this area is very important. For best performance results, Oracle should read as much as possible from memory and limit its disk access.

To access the Oracle Detail Cache screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **C** (upper case). An example of the screen is shown in Figure 35.1.

```

Meta-View D.05f firefly          MON, 18 JUL 2005, 04:10    E: 00:06:11  I: 01:03
Instance:  devpw.lund.com        Oracle Detail Cache
-----
Row Cache                          Library Cache
-----
Hit Ratio:           91.41 [ 91.55]    Hit Ratio:           100.00 [100.00]
DB Block Gets:       256 [ 1674]        User Calls:          112 [  720]
Consistent Gets:     140 [  942]        Recursive Calls:    216 [ 1344]
Physical Reads:       34 [  221]        Exec Count:          104 [  675]
                                           Parse Cnt (tot):    120 [  771]
                                           Parse Cnt (hard):   0 [    0]
                                           Pins:                272 [ 1748]
                                           Reloads:              0 [    0]
-----
Redo Buffer
-----
Redo Syn Wrts:        16 [  104]
Redo Logspc Req:      0 [    0]
-----
Waits                               Data Dict Cache
-----
Free List:            0 [    0]          Hit Ratio:           100.00 [100.00]
Sys Undo Block:       0 [    0]          Gets:                 12 [  109]
Sys Undo Header:      0 [    0]          Get Misses:           0 [    0]
Undo Block:           0 [    0]
Undo Header:          0 [    0]
-----
Enter command:

```

Figure 35.1 MVHOST Oracle Detail Cache screen

Oracle Detail Cache Display Items

Row Cache

The Row Cache screen section refers to the portion of SGA where Oracle keeps row buffers.

Table 35.1 *MVHOST Oracle Row Cache data items*

Data Item	Description
Hit Ratio	$[1 - \text{physical reads} / (\text{consistent gets} + \text{db block gets})] * 100$ The sum of db block gets and consistent gets represents the number of logical reads performed by the database.
DB Block Gets	The number of blocks accessed via single block gets (not through the consistent get mechanism). This statistic is incremented when a block is read for update and when segment header blocks are accessed.
Consistent Gets	The number of accesses made to the block buffer to retrieve data in a consistent way. The SCN (System Change Number) is used to make sure the data being read has not changed since the query was started.
Physical Reads	The number of blocks read from the disk requests. Reading from temporary data segments does not increment this value. Even if the read is a multi-block read, this statistic is incremented only by 1.

Library Cache

The Library Cache portion of the Oracle Detail Cache screen refers to SQL cache and parsing.

Table 35.2 *MVHOST Oracle Library Cache data items*

Data Item	Description
Hit Ratio	$(1 - \text{reloads/pins}) * 100$
User Calls	The number of logons, statement parsing, and statement executions.
Recursive Calls	The number of SQL statements generated by the Oracle kernel rather than by user applications.
Exec Count	The number of execute requests and cursors opened.
Parse Cnt (tot)	The number of parse requests. This number is incremented for each parse request, even if the query is already parsed in the cache.

Data Item	Description
Parse Cnt (hard)	The number of parse requests that result in a load of the cursor into the cursor cache and the building of the plan tree.
Pins	The number of times a PIN was requested for objects from the library cache.
Reloads	The number of PINs of objects which are not the first PIN performed since the object handles were created, and which requires loading the objects from disk.

Redo Buffer

The Redo Buffer portion of the Oracle Detail Cache screen displays information about the "dirty" buffers. The changes have to be written into the redo logs.

Table 35.3 *MVHOST Oracle Redo Buffer data items*

Data Item	Description
Redo Syn Wrts	This statistic reflects the number of user commits, the number of checkpoints, and the number of log switches. Its value is incremented every time a write in the log files occurs.
Redo Logspc Req	<p>The "Redo Logspc Req" statistic reflects the number of times a user process waits for space in the redo log buffer area of the SGA. Usually, a space request will be associated with a log switch. This wait is often caused by the archiver being lazy and the log writer not being able to write from the log buffer to the redo log because the redo log has not been copied by the ARCH process.</p> <p>If the value of this statistic is non-zero, setting a bigger value for the LOG_BUFFER parameter in the init.ora file should increase the size of the redo log buffer area of the SGA.</p> <p>Increasing the size of the online redo log files can also help decrease the number of waits associated with redo log entries as fewer log switches happen.</p> <p>This statistic should ideally be zero. It is a key performance indicator.</p>

Waits

The Waits data items are described in the next table. Oracle waits should be minimized as possible.

Table 35.4 *MVHOST Oracle Waits data items*

Data Item	Description
Free List	The number of waits for free lists. If this number is too high, you could reduce free lists wait by increasing the FREELIST parameter for tables.
NOTE The next four values could indicate rollback conflicts.	
Sys Undo Block	The number of waits for blocks for the SYSTEM rollback segment other than headers.
Sys Undo Header	The number of waits for the buffers that contain the header blocks for the SYSTEM rollback segment.
Undo Block	The number of waits for blocks (except headers) for rollback segments other than SYSTEM.
Undo Header	The number of waits for the buffers that contain the header blocks for rollback segments other than SYSTEM.

Performance Tip

To reduce rollback conflicts, new rollback segments could be added. Undo header wait occurs if there are not enough rollback segments to support the number of concurrent transactions. Undo header wait occurs when multiple users update records in the same block at the same time.

Data Dict Cache

The Data Dict Cache screen section displays information about the portion of memory in which Oracle keeps information about database structure in memory. The data items are described in the next table.

Table 35.5 *MVHOST Oracle Data Dict Cache data items*

Data Item	Description
Hit Ratio	$(1 - \text{gets}/\text{getmisses}) * 100$
Gets	The number of get requests from the data dictionary.
Get Misses	The number of misses for get requests from the data dictionary—get requests for which the data was not found in the cache and had to be read from disk.

MVHOST ORACLE DETAIL EVENTS

The Oracle Detail Events Screen

The Oracle Detail Events screen provides statistics related to Oracle database events.

To access the Oracle Detail Events screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **E** (upper case). An example of the screen is shown in Figure 36.1.

DB File		Log File	
Sequential Read	14 [105]	Sequential Read:	0 [0]
Scattered Read:	0 [0]	Sync:	16 [120]
Parallel Read:	0 [0]	Single Write:	0 [0]
Single Write:	0 [0]	Parallel Write:	16 [120]
Parallel Write:	1 [13]		
File		Control File	
Identify:	0 [0]	Sequential Read:	48 [360]
Open:	18 [135]	Parallel Write:	20 [140]
		Refresh Command:	8 [60]
Net Events			
SQL*Net break/reset to client:		0 [0]	
SQL*Net message from client:		96 [720]	
SQL*Net message to client:		96 [720]	
Enter command: _			

Figure 36.1 MVHOST Oracle Detail Events screen

Oracle Detail Events Display Items

The data values in brackets ([]) are cumulative values for the period since MVHOST was started. (The length of this "elapsed" time is displayed in the MVHOST banner line as "E: HH:MM:SS.") The data value outside of the brackets is the count for the current interval (displayed in the banner line as "I: MM:SS").

DB File

The DB File section of the Oracle Detail Events screen displays counts of various db file events.

Table 36.1 *MVHOST Oracle Detail Events data items: DB File*

Data Item	Description
Sequential Read	The number of times the session waited while a sequential read from the database was performed. Sequential reads are also used to rebuild the control file, dump datafile headers, and get the database file headers.
Scattered Read	The number of times the session waited while a read from multiple data blocks was performed.
Parallel Read	The number of times during recovery that database blocks that need to be changed as part of recovery are read in parallel from the database.
Single Write	The number of times the session waited for the writing of the file headers.
Parallel Write	The number of times the DBWR process performed a parallel write to files and blocks.

Log File

The Log File section shows counts of log file events.

Table 36.2 *MVHOST Oracle Detail Events data items: Log File*

Data Item	Description
Sequential Read	The number of times the session waited for the read from a log file to return. This event is used to read redo records from the log file.
Sync	The number of times a user session committed, and flushed the session's redo information to the redo log file.

Data Item	Description
Single Write	The number of times the session waited for the write to a logfile to complete.
Parallel Write	The number of times redo records were written to the redo log files from the log buffer.

File

The File section shows file event counts.

Table 36.3 *MVHOST Oracle Detail Events data items: File*

Data Item	Description
Identify	The number of times the identify event was used to identify a file so that it could be opened later.
Open	The number of times the open event was used to open a file.

Control File

The Control File section displays control file event statistics.

Table 36.4 *MVHOST Oracle Detail Events data items: Control File*

Data Item	Description
Sequential Read	The number of times a read from the control file occurred. For example, to: <ul style="list-style-type: none"> • Make a backup of the control files. • Share information between instances from the control file. • Read other blocks from the control files. • Read the header block.
Parallel Write	The number of times a parallel write occurred when the session was writing physical blocks to all control files. This event can take place when: <ul style="list-style-type: none"> • The session starts a control file transaction to make sure that the control files are up-to-date in case the session crashes before committing the control file transaction. • The session commits a transaction to a control file, changing a generic entry in the control file, and the new value is written to all control files.

Data Item	Description
Refresh Command	The number of times Oracle issued a command to refresh the control file for a database.

Net Events

The Net Events section displays counts related to net events.

Table 36.5 *MVHOST Oracle Detail Events data items: Net Events*

Data Item	Description
SQL* Net break/reset to client	The number of times the server sent a break or reset message to the client—the session running on the server waited for a reply from the client.
SQL* Net message from client	The number of times the server process (foreground process) waited for a message from the client process to arrive.
SQL* Net message to client	The number of times the server (foreground process) sent a message to the client.

MVHOST ORACLE DETAIL DBWR

The Oracle Detail DBWR Screen

The Oracle Detail DBWR screen provides statistics about the DBWR process; the process that writes the modified buffers into a database.

To access the Oracle Detail DBWR screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **B** (upper case). An example of the screen is shown in Figure 37.1.

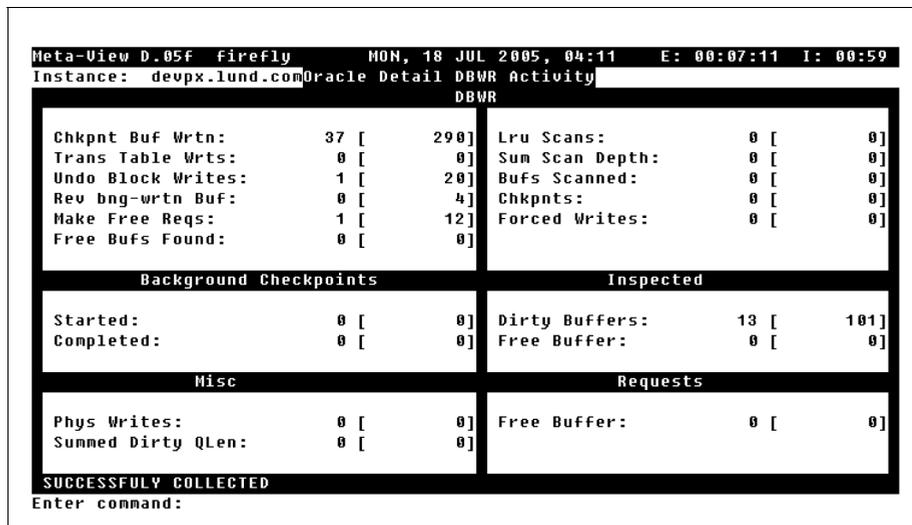


Figure 37.1 MVHOST Oracle Detail DBWR screen

Oracle Detail DBWR Display Items

DBWR

The DBWR section displays information about the mirror write consistency (MWC) DBWR.

Table 37.1 *MVHOST Oracle Detail DBWR data items: DBWR*

Data Item	Description
Chkpnt Buf Wrtn	The number of buffers that were written for checkpoints.
Trans Table Wrts	The number of transaction table writes.
Undo Block Writes	The number of transaction table blocks written by DBWR. This value is an indication of how many "hot" buffers were written, leading to write complete waits.
Rev bng-wrtn Buf	The number of times that DBWR tried to save a buffer for writing and found that it was already in the write batch. This statistic is a measure of the amount of "unnecessary" work that DBWR had to do in trying to fill the batch. This can occur because many sources contribute to a write batch. If the same buffer from different sources is considered for adding to the write batch, then all but the first attempt will be unnecessary since the buffer is already marked as being written.
Make Free Reqs	The number of requests to make more buffers free in the LRU section of the buffer cache.
Free Bufs Found	The number of free buffers found that DBWR found to be free when requested to make free buffers. The average number of free buffers is: <i>(DBWR free buffers found / DBWR make free requests)</i>
LRU Scans	The number of scans through LRU chain for more buffers to write.
Sum Scans Depth	Can be divided by LRU scans to determine the average length of the scans through the buffer cache. It is not the number of buffers scanned. If the write batch is filled and a write takes place to disk, the scan depth halts.

Data Item	Description
Bufs Scanned	The number of buffers in the LRU section of the buffer cache scanned by DBWR when it searches for dirty buffers to write to disk. It does not halt as summed scans depth. The average number of buffers being scanned is calculated: <i>(DBWR buffers scanned / DBWR LRU scans)</i>
Chkpnts	The number of times DBWR was signaled to perform a checkpoint by LGWR.
Forced Writes	The number of blocks forced written.

Background Checkpoints

The Background Checkpoints section data items are described in the next table.

Table 37.2 *MVHOST Oracle Detail DBWR data items: Background Checkpoints*

Data Item	Description
Started	The number of background checkpoints started.
Completed	The number of background checkpoints completed.

Performance Tip

The background checkpoints started and completed values should differ by 1. If the difference is greater than 1, DBWR is falling behind, and the size of the log files should be increased, or the buffer cache is too small.

Inspected

The Inspected section data items are described in Table 37.3.

Table 37.3 *MVHOST Oracle Detail DBWR data items: Inspected*

Data Item	Description
Dirty Buffers	The number of dirty buffers found in the cache. If the value is large or continues to increase, DBWR is not keeping up with the workload.
Free Buffer	The number of free buffers found in the cache.

Misc

The Misc section data items are described in the next table.

Table 37.4 *MVHOST Oracle Detail DBWR data items: Misc*

Data Item	Description
Phys Writes	The number of writes to disk, to both data files and log files made by DBWR and LGWR. This statistic is incremented by 1 regardless if it was a single-block write or a multiple-block write.
Summed Dirty Qlen	The sum of the dirty LRU queue length after every write request. Divide by write requests to get the average queue length after write completion.

Requests

The Requests section data item is described in the following table.

Table 37.5 *MVHOST Oracle Detail DBWR data item: Requests*

Data Item	Description
Free buffer	The number of free buffer requests. A free buffer request happens when data is inserted into a database, every time a new block is required. When data is updated, free buffers are requested to contain rollback information.

MVHOST ORACLE DETAIL DATAFILES

The Oracle Detail Datafiles Screen

The Oracle Detail Datafiles screen displays the first 10 datafiles in order of their activity, listing the most active first. To speed up the database, the datafiles should be distributed, if possible, based on their activity on multiple disks—even with different controllers.

To access the Oracle Detail Datafiles screen from any MVHOST display screen:

- 1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu.
- 2 From the Screen Selection Menu, enter **S** (upper case). An example of the screen is shown in Figure 38.1.

```

Meta-View D.05f firefly          MON, 18 JUL 2005, 04:11      E: 00:08:11  I: 01:00
Instance: devpx.lund.com        Oracle Detail Datafiles
SUCCESSFULLY COLLECTED

```

No	Name	Tablespace	Reads	Writes	Blk Reads	Blk Writes	Size
4	temp01.dbf	TEMP	10	36	34	36	20.00
1	system01.dbf	SYSTEM	0	0	0	0	270.00
2	tools01.dbf	TOOLS	0	0	0	0	10.00
6	indx01.dbf	INDX	0	0	0	0	20.00
7	drsys01.dbf	DRSYS	0	0	0	0	20.00
5	users01.dbf	USERS	0	0	0	0	20.00
3	rbs01.dbf	RBS	0	0	0	0	50.00

```

Enter command: _

```

Figure 38.1 MVHOST Oracle Detail Datafiles screen

Oracle Detail Datafiles Display Items

The Oracle Detail Datafiles data items are described in the next table.

Table 38.1 *MVHOST Oracle Detail Datafiles data items*

Data Item	Description
Reads	The number of reads.
Writes	The number of writes.
Blk reads	The number of block reads.
Blk writes	The number of block writes.
Size	The size of the datafile, in MegaBytes.

MVLOGD

The Historical Performance Data Logging Utility

The Meta-View Performance Manager application suite includes a data logging utility called MVLOGD. MVLOGD enables the user to collect historical system performance data for analysis of performance problems and trends. The data is collected and stored in SL (system log) files for later use by MVHOST or MVLOGX.

Data can be logged three ways:

- A single, one-time-only, session.
The length of the data collection period is determined by the user.
- Continuously, 24 hours a day.
The logging job must be stopped manually with the `lpskill` command.
- Scheduled, using the cron facility.
For example, Monday through Friday, 06:30 AM to 6:30 PM.

