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PERFORMANCE SOLUTIONS

WHAT YOU NEED TO KNOW. **WHEN** YOU NEED TO KNOW IT.

User's Guide

Meta-View Performance Manager

Meta-View Agent and Host for HP-UX

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Meta-View Performance Manager for HP-UX version D.05d

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META-VIEW AGENT AND HOST FOR HP-UX

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 HP-UX comprises the following components:

1. **Meta-View Agent for HP-UX**

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

2. **Meta-View Host for HP-UX**

   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 HP-UX 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 HP-UX

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

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

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

```
/opt/lps/

/etc/opt/lps/

/var/opt/lps/
```

These are changing to:

```
/opt/lund/

/etc/opt/lund/

/var/opt/lund/
```

For each directory:

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

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

Examples of file name changes are: `sos` has become `mvhost`; `soslogx` has become `mvlogx`. An appendix at the end of these notes contains a table showing all of the name changes.

We hope that the inconvenience you may experience from these changes will be far outweighed by the exceptional value you will realize from the added features in Meta-View. We have tried to

minimize the inconvenience by carefully documenting the changes and by providing scripts to automate the transition as much as possible.

Package Contents

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

1 **Printed documentation**:

- Cover Letter
- Release Notes for Meta-View Agent and Host for HP-UX
- Release Notes for Meta-View Agent and Host for Linux
- Release Notes for Meta-View Agent and Host for Solaris
- Release Notes for Meta-View Web
- Supplemental Notes for Meta-View Performance Manager for UNIX
- Installation and Setup Instructions for Meta-View Agent and Host for UNIX
- Installation and Setup Instructions for Meta-View Web
- Installation and Setup Instructions for Meta-View Alert as contained in the User's Guide

2 **The Meta-View Performance Manager Product CD** containing the Meta-View Web and Meta-View Alert component and all Meta-View Performance Manager documentation, including a user's guide for each supported platform.

Installing Meta-View Agent and Host for UNIX

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

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

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

Product Support

Lund Performance Solutions Main Offices

When you purchase support from Lund Performance Solutions, you benefit from the knowledge and experience of our technical support team. We are glad to help you interpret data and resolve performance issues. Our contracted product support entitles you to receive timely updates, bug fixes, documentation and direct technical support.

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Albany OR 97321 USA

Internet URL

Visit the Lund Performance Solutions website at **http://www.lund.com/**.

Telephone Number

For customer and technical support, call **(541) 812-7600**, Monday through Friday during the hours of 7:00 A.M., to 4:00 P.M., Pacific time, excluding holidays.

Fax Number

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- Sales Team **info@lund.com**
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- Documentation Team **documentation@lund.com**
- Consulting Team **consulting@lund.com**

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Lund Performance Solutions' professional sales team is available to answer your sales and customer support questions Monday through Friday during the hours 7:00 A.M., to 4:00 P.M., Pacific time, excluding major holidays.

Please contact your sales representative for information about the latest Lund Performance Solutions products, the Lund Software Subscription Plan, upgrade options and prices, and more.

Lund Performance Solutions Technical Support Team

At Lund Performance Solutions, we are working hard to provide you with intuitive software products. Additionally, we try to provide superior online and printed documentation. However, should you find yourself with a technical question that you cannot answer with the tools provided, please contact our technical support team.

NOTE You must be a registered user to access Lund Performance Solutions' support services. Lund Performance Solutions' support services are subject to Lund Performance Solutions' prices, terms, and conditions in place at the time the services are used.

E-mail Tech Support

Ask questions and receive detailed answers from the technical support team by sending an e-mail message to **support@lund.com**. Please include the product serial number with your question. You will receive a reply by e-mail.

Telephone Tech Support

You can reach the technical support team by phone at **(541) 812-7600**, Monday through Friday during the hours 7:00 A.M., to 4:00 P.M., Pacific time, excluding major holidays.

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

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

Lund Performance Solutions Documentation Team

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For information about Lund Consulting Services, please review our website, send an e-mail message to **consulting@lund.com**, or contact your account manager.

Product Documentation

User's Guide

This document accompanies the Meta-View Performance Manager for HP-UX 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 HP-UX 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.

2

INSTALLATION AND SETUP INSTRUCTIONS

Installation and Setup for HP-UX

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

Extracting the Setup Program from the Product CD (HP-UX)

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

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

      ```
      ls -d /cdrom
      ```

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

      ```
      mkdir /cdrom
      ```

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

      ```
      mount -F cdfs <device file name> /cdrom
      ```

      The device file name is `/dev/dsk/c0tXd0`, where X is a number such as 2 or 6. You can use the following command to discover the correct device file for the CD-ROM on your system:

      ```
      /sbin/ioscan -knfC disk
      ```

      Find the entry described as a CD-ROM drive; the device file will be listed on the line below it.

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

4 Change the current working directory to /tmp:

```
cd /tmp
```

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

```
mkdir lund
```

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

```
cd lund
```

7 Determine the install file name

```
ls/cdrom/Meta-View_Agent/HP-UX/*.tar
```

8 Use the tar command to extract the lpssetup program from the product CD (insert the correct tar file name from the previous step)

```
tar xf /cdrom/Meta-View_Agent/HP-UX/mvAgent-HPUX-?.???.tar ./
lpssetup
```

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

Running the Setup and Installation Script (HP-UX)

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

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

To set up Meta-View Agent and Host for HP-UX using the lpssetup installation script:

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

2 Run the lpssetup script (insert the correct file name from step 7 above)

```
./lpssetup /cdrom/Meta-View_Agent/HP-UX/mvAgent-HPUX-?.???.tar
```

NOTE If the product CD was not mounted using the recommended switches from the previous section, the setup script may not be able to find the tar file using the above command.

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

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

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

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

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

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

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

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

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

7 If Meta-View is being installed on a system with HP-UX 10.20, a prompt will appear asking to install a Curses library patch. The installation of this patch is highly recommended, as it fixes display issues in the Curses library under HP-UX 10.20.

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

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

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

a Change out of the directory that will be deleted:

```
cd
```

b Remove the directory:

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

10 When the script has finished, you can unmount the Meta-View Performance Manager Product CD by using the following command:

```
umount /cdrom
```

11 Congratulations! Meta-View Agent and Host for HP-UX are now installed and ready to run! Please continue with the Startup section, on page 9.

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

Startup

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

```
$ mvlogd -c
$ mvdatad
$ mvhost
$ mvlogx
```

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

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

Automatic Startup and Shutdown

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

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

If the install option is selected, the rc init script, $LPS_OPT_PATH/contrib/bin/lund.rc.hpux, (normally /opt/lund/contrib/bin/lund.rc.hpux) will be copied to the /sbin/init.d directory as /etc/init.d/lund.rc and the corresponding configuration script, lund.rc.config, will be copied to /etc/rc.config.d.

Permissions will be set to 555 (read/execute for all) on the lund.rc file and 444 (read-only all) on the lund.rc.config file.

Please note that the software is ENABLED for startup by default. Edit the /etc/rc.config.d/lund.rc.config file to disable automatic startup of the Meta-View daemons.

Ownership will be assigned to the "bin" owner and group for both files.

The installer will then make symlinks from the /sbin/init.d/lund.rc file to /sbin/rc3.d/S999lund.rc and /sbin/rc1.d/K001lund.rc so that the Meta-View software will be the last to start on the system and the first to be shut down.

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

3

TECHNICAL OVERVIEW

Meta-View Performance Manager Architecture

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

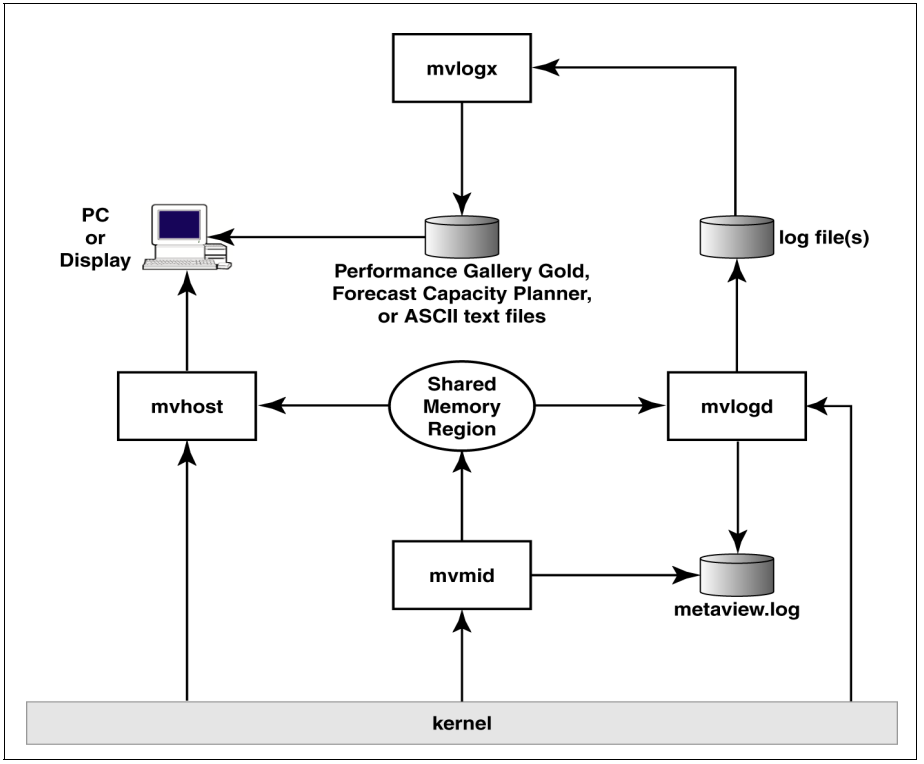


Figure 3.1 *Meta-View Performance Manager for HP-UX relationships between key processes and files*

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.
- *.col, to export data to Forecast Capacity Planner, a performance and capacity planning tool by Lund Performance Solutions.
- *.pfg, to export data to Performance Gallery (B.0x and higher), a trend analysis and graphical reporting applications by Lund Performance Solutions.

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

For information about Forecast Capacity Planner or Performance Gallery, please refer to the product documentation or contact your Lund account manager (see "Lund Performance Solutions Sales Team" on page 4).

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.
	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/	fcastitems	A list of data items that can be extracted for use in Forecast Capacity Planner.
	itemlist	A list of all data items logged in historical files and usable by kip, advice, and ppoints.
	ksymbols	A list of kernel symbols that need address mappings.
	license	A new version of license file.
	logxhelp	The MVLOGX online help file.
	lpscfg	A license file.
	pfgitems	A list of Performance Gallery B.0x extraction items.
	pfgitems2	A list of Performance Gallery Gold (C.0x and higher) extraction items.
	mvhelp	The MVHOST online help file.
	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 reprtdef 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.

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

4

Environment Variables and Workload Groups

Environment Variables

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

Table 4.1 *Meta-View Performance Manager environment variables*

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

Setting the Environment Variables

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

- PATH
- TERM
- LUND_OPT_PATH

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

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

  Set only if the host-specific dynamic files were placed in a custom directory.
- Localization environment variables (optional).

Setting the PATH Environment Variable

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

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

  PATH=$PATH:/opt/lund/bin
- If the Meta-View Performance Manager application files were placed in a custom directory, add the following line to your .profile:

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

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

Setting the TERM Environment Variable

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

TERM=vt100

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

Setting LUND_OPT_PATH, LUND_ETC_PATH, and LUND_VAR_PATH

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

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

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

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

Setting the Localization Environment Variables

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

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

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

Workload Groups

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

- Applications
- User login
- Departmental processes

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

Identifying and Characterizing Workload Groups

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

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

Identifying Workload Groups

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

Characterizing Workload Groups

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

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

Creating a Workload Group Definition File

Once you have identified and refined you 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 *regexp* (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.

5

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.

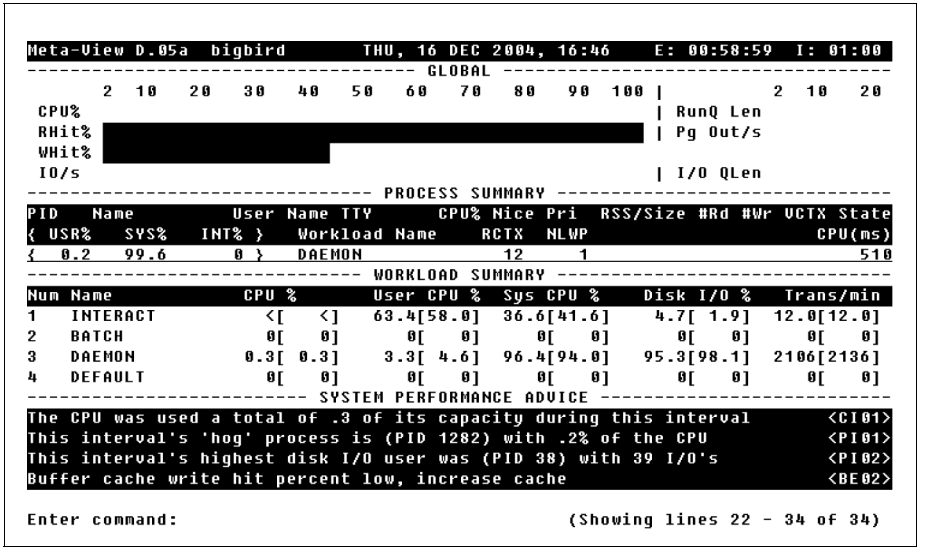


Figure 5.1 *MVHOST Global Summary screen*

Data Screens

The MVHOST application generates a variety of useful data screens. Each screen is outlined in “MVHOST Screen Selection Menu” on page 37, then described in detail in Chapters 10 through 42.

Screen Conventions

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

Table 5.1 *Meta-View screen conventions*

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

6

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
  V -  Volume group detail                   D -  Disk 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 45.

Key	Command	Description
r	Reset totals to zero	Type **r** from any MVHOST display screen to (1) reset all cumulative values (shown in brackets), (2) reset the elapsed time to zero, and (3) update the interval data. For an example, see "Resetting Cumulative Statistics" on page 46.
p	Print screen	Type **p** from any MVHOST display screen to send the current screen display to a specified printer or a default printer, or to print the screen display to a specified file.
f	Toggle update intervals on/off	Type **f** from any MVHOST display screen to postpone (freeze) data updates for all MVHOST screens until the f key is pressed again (to un-freeze).
R	Add a new Oracle instance	Type **R** (upper case) from any screen to add a new Oracle instance. MVHOST will prompt for instance name (a connect string). Enter a net service name (listed in tsnames.ora) 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. Next, MVHOST will prompt for a 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). 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.
T	Delete an Oracle instance	Type **T** (upper case) to delete an Oracle instance.

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.
!	UNIX shell	Suspends execution of MVHOST and executes a UNIX shell. To return to the MVHOST application, type **exit**.
Ctrl+l	Refresh screen	Press the **Ctrl+l** 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.

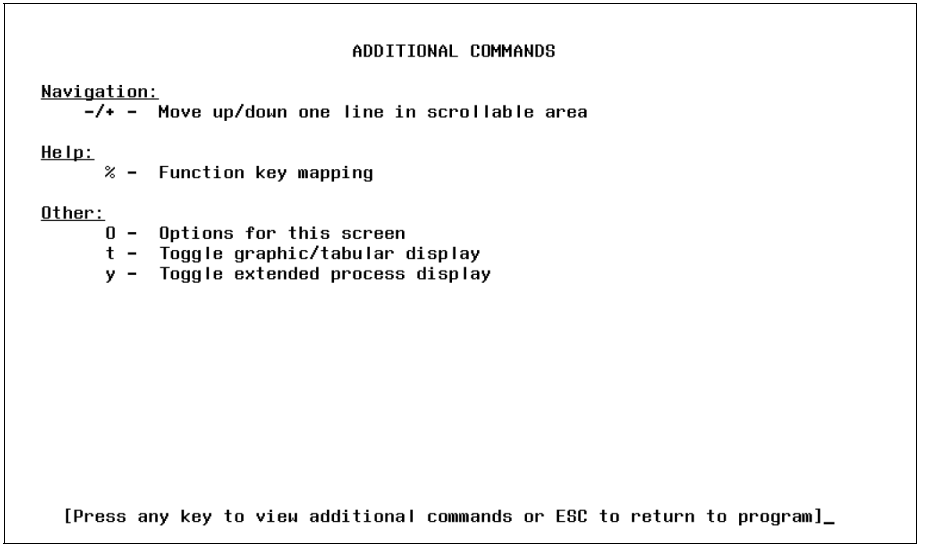


Figure 6.2 *MVHOST Additional Commands screen (example)*

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 Navigation Commands

Table 6.6 *MVHOST screen-specific navigation command keys*

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

Screen-Specific Configuration Commands

Table 6.7 *MVHOST screen-specific configuration command keys*

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

Screen-Specific Help Commands

Table 6.8 *MVHOST screen-specific configuration command keys*

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

Screen-Specific Action Commands

Table 6.9 *MVHOST screen-specific action command keys*

Key	Command	Description
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).
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.
n	Select new...	• Type **n** from the Process Detail screen to select a new process. • Type **n** from the Workload Detail screen to select a new workgroup. • Type **n** from the Disk Detail screen to select a new disk. • Type **n** from the Volume Detail screen to select a new volume.

7

MVHOST Screen Selection Menu

Screen Selection Menu Screen

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

```
                    SCREEN SELECTION MENU

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

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


Enter screen ID:
```

Figure 7.1 *MVHOST Screen Selection Menu*

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

Screen Selection Commands

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

NOTE All command keys are case-sensitive.

Table 7.1 *MVHOST Screen Selection Menu command keys*

Key	Screen Title	Description
g	Global Summary	Displays a basic, overall picture of your system's performance. See "MVHOST Global Summary" on page 89.
c	CPU Summary	Reports the general state of one or more CPUs. See "MVHOST CPU Summary" on page 113.
m	Memory Summary	Provides a more detailed look at memory performance data. See "MVHOST Memory Summary" on page 119.
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 125.
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 129.
v	Volume Summary	Displays information for each logical volume and volume group. See "MVHOST Volume Summary" on page 131.
f	Files System I/O Summary	Displays the logical and physical read and write rates for each file system. See "MVHOST File System I/O Summary" on page 133.

Key	Screen Title	Description
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 135.
l	Network Summary	Displays network performance information, including protocol data and network interface information. See “MVHOST Network Summary” on page 137.
n	NFS Summary	Provides information about the Network File System (NFS). See “MVHOST NFS Summary” on page 139.
w	Swap Summary	Provides information on system swap space utilization. See “MVHOST Swap Summary” on page 145.
u	User Summary	Reveals how each user is utilizing system resources. See “MVHOST User Summary” on page 149.
t	Terminal Summary	Displays information about the activity of the individual terminals. See “MVHOST Terminal Summary” on page 151.
b	System Table Summary	Reports the configuration and utilization of several system tables and caches. See “MVHOST System Table Summary” on page 153.
y	System Configuration	Shows significant system configuration parameters. See “MVHOST System Configuration Summary” on page 161.
h	Device Configuration	Provides a listing of hardware and pseudo devices that are configured on your system. See “MVHOST Device Configuration Summary” on page 167.
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 169.

Key	Screen Title	Description
k	Workload Definitions	Displays the application workload definitions (workdefs) file. See "MVHOST Workload Definitions" on page 171.
P	Process Detail	Displays the performance of one process in detail. See "MVHOST Process Detail" on page 173.
F	Process File Usage	Lists all of the files currently accessed by a process. See "MVHOST Process File Usage" on page 179.
M	Process Memory Regions	Displays information about the process' memory and virtual memory address space usage. See "MVHOST Process Memory Regions" on page 183.
W	Workload Detail	Provides detailed information about a specific workload. See "MVHOST Workload Detail" on page 187.
D	Disk Detail	Provides detailed performance data about a specified disk. See "MVHOST Disk Detail" on page 191.
V	Volume Detail	Provides detailed performance numbers for a specified volume group or logical volume. See "MVHOST Volume Detail" on page 193.
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 197.
L	Oracle Detail Latches	Provides latches statistics. See "MVHOST Oracle Detail Latches" on page 201.
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 205.
N	Oracle Detail Mem and Net	Contains statistics about memory allocation and network transfers. See "MVHOST Oracle Detail Memory and Network" on page 209.

Key	Screen Title	Description
K	Oracle Detail Rollback	Provides statistics about rollback segments. See “MVHOST Oracle Detail Rollback Segments” on page 213.
C	Oracle Detail Cache	Displays the most important statistics related to Oracle cache management. See “MVHOST Oracle Detail Cache” on page 215.
E	Oracle Detail Events	Shows statistics related to database events. See “MVHOST Oracle Detail Events” on page 221.
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 225.
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 229.

8

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.

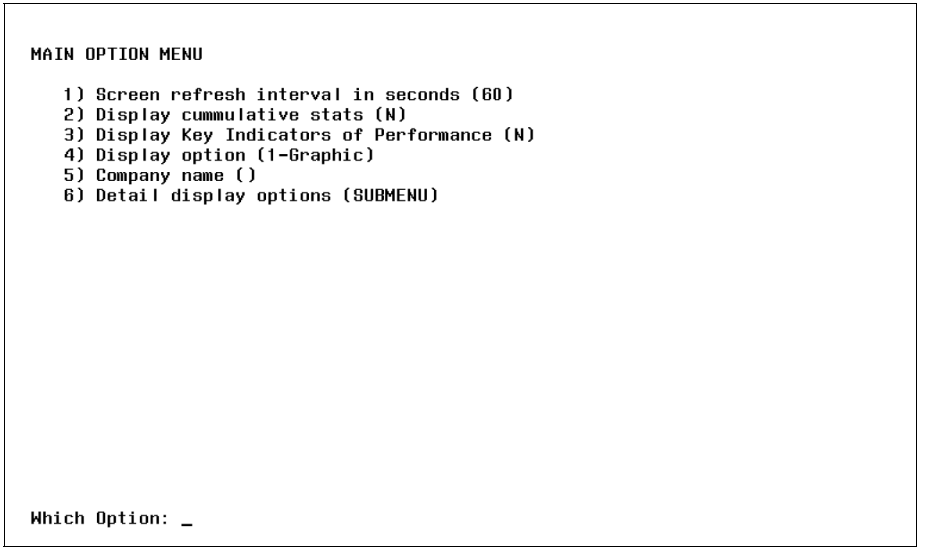


Figure 8.1 *MVHOST Main Option Menu*

Main Option Commands

To modify a main option, either temporarily or permanently:

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

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

NOTE All command keys are case-sensitive.

