



User's Guide

Meta-View Performance Manager

Meta-View Agent and Host for Linux

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

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META-VIEW AGENT AND HOST FOR LINUX

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 Linux comprises the following components:

1 **Meta-View Agent for Linux**

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 Linux, 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 Linux**

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 Linux 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 Linux

The components of Meta-View that reside on the server are Meta-View Agent and Host for Linux. 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 289.

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 components 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 Linux, see "Installation and Setup for Linux" 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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- 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 Linux 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 Linux 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 Linux

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

To install Meta-View Agent and Host for Linux:

- 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 If the CD-ROM is not mounted, mount it manually:

```
mount /dev/cdrom /mnt/cdrom
```

- 4 Consult the README.txt file to determine current package file names applicable to this installation.
- 5 Now change to the CD-ROM directory by typing :

```
cd /mnt/cdrom/Meta-View_Agent/Linux
```

- 6 Install the software using this command:

```
rpm -Uvh metaview*.rpm
```

Please see the README.txt file to determine the system requirements for the Meta-View version you are installing.

The rpm command (above) executes the following tasks:

- Installs the Meta-View Agent and Host for Linux application in /opt/lund.
- Installs the configuration files in /opt/lund/newcfg.
- Copies non-duplicate files from /opt/lund/newcfg to /etc/opt/lund (any duplicate files that already exist in /etc/opt/lps will not be overwritten).
- Creates the lund group, if it does not exist already.
- Installs the metaview.sh file in /etc/profile.d/. This file sets the environment variables:
 - LUND_ETC_PATH

- LUND_OPT_PATH
 - LUND_VAR_PATH
 - LUND_GROUP
 - Installs man pages in /usr/man.
- 7 Congratulations! Meta-View Agent and Host for Linux are now installed and ready to run! Please continue with the Startup section, below.

Startup

To run the Meta-View Performance Manager for Linux 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 "mvdattad" data daemon, the interactive "mvhost" program, and the "mvlogx" historical performance data extraction utility from the command line. For example:

```
$ mvlogd -c
$ mvdattad
$ mvhost
$ mvlogx
```



NOTE Before viewing system performance data with the Meta-View Web or Alert clients, both the mvlogd and mvdattad 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.

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 10.

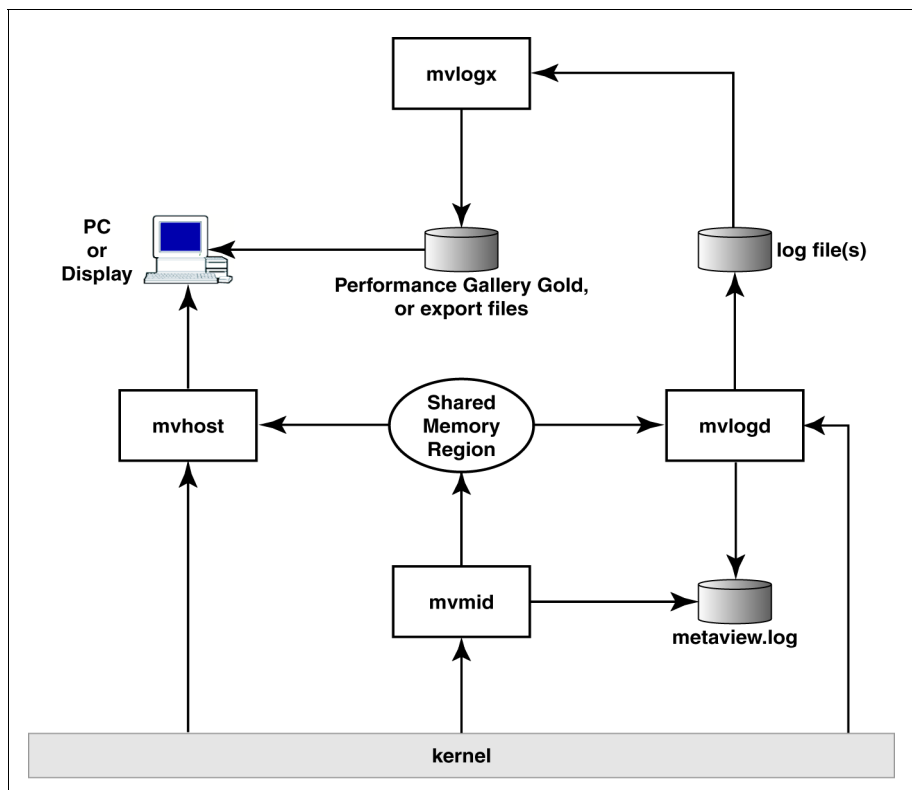


Figure 3.1 Meta-View Performance Manager for Linux relationships between key processes and files

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 202) 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.
	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.
	mvdatad	A daemon that creates data performance files.
	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)).
	mvrcrom	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.
	logxhelp	The MVLOGX online help file.
	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 kiclean 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” on page 17.

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=tty0p2, 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.04f kodkod.lund. MON, 18 JUL 2005, 15:08 E: 01:14:46 I: 01:00
----- GLOBAL -----
CPU%      2  10  20  30  40  50  60  70  80  90 100
SwOut/s   0
IO/s
----- PROCESS SUMMARY -----
PID  Name      User Name  TTY      CPU%  Nice  Pri  RSS/Size  State
20503 0          rodicap   ---      <      0    15  1620/1644  SLEEP
20544 mvhost    rodicap   pts/0    0.5    -20   0   7372/7372  SLEEP
17466 mvmid      root      ---      2.4    RT    0   8768/8768  RUN
----- WORKLOAD SUMMARY -----
Num      Name      CPU %      User CPU %
1        INTERACT  0.5[ 1.1]  65.5[43.2]
2        BATCH    0[ 0]      0[ 0]
3        DAEMON    2.4[ 2.6]  39.3[44.4]
4        DEFAULT   0[ 0]      0[ 0]
----- SYSTEM PERFORMANCE ADVICE -----
The CPU was used a total of 2.8 of its capacity during this interval <CI01>
This interval's 'hog' process is (PID 17466) with 2.4% of the CPU <PI01>
getattr percent indicates attribute cache problems on NFS client(s) <NE02>

Enter command:
UPDATE  RESET  SCREEN  HELP  MORE  FREEZE  PRINT  EXIT

```

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 33, then described in detail in Chapters 10 through 36.

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 "Display cumulative stats" on page 39.
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                   F - Process file usage
  M - Process memory usage             W - Workload detail
  Z - Hog process zoom

Action Keys:
  u - Update interval data             r - Reset totals to zero
  p - Print screen                     f - Toggle update intervals on/off
  R - Add a new Oracle instance        T - Delete an Oracle instance

Other:
  H - Main on-line help                h - Context sensitive help
  o - Main option menu                 ? - Command help (this screen)
  ^L - Refresh 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 39.

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 40.
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
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.

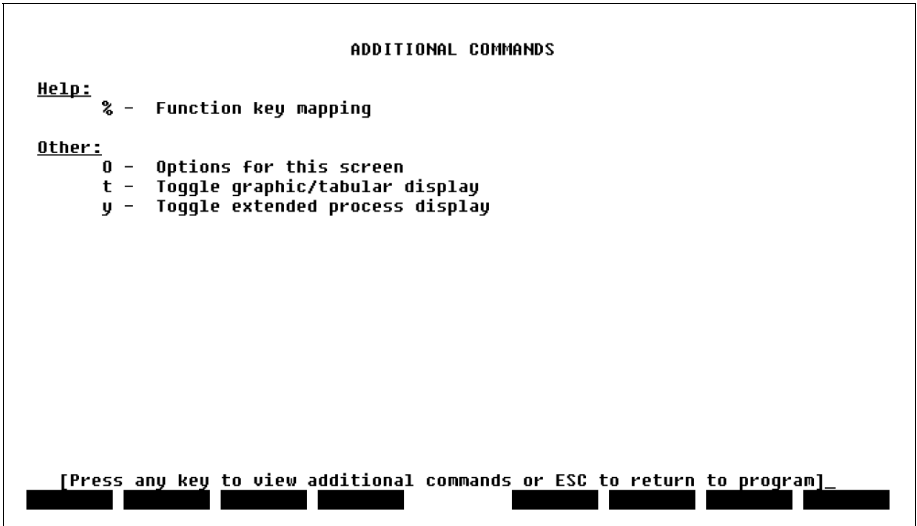


Figure 6.2 MVHOST Additional Commands screen (example)

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 Configuration Commands

Table 6.6 *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 6.7 *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 6.8 *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.

Key	Command	Description
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               y System Configuration
d Disk I/O Summary             p Pulse Points
r Disk Controller I/O Summary  k Workload Definitions
                                P Process Detail
s File System Space Summary    F Process File Usage
l Network Summary              M Process Memory Regions
n NFS Summary                  W Workload Detail
w Swap Summary

                                O Oracle Main Screen
                                L Oracle Detail - Latches
                                A Oracle Detail - Database
                                N Oracle Detail - Memory and Network
                                K Oracle Detail - Rollback Segments

                                C Oracle Detail - Cache
                                E Oracle Detail - Events
                                B Oracle Detail - DBWR
                                S Oracle Detail - Datafiles

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 81.
c	CPU Summary	Reports the general state of one or more CPUs. See "MVHOST CPU Summary" on page 103.
m	Memory Summary	Provides a more detailed look at memory performance data. See "MVHOST Memory Summary" on page 109.
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 113.
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 117.
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 119.
l	Network Summary	Displays network performance information, including protocol data and network interface information. See "MVHOST Network Summary" on page 121.

Key	Screen Title	Description
n	NFS Summary	Provides information about the Network File System (NFS). See “MVHOST NFS Summary” on page 125.
w	Swap Summary	Provides information on system swap space utilization. See “MVHOST Swap Summary” on page 135.
u	User Summary	Reveals how each user is utilizing system resources. See “MVHOST User Summary” on page 137.
t	Terminal Summary	Displays information about the activity of the individual terminals. See “MVHOST Terminal Summary” on page 139.
y	System Configuration	Shows significant system configuration parameters. See “MVHOST System Configuration Summary” on page 141.
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 147.
k	Workload Definitions	Displays the application workload definitions (workdefs) file. See “MVHOST Workload Definitions” on page 149.
P	Process Detail	Displays the performance of one process in detail. See “MVHOST Process Detail” on page 151.
F	Process File Usage	Lists all of the files currently accessed by a process. See “MVHOST Process File Usage” on page 155.
M	Process Memory Regions	Displays information about the process’ memory and virtual memory address space usage. See “MVHOST Process Memory Regions” on page 159.
W	Workload Detail	Provides detailed information about a specific workload. See “MVHOST Workload Detail” on page 163.

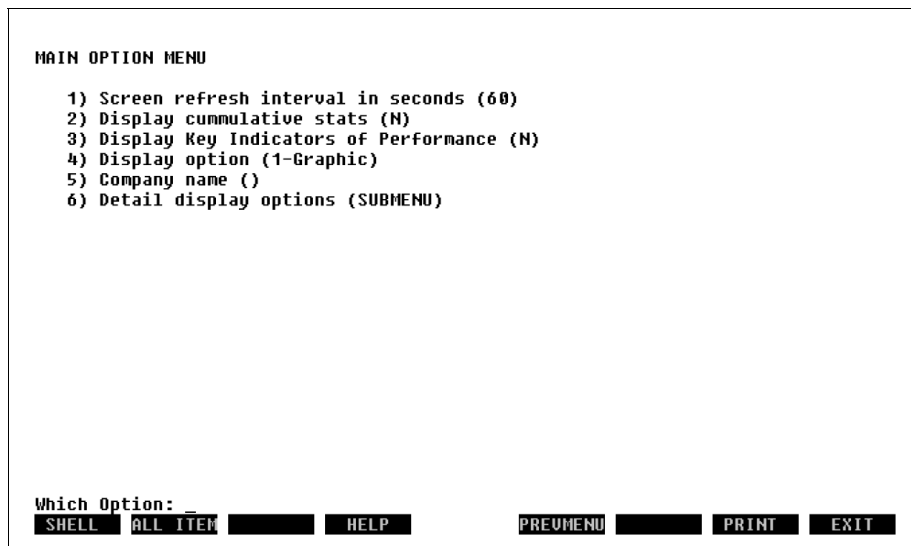
Key	Screen Title	Description
O	Oracle Main	Lists all Oracle instances, and shows some important metrics for each, as well as some aggregate statistics (summed over all instances). See “MVHOST Oracle Main” on page 167.
L	Oracle Detail Latches	Provides latches statistics. See “MVHOST Oracle Detail Latches” on page 171.
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 175.
N	Oracle Detail Mem and Net	Contains statistics about memory allocation and network transfers. See “MVHOST Oracle Detail Memory and Network” on page 179.
K	Oracle Detail Rollback	Provides statistics about rollback segments. See “MVHOST Oracle Detail Rollback Segments” on page 183.
C	Oracle Detail Cache	Displays the most important statistics related to Oracle cache management. See “MVHOST Oracle Detail Cache” on page 185.
E	Oracle Detail Events	Shows statistics related to database events. See “MVHOST Oracle Detail Events” on page 191.
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 195.
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 199.

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: _
SHELL ALL ITEM HELP PREVMENU PRINT EXIT
```

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 10 seconds.

```
Meta-View D.04f kodkod.lund. MON, 18 JUL 2005, 14:55 E: 01:02:06 I: 00:10
```

Figure 8.2 *MVHOST banner: current interval (I: 00:10)*

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 35 seconds (I: 00:35) of the interval. The interval data will be updated again according to the refresh interval rate set in the MVHOST Main Options Menu.



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.

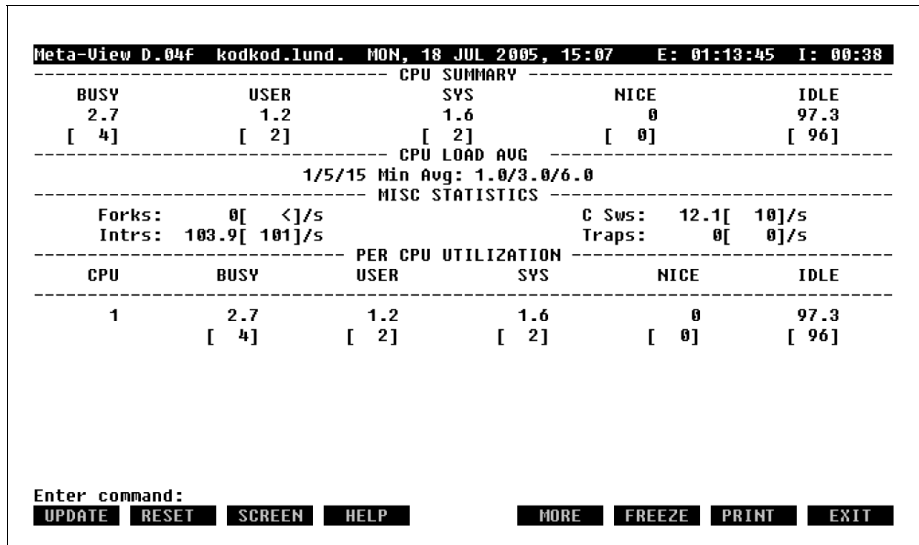


Figure 8.4 MVHOST Disk I/O Summary screen (tabular display) with cumulative stats

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 39).

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.04f kodkod.lund. MON, 18 JUL 2005, 15:09 E: 01:15:55 I: 01:09
Total Busy: 2.8% Used mem : 97.5% Page Ins: 0

```

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 85.

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.

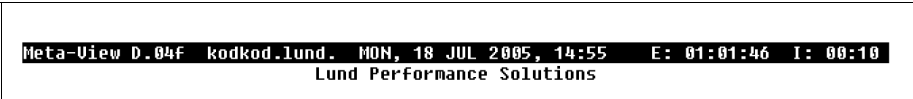


Figure 8.6 MVHOST Company Name example (Lund Performance Solutions)

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."

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 Enter.

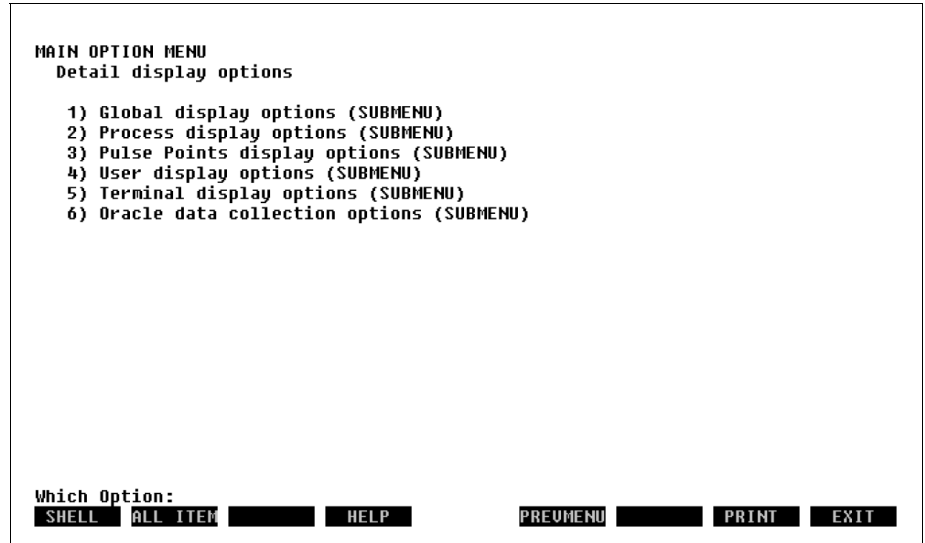


Figure 8.7 *MVHOST Detail display options submenu screen*

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)
See "Global display options Submenu Screen" on page 44.
 - Process display options (SUBMENU)
See "Process display options Submenu Screen" on page 50.
 - Pulse Points display options (SUBMENU)
See "Pulse Points display options" on page 55.
 - User display options (SUBMENU)
See "User Display Options" on page 58.
 - Terminal display options (SUBMENU)
See "Terminal Display Options" on page 62.
- 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 (Y)
    10) Display only active workloads (N)
    --- CPU percentage required for workload display

Which Option:
SHELL ALL ITEM HELP PREUMENU PRINT EXIT
  
```

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.

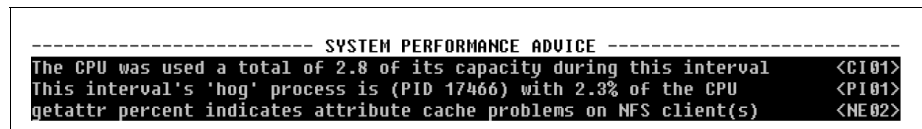


Figure 8.9 *MVHOST Global Summary screen: SYSTEM PERFORMANCE ADVICE messages*

Advice messages are discussed further in “SYSTEM PERFORMANCE ADVICE” on page 98.

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: 3.5[4]				Capture Ratio: 0.6[<]			
User: 1.2[2]	Sys: 2.3[2]	1/5/15 Load Avg%:		10 11 9.0			
Nice: 0[0]	Idle: 96.5[96]						

Figure 8.10 *MVHOST Global Summary screen: CPU statistics*

Global CPU statistics are discussed in “CPU UTILIZATION” on page 93 and “CPU MISC” on page 94.

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 -----				-----			
Page Outs: 4.3[3]/s	Page Ins: 0[<]/s	Minor Pg Faults: 0[0]/s					
Swap Outs: 0[0]/s	Swap Ins: 0[0]/s	Major Pg Faults: 0[0]/s					

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

Global memory statistics are discussed in “MEM/VM” on page 95.

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:	76	#Wait I/O:	0	Transactions:	0[0]/s
#Active:	1	#Active:	2	#Swap:	0		

Figure 8.12 MVHOST Global Summary screen: MISC statistics

Global miscellaneous statistics are discussed further in “MISC” on page 96.

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	I0/s	I0%	Qlen	|	Disk	I0/s	I0%	Qlen
hda	0	100	0	|				

Figure 8.13 MVHOST Global Summary screen: DISK statistics

Global disk statistics are discussed further in “DISK” on page 97.

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	State
20503	0	rodicap		---	0.1	0	15	1620/1644	SLEEP
20544	mvhost	rodicap		pts/0	0.6	-20	0	7372/7372	SLEEP
17466	munid	root		---	2.2	RT	0	8768/8768	RUN

Figure 8.14 *MVHOST Global Summary screen: PROCESS SUMMARY*

Global process statistics are discussed further in "PROCESS SUMMARY" on page 87.

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 %
1	INTERACT	0.6	[1.2]	62.5 [42.8]
2	BATCH	0	[0]	0 [0]
3	DAEMON	2.6	[2.6]	45.0 [44.6]
4	DEFAULT	0	[0]	0 [0]

Figure 8.15 *MVHOST Global Summary screen: WORKLOAD SUMMARY*

Workload statistics are discussed further in “WORKLOAD SUMMARY” on page 92.

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 only active processes (Y)
    3) CPU percentage required for process display (.0)
    4) Display interactive processes (Y)
    5) Display non-interactive processes (Y)
    6) Display processes which have died (Y)
    7) Process logon filter (.* )
    8) Process sort option (4-CPU time)
    9) Display processes sorted in ascending order (Y)
    10) Maximum number of processes to display (0=ALL) (0)
  
```

Which Option: _

SHELL ALL ITEM

HELP

PREVMENU

PRINT

EXIT

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 PROCESS SUMMARY can be extended to provide an additional line of information for each process.

Headings

Process Line

Extended Process Line

PROCESS SUMMARY									
PID	Name	User	Name	TTY	CPU%	Nice	Pri	RSS/Size	State
	Group Name					nswap			CPU(ms)
	DAEMON	-				0			10
20501	sshd: rodicap [priv]	root		---	0.7	0	15	1600/1632	SLEEP
	DAEMON		schedule_timeout			0			70
20544	mvhost	rodicap		pts/0	1.7	-20	0	7372/7372	RUN
	INTERACT	-				0			170
17466	mmid	root		---	2.3	RT	0	8760/8760	RUN
	DAEMON	-				0			240
20503	0	rodicap		---	12.4	0	16	1620/1644	SLEEP
	DAEMON		schedule_timeout			0			1270

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

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 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-Priority	Sort by process priority.	Pri

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 8.18).

```

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:

SHELL ALL ITEM HELP PREMENU PRINT EXIT

Figure 8.18 *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.04f kodkod.lund. TUE, 19 JUL 2005, 03:41 E: 00:52:23 I: 29:50					
	PULSE POINTS					
	Indicator	|	Green	|	Yellow	| Red | Comments
CPU Statistics	--- CPU ---					
	CPU Busy %		2.9[		3.1]	
	Run-Q Average		0[		0]	
Memory Stats	--- Memory ---					
	Page Out Rate		0.6[		1.2]	/sec
	Swap Out Rate		0[		0]	/sec
Disk I/O Stats	--- Disk I/O ---					
	Average Wait Time		0.3[		1.9]	System Wide
	Average Q-Length		0[		0]	System Wide
	Disk Utilization %		0[		0]	System Wide
	Disk I/O Rate (/sec)		0[		0]	System Wide
Network Stats	--- Network ---					
	Defer %		0[		0]	System Wide
	Collision %		0[		0]	System Wide
	Enter command:					
	UPDATE	RESET	SCREEN	HELP	MORE	FREEZE PRINT EXIT

Figure 8.19 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 8.19).

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 8.19 on page 57.

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 8.19 on page 57.)

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 8.20).