SL Files

MVLOGD creates one logical file record for every batch interval. The default interval is 10 minutes (600 seconds). The log file is saved in the Meta-View Performance Manager log directory (`/var/opt/lund/log` is the default location) and named using the format `SLyyjjjs`.

- `SL` represents the Meta-View log file.
- `yy` represents the current year.
- `jjj` represents the Julian day of the year.
- `s` represents the sequence of the log (up to 26 characters, from a through z).

Starting the Logging Process

To begin the collection process, enter **mvlogd** at the shell prompt of your home directory. It is assumed that your path statements are set up properly.

Command Line Switches

Use command line switches to modify the SOSLOGD configuration. Enter **mvlogd -h** at the shell prompt of your home directory to view all available command line switches. The effects of the command line switches vary depending on whether you are using the default or advanced configuration parameters. The functions of each command line switch is summarized in the next table.

Table 39.1 *MVLOGD command line switch functions*

Switch	Default Configuration	Advanced Configuration
-c	Log continuously (24 hours) by restarting at 00:00 hours.	Log continuously until midnight.
-h	Display all available command line switches	
-o	Display the default configuration.	Display the configuration parameters in the .mvlogdrc file.

Viewing Default Configuration Parameters

To view the default configuration parameters for your system, type **mvlogd -o** from your home directory. The default parameters are described in Table 39.2.

Table 39.2 *MVLOGD default configuration parameters*

Parameter	Description
Enter duration of job in minutes (0)	The duration of the job is 24 hours.
Interval time in seconds (600)	The program will take a sample and write a log record every 10 minutes.
Company name ()	The company name is blank, by default.
Display advice messages (Y)	MVLOGD will display advice messages.

Setting Advanced Configuration Parameters

To create a custom configuration parameter file:

- 1 Create a custom file (.mvlogdrc) with your editing program, listing the parameters as described:
 - **RunTime** The amount of time (minutes) Meta-View Performance Manager will monitor your system's processes.
 - **CycleTime** The amount of time (seconds) between samples.
 - **CompanyName** Your company name (added to the title of each log report). (This can be the name of your system or another subheading, if desired.)

All parameters listed above are optional, and their order in the .soslogdrc file is not important.
- 2 Place the .mvlogdrc file in your home directory (the same directory as mvlogd) to enable batch logging parameters.
- 3 To change the configuration, edit the parameters in the .mvlogdrc file. For example:
 - To collect data in one-hour batches, change the batch run time to 60 minutes by typing **RunTime=60**.
 - To shorten the interval time to five minutes (300 seconds), type **CycleTime=300**.
 - To add the name of your company (or another subheading) to the title of each log report, type **CompanyName=<your company's name>**.

Configuration Variables

The configurations outlined in Table 39.3 can be found in the .mvlogdrc file.

Table 39.3 *MVLOGD default configuration variables*

Variable	Type	Min	Max	Default	Description
RunTime	integer	0	1440	0	Duration of job in minutes
CycleTime	integer	10	3600	600	Interval time in seconds
CompanyName	string	N/A	N/A	<blank>	Company name
DisplayAdvice	Y/N	N/A	N/A	Y	Display advice messages
ProcLog	Y/N	N/A	N/A	Y	Log processes
ProcCPThreshold	integer	0	100	0	CPU percentage required for process display

Variable	Type	Min	Max	Default	Description
LogOnlyActProc	Y/N	N/A	N/A	Y	Log only active processes
LogInteractProc	Y/N	N/A	N/A	Y	Display attached processes
LogNonInteractProc	Y/N	N/A	N/A	Y	Log non-interactive processes, including daemons and batch processes).
LogDeadProc	Y/N	N/A	N/A	Y	Log processes that died
ProcLogonFilter	reg exp	N/A	N/A	.*	Process logon filter
ProcSortOpt	integer	1	8	4	Process sort options: 1 - sort by PID# 2 - sort by Logon Terminal 3 - sort by Workload group 4 - sort by CPU time 5 - sort by Disc I/O 6 - sort by Term reads 7 - sort by Priority 8 - sort by Wait State
ProcSortAscend	Y/N	N/A	N/A	N	Log processes sorted in ascending order
ProcLogLimit	integer	1	127	10	Maximum number of processes to be logged per interval

MVLOGX

The Historical Performance Data Extraction Utility

MVLOGX is the historical data counterpart to MVHOST. It provides the means for reviewing performance data stored in the log files that `mvlogd` has collected. The user interface is similar in many ways to MVHOST. The main difference is that the MVLOGX screens do not display current samples of online performance data. Instead, they display historical data collected by MVLOGD.

The primary functions of MVLOGX are:

- To browse through the data recorded in your log files using a variety of screen reports. This is usually done to identify periods of system activity that may require further analysis.
- To prepare logged performance data from the log files for Performance Gallery Gold, a 32-bit, full-color graphical analysis and reporting application from Lund Performance Solutions.

Getting Started

To run MVLOGX:

- 1 From your home directory, enter **mvlogx** (lowercase) at the prompt. The initial MVLOGX screen will display (see Figure 40.1)



NOTE To view the screen without soft function keys, add the `-k` command key switch.

```

*****
Meta-View Performance Manager D.05f
Copyright (c) 1991-2005 Lund Performance Solutions
*****

          Initializing...
This product licensed to: Speke

Checking logfile catalog ...

Adding SL04210A
  Invalid records in logfile SL04210A (file ignored)
Adding SL05195A
Deleting SL05195A
240 log files with dates 05/06/04 - 07/14/05

<Hit return to continue>

Enter initial sample date (00/00/00): 07/13/05
Enter initial sample time (06:16): 10:00_

```

Figure 40.1 *MVLOGX initial screen*

- 2 When MVLOGX is run for the first time on a system, it creates a catalog of the SL files located in the working directory. The catalog is saved as a file (.slogcat) in the same location as the SL files. At subsequent startups, MVLOGX will check to see if the catalog exists. It will create a new catalog if the previous catalog cannot be found.
- 3 Enter the following information as prompted:
 - a The start date of the initial sample using the format mm/dd/yy. If you do not provide a date, the program will retrieve the earliest sample date recorded by default. Press Enter.
 - b The start time using the format hh:mm. If you do not provide a start date, the program will retrieve the start time of the earliest sample data recorded, by default.

The first MVLOGX data report, the CPU Summary screen, will display. Information about each MVLOGX report is provided in “MVLOGX Reports” on page 255.

The MVLOGX commands and menus are described in “MVLOGX Menus and Options” on page 235.

Command Line Switches

Use command line switches to modify the MVLOGX configuration. Enter **mvlogx -h** at the shell prompt of your home directory to view all available command line switches. The function of each command line switch is summarized in Table 40.1.

Table 40.1 *MVLOGX command line switch functions.*

Switch	Function
-h	Displays available command line switches.
-j	Forces MVLOGX into job mode. NOTE When input is redirected from a pipe or a file (not from a terminal), MVLOGX is forced into job mode regardless of whether or not the -j command line switch is used.
-k	Disables function keys (when function keys are available).
-o	Displays configuration options on startup (batch mode).
-u<filename>	Specifies alternate user configuration filename.
-x	Enables process export file report.
-y<filename>	Specifies alternate system configuration filename.
-z	Disables the "Are you sure you want to exit?" dialog.

Browsing MVLOGX Reports

- 1 The first MVLOGX report displayed is the CPU Summary report. Begin by scrolling through this report using the commands keys.
 - The commands shown in the MVLOGX Main Commands screen are discussed in "MVLOGX Menus and Options" on page 235.
 - Look for points within the data that show high CPU utilization percentages and/or high response time rates.
- 2 Compare the CPU data with information displayed in other MVLOGX reports, which can be selected from the MVLOGX Report Format Selection Menu.
 - The Report Format Selection Menu is explained in "MVLOGX Menus and Options" on page 235.
 - Each MVLOGX report is described in "MVLOGX Reports" on page 255.
- 3 The appearance of the reports displayed can be modified. Use the display options described in "MVLOGX Reports" on page 255.

Preparing Logged Data for Export

The data logged by MVLOGD can be prepared in MVLOGX for export to either Performance Gallery Gold or another third-party application.

Exporting Data to Performance Gallery Gold

Setting the Performance Gallery Configuration

If needed, you can change the configuration of the export file with the options provided in MVLOGX.

- 1 From any MVLOGX report display, type **o** to access the MVLOGX MAIN OPTION MENU.
- 2 Select the Performance Gallery configuration (SUBMENU) option.
- 3 Select the Export Data configuration (SUBMENU) option.
- 4 Check the configuration of the export data. Make modifications as needed. (For more information about this configuration menu, see “Export Data configuration Submenu” on page 250.) Press the Enter key to exit the submenu.
- 5 From the Performance Gallery configuration submenu, select the Export Thresholds configuration (SUBMENU) option.
- 6 Set the export thresholds. (The options in the Export Thresholds configuration submenu are described in “Export Thresholds configuration Submenu” on page 253.) Press the Enter key to exit the submenu.
- 7 Press the Enter key to exit the Performance Gallery configuration submenu.
- 8 Press the Enter key again to exit the MVLOGX MAIN OPTION MENU.

Creating the PGG Export File

From any MVLOGX report display, type **P** to start the process. Respond to the following prompts:

- Enter Performance Gallery export file (MVLOGX will append a .pgf file extension to the file name)
- Enter start date for Performance Gallery (mm/dd/yy)
- Enter start time for Performance Gallery (hh:mm)
- Enter end date for Performance Gallery (mm/dd/yy)
- Enter end time for Performance Gallery (hh:mm)

MVLOGX will read the log files that meet the date and time criteria entered, then write the eligible data to the specified export file. If a directory path is not given for the export file, the file will be written to the current working directory.

Exporting Data to Third-party Applications

Setting the Export File Configuration

If needed, you can change the configuration of the export file with the options provided in MVLOGX.

- 1 From any MVLOGX report display, type **o** to access the MVLOGX MAIN OPTION MENU.
- 2 Select the Export file configuration (SUBMENU) option.
- 3 Check the configuration of the export data. Make modifications as needed. (For more information about this configuration menu, see “Export Data configuration Submenu” on page 250.) Press the Enter key to exit the submenu.
- 4 Press the Enter key again to exit the MVLOGX MAIN OPTION MENU.

Creating the Export File

From any MVLOGX display, type **R** to start the process. Reply to the following prompts:

- Enter data export file
- Enter start ascii dump date (mm/dd/yy)
- Enter start ascii dump time (hh:mm)
- Enter end ascii dump date (mm/dd/yy)
- Enter end ascii dump time (hh:mm)
- Single record extract (Y/N)

MVLOGX will read the log files that meet the date and time criteria entered, then write the eligible data to the specified export file. If a directory path is not given for the export file, the file will be written to the current working directory.

Creating Custom Reports

The log reports generated by MVLOGX are user-configurable.

To create a custom MVLOGX report, create an ASCII report configuration file that defines the report, then use the `mvrcom` report compiler to compile the ASCII files into a master report definition file called `reprtdef`.



NOTE The `mvrcom` report compiler must be run in the `lund` file structure in order to update the report definition file, `reprtdef`, used by MVLOGX.

The `mvrcom` report compiler uses the commands listed in the following table.

Table 40.2 *mvrcom* report compiler commands

Command	Description
ADD <file name>	Adds the specified configuration file to the master report definition file, <code>reprtdef</code> .
DEL <report name>	Deletes the specified configuration file from <code>reprtdef</code> .

Command	Description
DUMP <report name>	Dumps existing report internal information.
EXIT	Exits the report compiler, mvrcom.
HELP	Displays the online help information.
LIST	Displays a brief list of all reports in the reptdef file.
REBUILD	Rebuilds the report configuration file.
UPDATE <file name>	Updates the existing configuration file to reptdef.

MVLOGX Report Configuration Rules

Delimiters

In all file specification lines, blanks and commas can be used interchangeably for delimiters. Blank lines can be inserted anywhere except in the text specifications associated with \$HEAD and \$TEXT lines.

Order of Items

Items must be specified in the following order:

- 1 TITLE, KEY, LENGTH, and LINES
- 2 HEAD specifications, if any
- 3 TEXT specifications, if any
- 4 ITEM and BAR specifications

Syntax of Specification Lines

The various specification lines are formatted using the following syntax.

\$TITLE "<report name>"

Required. This line specifies the name of the report.

\$KEY "<line 1>," "<line 2>," <keycode>

Required. This line specifies the function key used to select this report format (when function keys are available).

- <line 1> is the first function key label line.
- <line 2> is the second function key label line.
- <keycode> is the two-digit code that specifies which function key should be used. The first digit specifies the keyset. The second digit identifies a function key with that keyset (1-5). This field is optional. If not entered, the default is the first available function key.

\$LENGTH <length>

Optional. This line specifies the maximum report line length. The <length> value cannot exceed 132. The default is 80.

\$LINES <lines>

Optional. This line specifies the number of lines required for each log report. The default value for <lines> is the number of lines specified for \$TEXT. If there is no \$TEXT specification, the default is 1 (one).

\$HEAD <start>

...text lines...

\$END

Optional. This line specifies the report heading text lines. <start> specifies the column in which the specified text starts. The default is 1 (one).

This is used to facilitate entry of long hardcopy report lines with 80-character screen editors. The number of heading lines is defined by the first \$HEAD specification encountered—subsequent \$HEAD specifications may not exceed this number of lines.

\$TEXT <start>

...text lines...

\$END

Optional. These lines specify the fixed text label lines to appear in the log report. <start> specifies the column in which specified text starts. The restrictions for \$HEAD also apply to \$TEXT.

\$DEFINE <identifier> <expression>

Optional. This line associates as an identifier with a string or numeric expression value. The identifiers can be used as item qualifiers in the next section.

- <identifier> is any string sequence up to 32 characters, starting with an alphabetical character.
- <expression> is one of the following:
 - A decimal, hexadecimal, or octal constant.
 - A sequence of up to 4 numerical constants, separated by periods.
 - A string of consecutive, non-blank characters, starting with a non-numeric character.
 - A quoted string, using either double or single quotation marks.

<item-name>[:<qualifier>]<row> <col> <length> <label>

This line specifies on item display.

- <item-name> is the name of the item. Global block items cannot have an item qualifier. All other items must have one.
- <qualifier> is a value that identifies which block in a multiple-block-type item is requested. This can be:
 - The word "Total" (the case must match).
 - A decimal, hexadecimal, or octal constant representing the instance ID.
 - An identifier defined in a previous \$DEFINE statement.
 - An instance index (I11, I12, ... I1xx), when it is needed the report for the instance with a specified number.
- <row> is the row in which the item should be displayed.
- <col> is the column in which the item should be displayed.
- <length> is the width of the field displayed.
- <label> is the unique text string (optional). It is not used by the log reporting program, but will be used by the report editor.

\$BAR <row>,<col>,<length>,<label>,<item-name>,"<code>"

·
·

\$END <scale>

This set of lines specifies a horizontal bar chart display, in which:

- <row> is the row in which the bar should be displayed.

- <col> is the column in which the bar should be displayed.
- <length> is the length of the bar chart displayed.
- <label> is a unique text string (optional). This is not used by the log reporting program, but will be used by the report editor.
- <item_name> is the name of the item to display. Disk and workload group items must be qualified. If multiple items are specified, they must all contain the same number of decimal places. This is generally not a problem, because only similar items will be combined in one bar graph, and similar items will all have the same number of decimal places.
- <code> is a single character to be used to represent this item in the bar graph. This can be blank.
- <scale> is the scaling factor. In other words, the total cumulative item value which completely fills the bar chart. It can contain as many decimal places as the specified items.