Screen refresh interval in seconds

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

```
Meta-View D.05a  bigbird        THU, 16 DEC 2004, 16:53    E: 01:06:00  I: 01:00
```

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

Setting the Length of the Interval

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

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

To adjust the length of the interval:

1 From the MVHOST Main Options Menu screen, select the Screen refresh interval in seconds option. Press the Enter key.

2 At the next prompt, enter a positive integer from 10 to 3600 (seconds). Press the Enter key.

Updating Interval Data

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

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

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

Display cumulative stats

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

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

```
Meta-View D.05a  bigbird       TUE, 21 DEC 2004, 12:48    E: 00:22:28  I: 01:23
------------------------------ DISK I/O SUMMARY -------------------------------
                                  Wait       Service     IO rate
Dev       I/O%    Qlen  Util%  Time(ms)   Time(ms)    (/sec)
--------------------------------------------------------------------------------
c3t6d0       0       0      0          0          0          0
           [  0] [   0] [   0]   [     0]   [     0]   [     0]
c1t2d0       0       0      0          0          0          0
           [  0] [   0] [   0]   [     0]   [     0]   [     0]
c0t6d0     100     0.5    3.5        1.8        4.8        6.0
           [100] [ 0.8] [  46]   [     4]   [     5]   [119.7]
--------------------------------------------------------------------------------
TOTALS     100     0.5    1.1        1.8        4.8        6.0
           [100] [ 0.8] [  15]   [     4]   [     5]   [119.7]




Enter command: _
```

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

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

Displaying Cumulative Statistics

To display cumulative statistics in all tabular displays:

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

Resetting Cumulative Statistics

To reset the cumulative statistics in all tabular displays to zero (0), enter **r** at the MVHOST Enter command: prompt from any MVHOST screen. This reset function also updates the current interval (see "Updating Interval Data" on page 45).

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.05a  bigbird       THU, 16 DEC 2004, 16:57    E: 01:10:00  I: 01:00
Total Busy:     .4% Read Hit: 100.0%
```

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 93.

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)

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.

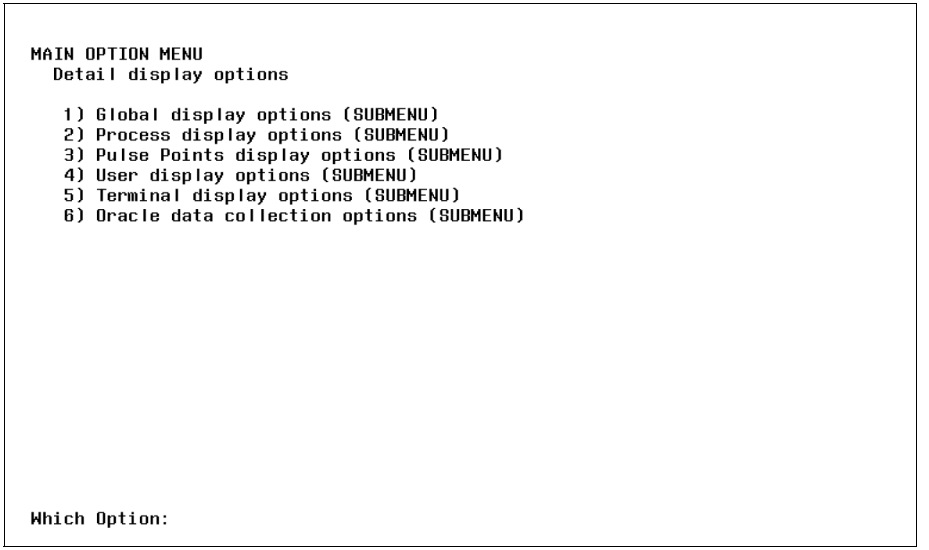


Figure 8.7 *MVHOST Detail display options submenu screen*

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 49.

- Process display options (SUBMENU)

  See “Process display options Submenu Screen” on page 56.

- Pulse Points display options (SUBMENU)

  See “Pulse Points display options” on page 62.

- User display options (SUBMENU)

  See “User Display Options” on page 65.

- Terminal display options (SUBMENU)

  See “Terminal Display Options” on page 69.

2 Press the Enter key.

Global Display Options

Global display options Submenu Screen

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

1 Type **o** from the MVHOST Enter command: prompt to view the MVHOST Main Option Menu screen.

2 From the MVHOST Main Option Menu screen, select Detail display options and press the Enter key.

3 From the Detail display options submenu screen, select Global display options and press the Enter key. The Global display options submenu screen will display (Figure 8.8).

```
MAIN OPTION MENU
  Detail display options
    Global display options

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




Which Option: _
```

Figure 8.8 *MVHOST Global display options submenu screen*

Global display option Commands

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

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

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

Display advice messages

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

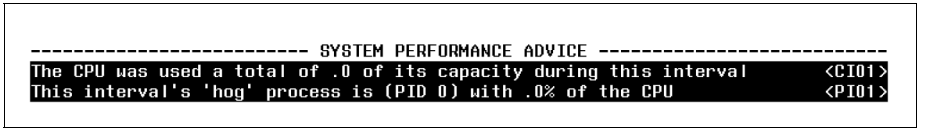


Figure 8.9 *MVHOST Global Summary screen: SYSTEM PERFORMANCE ADVICE messages*

Advice messages are discussed further in “SYSTEM PERFORMANCE ADVICE” on page 108.

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.

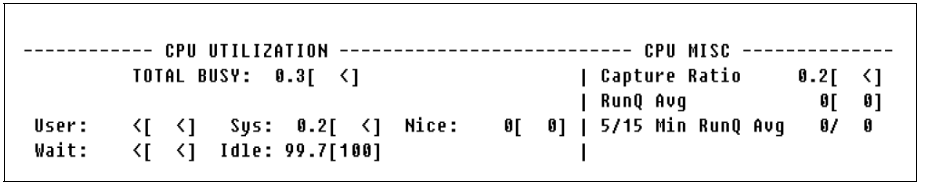


Figure 8.10 *MVHOST Global Summary screen: CPU statistics*

Global CPU statistics are discussed in "CPU UTILIZATION" on page 101 and "CPU MISC" on page 104.

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.

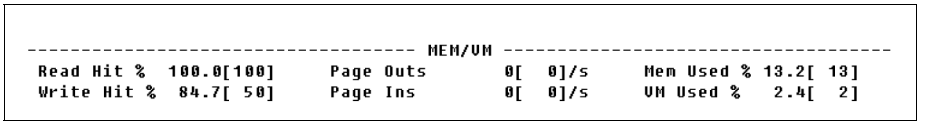


Figure 8.11 *MVHOST Global Summary screen: MEM/VM statistics*

Global memory statistics are discussed in "MEM/VM" on page 105.

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.

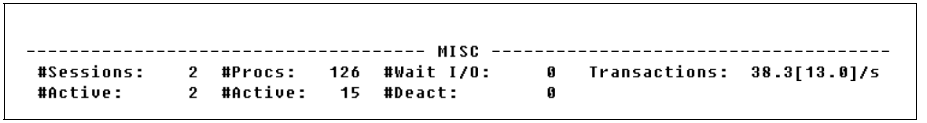


Figure 8.12 *MVHOST Global Summary screen: MISC statistics*

Global miscellaneous statistics are discussed further in “MISC” on page 105.

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.

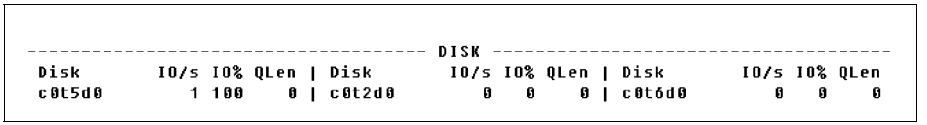


Figure 8.13 *MVHOST Global Summary screen: DISK statistics*

Global disk statistics are discussed further in “DISK” on page 106.

Suppressing Disk Statistics

To suppress disk statistics from the Global Summary screen:

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

Maximum number of disks to display

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

1 From the Global display options submenu screen, select the Maximum number of disks to display option, which is available only when the Global Summary screen is displayed in tabular format. Press the Enter key.

2 At the next prompt, enter the maximum number of disks to display (0=ALL, or a number from 1 to 196612). Press the Enter key.

Display process information

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

```
-------------------------------- PROCESS SUMMARY --------------------------------
PID    Name          User Name TTY       CPU% Nice Pri  RSS/Size #Rd #Wr VCTX State
38     vxfsd         root      ---        <    20 152  1888/1888   0   24 1525   RUN
1282   diagmond      root      ---        0.2  10 154   20m/ 20m   0   0    24 SLEEP
```

Figure 8.14 *MVHOST Global Summary screen: PROCESS SUMMARY*

Global process statistics are discussed further in "PROCESS SUMMARY" on page 96.

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 %   Sys CPU %    Disk I/O %   Trans/min
1   INTERACT    0.1[ 0.4]    63.1[59.5]   36.9[39.3]    4.0[ 3.7]   6.0[42.0]
2   BATCH         0[   0]      0[   0]      0[   0]      0[   0]      0[   0]
3   DAEMON      0.4[ 0.7]    16.0[24.0]   65.4[60.4]   96.0[96.3]   714[ 948]
4   DEFAULT       0[   0]      0[   0]      0[   0]      0[   0]      0[   0]
```

Figure 8.15 *MVHOST Global Summary screen: WORKLOAD SUMMARY*

Workload statistics are discussed further in “WORKLOAD SUMMARY” on page 100.

Displaying Workload Summary Information

To display workload information:

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

Display only active workloads

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

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

Displaying Only Active Workloads

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

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

CPU percentage required for workload display

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

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

Resetting the Minimum CPU Requirement

To set a new minimum CPU percentage requirement:

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

Process Display Options

Process display options Submenu Screen

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

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

```
MAIN OPTION MENU
  Detail display options
    Process display options

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









Which Option: _
```

Figure 8.16 *MVHOST Process display options submenu screen*

Process display option Commands

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

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

4 Press Enter to exit the Detail display options submenu screen.

5 Press Enter to exit the MVHOST Main Options Menu screen.

6 At the **Should these options be saved permanently?** prompt:

- Press the Enter key to return to the MVHOST program without saving the modifications permanently.
- Type **Y** (Yes) to save the changes permanently and then press the Enter key.

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

Display extended process line

Additional process information can be displayed in the PROCESS SUMMARY section of the Global Summary screen.

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

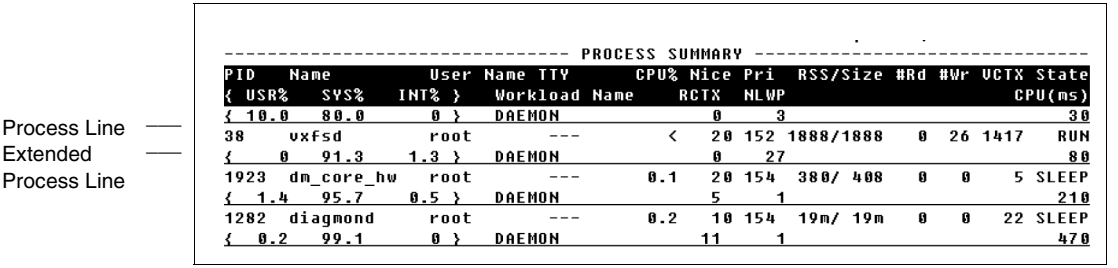


Figure 8.17 *MVHOST Global Summary screen: headings & extended process lines*

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 8.1.

Table 8.1 *Extended process column headings*

Heading	Description
USR%	The percentage of the process' execution time spent in user mode.
SYS%	The percentage of the process' execution time spent in system/kernel mode.
INT%	The percentage of the process' execution time spent for interrupts.
Workload Name	The name of the workload which the process belongs to.

Heading	Description
RCTX	The number of Resource Context Switches, representing the number of times the operating system takes over after the process' timeslice has ended.
NLWP	The number of threads for which the current process is the parent.
CPU (ms)	The total CPU time in milliseconds used by the process during the current interval.

Extending the PROCESS SUMMARY

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

1 From the Process display options submenu screen, select the Display extended process line option. Press the Enter key.

2 At the next prompt, enter **Y** (Yes). Press the Enter key.

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

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

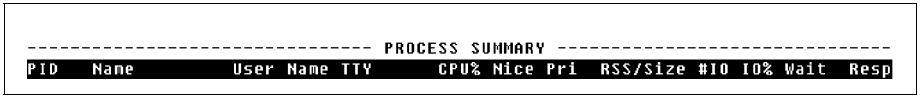


Figure 8.18 *MVHOST PROCESS SUMMARY column headings (alternative)*

Switching the PROCESS SUMMARY Column Headings

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

1 From the Process display options submenu screen, select the Display total and I/O percentage instead of read/write counts option. Press the Enter key.

2 At the next prompt, enter **Y** (Yes). Press the Enter key.

Display only active processes

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

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

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

Displaying Both Active and Inactive Processes

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

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

CPU percentage required for process display

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

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

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

Setting the CPU Percentage Required for a Process to Display

To set the minimum CPU percentage:

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

Display interactive processes

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

Suppressing Interactive Processes

To exclude interactive processes from the screen display:

1 From the Process display options submenu screen, select the Display interactive processes option. Press the Enter key.

2 At the next prompt, type **N** (No). Press the Enter key.

Display non-interactive processes

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

Suppressing non-interactive Processes

To exclude non-interactive processes from the screen display:

1 From the Process display options submenu screen, select the Display non-interactive processes option. Press the Enter key.

2 At the next prompt, type **N** (No). Press the Enter key.

Display processes which have died

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

Suppressing Dead Processes

To exclude dead processes from the screen display:

1 From the Process display options submenu screen, select the Display processes which have died option. Press the Enter key.

2 At the next prompt, type **N** (No). Press the Enter key.

Process login filter

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

Specifying a Process Login Filter

To limit displayed processes to those of just one login:

1 From the Process display options submenu screen, select the Process login filter option. Press the Enter key.

2 At the next prompt, enter the logon using any acceptable regular expression. For example, to match the login, "root," you would type **root** at the next prompt. Press the Enter key.

For information about regular expressions, refer to the Unix manpage, "regexp," by typing **man regexp** 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 8.2). Press the Enter key.

Table 8.2 *MVHOST process sort options*

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

Display processes sorted in ascending order

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

Displaying Processes in Descending Order

To sort and display processes in descending order:

1 From the Process display options submenu screen, select the Display processes sorted in ascending order option. Press the Enter key.

2 At the next prompt, type **N** (No). Press the Enter key.

Maximum number of processes to display

To specify a maximum number of processes to be displayed:

1 From the Process display options submenu screen, select the Maximum number of processes to display option. Press the Enter key.

2 At the next prompt, enter a whole numeric value between 0 and 999.

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

1 Set the Process sort option to **4-CPU** time to sort the processes by CPU time utilized.

2 Set the Display processes sorted in ascending order option to **N**, to display the processes in descending order.

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

Pulse Points display options

Pulse Points display options Submenu Screen

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

1 Type **o** from the MVHOST Enter command: prompt to view the MVHOST Main Option Menu screen.

2 Ensure the Display process information option is enabled.

3 From the MVHOST Main Option Menu screen. select Detail display options and press Enter.

4 From the Detail display options submenu screen, select Pulse Points display options and press Enter. The Pulse Points display options submenu screen will display (Figure 8.19).

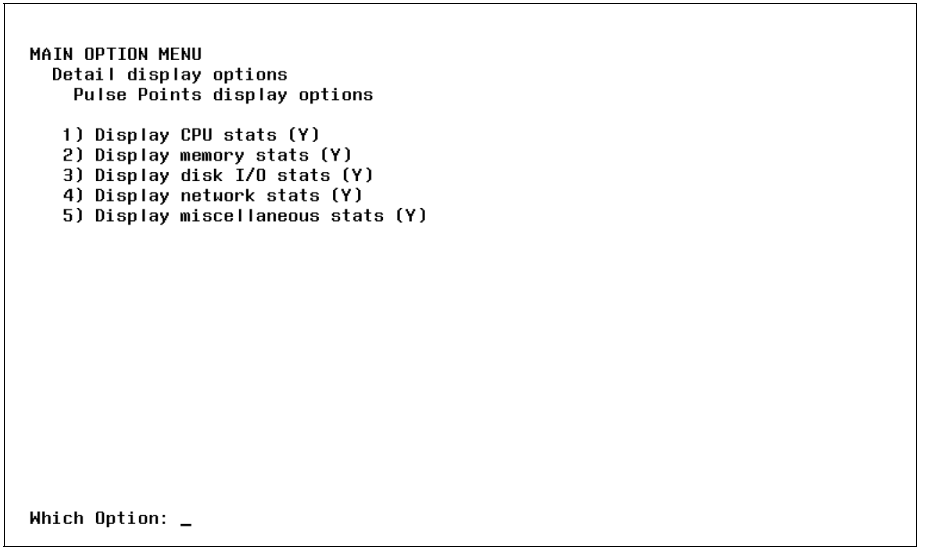


Figure 8.19 *MVHOST Pulse Points display options submenu screen*

Pulse Points display option Commands

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

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

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

Display CPU stats

CPU statistics are displayed in the Pulse Points screen.

CPU Statistics
Memory Stats
Disk I/O Stats
Network Stats

```
Meta-View D.05d  bigbird        TUE, 10 MAY 2005, 01:27     E: 01:25:46  I: 02:19
-------------------------------  PULSE POINTS  -------------------------------
    Indicator            |    Green    |    Yellow    |      Red     | Comments
--- CPU ------------------------------------------------------------------------
CPU Busy %                    0.3[   0.3]
Run-Q Average                   0[     0]
--- Memory ---------------------------------------------------------------------
Page Out Rate                   0[     0]                                /sec
Read Hit %                  100.0[100.0]
--- Disk I/O -------------------------------------------------------------------
Average Wait Time             3.7[   5.1]                           System Wide
Average Q-Length                0[     0]                           System Wide
Disk Utilization %            1.6[   2.0]                           System Wide
Disk I/O Rate (/sec)                                      106[   845] System Wide
--- Network --------------------------------------------------------------------
Collision %                     0[     0]                           System Wide
-------------------------------------------------------------------------------




Enter command: _
```

Figure 8.20 *MVHOST Pulse Points screen*

Suppressing CPU Statistics

To suppress CPU statistics from the Pulse Points screen:

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

Display memory stats

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

Suppressing Memory Statistics

To suppress memory statistics from the Pulse Points screen:

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

Display disk I/O stats

Disk I/O statistics are displayed in the Pulse Points screen. To see an example of this screen, refer to Figure 8.20 on page 64.

Suppressing Disk I/O Statistics

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

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

Display network stats

Network statistics are displayed in the Pulse Points screen.

Suppressing Network Statistics

To suppress network statistics from the Pulse Points screen:

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

Display miscellaneous stats

Miscellaneous statistics, when available, are displayed in the Pulse Points screen. (Miscellaneous statistics are not displayed in the example in Figure 8.20 on page 64.)

Suppressing Miscellaneous Statistics

To suppress miscellaneous statistics from the Pulse Points screen:

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

User Display Options

User display options Submenu Screen

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

1 Type **o** from the MVHOST Enter command: prompt to view the MVHOST Main Option Menu screen.

2 Ensure the Display process information option is enabled.

3 From the MVHOST Main Option Menu screen, select Detail display options and press the Enter key.

4 From the Detail display options submenu screen, select User display options and press the Enter key. The User display options submenu will appear (Figure 8.21).

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

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









Which Option: _
```

Figure 8.21 *MVHOST User display options submenu screen*

User display option Commands

The purpose of the user display options is to fine tune the information in the User Summary screen (discussed in "MVHOST User Summary" on page 149).

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, "regexp," by typing **man regexp** 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 8.3). Press the Enter key.

Table 8.3 *MVHOST user sort options*

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

Display users sorted in ascending order

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

Displaying Users in Ascending Order

To sort and display processes in ascending order:

1 From the Process display options submenu screen, select the Display users sorted in ascending order option. Press the Enter key.

2 At the next prompt, type **Y** (Yes). Press the Enter key.

Maximum number of users to display

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

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

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

Terminal Display Options

Terminal display options Submenu Screen

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

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

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

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









Which Option: _
```

Figure 8.22 *MVHOST Terminal display options submenu screen*

Terminal display option Commands

The purpose of the terminal display options is to fine-tune the information in the Terminal Summary screen (discussed in "MVHOST Terminal Summary" on page 151).

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 8.4). Press the Enter key.

Table 8.4 *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 8.23).

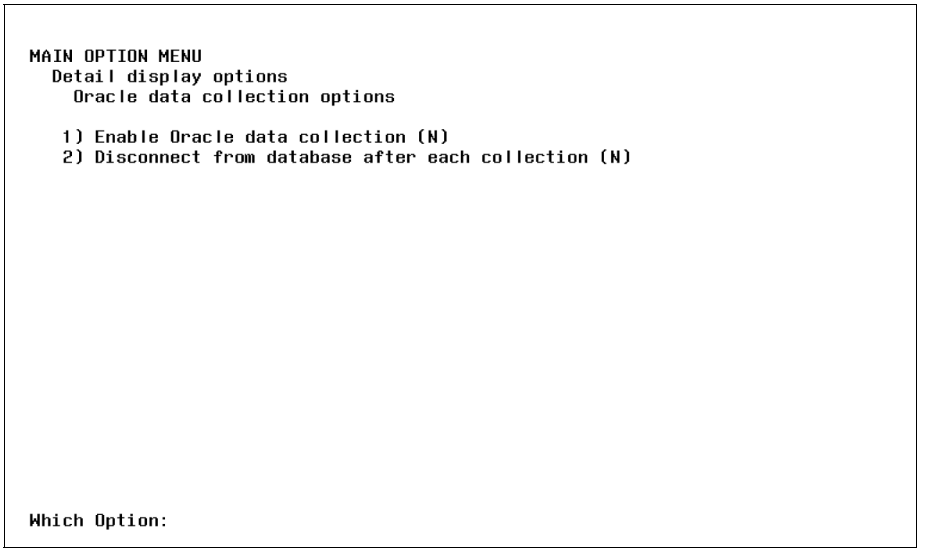


Figure 8.23 *MVHOST Oracle data collection options submenu screen*

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.