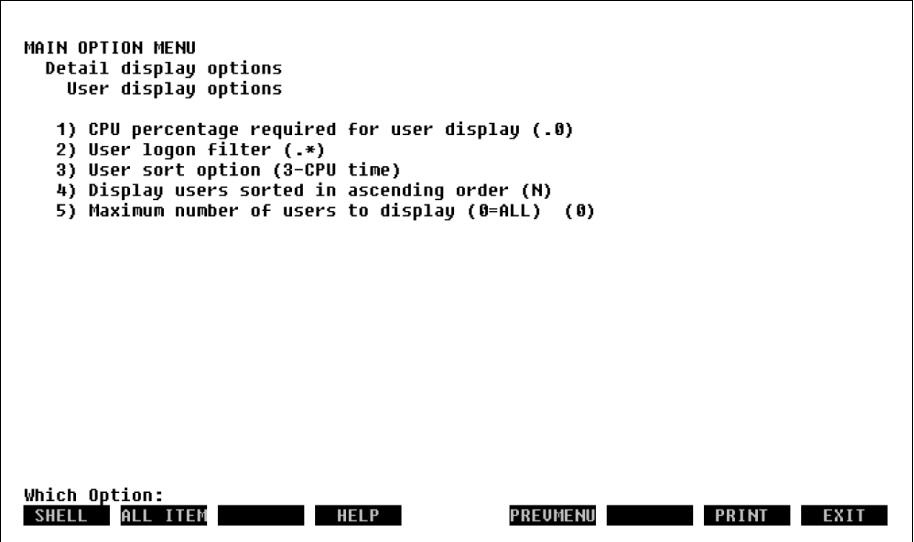


Figure 8.20 *MVHOST User display options submenu screen*

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 137).

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-Process	Sort users by process name.
5-Virtual Memory VSS / (KB)	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 8.21).

```

MAIN OPTION MENU
  Detail display options
    Terminal display options

    1) Filter getty processes from terminal display (V)
    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:
SHELL  ALL ITEM  HELP  PREVMENU  PRINT  EXIT
  
```

Figure 8.21 *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 139).

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.

Display terminals sorted in ascending order

This setting determines whether the sort order for the sort option applied in the previous option is ascending or descending. By default, the terminals will be sorted and displayed in descending order.

Displaying Terminals in Ascending Order

To sort and display terminals in ascending order:

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

Maximum number of terminals to display

This setting determines the maximum number of terminals to be listed in the Terminal 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 Terminal Summary screen:

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

Oracle Data Collection Options

Oracle data collection options Submenu Screen

To access the Oracle data collection 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 Oracle data collection options and press the Enter key. The Oracle data collection options submenu screen will display (Figure 8.22).

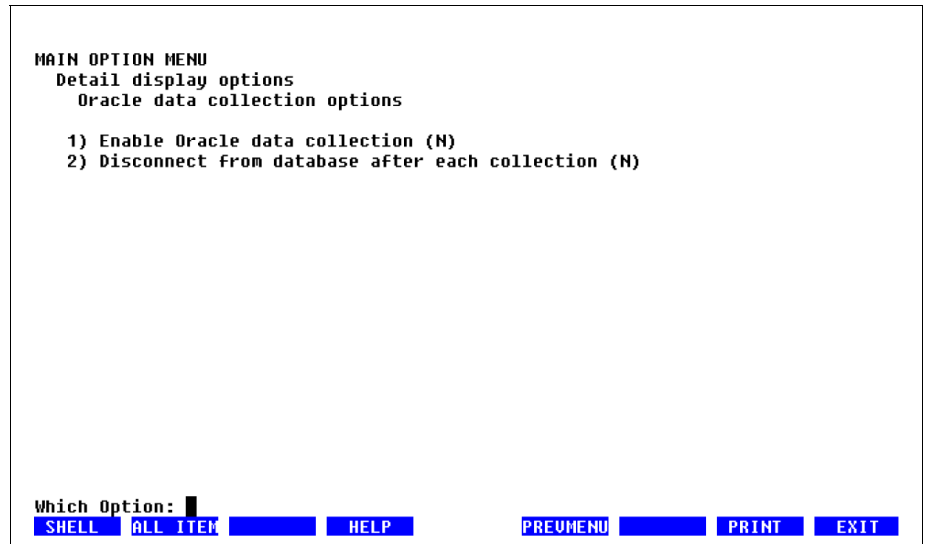


Figure 8.22 *MVHOST Oracle data collection options submenu screen*

Oracle data collection option Commands

The purpose of the Oracle data collection options is to enable or disable Oracle data collection and either connect or disconnect from the Oracle database after each collection.

To modify an Oracle data collection option, either temporarily or permanently:

- 1 Type the option command key from the Oracle data collection 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 Oracle data collection 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.

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 69. 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 Ipstrap 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 45.
 - For instructions to enable advice messages in MVLOGD, see “Setting Advanced Configuration Parameters” on page 203.



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 147.

#####					
CPU Pulse Points Indicator Lines	—— \$PP_CPU	CPU-BUSY%	"CPU Busy %"	60,85	" "
	\$PP_CPU	CPU-QUEUE-LEN	"Run-Q Average"	5,10	" "
Memory Pulse Points Indicator Lines	—— \$PP_MEMORY	VM-PAGE-OUT-RATE	"Page Out Rate"	15,20	"/sec"
	\$PP_MEMORY	BC-RHIT%	"Read Hit %"	90,80	" "
Disk Pulse Points Indicator Lines	—— \$PP_DISC	DISC-AVG-WAIT-TIME	"Average Wait Time"	30,40	"System Wide"
	\$PP_DISC	DISC-QUEUE-LEN	"Average Q-Length"	1, 3	"System Wide"
	\$PP_DISC	DISC-UTIL%	"Disk Utilization %"	40,60	"System Wide"
	\$PP_DISC	DISC-I/O-RATE	"Disk I/O Rate (/sec)"	40,60	"System Wide"
Network 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.04F kodkod.lund. TUE, 19 JUL 2005, 03:41 E: 00:52:23 I: 29:50				
PULSE POINTS				
Indicator	Green	Yellow	Red	Comments
--- CPU ---				
CPU Busy %	2.9	3.1		
Run-Q Average	0	0		
--- Memory ---				
Page Out Rate	0.6	1.2		/sec
Swap Out Rate	0	0		/sec
--- Disk I/O ---				
Average Wait Time	0.3	1.9		System Wide
Average Q-Length	0	0		System Wide
Disk Utilization %	0	0		System Wide
Disk I/O Rate (/sec)	0	0		System Wide
--- Network ---				
Defer %	0	0		System Wide
Collision %	0	0		System Wide
Enter command:				
UPDATE	RESET	SCREEN	HELP	MORE FREEZE PRINT EXIT

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-PAGE-OUT-RATE "Page Out Rate" 15,20 "/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-BUSY%, the indicator line would be:

```
$PP_CPU      CPU-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-PAGE-OUT-RATE      "Page Out Rate"      15,20      "/sec"
```

"Page Out Rate" is the `<label>` that describes the `<variable>`, VM-PAGE-OUT-RATE.

- 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 77.

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.

- 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.

- 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.

Example 1

```
$PP_CPU    CPU-BUSY%           "CPU Busy %"           60,85      ""
```

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

- CPU-BUSY% data values less than 60 will appear in the Green column in the Pulse Points screen.
- CPU-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-BUSY% data values greater than 85 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-PAGE-OUT-RATE    "Page Out Rate"           15,20      "/sec"
```

The comment, "/sec", tells the user the Page Out Rate is calculated in seconds.

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 85.

```
# Var_name          row,column,width
CPU-BUSY%           ROW,13,WIDTH
VM-USED-MEM%        ROW,41,WIDTH
VM-SWAP-OUTS        ROW,68,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.

Command	Description
\$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.

Graphical Format

Figure 10.1 shows an example of the Global Summary screen in graphical format.

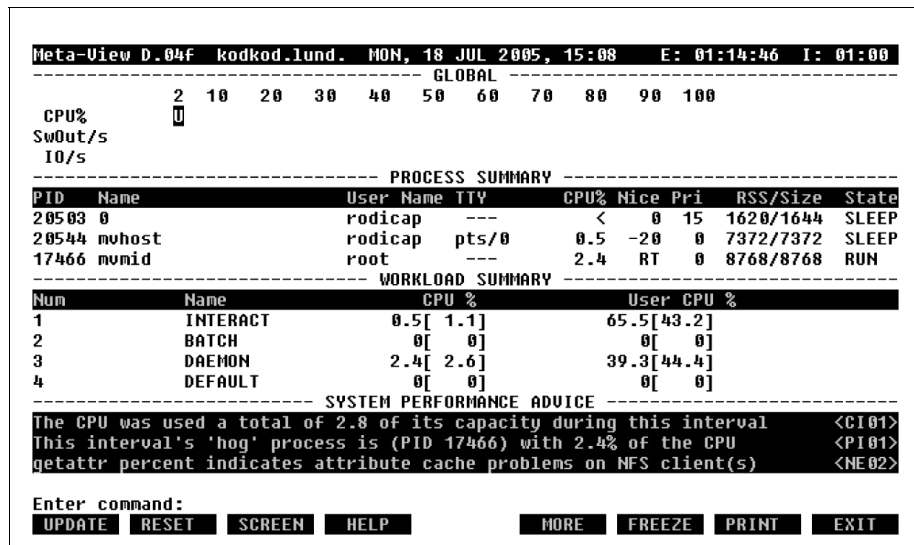


Figure 10.1 MVHOST Global Summary screen (graphical format)

The graphical Global Summary screen can show the following information:

- The MVHOST banner
- The Key Indicators of Performance (KIP) line (optional)
- GLOBAL statistics
- PROCESS SUMMARY (optional)
- WORKLOAD SUMMARY (optional)
- SYSTEM PERFORMANCE ADVICE messages (optional)

Each of these components is described in “Global Summary Screen Display Items” on page 84.

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.

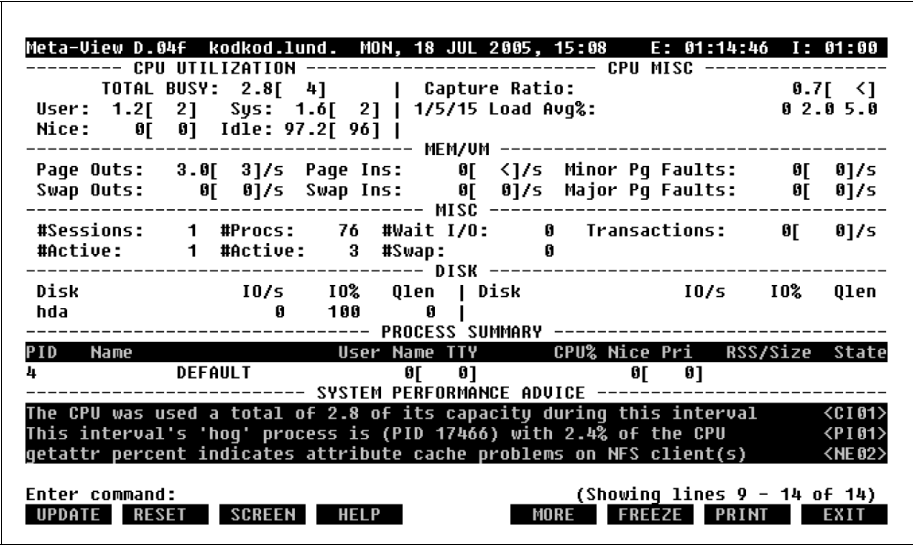


Figure 10.2 MVHOST Global Summary screen (tabular format)

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 84.

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.04f. 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 kodkod.lund.com.

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 39.

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 38.

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.

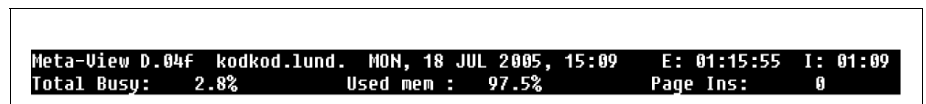


Figure 10.4 *MVHOST Global Summary screen: Key Indicators of Performance (KIP) line*

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

Used mem

The Used mem value displayed in the KIP line is the percentage of used memory.

Swap Outs

The Swap Outs value displayed in the KIP line is the number of processes swapped out per second.



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 78.

GLOBAL

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

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.

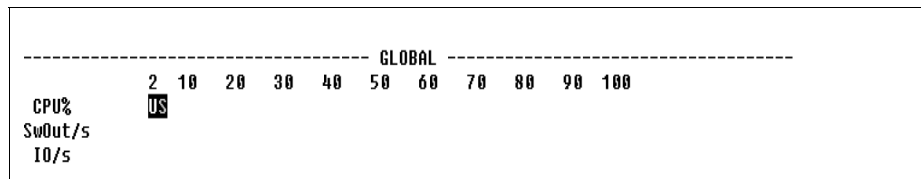


Figure 10.5 *MVHOST Global Summary screen: GLOBAL (left column)*

Each letter-width space on the CPU% bar graph represents approximately 2 percent of the CPUs time for the current interval. The code letters correspond to the CPU activities described in Table

10.1. Where a block of spaces on the bar graph is bordered by two instances of one code letter (e.g., S...S), that corresponding activity (e.g., executing system calls and code) would account for the CPU% range bordered by the two letters.

For example, the CPU% bar shown in Figure 10.5 indicates the following:

- 2 percent of CPU time was spent executing user code.
- 2 percent of CPU time was spent executing system calls and code (in kernel mode).

The code letters used in the CPU% bar graph are described in Table 10.1.

Table 10.1 CPU% states or activities

Code	Statistic	Description
S	System	The percentage of CPU time spent executing system calls and code (in kernel mode). This does not include time spent performing context switches or idle time.
U	User Mode	The percentage of CPU time spent executing user program code with a nice value of 20 and without any special priority .
W	Wait	The amount of idle time the CPU spent waiting for a I/O operation to complete.

SwOut/s

The SwOut/s value represents the number of processes swapped out per second.

IO/s

The IO/s bar represents the disk I/O rate. This is the number of physical reads and writes per second for each type of physical I/O. Similarly to the CPU% bar (see “CPU%” on page 86), a specific code letter in the bar graph tell you how many of physical I/Os were accumulated in the current interval. Each of these code letters are listed and scribed in Table 10.2.

Table 10.2 Physical I/Os

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

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 151.

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 48.

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

- Display or suppress the extended process line.
- Display all processes or only the active processes.
- Set the CPU percentage required for process display.
- Display or suppress interactive processes.
- Display or suppress non-interactive 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 50.

PROCESS SUMMARY Data Items

PROCESS SUMMARY									
PID	Name	User	Name	TTY	CPU%	Nice	Pri	RSS/Size	State
20503	0	rodicap		---	0.1	0	15	1620/1644	SLEEP
20544	mvhost	rodicap		pts/0	0.6	-20	0	7372/7372	SLEEP
17466	nmuid	root		---	2.2	RT	0	8768/8768	RUN

Figure 10.6 MVHOST Global Summary screen: PROCESS SUMMARY

The contents of each PROCESS SUMMARY column (shown in Figure 10.6) are described in the next table.

Table 10.3 *MVHOST Process Summary data items*

Data Item	Description
PID	The process identification number that uniquely identifies each process running on the system.
Name	The process name.
User Name	The name of the user that owns (or creates) each process running on the system.
TTY	"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).
CPU%	The CPU% column shows the percentage of system-wide CPU time that was used by each process. This is normalized for multiple-processors. In other words, all CPU% values added together should never exceed 100 (percent).
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>

Data Item	Description
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>
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>
State	<p>The state the current state of the process. Possible values are:</p> <ul style="list-style-type: none"> RUN - running on the CPU; SLEEP - the process is waiting for a resource or event (sleeping); USLEP - the process is waiting for a resource or event, but it cannot be preempted by the scheduler (uninterruptible sleeping); STOP - the process is suspended because of the job control it is being traced; ZOMB - the process is dead, but still contains a table process entry; SWAP - the process is swapped.

Extended Process Statistics Lines

The PROCESS SUMMARY portion of the Global Summary screen can be extended to show the percentage of time each process spent in one or more wait states during the current interval. This additional information is displayed below each corresponding process statistics line in an extended process line.

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

PROCESS SUMMARY									
PID	Name	User	Name	TTY	CPU%	Nice	Pri	RSS/Size	State
Group	Name	wchan			nswap				CPU(ms)
20501	DAEMON	-			0				10
20501	sshd: rodicap [priv]	root	---		0.7	0	15	1608/1632	SLEEP
	DAEMON	schedule_timeout			0				70
20544	mvhost	rodicap	pts/0		1.7	-20	0	7372/7372	RUN
	INTERACT	-			0				170
17466	mumid	root	---		2.3	RT	0	8768/8768	RUN
	DAEMON	-			0				240
20503	0	rodicap	---		12.4	0	16	1620/1644	SLEEP
	DAEMON	schedule_timeout			0				1270

Figure 10.7 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 10.4.

Table 10.4 Extended process column headings

Heading	Description
Group Name	The name of the group that owns the process.
wchan	The address at which the process is sleeping.
nswap	The number of times the process was swapped in the current interval.
CPU (ms)	The total CPU time in milliseconds used by the process during the current interval.

For example, the extended process line for PID 20501 shown in Figure 10.7 provides the following information:

- Process 20501 is in the DAEMON workload group.
- Process was swapped 0 (zero) times.
- Process consumed 70 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 151.

WORKLOAD SUMMARY

The MVHOST program is able to track process statistics by application workloads. Workloads was discussed in “Workload Groups” on page 21. 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 %
1	INTERACT	0.6[1.2]	62.5[42.8]
2	BATCH	0[0]	0[0]
3	DAEMON	2.6[2.6]	45.0[44.6]
4	DEFAULT	0[0]	0[0]

Figure 10.8 *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 10.5 *MVHOST Workload Summary data items*

Data Item	Description
Num	A unique sequential identifier assigned to each workload.
Name	The name assigned to each workload as it appears in the workload definition file.
CPU%	The CPU% column represents the percentage of the CPU time used by each workload during the current interval and the elapsed interval.
User CPU%	The percentage of system-wide I/Os performed by this workload.

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.

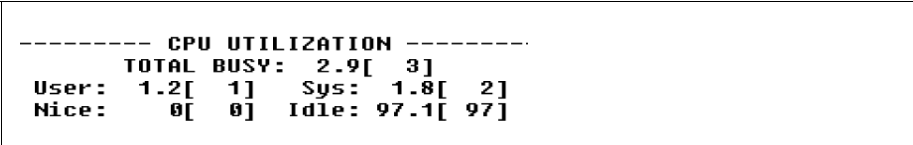


Figure 10.9 MVHOST Global Summary screen: CPU UTILIZATION

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 10.6 MVHOST CPU Utilization data items

Data Item	Description
TOTAL BUSY	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 and Sys values reported in the same area of the Global Summary screen.
User	The percentage of time the CPU spent executing in user mode (nice <=0).
Sys	<div>The percentage of time the CPU spent in system (kernel) mode.</div> <div>Performance Tip 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.</div>
Nice	The amount of time the CPU spent in user mode (nice > 0).

Data Item	Description
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:	0.6[<]
1/5/15 Load Avg%:	1.0 3.0 2.0

Figure 10.10 *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 10.7.

Table 10.7 MVHOST CPU Miscellaneous data items

Data Item	Description
Capture Ratio	<p>The Capture Ratio value is calculated as:</p> $\text{Capture Ratio} = (\text{User} + \text{Nice}) / \text{Sys}$ <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>
1/5/15 Min RunQ Avg	The 5/15 Min RunQ Avg values show the load average in the last minute, in the last five minutes and the last 15 minutes, respectively.

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 109.

MEM/VM					
Page Outs:	4.3[3]/s	Page Ins:	0[<]/s	Minor Pg Faults:	0[0]/s
Swap Outs:	0[0]/s	Swap Ins:	0[0]/s	Major Pg Faults:	0[0]/s

Figure 10.11 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 10.8.

Table 10.8 MVHOST Memory/Virtual Memory data items

Data Item	Description
Page Outs	The number of page outs per second.

Data Item	Description
Swap Outs	The number of processes swapped out per second.
Page Ins	The number of page ins per second.
Swap Ins	The number of processes swapped in per second.
Minor Pg Faults	The number of minor page faults per second.
Major Pg Faults	The number of major page faults 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 state, and number of transactions. These statistics provide a good overview of the system's general workload.

----- MISC -----					
#Sessions:	1	#Procs:	76	#Wait I/O:	0 Transactions: 0[0]/s
#Active:	1	#Active:	2	#Swap:	0

Figure 10.12 *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 10.9 *MVHOST Miscellaneous data items*

Data Item	Description
#Sessions	The current number of sessions logged on the system.

Data Item	Description
#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 process death.

DISK

The DISK portion of the tabular Global Summary screen presents a few statistics for each configured disk drive on the system (see Figure 10.13). 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	I0/s	I0%	Qlen	|	Disk	I0/s	I0%	Qlen
hda	0	100	0	|				

Figure 10.13 *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 10.10 *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 QLen value represents 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.

<pre> ----- SYSTEM PERFORMANCE ADVICE ----- The CPU was used a total of 2.8 of its capacity during this interval <CI01> This interval's 'hog' process is (PID 17466) with 2.3% of the CPU <PI01> getattr percent indicates attribute cache problems on NFS client(s) <NE02> </pre>

Figure 10.14 *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 99 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 67.

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 67.

<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.

<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.

<LE02> Defer percent indicates %s %s network bottleneck

Advice message LE02 is generated to alert the user when the defer percentage for the current interval is equal to or greater than 2 percent, which indicates a possible network bottleneck.

- A collision percentage equal to or greater than 2 and less than 10 during the current interval is HEAVY.
- A collision percentage equal to or greater than 10 percent is EXCESSIVE.

<ME03> Page out rate reveals %s %s memory load

Advice message ME03 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.

<NE01> Readlink percent indicates NFS mount w/excessive links, use loopback mnt

Advice message NE01 is generated to alert the user when the readlink percentage for the current interval is in the range 10-100.

<NE02> Getattr percent indicates attribute cache problems on NFS client(s)

Advice message NE02 is generated to alert the user when the getattr percentage for the current interval is in the range 60-100.

<NE03> Null percent indicates automounter timeout is too small on NFS client(s)

Advice message NE03 is generated to alert the user when the null percentage for the current interval is in the range 1-100.

<NE04> Write percent high, consider solution to speed-up disk writes (ie. NVRAM)

Advice message NE02 is generated to alert the user when the write percentage for the current interval is in the range 5-100.

<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 104 (next page) and “Tabular Format” on page 105.

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.