MVLOGX Report File Example

There are several MVLOGX reports stored in /etc/opt/lund/rpt/reprtdef. An example is provided here, for your convenience.

```

$title "Global Summary"
$key " GLOBAL ", "SUMMARY ", 12

$text
*** hh:mm *****
+----- CPU Utilization % -----+----- CPU Misc -----+
|   TOTAL BUSY: nnn.n   HIGH PRI:  nnn.n   | Capture      nnn.n   |
| User   nnn.n   Sys   nnn.n   Vflt  nnn.n   | RunQ Avg     nnn.n   |
| Real  nnn.n   Intr  nnn.n   Idle  nnn.n   | 5 Min RunQ Avg nnn.n   |
| Nice  nnn.n   C Sw  nnn.n   | RunQ Busy %   nnn.n   |
| NNice nnn.n   Trap  nnn.n   |                 |
|----- Global MEM/VM Statistics -----|
| Read Hit %  nnn.n           Page Outs  nn.n/s           Mem Used %  nn.n   |
| Write Hit %  nnn.n           Deact Byte nnnn/s           VM Used %   nn.n   |
|----- Global MISC Statistics -----|
| #Sessions:nnnn #Procs: nnnn #Wait IO: nnnn   Ttyin:   nnnnn(nnnn) |
| #Active:  nnnn #Active:nnnn #Deact:   nnnn   Avg Response Time: nnnn.n |

```

```

|----- Global Disk Statistics -----|
|Disk:Rt/IO%/QL      c0t5d0: nn/nnn/nnnn.n      c0t6d0: nn/nnn/nnnn.n |
+-----+
$END

$DEFINE D1 c0t5d0
$DEFINE D2 c0t6d0

TIME                1,  5,  5

CPU-BUSY%           3, 19,  5
CPU-HIGH-PRI-BUSY% 3, 42,  5

CPU-USER%           4, 11,  5
CPU-REAL%           5, 11,  5
CPU-NICE%           6, 11,  5
CPU-NNICE%          7, 11,  5

CPU-SYS%            4, 28,  5
CPU-INTR%           5, 28,  5
CPU-CSW%            6, 28,  5
CPU-TRAP%           7, 28,  5

CPU-VFLT%           4, 45,  5
CPU-IDLE%           5, 45,  5

CPU-CAPTURE         3, 72,  5
CPU-QUEUE-LEN       4, 72,  5
CPU-QUEUE-5M        5, 72,  5
CPU-QUEUE-BUSY%    6, 72,  5

```

VM-READ-HIT%	9, 17, 5
VM-WRITE-HIT%	10, 17, 5
VM-PAGE-OUT-RATE	9, 45, 4
VM-DEACT-BPS	10, 45, 4
VM-USED-MEM%	9, 74, 4
VM-USED-VM%	10, 74, 4
MISC-SESSIONS	12, 13, 5
MISC-ACT-SESSIONS	13, 13, 5
MISC-PROCESSES	12, 28, 5
MISC-ACT-PROCESSES	13, 28, 5
MISC-PROC-BLOCK-IO	12, 46, 5
MISC-PROC-DEACT	13, 47, 4
MISC-TTYIN-COUNT	12, 66, 6
MISC-TTYIN-RATE	12, 73, 5
MISC-RESP-TIME	13, 72, 6
DISC-IO-RATE:D1	15, 31, 2
DISC-IO%D1	15, 34, 3
DISC-QUEUE-LEN:D1	15, 38, 6
DISC-IO-RATE:D2	15, 64, 2
DISC-IO%D2	15, 67, 3
DISC-QUEUE-LEN:D2	15, 71, 6

MVLOGX MENUS AND OPTIONS

The MVLOGX Main Commands Screen

The MAIN COMMANDS screen in MVLOGX contains a list of single-key shortcut commands that can be invoked from any MVLOGX display screen.

To display the MAIN COMMANDS menu, type ? from any MVLOGX screen.

```

                                MAIN COMMANDS
Navigation Keys:
+ - Scroll ahead                > - Skip forward
- - Scroll back                 < - Skip back
s - Report selection menu       t - Select time prompt

Logfile Commands:
i - Display file index         l - Display logfile list
p - Print report               r - Reload report definitions
u - Update

Configuration:
d - Toggle process display     y - Toggle ext. process display
o - Options menu

Exporting Data:
R - Export report              P - Perfgraph export
c - Report compiler

Other:
m - More func keys            ^L - Refresh screen
? - Command help (this screen) e - Exit program
[Press any key to view additional commands or ESC to return to program]_

```

Figure 41.1 MVLOGX MAIN COMMANDS screen

Each command is described in the next section of this chapter.

Main Commands

The Curses library enables Meta-View Performance Manager to run with non-HP terminals. Host systems using non-HP terminals will not have function keys available to them, therefore, the

MVLOGX key commands have been modified to be more intuitive. However, because the function keys could be removed from the application altogether in the future, use of the command keys is recommended.

Navigation Commands

Table 41.1 *MVLOGX navigation command keys*

Key(s)	Command
+	Scroll ahead
-	Scroll back
<	Skip backward
>	Skip forward
s	Display the report selection menu
t	Select the time prompt

Logfile Commands

Table 41.2 *MVLOGX logfile command keys*

Key(s)	Command
i	Display the file index
l	Display the logfile list
p	Print the report
r	Reload the report definitions
u	Update the report

Configuration Commands

Table 41.3 *MVLOGX configuration command keys*

Key(s)	Command
d	Toggle the process display
o	Display the Options menu

Key(s)	Command
y	Toggle the extended process display

Data Export Commands

Table 41.4 *MVLOGX data export command keys*

Key(s)	Command
c	Compile the report
R	Export Performance Gallery Gold data

Other Commands

Table 41.5 *MVLOGX other command keys*

Key(s)	Command
?	Display the Main Commands screen
Ctrl+l	Refresh the screen
e	Exit the program
m	Cycle through the function keys

Additional Commands

A second screen of commands, the Additional Commands screen, can be viewed by pressing any key from the Main Commands screen *when additional commands are available* for the active MVLOGX display screen.

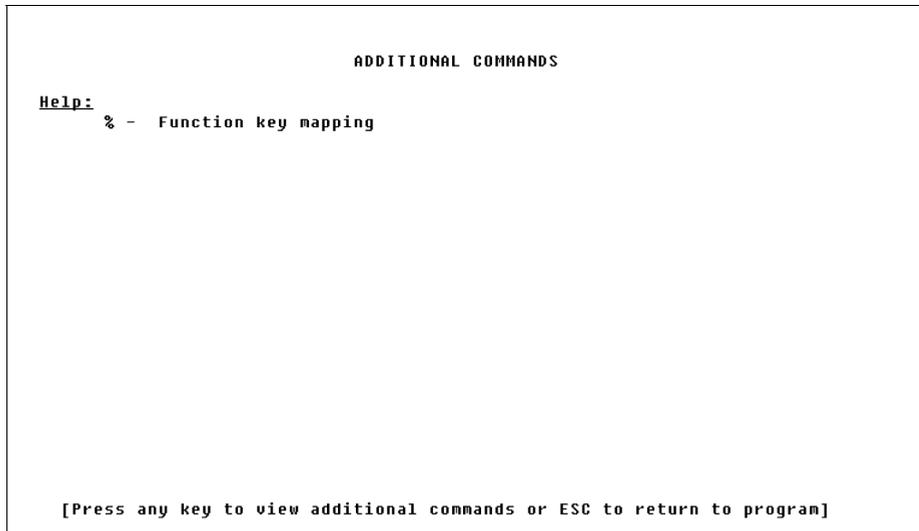


Figure 41.2 *MVLOGX Additional Commands screen (example)*

To return to the Main Commands screen from the Additional Commands screen, press any key.
To return to the MVLOGX program, press the Esc key.

To invoke a specific command displayed on the Additional Commands screen, type the corresponding command key(s) from any MVLOGX display screen.

Screen-Specific Help Commands

Table 41.6 *MVHOST screen-specific configuration command keys*

Key	Command	Description
%	Function key mapping	If function keys are available, type the percent character (%) from any MVLOGX display screen to display function key mapping.

The MVLOGX Report Format Selection Menu

The Report Format Selection Menu contains a list of system performance data reports that can be compiled by MVLOGX.

To display the Report Format Selection Menu, type a lowercase **s** from any MVLOGX screen.

```

MVLOGX  D.05e1  FireFly  Loc:var/opt/lund/log/  Log: --/--/--  --:--
Report Format Selection Menu

  1 CPU Summary Chart                13 FS Space Summary
  2 Global Summary                   14 DNLC Summary
  3 Memory Summary Chart             15 System Configuration
  4 Memory Summary                   16 ORACLE Detail Cache
  5 Disk Summary                     17 ORACLE Database Activity
  6 Disk Summary Chart               18 ORACLE DBWR Activity
  7 Network Summary                  19 ORACLE Detail Events
  8 Net IF Summary                   20 ORACLE LRU Latches
  9 NFS Client Summary               21 ORACLE Memory and Network
 10 Workload Summary                 22 ORACLE Detail Datafiles
 11 Workload Detail (INTERACT)       23 ORACLE Detail Rollback Segments
 12 Response Time Chart

Press return to go to main screen.
Enter report format option: _

```

Figure 41.3 *MVLOGX Report Format Selection Menu screen*

To view one of the reports listed in the Report Format Selection Menu, type the report's corresponding command key at the command prompt. The reports are described in detail in "MVLOGX Reports" on page 255.



NOTE All command keys are case-sensitive.

Table 41.7 *MVLOGX Report Format Selection Menu command keys*

Key	Screen Title	Description
1	CPU Summary Chart	Reports the general state of one or more CPUs. For more information, see "MVLOGX CPU Summary Chart" on page 255.
2	Global Summary	Contains a basic, overall picture of your system's performance. For more information, see "MVLOGX Global Summary" on page 256.
3	Memory Summary Chart	Displays memory performance data in graphical format. For more information, see "MVLOGX Memory Summary Chart" on page 257.

Key	Screen Title	Description
4	Memory Summary	Provides a detailed look at memory performance data in tabular format. For more information, see "MVLOGX Memory Summary" on page 258.
5	Disk Summary	Contains a table of performance data for all disks on the system. For more information, see "MVLOGX Disk Summary" on page 259.
6	Disk Summary Chart	Displays a summary of disk activities in graphical format. For more information, see "MVLOGX Disk Summary Chart" on page 260.
7	Network Summary	Displays network performance information, including protocol data and network interface information. For more information, see "MVLOGX Network Summary" on page 261.
8	Net If Summary	Contains information about the network interface. For more information, see "MVLOGX Net If (Network Interface) Summary" on page 262.
9	NFS Client Summary	Provides information about the Network File System (NFS). For more information, see "MVLOGX NFS Client Summary" on page 263.
10	Workload Summary	Provides general workload information. For more information, see "MVLOGX Workload Summary" on page 264.
11	Workload Detail (INTERACT)	Provides detailed information about the INTERACT workload. For more information, see "MVLOGX Workload Detail" on page 265.
12	Response Time Chart	Displays system response times in graphical format. For more information, see "MVLOGX Response Time Chart" on page 266.
13	FS Space Summary	Contains general information about the block and fragment size, space usage, and inode usage for each file system. For more information, see "MVLOGX FS Space Summary" on page 267.

Key	Screen Title	Description
14	DNLC Summary	Reports statistics regarding file name lookups satisfied in the dynamic name lookup cache (DNLC). For more information, see “MVLOGX DNLC Summary” on page 268.
15	System Configuration	Shows the current system configuration parameters. For more information, see “MVLOGX System Configuration” on page 269.
16	ORACLE Detail Cache	Displays the most important statistics related to Oracle cache management. For more information, see “MVLOGX ORACLE Detail Cache” on page 270.
17	ORACLE Database Activity	Provides important statistics related to Oracle database activities. For more information, see “MVLOGX ORACLE Database Activity” on page 271.
18	ORACLE DBWR Activity	Provides statistics about the DBWR process; the process that writes the modified buffers into a database. For more information, see “MVLOGX ORACLE DBWR Activity” on page 272.
19	ORACLE Detail Events	Provides statistics related to Oracle database events. For more information, see “MVLOGX ORACLE Detail Events” on page 273.
20	ORACLE LRU Latches	Presents latches statistics. For more information, see “MVLOGX ORACLE LRU Latches” on page 274.
21	ORACLE Memory and Network	Provides statistics about memory allocation and network transfers. For more information, see “MVLOGX ORACLE Memory and Network” on page 275.
22	ORACLE Detail Datafiles	Displays the first 10 datafiles in order of their activity, listing the most active first. For more information, see “MVLOGX ORACLE Detail Datafiles” on page 276.

Key	Screen Title	Description
23	ORACLE Detail Rollback Segments	Provides consistent data for the other readers and in case of a rollback it is used to bring the data to its previous state. For more information, see "MVLOGX ORACLE Detail Rollback Segments" on page 277.

The MVLOGX Main Option Menu

The MVLOGX MAIN OPTION MENU screen contains a set (and several subsets) of options that enable the user to configure the MVLOGX program.

To access the MVLOGX MAIN OPTION MENU, type **o** from any MVLOGX screen.

```

MAIN OPTION MENU

  1) Current log file location (/var/opt/lund/log/)
  2) Company name ( )
  3) Use function keys to select reports (N)
  4) Maximum lines per report page (60)
  5) Display process information (N)
  6) Display extended process line (N)
  7) Data break configuration menu (SUBMENU)
  8) Log information exclusions (SUBMENU)
  9) Export file configuration menu (SUBMENU)
 10) Performance Gallery configuration (SUBMENU)

Which Option:

```

Figure 41.4 MVLOGX MAIN OPTION MENU

Main Options

To enable an option:

- 1 Type the option command key from the MVLOGX MAIN OPTION MENU and press the Enter key.
- 2 Enter a new parameter at the secondary command prompt. Press Enter.
- 3 Press Enter again to exit the MVLOGX MAIN OPTION MENU.

- 4 At the Should these options be saved permanently? prompt:
 - Press the Enter key to return to the MVLOGX program without saving the options permanently.
 - Type **Y** (Yes) to save the changes permanently and then press the Enter key.

Information about each option is described to assist you.



NOTE All command keys are case-sensitive.

Current log file location

The current location of the SL log file is shown in parentheses. To load a different log file:

- 1 From the MVLOGX MAIN OPTION MENU, type the command key for the Current file location option. Press the Enter key.
- 2 At the secondary prompt, type the location of the new SL file. Press the Enter key.

Company name

By default, the company name is not included in the MVLOGX reports. To add the name of your company or another brief headline for your MVLOGX reports:

- 1 From the MVLOGX MAIN OPTION MENU, type the command key for the Company name option. Press the Enter key.
- 2 At the secondary prompt, type a company name, system name, or another headline (up to 43 alpha-numeric characters). Press the Enter key.

The headline is inserted into the banner line of the MVLOGX report.

Use function keys to select reports

The function keys, when available, are displayed in the bottom portion of the MVLOGX screens. By default, they are not used to select MVLOGX reports. To enable/disable the function keys to select reports:

- 1 From the MVLOGX MAIN OPTION MENU, type the command key for the Use function keys to select reports option. Press the Enter key.
- 2 At the secondary prompt, type **Y** (Yes) to enable the option, or **N** (No) to disable the option. Press Enter.

Maximum lines per report page

By default, MVLOGX reports contain up to 60 lines of information per page. To increase or decrease the maximum threshold:

- 1 From the MVLOGX MAIN OPTION MENU, type the command key for the Maximum lines per report page option. Press the Enter key.
- 2 At the secondary prompt, type a new maximum threshold. Press Enter.

Display process information

To include/exclude PROCESS STATISTICS in the Global Summary report:

- 1 From the MVLOGX MAIN OPTION MENU, type the command key for the Display process information option. Press the Enter key.
- 2 At the secondary prompt, type **Y** (Yes) to enable the option, or **N** (No) to disable the option. Press Enter.

Display extended process line

To include/exclude PROCESS STATISTICS in the Global Summary report:

- 1 From the MVLOGX MAIN OPTION MENU, type the command key for the Display process information option. Press the Enter key.
- 2 At the secondary prompt, type **Y** (Yes) to enable the option, or **N** (No) to disable the option. Press Enter.

Data break configuration (SUBMENU)

The Data break configuration submenu lists options that average the data into larger units of time, so the system performance is shown for a day, a week, or a month.

To view the Data break configuration submenu, type the command key for the data break configuration option. Press the Enter key.

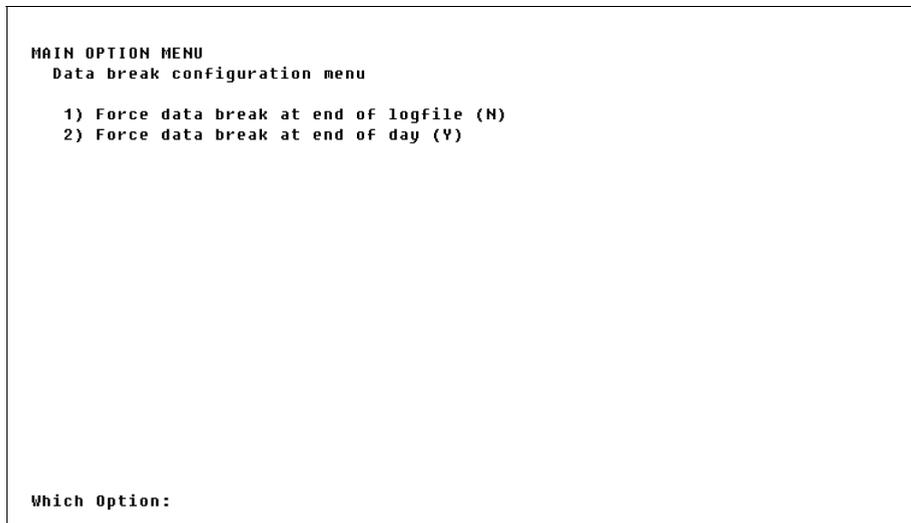


Figure 41.5 *MVLOGX Data break configuration submenu*

The Data break configuration options are listed and described in the next table.

Table 41.8 *MVLOGX Data break configuration options*

Option	Default	Description
Force data break at end of logfile	N	By default, the boundary between datafiles is transparent, or "invisible", to the user. To force a break between datafiles on the report screen, enter Y (Yes).
Force data break at end of day	Y	By default, there is a break after the last data record for each day. To remove this break, enter N (No).

Log information exclusions (SUBMENU)

The Log information exclusions submenu contains options that can be set to exclude specific day and time ranges from the data display. The excluded data will not actually be removed from the SL file, but it will not appear in the MVLOGX reports.