9

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 Command ——

Comments ——

Default Advice Specification Block ——

```
################################################################################
echo >/dev/console
#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.

<CI01>The CPU was used a total of %s of its capacity during this interval
ALWAYS
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 77. 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 by applied.

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

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

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

Example

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

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

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

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

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

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

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

SNMP Traps

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

Installing the lpstrap File

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

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

#!/bin/ksh -f

MGR_HOST=<host-systemname>

SNMPTRAP_PATH=/opt/OV/bin

$SNMPTRAP_PATH/snmptrap "" .1.3.6.1.4.1.11.2.17.1

$MGR_HOST 6 58916872\""

**.1.3.6.1.4.1.11.2.17.2.1.0 Integer 14 **

**.1.3.6.1.4.1.11.2.17.2.5.0 octetstringascii "Major" **

**.1.3.6.1.4.1.11.2.17.2.4.0 octetstringascii **

"Meta-View Performance Manager: $@"

2 Change the file permissions as executable:

chmod 755 lpstrap

Enabling the SNMP Traps

To enable SNMP traps, perform the following steps.

1 Modify MGR_HOST in /opt/lund/bin/lpstrap to reflect the host that will receive the traps (the system running the browser).

2 Modify SNMPTRAP_PATH in /opt/lund/bin/lpstrap to reflect the path for snmptrap on the host executing Meta-View Performance Manager. By default, lpstrap uses /opt/OV/bin/.

3 Modify the /etc/opt/lund/cfg/advice file to enable lpstrap by removing the number sign character (#) in the line: #lpstrap.

4 Modify the /etc/opt/lund/cfg/advice file to specify which messages you wish to be sent as SNMP traps by preceding the threshold specification with a greater than sign (>).

For example, the advice message specification block:

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

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

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

will become:

```
<CE01>CPU Queue length indicates %s %s CPU bottleneck
>CPU-QUEUE-LEN (5-9999)
CPU-QUEUE-LEN | 10 an | 5 a | 2 a
CPU-QUEUE-LEN | 10 EXCESSIVE | 5 HEAVY | 2 moderate
```

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

5 Start the Meta-View Performance Manager executable program (MVHOST or MVLOGD) to which you want to send the traps, and enable advice messages within that program.

- For instructions to enable advice messages in MVHOST, refer to "Display advice messages" on page 50.
- For instructions to enable advice messages in MVLOGD, see "Setting Advanced Configuration Parameters" on page 233.

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 years1996 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 169.

```
##############################################################################
```

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-IO-RATE       "Disk I/O Rate (/sec)" 40,60    "System Wide"
```

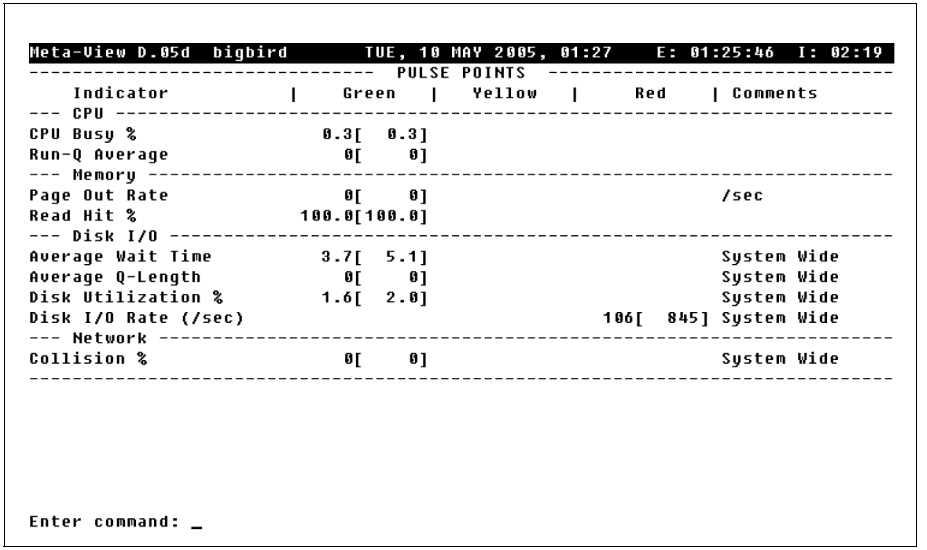
Network Pulse Points Indicator Line

```
$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.05d  bigbird        TUE, 10 MAY 2005, 01:27     E: 01:25:46  I: 02:19
--------------------------------  PULSE POINTS  --------------------------------
    Indicator            |    Green    |   Yellow    |      Red     | Comments
--- CPU ------------------------------------------------------------------------
CPU Busy %                   0.3[  0.3]
Run-Q Average                  0[    0]
--- Memory ---------------------------------------------------------------------
Page Out Rate                  0[    0]                                /sec
Read Hit %                 100.0[100.0]
--- Disk I/O -------------------------------------------------------------------
Average Wait Time            3.7[  5.1]                                System Wide
Average Q-Length               0[    0]                                System Wide
Disk Utilization %           1.6[  2.0]                                System Wide
Disk I/O Rate (/sec)                                       106[  845] System Wide
--- Network --------------------------------------------------------------------
Collision %                    0[    0]                                System Wide
--------------------------------------------------------------------------------




Enter command: _
```

Figure 9.4 *MVHOST Pulse Points screen (example)*

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

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

Pulse Point Indicator Lines

Example

```
$PP_MEMORY  VM-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)

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 85.

  When the scale is from high to low (the yellow-threshold value is greater than the red-threshold value), the value of the <variable> must be greater than the value for the yellow threshold. See Example 2 on page 85.

- Yellow

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

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

- Red

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

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

Example 1

```
$PP_CPU    CPU-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.

Example 2

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

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

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

- BC-RHIT% data values equal to or less than 90 and greater than 80 will appear in the Yellow column in the Pulse Points screen.
- BC-RHIT% data values less than 80 will appear in the Red column in the Pulse Points screen.

8 The <comment> field (optional) can be used to assist in the interpretation of the pulse points indicator. Any comments must be enclosed in quotation characters (" "). For example, in the indicator line:

```
$PP_MEMORY  VM-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 93.

```
# Var_name              row,column,width

CPU-BUSY%               ROW,13,WIDTH

BC-RHIT%                ROW,30,WIDTH
```

Figure 9.5 *kip configuration file (example)*

Configuration Rules

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

Example

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

Syntax

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

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

All kip variable items:

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

Attribute Commands

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

Table 9.1 *MVHOST kip attribution commands*

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

10

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.

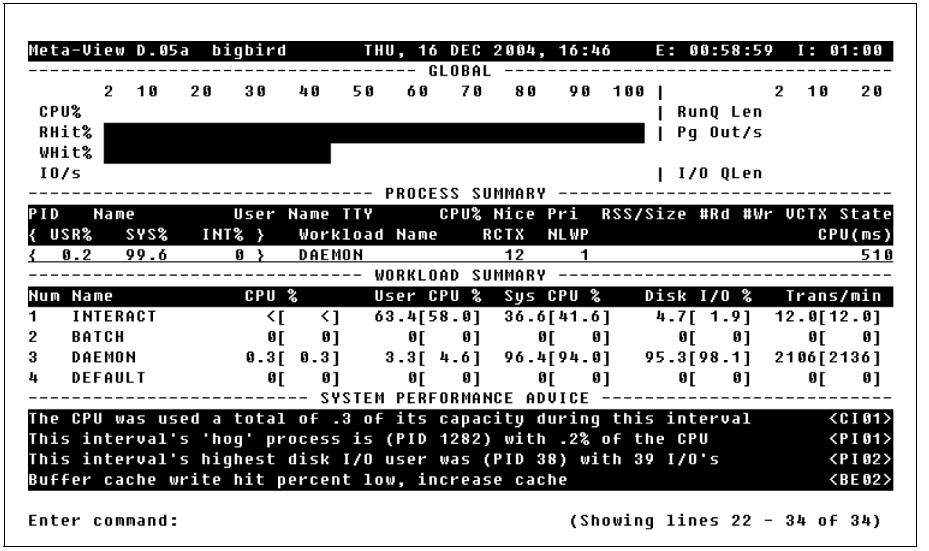


Figure 10.1 *MVHOST Global Summary screen (graphical format)*

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 92.

Tabular Format

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

```
Meta-View D.05d  bigbird       TUE, 10 MAY 2005, 03:40    E: 00:53:08  I: 01:00
------------ CPU UTILIZATION ------------------------- CPU MISC --------------
          TOTAL BUSY:  0.3[  1]                        | Capture Ratio      0.1[  1]
                                                       | RunQ Avg             0[  0]
 User:    <[  1]   Sys:  0.3[  1]  Nice:    0[  0] | 5/15 Min RunQ Avg   0/  0
 Wait:    <[  <]  Idle: 99.7[ 99]                     |
---------------------------------- MEM/VM ------------------------------------
 Read Hit %  100.0[100]     Page Outs        0[  0]/s     Mem Used % 30.4[ 29]
 Write Hit %  56.1[ 88]     Page Ins         0[  2]/s     VM Used %  16.5[ 15]
------------------------------------ MISC -------------------------------------
 #Sessions:    2  #Procs:   124  #Wait I/O:      0   Transactions:  36.6[ 0.7]/s
 #Active:      1  #Active:   17  #Deact:         0
------------------------------------ DISK -------------------------------------
 Disk       IO/s IO% QLen | Disk       IO/s IO% QLen | Disk       IO/s IO% QLen
 c0t6d0        1 100  0.5 | c3t6d0        0    0    0 | c1t2d0        0    0    0
------------------------------- PROCESS SUMMARY -------------------------------
PID   Name         User Name TTY      CPU% Nice Pri  RSS/Size #Rd #Wr VCTX State
-------------------------- SYSTEM PERFORMANCE ADVICE ---------------------------
The CPU was used a total of .3 of its capacity during this interval       <CI01>
This interval's 'hog' process is (PID 1293) with .2% of the CPU           <PI01>
This interval's highest disk I/O user was (PID 38) with 30 I/O's          <PI02>
Buffer cache write hit percent low, increase cache                        <BE02>

Enter command: _                                    (Showing lines 18 - 23 of 23)
```

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 92.

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.05a. 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 bigbird.

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 45.

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 44.

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. The data displayed in the KIP line is configurable. By default, it shows Total Busy and Read Hit data for the current interval.

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

Read Hit

The Read Hit value displayed in the KIP line is the read hit percentage for the current interval.

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 86.

GLOBAL

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

GLOBAL (Left Column)

CPU%

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

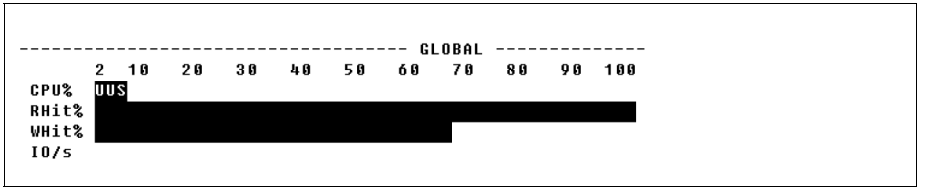


Figure 10.5 *MVHOST Global Summary screen: GLOBAL (left column)*

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:

- 4 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
N	Nice	The percentage of time executing processes w/a nice value in user mode.
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.

RHit%

The RHit% bar represents the buffer cache read hit percentage.

WHit%

The WHit% bar represents the write hit percentage.

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 94), a code letter (I - IO rate (IO/s)) in the bar graph tell you how many of physical I/Os were accumulated in the current interval.

GLOBAL (Right Column)

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

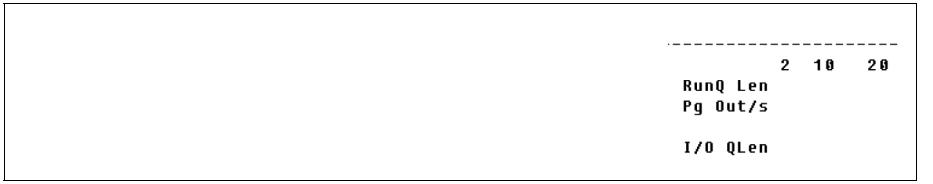


Figure 10.6 *MVHOST Global Summary screen: GLOBAL (right column)*

Each data item in the right column of the GLOBAL statistics is described in Table 10.2.

Table 10.2 *MVHOST Global data items*

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

PROCESS SUMMARY

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

To examine the CPU usage and disk I/O usage information for a process, open the Process Detail screen. For further information, see "MVHOST Process Detail" on page 173.

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 54.

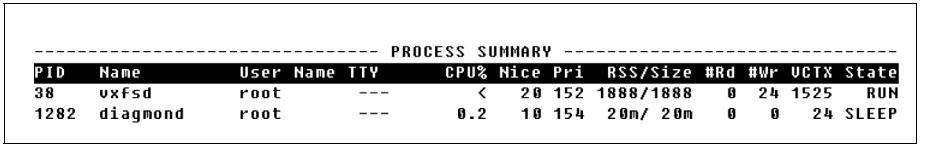
You can configure the PROCESS SUMMARY display in the following ways:

- Display or suppress the extended process line.
- Display either the total and I/O percentages or the read and write counts.
- Display all processes or only the active processes.
- Display or suppress attached processes.

- Display or suppress detached processes.
- Display or suppress system processes.
- Display or suppress processes that have died.
- Apply a process logon filter.
- Apply a process sort option.
- Display sorted processes in either ascending or descending order.
- Set a maximum number of processes to display.

For information about these options, please refer to “Process Display Options” on page 56.

PROCESS SUMMARY Data Items



PROCESS SUMMARY

PID	Name	User Name	TTY	CPU%	Nice	Pri	RSS/Size	#Rd	#Wr	VCTX	State
38	vxfsd	root	---	<	20	152	1888/1888	0	24	1525	RUN
1282	diagmond	root	---	0.2	10	154	20m/ 20m	0	0	24	SLEEP

Figure 10.7 *MVHOST Global Summary screen: PROCESS SUMMARY*

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

Table 10.3 *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).

Data Item	Description
Nice	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. • 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). A process that slows system response time can be "niced" to lower its priority and allow other processes to be executed more quickly.
Pri	The Pri column shows the most recent priority that each process was given. 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). 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.
RSS/Size	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. ***Performance Tip*** 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.
#Rd	The #Rd column lists the number of physical reads performed by each process during the current interval.

Data Item	Description
#Wr	The #Wr column shows the number of physical writes performed by each process during the current interval. ***Performance Tip*** The #Wr values are important because they can point to processes that are performing excessive disk I/Os. To confirm, check the SYSTEM PERFORMANCE ADVICE portion of the Global Summary screen for a message that reports the high I/O process for the current interval. When high #Rd and #Wr values are evident, determine whether the I/Os are necessary or unnecessary.
VCTX	The number of Voluntary Context Switches for the process, representing the number of times the process voluntarily does not assume the entire timeslice reserved (e.g. it has to wait for a resource).
State	The state the process was in at the end of the current interval.

Extended Process Statistics Lines

The PROCESS SUMMARY portion of the Global Summary screen can be extended to provide an additional line of information for each process.

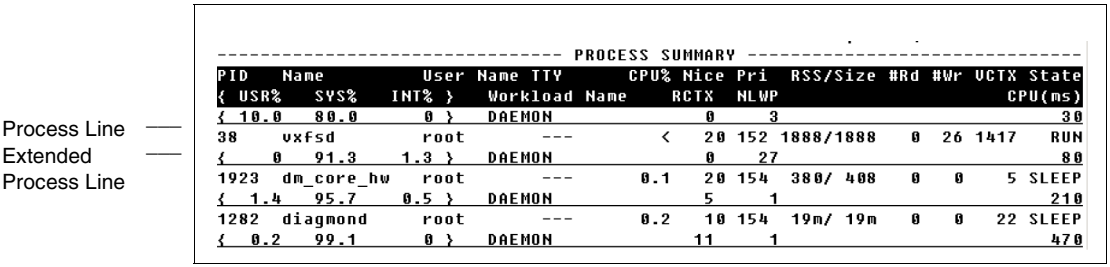


Figure 10.8 *MVHOST Global Summary screen: extended process column headings and lines*

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

The statistics in the extended process lines correspond with the column headings in the extended process headings line. Each column heading is described in Table 10.4.

Table 10.4 *Extended process column headings*

Heading	Description
USR%	The percentage of the process' execution time spent in user mode.
SYS%	The percentage of the process' execution time spent in system/kernel mode.
INT%	The percentage of the process' execution time spent for interrupts.
Workload Name	The name of the workload which the process belongs to.
RCTX	The number of Resource Context Switches, representing the number of times the operating system takes over after the process' timeslice has ended.
NLWP	The number of threads for which the current process is the parent.
CPU (ms)	The total CPU time in milliseconds used by the process during the current interval.

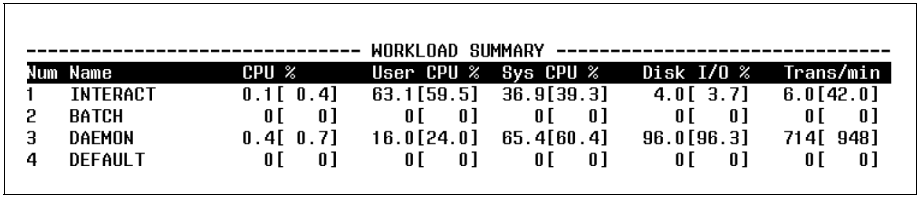
Additional information about a process can be viewed in the Process Detail screen, which is discussed in "MVHOST Process Detail" on page 173.

WORKLOAD SUMMARY

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

WORKLOAD SUMMARY Display Options

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



WORKLOAD SUMMARY

Num	Name	CPU %	User CPU %	Sys CPU %	Disk I/O %	Trans/min
1	INTERACT	0.1[0.4]	63.1[59.5]	36.9[39.3]	4.0[3.7]	6.0[42.0]
2	BATCH	0[0]	0[0]	0[0]	0[0]	0[0]
3	DAEMON	0.4[0.7]	16.0[24.0]	65.4[60.4]	96.0[96.3]	714[948]
4	DEFAULT	0[0]	0[0]	0[0]	0[0]	0[0]

Figure 10.9 *MVHOST Global Summary screen: WORKLOAD SUMMARY*

By default, all workloads running on the system are included in this process summary. To show only the active workloads, enter **Y** (Yes) for the Display only active workloads option in the

MVHOST Main Options Menu screen, then set the minimum CPU time required for workload display to a value between 0.1 and 99.9 percent.

WORKLOAD SUMMARY Data Items

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

Table 10.5 *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 percentage of system-wide CPU time that was used by the workload's processes. This is normalized for multiple-processors. In other words, all CPU% values added together should never exceed 100%. (Elapsed interval data is enclosed in brackets ([ ]).
User CPU%	The percentage of the workload's CPU time spent in user mode.
Sys CPU%	The percentage of the workload's CPU time spent in system mode.
Disk I/O%	The percentage of system-wide I/Os performed by the workload's processes.
Trans/min	The number of transactions per minute for the 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.

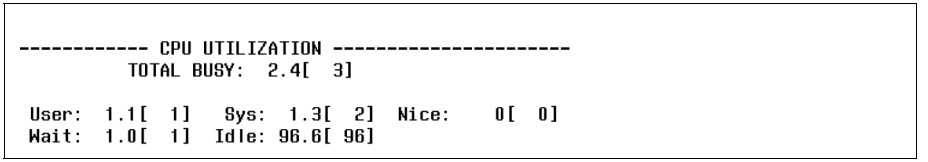


Figure 10.10 *MVHOST Global Summary screen: CPU UTILIZATION*

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

CPU UTILIZATION Data Items

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

Table 10.6 *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, Nice, and Sys, values reported in the same area of the Global Summary screen. ***Performance Tip*** When the TOTAL BUSY value is consistently greater than 75 or 80 percent and the majority of this resource is consumed by high-priority interactive user processing, it is possible that the CPU is a bottleneck on your system. It is important to observe this data over time and not base your diagnosis on a brief spike in CPU activity. If the TOTAL BUSY value is excessive due to batch job activity, there is usually ample CPU capacity for interactive users. To confirm your diagnosis, investigate the average length of the CPU queue (see "RunQ Avg" on page 104).
User	The percentage of time the CPU spent executing user code with a nice value of 20 and without any special priority status. ***Performance Tip*** It is usually advantageous to allow the majority of CPU time to be spent processing user code (including real- and nice-level code). To get a feel for the relative impact of productive or nonproductive work, monitor the Capture Ratio value (see "MEM/VM" on page 105).
Nice	The percentage of time executing processes with a nice value in user mode.

Data Item	Description
Sys	The Sys value in the CPU UTILIZATION portion of the Global Summary screen represents the percentage of time the CPU spent in system (kernel) mode. ***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.
Idle	The Idle value represents the percentage of time the CPU was not in use. ***Performance Tip*** 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. 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.
Wait	The percentage of time spent waiting for I/O operations (VM paging/swaping operations, block I/O or raw I/O).

CPU MISC

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

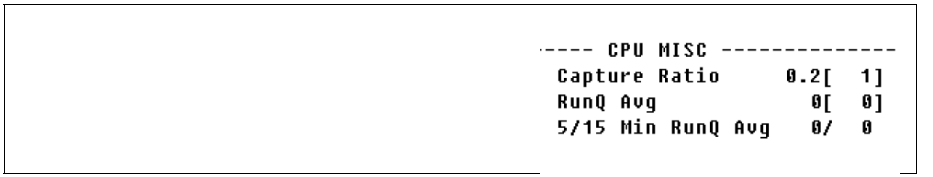


Figure 10.11 *MVHOST Global Summary screen: CPU MISC*

CPU MISC Data Items

The data items presented in the CPU MISC portion of the Global Summary screen are described in Table 10.7.

Table 10.7 *MVHOST CPU Miscellaneous data items*

Data Item	Description
Capture Ratio	The Capture Ratio value is calculated as: ***Capture Ratio = (User + Real + Nice) / Sys*** ***Performance Tip*** 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.
RunQ Avg	The average number of processes present in the CPU run queue during the current interval. The value reported in brackets is the cumulative run queue average for the elapsed interval. The RunQ Avg values reported in the Global Summary screen are similar to the system load average values retrieved by typing the **uptime** command at the Unix command prompt.
5/15 Min RunQ Avg	The 5/15 Min RunQ Avg values show the load average 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 119.

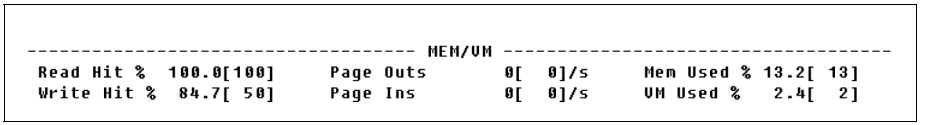


Figure 10.12 *Global Summary screen: MEM/VM*

MEM/VM Display Options

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

MEM/VM Data Items

The data items presented in the MEM/VM portion of the Global Summary screen are described in Table 10.8.

Table 10.8 *MVHOST Memory/Virtual Memory data items*

Data Item	Description
Read Hit %	The percentage of disk reads satisfied in the buffer cache.
Write Hit %	The percentage of disk writes satisfied in the buffer cache.
Page Outs	The number of page outs per second.
Page Ins	The number of page ins per second.
Mem Used %	The percentage of RAM currently used.
VM Used %	The percentage of swap space currently used.

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.

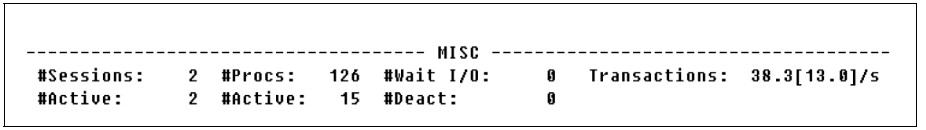


Figure 10.13 *MVHOST Global Summary screen: MISC*

MISC Display Options

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

MISC Data Items

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

Table 10.9 *MVHOST Miscellaneous data items*

Data Item	Description
#Sessions	The current number of sessions logged on the system.
#Active	The #Active value (displayed below the #Sessions value) represents the current number of active sessions (sessions that used at least 0.0 percent of CPU time).
#Procs	The current number of processes present on the system.
#Active	The #Active value (displayed below the #Procs value) represents the current number of active processes (processes that used at least 0.0 percent CPU).
#Wait I/O	The current number of processes that waited on disk I/O.
#Deact	The current number of deactivated processes.
Transactions	The number of transactions per second that occurred during the current interval. A transaction is defined as a voluntary context switch for a process (the process gave up on CPU waiting for a resource).

DISK

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

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

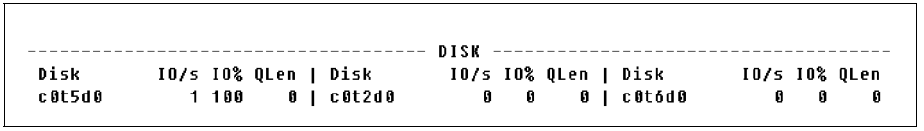


Figure 10.14 *MVHOST Global Summary screen: DISK*

DISK Display Options

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

DISK Data Items

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

Table 10.10 *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.

Data Item	Description
QLen	The QLen value represents the average length of the disk's queue. ***Performance Tip*** 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: • Excessive disk arm movement due to heavily hit files. You might achieve better I/O balance by placing complementary files on separate drives. • Database inefficiencies. Implement better database maintenance. • Hardware issues. Upgrade slow disk drives.

SYSTEM PERFORMANCE ADVICE

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