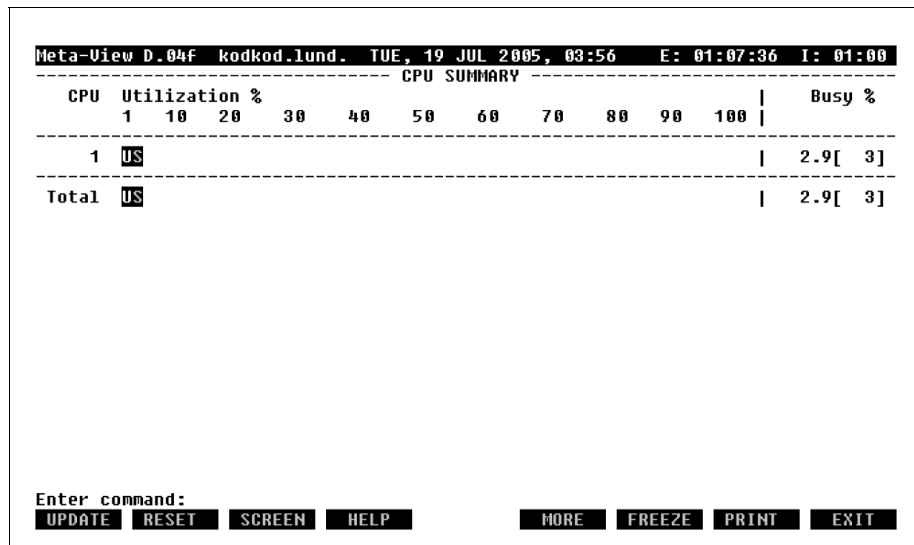


Figure 11.1 *MVHOST CPU Summary screen (graphical format)*

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 89.</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.04f kodkod.lund. TUE, 19 JUL 2005, 03:57 E: 01:08:36 I: 00:59
----- CPU SUMMARY -----
      BUSY      USER      SYS      NICE      IDLE
      3.2       1.4       1.9       0       96.8
    [ 3]      [ 1]      [ 2]      [ 0]      [ 97]
-----
              CPU LOAD AVG
          1/5/15 Min Avg: 2.0/3.0/2.0
----- MISC STATISTICS -----
Forks:      <[ <]/s      C Sws: 11.4[ 13]/s
Intrs: 102.9[ 103]/s      Traps: 0[ 0]/s
-----
      CPU      BUSY      USER      SYS      NICE      IDLE
-----
      1       3.2       1.4       1.9       0       96.8
          [ 3]      [ 1]      [ 2]      [ 0]      [ 97]
-----
Enter command:
[UPDATE] [RESET] [SCREEN] [HELP] [MORE] [FREEZE] [PRINT] [EXIT]

```

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 39. Each data item is described in the following table.

Table 11.2 MVHOST CPU Utilization 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 code with a nice value of 20 and without any special priority status.
SYS	The percentage of time the CPU spent in system (kernel) mode.
NICE	The percentage of time executing processes with a nice value in user mode.
IDLE	The percentage of time the CPU was not in use.

CPU LOAD AVG

The CPU LOAD AVG portion of the tabular CPU Summary screen contains the CPU run 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 CPU LOAD AVG data items*

Data Item	Description
1/5/15 Min Avg	The average number of processes in the run queue during the current 1-, 5-, and 15-minute periods, respectively.

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.
Intrs	The number of interrupts per second.
C Sws	The number of context switches per second.
Traps	The number of traps 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 106 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.04f kodkod.lund. TUE, 19 JUL 2005, 03:58 E: 01:09:36 I: 00:59
----- MEM/VM ALLOCATION -----
      Size      Used      Free      Shared      Buffers      Cached
Mem      126788k    123632k    3156k          0      19128k    64204k
-/+ buffers&cached      40300k    86488k
VM      648892k    179472k    469420k
----- PROC MEM STATUS -----
Loaded      Run      Sleep      Total      |      Swapped      Run      Sleep      Total
              1          86          87      |          0          0          0
----- PAGING -----
      In(/s)      Out(/s)      In(byte/s)      Out(byte/s)      #In      #Out
Pages      0[ <]      2.4[ 1]      0[ 20]      9845[ 5276]      0[ 20]      144[5380]
Swaps      0[ 0]      0[ 0]      0[ 0]      0[ 0]      0[ 0]      0[ 0]
Minor Pg Faults:      0[ 0]/s      Major Pg Faults:      0[ 0]/s

Enter command:
[UPDATE] [RESET] [SCREEN] [HELP] [MORE] [FREEZE] [PRINT] [EXIT]

```

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	Megabytes of RAM on the system.
	Used	Megabytes of RAM used by user processes.
	Free	Megabytes of unused RAM.
	Shared	Megabytes of shared RAM.
	Buffers	Megabytes of RAM in buffers.
	Cached	Megabytes of cached RAM
-/+ buffers & caches	Size	Not applicable.
	Used	Megabytes of memory used in buffers and cache by user processes.
	Free	Megabytes of unused memory from buffers and cache.
	Shared	Not applicable.
	Buffer	Not applicable.
	Cached	Not applicable.
VM	Size	Megabytes of virtual memory (swap space) configured on the system.
	Used	Megabytes of virtual memory used by user processes.
	Free	Megabytes of unused virtual memory.
	Shared	Not applicable.
	Buffer	Not applicable.
	Cached	Not applicable.

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
Loaded	Run	Number of processes in memory that are able to run.
	Sleep	Number of processes in memory that are sleeping.
	Total	Total number of processes in memory.
Swapped	Run	Number of processes in memory that have been swapped that are runnable.
	Sleep	Number of processes swapped that are not runnable.
	Total	Total number of processes swapped.

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
Pages	In (/s)	The number of page ins per second.
	Out (/s)	The number of page outs per second.
	In (byte/s)	The rate of page ins in bytes per second.
	Out (byte/s)	The rate of page outs in bytes per second.
	#In	The number of page ins.
	#Out	The number of page outs.

Data item		Description
Swaps	In (/s)	The number of swaps ins reads per second.
	Out (/s)	The number of swaps outs per second.
	In (byte/s)	The rate of bytes swapped in per second.
	Out (byte/s)	The rate of bytes swapped out per second.
	#In	The number of swap ins
	#Out	The number of swap outs.
Minor Pg Faults		The number of minor page faults per second.
Major Pg Faults		The number of major page faults per second.

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 114 (next page) and “Disk I/O Summary Screen Display Items” on page 114.

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.

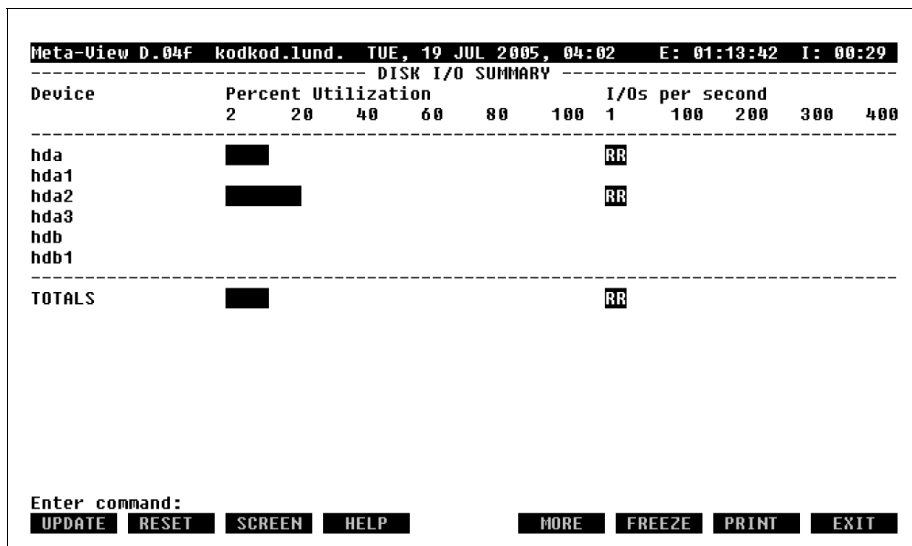


Figure 13.1 MVHOST Disk I/O Summary screen (graphical format)

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.

Tabular Format

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

Meta-View D.04F kodkod.lund. TUE, 19 JUL 2005, 04:02 E: 01:13:42 I: 00:29									
DISK I/O SUMMARY									
Dev	I/O%	Qlen	Util%	Avg Time (ms)		Rates (/s)		Avg Size (kb)	
				Wait	Serv	Read	Write	Read	Write
hda	100	1.0	12.4	34.7	4.5	24.2	4.0	8.0	23.0
hda1	0	0	0	0	0	0	0	0	0
hda2	100	1.0	21.2	34.7	7.7	24.2	4.0	8.0	23.0
hda3	0	0	0	0	0	0	0	0	0
hdb	0	0	0	0	0	0	0	0	0
hdb1	0	0	0	0	0	0	0	0	0
TOTALS	100	1.0	12.4	34.7	4.5	24.2	4.0	8.0	23.0
Enter command:									
UPDATE		RESET		SCREEN		HELP		MORE	
								FREEZE	
								PRINT	
								EXIT	

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.
Avg 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.
Avg 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.04f kodkod.lund. TUE, 19 JUL 2005, 04:03 E: 01:14:43 I: 00:30			
DISK CONTROLLER I/O SUMMARY			
Dev	I/O%	Physical Read/s	Physical Write/s
ide/c0	100	74.2	1.7
TOTALS	100	74.2	1.7

Enter command:

UPDATE RESET SCREEN HELP
 MORE FREEZE PRINT EXIT

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 the disk controller.
I/O%	The percentage of all disk I/Os on the system performed by each disk controller.
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	The TOTALS line sums up the activities of all disk controllers for the interval.

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.04f kodkod.lund. TUE, 19 JUL 2005, 04:03 E: 01:15:13 I: 00:30							
----- FILE SYSTEM SPACE SUMMARY -----							
File System	Block Frag Size/Size	Size	Free	Free(su)	Used%	Total Inodes	Free Inodes
/	4096/4096	7389m	476m	852m	88	960992b	794798b
/boot	1024/1024	30m	18m	20m	33	8032b	7986b
/ftp_files	4096/4096	75088m	63030m	66844m	11	9764k	9760k
Enter command:							
UPDATE		RESET		SCREEN		HELP	
MORE		FREEZE		PRINT		EXIT	

Figure 15.1 *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 15.1 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 15.1 *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.
Frag Size	The file system fragment size in bytes.
Size	The overall size of each file system in megabytes (m).
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.04f kodkod.lund. TUE, 19 JUL 2005, 04:04 E: 01:15:44 I: 00:30									
----- NETWORK SUMMARY -----									
Protocol	Packets	In/s	Packets	Out/s	Errors	In%	Errors	Out%	
IP	0.4[	1]	0.2[	1]	0[	0]	0[	0]	
TCP/IP	0.2[	1]	0.1[	1]	0[	0]	0[	0.18]	
ICMP	0[	0]	0[	0]	0[	0]	0[	0]	
UDP	0.1[	<]	0.1[	<]	0[	0]	N/A[	N/A]	
----- NETWORK INTERFACES -----									
Interf	Packets		Avg Packet	Size	Errors				
	In/s	Out/s	Recv	Sent	In%	Out%	Coll%	Defer%	Nocan
lo	0	0	<	<	0	0	0	0	0
eth0	0.2	0.1	117	158	0	0	0	0	0
eth1	0.3	0.1	84	1029	0	0	0	0	0
TOTALS	0.4	0.2	96	680	0	0	0	0	0

Enter command:									
UPDATE	RESET	SCREEN	HELP		MORE	FREEZE	PRINT	EXIT	

Figure 16.1 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 16.1 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 16.1 *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 16.2.

Table 16.2 *MVHOST NETWORK INTERFACES data items*

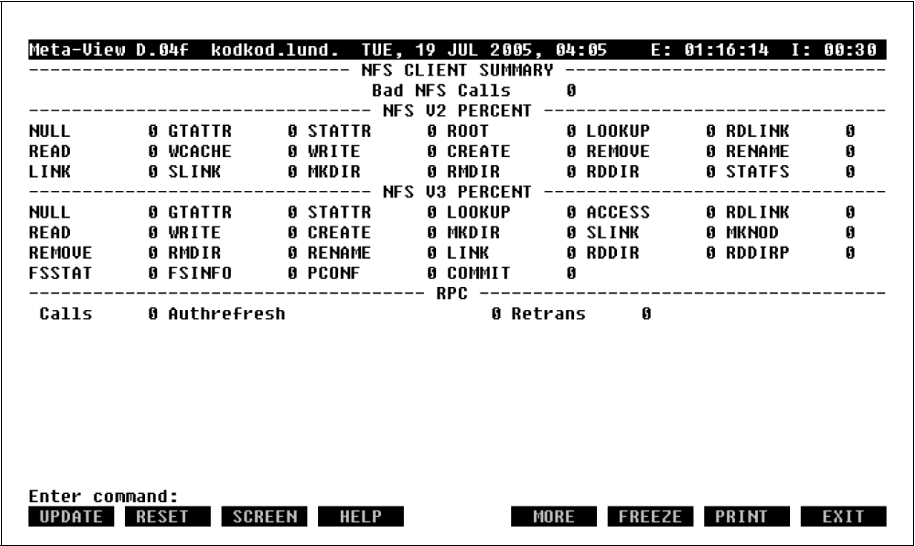
Data Item	Description
Interf	The name of the network interface.
Packets In/s	The number of packets received per second for the specific interface (the value in brackets is cumulative).
Packets Out/s	The number of packets sent per second for the specific interface.
Average Packet Size Receive	The average size of the received packets.
Average Packet Size Sent	The average size of the sent packets.
Error In%	The percentage of packets read during the interval that resulted in error.

Data Item	Description
Error Out%	The percentage of packets written during the interval that resulted in error.
Collision%	The number of output packets sent that resulted in a collision.
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.
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 17.1.



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 130.

NFS CLIENT SUMMARY

The NFS CLIENT SUMMARY portion of the NFS Summary screen provides 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, when the screen is set to display NFS call rates (see “Additional Command Keys for the NFS Summary Screen” on page 126).
- 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 17.1 *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.
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 CLIENT SUMMARY provides rate and percentage information for the NFS V3 calls. Each data item is defined in the next table.

Table 17.2 *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.

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

Table 17.3 *MVHOST (Client) RPC data items*

Data Item	Description
Calls	The number of client RPC calls made per second.
Authrefresh	The number of times the RPC client had to retransmit the security credentials.

Data Item	Description
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.

NFS Server Summary Screen Display Items

An example of the NFS SERVER SUMMARY screen display is shown in Figure 17.2.

Meta-View D.04f kodkod.lund. TUE, 19 JUL 2005, 04:05 E: 01:17:14 I: 00:30						
NFS SERVER 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 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 Bad Auth	0 Bad CInt	0 Xdr Call	0	
Enter command:						
UPDATE RESET SCREEN HELP MORE FREEZE PRINT EXIT						

Figure 17.2 MHVOST 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 the next table.

Table 17.4 *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.

Data Item	RATE Definition	PERCENT Definition
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 SERVER SUMMARY provides rate and percentage information for the NFS V3 calls. Each data item is defined in the next table.

Table 17.5 *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 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.

Data Item	RATE Definition	PERCENT Definition
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.
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 17.6 *MVHOST (Server) RPC data items*

Data Item	Description
Calls	The number of client RPC calls made per second.
Bad Calls	The number of those calls that were rejected before being passed to the NFS service routines.
Bad Auth	The number of client authentications that have failed.
Bad CInt	The number of calls made by an incompatible client.
Xdr Call	The number of errors in decoding messages.

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.04F kodkod.lund. TUE, 19 JUL 2005, 04:06 E: 01:17:45 I: 00:30				
----- PER SWAP UTILIZATION -----				
Dev/Mount	Type	Size(mb)	Used(mb)	Free(mb)

/dev/hda3	DEV	509	54	455
Enter command:				
UPDATE	RESET	SCREEN	HELP	MORE
FREEZE PRINT EXIT				

Figure 18.1 *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 18.1 shows an example of the screen.

Swap Summary Screen Display Items

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 18.1 *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 (megabytes) used in the device/file system.
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.04f kodkod.lund. TUE, 19 JUL 2005, 04:10 E: 01:22:17 I: 00:30						
----- USER SUMMARY -----						
User Name	UID	CPU%	Procs	Sess	RSS(kb)	USS(kb)
root	0	2.8	42	0	62004	76992
rodicap	518	0.7	3	1	9572	9596
xfs	43	0	1	0	664	3120
rpcuser	29	0	1	0	588	684
rpc	32	0	1	0	464	548
postgres	26	0	17	0	18780	28648
nobody	99	0	7	0	10268	47064
mysql	27	0	4	0	2672	13184
gdm	42	0	2	0	2588	6192
gabi	513	0	8	3	11092	11192
daemon	2	0	1	0	496	548

Enter command:						
UPDATE	RESET	SCREEN	HELP	MORE	FREEZE	PRINT EXIT

Figure 19.1 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 19.1.

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 19.1 *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.
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.04f kodkod.lund. TUE, 19 JUL 2005, 04:11 E: 01:22:48 I: 00:30				
----- TERMINAL SUMMARY -----				
Terminal	User Name	Login Time	Idle Time	Processes
pts/4	N/A	3:52:06	1:40:42	1[0]
pts/3	N/A	3:52:59	0:56:19	2[0]
pts/2	N/A	3:57:06	0:55:25	2[0]
pts/0	N/A	1:23:07	46:28:02	2[0]
Enter command:				
UPDATE	RESET	SCREEN	HELP	MORE FREEZE PRINT EXIT

Figure 20.1 *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 20.1.

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 20.1 *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.

MVHOST SYSTEM CONFIGURATION SUMMARY

The System Configuration Screen

The System Configuration screen displays various configurable kernel parameters. Figure 21.1 shows an example of the screen.

```

Meta-View D.04f kodkod.lund. TUE, 19 JUL 2005, 04:16 E: 01:27:21 I: 00:30
-----
SYSTEM CONFIGURATION
-----
system name: kodkod.lund.com
kernel version: 2.4.18-3
serial num: 694356498
boot time: 06:49 15 JUL 2005
cpu type: i586
run level: 5
-----
MEMORY MANAGEMENT CONFIG
-----
BDFLUSH      nfract: 40      ndirty: 0      nrefill: 0
BDFLUSH      nref dirt: 0    age buffer: 3000 age super: 60
KSWAPD      tries base: 512  tries min: 32  swp cluster: 8
FREE PAGES   fp min: 510    fp low: 765    fp high: 1020
BUFFERMEM    bf min%: N/A    bf borrow%: N/A bf max%: N/A
PAGECACHE    pg min%: N/A    pg borrow%: N/A pg max%: N/A
PGT CACHE    pgt low%: 25    pgt high%: 50
-----
PROCESS CONFIGURATION
-----
rlim_fd_cur: 1024  rlim_fd_max: 1024  maxuprc: 999  max_nproc: N/A
-----
IPC CONFIGURATION
-----
MESSAGES      msgmap: 0 | SEMAPHORES      semvmx: 32767 | SHARED MEM
msgmax: 8192   msgmni: 16 | semmap: 32k     semaem: 53 | shmmax: 32m
msgmnb: 16384  msgseg: 16k | semmni: 128    semnu: 32000 | shmmni: 4096
msgssz: 16     msgtql: 0 | semms: 32k     semume: 32 | shmseg: 4096
-----
Enter command:
[UPDATE] [RESET] [SCREEN] [HELP] [MORE] [FREEZE] [PRINT] [EXIT]

```

Figure 21.1 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 21.1 *MVHOST SYSTEM CONFIGURAITON data items*

Data Item	Description
system name	The specific name of the system assigned during the system installation.
kernel version	The version of the kernel.
serial num	The serial number of the 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 21.2 *MVHOST MEMORY MANAGEMENT data items*

Data Item		Description
BDFLUSH	nfract	If more tha nfract% of the buffers are dirty, bdflush is triggered.
	ndirty	The ndirty data item represents the maximum number of dirty blocks which can be written out in a wake-cycle.
	nrefill	The nrefill data item represents the number of clean buffers which bdflush tries to obtain each time the kernel wants to refill buffers.
	nref dirt	Dirty buffer threshold for activating bdflush when trying to refill buffers.
	age buffer	The age buffer data item represents the time for normal buffer to age before it is flushed.
	age super	The age super data item represents the time for superblock to age before being flushed.
KSWAPD	tries base	The tries base data item represents the maximum number of pages kswapd tries to free in one round.
	tries min	The tries min data item represents the minimum number of times kswapd tries to free a page each time it is called.
	swp cluster	The swp cluster data item represents the number of pages kswapd writes in one turn.

Data Item		Description
FREE PAGES	fp min	When the number of free pages in the system reaches this number , only the kernel can allocate more memory.
	fp low	If the number of free pages gets this point, the kernel starts swapping aggressively.
	fp high	The kernel tries to keep up this amount of memory free; if memory comes below this point, the kernel gently starts swapping in the hopes that it never has to do real aggressive swapping.
BUFFERMEM	bf min%	The bf min data item represents the minimum percentage of memory that should be spent on buffer memory.
	bf borrow%	Currently ignored by the 2.2 kernel series.
	bf max%	Currently ignored by the 2.2 kernel series.
PAGECACHE	pg min%	The pg min data item represents the minimum percentage of memory that should be used by the page cache.
	pg borrow%	Currently ignored by the 2.2 kernel series.
	pg max%	Currently ignored by the 2.2 kernel series.
PGT CACHE	pgt low%	The kernel keeps a number of page tables in a pre-processor cache. The cache size for each processor will be between the low and the high value.
	pgt high%	

PROCESS CONFIGURATION

The PROCESS CONFIGURATION portion of the System Configuration screen displays information about the process configuration parameters.

Table 21.3 *MVHOST PROCESS CONFIGURATION data items*

Data Item	Description
rlim_fd_cur	The rlim_fd_cur data item represents the soft limit maximum open files allowed by a process.

Data Item	Description
rlim_fd_max	The rlim_fd_max data item represents the hard limit maximum open files allowed by a process. Only processes with root privileges can exceed rlim_fd_cur and use rlim_fd_max.
maxuprc	The maxuprc data item represents the maximum number of processes any one user can own.
max_nproc	The max_nproc data item represents 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 21.4 *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.04f  kodkod.lund.  TUE, 19 JUL 2005, 03:41  E: 00:52:23  I: 29:50
-----
                                PULSE POINTS
-----
Indicator                               |  Green  |  Yellow  |    Red   |  Comments
-----
CPU -----
CPU Busy %                             2.9[  3.1]
Run-Q Average                           0[    0]
Memory -----
Page Out Rate                           0.6[  1.2]                               /sec
Swap Out Rate                           0[    0]                               /sec
Disk I/O -----
Average Wait Time                        0.3[  1.9]                               System Wide
Average Q-Length                         0[    0]                               System Wide
Disk Utilization %                       0[    0]                               System Wide
Disk I/O Rate (/sec)                     0[    0]                               System Wide
Network -----
Defer %                                  0[    0]                               System Wide
Collision %                              0[    0]                               System Wide
-----

Enter command:
[UPDATE] [RESET] [SCREEN] [HELP] [MORE] [FREEZE] [PRINT] [EXIT]

```

Figure 22.1 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 22.1.

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 103.

The pulse points indicators are configurable. For configuration guidelines, refer to "MVHOST ppoints File" on page 74.

Pulse Points Screen Column Headings

Each of the column headings for the Pulse Points screen is described in the next table.

Table 22.1 *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.04f kodkod.lund. TUE, 19 JUL 2005, 04:17 E: 01:28:52 I: 00:30			
WORKLOAD DEFINITIONS			
Number	Name	Type	Specifications
1	INTERACT	INTERACT	
2	BATCH	BATCH	NICE=21-39
3	DAEMON	DAEMON	
4	DEFAULT	MIX	
Enter command:			
UPDATE		RESET	SCREEN
HELP		MORE	FREEZE
		PRINT	EXIT

Figure 23.1 *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 23.1.

Workload Definitions Screen Display Items

WORKLOAD DEFINITIONS

The data items presented in the Workload Definitions screen are described in the following table.

Table 23.1 *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 21).
Specifications	The other specifications that define the workload (for information about workload types, refer to “Creating a Workload Group Definition File” on page 20).

MVHOST PROCESS DETAIL

The Process Detail Screen

The Process Detail screen displays detailed information about a specific process.

Meta-View D.04f kodkod.lund. TUE, 19 JUL 2005, 04:18 E: 01:29:22 I: 00:30									
PID			ID			TERMINAL			
Pid:	21057		Cmd:	/opt/lund/bin/mologd		tty:	---		
PPID:	1		User:	root		State:	DET		
			Group:	root					
CPU			MEMORY			SCHEDULLING			
CPU %:	4.1	[0.2]	RSS:	6160		Nice:	-20		
CPU ms:	1240	[11450]	USS:	6160		Pri:	0		
			State:	SLEEP					
User %:	66.9	[67.8]	Min/s:	15.5		Sched:	SCH_OTHER		
Sys %:	33.1	[32.2]	Maj/s:	0					
			Swp/s:	0		wchan:	schedule_timeout		
Enter command:									
UPDATE		RESET		SCREEN		HELP		MORE	
								FREEZE	
								PRINT	
								EXIT	

Figure 24.1 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 24.1 *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 24.2 *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.

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 24.3 *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.

Data Item	Description
State	The terminal state: <ul style="list-style-type: none"> DET - detached from a terminal. ATT - attached to a terminal.

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 24.4 *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.

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 24.5 *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.

Data Item	Description
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.

SCHEDULING

The SCHEDULING portion of the Process Detail screen displays scheduling information. Each data item is described in Table 24.6.

Table 24.6 *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. The value depends on the scheduling policy.
Sched	The scheduling policy of the process. Possible values are: <ul style="list-style-type: none"> FIFO - real time, FIFO (queue) scheduling. RR - real time, round robin scheduling. OTHER - "normal", timeshare scheduling. For information about the scheduling, see the Unix man page, "sched_setscheduler".
wchan	The name of the kernel function on which the process is waiting.

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.04f kodkod.lund. TUE, 19 JUL 2005, 04:40 E: 01:52:08 I: 00:34
----- PROCESS FILE USAGE -----
      PID: 21057   Name: mvlogd      User Name: root      Tty: ---
----- OPEN FILES -----
      Filename      Type      Access      Size
-----
/var/opt/lund/log/SL052000 Regular W      102122
[1980]             FIFO   W        0
/var/opt/lund/tmp/metaview.log Regular RW      38915

```

Enter command:

UPDATE	RESET	SCREEN	HELP	MORE	FREEZE	PRINT	EXIT
--------	-------	--------	------	------	--------	-------	------

Figure 25.1 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.