The Log information exclusions options enable the user to exclude performance data collected during days or periods of low and or unusual activity that could skew analysis of the system's general performance.



NOTE Do not exclude log information when preparing data for export to the Performance Gallery Gold application. Ensure the default settings are enabled.

To view the Log information exclusions submenu, type the command key for the Log information exclusions option from the MVLOGX MAIN OPTION MENU (see Figure 41.6).

```

MAIN OPTION MENU
  Log information exclusions

  1) Exclusions enabled (N)
  --- Exclude holidays
  --- Exclude day range
  ---           to
  --- Exclude time range
  ---           to

Which Option: _

```

Figure 41.6 *MVLOGX Log information exclusions submenu*

The Log information exclusions options are listed and described in the next table.

Table 41.9 *MVLOGX Log information exclusion options*

Option	Default	Description
Exclusions enabled	N	By default, exclusions are disabled. To set and enable one or more exclusions, type Y (Yes) and press Enter—the subsequent options will be activated.
Exclude holidays	N	To exclude holidays (as defined in the holidays.dat file), type Y (Yes) and press Enter. For information about the holiday.dat file, see “MVHOST holidays File” on page 74.

Option	Default	Description
Exclude day range	0=None	To exclude a range of days, type the corresponding number of the first day in the range of days. For example: 0=None (exclude no days) 1=Sunday 2=Monday 3=Tuesday 4=Wednesday 5=Thursday 6=Friday 7=Saturday
to	0=None	Type the corresponding number of the last day in the excluded day range.
Exclude time range	00:00	To exclude a specific range of time, type the start of this range in hours and minutes (hh:mm).
to	00:00	Type the end of the excluded time range (hh:mm).

Additional time ranges can be excluded. The progression of options allows up to four different time ranges to be excluded from each day or day range. For example, to report data for normal business hours only (Monday through Friday, 8:00 AM to 5:00 PM, no holidays), you would exclude data from weekends, holidays, the early morning hours, and the night-time hours.

Export file configuration menu (SUBMENU)

The options in the Export file configuration submenu will format the file that receives the logged data to be exported to a third-party application for analysis. The purpose of these options is to make the file format compatible with the import functions of popular spreadsheet, database, and graphics applications.



NOTE Do not employ these options when preparing data for export to the Performance Gallery Gold application. Ensure the default settings are enabled.

To view the Export file configuration submenu, type the command key for the Export file configuration menu option from the MVLOGX MAIN OPTION MENU.

```

MAIN OPTION MENU
  Export file configuration menu

  1) Generate item label heading line (Y)
  2) Enclose item labels in quotes (Y)
  3) Include log date in data line (N)
  --- Date format option
  --- Enclose date in quotes
  6) Include log time in data line (Y)
  7) Time format option (1-24 hr)
  8) Enclose time in quotes (Y)
  9) Separate items with commas (Y)

Which Option:

```

Figure 41.7 *MVLOGX Export file configuration submenu*

The Export file configuration options are listed and described in the next table.

Table 41.10 *MVLOGX Export file configuration options*

Option	Default	Description
Generate item label heading line	Y	The item label heading line is provided by default. To eliminate the heading line, choose N (No).

Option	Default	Description
Enclose item labels in quotes	Y	The data item labels are enclosed in quotation marks (" "). To eliminate the quotation marks, choose N (No).
Include log date in data line	N	To include the log date in the data line, enter Y (Yes). The two subsequent options will be activated.
Date format option	1-mm/dd/yy	To change the format of the log date, enter the corresponding number: 1=mm/dd/yy 2=mmddy 3=dd mmm yy 4=dd.mm.yy
Enclose date in quotes	Y	The log date will be enclosed in quotation marks, by default. To remove the quotation marks, enter N (No).
Include log time in data line	Y	The log time will be included in the data line. To eliminate this information from the data line, enter N (No).
Time format option	1=24 hr	The time format options are: 1=24 hr 2=AM/PM
Enclose time in quotes	Y	The log time will be enclosed in quotation marks, by default. To remove the quotation marks, enter N (No).
Separate items with commas	Y	By default, the data items in the export file are comma-delimited. To send the data without commas, enter N (No).

Performance Gallery configuration (SUBMENU)

To view the Performance Gallery configuration submenu, type the command key for the Performance Gallery configuration option from the MVLOGX MAIN OPTION MENU.

```
MAIN OPTION MENU
  Performance Gallery configuration

    1) Export Data configuration (SUBMENU)
    2) Export Thresholds configuration (SUBMENU)
```

Which Option:

Figure 41.8 *MVLOGX Performance Gallery configuration submenu*

From the Performance Gallery configuration submenu, you can access the following configuration menus:

- Export Data configuration submenu (see “Export Data configuration Submenu” on page 250).
- Export Thresholds configuration submenu (see “Export Thresholds configuration Submenu” on page 253).

Export Data configuration Submenu

To display the Export Data configuration submenu, type the corresponding command key from the MVLOGX Performance Gallery configuration submenu.

```

MAIN OPTION MENU
  Performance Gallery configuration
    Export Data configuration

    1) CPU Data (Y)
    2) Buffer Cache Data (Y)
    3) DNLC Cache Data (Y)
    4) Inode Cache Data (Y)
    5) VM Data (Y)
    6) Misc Data (Y)
    7) Disk Data (Y)
    8) Network Protocol Data (Y)
    9) Network Interface Data (Y)
   10) NFS Data (N)
   11) NFS Global Data (Y)
   12) RPC Data (Y)
   13) Workload Data (Y)
   14) Process Data (N)
   15) Swap Data (N)
   16) File System Space Data (N)
   17) Processor Data (N)

Which Option:

```

Figure 41.9 *MVLOGX Export Data configuration submenu*

The Export Data configuration options are listed and described in the next table.

Table 41.11 *MVLOGX Export Data configuration options*

Option	Default	Description
CPU Data	Y	By default, any CPU data in the collection will be exported. To eliminate CPU data from the export file, enter N (No).
Buffer Cache Data	Y	By default, buffer cache data will be exported. To eliminate this data from the export file, enter N (No).
DNLC Cache Data	Y	By default, DNLC (dynamic name lookup cache) will be exported. To eliminate this data from the export file, enter N (No).
Inode Cache Data	Y	By default, inode cache data will be exported. To eliminate this data from the export file, enter N (No).
VM Data	Y	By default, VM (virtual memory) data will be exported. To eliminate this data from the export file, enter N (No).
Misc Data	Y	By default, miscellaneous data will be exported. To eliminate this data from the export file, enter N (No).

Option	Default	Description
Disk Data	Y	By default, disk data will be exported. To eliminate this data from the export file, enter N (No).
Network Protocol Data	Y	By default, network protocol data will be exported. To eliminate this data from the export file, enter N (No).
Network Interface Data	Y	By default, network interface data will be exported. To eliminate this data from the export file, enter N (No).
NFS Data	N	By default, NFS (network file system) data will not be exported. To include this data in the export file, enter Y (Yes).
NFS Global Data	Y	By default, global (system-wide) NFS data will be exported. To eliminate this data from the export file, enter N (No).
RPC Data	Y	By default, RPC (remote procedure call) will be exported. To eliminate this data from the export file, enter N (No).
Workload Data	Y	By default, workload data will be exported. To eliminate this data from the export file, enter N (No).
Process Data	N	By default, process data will not be exported. To include this data in the export file, enter Y (Yes).
Swap Data	N	By default, swap data will not be exported. To include this data in the export file, enter Y (Yes).
File Systems Space Data	N	By default, file systems space data will not be exported. To include this data in the export file, enter Y (Yes).
Processor Data	N	By default, processor data will not be exported. To include this data in the export file, enter Y (Yes).

Export Thresholds configuration Submenu

To display the Export Thresholds configuration submenu, type the corresponding command key from the MVLOGX Performance Gallery configuration submenu.

```

MAIN OPTION MENU
Performance Gallery configuration
Export Thresholds configuration

1) Max Number of Discs Exported (100)
2) Max Number of Network ifs Exported (10)
3) Max Number of NFS Systems Exported (50)
4) Max Number of Workloads Exported (50)
5) Max Number of Processes Exported (20)
6) Max Number of Swaps Exported (20)
7) Max Number of File System Space Exported (100)
8) Max Number of Processors Exported (10)
9) Performance Gallery File Size Limit (10000)

Which Option: _

```

Figure 41.10 *MVLOGX Export Thresholds configuration submenu*

The Export Thresholds configuration options are listed in Table 41.12. Their meanings are self-explanatory.

Table 41.12 *MVLOGX Export Thresholds configuration options*

Option	Default Setting
Max number of Discs Exported	100
Max number of Network ifs (interfaces) Exported	10
Max Number of NFS Systems Exported	50
Max Number of Workloads Exported	50
Max Number of Processes Exported	20
Max Number of Swaps Exported	20
Max Number of File System Space Exported	100
Max Number of Processors Exported	10
Performance Gallery File Size Limit	10,000

MVLOGX REPORTS

MVLOGX CPU Summary Chart

The CPU Summary Chart in MVLOGX displays general CPU statistics in graphical format, similar to the CPU SUMMARY in MVHOST.

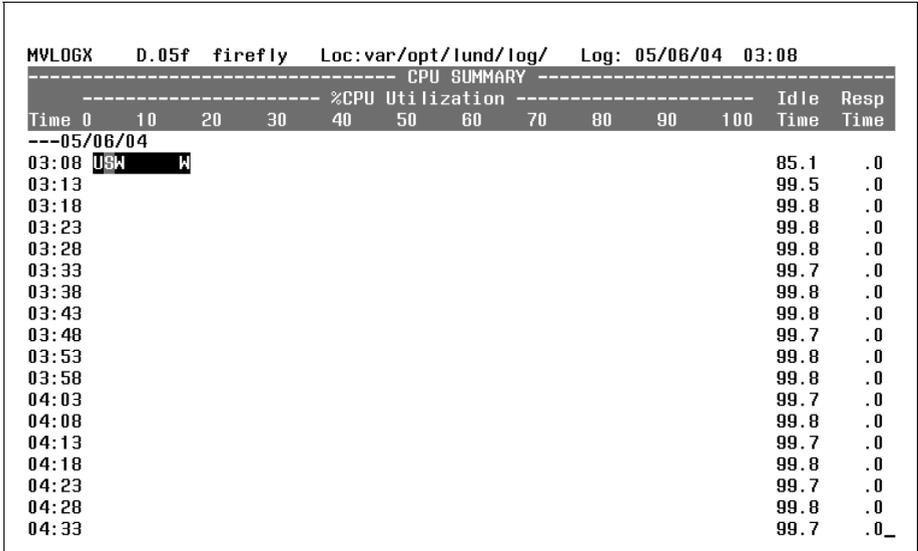


Figure 42.1 MVLOGX CPU Summary Chart report

For information about the MVLOGX CPU Summary Chart data, please refer to “MVHOST CPU Summary” on page 107.

MVLOGX Global Summary

The Global Summary in MVLOGX displays system-wide performance data, similar to the Global Summary in MVHOST:

- CPU utilization statistics
- CPU miscellaneous statistics
- Memory and virtual memory statistics
- Miscellaneous statistics
- Disk statistics
- Process statistics
- Workload statistics

An example MVLOGX Global Summary screen is shown in Figure 42.2. For information about global data, refer to “MVHOST Global Summary” on page 83.

```

MVLOGX   D.05f  firefly  Loc:var/opt/lund/log/  Log: 05/06/04  03:08
---05/06/04
----- CPU UTILIZATION ----- CPU MISC -----
          TOTAL BUSY:  3.4          | Capture Ratio:                1.2
                                   | RunQ Avg:                      .3
    User:  1.9          Sys:  1.6   | 5/15 Min Runq Avg:            .1/ .0
    Wait: 11.4         Idle: 85.1   | RunQ Busy %:                  25.0
----- MEM/VM -----
Pg Scans :  .0/s          Pg Reclaims:  4.0/s          Page Outs:  .0/s
Pg Res Tm: 600.0          Swap Outs:  .0/s
----- MISC -----
#Sessions:  1  #Procs:  43  #Wait I/O:  0          Transactions:  25.2/s
#Active:    0  #Active:  2  #Swap:    0          Avg Response Time:  .0
----- DISK -----
Disk      IO/s IO% QLen | Disk      IO/s IO% QLen | Disk      IO/s IO% QLen
c0t0d0    19 100  5.1 | c0t2d0    0  0  .0 | fd0       0  0  .0
-----

```

Figure 42.2 *MVLOGX Global Summary report*

MVLOGX Memory Summary Chart

The Memory Summary Chart in MVLOGX displays memory performance statistics in a graphical format.

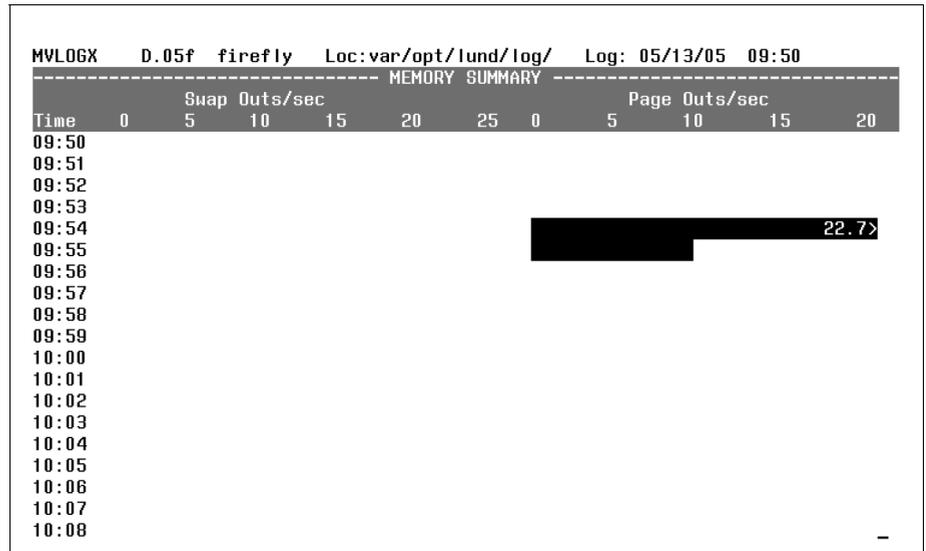


Figure 42.3 *MVLOGX Memory Summary Chart report*

For information about the data in the MVLOGX Memory Summary Chart, refer to “MVHOST Memory Summary” on page 113.

MVLOGX Memory Summary

The Memory Summary in MVLOGX displays a detailed look at memory and virtual memory performance, similar to the Memory Summary in MVHOST.

```

MVLOGX   D.05f firefly   Loc:var/opt/lund/log/   Log: 05/11/04 08:20
----- MEM/VM ALLOCATION -----
          Size (KB)  Used (KB)  Free (KB)  |
Mem       131072    92152    38920    |  Loaded    1    40    41
VM        604864    73464    531400    |  Swapped   0    0    0
----- PAGING -----
          In(/s)    Out(/s)    In(byte/s)  Out(byte/s)  #In  #Out
Pages     .0        .0          0            0            0    1
Swaps     .0        .0          0            0            0    0
Minor Pg Faults: .9/s
Major Page Faults: .0/s
----- PAGE SCANNER -----
Page Recs: .2/s      Page Scans: .0/s      Ave Page Res:600.0
----- MEMORY MANAGEMENT CONFIG -----
lotsfree: 239      throttlefree: 59      page size: 8192
desfree:  119      priority paging: 0     fastscan: 7857
minfree:  59       maxpgio: 40          slowscan: 100
----- FSFLUSH CONFIGURATION -----
ufs_LW: 262144      autoup: 30            doiflush: 1
ufs_HW: 393216     t_fsflushr: 5         dopageflush: 1
-----

```

Figure 42.4 *MVLOGX Memory Summary report*

For information about the data in the MVLOGX Memory Summary Chart, refer to “MVHOST Memory Summary” on page 113.

MVLOGX Disk Summary

The Disk Summary in MVLOGX provides a summary of performance data for all disks on the system.

MVLOGX D.05f firefly Loc:var/opt/lund/log/ Log: 05/11/04 08:20										
--- 08:20 ----- DISK SUMMARY -----										
Dev	IO%	Qlen	Util%	Wait Time(ms)	Service Time(ms)	Rates (/s)		Avg Size(B)		
						Read	Write	Read	Write	
c0t0d0	100	.0	.0	10.8	14.6	.0	.2	0	7400	
c0t2d0	0	.0	.0	.0	.0	.0	.0	0	0	
fd0	0	.0	.0	.0	.0	.0	.0	0	0	
TOTALS	100	.0	.0	10.8	14.6	.0	.2	0	7400	
--- 08:25 ----- DISK SUMMARY -----										
Dev	IO%	Qlen	Util%	Wait Time(ms)	Service Time(ms)	Rates (/s)		Avg Size(B)		
						Read	Write	Read	Write	
c0t0d0	100	.0	.0	6.6	15.4	.0	.1	0	7040	
c0t2d0	0	.0	.0	.0	.0	.0	.0	0	0	
fd0	0	.0	.0	.0	.0	.0	.0	0	0	
TOTALS	100	.0	.0	6.6	15.4	.0	.1	0	7040_	

Figure 42.5 MVLOGX Disk Summary report

For information about the data presented in the MVLOGX Disk Summary, refer to “MVHOST Disk I/O Summary” on page 117.