```
-------------------------- SYSTEM PERFORMANCE ADVICE ---------------------------
The CPU was used a total of 1.7 of its capacity during this interval      <CI01>
This interval's 'hog' process is (PID 4762) with .9% of the CPU           <PI01>
This interval's highest disk I/O user was (PID 7207) with 17 I/O's        <PI02>
Collision percent indicates a moderate network bottleneck                 <LE01>
Buffer cache write hit percent low, increase cache                        <BE02>
FLOCKS too high at 6                                                      <GE03>
```

Figure 10.15 *MVHOST Global Summary screen: SYSTEM PERFORMANCE ADVICE*

At the end of each advice message, there is a four-character message identification code (for example, <CI01> or <ME01>). The identification code of any standard advice message can be referenced in "System Performance Advice Message Interpretations" on page 109 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 75.

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 75.

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

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

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

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

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

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

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

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

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

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

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

```
<DE01> Average disk service time indicates possible disk bottleneck
```

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

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

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

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

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

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

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

```
<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.

11

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 114 (next page) and “Tabular Format” on page 115.

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.

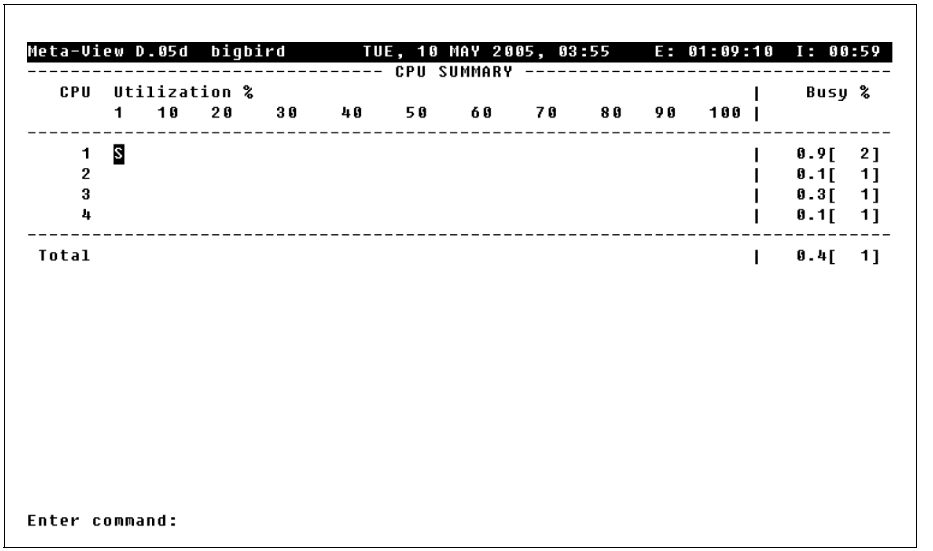


Figure 11.1 *MVHOST CPU Summary screen (graphical format)*

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%	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. 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 97.
Busy%	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).
Total	The Total value represents the average utilization percentage of all CPUs during the current interval.

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.

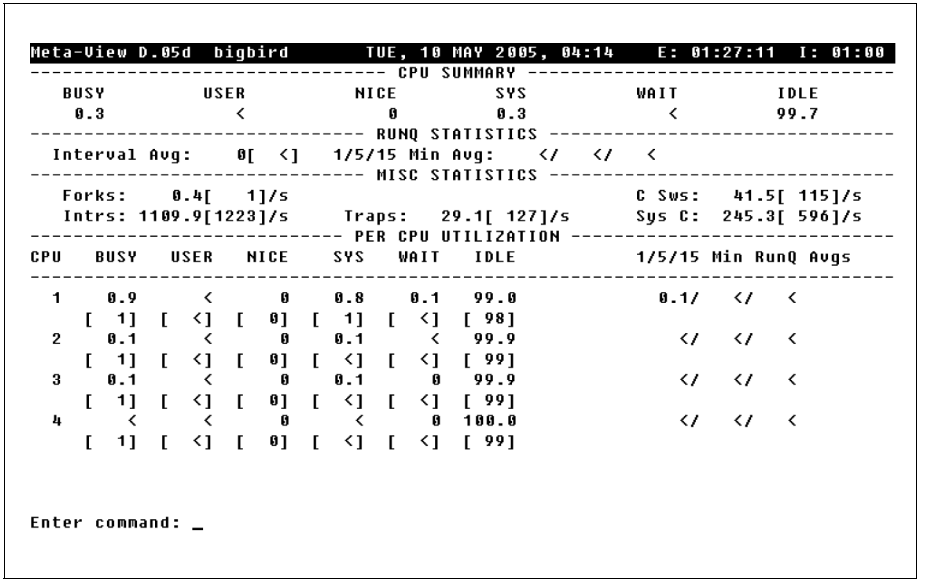


Figure 11.2 *MVHOST CPU Summary screen (tabular format)*

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 45. For a description of each data item, please refer to "CPU Terms" on page 325 in the Glossary of Terms.

Table 11.2 *MVHOST CPU Utilization data items*

Data Item	Description
User	The percentage of time the CPU spent executing user code with a nice value of 20 and without any special priority status.
Nice	The percentage of time executing processes with a nice value in user mode.
Sys	The percentage of time the CPU spent in system (kernel) mode.
Idle	The percentage of time the CPU was not in use.

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, Nice and Sys values.
Wait	The percentage of time spent waiting for I/O operations (VM paging/swaping operations, block I/O or raw I/O).

RUNQ STATISTICS

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

Table 11.3 *MVHOST RUNQ STATISTICS data items*

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

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.
C Sws	The number of context switches per second.
Intrs	The number of interrupts per second.
Traps	The number of traps per second.
Sys C	The number of system calls per second.

PER CPU UTILIZATION

The PER CPU UTILIZATION portion of the tabular CPU Summary screen displays the same data listed in the CPU SUMMARY portion of the screen for each CPU on the system. Please refer to "CPU SUMMARY" on page 116 for a description of each data item.

12

MVHOST MEMORY SUMMARY

The Memory Summary Screen

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

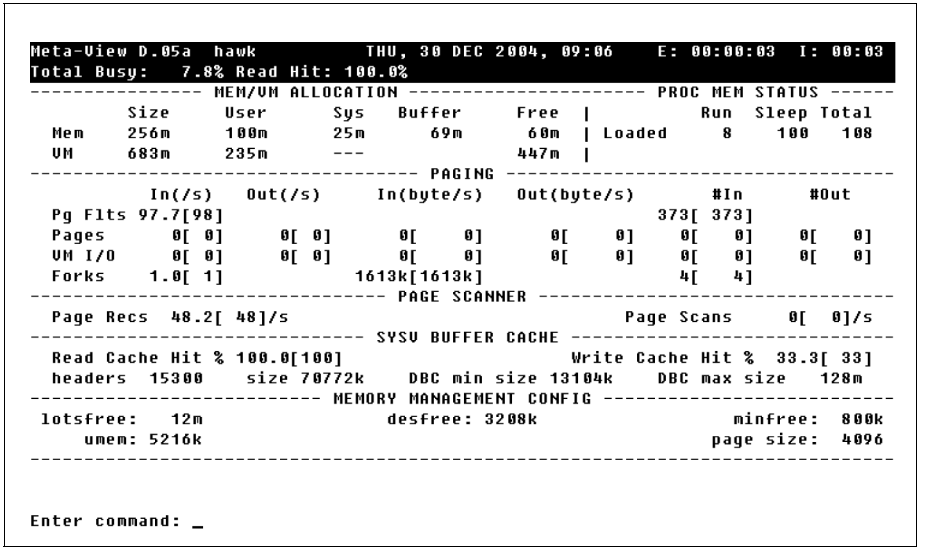


Figure 12.1 *MVHOST Memory Summary screen*

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.
	User	Megabytes of RAM used by user processes.
	Sys	Megabytes of RAM used by the operating system.
	Buffer	Megabytes of RAM used by the buffer cache.
	Free	Megabytes of unused RAM.
VM	Size	Megabytes of virtual memory (swap space) configured on the system.
	User	Megabytes of virtual memory used by user processes.
	Sys	Not applicable.
	Buffer	Not applicable.
	Free	Megabytes of unused virtual memory.

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.

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
Pg Flts	In (/s)	The number of page faults per second (see “page fault” on page 328).
Pages	In (/s)	The number of page ins per second (see “page in” on page 328).
	Out (/s)	The number of page outs per second (see “page out” on page 328).
	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.
VM I/O	In (/s)	The number of virtual memory reads per second.
	Out (/s)	The number of virtual memory writes per second.
	In (byte/s)	The rate of virtual memory reads in bytes per second.
	Out (byte/s)	The rate of virtual memory writes in bytes per second.
	#In	The number of virtual memory reads.
	#Out	The number of virtual memory writes.
Forks	In (/s)	The number of forks per second.
	Out (/s)	Not applicable.
	In (byte/s)	The pages paged in as a result of a fork, in bytes per second.
	Out (byte/s)	Not applicable.
	#In	The number of forks.
	#Out	Not applicable.

PAGE SCANNER

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

Table 12.4 *MVHOST PAGE SCANNER data items*

Data Item	Description
Page Recs	The Page Recs value represents the number of pages reclaimed per second.
Page Scans	The Page Scans value represents the number of pages scanned by the page scanner per second.

SYSV BUFFER CACHE

The SYSV BUFFER CACHE portion of the Memory Summary screen displays the values of key buffer cache variables. Each data item is described in the following table.

Table 12.5 *MVHOST SYSV BUFFER CACHE data items*

Data Item	Description
Read Cache Hit %	The percentage of read requests satisfied in buffer cache.
Write Cache Hit %	The percentage of writes not written, because of write delays, to total writes attempted. Write delays are used to decrease the number of disk writes necessary and to organize outstanding writes in a more efficient order.
headers	The number of buffer cache headers. If a dynamic buffer cache is configured, this number will change over time.
size	The current size of buffer cache. If a dynamic buffer cache is configured, this number will change over time.
DBC min size	Minimum size of the Dynamic Buffer Cache. If DBC is not configured, "N/A" will be displayed.
DBC max size	Maximum size of the Dynamic Buffer Cache. If DBC is not configured, "N/A" will be displayed.

MEMORY MANAGEMENT CONFIG

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

Table 12.6 *MVHOST MEMORY MANAGEMENT CONFIG data items*

Data Item	Description
lotsfree	The upper bound for paging. Once paging has started, it will continue until free memory (refer to “MEM/VM ALLOCATION” on page 120) is larger than lotsfree.
desfree	The lower bound for paging. When free memory drops below desfree, paging begins.
minfree	The threshold at which the system considers itself to be out of memory. At this point, the system will start swapping processes.
umem	Unlockable memory.
page size	Size of pages, in bytes.

13

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 126 (next page) and “Disk I/O Summary Screen Display Items” on page 126.

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.

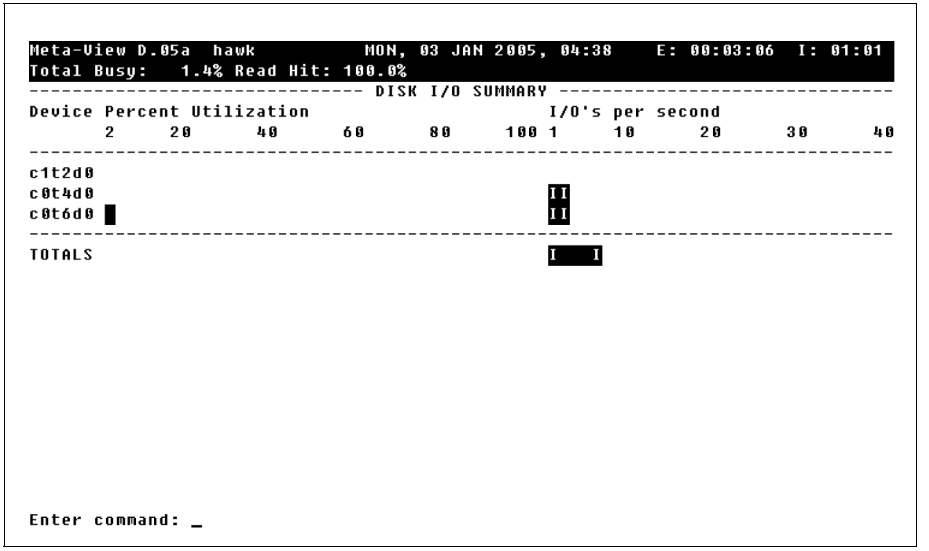


Figure 13.1 *MVHOST Disk I/O Summary screen (graphical format)*

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.
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.

Data Item	Description
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.05a  hawk          MON, 03 JAN 2005, 04:35    E: 00:00:04  I: 00:04
Total Busy:   9.6% Read Hit:  98.2%
------------------------------ DISK I/O SUMMARY -------------------------------
                                Wait      Service    IO rate
Dev       I/O%   Qlen  Util%  Time(ms)  Time(ms)   (/sec)
-------------------------------------------------------------------------------
c1t2d0       0      0      0         0         0         0
c0t4d0      11    0.5    2.5       4.0       1.3       0.8
c0t6d0      89    0.5  152.5       4.8       9.0       6.8
-------------------------------------------------------------------------------
TOTALS     100    0.5   51.6       4.7       8.2       7.6




Enter command:
```

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

DISK I/O SUMMARY (tabular format)

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

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

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

14

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.

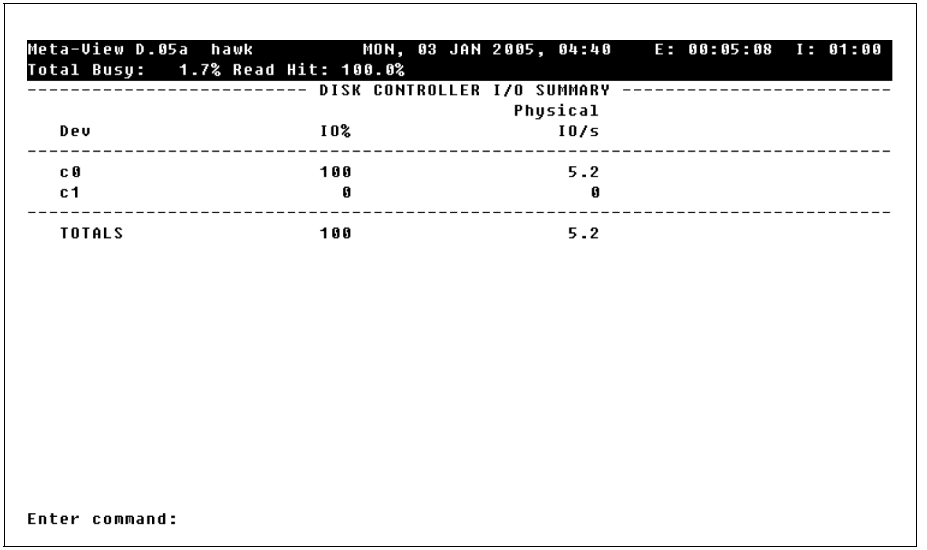


Figure 14.1 *MVHOST Disk Controller I/O Summary screen*

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*

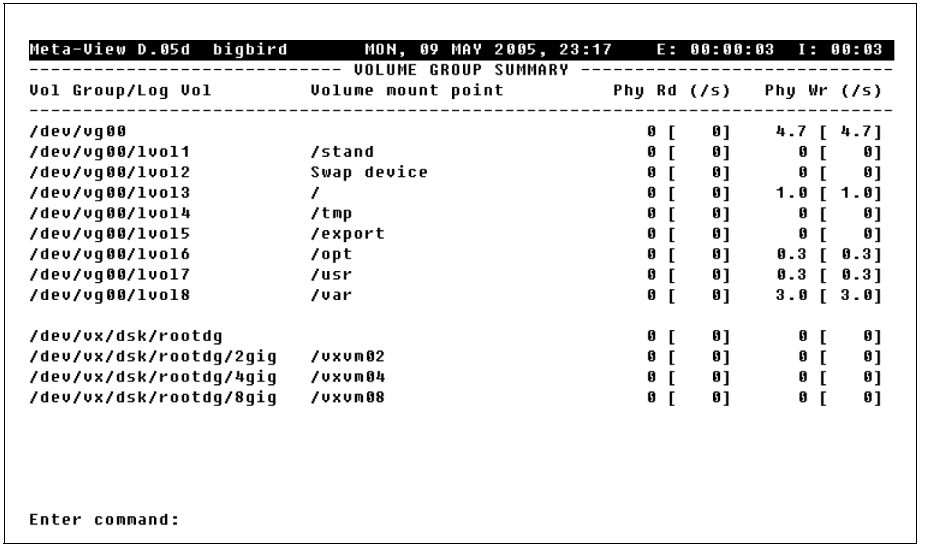
Data Item	Description
Dev	The device identification number for the disk controller.
I/O%	The percentage of all disk I/Os on the system performed by each disk controller.
Physical IO/s	The number of physical I/O operations per second performed by the disk controller.
TOTALS	The TOTALS line sums up the activities of all disk controllers for the interval.

15

MVHOST VOLUME SUMMARY

The Volume Summary Screen

The Volume Summary screen displays information for each logical volume and volume group.