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 25.1 *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 25.2.

Table 25.2 *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 • 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).

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.04F kodkod.lund. TUE, 19 JUL 2005, 04:41 E: 01:52:44 I: 00:35
----- PROCESS MEMORY REGIONS -----
PID: 21057 Name: mvlogd User Name: root Tty: ---
----- MEMORY REGIONS -----
Front Store File Type USS Virtual Address
-----
hda2:/lib/libdl-2.2.5.so MMAP 4 0x40046000
hda2:/lib/libpthread-0.9.so MMAP 56 0x40047000
hda2:/lib/libpthread-0.9.so MMAP 28 0x40055000
hda2:/lib/libc-2.2.5.so MMAP 1144 0x4005c000
hda2:/lib/libc-2.2.5.so MMAP 20 0x4017a000
<HEAP> HEAP 16 0x4017f000
hda2:/lib/libnss_files-2.2.5.so MMAP 36 0x40183000
hda2:/lib/libnss_files-2.2.5.so MMAP 4 0x4018c000
<HEAP> HEAP 280 0x4018d000
4:/SYSU4102c340 (deleted) MMAP 2628 0x401d3000
<HEAP> HEAP 132 0x40464000
hda2:/lib/libnsl-2.2.5.so MMAP 68 0x40494000
hda2:/lib/libnsl-2.2.5.so MMAP 4 0x404a5000
<HEAP> HEAP 8 0x404a6000
<STACK> STACK 28 0xbfff9000

Enter command: (Showing lines 13 - 28 of 28)
[UPDATE] [RESET] [SCREEN] [HELP] [MORE] [FREEZE] [PRINT] [EXIT]

```

Figure 26.1 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 26.1.

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 26.1 *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 26.2 *MVHOST MEMORY REGIONS data items*

Data Item	Description
Front Store File	<p>The file path that corresponds to the memory region.</p> <p>This is the program name for data and text regions and the library name for shared libraries.</p> <ul style="list-style-type: none"> • 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 command to look up the file name.
Type	<p>The type of memory region:</p> <ul style="list-style-type: none"> • HEAP - the region is a heap • STACK - stack region • ANON - the region is anonymous; not associated with a file • MMAP - memory mapped region
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 21.

```

Meta-View D.04f kodkod.lund. TUE, 19 JUL 2005, 04:41 E: 01:53:15 I: 00:30
----- WORKLOAD DETAIL -----
Workload: INTERACT                               Proc Count: 13.0[ 13.9]
----- CPU -----                               MEMORY -----
CPU %: 5.2[ 0.5] CPU ms: 1620[ 34680]]          RSS: 16m USS: 16m
User %: 54.9[ 47.1] Sys %: 45.1[ 52.9]]         Min/s: 9.3 Maj/s: 0
----- PROCESS SUMMARY -----
PID   Name      User Name TTY      CPU% Nice Pri  RSS/Size  State
21337 mvhost      rodicap  pts/0    5.2  -20  1  7384/7384  SLEEP

```

Enter command:

UPDATE	RESET	SCREEN	HELP	MORE	FREEZE	PRINT	EXIT
--------	-------	--------	------	------	--------	-------	------

Figure 27.1 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 27.1.

- 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 27.1 *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 27.2.

Table 27.2 *MVHOST CPU USAGE 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 and nice time.
Sys %	The percentage of the process' execution time spent in system/ kernel mode. This includes memory and trap time.

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 27.3 MVHOST MEMORY data items

Data Item	Description
RSS	The resident set size, which is equal to the amount of RAM the process is using, excluding 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.
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.

PROCESS SUMMARY

The Process Summary section provides a general look at processes on your system. The processes displayed can be configured. For information, refer to "PROCESS SUMMARY Data Items" on page 88.

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 28.1.

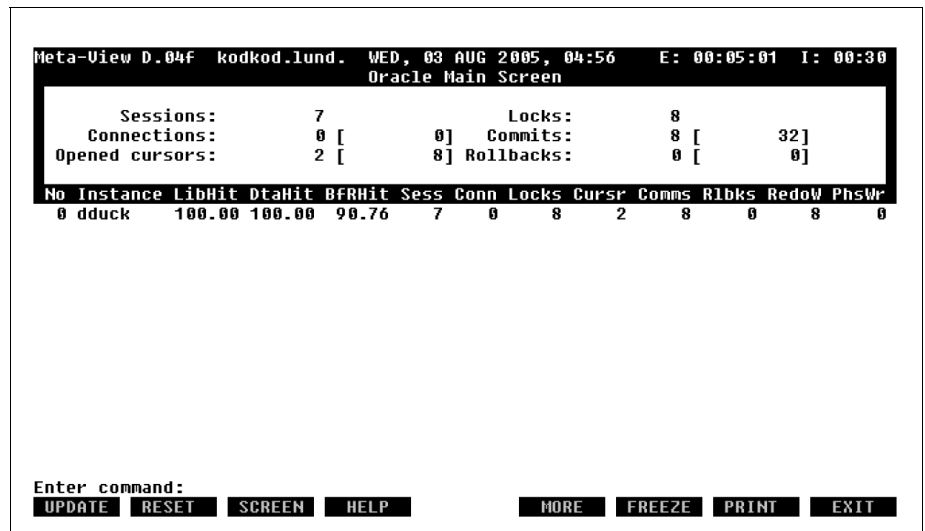


Figure 28.1 MVHOST Oracle Main screen

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 28.1 *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 28.2 *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 29.1.

Meta-View D.04f kodkod.lund. WED, 03 AUG 2005, 05:16 E: 00:00:05 I: 00:05									
Instance: dduck			Oracle Detail Latches						
LRU Latches									
Cache Buffer Chains					Cache Buffer Handles				
Gets:	15	[	15]		Gets:	497	[	497]	
Misses:	0	[	0]		Misses:	0	[	0]	
In Gets:	0	[	0]		In Gets:	6	[	6]	
In Misses:	0	[	0]		In Misses:	0	[	0]	
Cache Protection Latch					Cache Buffers Lru Chain				
Gets:	0	[	0]		Gets:	0	[	0]	
Misses:	0	[	0]		Misses:	0	[	0]	
In Gets:	0	[	0]		In Gets:	0	[	0]	
In Misses:	0	[	0]		In Misses:	0	[	0]	
Redo Log Buffer Latches									
Redo Allocation					Redo Copy				
Gets:	56	[	56]		Gets:	0	[	0]	
Misses:	0	[	0]		Misses:	0	[	0]	
In Gets:	0	[	0]		In Gets:	40	[	40]	
In Misses:	0	[	0]		In Misses:	0	[	0]	
Redo Writing									
Gets:	46	[	46]		In Gets:	0	[	0]	
Misses:	0	[	0]		In Misses:	0	[	0]	
Enter command:									
UPDATE		RESET		SCREEN		HELP		MORE	
						FREEZE		PRINT	
								EXIT	

Figure 29.1 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 29.1 *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 two sub-sections of data.

Table 29.2 *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.

Data Item	Description
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 30.1.

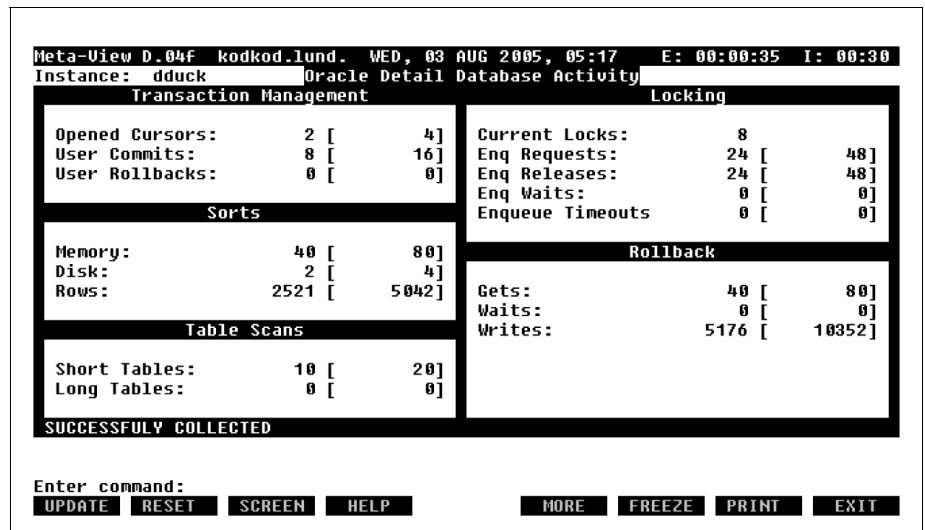


Figure 30.1 MVHOST Oracle Detail Database Activity screen

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 30.1 *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 30.2 *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 30.3 *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 30.4 *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 30.5 *MVHOST Oracle Detail Database Activity data items: Rollback*

Data Item	Description
Gets	The number of gets.
Waits	The number of waits.
Writes	The number of writes.

MVHOST ORACLE DETAIL MEMORY AND NETWORK

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 31.1.

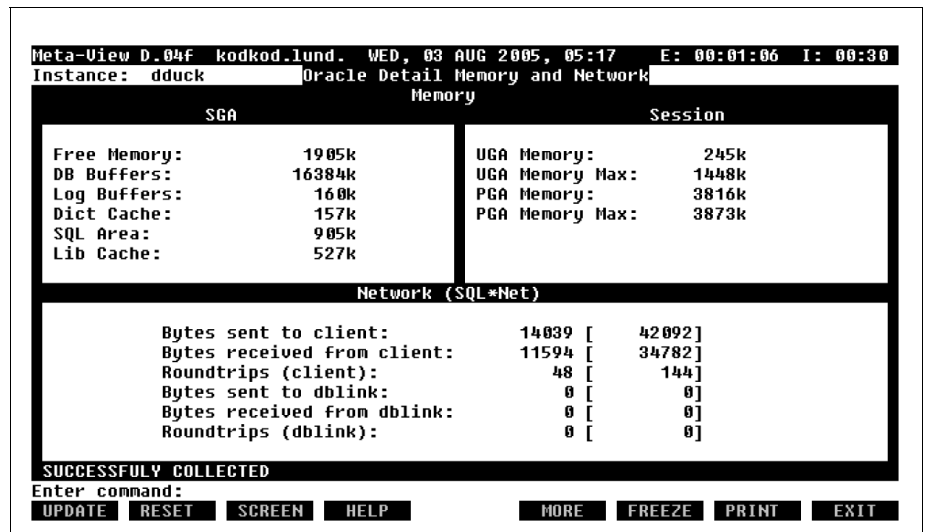


Figure 31.1 MVHOST Oracle Detail Memory and Network screen

Oracle Detail Memory and Network Display Items

SGA

The SGA section of the screen presents statistics related to the SGA.

Table 31.1 *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 31.2 *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 31.3 *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 32.1.

Meta-View D.04f kodkod.lund. WED, 03 AUG 2005, 05:17 E: 00:01:06 I: 00:30				
Instance: dduck Oracle Detail Rollback Segments				
SUCCESSFULLY COLLECTED				
Name	Waits	Gets	Writes	Hit Ratio
RBS0	0	7	1250	100.00
RBS2	0	5	1212	100.00
RBS6	0	5	1212	100.00
RBS3	0	5	1120	100.00
RBS4	0	5	130	100.00
RBS1	0	5	126	100.00
RBS5	0	5	126	100.00
SYSTEM	0	3	0	100.00
Enter command:				
UPDATE	RESET	SCREEN	HELP	MORE
				FREEZE
				PRINT
				EXIT

Figure 32.1 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 32.1 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 33.1.

Meta-View D.04f kodkod.lund. WED, 03 AUG 2005, 05:18 E: 00:01:37 I: 00:30			
Instance: dduck		Oracle Detail Cache	
Row Cache		Library Cache	
Hit Ratio:	90.86 [90.78]	Hit Ratio:	100.00 [100.00]
DB Block Gets:	126 [498]	User Calls:	48 [192]
Consistent Gets:	60 [240]	Recursive Calls:	24 [96]
Physical Reads:	17 [68]	Exec Count:	50 [200]
Redo Buffer		Parse Cnt (tot):	50 [200]
Redo Syn Wrts:	8 [32]	Parse Cnt (hard):	0 [0]
Redo Logspc Req:	0 [0]	Pins:	114 [456]
Waits		Reloads:	0 [0]
Free List:	0 [0]	Data Dict Cache	
Sys Undo Block:	0 [0]	Hit Ratio:	100.00 [100.00]
Sys Undo Header:	0 [0]	Gets:	6 [24]
Undo Block:	0 [0]	Get Misses:	0 [0]
Undo Header:	0 [0]		
Enter command:			
UPDATE RESET SCREEN HELP		MORE FREEZE PRINT EXIT	

Figure 33.1 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 33.1 *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 33.2 *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.

Data Item	Description
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.
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 33.3 *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.</p> <p>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 33.4 *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 33.5 *MVHOST Oracle Data Dict Cache data items*

Data Item	Description
Hit Ratio	$(1 - \text{gets/getmisses}) * 100$
Gets	The number of get requests from the data dictionary.

Data Item	Description
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 34.1.

Meta-View D.04f kodkod.lund. WED, 03 AUG 2005, 05:18 E: 00:01:37 I: 00:30									
Instance: dduck					Oracle Detail Events				
DB File					Log File				
Sequential Read	6	[	24]		Sequential Read:	0	[	0]	
Scattered Read:	0	[	0]		Sync:	8	[	32]	
Parallel Read:	0	[	0]						
Single Write:	0	[	0]		Single Write:	0	[	0]	
Parallel Write:	0	[	3]		Parallel Write:	8	[	32]	
File					Control File				
Identify:	0	[	0]		Sequential Read:	24	[	96]	
Open:	8	[	32]		Parallel Write:	10	[	31]	
					Refresh Command:	4	[	16]	
Net Events									
SQL*Net break/reset to client:						0	[	0]	
SQL*Net message from client:						48	[	192]	
SQL*Net message to client:						48	[	192]	
Enter command:									
UPDATE		RESET		SCREEN		HELP		MORE	
								FREEZE	
								PRINT	
								EXIT	

Figure 34.1 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 34.1 *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 34.2 *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 34.3 *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 34.4 *MVHOST Oracle Detail Events data items: Control File*

Data Item	Description
Sequential Read	<p>The number of times a read from the control file occurred. For example, to:</p> <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	<p>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:</p> <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 34.5 *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 35.1.

Meta-View D.04f kodkod.lund. WED, 03 AUG 2005, 05:18 E: 00:02:07 I: 00:30															
Instance: dduck		Oracle Detail DBWR Activity													
DBWR															
Chkpnt Buf Wrtn:		18	[	95	]	Lru Scans:		0	[	0]	
Trans Table Wrts:		0	[	0	]	Sum Scan Depth:		0	[	0]	
Undo Block Writes:		0	[	5	]	BuFs Scanned:		0	[	0]	
Rev bng-wrtn Buf:		0	[	0	]	Chkpnts:		0	[	0]	
Make Free Reqs:		0	[	5	]	Forced Writes:		0	[	0]	
Free BuFs Found:		0	[	0]									
Background Checkpoints						Inspected									
Started:		0	[	0	]	Dirty Buffers:		7	[	33]	
Completed:		0	[	0	]	Free Buffer:		0	[	0]	
Misc						Requests									
Phys Writes:		0	[	0	]	Free Buffer:		0	[	0]	
Summed Dirty QLen:		0	[	0]									
SUCCESSFULLY COLLECTED															
Enter command:															
UPDATE		RESET		SCREEN		HELP		MORE		FREEZE		PRINT		EXIT	

Figure 35.1 MVHOST Oracle Detail DBWR screen

Oracle Detail DBWR Display Items

DBWR

The DBWR section displays information about the mirror write consistency (MWC) DBWR.

Table 35.1 *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
Bufts 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 35.2 *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 35.3.

Table 35.3 *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 Buffers	The number of free buffers found in the cache.

Misc

The Misc section data items are described in the next table.

Table 35.4 *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 35.5 *MVHOST Oracle Detail DBWR data item: Requests*

Data Item	Description
Free buffers	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 36.1.

```
Meta-View D.04f kodkod.lund. WED, 03 AUG 2005, 05:19 E: 00:02:37 I: 00:30
Instance: dduck Oracle Detail Datafiles
SUCCESSFULLY COLLECTED
```

No	Name	Tablespace	Reads	Writes	Blk Reads	Blk Writes	Size
4	temp01.dbf	TEMP	6	19	18	19	68.00
3	rbs01.dbf	RBS	1	2	1	2	516.00
1	system01.dbf	SYSTEM	1	1	1	1	260.00
6	indx01.dbf	INDX	1	1	1	1	54.00
5	users01.dbf	USERS	1	1	1	1	104.00
2	tools01.dbf	TOOLS	1	1	1	1	8.00

```

Enter command:
  UPDATE  RESET  SCREEN  HELP  MORE  FREEZE  PRINT  EXIT

```

Figure 36.1 MVHOST Oracle Detail Datafiles screen

Oracle Detail Datafiles Display Items

The Oracle Detail Datafiles data items are described in the next table.

Table 36.1 *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 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.

Configuring MVLOGD Run Time

By default, MVLOGD will run, collecting host data, until midnight (23:59). The run time can be configured to run repeatedly or at specific intervals by using either the **-c** command line switch or the **cron** facility.

-c Command Line Switch

Enter **mvlogd -c** at the shell prompt of your home directory to modify the MVLOGD run time configuration. The effects of the command line switches vary depending on whether you are using the default or advanced configuration parameters.

cron

The **-c** switch should not be used in conjunction with **cron**. **cron** should be used if the user wants mvlogd to run only during specific hours. For example, to run mvlogd from 8AM to 6PM, configure it to run 10 hours, then configure a cron job to start it every day at 8AM.

The functions of each command line switch is summarized in the next table.

Table 37.1 *MVLOGD command line switch functions*

Switch	Default Configuration	Advanced Configuration
-c	Log continuously (24 hours) by restarting at 00:00 hours.	Log until the RunTime value has expired, and then automatically restream.
-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 37.2.

Table 37.2 *MVLOGD default configuration parameters*

Parameter	Description
Enter duration of job in minutes (0)	The collector will run until midnight. When used with the -c command switch, the collector will automatically restream itself immediately.
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.)
- 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 37.3 can be found in the .mvlogdrc file.

Table 37.3 *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
ProcCPUPhreshold	integer	0	100	0	CPU percentage required for process display
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	7	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
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 38.1)



NOTE To view the screen without soft function keys, add the -k command key switch.

```

*****
Meta-View Performance Manager D.04f
Copyright (c) 1991-2004 Lund Performance Solutions
*****

                                Initializing...
This product licensed to: Lund-kodkod

Checking logfile catalog ...

83 log files with dates 07/20/04 - 07/19/05

Enter initial sample date (00/00/00): 07/18/05
Enter initial sample time (04:47): 09:00_

████████████████████████████████████████████████████████████████████████████████

```

Figure 38.1 *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 237.

The MVLOGX commands and menus are described in “MVLOGX Menus and Options” on page 217.

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 38.1.

Table 38.1 *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

- 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 217.
 - Look for points within the data that show high CPU utilization percentages and/or high response time rates.
- 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 217.
 - Each MVLOGX report is described in “MVLOGX Reports” on page 237.
- The appearance of the reports displayed can be modified. Use the display options described in “MVLOGX Menus and Options” on page 217.

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 232.) 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 235.) 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
- 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 232.) 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 reptdef.



NOTE The mvrcom report compiler must be run in the lund file structure in order to update the report definition file, reptdef, used by MVLOGX.

The mvrcom report compiler uses the commands listed in the following table.

Table 38.2 *mvrcom report compiler commands*

Command	Description
ADD <file name>	Adds the specified configuration file to the master report definition file, reptdef.
DEL <report name>	Deletes the specified configuration file from reptdef.

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 reprtdef file.
REBUILD	Rebuilds the report configuration file.
UPDATE <file name>	Updates the existing configuration file to reprtdef.

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 ", 11

$TEXT

+----- CPU Utilization % -----+----- CPU Misc -----+
|                                     | Capture Ratio          nnnn.n  |
|      TOTAL BUSY: nnn.n           | 1/5/15 Load Avg  nnnn.n/nnnn.n/nnnn.n |
|      User   nnn.n      Sys   nnn.n |                                     |
|      Nice   nnn.n      Idle  nnn.n  |                                     |
|----- MEM/VM -----|
|      Page Outs  nnnn.n/s           | Page Ins   nnnn.n/s           |
|      Swap Outs  nnn.n/s            | Swap Ins   nnn.n/s            |
|----- MISC -----|
| #Sessions: nnnn #Procs: nnnn #Wait IO: nnnnn Transactions:  nnnn.n/s |
| #Active:  nnnn #Active: nnnn #Swap:  nnnnn Avg Response Time: nnnn.n |
|----- DISK -----|
|Disk      IO/s   IO%   QLen | Disk      IO/s   IO%   QLen |
|xxxxxxxxxx xxxxx  xxx  xxxxx |xxxxxxxxxxx xxxxx  xxx  xxxxx |
+-----+-----+

```

\$END

\$DEFINE D1 /dev/hda

\$DEFINE D2 /dev/hdb

CPU-BUSY% 2, 21, 5

CPU-CAPTURE 2, 74, 6

CPU-USER% 3, 9, 5

CPU-SYS% 3, 27, 5

CPU-QUEUE-LEN 3, 60, 6

CPU-QUEUE-5M 3, 67, 6

CPU-QUEUE-15M 3, 74, 6

CPU-NICE% 4, 9, 5

CPU-IDLE% 4, 27, 5

VM-PAGE-OUT-RATE 6, 21, 6

VM-PAGE-IN-RATE 6, 61, 6

VM-SWAP-OUT-RATE 7, 22, 5

VM-SWAP-IN-RATE 7, 62, 5

MISC-SESSIONS 9, 13, 5

MISC-PROCESSES 9, 28, 5

MISC-PROC-BLOCK-IO 9, 45, 5

MISC-TRANS-RATE 9, 72, 5

MISC-ACT-SESSIONS 10, 13, 5

MISC-ACT-PROCESSES 10, 28, 5

MISC-PROC-SWAPPED 10, 45, 5

MISC-RESP-TIME 10, 72, 6

DISC-DEVFILE:D2	13, 43, 16
DISC-IO-RATE:D2	13, 61, 5
DISC-IO%D2	13, 70, 3
DISC-QUEUE-LEN:D2	13, 75, 5

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 - Perfcall export
c - Report compiler

Other:
n - 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 39.1 *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 39.1 *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 39.2 *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 39.3 *MVLOGX configuration command keys*

Key(s)	Command
d	Toggle the process display
o	Display the Options menu
y	Toggle the extended process display

Data Export Commands

Table 39.4 *MVLOGX data export command keys*

Key(s)	Command
c	Compile the report
R	Export Performance Gallery Gold data

Other Commands

Table 39.5 *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.