MVLOGX Disk Summary Chart

The Disk Summary Chart in MVLOGX displays disk performance data in graphical format.

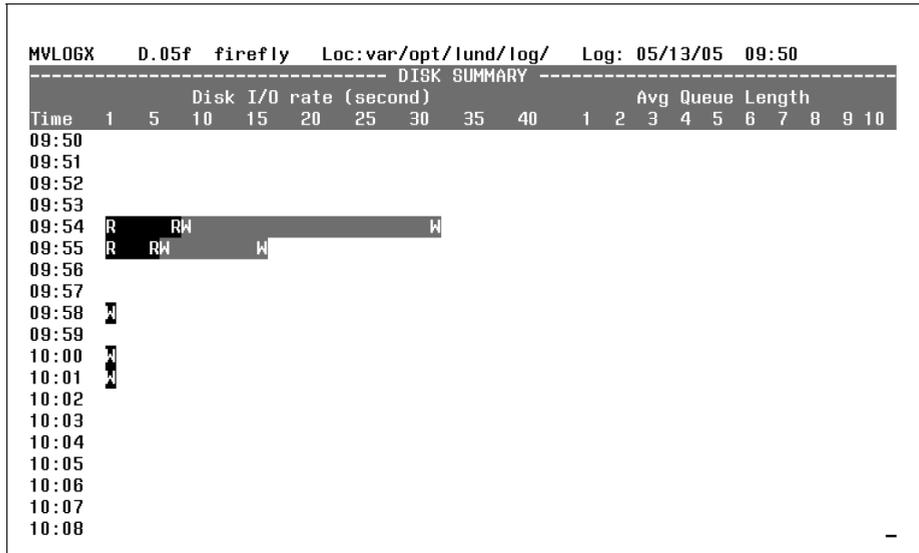


Figure 42.6 *MVLOGX Disk Summary Chart report*

For information about the data presented in the MVLOGX Disk Summary, refer to “MVHOST Disk I/O Summary” on page 117.

MVLOGX Network Summary

The Network Summary in MVLOGX displays network performance information.

MVLOGX		D.05f	firefly	Loc:var/opt/lund/log/		Log: 07/12/04 11:36		
11:36		NETWORK SUMMARY						
Protocol	Packets	in/s	Packets	out/s	Errors	In%	Errors	Out%
IP		.4		.4		.00		.00
TCP/IP		.4		.3		.00		1.03
ICMP		.0		.0		.00		.00
UDP		.0		.0		.00		N/A
11:41		NETWORK SUMMARY						
Protocol	Packets	in/s	Packets	out/s	Errors	In%	Errors	Out%
IP		.3		.3		.00		.00
TCP/IP		.3		.2		.00		.00
ICMP		.0		.0		.00		.00
UDP		.0		.0		.00		N/A

Figure 42.7 *MVLOGX Network Summary report*

For information about the data displayed in the MVLOGX Network Summary, please refer to “MVHOST Network Summary” on page 127.

MVLOGX Net If (Network Interface) Summary

The Net If Summary in MVLOGX displays performance information as it pertains to the network interface.

```

MVLOGX  D.05f firefly  Loc:var/opt/lund/log/  Log: 07/12/04 11:56
--- 11:56 ----- NETWORK INTERFACE SUMMARY -----
Interf  Packets In/s  Packets Out/s  Defer%  Coll%  Err In%  Err Out%  Nocan
-----
Io0     .0             .0             .00     .00    .00     .00     .0
hme0   .5             .3             .00     .00    .00     .00     .0
TOTALS .5             .3             .00     .00    .00     .00     .0
-----
TOTALS .5             .3             .00     .00    .00     .00     .0
--- 12:01 ----- NETWORK INTERFACE SUMMARY -----
Interf  Packets In/s  Packets Out/s  Defer%  Coll%  Err In%  Err Out%  Nocan
-----
Io0     .0             .0             .00     .00    .00     .00     .0
hme0   .5             .3             .00     .00    .00     .00     .0
TOTALS .5             .3             .00     .00    .00     .00     .0
-----
TOTALS .5             .3             .00     .00    .00     .00     .0_

```

Figure 42.8 *MVLOGX Net If Summary report*

For information about the data displayed in the MVLOGX Net If Summary, please refer to "NETWORK INTERFACES" on page 128.

MVLOGX NFS Client Summary

The NFS Client Summary in MVLOGX displays bad NFS call information associated with the NFS client.

Bad NFS Calls

The Bad NFS Calls data item represents:

- The number of bad NFS calls accumulated during the current interval.
- The percentage of NFS calls that are bad NFS calls.

```

MVLOGX      D.05f firefly  Loc:var/opt/lund/log/  Log: 05/13/05 10:01
--- 10:01 ----- NFS CLIENT SUMMARY -----
                          Bad NFS Calls      .0
----- NFS V2 PERCENT -----
NULL      .0 GTATTR   .0 STATTR   .0 ROOT     .0 LOOKUP   .0 RDLINK   .0
READ      .0 WCACHE   .0 WRITE    .0 CREATE   .0 REMOVE   .0 RENAME   .0
LINK      .0 SLINK     .0 MKDIR    .0 RMDIR    .0 RDDIR    .0 STATFS   .0
----- NFS V3 PERCENT -----
NULL      .0 GTATTR   .0 STATTR   .0 LOOKUP   .0 ACCESS   .0 RDLINK   .0
READ      .0 WRITE    .0 CREATE   .0 MKDIR    .0 SLINK    .0 MKNOD    .0
REMOVE    .0 RMDIR    .0 RENAME   .0 LINK     .0 RDDIR    .0 RDDIRP   .0
FSSTAT    .0 FSINFO   .0 PCONF    .0 COMMIT   .0
----- RPC -----
Calls      .0  Bad Calls  .0  Retrans   .0  Timeouts   .0  Badxids    .0
----- NFS SERVERS -----
                          No Resp  Rd Rate  Wr Rate  Wt Time  Srv Time  Avg QLen
-----

```

Figure 42.9 MVLOGX NFS Client Summary report

For information about MVLOGX NFS Client data, refer to “MVHOST NFS Summary” on page 131.

MVLOGX Workload Summary

The Workload Summary in MVLOGX displays workload statistics.

```

MVLOGX  D.05f  firefly  Loc:var/opt/lund/log/  Log: 07/13/04  10:32
--- 10:32 ----- WORKLOAD SUMMARY -----
No Group Name  %CPU  %User CPU  %Disk I/O  Mem (KB)  VM (KB)
1: INTERACT    .0     .0     .0     .0     1184     1808
2: BATCH       .0     .0     .0     .0     0        0
3: DAEMON     .3     .1     100.0   51328  114272
4: DEFAULT    .0     .0     .0     .0     0        0
5:
--- 10:37 ----- WORKLOAD SUMMARY -----
No Group Name  %CPU  %User CPU  %Disk I/O  Mem (KB)  VM (KB)
1: INTERACT    .0     .0     .0     .0     1184     1808
2: BATCH       .0     .0     .0     .0     0        0
3: DAEMON     .2     .1     100.0   51328  114272
4: DEFAULT    .0     .0     .0     .0     0        0
5:
--- 10:42 ----- WORKLOAD SUMMARY -----
No Group Name  %CPU  %User CPU  %Disk I/O  Mem (KB)  VM (KB)
1: INTERACT    .0     .0     .0     .0     1184     1808
2: BATCH       .0     .0     .0     .0     0        0
3: DAEMON     .2     .1     100.0   51328  114272
4: DEFAULT    .0     .0     .0     .0     0        0
5:

```

Figure 42.10 *MVLOGX Workload Summary report*

For information about the MVLOGX Workload Summary statistics, refer to “WORKLOAD SUMMARY Data Items” on page 96.

MVLOGX Workload Detail

The Workload Detail in MVLOGX displays detailed information about a specific workload.

MVLOGX		D.05f firefly		Loc:var/opt/lund/log/		Log: 07/13/04 10:32	
----- WORKLOAD DETAIL -----							
Workload: INTERACT						Proc Count: 1.0	
----- MEMORY -----							
CPU %:	.0		RSS:	1184		Trans :	0
CPU ms:	0		VSS:	1808		Resp T:	.0
:			:			:	
User %:	.0		Min/s:	.0		Phyio in:	0
Sys %:	.0		Maj/s:	.0		Phyio out:	0
Trap %:	.0		Sup/s:	.0		Phyio in/s:	.0
						Phyio out/s:	.0
						IO%:	.0
						:	
----- WAIT STATES -----							
JOB:	0		CPU:	0		OTHR:	100
PRI:	0	TFLT:	0	DFLT:	0	KFLT:	0
						ULCK:	0

Figure 42.11 *MVLOGX Workload Detail report*

For information about the data presented in the MVLOGX Workload Detail report, refer to “MVHOST Workload Detail” on page 181.

MVLOGX Response Time Chart

The Response Time Chart report in MVLOGX displays the number of transactions per second and the average response time (seconds) recorded.

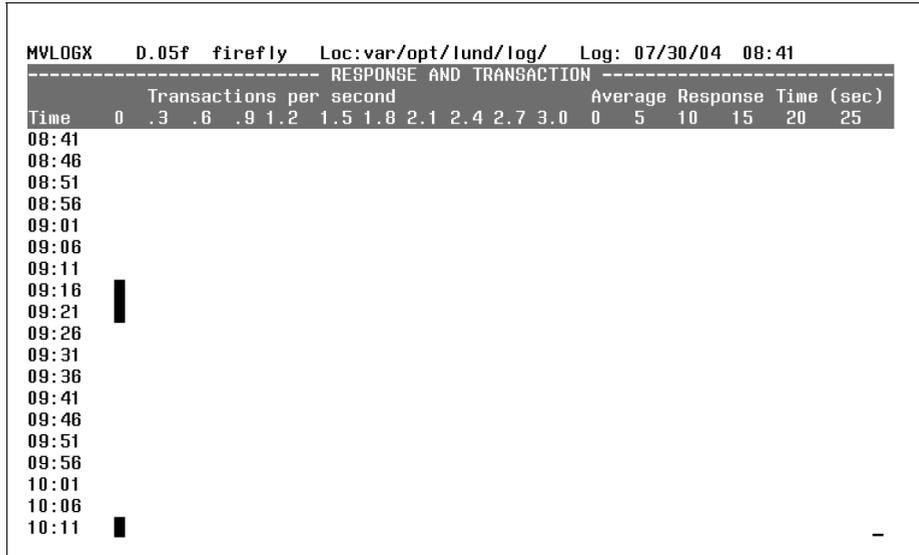


Figure 42.12 *MVLOGX Response Time Chart report*

For descriptions of these data items, please refer to:

- “Transactions” on page 101
- “Avg Response Time” on page 101

MVLOGX FS Space Summary

The FS Space Summary in MVLOGX displays file system space information for each file system.

```

MVLOGX   D.05f  firefly  Loc:var/opt/lund/log/  Log: 07/30/04  08:41
--- 08:41 ----- FILE SYSTEM SPACE SUMMARY -----
Mount          Block/Frag          Size (KB)  Free (KB)  Free su  Used%
              Size/Size
-----
/              8192/ 1024         6191949   1601930   1663849   73
/proc         512/ 512           0         0         0         0
/dev/fd       1024/ 1024         0         0         0         0
-----

--- 08:46 ----- FILE SYSTEM SPACE SUMMARY -----
Mount          Block/Frag          Size (KB)  Free (KB)  Free su  Used%
              Size/Size
-----
/              8192/ 1024         6191949   1601928   1663847   73
/proc         512/ 512           0         0         0         0
/dev/fd       1024/ 1024         0         0         0         0
-----
-

```

Figure 42.13 *MVLOGX FS Space Summary report*

For information about the data contained in the MVLOGX FS Space Summary report, refer to “MVHOST File System Space Summary” on page 125.

MVLOGX DNLC Summary

The DNLC Summary in MVLOGX displays information about the DNLC (dynamic name lookup cache).

```

MVLOGX  D.05f firefly  Loc:var/opt/lund/log/  Log: 07/30/04 08:41
--- 08:41 ----- DNLC SUMMARY -----
ncsize 8452          lookup rate 36.7          hit % 100.0
-----
--- 08:46 ----- DNLC SUMMARY -----
ncsize 8452          lookup rate 35.8          hit % 100.0
-----
--- 08:51 ----- DNLC SUMMARY -----
ncsize 8452          lookup rate 35.7          hit % 100.0
-----
--- 08:56 ----- DNLC SUMMARY -----
ncsize 8452          lookup rate 36.4          hit % 100.0
-----
--- 09:01 ----- DNLC SUMMARY -----
ncsize 8452          lookup rate 37.0          hit % 100.0
-----
--- 09:06 ----- DNLC SUMMARY -----
ncsize 8452          lookup rate 35.5          hit % 100.0
-----
--- 09:11 ----- DNLC SUMMARY -----
ncsize 8452          lookup rate 35.9          hit % 100.0
-----

```

Figure 42.14 *MVLOGX DNLC Summary report*

The data items in the MVLOGX DNLC Summary are described in “MVHOST PROCESS CACHE SUMMARY data items” on page 154.

MVLOGX System Configuration

The System Configuration report in MVLOGX displays various configurable kernel parameters.

```

MVLOGX   D.05f firefly   Loc:var/opt/lund/log/   Log: 07/30/04 08:41
-- 08:41 -----
SYSTEM CONFIGURATION
system name: firefly   os version: 5.8   cpu type: sun4u
serial num: 2163755919   boot time: 20:52 28 APR 2004   run level: 3
-----
MEMORY MANAGEMENT CONFIG
lotsfree: 239   throttlefree: 59   page size: 8192
desfree: 119   priority paging: 0   fastscan: 7657
minfree: 59   maxpgio: 40   slowscan: 100
-----
FSFLUSH CONFIGURATION
ufs_LW: 262144   autoup: 30   doiflush: 1
ufs_HW: 393216   t_fsflushr: 5   dopageflush: 1
-----
CACHE/BUF CONFIGURATION
ufs_ninode: 8452   |   nbuf: 400   |   :
ncsize: 8452   |   bufhwm: 2448   |   :
-----
PROCESS CONFIGURATION
rlim_fd_cur: 256   rlim_fd_max: 1024   maxuprc: 1909   max_nproc: 1914
-----
IPC CONFIGURATION
MESSAGES   msgmap:   |   SEMAPHORES   semvmx: 32767 |   SHARED MEM
msgmax: 2048   msgmni: 50 |   semmap:   semaem: 16384 |   max:
msgmnb: 4096   msgseg:   |   semmni: 100   semmnu: 30 |   shmni: 100
msgsz:   msgtql: 40 |   semmns: 200   semume: 10 |   shmseg: 10
-----

```

Figure 42.15 *MVLOGX System Configuration report*

For information about the data items presented in the MVLOGX System Configuration report, refer to “MVHOST System Configuration Summary” on page 157.

MVLOGX ORACLE Detail Cache

The ORACLE Detail Cache report in MVLOGX displays the most important statistics related to Oracle cache management.

```

MVLOGX   D.05f  firefly  Loc:var/opt/lund/log/  Log: 07/19/05  08:42
---07/19/05
--- 08:42 ----- Oracle instance name: devpx.lund.com
                Row Cache                Library Cache
DB BLOCK GETS:      130                User Calls:          64
CONSISTENT GETS:    72                  Recursive calls:     210
PHYSICAL READS:    17                   Exec Count:          55
                                     Parse Cnt (tot):     71
                                     Parse Cnt (hard):    0
                Redo Buffer                Pins:                160
Redo Syn Wrts:      8                   Reloads:              0
Redo Logspc Req:    0
                                     Data Dict Cache
                Waits                       Gets:                6
Free List:          0                   Get Misses:          0
Sys Undo Block:    0
Sys Undo Header:    0
Undo Block:        0
Undo Header:       0
-----
  
```

Figure 42.16 *MVLOGX ORACLE Detail Cache report*

For information about the data items presented in the MVLOGX ORACLE Detail Cache report, refer to “MVHOST Oracle Detail Cache” on page 205.

MVLOGX ORACLE Database Activity

The ORACLE Database Activity report in MVLOGX provides important statistics related to Oracle database activities.

```

MVLOGX      D.05F FireFly      Loc:var/opt/lund/log/      Log: 07/19/05 08:43
---07/19/05
--- 08:43 ----- Oracle instance name: devpx.lund.com
      Transaction Management
Opened Cursors:      27
User Commits:        8
User Rollbacks:      0
      Sorts
Memory:              44
Disk:                2
Rows:                2891
      Table Scans
Short Tables:        11
Long Tables:         0
      Locking
Current Locks:       9
Enq Requests:       33
Enq Releases:       33
Enq Waits:           0
Enqueue Timeouts:   0
      Rollback
Gets:                40
Waits:               0
Writes:              5652
-----

```

Figure 42.17 *MVLOGX ORACLE Database Activity report*

For information about the data items presented in the MVLOGX ORACLE Database Activity report, refer to “MVHOST Oracle Detail Database Activity” on page 195.