```
Meta-View D.05d  bigbird        MON, 09 MAY 2005, 23:17    E: 00:00:03  I: 00:03
------------------------------ VOLUME GROUP SUMMARY ------------------------------
Vol Group/Log Vol          Volume mount point          Phy Rd (/s)    Phy Wr (/s)
-----------------------------------------------------------------------------------
/dev/vg00                                                0 [    0]     4.7 [ 4.7]
/dev/vg00/lvol1            /stand                        0 [    0]       0 [   0]
/dev/vg00/lvol2            Swap device                   0 [    0]       0 [   0]
/dev/vg00/lvol3            /                             0 [    0]     1.0 [ 1.0]
/dev/vg00/lvol4            /tmp                          0 [    0]       0 [   0]
/dev/vg00/lvol5            /export                       0 [    0]       0 [   0]
/dev/vg00/lvol6            /opt                          0 [    0]     0.3 [ 0.3]
/dev/vg00/lvol7            /usr                          0 [    0]     0.3 [ 0.3]
/dev/vg00/lvol8            /var                          0 [    0]     3.0 [ 3.0]

/dev/vx/dsk/rootdg                                       0 [    0]       0 [   0]
/dev/vx/dsk/rootdg/2gig    /vxvm02                       0 [    0]       0 [   0]
/dev/vx/dsk/rootdg/4gig    /vxvm04                       0 [    0]       0 [   0]
/dev/vx/dsk/rootdg/8gig    /vxvm08                       0 [    0]       0 [   0]




Enter command:
```

Figure 15.1 *MVHOST Volume Summary screen*

To access the Volume 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 **v** (Volume Summary). The Volume Summary screen will display (refer to Figure 15.1).

Volume Summary Screen Display Items

VOLUME GROUP SUMMARY

The data items in the Volume Summary screen are described in the next table.

Table 15.1 *MVHOST VOLUME GROUP SUMMARY data items*

Data Item	Description
Vol Group/Log Vol	The volume group directory or logical volume special device file corresponding to the volume.
Phy Rd (/s)	The number of physical reads per second (see "physical I/O" on page 329).
Phy Wr (/s)	The number of physical writes per second.

16

MVHOST File System I/O Summary

The File System I/O Summary Screen

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

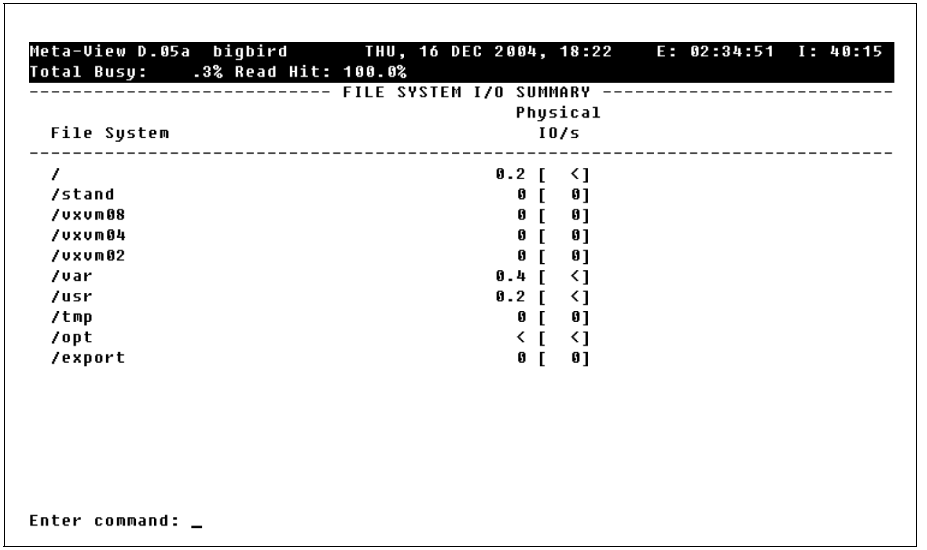


Figure 16.1 *MVHOST File System I/O Summary screen*

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

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

File System I/O Summary Screen Display Items

FILE SYSTEM I/O SUMMARY

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

Table 16.1 *MVHOST FILE SYSTEM I/O SUMMARY data item*

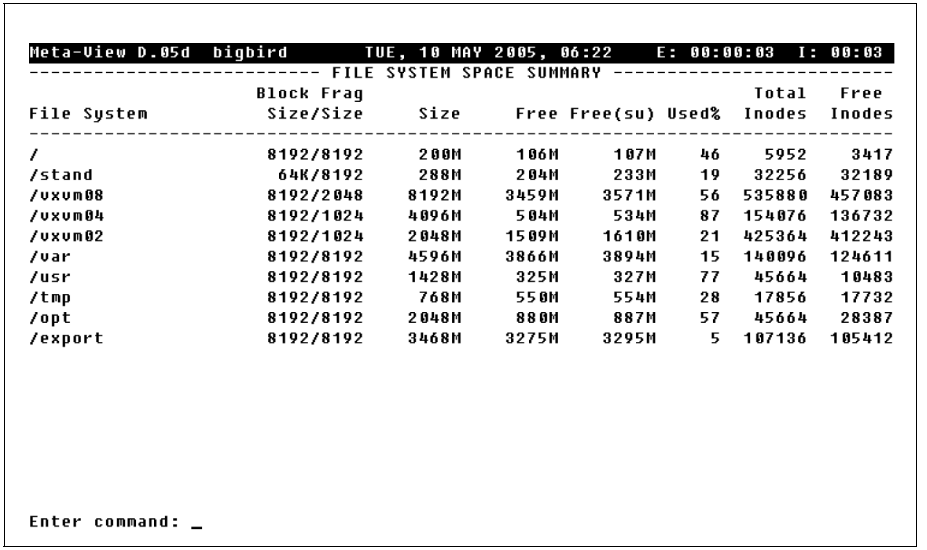
Data Item	Description
Physical IO/s	The file system's number of physical IO operations per second.

17

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.05d  bigbird        TUE, 10 MAY 2005, 06:22     E: 00:00:03  I: 00:03
--------------------------- FILE SYSTEM SPACE SUMMARY ---------------------------
                     Block Frag                                          Total   Free
File System           Size/Size      Size      Free Free(su) Used%  Inodes  Inodes
-------------------------------------------------------------------------------
/                    8192/8192      200M      106M      107M     46    5952    3417
/stand                 64K/8192      288M      204M      233M     19   32256   32189
/vxvm08              8192/2048      8192M     3459M     3571M     56  535880  457083
/vxvm04              8192/1024      4096M      504M      534M     87  154076  136732
/vxvm02              8192/1024      2048M     1509M     1610M     21  425364  412243
/var                 8192/8192      4596M     3866M     3894M     15  140096  124611
/usr                 8192/8192      1428M      325M      327M     77   45664   10483
/tmp                 8192/8192       768M      550M      554M     28   17856   17732
/opt                 8192/8192      2048M      880M      887M     57   45664   28387
/export              8192/8192      3468M     3275M     3295M      5  107136  105412




Enter command: _
```

Figure 17.1 *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 17.1 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 17.1 *MVHOST FILE SYSTEM SPACE SUMMARY data items*

Data Item	Description
File System	The mount point.
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.

18

MVHOST NETWORK SUMMARY

The Network Summary Screen

The Network Summary screen displays network performance information.

```
Meta-View D.04h  bigbird        THU, 30 SEP 2004, 13:25    E: 00:35:10  I: 00:59
------------------------------ NETWORK SUMMARY ------------------------------
  Protocol          Packets In/s    Packets Out/s      Errors In%      Errors Out%
-----------------------------------------------------------------------------
  IP                  0.9[    1]      1.9[    3]       0[    0]        0[    0]
  TCP/IP              0.9[    1]      1.8[    2]       0[    0]      6.54[ 5.01]
  ICMP                  <[    <]        0[    0]       0[    0]        0[    0]
  UDP                   0[    <]        0[    <]       0[    0]      N/A[  N/A]
---------------------------- NETWORK INTERFACES ----------------------------
Interface  Packets In/s  Packets Out/s    Collision%     Error In%     Error Out%
lan1          0.9[    1]      1.9[    3]       0[    0]       0[    0]       0[    0]
lan0            0[    0]        0[    0]       0[    0]       0[    0]       0[    0]
lo0             0[    0]        0[    0]       0[    0]       0[    0]       0[    0]
-----------------------------------------------------------------------------
TOTALS        0.9[    1]      1.9[    3]       0[    0]       0[    0]       0[    0]



Enter command: _
```

Figure 18.1 *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 **l** (Network Summary). The Network Summary screen will display. Figure 18.1 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 18.1 *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 18.2.

Table 18.2 *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.
Collision%	The number of output packets sent that resulted in a collision (see "collision" on page 329).
Error In%	The percentage of packets read during the interval that resulted in error.
Error Out%	The percentage of packets written during the interval that resulted in error.
TOTALS	Data values from a system-wide perspective.

19

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 19.1.

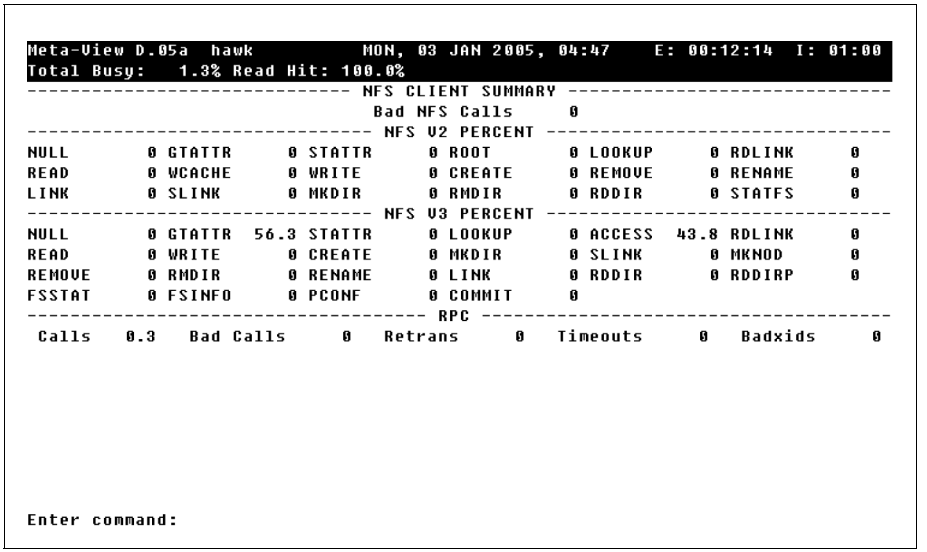


Figure 19.1 *MVHOST NFS CLIENT Summary screen*

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

1 Type **s** from the MVHOST Enter command: prompt to view the Screen Selection Menu screen.

2 From the Screen Selection Menu screen, enter **n** (NFS Summary). The NFS Summary screen will display.

Additional Command Keys for the NFS Summary Screen

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

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

NFS Summary Screen Display Items

NFS CLIENT SUMMARY

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

Bad NFS Calls

The Bad NFS Calls data item represents:

- The number of bad NFS calls accumulated during the current interval, when the screen is set to display NFS call rates (see "Additional Command Keys for the NFS Summary Screen" on page 140).
- 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 19.1 *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.

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

Data Item	RATE Definition	PERCENT Definition
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 19.2 *MVHOST (Client) NFS V2 RATE and PERCENT data items*

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

Data Item	RATE Definition	PERCENT Definition
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 19.3 *MVHOST (Client) RPC data items*

Data Item	Description
Calls	The number of client RPC calls made per second.
Bad Calls	The number per second of client RPC calls that returned with an error. This number includes time-outs and interruptions.
Retrans	The number per second of client RPC calls that were retransmitted. A call is retransmitted when no response is received from the server within the time-out period.

Data Item	Description
Timeouts	The number of RPC calls that timed-out per second. This number includes all retransmissions and timeouts that are counted as bad calls (with no retransmission).
Badxids	The number of duplicate requests per second. A badxid is defined in MVHOST as a duplicate transmission. Every outgoing NFS request is assigned a unique sequential identifier. Requests are retransmitted if the server does not respond within a set time-out period. When the server eventually does respond, it is possible for the client to respond to the same request multiple times. Each duplicate transmission is counted as a badxid. Badxids are an indication that the server is not responding quickly enough.

20

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. (As of HP-UX 10.0, swapping has been replaced with process deactivating, however, the space used for paging/deactivating is still called "swap space" for historical reasons.)

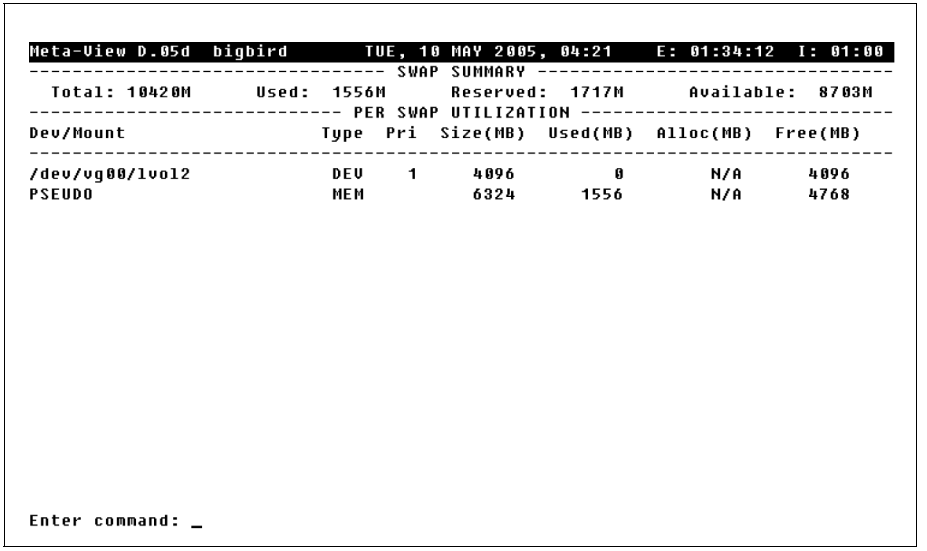


Figure 20.1 *MVHOST Swap Summary screen*

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 20.1 shows an example of the screen.

Swap Summary Screen Display Items

SWAP SUMMARY

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

Table 20.1 *MVHOST SWAP SUMMARY data items*

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

PER SWAP UTILIZATION

The PER SWAP UTILIZATION portion of the Swap Summary screen provides information for each swap device and file system.

Table 20.2 *MVHOST PER SWAP UTILIZATION data items*

Data Item	Description
Dev/Mount	The device file or mount point for swap device or file system swap, respectively. If it is a memory swap, "PSEUDO" will be displayed.
Type	The type of swap: • DEV = device swap • MEM = memory swap • FS = file system swap
Pri	The priority of the swap device/file system.
Size (MB)	The amount of swap space configured for the device/file system.
Used (MB)	The amount of swap space used in the device/file system.

Data Item	Description
Alloc (MB)	The amount of file system swap space allocated. This value is not applicable to device or memory swap.
Free (MB)	The amount of swap space 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.

21

MVHOST USER SUMMARY

The User Summary Screen

The User Summary screen displays information about resource usage by user.

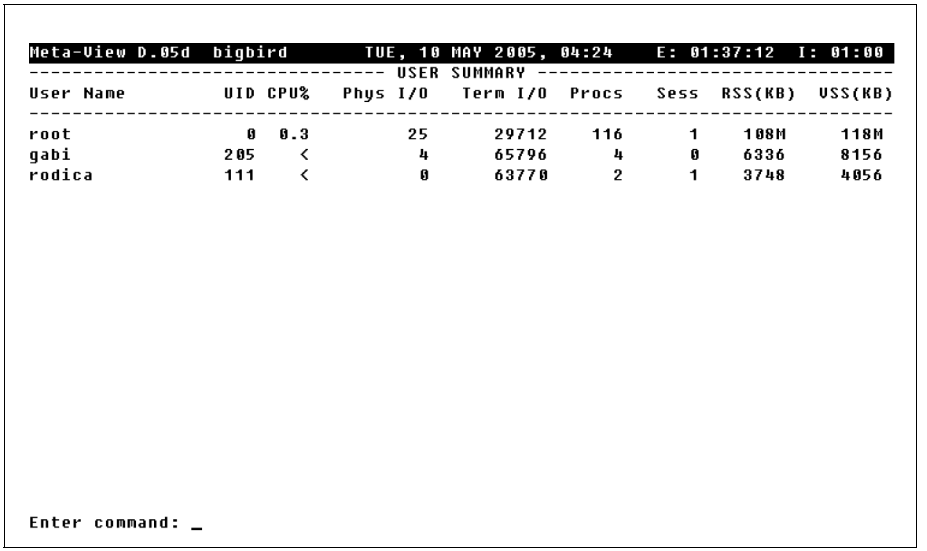


Figure 21.1 *MVHOST User Summary screen*

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 21.1.

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 21.1 *MVHOST USER SUMMARY data items*

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

22

MVHOST TERMINAL SUMMARY

The Terminal Summary Screen

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

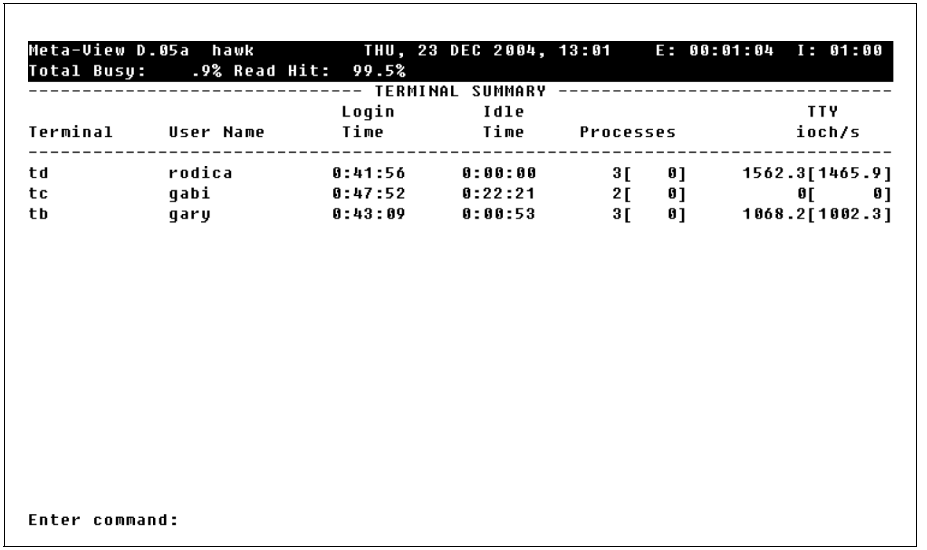


Figure 22.1 *MVHOST Terminal Summary screen*

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 22.1.

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 22.1 *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.
ioch/s	The number of characters read/write from/to the terminal per second.

23

MVHOST System Table Summary

The System Table Summary Screen

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

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

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

Examples of the Disk I/O Summary screen are provided in “Graphical Format” on page 154 and “Tabular Format” on page 156.

System Table Summary Screen Display Items

Graphical Format

An example of the System Table Summary in graphical format is shown in Figure 23.1.

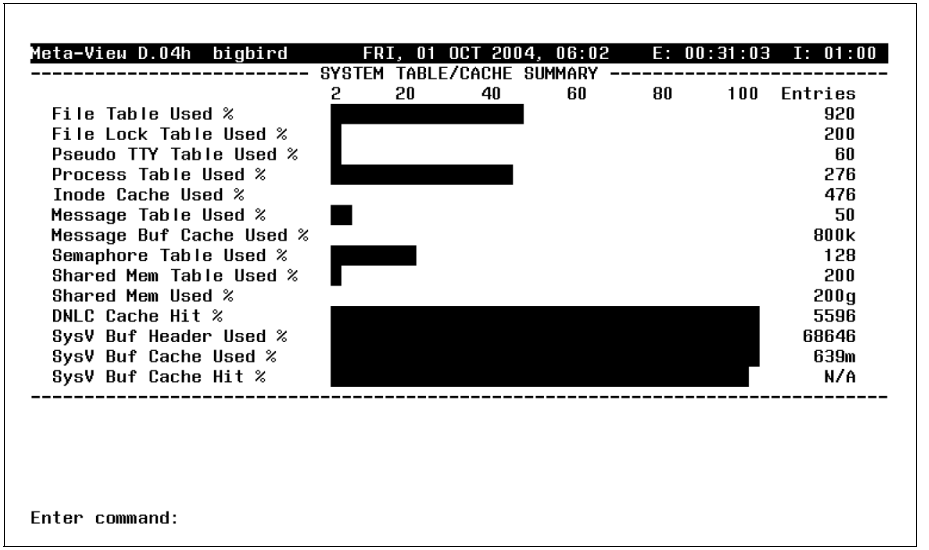


Figure 23.1 *MVHOST System Table Summary screen (graphical format)*

SYSTEM TABLE/CACHE SUMMARY

Table 23.1 *MVHOST SYSTEM TABLE/CACHE SUMMARY data items.*

Data Item	Description
File Table Used%	The percentage of entries in the file table used.
File Table Entries	The number of entries configured for the file table.
File Lock Table Used%	The percentage of entries in the flock table used.
File Lock Table Entries	The number of entries configured for the flock table.
Pseudo TTY Table Used%	The percentage of entries in the pty table used.
Pseudo TTY Table Entries	The number of entries configured for the pty table.
Process Table Used%	The percentage of entries in the process table used.

Data Item	Description
Process Table Entries	The number of entries configured for the process table.
Inode Cache Used%	The percentage of entries in the inode cache used.
Inode Cache Entries	The number of entries configured for the inode cache.
Message Table Used%	The percentage of entries in the message queue table used.
Message Table Entries	The number of entries configured for the message queue table.
Message Buf Cache Used%	The percentage of entries in the message buffer cache used.
Message Buf Cache Entries	The size of the message buffer cache.
Semaphore Table Used%	The percentage of SysV semaphore identifiers used.
Semaphore Table Entries	The number of SysV semaphore identifiers configured.
Shared Mem Table Used%	The percentage of shared memory identifiers used.
Shared Mem Table Entries	The number of shared memory identifiers configured.
Shared Mem Used%	The percentage of shared memory pool used.
Shared Mem Entries	The size of shared memory pool, which may exceed the size of virtual memory.
DNLC Cache Hit%	The percentage of file name lookups that are satisfied in the DNLC (dynamic name lookup cache).
DNLC Cache Entries	The number of names configured in for the table.
SysV Buf Header Used%	The percentage of buffer headers used.
SysV Buf Header Entries	The number of buffer headers configured.
SysV Buf Cache Used%	The percentage of buffer cache used.
SysV Buf Cache Entries	The number of buffer cache entries configured.
SysV Buf Cache Hit%	The percentage of page faults satisfied in the buffer cache.