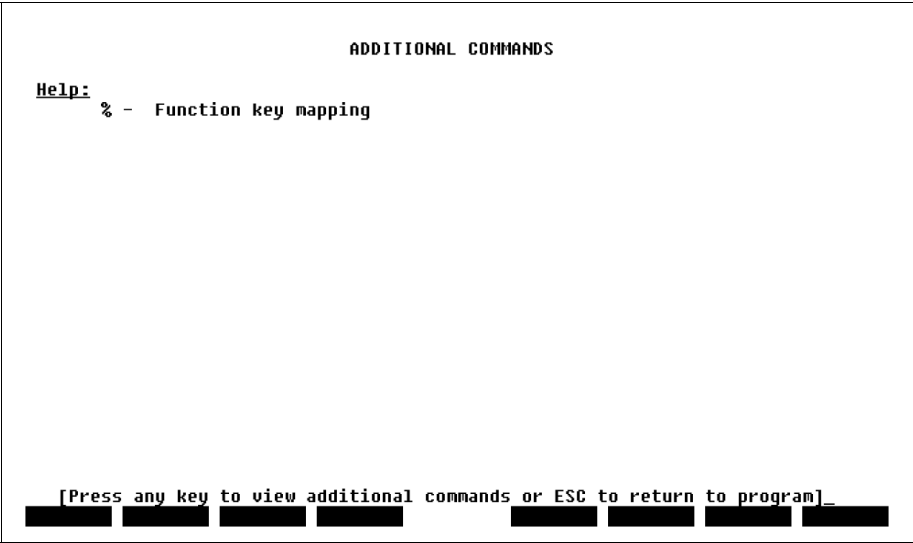


Figure 39.2 MVHOST Additional Commands screen (example)

To return to the Main Commands screen from the Additional Commands screen, press any key.
To return to the 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 39.6 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.

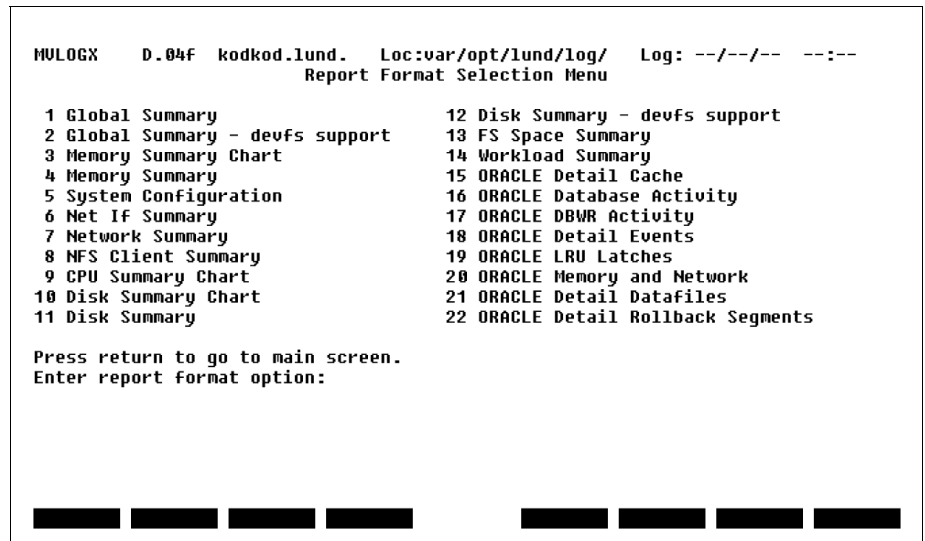


Figure 39.3 *MVLOGX Report Format Selection Menu screen*

To view one of the reports listed in the Report Format Selection Menu, type the report's corresponding command key at the command prompt. Each screen is described briefly in Table . The reports are described in detail in "MVLOGX Reports" on page 237.



NOTE All command keys are case-sensitive.

Table 39.7 *MVLOGX Report Format Selection Menu command keys*

Key	Report Format	Description
1	Global Summary	The Global Summary report contains a basic, overall picture of your system's performance. For more information, see "MVLOGX Global Summary" on page 238.
2	Global Summary - devfs support	The Global Summary - devfs support report is similar to the Global Summary report. For more information, see "MVLOGX Global Summary" on page 238.

Key	Report Format	Description
3	Memory Summary Chart	The Memory Summary Chart displays memory performance data in graphical format. For more information, see “MVLOGX Memory Summary Chart” on page 239.
4	Memory Summary	The Memory Summary report provides a detailed look at memory performance data in tabular format. For more information, “MVLOGX Memory Summary” on page 240.
5	System Configuration	Shows the current system configuration parameters. For more information, see “MVLOGX System Configuration” on page 248.
6	Net If Summary	The Net If Summary report contains information about the network interface. For more information, see “MVLOGX Net If (Network Interface) Summary” on page 244.
7	Network Summary	The Network Summary report displays network performance information, including protocol data and network interface information. For more information, see “MVLOGX Network Summary” on page 243.
8	NFS Client Summary	The NFS Client Summary report provides information about the Network File System (NFS). For more information, see “MVLOGX NFS Client Summary” on page 245.
9	CPU Summary Chart	The CPU Summary Chart reports the general state of one or more CPUs. For more information, see “MVLOGX CPU Summary Chart” on page 237.
10	Disk Summary Chart	The Disk Summary Chart displays a summary of disk activities in graphical format. For more information, see “MVLOGX Disk Summary Chart” on page 242.

Key	Report Format	Description
11	Disk Summary	The Disk Summary report contains a table of performance data for all disks on the system. For more information, see "MVLOGX Disk Summary" on page 241.
12	Disk Summary - devfs support	The Disk Summary - devfs support report is similar to the Disk Summary report. For more information, see "MVLOGX Disk Summary" on page 241.
13	FS Space Summary	The 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 247.
14	Workload Summary	The Workload Summary report provides general workload information. For more information, see "MVLOGX Workload Summary" on page 246.
15	ORACLE Detail Cache	Displays the most important statistics related to Oracle cache management. For more information, see "MVLOGX ORACLE Detail Cache" on page 249.
16	ORACLE Database Activity	Provides important statistics related to Oracle database activities. For more information, see "MVLOGX ORACLE Database Activity" on page 250.
17	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 251.
18	ORACLE Detail Events	Provides statistics related to Oracle database events. For more information, see "MVLOGX ORACLE Detail Events" on page 252.
19	ORACLE LRU Latches	Presents latches statistics. For more information, see "MVLOGX ORACLE LRU Latches" on page 253.

Key	Report Format	Description
20	ORACLE Memory and Network	Provides statistics about memory allocation and network transfers. For more information, see “MVLOGX ORACLE Memory and Network” on page 254.
21	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 255.
22	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 256.

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.

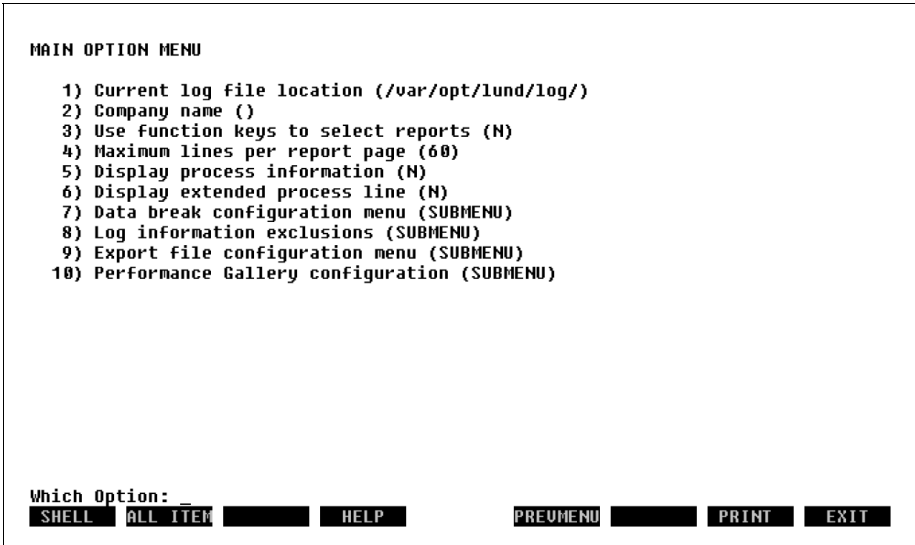


Figure 39.4 *MVLOGX MAIN OPTION MENU*

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:

- From the MVLOGX MAIN OPTION MENU, type the command key for the Display process information option. Press the Enter key.
- 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.

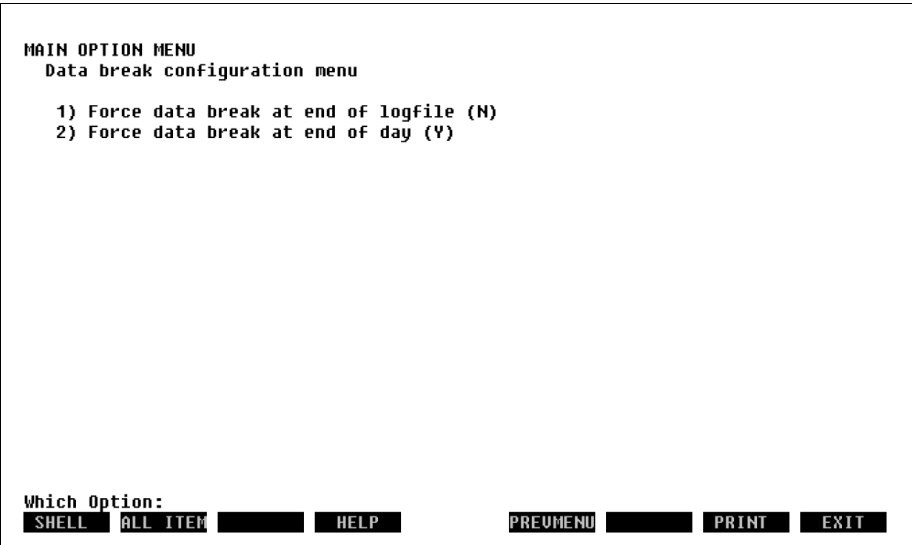


Figure 39.5 MVLOGX Data break configuration submenu

The Data break configuration options are listed and described in the next table.

Table 39.8 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).

Option	Default	Description
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 39.6).

```

MAIN OPTION MENU
  Log information exclusions

    1) Exclusions enabled (N)
    --- Exclude holidays
    --- Exclude day range
    ---           to
    --- Exclude time range
    ---           to
    --- Exclude time range
    ---           to
    --- Exclude time range
    ---           to
    --- Exclude time range
    ---           to
  
```

Which Option:

SHELL ALL ITEM

HELP

PREMENU

PRINT

EXIT

Figure 39.6 MVLOGX Log information exclusions submenu

The Log information exclusions options are listed and described in the next table.

Table 39.9 *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 72.
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: _

SHELL

ALL ITEM

HELP

PREMENU

PRINT

EXIT

Figure 39.7 MVLOGX Export file configuration submenu

The Export file configuration options are listed and described in the next table.

Table 39.10 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=mmddyy 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:

SHELL ALL ITEM HELP PREMENU PRINT EXIT

Figure 39.8 *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 232).
- Export Thresholds configuration submenu (see “Export Thresholds configuration Submenu” on page 235).

Export Data configuration Submenu

To display the Export Data configuration submenu, type the corresponding command key from the MVLOGX Performance Gallery configuration submenu.

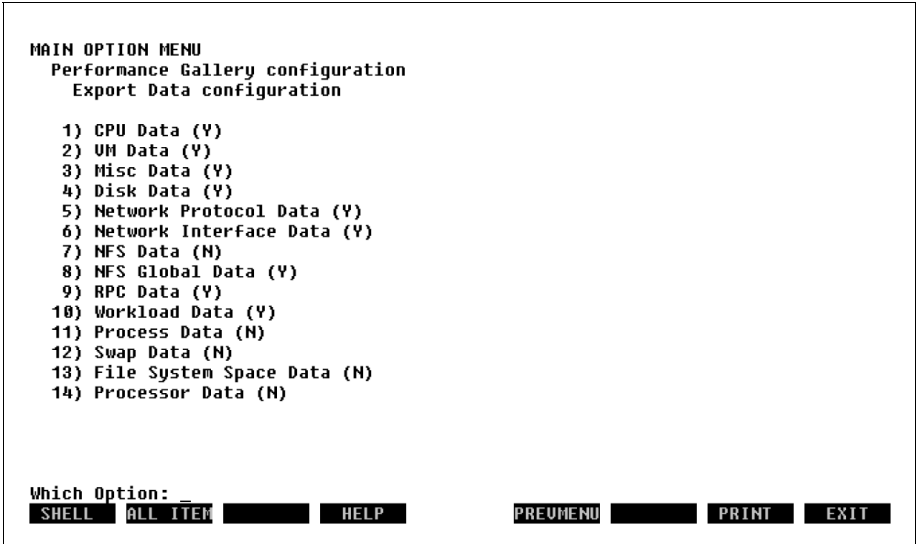


Figure 39.9 MVLOGX Export Data configuration submenu

The Export Data configuration options are listed and described in the next table.

Table 39.11 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).
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).
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).

Option	Default	Description
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) 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) data 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.

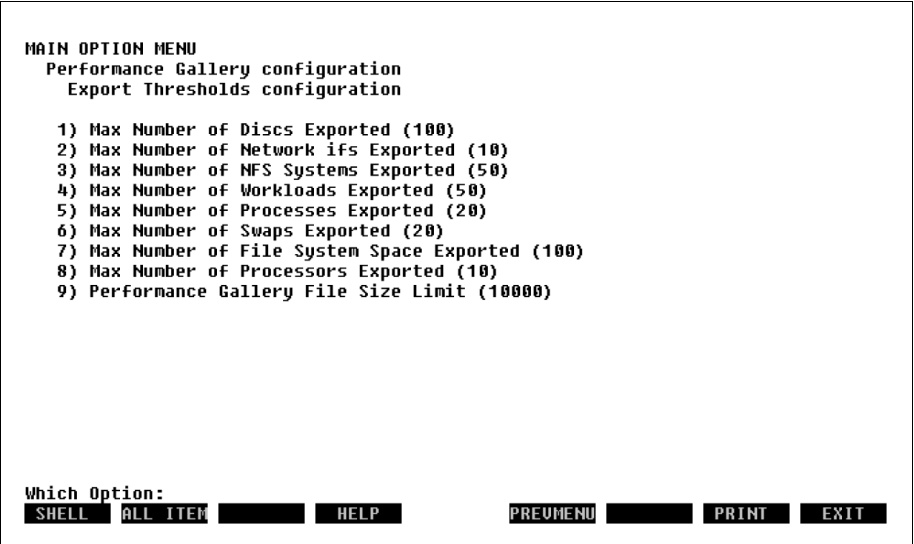


Figure 39.10 MVLOGX Export Thresholds configuration submenu

The meanings of the Export Thresholds configuration options are self-explanatory.

Table 39.12 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.

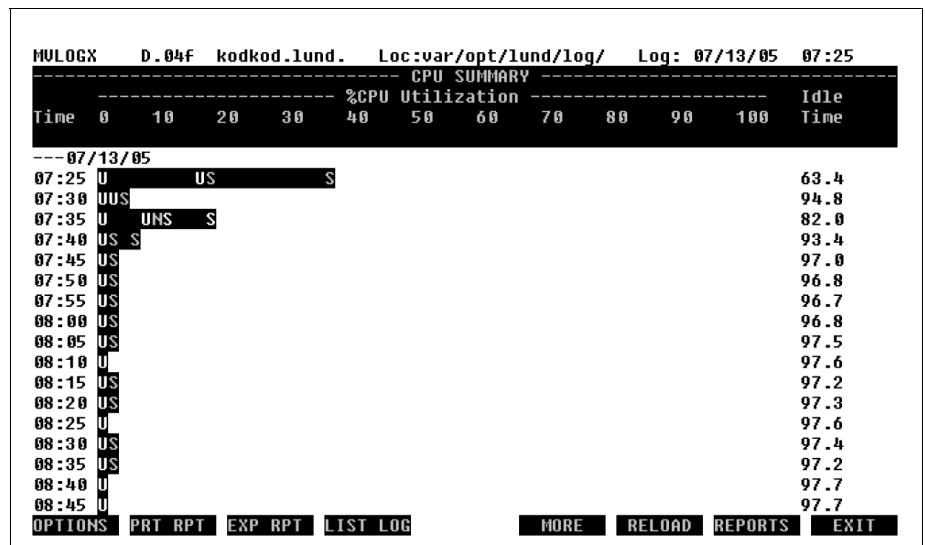


Figure 40.1 MVLOGX CPU Summary Chart report

For information about the MVLOGX CPU Summary Chart data, please refer to "MVHOST CPU Summary" on page 103.

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 40.2. For information about global data, refer to “MVHOST Global Summary” on page 81.

MULOGX	D.04k	cheetah.lund	Loc:var/opt/lund/log/	Log: 07/27/05	09:01
----- CPU UTILIZATION -----					
TOTAL BUSY: 2.2			Capture Ratio:	.9	
User: 1.0	Sys: 1.2		1/5/15 Load Avg:	.0/	.0/
Nice: .0	Idle: 97.8				
----- MEM/VH -----					
Page Outs: 9.4/s		Page Ins: .0/s			
Swap Outs: .0/s		Swap Ins: .0/s			
----- MISC -----					
#Sessions: 0	#Procs: 88	#Wait I/O: 0	Transactions:	.0/s	
#Active: 0	#Active: 5	#Swap: 0	Avg Response Time:		
----- DISK -----					
Disk	I0/s	I0%	Qlen	Disk	I0/s I0% Qlen
sda	1	100	.0		

OPTIONS		PRT RPT	EXP RPT	LIST LOG	
MORE		RELOAD	REPORTS	EXIT	

Figure 40.2 MVLOGX Global Summary report

MVLOGX Memory Summary Chart

The Memory Summary Chart in MVLOGX displays memory performance statistics in a graphical format.



Figure 40.3 *MVLOGX Memory Summary Chart report*

For information about the data in the MVLOGX Memory Summary Chart, refer to “MVHOST Memory Summary” on page 109.

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.04F	kodkod.lund.	Loc:var/opt/lund/log/	Log: 07/13/05	07:25
---07/13/05					
----- MEM/VM ALLOCATION -----					
	Size	Used	Free	Shared	Buffers
Mem	126788	78524	48264	0	15716
-/+ buffers&cached		34864	91924		27944
VM	648892	648892	570368		
----- PROC MEM STATUS -----					
	Run	Sleep	Total	Swapped	Run
Loaded	4	33	37		0
					Sleep
					0
					Total
					0
----- PAGING -----					
	In(/s)	Out(/s)	In(byte/s)	Out(byte/s)	#In
Pages	469.2	142.2	1921836	582427	4448
Swaps	.0	.0	0	0	0
Minor Pg Faults:		.0/s		Major Page Faults:	.0/s

<div> <div>OPTIONS</div> <div>PRT RPT</div> <div>EXP RPT</div> <div>LIST LOG</div> <div>MORE</div> <div>RELOAD</div> <div>REPORTS</div> <div>EXIT</div> </div>					

Figure 40.4 MVLOGX Memory Summary report

For information about the data in the MVLOGX Memory Summary Chart, refer to “MVHOST Memory Summary” on page 109.

MVLOGX Disk Summary

The Disk Summary in MVLOGX provides a summary of performance data for all disks on the system.

MVLOGX	D.04k	cheetah.lund	Loc:var/opt/lund/log/				Log: 07/27/05 09:01			
--- 09:01			DISK SUMMARY							
					Avg Time (ms)		Rates (/s)		Avg Size(kb)	
Dev	IO%	Qlen	Util%	Wait	Serv	Read	Write	Read	Write	
sda	100	.0	.0	.5	.3	.0	.7	.0	14.0	
sda1	100	.0	.0	.5	.3	.0	.7	.0	14.0	
sda2	0	.0	.0	.0	.0	.0	.0	.0	.0	

TOTALS	100	.0	.0	.5	.3	.0	.7	.0	14.0	

MVLOGX Disk Summary Chart

The Disk Summary Chart in MVLOGX displays disk performance data in graphical format.

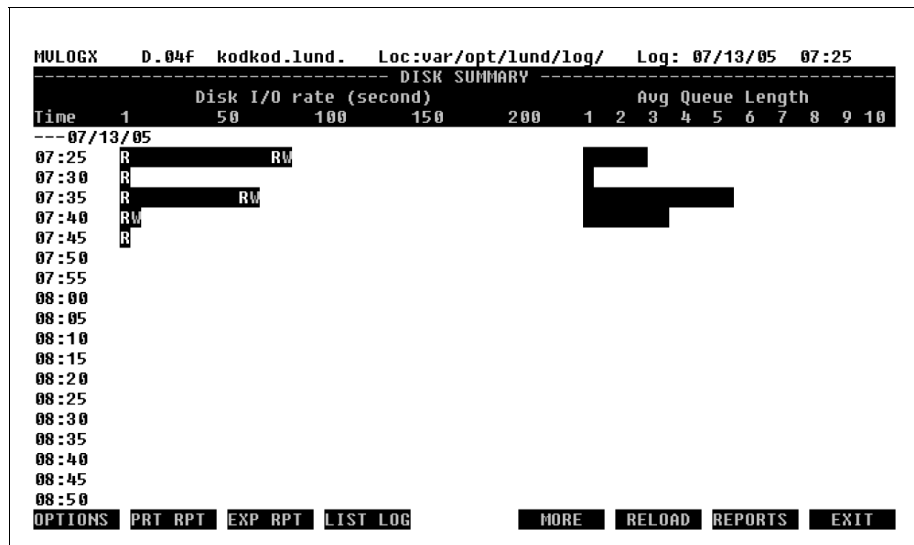


Figure 40.6 *MVLOGX Disk Summary Chart report*

For information about the data presented in the MVLOGX Disk Summary, refer to "MVHOST Disk I/O Summary" on page 113.

MVLOGX Network Summary

The Network Summary in MVLOGX displays network performance information.

MVLOGX	D.04F	kodkod.lund.	Loc:var/opt/lund/log/	Log: 07/13/05	07:25
---07/13/05					
--- 07:25 ---					
Protocol	Packets	in/s	NETWORK Packets	SUMMARY out/s	Errors In% Errors Out%
IP		.1		.1	.00 .00
TCP/IP		.0		.0	.00 .00
ICMP		.0		.0	.00 .00
UDP		.0		.0	.00 N/A
--- 07:30 ---					
Protocol	Packets	in/s	NETWORK Packets	SUMMARY out/s	Errors In% Errors Out%
IP		1.8		2.0	.00 .00
TCP/IP		.6		.7	.00 .00
ICMP		.0		.0	.00 .00
UDP		1.2		1.2	.00 N/A
<div> <div>OPTIONS</div> <div>PRT RPT</div> <div>EXP RPT</div> <div>LIST LOG</div> <div>MORE</div> <div>RELOAD</div> <div>REPORTS</div> <div>EXIT</div> </div>					

Figure 40.7 MVLOGX Network Summary report

For information about the data displayed in the MVLOGX Network Summary, please refer to “MVHOST Network Summary” on page 121.

MVLOGX Net If (Network Interface) Summary

The Net If Summary in MVLOGX displays performance information as it pertains to the network interface.