MVLOGX ORACLE DBWR Activity

The ORACLE DBWR Activity report in MVLOGX provides statistics about the DBWR process; the process that writes the modified buffers into a database.

```

MVLOGX   D.05F  firefly  Loc:var/opt/lund/log/   Log: 07/19/05  08:44
---07/19/05
--- 08:44 ----- Oracle instance name: devpx.lund.com
                        DBWR
Chkpt Buf Wrtn:          19          Lru Scans:          0
Trans Table Wrts:        0          Sum Scan Depth:     0
Undo block Writes:       1          Bufs Scanned:       0
Rev bng-wrtn Buf:        0          Chkpts:             0
Make Free Reqs:          1          Forced Writes:      0
Free Bufs Found:         0

      Background Checkpoints
Started:                   0          Inspected
Completed:                 0          Dirty Buffers:     6
                                   Free Buffer:           0

      Misc
Phys Writes:               0          Requests
Summed Dirty Qlen:         0          Free Buffer:         0
-----

```

Figure 42.18 *MVLOGX ORACLE DBWR Activity report*

For information about the data items presented in the MVLOGX ORACLE DBWR Activity report, refer to “MVHOST Oracle Detail DBWR” on page 213.

MVLOGX ORACLE Detail Events

The ORACLE Detail Events report in MVLOGX provides statistics related to Oracle database events.

```

MVLOGX   D.05F  firefly  Loc:var/opt/lund/log/  Log: 07/19/05  08:45
---07/19/05
--- 08:45 ----- Oracle instance name: devpx.lund.com
          DB File                               Log File
Sequential Read:          7                Sequential Read:          0
Scattered Read:          0                Sync:                    8
Parallel Read:           0
Single Write:            0                Single Write:             0
Parallel Write:          1                Parallel Write:           8

          File                               Control File
Identify:                 0                Sequential Read:         24
Open:                     9                Parallel Write:         19
                               Refresh Command:          4

                               Net Events
SQL*Net break/reset to client:                0
SQL*Net message from client:                 48
SQL*Net message to client:                   48
-----

```

Figure 42.19 *MVLOGX ORACLE Detail Events report*

For information about the data items presented in the MVLOGX ORACLE Detail Events report, refer to “MVHOST Oracle Detail Events” on page 209.

MVLOGX ORACLE LRU Latches

The ORACLE LRU Latches report in MVLOGX presents latches statistics.

```

--- 00:01 ----- Oracle instance name: devpx.lund.com
                    Lru Latches
Cache Buffer Chains          Cache Buffer Handles
Gets:                      16          Gets:                      524
Misses:                    0          Misses:                    0
In Gets:                   0          In Gets:                   6
In Misses:                 0          In Misses:                 0
Cache Protection Latch    Cache Buffers Lru Chain
Gets:                      0          Gets:                      0
Misses:                    0          Misses:                    0
In Gets:                   0          In Gets:                   0
In Misses:                 0          In Misses:                 0
Redo Allocation           Redo Log Buffer Latches
Gets:                      58          Gets:                      0
Misses:                    0          Misses:                    0
In Gets:                   0          In Gets:                   42
In Misses:                 0          In Misses:                 0
Redo Writing
Gets:                      46          In Gets:                   0
Misses:                    0          In Misses:                 0
-----

```

Figure 42.20 *MVLOGX ORACLE LRU Latches report*

For information about the data items presented in the MVLOGX ORACLE LRU Latches report, refer to “MVHOST Oracle Detail Latches” on page 191.

MVLOGX ORACLE Memory and Network

The ORACLE Memory and Network report in MVLOGX provides statistics about memory allocation and network transfers.

```

MVLOGX   D.05f  firefly  Loc:var/opt/lund/log/  Log: 07/19/05  00:01
--- 00:01 ----- Oracle instance name: devpx.lund.com

                                MEMORY

      SGA                               Session
Free Memory:           42636           UGA Memory:           344920
DB Buffers:            16384           UGA Memory Max:      1349731
Log Buffers:             160           PGA Memory:          7317384
Dict Cache:             369           PGA Memory Max:      7317384
SQL Area:               1069
Lib Cache:              1522

                                NETWORK
Bytes sent via SQL*Net to client:           14238
Bytes received via SQL*Net from client:      11604
SQL*Net roundtrips to/from client:           48
Bytes sent via SQL*Net to dblink:            0
Bytes received via SQL*Net from dblink:      0
SQL*Net roundtrips to/from dblink:           0
-----

```

Figure 42.21 *MVLOGX ORACLE Memory and Network report*

For information about the data items presented in the MVLOGX ORACLE Memory and Network report, refer to “MVHOST Oracle Detail Memory and Network” on page 199.

MVLOGX ORACLE Detail Datafiles

The ORACLE Detail Datafiles report in MVLOGX displays the first 10 datafiles in order of their activity, listing the most active first.

```

MVLOGX      D.05f  firefly  Loc:var/opt/lund/log/  Log: 07/19/05  00:01
--- 00:01 ----- Oracle instance name: devpx.lund.com
No  Name          Tablespace  Reads  Writes  Blk Reads  Blk Writes  Size
-----
 4  temp01.dbf     TEMP        5      18       17         18       2000
 3  rbs01.dbf      RBS         0        1         0          1       5000
 1  system01.dbf  SYSTEM      0        0         0          0      27000
 6  indx01.dbf    INDX        0        0         0          0       2000
 7  drsys01.dbf   DRSYS      0        0         0          0       2000
 5  users01.dbf   USERS      0        0         0          0       2000
 2  tools01.dbf   TOOLS      0        0         0          0       1000
 0
 0
 0
-----

```

Figure 42.22 *MVLOGX ORACLE Detail Datafiles report*

For information about the data items presented in the MVLOGX ORACLE Detail Datafiles report, refer to “MVHOST Oracle Detail Datafiles” on page 217.

MVLOGX ORACLE Detail Rollback Segments

The ORACLE Detail Rollback Segments report in MVLOGX provides consistent data for the other readers and in case of a rollback it is used to bring the data to its previous state.

MVLOGX	D.05F	FireFly	Loc:var/opt/lund/log/	Log: 07/19/05	00:01		
---	00:01	-----	Oracle instance name: devpx.lund.com				
Name			IO	Waits	Gets	Writes	Read Hit
RBS4			1439	0	7	1432	100.00
RBS0			1307	0	5	1302	100.00
RBS3			1273	0	5	1268	100.00
RBS6			1273	0	5	1268	100.00
RBS1			135	0	5	130	100.00
RBS2			131	0	5	126	100.00
RBS5			131	0	5	126	100.00
SYSTEM			3	0	3	0	100.00
			0	0	0	0	.00
			0	0	0	0	.00

Figure 42.23 *MVLOGX ORACLE Detail Rollback Segments report*

For information about the data items presented in the MVLOGX ORACLE Detail Rollback Segments report, refer to “MVHOST Oracle Detail Rollback Segments” on page 203.



META-VIEW FOR SOLARIS PULSE POINTS

Pulse points are the indicators of performance displayed in the MVHOST Pulse Points screen. For information about pulse point performance indicators, see “MVHOST Pulse Points Summary” on page 163.

The following Solaris pulse points are provided by Lund Performance Solutions. The performance ranges are generic for all Solaris systems—customizing them for your system is recommended. Please refer to the configuration instructions in “MVHOST ppoints File” on page 76.

Table A.1 *Meta-View for Solaris Pulse Points*

Performance Indicator	Performance Ranges		
	Normal	Problematic	Unacceptable
Processor Performance			
CPU Busy % The percentage of time the CPU spent executing the following activities instead of being in a pause or idle state: <ul style="list-style-type: none">• Processing user and system process code.• Managing main memory.• Scheduling and dispatching processes (interrupts).• Processing context switches and overhead (external device activity).	less than 60	60 to 85	greater than 85
Queue Busy % The percentage of time the CPU spent serving online, interactive sessions (*real time* user processes).	less than 75	75 to 90	greater than 90

Performance Indicator	Performance Ranges		
	Normal	Problematic	Unacceptable
<p>Run Queue Average</p> <p>The average number of executable processes that waited for the CPU during a collection interval.</p>	less than 5	5 to 10	greater than 10
Memory Performance			
<p>Average Page Residence</p> <p>The average percentage of main memory used during the collection interval.</p>	greater than 40	40-20	less than 20
<p>Page Scan Rate</p> <p>The virtual memory page scanning rate.</p>	less than 150	150 to 200	greater than 150
<p>Page Out Rate/second</p> <p>The number of instances per second that a page out occurred during the collection interval. A page out is performed to move the least-needed pages from memory by writing them to swap space or to the file system. A page out occurs when physical memory becomes scarce.</p>	less than 15	15 to 20	greater than 20
<p>Swap Out Rate/second</p> <p>The number of processes swapped out of memory to disk in order to satisfy extreme memory shortages.</p>	less than 1	1 to 2	greater than 2
Disk Performance			
<p>Disk Average Wait Time</p> <p>The average wait time for disk requests.</p>	less than 30	30 to 40	greater than 40



Performance Indicator	Performance Ranges		
	Normal	Problematic	Unacceptable
<p>Disk Queue Length</p> <p>The average number of processes in the request queue for a particular disk drive.</p>	less than 1	1 to 3	greater than 3
<p>Disc Util %</p> <p>The percentage of disk utilization.</p>	less than 40	40 to 60	greater than 60
<p>Disk I/O Rate/second</p> <p>The number of disk I/O (reads and writes to disk) per second.</p>	less than 40	40 to 60	greater than 60
Network Performance			
<p>Defer %</p> <p>The percentage of output packets deferred. A packet is deferred when the LAN card is too busy with other incoming or outgoing packets.</p>	less than 1	1 to 10	greater than 10
<p>Collision %</p> <p>The number of output packets sent that resulted in a collision.</p>	less than 15	15 to 30	greater than 30

WAIT STATES

Overview

Meta-View Performance Manager for Solaris wait states information is displayed in the following MVHOST screens:

- In the PROCESS STATISTICS portion of the Global Summary screen.
- In the extended process line of the Global Summary screen.
- In the WAIT STATES portion of the Process Detail screen.
- In the WAIT STATES portion of the Workload Detail screen.

Wait State Descriptions

Each of the wait states monitored by MVHOST is described in the next table.

Table B.1 *Wait States*

Wait State	Description
CPU	The percentage of a process' time that it was in the CPU state, executing on the CPU.
JOB	The percentage of a process' time that it was in the JOB state, waiting for job control or tracing signals.
OTHR	The percentage of a process' time that it was in the OTHR state, waiting on all other resources and events.
PRI	The percentage of a process' time that it was in the PRI state, waiting for the CPU.
TFLT	The percentage of a process' time that it was in the TFLT state, waiting on text page faults.

Wait State	Description
DFLT	The percentage of a process' time that it was in the DFLT state, waiting on data page faults.
KFLT	The percentage of a process' time that it was in the KFLT state, waiting on kernel page faults.
ULCK	The percentage of a process' time that it was in the ULCK state, waiting on user locks.



FILE CHANGES IN META-VIEW

The following table shows the file changes from SOS Performance Advisor to Meta-View Performance Manager. The table is sorted by the SOS Performance Advisor file name. If that name is "<<new>>", then the file has been introduced in Meta-View.

Global config files can be located in `/etc/opt/lund`, such as `.mvmidrc`. User config files will override these.

SOS File Name	Meta-View before D.04c	Meta-View for D.04c and later
	<code>/opt/lps/bin/mvdatad</code>	<code>/opt/lund/bin/mvdatad</code>
<code>/opt/lps/bin/lpsmid</code>	<code>/opt/lps/bin/mvmid</code>	<code>/opt/lund/bin/mvmid</code>
<code>/opt/lps/bin/sos</code>	<code>/opt/lps/bin/mvhost</code>	<code>/opt/lund/bin/mvhost</code>
<code>/opt/lps/bin/soslogd</code>	<code>/opt/lps/bin/mvlogd</code>	<code>/opt/lund/bin/mvlogd</code>
<code>/opt/lps/bin/soslogx</code>	<code>/opt/lps/bin/mvlogx</code>	<code>/opt/lund/bin/mvlogx</code>
<code>/opt/lps/bin/sosrcom</code>	<code>/opt/lps/bin/mvrcom</code>	<code>/opt/lund/bin/mvrcom</code>
<code>/opt/lps/cfg/soskip</code>	<code>/opt/lps/cfg/kip</code>	<code>/opt/lund/cfg/</code>
	<code>/opt/lps/lib/alert_config</code>	<code>/opt/lund/lib/alert_config</code>
	<code>/opt/lps/lib/oraextr.xml</code>	<code>/opt/lund/lib/oraextr.xml</code>
<code>/opt/lps/lib/soshelp</code>	<code>/opt/lps/lib/mvhelp</code>	<code>/opt/lund/lib/mvhelp</code>
	<code>/opt/lps/tmp/mvdatad.log</code>	<code>var/opt/lund/tmp/mvdatad.log</code>
<code>/opt/lps/tmp/lps.log</code>	<code>/opt/lps/tmp/metaview.log</code>	<code>var/opt/lund/tmp/metaview.log</code>
<code>/home/<user>.lpsmidrc</code>	<code>/home/<user>.mvmidrc</code>	<code>/home/<user>.mvmidrc</code>
<code>/home/<user>.sosrc</code>	<code>/home/<user>.mvhostrc</code>	<code>/home/<user>.mvhostrc</code>
<code>/home/<user>.soslogdrc</code>	<code>/home/<user>.mvlogdrc</code>	<code>/home/<user>.mvlogdrc</code>
<code>/home/<user>.soslogxrc</code>	<code>/home/<user>.mvlogxrc</code>	<code>/home/<user>.mvlogxrc</code>

GLOSSARY OF TERMS

CPU Terms

The CPU terms defined in this glossary are specific to the performance data provided by MVHOST.

capture ratio

A ratio of time a CPU spent in user mode to system/kernel mode. The capture ratio value is calculated:

$$\text{Capture Ratio} = (\text{User} + \text{Real} + \text{Nice}) / \text{Sys}$$

A capture ratio value equal to one or greater indicates the system is spending more than half its time on useful system work. A value of less than one means the system is spending more than half its time on overhead.

context switch

A context switch occurs when a process relinquishes a CPU.

context switch time

The amount of time a CPU spends managing context switches.

high priority time (high pri time)

The amount of time a CPU spends executing high priority processes. A high priority process is any process (excluding batch processes) that does not have a positive nice value. Generally, high priority processes are all interactive and system processes.

idle time

The amount of time a CPU has nothing to do.

interrupt

Interrupts occur when a high priority event must have control of a CPU. The current running process is forced to temporarily suspend execution while the interrupt is processed. The most well known interrupt is a disk I/O completion interrupt.

interrupt CPU time

The amount of time a CPU spends processing interrupts.

negative nice time (nnice time)

The amount of time a CPU spends in user mode for a process that has a nice level of 0-19. Refer to the **nice** man page for more information.

nice time

The amount of time a CPU spends in user mode for a process that has a nice level of 21-40. Refer to the **nice** man page for more information.

real time

The amount of time a CPU spends in in user mode for "real time" priority processes.

system time

The amount of time a CPU spends in kernel mode which does not fall under interrupt, trap, and memory times.

trap

Similar to an interrupt. The difference is that the process currently running on a CPU causes the trap. Interrupts are not caused by the process that is interrupted.

trap time

The amount of time a CPU spends processing traps.

user time

The amount of time a CPU spends in user mode (excluding nice, negative nice, and real times).

Memory Terms

The memory terms defined in this glossary are specific to the performance data provided by MVHOST.

activation

An activation occurs when a process is reactivated from a deactivation. See "deactivation" on page 289.

buffer cache

A pool of buffers in memory with the purpose of maintaining data in memory to avoid disk access.

buffer cache headers

The headers associated with each set of data within the buffer cache.

buffer cache hit

A buffer cache hit occurs when data is found in the buffer cache as opposed to disk. Read hit percentages lower than 90 can indicate the need for a larger buffer cache. Write hit percentage lower than 65 also indicates the potential need to increase the buffer cache size.

deactivation

A deactivation occurs when a process is removed from the list of runnable processes because of memory or CPU contention. It will not be scheduled until it is CPU and/or memory contention subsides. Deactivations indicate CPU and/or memory bottlenecks.

desfree

The lower bound for paging. When free memory drops below desfree, paging begins.

dynamic buffer cache (DBC)

The buffer cache is configured in a manner that allows the kernel to dynamically change the buffer cache size. The buffer cache grows as a result of page faults. It shrinks as the vhand process finds unused pages.

fixed size buffer cache

The "fixed size buffer cache" means the size is fixed and will not change without a reconfiguration and recompilation of the kernel.

lotsfree

The upper bound for paging. Once paging has begun, it will continue until free memory is larger than lotsfree.

major page fault

Page faults that require disk access.

minfree

The threshold at which the system considers itself "out of memory". At this point, the system will start deactivating processes.

minor page fault

Page faults that are satisfied in memory; for example, via page reclaims.

page fault

Page faults occur when a page is not found in the buffer cache; the pages are satisfied in memory and disk.

page in

A page in is a page fault that requires disk access.

page out

A page out occurs when the amount of memory required is greater than the available amount. Data within the page is written to disk and the page is made available for use. Excessive page outs indicates a memory bottleneck.

page reclaim

A page reclaim occurs when a requested page exists on the free list. A page reclaim results in a page fault being satisfied in memory.

page scan

A page scan occurs when the vhand process searches through used pages for candidates to page out. Excessive page scanning can be an indicator of a memory bottleneck.

unlockable memory

The amount of memory that cannot be locked. Physical memory that may be locked is called "lockable memory". Locked memory holds frequently-accessed programs or data structures, such as the operating system code. Lockable memory is never more than 3/4 of the available memory. Allowing too much locked memory could lead to a system deadlock. Unlockable memory is used for swapping pages but lockable memory cannot be used for swapping pages.