Tabular Format

An example of the System Table Summary in tabular format is shown in Figure 23.2.

```
Meta-View D.05d  bigbird        TUE, 10 MAY 2005, 06:26     E: 00:03:03  I: 01:00
--------------------------- MISC TABLE/CACHE SUMMARY ---------------------------
                                    Entries         Used        Used %         High
 File Table                             920          426          46.3          426
 File Lock Table                        200            6           3.0            6
 Pseudo TTY Table                        60            1           1.7            1
 Process Table                          276          122          44.2          122
 Inode Cache                            476            0             0            0
--------------------------- IPC TABLE/CACHE SUMMARY ----------------------------
                          Size      Entries         Used       Used %         High
 Message Table             N/A           50            2          4.0            2
 Message Buffer Cache     800K          N/A            0            0            0
 Semaphore Table           N/A          128           27         21.1           27
 Total semaphores          N/A       262144           30         0.01
 Shared Memory Table       N/A          200            7          3.5            7
 Shared Memory            200G          N/A          118            0          118
------------------------------ DNLC CACHE SUMMARY ------------------------------
 Entries    5596                  Hit % 100.0                    Lookups/s      0
--------------------------- SYSV BUFFER CACHE SUMMARY ---------------------------
     HEADER TABLE       |     Min      Max           DATA CACHE
 Entries  Used  Used % |    Size     Size     Size     Used  Used %    High  Hit %
    109K  109K   100.0 |    408M    4088M    1594M    1594M   100.0   1594M   98.6
--------------------------------------------------------------------------------
Enter command: _
```

Figure 23.2 *MVHOST System Table Summary screen (tabular format)*

MISC TABLE/CACHE SUMMARY

This section provides information about miscellaneous caches and tables.

Table 23.2 *MVHOST MISC TABLE/CACHE SUMMARY data items*

Data Item		Description
File Table	Entries	The configured number of entries for the file table.
	Used	The number of file table entries used.
	Used %	The percentage of file table entries used.
	High	The highest number of file table entries used since MVHOST was started.

Data Item		Description
File Lock Table	Entries	The configured number of entries for the flock table.
	Used	The number of file locks used.
	Used %	The percentage of file locks used.
	High	The highest number of file locks used since MVHOST was started.
Pseudo TTY Table	Entries	The configured number of entries for the pty table.
	Used	The number of pty entries used.
	Used %	The percentage of pty entries used.
	High	The highest number of pty entries used since MVHOST was started.
Process Table	Entries	The configured number of entries for the process table.
	Used	The number of process table entries used.
	Used %	The percentage of process table entries used.
	High	The highest number of process table entries used since MVHOST was started.
Inode Cache	Entries	The configured number of entries for the inode cache.
	Used	The number of inode entries used.
	Used %	The percentage of inode entries used.
	High	The highest number of inode entries used since MVHOST was started.

IPC TABLE/CACHE SUMMARY

Table 23.3 *MVHOST IPC TABLE/CACHE SUMMARY data items*

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

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

DNLC CACHE SUMMARY

The DNLC CACHE SUMMARY portion of the System Table Summary screen displays information about the DNLC (dynamic name lookup cache).

Table 23.4 *MVHOST DNLC CACHE SUMMARY data items*

Data Item	Description
Entries	The configured number of entries for DNLC.
Hit %	The percentage of file name lookups found in DNLC, avoiding expensive lookup.
Lookups/s	The number of file name lookups per second.

SYSV BUFFER CACHE SUMMARY

The SYSV BUFFER CACHE SUMMARY portion of the System Table Summary screen displays information about the SysV buffer cache.

Table 23.5 *MVHOST SYSV BUFFER CACHE SUMMARY data items*

Data Item		Description
HEADER TABLE	Entries	The number of buffer headers configured. If a DBC is configured, this number will change over time. For a definition of buffer headers, see “buffer cache headers” on page 327.
	Used	The number of buffer headers used.
	Used %	The percentage of buffer headers used.
DATA CACHE	Min Size	The minimum size allowed for the dynamic buffer cache. If a fixed size buffer cache is configured, "N/A" will be displayed.
	Max Size	The maximum size allowed for the dynamic buffer cache. If a fixed size buffer cache is configured, "N/A" will be displayed.
	Size	The current size of the buffer cache.
	Used	The kilobytes of buffer cache used.
	Used %	The percentage of the buffer cache used.
	High	The largest amount of buffer cache used.
	Hit %	The percentage of reads/writes satisfied by the buffer cache.

24

MVHOST System Configuration Summary

The System Configuration Screen

The System Configuration screen displays various configurable kernel parameters. Figure 24.1 shows an example of the screen.

```
Meta-View D.05a  hawk          WED, 29 DEC 2004, 09:50    E: 00:00:04  I: 00:04
Total Busy:   7.1% Read Hit:  94.1%
----------------------------- SYSTEM CONFIGURATION -----------------------------
 system name: hawk        os version: B.11.11                 cpu type: 9000/782
  serial num: 2007483984   boot time: 09:35 30 NOV 2004     run level: 3
--------------------------- MEMORY MANAGEMENT CONFIG ---------------------------
 lotsfree:  3208                desfree:   802                   minfree:   200
     umem:  1304                                               page size:  4096
------------------------------- FS CONFIGURATION -------------------------------
 fs_async: 0                       nfile:   920                     ninod:   476
------------------------------- SWAP CONFIGURATION -----------------------------
 nswapdev:   10                                                    nswapfs:   10
------------------------ SYSV BUFFER CACHE CONFIGURATION -----------------------
 nbuf: 15300        bufpages:  15172       dbc min:  3276       dbc max:  32768
---------------------------- PROCESS CONFIGURATION -----------------------------
 timeslice:    10                maxfiles:    60               maxtsiz:   2048
   maxuprc:    75              maxfiles_lim:  1024               maxdsiz:  16384
     nproc:   276                                              maxssiz: 262144
------------------------------- IPC CONFIGURATION ------------------------------
     MESSAGES      msgmap:   42 |    SEMAPHORES     semvmx: 32767 |   SHARED MEM
 msgmax:  8192     msgmni:   50 | semmap:   66      semaem: 16384 | shmmax:  64m
 msgmnb: 16384     msgseg: 2048 | semmni:   64      semmnu:    30 | shmmni:  200
 msgssz:     8     msgtql:   40 | semmns:  128      semume:    10 | shmseg:  120
Enter command:
```

Figure 24.1 *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 24.1 *MVHOST SYSTEM CONFIGURAITON data items*

Data Item	Description
system name	The specific name of the system assigned during the system installation.
serial num	The serial number of the system.
os version	The version of the operating system.
cpu type	The type of CPU hardware and model.
boot time	The time of the last system reboot.
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 24.2 *MVHOST MEMORY MANAGEMENT data items*

Data Item	Description
lotsfree	The upper bound for paging (see “lotsfree” on page 327).
desfree	The lower bound for paging (see “desfree” on page 327).
minfree	The threshold value at which the system considers itself to be out of memory (see “minfree” on page 327).
umem	The amount of unlockable memory configured (see “unlockable memory” on page 328).
page size	The page size data item represents the size of the pages (bytes).

FS CONFIGURATION

The FS CONFIGURATION portion of the System Configuration screen displays information about the file system configuration.

Table 24.3 *MVHOST FS CONFIGURATION data items*

Data Item	Description
fs_async	Defines whether inodes are written asynchronously when critical fields are modified (i.e., file size). The default is 0 - inodes are written synchronously. Writing inodes asynchronously can improve performance, but can cause data integrity in the case of a system crash. It's advised to leave synchronous writes on.
nfile	The configured number of entries in the file table.
ninod	The configured number of entries in the inode cache.

SWAP CONFIGURATION

The SWAP CONFIGURATION portion of the System Configuration screen displays information about the swap configuration.

Table 24.4 *MVHOST SWAP CONFIGURATION data items*

Data Item	Description
nswapdev	The maximum number of swap devices allowed.
nswapfs	The maximum number of swap file systems allowed.

SYSV BUFFER CACHE CONFIGURATION

The SYSV BUFFER CACHE CONFIGURATION portion of the System Configuration screen displays information about the SYSV buffer cache parameters.

Table 24.5 *MVHOST SYSV BUFFER CACHE CONFIGURATION data items*

Data Item	Description
nbuf	The configured number of buffer cache headers on the system. If the DBC is configured, this number will change over time.
bufpages	The number of pages configured in the buffer cache. If the DBC is configured, this number will change over time.

Data Item	Description
dbc min	The minimum size in pages of the DBC. If a fixed size buffer cache is used, "N/A" will be displayed.
dbc max	The maximum size in pages of the DBC. If a fixed size buffer cache is used, "N/A" will be displayed.

PROCESS CONFIGURATION

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

Table 24.6 *MVHOST PROCESS CONFIGURATION data items*

Data Item	Description
timeslice	The timeslice scheduling interval in units of clock ticks (10 milliseconds). • If the value is 0, the system default is used (100 ticks). • If the value is -1, round-robin scheduling is disabled. See "timeslice" on page 330.
maxfiles	The soft limit on the maximum number of files a process may have open. A process may override the soft limit.
maxtsiz	The maximum size of the text segment of a process in pages.
maxuprc	The maximum number of processes allowed for a single user.
maxfiles_lim	The hard limit on the maximum number of files a process may have open. Only a process owned by root can only override the hard limit.
maxdsiz	The maximum size of the data segment of a process in pages.
nproc	The configured number of entries in the process table. This defines how many processes may run on the system at one given time.
maxssiz	The maximum size of the stack segment of a process in pages.

IPC CONFIGURATION

The IPC CONFIGURATION portion of the System Configuration screen displays information about the SYSV IPC (interprocess communication) configuration parameters.

Table 24.7 *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
	msgmap	The configured number of message map entries.
	msgmni	The configured number of message queue identifiers.
	msgseg	The number of segments allocated in the message buffer cache.
	msgtql	The configured number of message headers. A message header is used for each message queued in the system.
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.

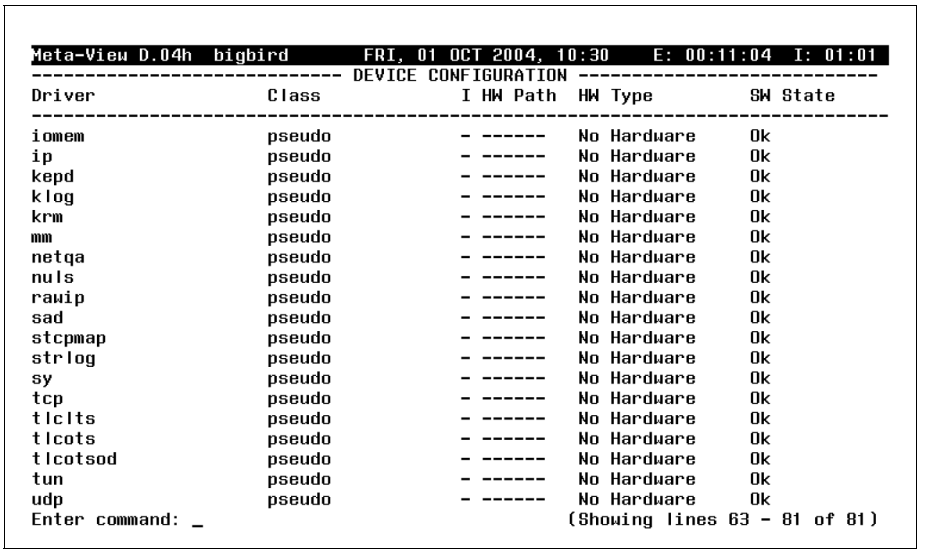
Data Item		Description
SHARED MEM	shmmax	The maximum shared memory segment size (bytes).
	shmmni	The configured number of shared memory identifiers.
	shmseg	The maximum number of shared memory segments that can be attached to a process.

25

MVHOST Device Configuration Summary

The Device Configuration Screen

The Device Configuration screen displays a listing of hardware and pseudo devices that are configured on the system. Figure 25.1 shows an example of the screen.



```
Meta-View D.04h  bigbird       FRI, 01 OCT 2004, 10:30    E: 00:11:04  I: 01:01
----------------------------- DEVICE CONFIGURATION ----------------------------
Driver                  Class              I HW Path  HW Type          SW State
-------------------------------------------------------------------------------
iomem                   pseudo             - ------   No Hardware      Ok
ip                      pseudo             - ------   No Hardware      Ok
kepd                    pseudo             - ------   No Hardware      Ok
klog                    pseudo             - ------   No Hardware      Ok
krm                     pseudo             - ------   No Hardware      Ok
mm                      pseudo             - ------   No Hardware      Ok
netqa                   pseudo             - ------   No Hardware      Ok
nuls                    pseudo             - ------   No Hardware      Ok
rawip                   pseudo             - ------   No Hardware      Ok
sad                     pseudo             - ------   No Hardware      Ok
stcpmap                 pseudo             - ------   No Hardware      Ok
strlog                  pseudo             - ------   No Hardware      Ok
sy                      pseudo             - ------   No Hardware      Ok
tcp                     pseudo             - ------   No Hardware      Ok
tlclts                  pseudo             - ------   No Hardware      Ok
tlcots                  pseudo             - ------   No Hardware      Ok
tlcotsod                pseudo             - ------   No Hardware      Ok
tun                     pseudo             - ------   No Hardware      Ok
udp                     pseudo             - ------   No Hardware      Ok
Enter command: _                                     (Showing lines 63 - 81 of 81)
```

Figure 25.1 *MVHOST Device Configuration screen*

To access the Device 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 **h** (Device Configuration). The Device Configuration screen will display.

Device Configuration Screen Display Items

The data items reported in the Device Configuration Summary are described in Table 25.1.

Table 25.1 *MVHOST DEVICE CONFIGURATION data items*

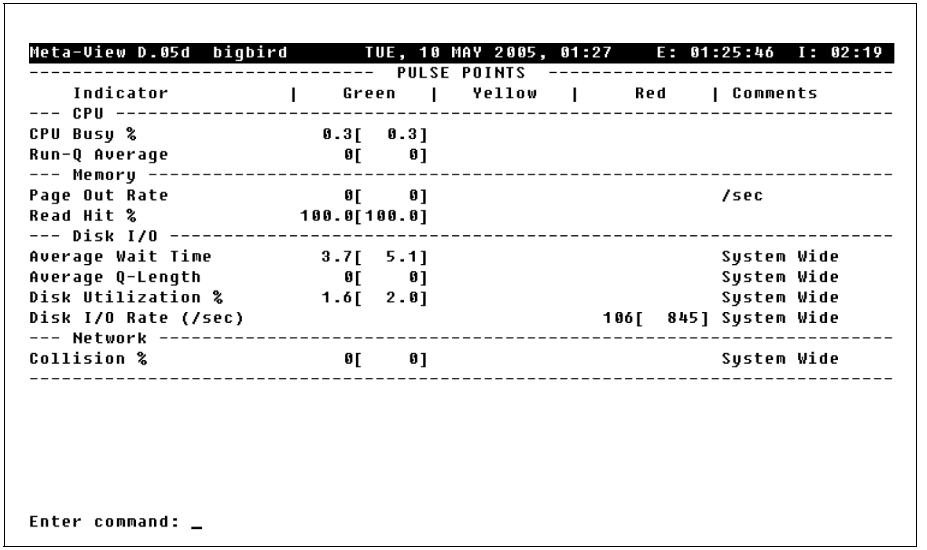
Data Item	Description
Driver	The kernel driver name.
Class	The device category defined in /usr/conf/master.d.
I	The Instance number associated with the device. The instance is a unique number assigned to a device within a class. Pseudo devices do not have instances.
HW Path	The address of the hardware components leading to the device address, listed sequentially from the bus address to the device address.
HW Type	The identification for the device's hardware component: • UNKNOWN - Unrecognizable hardware • PROCESSOR - processor • MEMORY - memory • BUS_NEXUS - bus converter or bus adapter • INTERFACE - interface card • DEVICE - device • NO HARDWARE - Not a hardware component
SW State	The state of the software driver controlling the hardware component: • CLAIMED - Software bound successfully • UNCLAIMED - No associated software found • DIFF_HW - Hardware found does not match software • NO_HW - Hardware is not responding • ERROR - Hardware is in an error state • SCAN - Node locked, try again later • OK - No errors reported

26

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.05d  bigbird        TUE, 10 MAY 2005, 01:27    E: 01:25:46  I: 02:19
--------------------------------  PULSE POINTS  --------------------------------
    Indicator           |    Green    |   Yellow    |      Red     | Comments
--- CPU ------------------------------------------------------------------------
CPU Busy %                  0.3[  0.3]
Run-Q Average                 0[    0]
--- Memory ---------------------------------------------------------------------
Page Out Rate                 0[    0]                                 /sec
Read Hit %                100.0[100.0]
--- Disk I/O -------------------------------------------------------------------
Average Wait Time           3.7[  5.1]                                 System Wide
Average Q-Length              0[    0]                                 System Wide
Disk Utilization %          1.6[  2.0]                                 System Wide
Disk I/O Rate (/sec)                                  106[  845] System Wide
--- Network --------------------------------------------------------------------
Collision %                   0[    0]                                 System Wide
--------------------------------------------------------------------------------



Enter command: _
```

Figure 26.1 *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 26.1.

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 113.

The pulse points indicators are configurable. For configuration guidelines, refer to "MVHOST ppoints File" on page 82.

Pulse Points Screen Column Headings

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

Table 26.1 *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.

27

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.

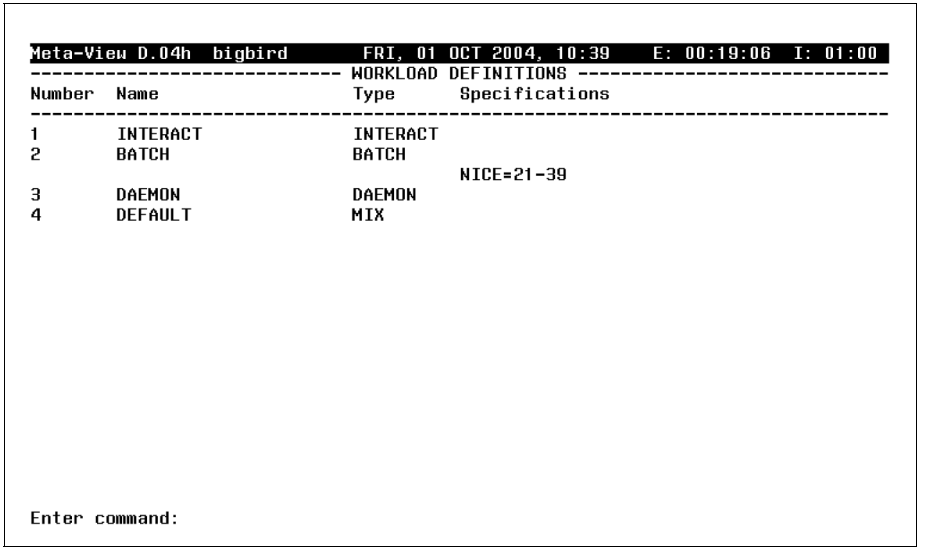


Figure 27.1 *MVHOST Workload Definitions screen*

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 27.1.

Workload Definitions Screen Display Items

WORKLOAD DEFINITIONS

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

Table 27.1 *MVHOST WORKLOAD DEFINITIONS data items*

Data Item	Description
Number	The unique, sequential identification number assigned to the workload.
Name	The name of the workload group.
Type	The type of workload (for information about workload types, refer to "Workload Groups" on page 25).
Specifications	The other specifications that define the workload (for information about workload types, refer to "Creating a Workload Group Definition File" on page 24).

28

MVHOST PROCESS DETAIL

The Process Detail Screen

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

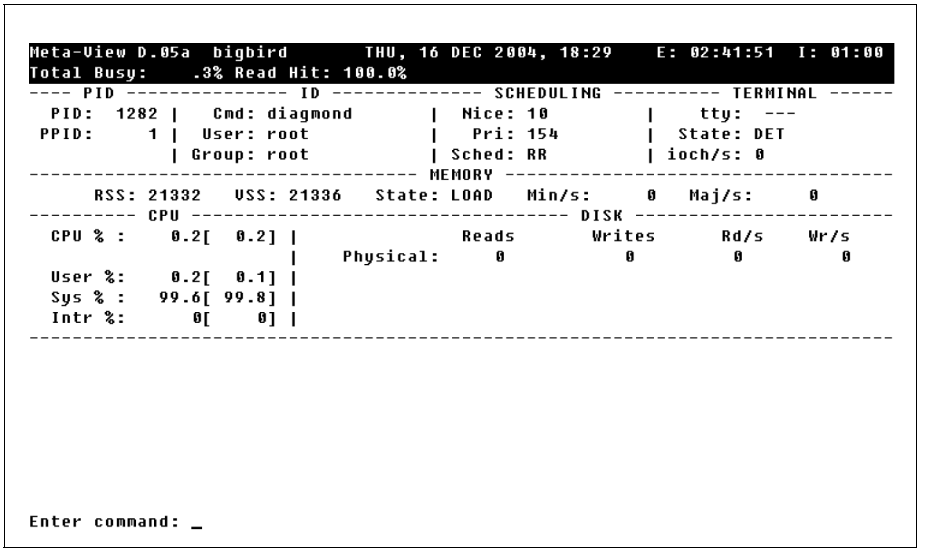


Figure 28.1 *MVHOST Process Detail screen*

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 28.1 *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 28.2 *MVHOST ID data items*

Data Item	Description
Cmd	The command that was invoked to create the process (does not include arguments).
User	The real user name of the user that owns the process.
Group	The name of the group that owns the process.

SCHEDULING

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

Table 28.3 *MVHOST SCHEDULING data items*

Data Item	Description
Nice	The nice value. A value of R indicates the process has a real time priority—the nice value is not used. For information about the nice utility, see the Unix man page, "nice."
Pri	The priority of the process, depending on the scheduling policy.

Data Item	Description
Sched	The Sched data item represents the scheduling policy of the process: • HPUX - Timeshare • RTPRIO - Real-Time • FIFO - Posix First In/First Out • RR - Posix Round-Robin • RR2 - Posix Round-Robin with a per-priority timeslice For information about the scheduling, see the "priocntl" Unix man page.

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 28.4 *MVHOST TERMINAL data items*

Data Item	Description
tty	The device file associated with the terminal device. If the process is not attached to a terminal, three dashes (---) is displayed.
State	The terminal state: • DET - detached from a terminal. • ATT - attached to a terminal.
ioch /s	The number of character I/Os to or from the terminal, per second.

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 28.5 *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): • 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 (see "minor page fault" on page 327).
Maj /s	The number of major page faults experienced by the process, per second (see "major page fault" on page 327).

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 28.6 *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.
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.
Intr %	The percentage of the process' execution time spent managing interrupts.

DISK

The DISK portion of the Process Detail screen displays various process and workload disk statistics. Each data item is described in Table 28.7.

Table 28.7 *MVHOST DISK data items*

Data Item		Description
Phy	Reads	Total number of physical disk reads of the current process, on the system (see “physical I/O” on page 329).
	Writes	Total number of physical writes of the current process, on the system.
	Rd/s	Physical reads of the current process, per second.
	Wr/s	Physical writes of the current process, per second.

29

MVHOST PROCESS FILE USAGE

The Process File Usage Screen

The Process File Usage screen displays information about each file opened by a specific process.

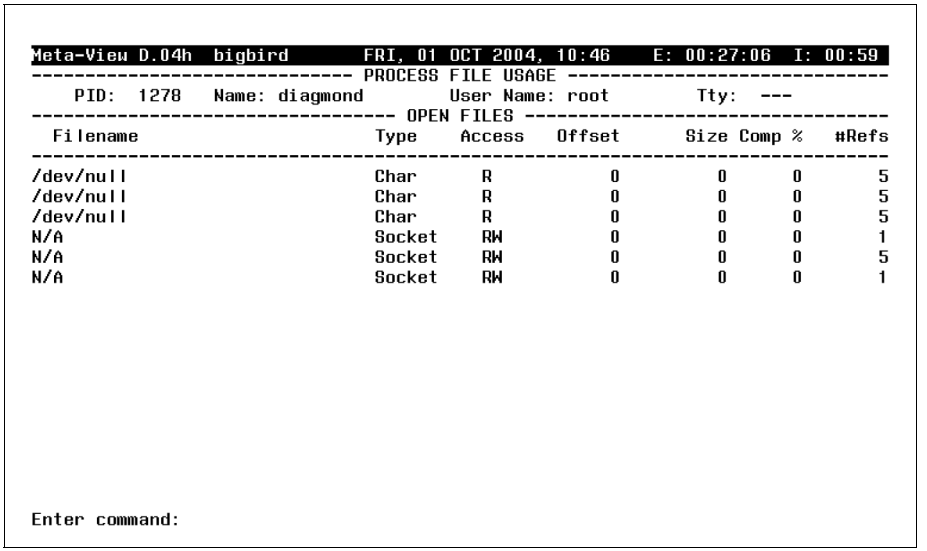


Figure 29.1 *MVHOST Process File Usage screen*

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 29.1 *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 29.2.

Table 29.2 *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.
Type	The Type data item denotes the type of file: • 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 • Regular - a regular file • Socket - a socket

Data Item	Description
Access	The type of access the process has to the open file: • R - read only • W - write only • RW - read and write
Offset	The offset (bytes) into the file.
Size	The size of the file (bytes).
Comp %	The percentage of offset into the file: Comp % = (Offset/Size) x 100
#Refs	The current number of references to the open file.

30

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.05d  bigbird        TUE, 10 MAY 2005, 04:32    E: 01:45:39  I: 00:59
---------------------------- PROCESS MEMORY REGIONS ----------------------------
 PID:  1293       Name: diagmond        User Name: root             Tty:  ---
---------------------------------- REGION TYPES ----------------------------------
 Data :  65M/  65M   Stack:  32K/  32K   MMap :2252K/2720K   Other:  32K/  32K
 Text : 156K/ 156K   Shm  :    0/    0   IO   :    0/    0   Total:69312/69784
------------------------------- MEMORY REGIONS -------------------------------
Front Store File                          Type     RSS     VSS  Virtual Address
-----------------------------------------------------------------------------
/dev/vg00/lvol7:9122                      MMAP     128     176  0x04245800.0xc0080000
/dev/vg00/lvol7:28795                     MMAP       4       4  0x04245800.0xc00ae000
/dev/vg00/lvol7:29636                     MMAP     992    1292  0x04245800.0xc0100000
/dev/vg00/lvol7:5158                      MMAP      16      20  0x04245800.0xc0278000
/dev/vg00/lvol7:29232                     MMAP      16      16  0x04245800.0xc030c000
/dev/vg00/lvol7:29221                     MMAP      28      28  0x04245800.0xc0394000
/dev/vg00/lvol7:29216                     MMAP      16      24  0x04245800.0xc04a8000
/dev/vg00/lvol7:29215                     MMAP      24      24  0x04245800.0xc04d8000
/dev/vg00/lvol7:29225                     MMAP      16      20  0x04245800.0xc051c000
/dev/vg00/lvol7:28982                     MMAP     196     196  0x04245800.0xc07a0000
/dev/vg00/lvol7:28791                     MMAP     108     112  0x04245800.0xc07e0000
/dev/vg00/lvol7:28793                     MMAP     216     216  0x04245800.0xc1110000
<UAREA>                                   UAREA     32      32  0x0e516800.0xffff0000

Enter command: _                                  (Showing lines 36 - 49 of 49)
```