MVLOGX D.04F kodkod.lund. Loc:var/opt/lund/log/ Log: 07/13/05 07:25									
---07/13/05									
--- 07:25 ----- NETWORK INTERFACE SUMMARY -----									
Interf	Packets In/s	Out/s	Avg Packet Size Recv	Size Sent	Errors In%	Out%	Coll%	Defer%	Nocan
lo	.0	.0	0	0	.00	.00	.00	.00	.0
eth0	.0	.0	0	0	.00	.00	.00	.00	.0
TOTALS	.0	.1	0	46	.00	.00	.00	.00	.0
--- 07:30 ----- NETWORK INTERFACE SUMMARY -----									
Interf	Packets In/s	Out/s	Avg Packet Size Recv	Size Sent	Errors In%	Out%	Coll%	Defer%	Nocan
lo	.0	.0	0	0	.00	.00	.00	.00	.0
eth0	1.5	1.3	173	186	.00	.00	.00	.00	.0
TOTALS	2.1	2.0	166	202	.00	.00	.00	.00	.0
<div> <div>OPTIONS</div> <div>PRT RPT</div> <div>EXP RPT</div> <div>LIST LOG</div> <div>MORE</div> <div>RELOAD</div> <div>REPORTS</div> <div>EXIT</div> </div>									

Figure 40.8 *MVLOGX Net If Summary report*

For information about the data displayed in the MVLOGX Net If Summary, please refer to “NETWORK INTERFACES” on page 122.

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.

```

MULOGX      D.04F  kodkod.lund.  Loc:var/opt/lund/log/   Log: 07/13/05   07:25
---07/13/05
--- 07:25 -----
                                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
-----
Calls          .0                      Retrans       .0                      Authref       .0
-----

```

Figure 40.9 *MVLOGX NFS Client Summary report*

For information about MVLOGX NFS Client data, refer to “NFS Summary Screen Display Items” on page 126.

MVLOGX Workload Summary

The Workload Summary in MVLOGX displays workload statistics.

MVLOGX	D.04F	kodkod.lund.	Loc:var/opt/lund/log/	Log: 07/20/04	15:26
--- 15:26 --- WORKLOAD SUMMARY ---					
No	Group Name	%CPU	%User CPU	Mem (kb)	VM (kb)
1:	INTERACT	.0	.0	10168	10100
2:	BATCH	.0	.0	0	0
3:	DAEMON	2.5	51.1	75140	80268
4:	DEFAULT	.0	.0	0	0
5:					
--- 15:31 --- WORKLOAD SUMMARY ---					
No	Group Name	%CPU	%User CPU	Mem (kb)	VM (kb)
1:	INTERACT	.0	.0	10168	10100
2:	BATCH	.0	.0	0	0
3:	DAEMON	1.9	36.6	75140	80268
4:	DEFAULT	.0	.0	0	0
5:					
<div> <div>OPTIONS</div> <div>PRT RPT</div> <div>EXP RPT</div> <div>LIST LOG</div> <div>MORE</div> <div>RELOAD</div> <div>REPORTS</div> <div>EXIT</div> </div>					

Figure 40.10 *MVLOGX Workload Summary report*

For information about the MVLOGX Workload Summary statistics, refer to “WORKLOAD SUMMARY Data Items” on page 92.

MVLOGX FS Space Summary

The FS Space Summary in MVLOGX displays file system space information for each file system.

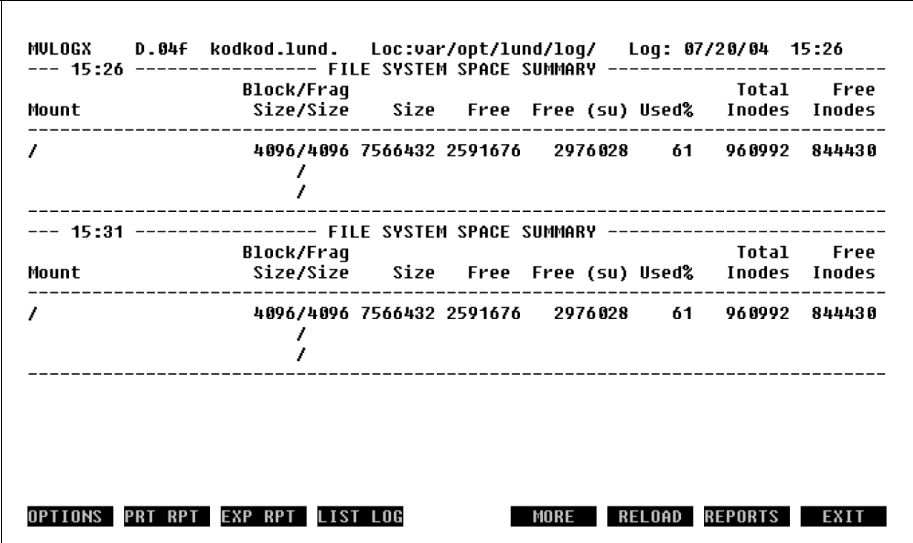


Figure 40.11 MVLOGX FS Space Summary report

For information about the data contained in the MVLOGX FS Space Summary report, refer to “MVHOST File System Space Summary” on page 119.

MVLOGX System Configuration

The System Configuration report in MVLOGX displays various configurable kernel parameters.

```

MVLOGX   D.04f  kodkod.lund.   Loc:var/opt/lund/log/   Log: 07/13/05   07:25
---07/13/05
--- 07:25 ----- SYSTEM CONFIGURATION -----
  system name: kodkod.lun
  kernel version: 2.4.18-3
  serial num: 694356498
                        cpu type: i586
                        boot time: 07:23 13 JUL 2005   run level: 5
----- PROCESS CONFIGURATION -----
rlim_fd_cur:          rlim_fd_max:          maxuprc:          max_nproc:
----- IPC CONFIGURATION -----
  MESSAGES  msgmap:    0 | SEMAPHORES  semumx: 32767 | SHARED MEM
msgmax: 8192  msgmni:   16 | semmap: 32000  senaen:    4 | shmmax: *****
msgmnb: 16384 msgseg: 16384 | semmni:   128  semnmu: 32000 | shmmni:  4096
msgssz:   16  msgtql:    0 | semmns: 32000  senume:   32 | shmseg:  4096
-----

```

OPTIONS **PRT RPT** **EXP RPT** **LIST LOG**

MORE **RELOAD** **REPORTS** **EXIT**

Figure 40.12 *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 141.

MVLOGX ORACLE Detail Cache

The ORACLE Detail Cache report in MVLOGX displays the most important statistics related to Oracle cache management.

MVLOGX	D.04F	kodkod.lund.	Loc:var/opt/lund/log/	Log: 08/03/05	05:04
---	05:04	-----	INSTANCE_NAME	dduck	
Row Cache			Library Cache		
DB BLOCK GETS:	87826688		User Calls:	05940992	
CONSISTENT GETS:	58884352		Recursive calls:	26980096	
PHYSICAL READS:	85731328		Exec Count:	0	
Redo Buffer			Parse Cnt (tot):	0	
Redo Syn Wrts:	94967296		Parse Cnt (hard):	78923776	
Redo Logspc Req:	76598784		Pins:	0	
Waits			Reloads:	67187456	
Free List:	0		Data Dict Cache		
Sys Undo Block:	0		Gets:	0	
Sys Undo Header:	0		Get Misses:	92368128	
Undo Block:	0				
Undo Header:	57965056				

<div> <div>OPTIONS</div> <div>PRT RPT</div> <div>EXP RPT</div> <div>LIST LOG</div> <div>MORE</div> <div>RELOAD</div> <div>REPORTS</div> <div>EXIT</div> </div>					

Figure 40.13 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 185.

MVLOGX ORACLE Database Activity

The ORACLE Database Activity report in MVLOGX provides important statistics related to Oracle database activities.

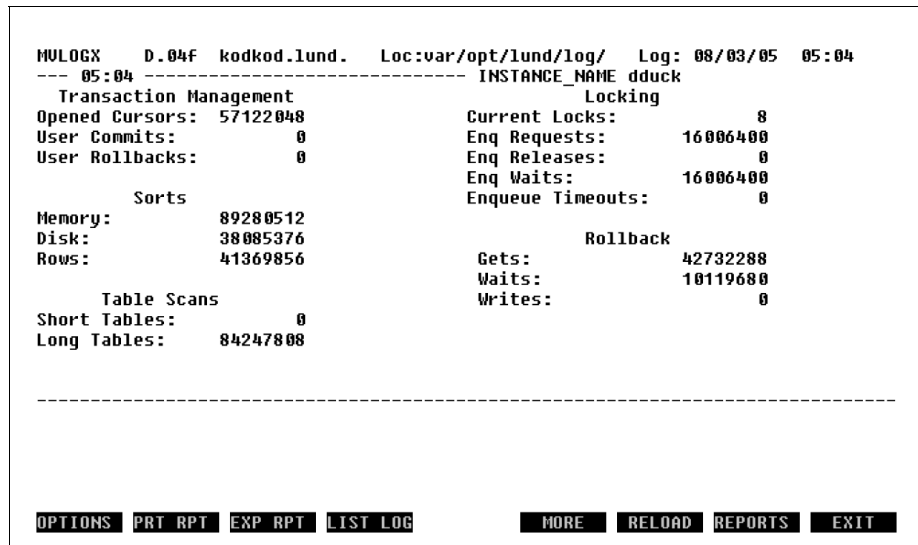


Figure 40.14 *MVLOGX ORACLE Database Activity report*

For information about the data items presented in the MVLOGX ORACLE Database Activity report, refer to “MVHOST Oracle Detail Database Activity” on page 175.

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.

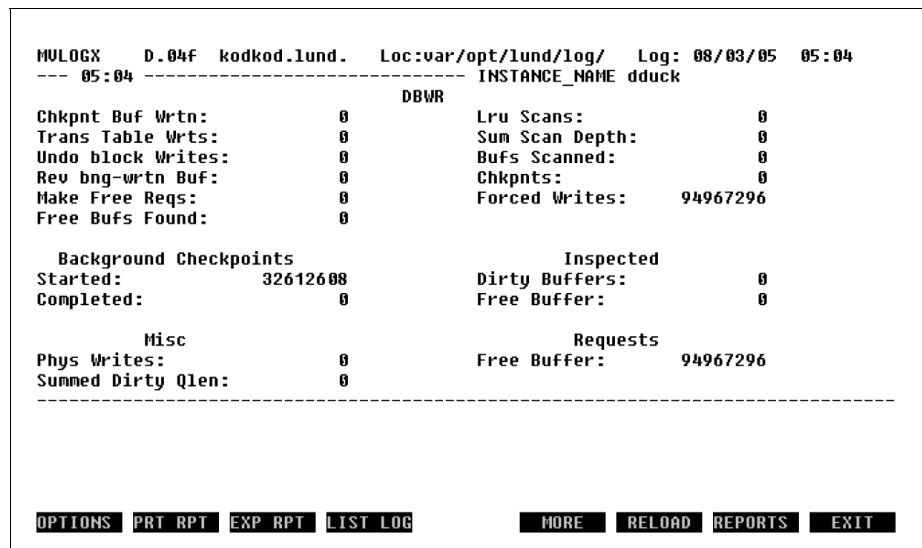


Figure 40.15 MVLOGX ORACLE DBWR Activity report

For information about the data items presented in the MVLOGX ORACLE BDWR Activity report, refer to “MVHOST Oracle Detail DBWR” on page 195.

MVLOGX ORACLE Detail Events

The ORACLE Detail Events report in MVLOGX provides statistics related to Oracle database events.

```
MULOGX      D.04f  kodkod.lund.   Loc:var/opt/lund/log/   Log: 08/03/05   05:04
--- 05:04 -----
          DB File
Sequential Read:      0
Scattered Read:    67841536
Parallel Read:      0
Single Write:      89934592
Parallel Write:      0

          Log File
Sequential Read:    89934592
Sync:              78561024
Single Write:      57122048
Parallel Write:    94967296

          File
Identify:          47056640
Open:             52089344

          Control File
Sequential Real:      0
Parallel Write:    10973696
Refresh Command:    03524608

                          Net Events
SQL*Net break/reset to client:    42732288
SQL*Net message from client:    42732288
SQL*Net message to client:      0
-----

OPTIONS  PRT RPT  EXP RPT  LIST LOG  MORE  RELOAD  REPORTS  EXIT
```

Figure 40.16 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 191.

MVLOGX ORACLE LRU Latches

The ORACLE LRU Latches report in MVLOGX presents latches statistics.

MVLOGX	D.04F	kodkod.lund.	Loc:var/opt/lund/log/	Log: 08/03/05	05:04
---	05:04	-----	INSTANCE_NAME	dduck	
Lru Latches					
Cache Buffer Chains			Cache Buffer Handles		
Gets:	0		Gets:	0	
Misses:	0		Misses:	52743424	
In Gets:	0		In Gets:	0	
In Misses:	87969536		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:	36845568	
Redo Allocation			Redo Copy		
Gets:	0		Gets:	0	
Misses:	0		Misses:	80577536	
In Gets:	0		In Gets:	0	
In Misses:	0		In Misses:	22855680	
Redo Log Buffer Latches			Redo Writing		
Gets:	0		In Gets:	0	
Misses:	0		In Misses:	57122048	
<div> <div>OPTIONS</div> <div>PRT RPT</div> <div>EXP RPT</div> <div>LIST LOG</div> <div>MORE</div> <div>RELOAD</div> <div>REPORTS</div> <div>EXIT</div> </div>					

Figure 40.17 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 171.

MVLOGX ORACLE Memory and Network

The ORACLE Memory and Network report in MVLOGX provides statistics about memory allocation and network transfers.

```

MVLOGX      D.04F  kodkod.lund.  Loc:var/opt/lund/log/  Log: 08/03/05  05:04
--- 05:04 -----

```

		INSTANCE_NAME	dduck
		MEMORY	
SGA		Session	
Free Memory:	1905	UGA Memory:	97183744
DB Buffers:	16384	UGA Memory Max:	76961536
Log Buffers:	160	PGA Memory:	78541056
Dict Cache:	157	PGA Memory Max:	91676928
SQL Area:	905		
Lib Cache:	527		
NETWORK			
Bytes sent via SQL*Net to client:		59128064	
Bytes received via SQL*Net from client:		42732288	
SQL*Net roundtrips to/from client:		0	
Bytes sent via SQL*Net to dblink:		0	
Bytes received via SQL*Net from dblink:		0	
SQL*Net roundtrips to/from dblink:		0	

```


```

OPTIONS	PRT RPT	EXP RPT	LIST LOG	MORE	RELOAD	REPORTS	EXIT
---------	---------	---------	----------	------	--------	---------	------

Figure 40.18 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 179.

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.

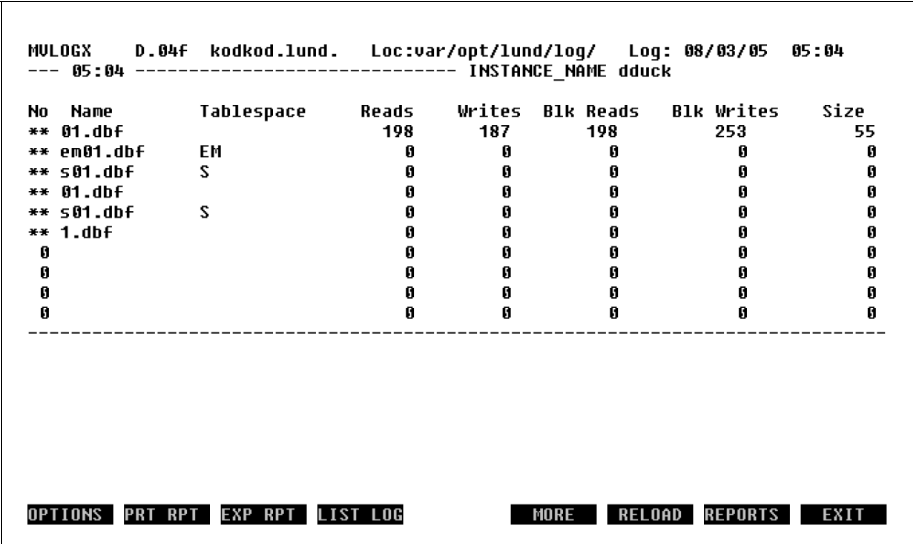


Figure 40.19 MVLOGX ORACLE Detail Datafiles report

For information about the data items presented in the MVLOGX ORACLE Detail Datafiles report, refer to “MVHOST Oracle Detail Datafiles” on page 199.

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.

Figure 40.20 *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 183.



META-VIEW FOR LINUX 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 147.

The following Linux pulse points are provided by Lund Performance Solutions. The performance ranges are generic for all Linux systems—customizing them for your system is recommended. Please refer to the configuration instructions in “MVHOST ppoints File” on page 74.

Table A.1 *Meta-View for Linux 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 85	85 to 95	greater than 95
Run Queue Average The average number of executable processes that waited for the CPU during a collection interval.	less than 5	5 to 10	greater than 10

Performance Indicator	Performance Ranges		
	Normal	Problematic	Unacceptable
Memory Performance			
Page Out Rate 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.	less than 70	70 to 100	greater than 100
Swap Out Rate The number of processes swapped out of memory to disk in order to satisfy extreme memory shortages.	less than 1	1 to 2	greater than 2
Disk Performance			
Average Wait Time The verage wait time for disk requests.	less than 50	50 to 100	greater than 100
Average Queue Length The average number of processes in the request queue for a particular disk drive.	less than 1	1 to 3	greater than 3
Disk Utilization % The percentage of disk utilization.	less than 40	40 to 60	greater than 60
Disk I/O Rate The number of disk I/O (reads and writes to disk) per second.	less than 50	50 to 100	greater than 100

Performance Indicator	Performance Ranges		
	Normal	Problematic	Unacceptable
Network Performance			
Defer The percentage of output packets deferred. A packet is deferred when the LAN card is too busy with other incoming or outgoing packets.	less than 2	2 to 10	greater than 10
Collision The number of output packets sent that resulted in a collision.	less than 3	3 to 10	greater than 10



LINUX DATA ITEMS

The following is the contents of the /opt/lund/lib/itemlist file. All possible data items monitored by Meta-View Performance Manager are listed in this file.

This information is provided as a reference to the user—please do not modify the itemlist file in any way. Data items may be added, modified, or deleted by Lund Performance Solutions periodically and without notice to users.

```
#####
#####
##### WARNING! #####
##### CUSTOMERS: DO NOT MODIFY THIS FILE! #####
#####
#####
!
!
! File Structure:
!
! Column 1
!     Item Name (used by MVLOGX reports and other functions)
!           (20 character MAX)
! Column 2
!     Block Number (Must be in sorted order from 0 to n)
!
! Column 3
!     Offset in 16 bit words (Must be in sorted order with no holes or overlaps)
! Column 4
```

```

!      Type of variable  (1 = short,      (16 bits,signed)
!                        2 = long,        (32 bits,signed)
!                        4 = longint,     (64 bits,signed)
!                        -1 = ushort,     (16 bits,unsigned)
!                        0 = string)
! Column 5
!      Total display length in characters (including dec pt and dec places)
!      (Should never be greater than 11 for non-string types!)
! Column 6
!      Implied decimal places
! Column 7
!      flags    - = none,
!              1 = peak values are low
!              0 = treat 0% like 100%          (for pulse points)
! Column 8
!      Comments

GLOB-ELAPSED-TIME      0  0  2  9  0  -   Elapsed time (ms)

GLOB-MODEL             0 2000  0  8  0  -   System model

DISC-DEV              1  0  2  8  0  -   Disk device code
DISC-PHY-READS        1  2  2  5  0  -   Disk physical reads
DISC-PHY-WRITES       1  4  2  5  0  -   Disk physical writes
DISC-PHY-RD-RATE      1  6  2  5  1  -   Disk physical read rate (/s)
DISC-PHY-WR-RATE      1  8  2  5  1  -   Disk physical write rate (/s)
DISC-PHY-AVG-RD-SIZE  1 10  2  5  0  -   Average disk physical read size (KB)
DISC-PHY-AVG-WR-SIZE  1 12  2  5  0  -   Average disk physical write size (KB)
DISC-IOS              1 14  2  5  0  -   Disk physical IO activity (IO's)
DISC-IO-RATE          1 16  2  6  0  -   Disk physical IO rate (IO/s)

```


DISC-AVG-SERV-TIME	1	18	-1	5	1	-	Average disk service time (ms)
DISC-AVG-WAIT-TIME	1	19	-1	5	1	-	Average disk wait time (ms)
DISC-IO%	1	20	1	3	0	-	Percent of total disc I/O
DISC-QUEUE-LEN	1	21	-1	6	1	-	Disk request queue length
DISC-UTIL%	1	22	1	5	1	-	Disk utilization %
DISC-DEV2	1	2000	2	8	0	-	Disc device code
DISC-DEVFILE	1	2002	0	16	0	-	Disc device filename
GROUP	2	0	1	3	0	-	Workload group number
GRP-LOW-PRI	2	1	-1	2	0	-	Workload high priority
GRP-HIGH-PRI	2	2	-1	2	0	-	Workload low priority
GRP-CPU%	2	3	-1	5	1	-	Workload CPU %
GRP-FILLER0	2	4	-1	5	1	-	Not used
GRP-PROC-COUNT	2	5	-1	6	1	-	Workload active process count
GRP-MEM	2	6	2	9	0	-	Memory used by procs in workload (KB)
GRP-VM	2	8	2	9	0	-	VM used by procs in workload (KB)
GRP-MEM%	2	10	-1	5	1	-	% Memory used by procs in workload
GRP-VM%	2	11	-1	5	1	-	% VM used by procs in workload
GRP-MAJFLT-RATE	2	12	2	5	1	-	Workload major page fault rate (/s)
GRP-MINFLT-RATE	2	14	2	5	1	-	Workload minor page fault rate (/s)
GRP-SWAP-RATE	2	16	2	5	1	-	Workload swap out rate (/s)
GRP-CPU	2	18	2	9	0	-	Workload CPU time (ms)
GRP-TYPE	2	20	-1	1	0	-	Workgroup type
GRP-USER-CPU%	2	21	-1	5	1	-	Workload user CPU percentage
GRP-SYS-CPU%	2	22	-1	5	1	-	Workload system CPU percentage
GRP-CPU-LIVE%	2	23	-1	3	0	-	Workload process percent alive on CPU %
GRP-LIVE-TIME	2	24	2	9	0	-	Workload process live time (ms)
GROUP2	2	2000	1	3	0	-	Workload group number

GRP-NAME	2	2001	0	12	0	-	Workload name
PROC-PID	3	0	2	5	0	-	Process PID
PROC-NAME	3	2	0	14	0	-	Process name
PROC-USER	3	9	0	10	0	-	Process user name
PROC-TTY	3	14	0	12	0	-	Process terminal device code
PROC-CPU-PCT	3	20	1	5	1	-	Process CPU %
PROC-NICE	3	21	1	3	0	-	Process nice value
PROC-PRI	3	22	1	3	0	-	Process priority value
PROC-FILLER	3	23	1	0	0	-	Not used
PROC-RSS	3	24	2	6	0	-	Process physical memory used (KB)
PROC-SIZE	3	26	2	6	0	-	Process virtual memory used (KB)
PROC-PHY-READS	3	28	2	6	0	-	Process physical disk reads
PROC-PHY-WRITES	3	30	2	6	0	-	Process physical disk writes
PROC-IO-PCT	3	32	1	3	0	-	Process % of physical IO's
PROC-WAIT-STATE	3	33	1	2	0	-	Process wait state
PROC-CPU-TIME	3	34	2	8	0	-	Process CPU time (ms)
PROC-USR-PCT	3	36	1	5	1	-	Process user mode wait %
PROC-SYS-PCT	3	37	1	5	1	-	Process sys mode wait %
CPU-BUSY%	6	0	-1	5	1	-	Total CPU busy %
CPU-USER%	6	1	-1	5	1	-	User CPU %
CPU-SYS%	6	2	-1	5	1	-	System CPU %
CPU-NICE%	6	3	-1	5	1	-	CPU nice user process %
CPU-IDLE%	6	4	-1	5	1	-	CPU idle %
CPU-FILLER	6	5	1	0	0	-	Not used
CPU-BUSY	6	6	2	6	0	-	Total CPU busy time (ms)
CPU-QUEUE-LEN	6	8	-1	5	1	-	Average CPU 1 min ready queue length
CPU-QUEUE-5M	6	9	-1	5	1	-	Average CPU 5 min ready queue length
CPU-QUEUE-15M	6	10	-1	5	1	-	Average CPU 15 min ready queue length