VM I/O

A physical disk I/O that is a result of virtual memory management.

Disk Terms

The disk terms defined in this glossary are specific to the performance data provided by MVHOST.

logical I/O

An I/O that is satisfied in memory or disk.

physical I/O

An I/O that requires disk access. Physical I/Os include User, Sys, VM, and RAW.

raw I/O

A disk I/O that bypasses the buffer cache.

service time

The amount of time an I/O request takes to be serviced once it begins to be processed by the disk (removed from the disk queue), excluding wait time.

system I/O

A disk I/O that is the result of system overhead in managing files (i.e., super-block reads/writes).

user I/O

A disk I/O that is a result of user file reads/writes.

virtual memory I/O

A disk I/O that is a result of virtual memory management.

wait time

The amount of time an I/O request waits in the disk queue before being serviced. Excessive wait times indicate a disk bottleneck.

Network Terms

The network terms defined in this glossary are specific to the performance data provided by MVHOST.

badxid

A duplicate transmission. Every outgoing NFS request is assigned a unique sequential identifier. Requests are retransmitted if the server does not respond within a time-out period. When the server eventually responds, it is possible to respond to the same request multiple times. This is counted as a badxid. badxids are an indication that the server is not responding quickly enough.

collision

A network collisions occurs when the system sends a packet at the same time as another system. When collisions occur, the system dispatching them waits a random amount of time to retransmit the packet. Excessive collision percentages indicate a network bottleneck.

Process Terms

The process terms defined in this glossary are specific to the performance data provided by MVHOST.

priority

The CPU scheduling priority of the process. High priority numbers indicate low priority status, and vice versa.

think time

The amount of time a process is waiting for user input.

timeslice

The maximum amount of time one process is allowed to run before the scheduler searches for other higher priority processes. The process may give up the CPU sooner if it enters kernel mode.

transactions

A character read or write, or a process death.

wait state

Identifies a resource that a process is waiting (blocked) on.

Wait State Codes

The wait state codes defined in this glossary are specific to the performance data provided by MVHOST.

CPU

Executing on the CPU.

JOB

Waiting for job control or tracing signals.

OTHR

Waiting on all other resources and events.

PRI

Waiting for the CPU.

TFLT

Waiting on text page faults.

DFLT

Waiting on data page faults.

KFLT

Waiting on kernel page faults.

ULCK

Waiting on user locks.

INDEX OF DATA ITEMS

C

CPU

CPU Summary

- busy percentage 109
- cpu identification number 108
- system time 110
- total 109
- total busy time 110
- user time 110
- utilization percentage 109
- wait time 110

Miscellaneous Statistics

- context switches per second 111
- forks per second 111
- interrupts per second 111
- mutual exclusion locks per second 111
- system calls per second 111
- traps per second 111

Run Queue Statistics

- 1/5/15 minute averages 111
- run queue average 111

D

Disk

Disk I/O Summary

- average queue length 120
- average service time 120
- average size of physical reads 120
- average size of physical writes 120
- average wait time 120
- device identification number 118, 120
- device utilization percentage 118
- disk utilization percentage 120
- I/O percentage 120
- I/Os per second 119
- number of physical reads per second 120
- number of physical writes per second 120
- total disk utilization 120
- total utilization 119

Disk Controller

Disk Controller I/O Summary

- device identification number 122
- I/O percentage per disk controller 122
- physical I/O operations number 122
- total activities of all disk controllers 122

F

File System I/O

File System I/O Summary

- file system 124
- physical reads per second 124

File System Space

File System Space Summary

- file system block size 126
- file system mount point 126
- free space available to non-super users 126
- free space available to super users 126
- number of free inodes 126
- percentage of file system space used 126
- total number of inodes 126

G

Global

CPU

- average response time 88
- cpu percentage 88
- disk serv time 88
- processes swapped out per second 90
- read hit percentage 89
- run queue length 90
- total busy percentage 88

CPU Miscellaneous

- 5/15 minimum run queue average 99
- capture ratio 99
- run queue average 99
- run queue busy percentage 99

CPU Utilization

- idle percentage 98
- system percentage 98
- total busy percentage 97

- user percentage 97
- wait 98
- Disk
 - disk drive 102
 - disk I/O queue length 90
 - I/O percentage 102
 - I/Os per second 89, 102
 - queue length 102
- Extended Process Line
 - cpu time 95
 - DPG state 94
 - group name 94
 - JOB state 94
 - KPG state 94
 - number of processes swapped 94
 - number of threads 94
 - OTH state 94
 - PRI state 94
 - process sleeping address 94
 - TPG state 94
 - ULCK state 94
- Memory/Virtual Memory
 - page ins 100
 - page outs 100
 - page reclaims 100
 - page scans 100
 - swap outs 100
- Miscellaneous
 - average response time 101
 - number of active processes 101
 - number of active sessions 101
 - number of deactivations 101
 - number of processes 101
 - number of processes waiting for I/Os 101
 - number of sessions 101
 - number of transactions 101
- Process Summary
 - cpu percentage 92
 - device file 92
 - nice value 92
 - number of physical reads 93
 - number of physical writes 93
 - process identification number 91

- process name 91
- process priority 92
- resident set size/size of process 93
- state 93
- user name 91
- Workload Summary
 - cpu percentage 96
 - disk I/O percentage 96
 - response time 96
 - transactions per minute 96
 - user cpu percentage 96
 - workload group name 96
 - workload group number 96

M

Memory

- Memory Management Configuration
 - desfree (lower threshold for paging) 116
 - fast scan rate per second 116
 - lotsfree (upper threshold for paging) 115
 - maximum number of page I/O operations 116
 - minfree (out of memory threshold) 116
 - page size 116
 - priority paging 116
 - slow scan rate per second 116
 - throttlefree 116
- Memory/Virtual Memory Allocation
 - memory statistics 114
 - virtual memory statistics 114
- Page Scanner
 - pages reclaimed per second 115
 - pages scanned per second 115
- Paging
 - number of bytes swapped in per second 115
 - number of bytes swapped out per second 115
 - number of swaps in 115
 - number of swaps in per second 115
 - number of swaps out 115
 - number of swaps out per second 115
- Process Memory Status
 - number of processes sleeping 114
 - number of swapped processing running 114
 - total number of processes 114

N

Network

Network Interfaces

- collision percentage 128
- count of incoming packets per seconds 129
- error in percentage 129
- error out percentage 129
- interface name 128
- network interface name 128
- packets deferred percentage 128
- packets in per second 128
- packets out per second 128
- total values 129

Network Summary

- errors in percentage 128
- network protocols 128
- packets in per second 128
- packets out per second 128

O

Oracle

Detail Cache

Data Dictionary Cache

- hit ratio 208
- number of get requests 208
- number of misses for get requests. 208

hit ratio 206

Library Cache

- hit ratio 206
- number of execute counts 206
- number of parse requests (hard). 207
- number of parse requests. 206
- number of PINs 207
- number of reloaded PINs 207
- recursive calls 206
- user calls 206

library cache statistics 206

Redo Buffer

- redo logspace requests 207
- redo synchronization writes 207

redo buffer cache statistics 207

Row Cache

- consistent gets 206
- number of blocks 206
- number of blocks read 206

row cache statistics 206

Waits

- number of waits for blocks 208
- number of waits for blocks other than SYSTEM

- rollback segments 208
- number of waits for buffers 208
- number of waits for buffers other than SYSTEM
rollback segments 208
- number of waits for free list 208
- waits 207

Detail Database Activity

- current locks 196
- enqueue releases 196
- enqueue requests 196
- enqueue timeouts 196
- enqueue waits 196
- gets 197
- number of long tables scanned 197
- number of rows sorted 197
- number of short tables scanned 197
- opened cursors 196
- sorts done in disk 197
- sorts done in memory 197
- user commits 196
- user rollbacks 196
- waits 197
- writes 198

Detail Datafiles

- block reads 218
- block writes 218
- reads 218
- size of datafile 218
- writes 218

Detail DBWR

- background checkpoints completed 215
- background checkpoints started 215
- buffers scanned 215
- checkpoint buffers written 214
- checkpoints 215
- dirty buffers 215
- forced writes 215
- free buffer requests 216
- free buffers 215
- free buffers found 214
- LRU scans 214
- make free requests 214
- physical writes 216
- revisions written to the buffer 214
- sum of the dirty LRU queue lengths 216
- sum scans depth 214

- transaction table block writes 214
- undo block writes 214
- Detail Events
 - control file statistics 211
 - db file statistics 210
 - file statistics 211
 - log file statistics 210
 - net events data 212
- Detail Latches
 - cache buffer chain 192
 - cache buffer handles 192
 - cache buffer LRU chain 192
 - cache protection latches 192
 - gets 192
 - immediate gets 192
 - immediate misses 192
 - misses 192
 - redo log buffer latches 193
- Detail Memory and Network
 - bytes received from client 201
 - bytes received from dblink 201
 - bytes sent to client 201
 - bytes sent to dblink 201
 - db block buffers 200
 - dictionary cache 200
 - free memory 200
 - library cache 200
 - log buffers 200
 - PGA memory 200
 - PGA memory maximum 200
 - roundtrips (client) 201
 - roundtrips (dblink) 201
 - SQL area 200
 - UGA memory 200
 - UGA memory maximum 200
- Detail Rollback Segments
 - gets 204
 - hit ratio 204
 - waits 204
 - writes 204
- Main
 - active sessions 188, 189
 - buffer hit percentage 189
 - commits 188

- commits number 189
- connection to instance 189
- connections 188
- cursors number 189
- dictionary hit percentage 189
- instance 189
- library hit ratio percentage 189
- locks 188
- locks entries number 189
- opened cursors 188
- redo writing number 189
- rollbacks 188
- rollbacks number 189
- writes to disk number 189

P

Process Detail

CPU

- cpu percentage 169
- number of ms the process was executing 169
- system percentage 170
- time spend processing traps percentage 170
- user percentage 170

Disk

- number of physical disk reads 171
- number of physical disk reads per second 171
- number of physical disk writes 171
- number of physical disk writes per second 171
- physical writes per second 171

ID

- process command 168
- process group name 168
- real user name 168

Memory

- major page faults 170
- minor page faults 170
- process memory state 170
- resident set size 170
- virtual set size 170

PID

- parent process identification 168
- process identification 168

Scheduling

- process nice value 168

- process priority 168
- process scheduling policy 169
- Terminal
 - character I/Os 169
 - terminal device file 169
 - terminal state 169
- Wait States
 - CPU 171
 - DFLT 172
 - JOB 171
 - KFLT 172
 - OTHR 171
 - PRI 171
 - TFLT 172
 - ULCK 172
- Process File Usage
 - Open Files
 - access type 175
 - file name 174
 - file type 175
 - number of references 175
 - offset 175
 - percentage completed 175
 - size 175
 - Process File Usage
 - device file 174
 - process identification 174
 - process name 174
 - user name 174
- Process Memory Regions
 - Memory Regions
 - Front Store File 178
 - RSS 179
 - Type 179
 - Virtual Address 179
 - VSS 179
 - Process Memory Regions
 - device file 178
 - process identification 178
 - process name 178
 - user name 178
- Pulse Points
 - Pulse Points Summary
 - comments 164

- green (acceptable range) 164
- indicator name 164
- red (unacceptable range) 164
- yellow (questionable range) 164

R

- Rlbks 189

S

- Summed 216

Swap

Per Swap Utilization

- device file of the swap device 142
- file system swap space allocated 142
- mount point of file system swap 142
- swap space configured for device 142
- swap space configured for file system 142
- swap space not used 143
- swap space used in device 142
- swap space used in file system 142
- type of swap 142

Swap Summary

- total swap space available 142
- total swap space configured 142
- total swap space reserved 142
- total swap space used 142

System Configuration

Cache Buffer Configuration

- configured number of buffer cache 160
- configured number of entries 160
- maximum possible number of entries 160
- maximum threshold value for the number of buffers 160
- number of callout structures 160

File System Configuration

- doiflush 160
- dopageflush 160
- maximum number of seconds a page remains in memory 159
- minimum threshold value for unflushed data 159
- set interval between instances 159

System Configuration

- File System Configuration
 - maximum threshold value for unflushed data 159

IPC Configuration

- msgmap (message map entries) 161
- msgmax (max size of a single message) 161
- msgmnb (max length of message queue) 161
- msgmnb (max size of single message) 161
- msgmni (message queue identifiers) 161
- msgseg (message buffer cache segments) 161
- msgssz (size of each message segment) 161
- msgtql (message headers) 161
- semaem (max undo value) 162
- semmap (SYSV semaphore map entries) 162
- semnmi (SYSV semaphore identifiers) 162
- semnms (SYSV semaphores available) 162
- semnmu (number of undos) 162
- semume (max undo entries per process) 162
- semvmx (SYSV semaphore max value) 162
- shmmax (max shared memory segment size) 162
- shmmni (shared memory identifiers) 162
- shmseg (max shared memory segments attached to a process) 162

Memory Management Configuration

- desfree (lower threshold for paging) 158
- fast scan rate 159
- lotsfree (upper threshold for paging) 158
- maximum number of page I/O operations 159
- out of memory threshold 158
- page size 159
- priority paging 159
- slow scan rate 159
- throttelfree pages 158

Process Configuration

- hard limit maximum number of open files 161
- maxuprc (max processes per user) 161
- nproc (entries in process table) 161
- soft limit maximum number of open files 160

System Configuration

- boot time 158
- cpu type 158
- operating system version 158
- run level 158
- system name 158
- system serial number 158

System Table/Cache Configuration

DNLC Cache Summary

- hit percentage 155
- lookups per second 155
- number of entries 155

Inode Cache Summary

- hit percentage 154
- inode free percentage 154
- maximum number of entries 154

IPC Table/Cache Summary

- Message Table 152

MISC Table/Cache Summary

- message buffer cache 152
- rnode cache 152
- semaphore table 153
- shared memory 153
- shared memory table 153

Process Cache Summary

- maximum number of processes 154

SYS Buffer Cache Summary

- maximum number of buffers 155

System Table/Cache Summary

- DNLC cache hit percentage 151
- file table used percentage 150
- inode cache entries 151
- inode cache used percentage 151
- message buffer cache entries percentage 150
- message table entries used percentage 150
- process table entries used percentage 150
- rnode cache used percentage 150
- shared memory identifiers used percentage 150
- shared memory pool used percentage 151
- SysV buffer cache hit percentage 151
- SysV buffer header used percentage 151
- SysV semaphore identifiers percentage 150

SYSV Buffer Cache Summary

- hit percentage 155
- number of buffers 155

T

Terminal

Terminal Summary

- attached processes 148
- idle time 148
- login time 148
- name of user at terminal 148

number of characters 148
 terminal device file 148

U

User

User Summary

cpu resources consumed by user 146
 physical I/Os associated with user 146
 processes owned by user 146
 RAM consumed by user 146
 sessions opened by user 146
 terminal I/Os associated with user 146
 user identification number 146
 user name 146
 virtual memory consumed by user 146

W

Workload Definitions

Workload Definitions

name of workload group 166
 number of workload group 166
 type of workload group 166
 workload group specifications 166

Workload Detail

CPU

cpu ms 182
 trap percentage 182

CPU Usage

cpu percentage 182

Disk

I/Os percentage 184
 physical disk reads 184
 physical disk reads per second 184
 physical disk writes 184
 physical disk writes per second 184

Memory

major page faults per second 183
 minor page faults per second 183
 processes swapped per second 183
 resident set size 183
 State 183
 system percentage 182
 user percentage 182
 virtual memory set size 183

Process Summary

CPU percentage 185
 Name 185
 Nice 185
 physical reads 185
 physical writes 185
 PID 185
 priority 185
 RSS/Size 185
 State 185
 terminal 185
 User Name 185