Figure 30.1 *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 30.1.

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 30.1 *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.

REGION TYPES

The REGION TYPES portion of the Process Memory Regions screen displays summary information for each type of memory region. Each data item is described in the following table.

Table 30.2 *MVHOST REGION TYPES data items*

Data Item	Description
Data	The total MB of RAM/virtual memory used by data regions for the process.
Text	The total KB of RAM/virtual memory used by text regions for the process.
Stack	The total KB of RAM/virtual memory used by stack regions for the process.

Data Item	Description
Shm	The total KB of RAM/virtual memory used by shared memory regions for the process (does not account for the other number of process sharing this region). The sum of this number for all processes could exceed the amount of RAM on a system, because it does not account for sharing.
MMap	The total amount of RAM/virtual memory used by memory mapped regions for the process.
IO	The total amount of RAM/virtual memory used by I/O regions for the process.
Other	The total amount of RAM/virtual memory used by any other regions for the process.
Total	The total KB of RAM/virtual memory used by all regions for the process.

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 30.3 *MVHOST MEMORY REGIONS data items*

Data Item	Description
Front Store File	The file path that corresponds to the memory region. This is the program name for data and text regions and the library name for shared libraries. • If a file name is not associated with the region, the type of region will be displayed. • If the file name is not obtainable, the device and inode will be displayed. This information can be used with the ncheck command to look up the file name.

Data Item	Description
Type	The type of memory region: • NULLDR - null dereference region • TEXT - text region • DATA - data region • STACK - stack region • SHM - shared memory region • MMAP - memory mapped region • UAREA - user area (uarea) region
RSS	The size of region in RAM (KB).
VSS	The size of region in virtual memory (KB).
Virtual Address	The virtual address of memory region in hex format. This number represents the address of the space and space offset of the region.

31

MVHOST WORKLOAD DETAIL

The Workload Detail Screen

The Workload Detail screen displays detailed information about a specific workload. For information about workloads, refer to “Workload Groups” on page 25.

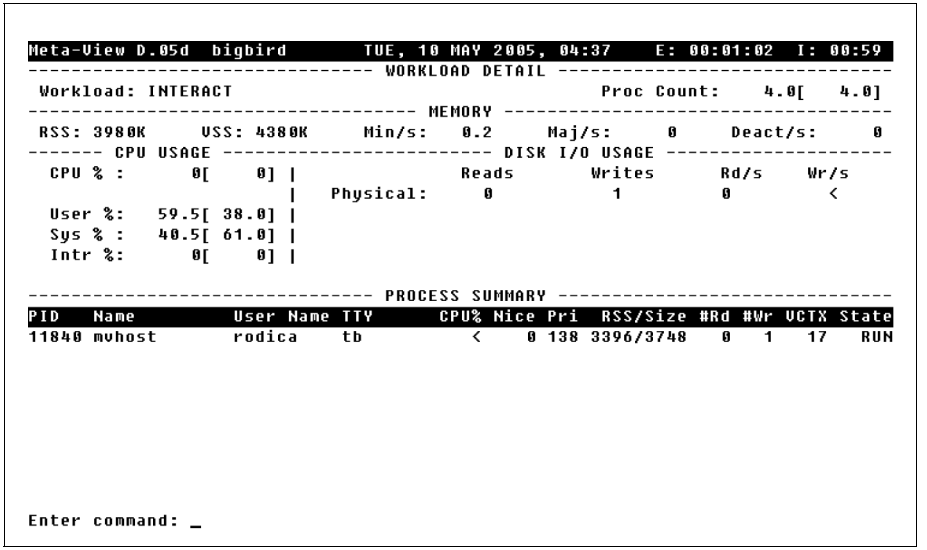


Figure 31.1 *MVHOST Workload Detail screen*

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 31.1.

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 31.1 *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.

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 31.2 *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 (see "minor page fault" on page 327).
Maj /s	The number of major page faults experienced by the process, per second (see "major page fault" on page 327).
Deact /s	The number of deactivations per second (see "deactivation" on page 327).

CPU USAGE

The CPU USAGE portion of the Workload Detail screen displays process and workload CPU information. The data items are described in Table 31.3.

Table 31.3 *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.
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.
Intr %	The percentage of the process' execution time spent managing interrupts.

DISK I/O USAGE

The DISK I/O USAGE portion of the Workload Detail screen displays various process and workload disk statistics. Each data item is described in Table 31.4.

Table 31.4 *MVHOST DISK I/O USAGE data items*

Data Item		Description
Phy	Reads	The number of physical disk reads performed by a process.
	Writes	The number of physical writes performed by a process.
	Rd/s	Physical reads per second performed by a process.
	Wr/s	Physical writes per second performed by a process.

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 97.

32

MVHOST Disk Detail

The Disk Detail Screen

The Disk Detail screen displays detailed information about a specific disk.

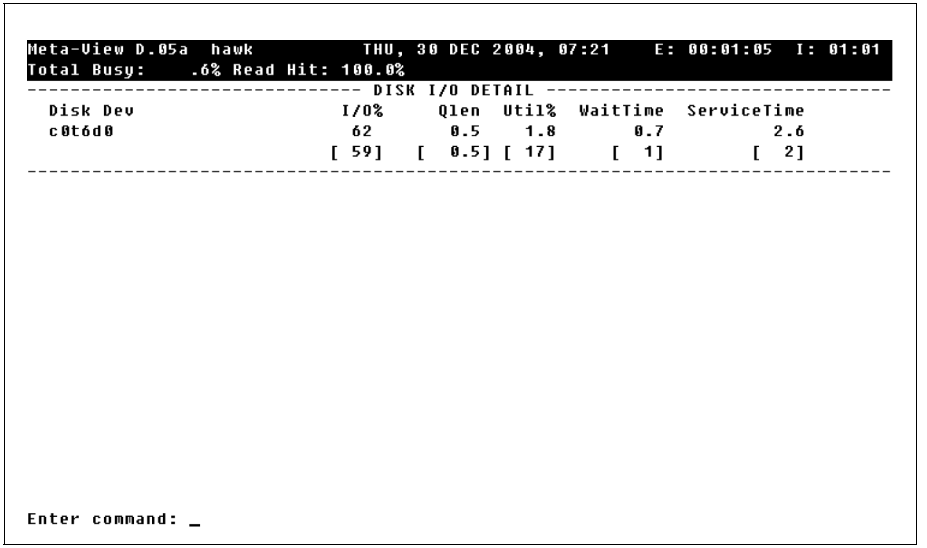


Figure 32.1 *MVHOST Disk Detail screen*

To access the Disk 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 **D** (Disk Detail).
3. At the secondary prompt:
   - Press the Enter key to display the Disk detail information for the given disk.

- Or, select another disk from the list.

The Disk Detail screen will display. An example of the screen is shown in Figure 32.1.

Disk Detail Display Items

DISK DETAIL

The DISK DETAIL portion of the Disk Detail screen displays workload identification information. The data items are described in the next table.

Table 32.1 *MVHOST DISK I/O DETAIL data items*

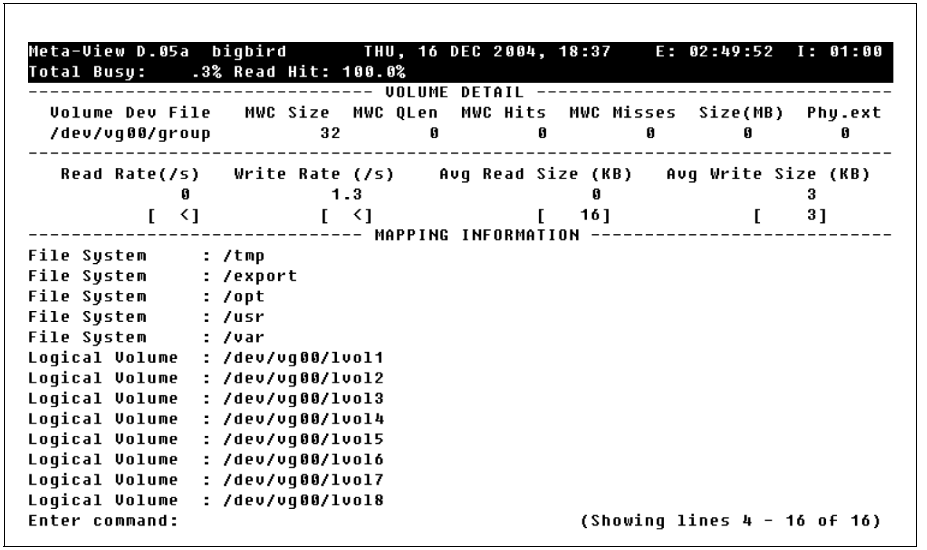
Data Item	Description
Dev	The device identification number for each disk on the system.
I/O%	The percentage of all disk I/Os on the system performed by each disk during the interval.
Qlen	The average number of disk requests waiting to be serviced by each disk.
Util%	The percentage of time each disk was in use during the interval.
Wait Time (ms)	The average number of milliseconds an I/O request had to wait in the disk queue before being serviced for each disk.
Service Time (ms)	The average number of milliseconds an I/O request takes to be serviced once it is removed from the disk queue and processed.

33

MVHOST VOLUME DETAIL

The Volume Detail Screen

The Volume Detail screen provides detailed performance numbers for the volume group or logical volume specified.



```
Meta-View D.05a  bigbird       THU, 16 DEC 2004, 18:37    E: 02:49:52  I: 01:00
Total Busy:    .3% Read Hit: 100.0%
------------------------------ VOLUME DETAIL -------------------------------
  Volume Dev File    MWC Size  MWC QLen  MWC Hits  MWC Misses  Size(MB)  Phy.ext
  /dev/vg00/group          32         0         0           0         0        0
----------------------------------------------------------------------------------
   Read Rate(/s)   Write Rate (/s)    Avg Read Size (KB)   Avg Write Size (KB)
               0              1.3                     0                     3
           [  <]          [  <]                [   16]               [    3]
---------------------------- MAPPING INFORMATION ----------------------------
File System     : /tmp
File System     : /export
File System     : /opt
File System     : /usr
File System     : /var
Logical Volume  : /dev/vg00/lvol1
Logical Volume  : /dev/vg00/lvol2
Logical Volume  : /dev/vg00/lvol3
Logical Volume  : /dev/vg00/lvol4
Logical Volume  : /dev/vg00/lvol5
Logical Volume  : /dev/vg00/lvol6
Logical Volume  : /dev/vg00/lvol7
Logical Volume  : /dev/vg00/lvol8
Enter command:                                   (Showing lines 4 - 16 of 16)
```

Figure 33.1 *MVHOST Volume Detail screen*

To access the Volume 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 **V** (Volume Detail).
3. At the secondary prompt:
   - Press the Enter key to display the Volume detail information for the given volume.

- Or, select another volume from the list.

The Volume Detail screen will display. An example of the screen is shown in Figure 33.1.

4 Use the **y** command key to toggle between the normal and extended process displays.

Volume Detail Display Items

VOLUME DETAIL

The VOLUME DETAIL portion of the Volume Detail screen displays information about the mirror write consistency (MWC) cache. The data items are described in the next table.

Table 33.1 *MVHOST VOLUME DETAIL data items*

Data Item	Description
Volume Dev File	The device file associated with the specified volume.
MWC Size	MWC cache size (not applicable to logical volumes),
MWC QLen	The average cache queue length over the interval (not applicable to logical volumes),
MWC Hits	The number of cache hits (not applicable to logical volumes),
MWC Misses	The number of cache misses (not applicable to logical volumes),
Size (MB)	The size of the specified volume.
Phy.ext	The number of physical extents.
Read Rate (/s)	Physical reads per second (see "physical I/O" on page 329).
Write Rate (/s)	Physical writes per second performed by a process.
Avg Read Size (kb)	The average size of a physical read.
Avg Write Size (kb)	The average size of a physical write.

MAPPING INFORMATION

The MAPPING INFORMATION portion of the Volume Detail screen provides mapping information between volume groups, logical volumes, and physical volumes (disks).

For volume groups each physical disk, logical volume, and corresponding file system will be listed.

For logical volumes, the volume group, physical volume (if the lv is contained within one disk), and the corresponding file system will be listed.

34

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 34.1.

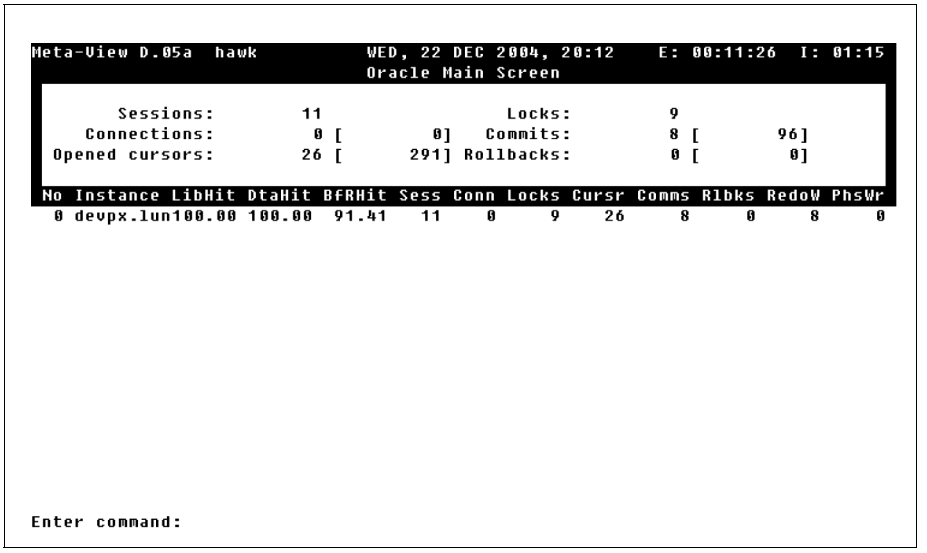


Figure 34.1 *MVHOST Oracle Main screen*

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 34.1 *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 34.2 *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.

35

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 35.1.

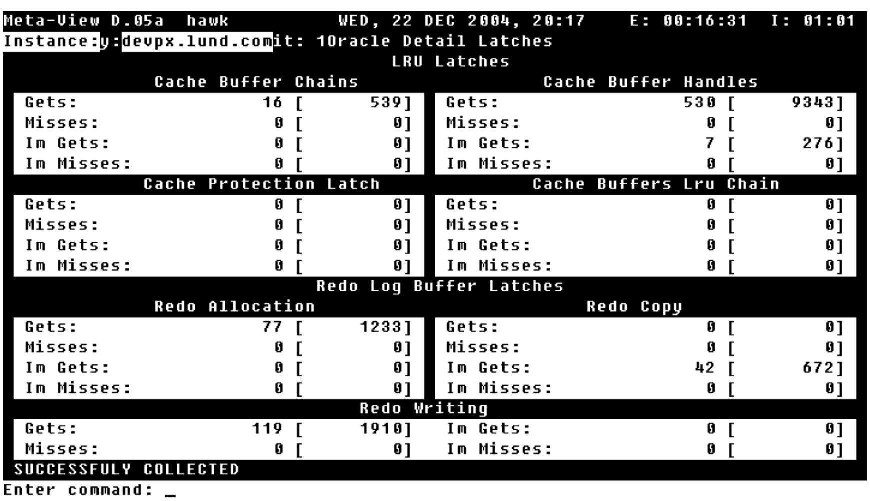


Figure 35.1 *MVHOST Oracle Detail Latches screen*

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 35.1 *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 35.2 *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 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.

36

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 36.1.

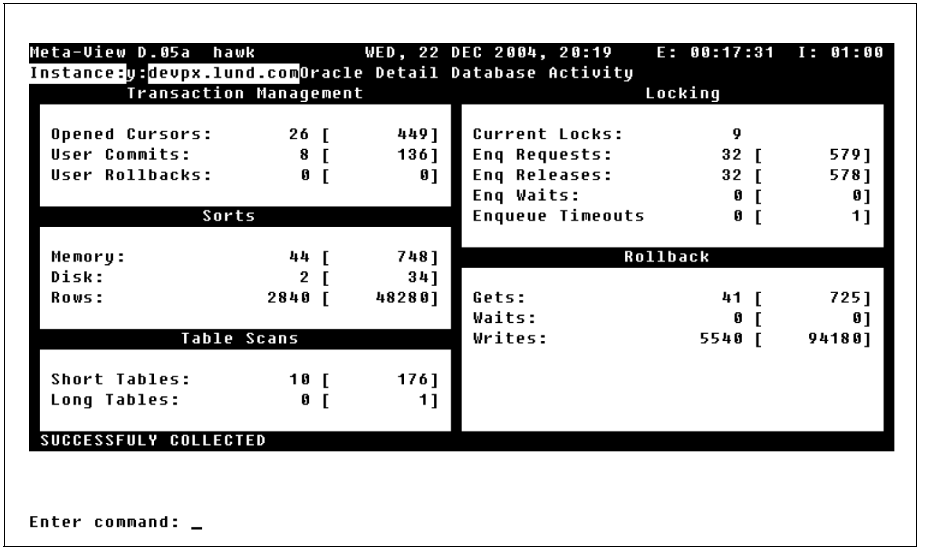


Figure 36.1 *MVHOST Oracle Detail Database Activity screen*

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 36.1 *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 36.2 *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 36.3 *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 36.4 *MVHOST Oracle Detail Database Activity data items: Table Scans*

Data Item	Description
Short tables	The number of short tables scanned.