CPU-CAPTURE	6	11	-1	5	1	1	CPU capture (user/sys CPU)
CPU-FORK-RATE	6	12	2	4	1	-	CPU fork rate (/s)
CPU-CSW-RATE	6	14	2	4	1	-	CPU context switch rate (/s)
CPU-INTERRUPT-RATE	6	16	2	4	1	-	CPU interrupt rate (/s)
CPU-TRAP-RATE	6	18	2	4	1	-	CPU trap rate (/s)
CPU-COUNT	6	2000	-1	3	0	-	CPU count
VM-USED-MEM%	7	0	-1	4	1	-	Physical memory used %
VM-REAL-USED-MEM%	7	1	-1	4	1	-	Memory used % (without buffer and cache)
VM-SHARED-MEM%	7	2	-1	4	1	-	Shared memory %
VM-USED-VM%	7	3	-1	4	1	-	Virtual memory used %
VM-USED-MEM	7	4	2	7	0	-	Physical memory used (KB)
VM-REAL-USED-MEM	7	6	2	7	0	-	Memory used (without buffer and cache) (KB)
VM-FREE-MEM	7	8	2	7	0	-	Free physical memory (KB)
VM-REAL-FREE-MEM	7	10	2	7	0	-	Available memory (with buffer and cache) (KB)
VM-USED-VM	7	12	2	7	0	-	Virtual memory used (KB)
VM-FREE-VM	7	14	2	7	0	-	Free virtual memory (KB)
VM-SHARED-MEM	7	16	2	7	0	-	Shared memory size (KB)
VM-BUFFER-MEM	7	18	2	7	0	-	Buffer memory size (KB)
VM-CACHED-MEM	7	20	2	7	0	-	Cache memory size (KB)
VM-PS-LOADED-RUN	7	22	-1	3	0	-	Number of procs loaded and runnable
VM-PS-LOADED-SLEEP	7	23	-1	3	0	-	Number of procs loaded and sleeping
VM-PS-LOADED	7	24	-1	3	0	-	Number of procs loaded
VM-PS-SWAP-RUN	7	25	-1	3	0	-	Number of procs swapped and runnable
VM-PS-SWAP-SLEEP	7	26	-1	3	0	-	Number of procs swapped and sleeping
VM-PS-SWAP	7	27	-1	3	0	-	Number of procs swapped
VM-PAGE-IN-RATE	7	28	2	6	1	-	Virtual memory page in rate (/s)

VM-PAGE-OUT-RATE	7	30	2	6	1	-	Virtual memory page out rate (/s)
VM-PAGE-IN-BPS	7	32	2	6	0	-	Virtual memory page in size rate (B/s)
VM-PAGE-OUT-BPS	7	34	2	6	0	-	Virtual memory page out size rate (B/s)
VM-PAGE-INS	7	36	2	6	0	-	Virtual memory page ins
VM-PAGE-OUTS	7	38	2	6	0	-	Virtual memory page outs
VM-SWAP-IN-RATE	7	40	2	6	1	-	Virtual memory swap in rate (/s)
VM-SWAP-OUT-RATE	7	42	2	6	1	-	Virtual memory swap out rate (/s)
VM-SWAP-IN-BPS	7	44	2	6	0	-	Virtual memory swap in rate (B/s)
VM-SWAP-OUT-BPS	7	46	2	6	0	-	Virtual memory swap out rate (B/s)
VM-SWAP-INS	7	48	2	6	0	-	Virtual memory swap ins
VM-SWAP-OUTS	7	50	2	6	0	-	Virtual memory swap outs
VM-MIN-PG-FLT-RATE	7	52	2	6	1	-	Virtual memory minor page fault rate (/s)
VM-MAJ-PG-FLT-RATE	7	54	2	6	1	-	Virtual memory major page fault rate (/s)
VM-VM-SIZE	7	56	2	7	0	-	Total virtual memory (KB)
VM-MEM-SIZE	7	2000	2	7	0	-	Total physical memory (KB)
MISC-SESSIONS	8	0	1	5	0	-	Sessions
MISC-ACT-SESSIONS	8	1	1	5	0	-	active sessions
MISC-PROCESSES	8	2	1	5	0	-	Processes
MISC-ACT-PROCESSES	8	3	1	5	0	-	Active processes
MISC-PROC-BLOCK-IO	8	4	1	5	0	-	Processes blocked on IO
MISC-PROC-SWAPPED	8	5	1	4	0	-	Swapped processes
MISC-TRANSACTIONS	8	6	2	6	0	-	Transaction count
MISC-TRANS-RATE	8	8	2	6	1	-	Transaction rate (/s)
MISC-TOT-RESP-TIME	8	10	2	6	0	-	Total response time (s)
MISC-RESP-TIME	8	12	2	6	1	-	Average response time (s)

NETP-IP-IN-PKT-RT	10	0	2	5	1	-	IP packets in rate (/s)
NETP-IP-OUT-PKT-RT	10	2	2	5	1	-	IP packets out rate (/s)
NETP-IP-IN-ERR%	10	4	-1	6	2	-	IP error in %
NETP-IP-OUT-ERR%	10	5	-1	6	2	-	IP error out %
NETP-ICMP-IN-PKT-RT	10	6	2	5	1	-	ICMP packets in rate (/s)
NETP-ICMP-OUT-PKT-RT	10	8	2	5	1	-	ICMP packets out rate (/s)
NETP-ICMP-IN-ERR%	10	10	-1	6	2	-	ICMP error in %
NETP-ICMP-OUT-ERR%	10	11	-1	6	2	-	ICMP error out %
NETP-UDP-IN-PKT-RT	10	12	2	5	1	-	UDP packet in rate (/s)
NETP-UDP-OUT-PKT-RT	10	14	2	5	1	-	UDP packet out rate (/s)
NETP-UDP-IN-ERR%	10	16	-1	6	2	-	UDP error in %
NETP-UDP-FILLER	10	17	1	0	0	-	Not used
NETP-TCP-IN-PKT-RT	10	18	2	5	1	-	TCP packet in rate (/s)
NETP-TCP-OUT-PKT-RT	10	20	2	5	1	-	TCP packet out rate (/s)
NETP-TCP-IN-ERR%	10	22	-1	6	2	-	TCP error in %
NETP-TCP-OUT-ERR%	10	23	-1	6	2	-	TCP packet out %
SWAP-DEV	11	0	2	8	0	-	Swap device code
SWAP-USED	11	2	2	5	0	-	Swap space used (MB)
SWAP-RESERVED	11	4	2	5	0	-	Swap space reserved (MB)
SWAP-FREE	11	6	2	5	0	-	Swap space free (MB)
SWAP-DEV2	11	2000	2	8	0	-	Swap device code
SWAP-DEVFILE	11	2002	0	24	0	-	Swap device filename
SWAP-TYPE	11	2014	0	6	0	-	Swap type
SWAP-FILLER	11	2017	1	0	0	-	Not used
SWAP-SIZE	11	2018	2	5	0	-	Swap size (MB)
NETIF-INDEX	12	0	2	8	0	-	NetIf index
NETIF-PCKTS-IN-RATE	12	2	2	6	1	-	NetIf packet in rate (/s)

NETIF-PCKTS-OUT-RATE	12	4	2	6	1	-	NetIf packet out rate (/s)
NETIF-PCKT-IN-SZ	12	6	2	7	0	-	Average NetIf packet in size (B)
NETIF-PCKT-OUT-SZ	12	8	2	7	0	-	Average NetIf packet out size (B)
NETIF-IN-ERR%	12	10	-1	6	2	-	NetIf packet in error %
NETIF-OUT-ERR%	12	11	-1	6	2	-	NetIf packet out error %
NETIF-COLLISION%	12	12	-1	6	2	-	NetIf packet collision %
NETIF-DEFER%	12	13	-1	6	2	-	NetIf packet defer %
NETIF-NOCANPUT-RATE	12	14	2	5	1	-	NetIf nocompuls (/s)
NETIF-INDEX2	12	2000	2	8	0	-	NetIf index
NETIF-IFNAME	12	2002	0	16	0	-	NetIf name
NFS-IP-ADDR	13	0	2	11	0	-	NFS IP Address
NFS-SERVER-RD-RATE	13	2	2	5	1	-	NFS server read rate (/s)
NFS-SERVER-WR-RATE	13	4	2	5	1	-	NFS server write rate (/s)
NFS-SERVER-NORESP	13	6	2	5	0	-	NFS server no response number
NFS-SERVER-SERV-TIME	13	8	2	5	2	-	NFS server service time (s)
NFS-SERVER-NET-TIME	13	10	2	5	2	-	NFS server network time (s)
NFS-SERVER-AVG-QLEN	13	12	2	5	1	-	NFS server request queue length
NFS-IP-ADDR2	13	2000	2	11	0	-	NFS IP Address
NFS-IP-NAME	13	2002	0	16	0	-	NFS node name
DSPC-DEV	14	0	2	8	0	-	Partition device code
DSPC-AVAIL-KB	14	2	2	8	0	-	Available partition space to non-super user (KB)
DSPC-USED-KB	14	4	2	8	0	-	Used partition space (KB)
DSPC-FREE-KB	14	6	2	8	0	-	Free partition space (KB)
DSPC-USED%	14	8	-1	5	0	-	Used partition space %
DSPC-FILLER	14	9	1	0	0	-	Not used

DSPC-AVAIL-INODES	14	10	2	8	0	-	Partition available inodes
DSPC-FREE-INODES	14	12	2	8	0	-	Partition available inodes to non-super user
DSPC-DEV2	14	2000	2	8	0	-	Partition device code
DSPC-MNTPNT	14	2002	0	24	0	-	Partition mount point
DSPC-BSIZE	14	2014	2	8	0	-	Partition block size (KB)
DSPC-FSIZE	14	2016	2	8	0	-	Partition frag size (KB)
DSPC-SIZE-KB	14	2018	2	8	0	-	Partition size (KB)
DSPC-INODES	14	2020	2	8	0	-	Partition configured inode number
BC-NBUF	15	0	2	5	0	-	Buffer cache size
BC-RHIT%	15	2	-1	5	1	0	Buffer cache read hit %
BC-WHIT%	15	3	-1	5	1	0	Buffer cache write hit %
BC-HIT%	15	4	-1	5	1	0	Buffer cache hit %
BC-BUFHWM	15	2000	2	5	0	0	Memory to be used for buffer cache (KB)
DNLC-LOOKUP-RT	16	0	2	5	1	-	Name cache lookup rate (/s)
DNLC-HIT%	16	2	-1	5	1	-	Name cache hit %
DNLC-NCSIZE	16	2000	2	5	0	-	Name cache table entries
IC-ENTRIES	17	0	2	5	0	-	Inode cache size
IC-ENTRIES-USED	17	2	2	5	0	-	Used inode cache entries
IC-ENTRIES-HIGH	17	4	2	5	0	-	Max number of icache entries ever used
IC-HIT%	17	6	-1	5	1	-	Inode cache hit %
IC-IPF%	17	7	-1	5	1	-	Inodes w/pages attached when freed %

IC-UFS-NINODE	17	2000	2	5	0	-	Inodes cache in memory
FSG-UFS-LW	18	2000	2	5	0	-	Maximum size to complete write IO
FSG-UFS-HW	18	2002	2	5	0	-	Minimum size to defer write IO
FSG-AUTOUP	18	2004	2	5	0	-	Interval between dirty page checks (s)
FSG-T-FSFLUSHR	18	2006	2	5	0	-	Interval between fsflush invocations (s)
FSG-DOIFLUSH	18	2008	-1	1	0	-	Update inode information during fsflush
FSG-DOPAGEFLUSH	18	2009	-1	1	0	-	Check memory for modified pages during fsflush
SYS-NAME	19	2000	0	12	0	-	System name
SYS-SERIAL-NUM	19	2006	2	10	0	-	System serial number
SYS-OS-VERSION	19	2008	0	10	0	-	SystemOS version
SYS-BOOT-TIME	19	2013	0	10	0	-	System boot time
SYS-BOOT-DATE	19	2018	0	16	0	-	System boot date
SYS-CPU-TYPE	19	2026	0	10	0	-	System CPU type
SYS-RUN-LEVEL	19	2031	0	2	0	-	System run level
IPC-MSG-ENTRIES-USED	20	0	2	5	0	-	Message entries used (ID's)
IPC-MSG-ENTRIES-HIGH	20	2	2	5	0	-	Maximum message entries used (ID's)
IPC-SEM-ENTRIES-USED	20	4	2	5	0	-	Semaphore entries used (ID's)
IPC-SEM-ENTRIES-HIGH	20	6	2	5	0	-	Maximum semaphore entries used (ID's)
IPC-SHM-ENTRIES-USED	20	8	2	5	0	-	Shared memory entries used (ID's)
IPC-SHM-ENTRIES-HIGH	20	10	2	5	0	-	Maximum shared memory entries used (ID's)
IPC-MSG-ENTRIES	20	12	2	5	0	-	Total message entries (ID's)
IPC-SEM-ENTRIES	20	14	2	5	0	-	Total semaphore entries (ID's)
IPC-SHM-ENTRIES	20	16	2	5	0	-	Total shared memory entries (ID's)
IPC-MSGMAX	20	18	2	5	0	-	Maximum message size (B)

IPC-MSGMNB	20	20	2	5	0	-	Maximum message queue size
IPC-MSGSSZ	20	22	2	5	0	-	Message segment size (B)
IPC-MSGMAP	20	24	2	5	0	-	Entries to track free message space
IPC-MSGMNI	20	26	2	5	0	-	Max number of message queue identifiers (ID's)
IPC-MSGSEG	20	28	2	5	0	-	Max number of message segments in system
IPC-MSGTQL	20	30	2	5	0	-	Max number of messages in system
IPC-SEMMAP	20	32	2	5	0	-	Entries to track free semaphore memory
IPC-SEMMNI	20	34	2	5	0	-	Max number of semaphore identifiers (ID's)
IPC-SEMMNS	20	36	2	5	0	-	Max number of semaphores in the system
IPC-SEVMX	20	38	2	5	0	-	Max semaphore value
IPC-SEMAEM	20	40	2	5	0	-	Max semaphore value in an undo structure
IPC-SEMMNU	20	42	2	5	0	-	Number of semaphore undo structures
IPC-SEMUME	20	44	2	5	0	-	Max semaphore undo structures per process
IPC-SHMMAX	20	46	2	5	0	-	Max size of a shared memory segment
IPC-SHMMNI	20	48	2	5	0	-	Max number of shared memory identifiers (ID's)
IPC-SHMSEG	20	50	2	5	0	-	Max number of shared memory segments per process (ID's)
FCACHE-ENTRIES	21	0	2	5	0	-	File cache entries
FCACHE-ENTRIES-USED	21	2	2	5	0	-	Used file cache entries
FCACHE-ENTRIES-HIGH	21	4	2	5	0	-	Max number of file cache entries ever used
RCACHE-ENTRIES	21	6	2	5	0	-	Rnode cache entries
RCACHE-ENTRIES-USED	21	8	2	5	0	-	Used rnode cache entries
RCACHE-ENTRIES-HIGH	21	10	2	5	0	-	Max number of rnode cache entries ever used

PCACHE-ENTRIES	22	0	2	5	0	-	Process cache entries
PCACHE-ENTRIES-USED	22	2	2	5	0	-	Used process cache entries
PCACHE-ENTRIES-HIGH	22	4	2	5	0	-	Maximum process cache entries ever used
PCACHE-MAX-NPROC	22	2000	2	5	0	-	Maximum process number
PCACHE-RLIM-FD-CUR	22	2002	2	4	0	-	Process open file descriptor soft limit
PCACHE-RLIM-FD-MAX	22	2004	2	4	0	-	Process open file descriptor hard limit
PCACHE-MAXUPRC	22	2006	2	5	0	-	Max number of user processes per user id
RPC-SRVR-CALL-RT	23	0	2	5	1	-	RPC calls received (/s)
RPC-SRVR-BADCALL-RT	23	2	2	5	1	-	Bad RPC calls received (/s)
RPC-SRVR-BDAUTH-RT	23	4	2	5	1	-	Bad RPC authorizations (/s)
RPC-SRVR-BADCLNT-RT	23	6	2	5	1	-	Bad RPC clients (/s)
RPC-SRVR-XDRCALL-RT	23	8	2	5	1	-	RPC xdr calls sent (/s)
RPC-CLNT-CALL-RT	23	10	2	5	1	-	RPC calls sent (/s)
RPC-CLNT-RETRAN-RT	23	12	2	5	1	-	RPC retransmissions (/s)
RPC-CLNT-AUTHREF-RT	23	14	2	5	1	-	RPC authorization refreshes (/s)
NFSG-CLT-BAD-CALL%	24	0	-1	5	1	-	NFS client bad call %
NFSG-CLT-V2-NULL%	24	1	-1	5	1	-	NFS client null call %
NFSG-CLT-V2-GETATTR%	24	2	-1	5	1	-	NFS client getattr call %
NFSG-CLT-V2-SETATTR%	24	3	-1	5	1	-	NFS client setattr call %
NFSG-CLT-V2-ROOT%	24	4	-1	5	1	-	NFS client root call %
NFSG-CLT-V2-LOOKUP%	24	5	-1	5	1	-	NFS client lookup call %
NFSG-CLT-V2-RDLINK%	24	6	-1	5	1	-	NFS client readlink call %
NFSG-CLT-V2-READ%	24	7	-1	5	1	-	NFS client read call %

NFSG-CLT-V2-WRCACHE%	24	8	-1	5	1	-	NFS client writecache call %
NFSG-CLT-V2-WRITE%	24	9	-1	5	1	-	NFS client write call %
NFSG-CLT-V2-CREATE%	24	10	-1	5	1	-	NFS client create call %
NFSG-CLT-V2-REMOVE%	24	11	-1	5	1	-	NFS client remove call %
NFSG-CLT-V2-RENAME%	24	12	-1	5	1	-	NFS client rename call %
NFSG-CLT-V2-LINK%	24	13	-1	5	1	-	NFS client link call %
NFSG-CLT-V2-SYMLINK%	24	14	-1	5	1	-	NFS client symlink call %
NFSG-CLT-V2-MKDIR%	24	15	-1	5	1	-	NFS client mkdir call %
NFSG-CLT-V2-RMDIR%	24	16	-1	5	1	-	NFS client rmdir call %
NFSG-CLT-V2-READDIR%	24	17	-1	5	1	-	NFS client readdir call %
NFSG-CLT-V2-STATFS%	24	18	-1	5	1	-	NFS client statfs call %
NFSG-SRV-BAD-CALL%	24	19	-1	5	1	-	NFS server bad call %
NFSG-SRV-V2-NULL%	24	20	-1	5	1	-	NFS server null call %
NFSG-SRV-V2-GETATTR%	24	21	-1	5	1	-	NFS server getattr call %
NFSG-SRV-V2-SETATTR%	24	22	-1	5	1	-	NFS server setattr call %
NFSG-SRV-V2-ROOT%	24	23	-1	5	1	-	NFS server root call %
NFSG-SRV-V2-LOOKUP%	24	24	-1	5	1	-	NFS server lookup call %
NFSG-SRV-V2-RDLINK%	24	25	-1	5	1	-	NFS server readlink call %
NFSG-SRV-V2-READ%	24	26	-1	5	1	-	NFS server read call %
NFSG-SRV-V2-WRCACHE%	24	27	-1	5	1	-	NFS server writecache call %
NFSG-SRV-V2-WRITE%	24	28	-1	5	1	-	NFS server write call %
NFSG-SRV-V2-CREATE%	24	29	-1	5	1	-	NFS server create call %
NFSG-SRV-V2-REMOVE%	24	30	-1	5	1	-	NFS server remove call %
NFSG-SRV-V2-RENAME%	24	31	-1	5	1	-	NFS server rename call %
NFSG-SRV-V2-LINK%	24	32	-1	5	1	-	NFS server link call %
NFSG-SRV-V2-SYMLINK%	24	33	-1	5	1	-	NFS server symlink call %
NFSG-SRV-V2-MKDIR%	24	34	-1	5	1	-	NFS server mkdir call %
NFSG-SRV-V2-RMDIR%	24	35	-1	5	1	-	NFS server rmdir call %
NFSG-SRV-V2-READDIR%	24	36	-1	5	1	-	NFS server readdir call %
NFSG-SRV-V2-STATFS%	24	37	-1	5	1	-	NFS server statfs call %

NFSG-CLT-V3-NULL%	24	38	-1	5	1	-	NFS v3 client null call %
NFSG-CLT-V3-GETATTR%	24	39	-1	5	1	-	NFS v3 client getattr call %
NFSG-CLT-V3-SETATTR%	24	40	-1	5	1	-	NFS v3 client setattr call %
NFSG-CLT-V3-LOOKUP%	24	41	-1	5	1	-	NFS v3 client lookup call %
NFSG-CLT-V3-ACCESS%	24	42	-1	5	1	-	NFS v3 client access call %
NFSG-CLT-V3-RDLINK%	24	43	-1	5	1	-	NFS v3 client readlink call %
NFSG-CLT-V3-READ%	24	44	-1	5	1	-	NFS v3 client read call %
NFSG-CLT-V3-WRITE%	24	45	-1	5	1	-	NFS v3 client write call %
NFSG-CLT-V3-CREATE%	24	46	-1	5	1	-	NFS v3 client create call %
NFSG-CLT-V3-MKDIR%	24	47	-1	5	1	-	NFS v3 client mkdir call %
NFSG-CLT-V3-SYMLINK%	24	48	-1	5	1	-	NFS v3 client symlink call %
NFSG-CLT-V3-MKNOD%	24	49	-1	5	1	-	NFS v3 client mknod call %
NFSG-CLT-V3-REMOVE%	24	50	-1	5	1	-	NFS v3 client remove call %
NFSG-CLT-V3-RMDIR%	24	51	-1	5	1	-	NFS v3 client rmdir call %
NFSG-CLT-V3-RENAME%	24	52	-1	5	1	-	NFS v3 client rename call %
NFSG-CLT-V3-LINK%	24	53	-1	5	1	-	NFS v3 client link call %
NFSG-CLT-V3-REaddir%	24	54	-1	5	1	-	NFS v3 client readdir call %
NFSG-CLT-V3-REaddirp%	24	55	-1	5	1	-	NFS v3 client readdirp call %
NFSG-CLT-V3-FSSTAT%	24	56	-1	5	1	-	NFS v3 client fsstat call %
NFSG-CLT-V3-FSINFO%	24	57	-1	5	1	-	NFS v3 client fsinfo call %
NFSG-CLT-V3-PATHCNF%	24	58	-1	5	1	-	NFS v3 client pathconf call %
NFSG-CLT-V3-COMMIT%	24	59	-1	5	1	-	NFS v3 client commit call %
NFSG-SRV-V3-NULL%	24	60	-1	5	1	-	NFS v3 server null call %
NFSG-SRV-V3-GETATTR%	24	61	-1	5	1	-	NFS v3 server getattr call %
NFSG-SRV-V3-SETATTR%	24	62	-1	5	1	-	NFS v3 server setattr call %
NFSG-SRV-V3-LOOKUP%	24	63	-1	5	1	-	NFS v3 server lookup call %
NFSG-SRV-V3-ACCESS%	24	64	-1	5	1	-	NFS v3 server access call %
NFSG-SRV-V3-RDLINK%	24	65	-1	5	1	-	NFS v3 server readlink call %
NFSG-SRV-V3-READ%	24	66	-1	5	1	-	NFS v3 server read call %
NFSG-SRV-V3-WRITE%	24	67	-1	5	1	-	NFS v3 server write call %