Response Time

response time 183
 transactions per second 183

Wait States

CPU 184
 DFLT 184
 JOB 184
 KFLT 184
 OTHR 184
 PRI 184
 TFLT 184
 ULCK 184

Workload Detail

process count 182
 workload group name 182

INDEX

Symbols

/etc/opt/lund 15, 16

 /etc/opt/lund/cfg 16, 17

 /etc/opt/lund/cfg/advice 17, 69–72

 /etc/opt/lund/cfg/holidays 17, 74–75

 /etc/opt/lund/cfg/kip 17, 80–81

 /etc/opt/lund/cfg/orainst.cfg 17

 /etc/opt/lund/cfg/ppoints 17, 76–80

 /etc/opt/lund/cfg/workdefs 17

 /etc/opt/lund/rpt 16, 17

 /etc/opt/lund/rpt/*.rpt 17

 /etc/opt/lund/rpt/reprtdef 17

/opt/lund 15, 16

 /opt/lund/bin 16, 17, 18

 /opt/lund/bin/kiclean 17

 /opt/lund/bin/lpscheck 17

 /opt/lund/bin/lpsextnd 17

 /opt/lund/bin/lpskill 17

 /opt/lund/bin/lpstrap 18, 73–74

 /opt/lund/bin/mvhost 18, 27–28

 /opt/lund/bin/mvlogd 18

 /opt/lund/bin/mvlogx 18

 /opt/lund/bin/mvmid 17

 /opt/lund/bin/mvrcrom 18

 /opt/lund/contrib 16

 /opt/lund/lib 16, 18

 /opt/lund/lib/alert_config 18

 /opt/lund/lib/fcastitems 18

 /opt/lund/lib/itemlist 18

 /opt/lund/lib/license 18

 /opt/lund/lib/license.old 18

 /opt/lund/lib/logxhelp 18

 /opt/lund/lib/mvhelp 18

 /opt/lund/lib/oraextr.xml 18

 /opt/lund/lib/pfgitems 18

 /opt/lund/lib/pfgitems2 18

 /opt/lund/lib/pwsalias file 18

 /opt/lund/newcfg 16, 19

 /opt/lund/newcfg/cfg 19

 /opt/lund/newcfg/rpt 19

/var/opt/lund 15, 16

 /var/opt/lund/log 16, 19

 /var/opt/lund/SL* 19

 /var/opt/lund/SLLOGCAT 19

 /var/opt/lund/tmp 16, 19

 /var/opt/lund/tmp/*unix.ino 19

 /var/opt/lund/tmp/ksymbols.db 19

 /var/opt/lund/tmp/metaview.log 19

 /var/opt/lund/tmp/mvlogd.pid 19

 /var/opt/lund/tmp/mvmid.pid 19

A

 Activation 288

 advice file 17, 69–72, 104

 alert configuration file 18

B

 Badxid 291

 Banner line 42, 86

 Buffer cache 289

 Buffer cache headers 289

 Buffer cache hit 289

C

 Capture ratio 287

 cfg file 19

Collision 292
Company name 45
Context switch 287
Context switch time 287
CPU
 Run Queue Statistics
 run queue time percentage 111
CPU Summary
 See MVHOST CPU Summary
Cumulative averages 87
Current interval 87

D

Deactivation 289
Desfree 289
Disk Controller I/O Summary
 See MVHOST Disk Controller I/O Summary
Disk I/O Summary
 See MVHOST Disk I/O Summary
Dynamic buffer cache (DBC) 289

E

Elapsed time 87
Environment variables 15, 21, 22, 23
 LUND_DATE_FMT 21, 23
 LUND_DATE_SEP 21, 23
 LUND_DECIMAL_INDICATOR 21, 23
 LUND_ETC_PATH 15, 21, 22, 23
 LUND_OPT_PATH 15, 21, 22, 23
 LUND_TIME_SEP 21, 23
 LUND_VAR_PATH 15, 21, 22, 23
 PATH 21, 22
 TERM 21, 22
Exporting data 225–227

Extended process line 93

F

fcastitems file 18
File System I/O Summary
 See MVHOST File System I/O Summary
File System Space Summary
 See MVHOST File System Space Summary
Fixed size buffer cache 289

G

Global display options
 commands
 CPU percentage required for workload display 53
 display advice messages 49
 display disk information on global screen 51
 display informational advice messages 49
 display memory information on global screen 50
 display miscellaneous information on global screen 51
 display only active workloads 53
 display process information 52
 display workload information 52
 maximum number of disks to display 52
 submenu screen 48
Global Summary
 See MVHOST Global Summary
Glossary of Terms 287–293
 CPU terms 287–288
 disk terms 290–291
 memory terms 288–290
 network terms 291–292
 process terms 292
 wait state codes 292–293

H

High priority time 287
 holidays file 17, 74–75

I

I/O

- logical 291
- physical 291
- raw 291
- system 291
- user 291
- virtual memory 291
- wait time 291

Idle time 287

Installation

- Meta-View Agent for Solaris 7–10

Interrupt 287

Interrupt CPU time 288

Interval 87

itemlist file 18

K

kiclean file 17

kip file 17, 80–81, 88

KIP line 44, 80–81, 87

ksymbols.db file 19

L

license file 18

license.old file 18

Logical I/O 291

logxhelp file 18

Lotsfree 289

lpscheck file 17

lpsextnd file 17

lpskill file 17

lpstrap file 18, 73–74

Lund Consulting Services 6

LUND directories

- directory listings 15
- file listings 17
- subdirectory listings 15

Lund Performance Solutions

- consulting team 6
- documentation team 5
- main offices
 - e-mail addresses 4
 - fax number 4
 - internet URL 4
 - postal address 4
 - telephone number 4
- technical support team 5

LUND_ETC_PATH=/etc/opt/lund 15, 23

LUND_OPT_PATH=/opt/lund 15, 23

LUND_VAR_PATH=/var/opt/lund 15, 23

M

Major page fault 289

Memory

- Page Scanner
 - average page residence 115

Memory Summary

- See MVHOST Memory Summary

metaview.log file 19

Minfree 289

Minor page fault 290

mvhelp file 18

- MVHOST 14, 18, 27–28
 - commands 29–35
 - main option menu 41–68
 - overview 27
 - screen conventions 28
 - screen selection menu 37–40
 - specific configuration files 69–81
- MVHOST CPU Summary 38, 107–112
 - data items 108–112
 - CPU SUMMARY 108, 110
 - MISC STATISTICS 111
 - PER CPU UTILIZATION 112
 - RUNQ STATISTICS 111
 - display screen 107
- MVHOST Disk Controller I/O Summary 38, 121–122
 - data items 122
 - display screen 121
- MVHOST Disk I/O Summary 38, 117–120
 - data items 118–120
 - display screen 117
- MVHOST File System I/O Summary 38, 123–124
 - data items 124
 - display screen 123
- MVHOST File System Space Summary 38, 125–126
 - data items 126
 - display screen 125
- MVHOST Global Summary 38, 83–105
 - data items 86–105
 - banner line 86
 - CPU MISC 98
 - CPU UTILIZATION 96
 - DISK 101
 - extended process line 93
 - GLOBAL 88
 - KIP line 87
 - MEM/VM 99
 - MISC 100
 - PROCESS SUMMARY 90
 - SYSTEM PERFORMANCE ADVICE 103
 - WORKLOAD SUMMARY 96
 - display options
 - CPU information 50
 - DISK 51, 52
 - MEM/VM 50, 51
 - MISC 51
 - PROCESS SUMMARY 52, 55–60
 - SYSTEM PERFORMANCE ADVICE 49
 - WORKLOAD SUMMARY 52, 53, 54
 - display screens
 - graphical 84
 - tabular 85
 - SYSTEM PERFORMANCE ADVICE
 - advice file configuration 69–72
- MVHOST Memory Summary 38, 113–116
 - data items 114–116
 - MEM/VM ALLOCATION 114
 - MEMORY MANAGEMENT CONFIG 115
 - PAGE SCANNER 115
 - PAGING 114
 - PROC MEM STATUS 114
 - display screen 113
- MVHOST Network Summary 38, 127–129
 - data items 128–129
 - NETWORK INTERFACES 128
 - NETWORK SUMMARY 128
 - display screen 127
- MVHOST NFS Summary 38, 131–136
 - additional command keys 132
 - data items 132–136
 - display screen 131
- MVHOST OracleStats
 - cache 40, 205–208
 - data items 206–208
 - display screen 205
 - database activity 40, 195–198

- data items 196–198
 - display screen 195
- datafiles 40, 217–218
 - data items 218
 - display screen 217
- dbwr 40, 213–216
 - data items 214–216
 - display screen 213
- events 40, 209–212
 - data items 210–212
 - display screen 209
- latches 40, 191–193
 - data items 192–193
 - display screen 191
 - LRU 192
 - redo log buffer 193
- main 40, 187–189
 - adding an Oracle instance 188
 - data items 188–189
 - deleting an Oracle instance 188
 - display screen 187
- memory and network 40, 199–201
 - data items 200–201
 - display screen 199
- rollback segments 40, 203–204
 - data items 204
 - display screen 203
- MVHOST Process Detail 39
 - data items 168–172
 - CPU 169
 - DISK 171
 - ID 168
 - MEMORY 169
 - PID 168
 - SCHEDULING 168
 - TERMINAL 169
 - WAIT STATES 171
 - display screen 167
- MVHOST Process File Usage 39, 173–175
 - data items 174–175
 - OPEN FILES 174
 - PROCESS FILE USAGE 174
 - display screen 173
- MVHOST Process Memory Regions 39, 177–179
 - data items 178–179
 - PROCESS MEMORY REGIONS 178
 - REGION TYPES 178
 - display screen 177
- MVHOST Pulse Points Summary 39, 163–164
 - display screen 163
 - data items 164
 - display screen column headings 164
- MVHOST Swap Summary 39, 141–143
 - data items 142–143
 - PER SWAP UTILIZATION 142
 - SWAP SUMMARY 142
 - display screen 141
- MVHOST System Configuration Summary 39, 157–162
 - data items 158–162
 - FS CONFIGURATION 159
 - IPC CONFIGURATION 161
 - MEMORY MANAGEMENT CONFIG 158
 - PROCESS CONFIGURATION 160
 - SYSTEM CONFIGURATION 158
 - display screen 157
- MVHOST System Table Summary 39, 149–155
 - data items 150–155
 - DNLC CACHE SUMMARY 154
 - INODE CACHE SUMMARY 154
 - IPC TABLE/CACHE SUMMARY 152
 - MISC TABLE/CACHE SUMMARY 151
 - PROCESS CACHE SUMMARY 153
 - SYSTEM TABLE/CACHE SUMMARY 150
 - SYSV BUFFER CACHE SUMMARY 155
 - display screens
 - graphical 150

- tabular 151
- MVHOST Terminal Summary 39, 147–148
 - data items 148
 - display screen 147
- MVHOST User Summary 39, 145–146
 - data items 146
 - display screen 145
- MVHOST Workload Definitions 39, 165–166
 - data items 166
 - display screen 165
- MVHOST Workload Detail 40, 181–185
 - data items 182–185
 - CPU 182
 - DISK 183
 - MEMORY 183
 - PROCESS SUMMARY 185
 - RESPONSE TIME 183
 - WAIT STATES 184
 - WORKLOAD DETAIL 182
 - display screen 181
- MVLOGD 14, 18, 219–222
 - advanced configuration parameters 221
 - advanced configuration variables 221
 - default configuration parameters 220
 - SL files 219
 - starting the logging process 219
- mvlogd.pid file 19
- MVLOGX 14, 18, 223–233
 - command line switches 224
 - data export 225–227
 - main commands
 - configuration commands 236
 - data export commands 237
 - display screen 235
 - logfile commands 236
 - navigation commands 236
 - other commands 237
 - main option menu 242–253
 - menus and options 235–253
 - report format selection menu 238–239
 - reports 255–277
 - browsing 225
 - CPU Summary Chart 255
 - custom 227–233
 - Disk Summary 259
 - Disk Summary Chart 260
 - DNLC Summary 268
 - FS Space Summary 267
 - Memory Summary 258
 - Memory Summary Chart 257
 - Network Interface Summary 262
 - Network Summary 261
 - NFS Client Summary 263
 - Oracle Database Activity 271
 - Oracle DBWR Activity 272
 - Oracle Detail Cache 270
 - Oracle Detail Datafiles 276
 - Oracle Detail Events 273
 - Oracle Detail Rollback Segments 277
 - Oracle LRU Latches 274
 - Oracle Memory and Network 275
 - Response Time Chart 266
 - System Configuration 269
 - Workload Detail 265
 - Workload Summary 264
 - startup procedure 223
- MVLOGX CPU Summary Chart 239
- MVLOGX Disk Summary 240
- MVLOGX Disk Summary Chart 240
- MVLOGX DNLC Summary 241
- MVLOGX FS Space Summary 240
- MVLOGX Global Summary 239
- MVLOGX Memory Summary 240
- MVLOGX Memory Summary Chart 239
- MVLOGX Net If Summary 240

MVLOGX Network Summary 240
 MVLOGX NFS Summary 240
 MVLOGX ORACLE Database Activity 241
 MVLOGX ORACLE DBWR Activity 241
 MVLOGX ORACLE Detail Cache 241
 MVLOGX ORACLE Detail Datafiles 241
 MVLOGX ORACLE Detail Events 241
 MVLOGX ORACLE Detail Rollback Segments 242
 MVLOGX ORACLE LRU Latches 241
 MVLOGX ORACLE Memory and Network 241
 MVLOGX Response Time Chart 240
 MVLOGX System Configuration 241
 MVLOGX Workload Detail (INTERACT) 240
 MVLOGX Workload Summary 240
 MVMID 14, 17
 mvmid.pid file 19
 mvcrom 18

N

Negative nice time 288
 Network Summary
 See MVHOST Network Summary
 NFS Summary
 See MVHOST NFS Summary
 Nice time 288

O

Option commands
 MVHOST display options
 See Global display options
 See Process display options
 See Pulse points display options
 See Terminal display options
 See User display options

ORACLE 241
 OracleStats
 See MVHOST OracleStats
 oraextr.xml file 18

P

Page fault 290
 major 289
 minor 290
 Page in 290
 Page out 290
 Page reclaim 290
 Page scan 290
 Performance tips 93, 98, 102
 pfgitems file 18
 pfgitems2 file 18
 Physical I/O 291
 ppoints file 76–80
 Priority 292
 Process Detail
 LWP/CSW
 number of involuntary context switches per
 second 171
 number of lightweight processes 170
 number of voluntary context switches per
 second 171
 Memory
 number of processes swapped out per
 second 170
 Process display options
 commands
 CPU percentage required for process
 display 57
 display alternate headings 56
 display extended process line 55
 display interactive processes 57
 display non-interactive processes 57

- display only active processes 56
- display processes sorted in ascending order 59
- display processes which have died 58
- maximum number of processes to display 59
- process login filter 58
- process sort option 58
- submenu screen 54
- Pulse points 279–281
 - disk
 - Disc Util % 281
 - Disk Average Wait Time 280
 - Disk I/O Rate/second 281
 - Disk Queue Length 281
 - memory
 - Average Page Residence 280
 - Page Out Rate/second 280
 - Page Scan Rate 280
 - Swap Out Rate/second 280
 - network
 - Collision % 281
 - Defer % 281
 - processor
 - CPU Busy % 279
 - Queue Busy % 279
 - Run Queue Average 280
 - pulse points file configuration 76–80
- Pulse points options
 - commands
 - display CPU stats 61
 - display disk I/O stats 62
 - display memory stats 62
 - display miscellaneous stats 62
 - display network stats 62
 - submenu screen 60
- pwsalias file 18
- pwsitems file 18

R

- Raw I/O 291
- Real time 288
- reprtdef file 17
- rpt file 19

S

- Screen refresh interval
 - setting the interval length 42
 - updating the interval data 43
- Security information 19
- Service time 291
- Setup procedures
 - establishing workload groups 23
 - creating a workload definition file 24
 - identifying and characterizing workloads 24
 - setting the environment variables 21
 - setting custom PATH variables 22
 - setting localization variables 23
 - setting the PATH variable 22
 - setting the TERM variable 22
- SL files 19, 219
- SLLOGCAT file 19
- SNMP traps 73–74
- Swap Summary
 - See MVHOST Swap Summary
- System Configuration Summary
 - See MVHOST System Configuration Summary
- System I/O 291
- System name 86
- System Table Summary
 - See MVHOST System Table Summary
- System time 288

T

Technical Support 5

Terminal display options

commands

filter getty processes from terminal
display 68

terminal sort option 68

submenu screen 66

Terminal Summary

See MVHOST Terminal Summary

Think time 292

Time slice 292

Transactions 292

Trap 288

Trap time 288

U

Unlockable memory 290

User display options

commands

CPU percentage required for user display 64

display users sorted in ascending order 66

maximum number of users to display 66

user login filter 64

user sort option 65

submenu screen 63

User I/O 291

User Summary

See MVHOST User Summary

User time 288

V

Version number 86

Virtual memory I/O 291

VM I/O 290

W

Wait state 292

Wait state codes

CPU 292

DFLT 293

JOB 292

KFLT 293

OTHR 293

PRI 293

TFLT 293

ULCK 293

Wait States

See also the Index of Data Items

definitions 283–284

overview 283

Wait time 288, 291

workdefs file 17

Workloads

characterizing workloads 24

creating a workload definition file

workload configuration guidelines 26

workload definition requirements 25

default workload groups

BATCH 25

DAEMON 25

DEFAULT 25

INTERACT 25

establishing workload groups 23

identifying workloads 24

workload group definition file 24

workload groups 25