NFSG-SRV-V3-CREATE%	24	68	-1	5	1	-	NFS v3 server create call %
NFSG-SRV-V3-MKDIR%	24	69	-1	5	1	-	NFS v3 server mkdir call %
NFSG-SRV-V3-SYMLINK%	24	70	-1	5	1	-	NFS v3 server symlink call %
NFSG-SRV-V3-MKNOD%	24	71	-1	5	1	-	NFS v3 server mknod call %
NFSG-SRV-V3-REMOVE%	24	72	-1	5	1	-	NFS v3 server remove call %
NFSG-SRV-V3-RMDIR%	24	73	-1	5	1	-	NFS v3 server rmdir call %
NFSG-SRV-V3-RENAME%	24	74	-1	5	1	-	NFS v3 server rename call %
NFSG-SRV-V3-LINK%	24	75	-1	5	1	-	NFS v3 server link call %
NFSG-SRV-V3-READDR%	24	76	-1	5	1	-	NFS v3 server readdr call %
NFSG-SRV-V3-READDRP%	24	77	-1	5	1	-	NFS v3 server readdirp call %
NFSG-SRV-V3-FSSTAT%	24	78	-1	5	1	-	NFS v3 server fsstat call %
NFSG-SRV-V3-FSINFO%	24	79	-1	5	1	-	NFS v3 server fsinfo call %
NFSG-SRV-V3-PATHCNF%	24	80	-1	5	1	-	NFS v3 server pathconf call %
NFSG-SRV-V3-COMMIT%	24	81	-1	5	1	-	NFS v3 server commit call %

INSTANCE_NUMBER	25	0	2	8	0	-	Oracle instance number
FILLER_0	25	2	2	0	0	-	Not used
SESSION_UGA_MEM25	25	4	4	8	0	-	Oracle session UGA memory (KB)
SESSION_UGA_MEM_MAX	25	8	4	8	0	-	Oracle session maximum UGA memory (KB)
SESSION_PGA_MEM	25	12	4	8	0	-	Oracle session PGA memory (KB)
SESSION_PGA_MEM_MAX	25	16	4	8	0	-	Oracle session maximum PGA memory (KB)
LOCKS_CURRENTLY_HELD	25	20	2	8	0	-	Oracle used lock entries
DB_BLOCK_BUF_K	25	22	2	8	0	-	Oracle block buffer (KB)
DICTIONARY_CACHE_K	25	24	2	8	0	-	Oracle dictionary cache (KB)
FREE_MEMORY_K	25	26	2	8	0	-	Oracle free memory (KB)
LIBRARY_CACHE_K	25	28	2	8	0	-	Oracle library cache (KB)
LOG_BUFFER_K	25	30	2	8	0	-	Oracle log buffer (KB)
SQL_AREA_K	25	32	2	8	0	-	Oracle SQL area (KB)
LOGONS_CURRENT	25	34	2	8	0	-	Oracle current logons
ROLLBACK_1_USN	25	36	2	8	0	-	Oracle rollback_1 segment number

ROLLBACK_1_NAME	25	38	0	30	0	-	Oracle rollback_1 segment name
FILLER_1	25	53	1	0	0	-	Not used
ROLLBACK_1_WAITS	25	54	2	8	0	-	Oracle rollback_1 waits
ROLLBACK_1_GETS	25	56	2	8	0	-	Oracle rollback_1 reads
ROLLBACK_1_WRITES	25	58	2	8	0	-	Oracle rollback_1 writes
ROLLBACK_1_IO	25	60	2	8	0	-	Oracle rollback_1 IO
ROLLBACK_1_HIT%	25	62	2	5	2	-	Oracle rollback_1 hit %
ROLLBACK_2_USN	25	64	2	8	0	-	Oracle rollback_2 segment number
ROLLBACK_2_NAME	25	66	0	30	0	-	Oracle rollback_2 segment name
FILLER_2	25	81	1	0	0	-	Not used
ROLLBACK_2_WAITS	25	82	2	8	0	-	Oracle rollback_2 waits
ROLLBACK_2_GETS	25	84	2	8	0	-	Oracle rollback_2 reads
ROLLBACK_2_WRITES	25	86	2	8	0	-	Oracle rollback_2 writes
ROLLBACK_2_IO	25	88	2	8	0	-	Oracle rollback_2 IO
ROLLBACK_2_HIT%	25	90	2	5	2	-	Oracle rollback_2 hit %
ROLLBACK_3_USN	25	92	2	8	0	-	Oracle rollback_3 segment number
ROLLBACK_3_NAME	25	94	0	30	0	-	Oracle rollback_3 segment name
FILLER_3	25	109	1	0	0	-	Not used
ROLLBACK_3_WAITS	25	110	2	8	0	-	Oracle rollback_3 waits
ROLLBACK_3_GETS	25	112	2	8	0	-	Oracle rollback_3 reads
ROLLBACK_3_WRITES	25	114	2	8	0	-	Oracle rollback_3 writes
ROLLBACK_3_IO	25	116	2	8	0	-	Oracle rollback_3 IO
ROLLBACK_3_HIT%	25	118	2	5	2	-	Oracle rollback_3 hit %
ROLLBACK_4_USN	25	120	2	8	0	-	Oracle rollback_4 segment number
ROLLBACK_4_NAME	25	122	0	30	0	-	Oracle rollback_4 segment name
FILLER_4	25	137	1	0	0	-	Not used
ROLLBACK_4_WAITS	25	138	2	8	0	-	Oracle rollback_4 waits
ROLLBACK_4_GETS	25	140	2	8	0	-	Oracle rollback_4 reads
ROLLBACK_4_WRITES	25	142	2	8	0	-	Oracle rollback_4 writes
ROLLBACK_4_IO	25	144	2	8	0	-	Oracle rollback_4 IO

ROLLBACK_4_HIT%	25 146	2 5 2 -	Oracle rollback_4 hit %
ROLLBACK_5_USN	25 148	2 8 0 -	Oracle rollback_5 segment number
ROLLBACK_5_NAME	25 150	0 30 0 -	Oracle rollback_5 segment name
FILLER_5	25 165	1 0 0 -	Not used
ROLLBACK_5_WAITS	25 166	2 8 0 -	Oracle rollback_5 waits
ROLLBACK_5_GETS	25 168	2 8 0 -	Oracle rollback_5 reads
ROLLBACK_5_WRITES	25 170	2 8 0 -	Oracle rollback_5 writes
ROLLBACK_5_IO	25 172	2 8 0 -	Oracle rollback_5 IO
ROLLBACK_5_HIT%	25 174	2 5 2 -	Oracle rollback_5 hit %
ROLLBACK_6_USN	25 176	2 8 0 -	Oracle rollback_6 segment number
ROLLBACK_6_NAME	25 178	0 30 0 -	Oracle rollback_6 segment name
FILLER_6	25 193	1 0 0 -	Not used
ROLLBACK_6_WAITS	25 194	2 8 0 -	Oracle rollback_6 waits
ROLLBACK_6_GETS	25 196	2 8 0 -	Oracle rollback_6 reads
ROLLBACK_6_WRITES	25 198	2 8 0 -	Oracle rollback_6 writes
ROLLBACK_6_IO	25 200	2 8 0 -	Oracle rollback_6 IO
ROLLBACK_6_HIT%	25 202	2 5 2 -	Oracle rollback_6 hit %
ROLLBACK_7_USN	25 204	2 8 0 -	Oracle rollback_7 segment number
ROLLBACK_7_NAME	25 206	0 30 0 -	Oracle rollback_7 segment name
FILLER_7	25 211	1 0 0 -	Not used
ROLLBACK_7_WAITS	25 222	2 8 0 -	Oracle rollback_7 waits
ROLLBACK_7_GETS	25 224	2 8 0 -	Oracle rollback_7 reads
ROLLBACK_7_WRITES	25 226	2 8 0 -	Oracle rollback_7 writes
ROLLBACK_7_IO	25 228	2 8 0 -	Oracle rollback_7 IO
ROLLBACK_7_HIT%	25 230	2 5 2 -	Oracle rollback_7 hit %
ROLLBACK_8_USN	25 232	2 8 0 -	Oracle rollback_8 segment number
ROLLBACK_8_NAME	25 234	0 30 0 -	Oracle rollback_8 segment name
FILLER_8	25 249	1 0 0 -	Not used
ROLLBACK_8_WAITS	25 250	2 8 0 -	Oracle rollback_8 waits
ROLLBACK_8_GETS	25 252	2 8 0 -	Oracle rollback_8 reads

ROLLBACK_8_WRITES	25 254	2	8	0	-	Oracle rollback_8 writes
ROLLBACK_8_IO	25 256	2	8	0	-	Oracle rollback_8 IO
ROLLBACK_8_HIT%	25 258	2	5	2	-	Oracle rollback_8 hit %
ROLLBACK_9_USN	25 260	2	8	0	-	Oracle rollback_9 segment number
ROLLBACK_9_NAME	25 262	0	30	0	-	Oracle rollback_9 segment name
FILLER_9	25 277	1	0	0	-	Not used
ROLLBACK_9_WAITS	25 278	2	8	0	-	Oracle rollback_9 waits
ROLLBACK_9_GETS	25 280	2	8	0	-	Oracle rollback_9 reads
ROLLBACK_9_WRITES	25 282	2	8	0	-	Oracle rollback_9 writes
ROLLBACK_9_IO	25 284	2	8	0	-	Oracle rollback_9 IO
ROLLBACK_9_HIT%	25 286	2	5	2	-	Oracle rollback_9 hit %
ROLLBACK_10_USN	25 288	2	8	0	-	Oracle rollback_10 segment number
ROLLBACK_10_NAME	25 290	0	30	0	-	Oracle rollback_10 segment name
FILLER_10	25 305	1	0	0	-	Not used
ROLLBACK_10_WAITS	25 306	2	8	0	-	Oracle rollback_10 waits
ROLLBACK_10_GETS	25 308	2	8	0	-	Oracle rollback_10 reads
ROLLBACK_10_WRITES	25 310	2	8	0	-	Oracle rollback_10 writes
ROLLBACK_10_IO	25 312	2	8	0	-	Oracle rollback_10 IO
ROLLBACK_10_HIT%	25 314	2	5	2	-	Oracle rollback_10 hit %
FILE_1_NUMBER	25 316	2	8	0	-	Oracle file_1 number
FILE_1_NAME	25 318	0	30	0	-	Oracle file_1 name
FILLER_11	25 333	1	0	0	-	Not used
TABLESPACE_1_NUMBER	25 334	2	8	0	-	Oracle tablespace number where file_1 belongs
TABLESPACE_1_NAME	25 336	0	30	0	-	Oracle tablespace name where file_1 belongs
FILLER_12	25 351	1	0	0	-	Not used
FILE_1_LENGTH_MB	25 352	2	8	0	-	Oracle file_1 length (MB)
PHYS_READS_1	25 354	2	8	0	-	Oracle file_1 physical reads
PHYS_WRITES_1	25 356	2	8	0	-	Oracle file_1 physical writes

PHYS_BLK_READS_1	25 358	2	8	0	-	Oracle file_1 physical block reads
PHYS_BLK_WRITES_1	25 360	2	8	0	-	Oracle file_1 physical block writes
IO_NUMBER_1	25 362	2	8	0	-	Oracle file_1 physical IO
FILE_2_NUMBER	25 364	2	8	0	-	Oracle file_2 number
FILE_2_NAME	25 366	0	30	0	-	Oracle file_2 name
FILLER_13	25 381	1	0	0	-	Not used
TABLESPACE_2_NUMBER	25 382	2	8	0	-	Oracle tablespace number where file_2 belongs
TABLESPACE_2_NAME	25 384	0	30	0	-	Oracle tablespace name where file_2 belongs
FILLER_14	25 399	1	0	0	-	Not used
FILE_2_LENGTH_MB	25 400	2	8	0	-	Oracle file_2 length (MB)
PHYS_READS_2	25 402	2	8	0	-	Oracle file_2 physical reads
PHYS_WRITES_2	25 404	2	8	0	-	Oracle file_2 physical writes
PHYS_BLK_READS_2	25 406	2	8	0	-	Oracle file_2 physical block reads
PHYS_BLK_WRITES_2	25 408	2	8	0	-	Oracle file_2 physical block writes
IO_NUMBER_2	25 410	2	8	0	-	Oracle file_2 physical IO
FILE_3_NUMBER	25 412	2	8	0	-	Oracle file_3 number
FILE_3_NAME	25 414	0	30	0	-	Oracle file_3 name
FILLER_15	25 429	1	0	0	-	Not used
TABLESPACE_3_NUMBER	25 430	2	8	0	-	Oracle tablespace number where file_3 belongs
TABLESPACE_3_NAME	25 432	0	30	0	-	Oracle tablespace name where file_3 belongs
FILLER_16	25 447	1	0	0	-	Not used
FILE_3_LENGTH_MB	25 448	2	8	0	-	Oracle file_3 length (MB)
PHYS_READS_3	25 450	2	8	0	-	Oracle file_3 physical reads
PHYS_WRITES_3	25 452	2	8	0	-	Oracle file_3 physical writes
PHYS_BLK_READS_3	25 454	2	8	0	-	Oracle file_3 physical block reads
PHYS_BLK_WRITES_3	25 456	2	8	0	-	Oracle file_3 physical block writes
IO_NUMBER_3	25 458	2	8	0	-	Oracle file_3 physical IO

FILE_4_NUMBER	25 460	2	8	0	-	Oracle file_4 number
FILE_4_NAME	25 462	0	30	0	-	Oracle file_4 name
FILLER_17	25 477	1	0	0	-	Not used
TABLESPACE_4_NUMBER	25 478	2	8	0	-	Oracle tablespace number where file_4 belongs
TABLESPACE_4_NAME	25 480	0	30	0	-	Oracle tablespace name where file_4 belongs
FILLER_18	25 495	1	0	0	-	Not used
FILE_4_LENGTH_MB	25 496	2	8	0	-	Oracle file_4 length (MB)
PHYS_READS_4	25 498	2	8	0	-	Oracle file_4 physical reads
PHYS_WRITES_4	25 500	2	8	0	-	Oracle file_4 physical writes
PHYS_BLK_READS_4	25 502	2	8	0	-	Oracle file_4 physical block reads
PHYS_BLK_WRITES_4	25 504	2	8	0	-	Oracle file_4 physical block writes
IO_NUMBER_4	25 506	2	8	0	-	Oracle file_4 physical IO
FILE_5_NUMBER	25 508	2	8	0	-	Oracle file_5 number
FILE_5_NAME	25 510	0	30	0	-	Oracle file_5 name
FILLER_19	25 525	1	0	0	-	Not used
TABLESPACE_5_NUMBER	25 526	2	8	0	-	Oracle tablespace number where file_5 belongs
TABLESPACE_5_NAME	25 528	0	30	0	-	Oracle tablespace name where file_5 belongs
FILLER_20	25 543	1	0	0	-	Not used
FILE_5_LENGTH_MB	25 544	2	8	0	-	Oracle file_5 length (MB)
PHYS_READS_5	25 546	2	8	0	-	Oracle file_5 physical reads
PHYS_WRITES_5	25 548	2	8	0	-	Oracle file_5 physical writes
PHYS_BLK_READS_5	25 550	2	8	0	-	Oracle file_5 physical block reads
PHYS_BLK_WRITES_5	25 552	2	8	0	-	Oracle file_5 physical block writes
IO_NUMBER_5	25 554	2	8	0	-	Oracle file_5 physical IO
FILE_6_NUMBER	25 556	2	8	0	-	Oracle file_6 number
FILE_6_NAME	25 558	0	30	0	-	Oracle file_6 name
FILLER_21	25 573	1	0	0	-	Not used

TABSPACE_6_NUMBER	25 574	2	8	0	-	Oracle tablespace number where file_6 belongs
TABSPACE_6_NAME	25 576	0	30	0	-	Oracle tablespace name where file_6 belongs
FILLER_22	25 591	1	0	0	-	Not used
FILE_6_LENGTH_MB	25 592	2	8	0	-	Oracle file_6 length (MB)
PHYS_READS_6	25 594	2	8	0	-	Oracle file_6 physical reads
PHYS_WRITES_6	25 596	2	8	0	-	Oracle file_6 physical writes
PHYS_BLK_READS_6	25 598	2	8	0	-	Oracle file_6 physical block reads
PHYS_BLK_WRITES_6	25 600	2	8	0	-	Oracle file_6 physical block writes
IO_NUMBER_6	25 602	2	8	0	-	Oracle file_6 physical IO
FILE_7_NUMBER	25 604	2	8	0	-	Oracle file_7 number
FILE_7_NAME	25 606	0	30	0	-	Oracle file_7 name
FILLER_23	25 621	1	0	0	-	Not used
TABSPACE_7_NUMBER	25 622	2	8	0	-	Oracle tablespace number where file_7 belongs
TABSPACE_7_NAME	25 624	0	30	0	-	Oracle tablespace name where file_7 belongs
FILLER_24	25 639	1	0	0	-	Not used
FILE_7_LENGTH_MB	25 640	2	8	0	-	Oracle file_7 length (MB)
PHYS_READS_7	25 642	2	8	0	-	Oracle file_7 physical reads
PHYS_WRITES_7	25 644	2	8	0	-	Oracle file_7 physical writes
PHYS_BLK_READS_7	25 646	2	8	0	-	Oracle file_7 physical block reads
PHYS_BLK_WRITES_7	25 648	2	8	0	-	Oracle file_7 physical block writes
IO_NUMBER_7	25 650	2	8	0	-	Oracle file_7 physical IO
FILE_8_NUMBER	25 652	2	8	0	-	Oracle file_8 number
FILE_8_NAME	25 654	0	30	0	-	Oracle file_8 name
FILLER_25	25 669	1	0	0	-	Not used
TABSPACE_8_NUMBER	25 670	2	8	0	-	Oracle tablespace number where file_8 belongs

TABLESPACE_8_NAME	25 672	0 30	0 -	Oracle tablespace name where file_8 belongs
FILLER_26	25 687	1 0	0 -	Not used
FILE_8_LENGTH_MB	25 688	2 8	0 -	Oracle file_8 length (MB)
PHYS_READS_8	25 690	2 8	0 -	Oracle file_8 physical reads
PHYS_WRITES_8	25 692	2 8	0 -	Oracle file_8 physical writes
PHYS_BLK_READS_8	25 694	2 8	0 -	Oracle file_8 physical block reads
PHYS_BLK_WRITES_8	25 696	2 8	0 -	Oracle file_8 physical block writes
IO_NUMBER_8	25 698	2 8	0 -	Oracle file_8 physical IO
FILE_9_NUMBER	25 700	2 8	0 -	Oracle file_9 number
FILE_9_NAME	25 702	0 30	0 -	Oracle file_9 name
FILLER_27	25 717	1 0	0 -	Not used
TABLESPACE_9_NUMBER	25 718	2 8	0 -	Oracle tablespace number where file_9 belongs
TABLESPACE_9_NAME	25 720	0 30	0 -	Oracle tablespace name where file_9 belongs
FILLER_28	25 735	1 0	0 -	Not used
FILE_9_LENGTH_MB	25 736	2 8	0 -	Oracle file_9 length (MB)
PHYS_READS_9	25 738	2 8	0 -	Oracle file_9 physical reads
PHYS_WRITES_9	25 740	2 8	0 -	Oracle file_9 physical writes
PHYS_BLK_READS_9	25 742	2 8	0 -	Oracle file_9 physical block reads
PHYS_BLK_WRITES_9	25 744	2 8	0 -	Oracle file_9 physical block writes
IO_NUMBER_9	25 746	2 8	0 -	Oracle file_9 physical IO
FILE_10_NUMBER	25 748	2 8	0 -	Oracle file_10 number
FILE_10_NAME	25 750	0 30	0 -	Oracle file_10 name
FILLER_29	25 765	1 0	0 -	Not used
TABLESPACE_10_NUMBER	25 766	2 8	0 -	Oracle tablespace number where file_10 belongs
TABLESPACE_10_NAME	25 768	0 30	0 -	Oracle tablespace name where file_10 belongs
FILLER_30	25 783	1 0	0 -	Not used

FILE_10_LENGTH_MB	25 784	2	8	0	-	Oracle file_10 length (MB)
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DBFILE_PARLRDTOTWTS	25 924	4	8	0	-	Oracle databasefile parallel read total waits
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SORTS_DISC	25	1180	4	8	0	-	Oracle sorts requiring disk write
SORTS_ROWS	25	1184	4	8	0	-	Oracle total rows sorted
TABLESCANS_SHORTTBL	25	1188	4	8	0	-	Oracle (short table) tablescans
TABLESCANS_LONGTBL	25	1192	4	8	0	-	Oracle (long table) tablescans
OPENED_CURS_CUM	25	1196	4	8	0	-	Oracle cumulative open cursors
USER_COMMITS	25	1200	4	8	0	-	Oracle user transaction commits
USER_ROLLBACKS	25	1204	4	8	0	-	Oracle user manual rollbacks
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INSTANCE_NUMBER2	25	2000	2	8	0	-	Oracle instance number
INSTANCE_NAME	25	2002	0	30	0	-	Oracle instance name
PROCESSOR_NUMBER	26	0	2	5	0	-	CPU number
PROCESSOR_BUSY%	26	2	2	5	1	-	Total CPU %
PROCESSOR_USER%	26	4	-1	5	1	-	User CPU %
PROCESSOR_SYS%	26	5	-1	5	1	-	System CPU %
PROCESSOR_NICE%	26	6	-1	5	1	-	CPU nice %
PROCESSOR_IDLE%	26	7	-1	5	1	-	CPU idle %

PROCESSOR_BUSY_TIME	26	8	2	6	0	-	Total CPU time (ms)
PROCESSOR_TRAP_RT	26	10	2	5	1	-	CPU trap rate (/s)
PROCESSOR_INTR_RT	26	12	2	5	1	-	CPU interrupt rate (/s)
PROCESSOR_NUMBER2	26	2000	2	5	0	-	CPU number
PROCESSOR_NAME	26	2002	0	16	0	-	CPU name



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
	/opt/lps/bin/mvdatad	/opt/lund/bin/mvdatad
/opt/lps/bin/lpsmid	/opt/lps/bin/mvmid	/opt/lund/bin/mvmid
/opt/lps/bin/sos	/opt/lps/bin/mvhost	/opt/lund/bin/mvhost
/opt/lps/bin/soslogd	/opt/lps/bin/mvlogd	/opt/lund/bin/mvlogd
/opt/lps/bin/soslogx	/opt/lps/bin/mvlogx	/opt/lund/bin/mvlogx
/opt/lps/bin/sosrcom	/opt/lps/bin/mvrcom	/opt/lund/bin/mvrcom
/opt/lps/cfg/soskip	/opt/lps/cfg/kip	/opt/lund/cfg/
	/opt/lps/lib/alert_config	/opt/lund/lib/alert_config
	/opt/lps/lib/oraextr.xml	/opt/lund/lib/oraextr.xml
/opt/lps/lib/soshelp	/opt/lps/lib/mvhelp	/opt/lund/lib/mvhelp
	/opt/lps/tmp/mvdatad.log	var/opt/lund/tmp/mvdatad.log
/opt/lps/tmp/lps.log	/opt/lps/tmp/metaview.log	var/opt/lund/tmp/metaview.log
/home/<user>.lpsmidrc	/home/<user>.mvmidrc	/home/<user>.mvmidrc
/home/<user>.sosrc	/home/<user>.mvhostrc	/home/<user>.mvhostrc
/home/<user>.soslogdrc	/home/<user>.mvlogdrc	/home/<user>.mvlogdrc
/home/<user>.soslogxrc	/home/<user>.mvlogxrc	/home/<user>.mvlogxrc

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