Data Item	Description
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 36.5 *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.

37

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 37.1.

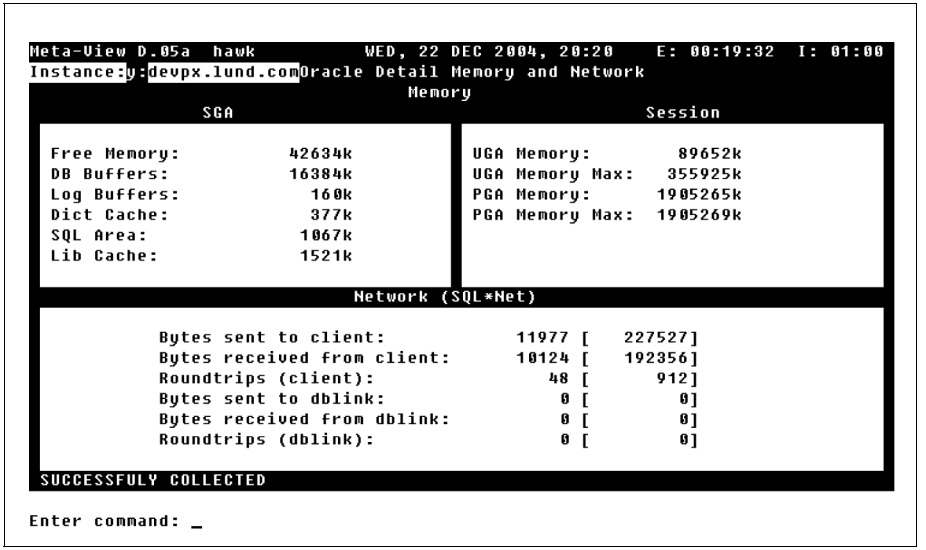


Figure 37.1 *MVHOST Oracle Detail Memory and Network screen*

Oracle Detail Memory and Network Display Items

SGA

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

Table 37.1 *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 37.2 *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 37.3 *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.

38

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 38.1.

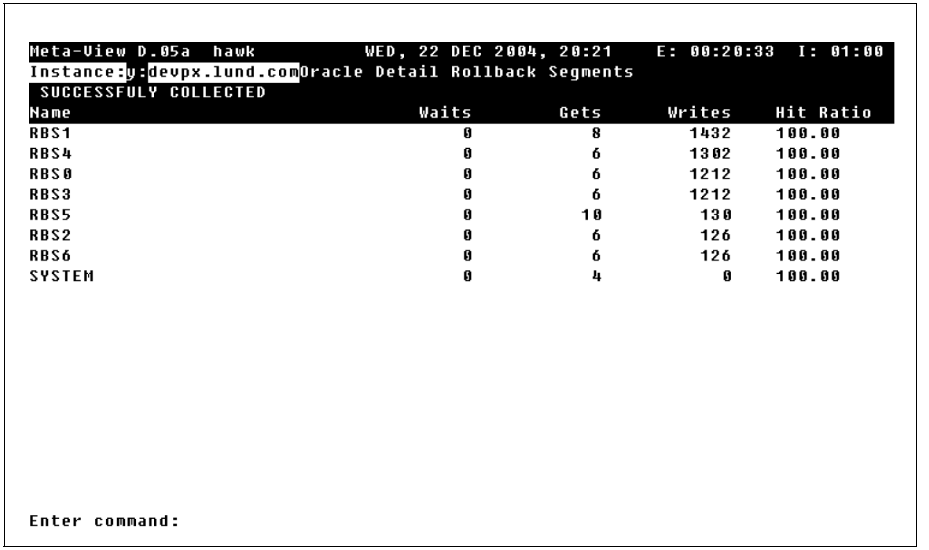


Figure 38.1 *MVHOST Oracle Detail Rollback Segments screen*

Oracle Detail Rollback Segments Display Items

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

Table 38.1 *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 - waits / gets) * 100}***

39

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 39.1.

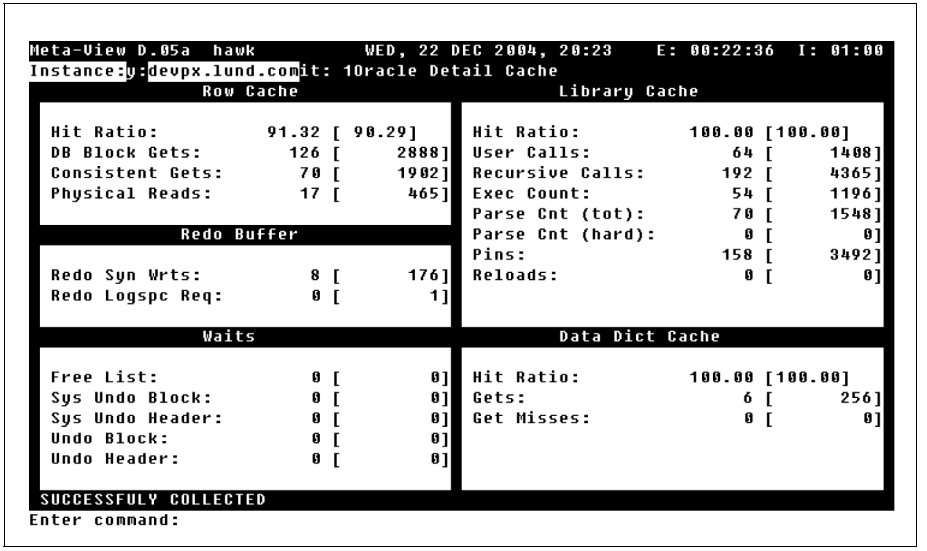


Figure 39.1 *MVHOST Oracle Detail Cache screen*

Oracle Detail Cache Display Items

Row Cache

The Row Cache screen section refers to the portion of SGA where Oracle keeps row buffers.

Table 39.1 *MVHOST Oracle Row Cache data items*

Data Item	Description
Hit Ratio	***[1 - physical reads / (consistent gets + 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 39.2 *MVHOST Oracle Library Cache data items*

Data Item	Description
Hit Ratio	***(1 - 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 39.3 *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	The "Redo Logspc Req" statistic reflects the number of times a user process waits for space in the redo log buffer area of the SGA. Usually, a space request will be associated with a log switch. This wait is often caused by the archiver being lazy and the log writer not being able to write from the log buffer to the redo log because the redo log has not been copied by the ARCH process. 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. 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. This statistic should ideally be zero. It is a key performance indicator.

Waits

The Waits data items are described in the next table. Oracle waits should be minimized as possible.

Table 39.4 *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 39.5 *MVHOST Oracle Data Dict Cache data items*

Data Item	Description
Hit Ratio	***(1 - 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.

40

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 40.1.

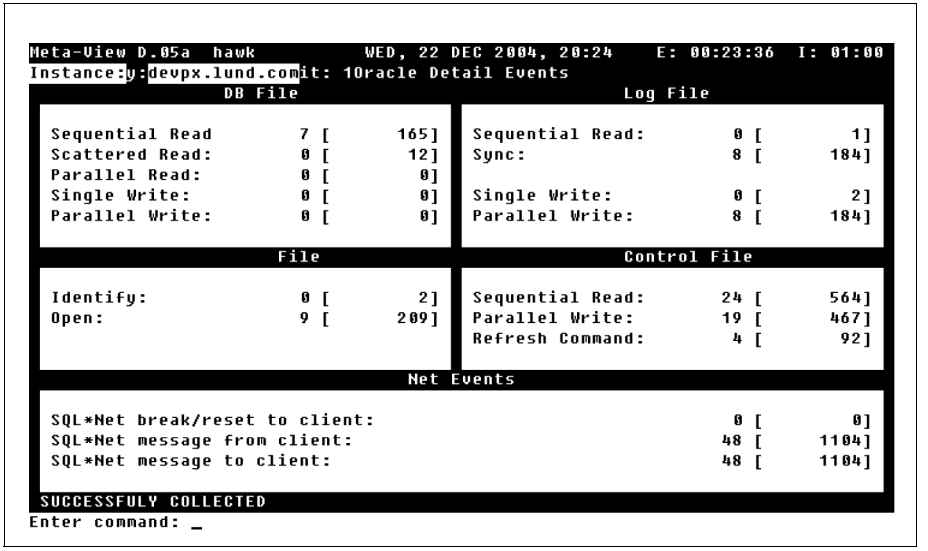


Figure 40.1 *MVHOST Oracle Detail Events screen*

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 40.1 *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 40.2 *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 40.3 *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 40.4 *MVHOST Oracle Detail Events data items: Control File*

Data Item	Description
Sequential Read	The number of times a read from the control file occurred. For example, to: • Make a backup of the control files. • Share information between instances from the control file. • Read other blocks from the control files. • Read the header block.
Parallel Write	The number of times a parallel write occurred when the session was writing physical blocks to all control files. This event can take place when: • 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 40.5 *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.

41

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 41.1.

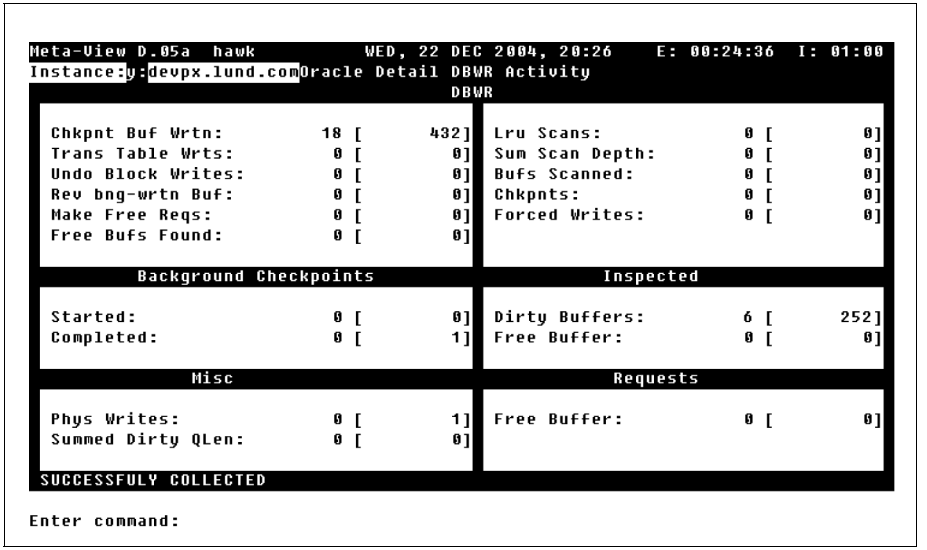


Figure 41.1 *MVHOST Oracle Detail DBWR screen*

Oracle Detail DBWR Display Items

DBWR

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

Table 41.1 *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: ***(DBWR free buffers found / DBWR make free requests)***
LRU Scans	The number of scans through LRU chain for more buffers to write.
Sum Scans Depth	Can be divided by LRU scans to determine the average length of the scans through the buffer cache. It is not the number of buffers scanned. If the write batch is filled and a write takes place to disk, the scan depth halts.

Data Item	Description
Bufs Scanned	The number of buffers in the LRU section of the buffer cache scanned by DBWR when it searches for dirty buffers to write to disk. It does not halt as summed scans depth. The average number of buffers being scanned is calculated: ***(DBWR buffers scanned / DBWR LRU scans)***
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 41.2 *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 41.3.

Table 41.3 *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 41.4 *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 41.5 *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.

42

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 42.1.

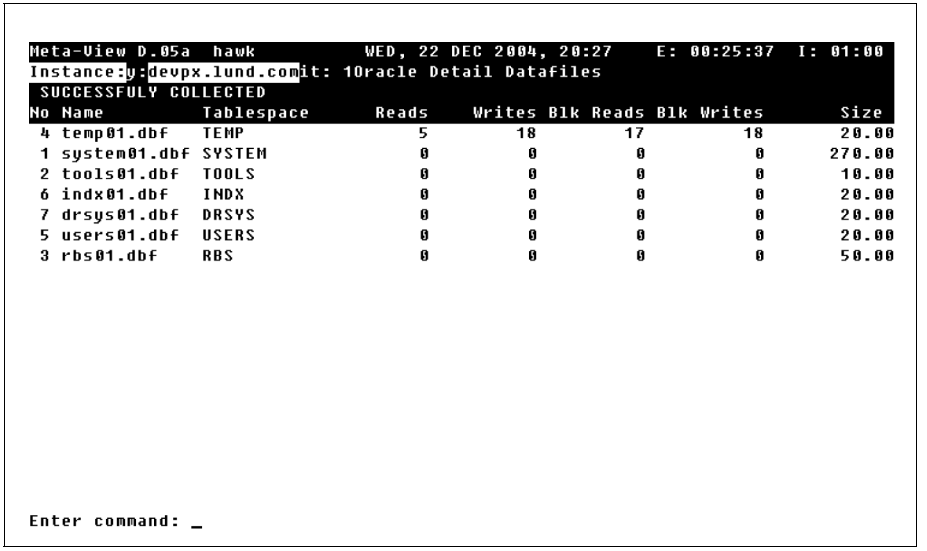


Figure 42.1 *MVHOST Oracle Detail Datafiles screen*

Oracle Detail Datafiles Display Items

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

Table 42.1 *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.

43

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.
- Repeatedly, by retreaming the collector.

  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 43.1 *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 43.2.

Table 43.2 *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 43.3 can be found in the .mvlogdrc file.

Table 43.3 *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
ProcCPUThreshold	integer	0	100	0	CPU percentage required for process display
ProcOnlyActive	Y/N	N/A	N/A	Y	Log only active processes
LogInteractProc	Y/N	N/A	N/A	Y	Display attached processes
LogNonInteractProc	Y/N	N/A	N/A	Y	Log non-interactive processes, including daemons and batch processes).
LogDeadProc	Y/N	N/A	N/A	Y	Log processes that died
ProcLogonFilter	reg exp	N/A	N/A	.*	Process logon filter
ProcSortOpt	integer	1	8	4	Process sort options: 1 - sort by PID# 2 - sort by Logon Terminal 3 - sort by Workload group 4 - sort by CPU time 5 - sort by Disc I/O 6 - sort by Term reads 7 - sort by Priority 8 - sort by State
ProcSortAscend	Y/N	N/A	N/A	N	Log processes sorted in ascending order
ProcLogLimit	integer	1	127	10	Maximum number of processes to be logged per interval

44

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 44.1)

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

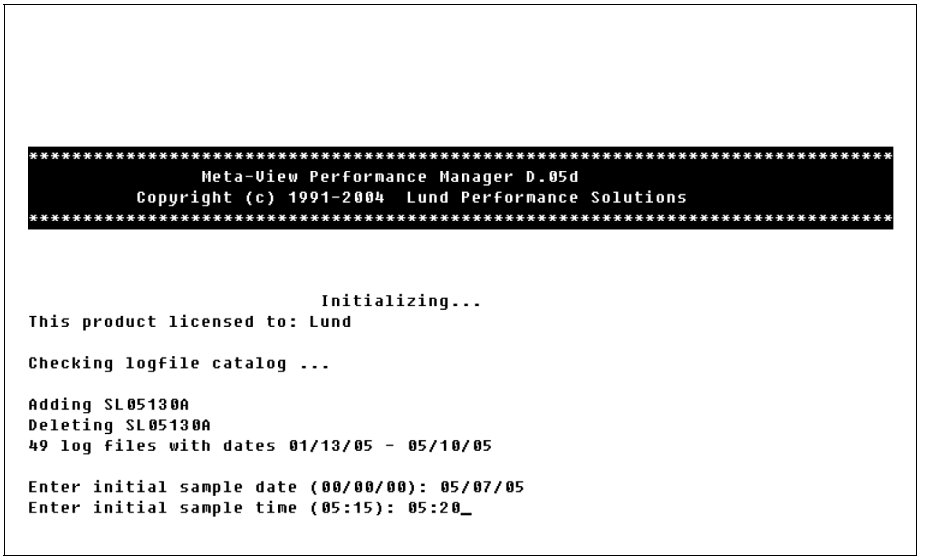


Figure 44.1 *MVLOGX initial screen*

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 (.sllogcat) 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 267.

The MVLOGX commands and menus are described in "MVLOGX Menus and Options" on page 247.

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 44.1.

Table 44.1 *MVLOGX command line switch functions.*

Switch	Function
-h	Displays available command line switches.
-j	Forces MVLOGX into job mode. **NOTE** When input is redirected from a pipe or a file (not from a terminal), MVLOGX is forced into job mode regardless of whether or not the -j command line switch is used.
-k	Disables function keys (when function keys are available).
-o	Displays configuration options on startup (batch mode).
-u<filename>	Specifies alternate user configuration filename.
-x	Enables process export file report.
-y<filename>	Specifies alternate system configuration filename.
-z	Disables the "Are you sure you want to exit?" dialog.

Browsing MVLOGX Reports

1. The first MVLOGX report displayed is the CPU Summary report. Begin by scrolling through this report using the commands keys.
   - The commands shown in the MVLOGX Main Commands screen are discussed in “MVLOGX Menus and Options” on page 247.
   - Look for points within the data that show high CPU utilization percentages and/or high response time rates.
2. Compare the CPU data with information displayed in other MVLOGX reports, which can be selected from the MVLOGX Report Format Selection Menu.
   - The Report Format Selection Menu is explained in “MVLOGX Menus and Options” on page 247.
   - Each MVLOGX report is described in “MVLOGX Reports” on page 267.
3. The appearance of the reports displayed can be modified. Use the display options described in “MVLOGX Menus and Options” on page 247.

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 262.) 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 264.) 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 262.) Press the Enter key to exit the submenu.
4. Press the Enter key again to exit the MVLOGX MAIN OPTION MENU.

Creating the Export File

From any MVLOGX display, type **R** to start the process. Reply to the following prompts:

- Enter data export file
- Enter start ascii dump date (mm/dd/yy)
- Enter start ascii dump time (hh:mm)
- Enter end ascii dump date (mm/dd/yy)
- Enter end ascii dump time (hh:mm)
- Single record extract (Y/N)

MVLOGX will read the log files that meet the date and time criteria entered, then write the eligible data to the specified export file. If a directory path is not given for the export file, the file will be written to the current working directory.

Creating Custom Reports

The log reports generated by MVLOGX are user-configurable.

To create a custom MVLOGX report, create an ASCII report configuration file that defines the report, then use the mvrcom report compiler to compile the ASCII files into a master report definition file called reprtdef.

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

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

Table 44.2 *mvrcom report compiler commands*

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

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 (II1, II2, ... IIxx), when it is needed the report for the instance with a specified number.
- <row> is the row in which the item should be displayed.
- <col> is the column in which the item should be displayed.
- <length> is the width of the field displayed.
- <label> is the unique text string (optional). It is not used by the log reporting program, but will be used by the report editor.

$BAR <row>,<col>,<length>,<label>,<item-name>,"<code>"

$END <scale>

This set of lines specifies a horizontal bar chart display, in which:

- <row> is the row in which the bar should be displayed.
- <col> is the column in which the bar should be displayed.

- <length> is the length of the bar chart displayed.
- <label> is a unique text string (optional). This is not used by the log reporting program, but will be used by the report editor.
- <item_name> is the name of the item to display. Disk and workload group items must be qualified. If multiple items are specified, they must all contain the same number of decimal places. This is generally not a problem, because only similar items will be combined in one bar graph, and similar items will all have the same number of decimal places.
- <code> is a single character to be used to represent this item in the bar graph. This can be blank.
- <scale> is the scaling factor. In other words, the total cumulative item value which completely fills the bar chart. It can contain as many decimal places as the specified items.

MVLOGX Report File Example

There are several MVLOGX reports stored in /etc/opt/lund/rpt/reprtdef. An example is provided here, for your convenience.

```
$TITLE "Global Summary"

$KEY " GLOBAL ","SUMMARY ",12


$TEXT

+---------------- CPU Utilization % ----------------+-------- CPU Misc --------+

|                  TOTAL BUSY: nnn.n                |  Capture         nnn.n   |

|      User   nnn.n          Sys   nnn.n            |  RunQ Avg        nnn.n   |

|      Nice   nnn.n          Idle  nnn.n            |  5 Min RunQ Avg  nnn.n   |

|------------------------------------- MEM/VM -------------------------------|

|  Read Hit %   nnn.n           Page Outs   nn.n/s           Mem Used %  nn.n  |

|  Write Hit %  nnn.n           Page Ins    nn.n/s           VM Used %   nn.n  |

|------------------------------------- MISC -------------------------------|

| #Sessions:nnnnn  #Procs: nnnnn   #Wait IO: nnnnn    Transactions:   nnnn.n/s |

| #Active:  nnnnn  #Active:nnnnn   #Deact:    nnnn                            |

|------------------------------------- DISK -------------------------------|

|Disk       IO/s IO% QLen |Disk       IO/s IO% QLen |Disk       IO/s IO% QLen  |

|xxxxxxxxxx xx.x xxx xx.x |xxxxxxxxxx xx.x xxx xx.x |xxxxxxxxxx xx.x xxx xx.x  |

+-------------------------------------------------------------------------------+
```

```
$END

$DEFINE D1 c0t6d0
$DEFINE D2 c0t5d0
$DEFINE D2 c0t0d0

CPU-BUSY%              2, 29, 5

CPU-USER%              3, 11, 5
CPU-NICE%              4, 11, 5

CPU-SYS%               3, 38, 5
CPU-IDLE%              4, 38, 5

CPU-CAPTURE            2, 72, 5
CPU-QUEUE-LEN          3, 72, 5
CPU-QUEUE-5M           4, 72, 5
CPU-QUEUE-BUSY%        5, 72, 5

BC-RHIT%               7, 17, 5
BC-WHIT%               8, 17, 5
VM-PAGE-OUT-RATE       7, 45, 4
VM-PAGE-IN-RATE        8, 45, 4
VM-USED-MEM%           7, 74, 4
VM-USED-VM%            8, 74, 4

MISC-SESSIONS         10, 13, 5
MISC-ACT-SESSIONS     11, 13, 5
MISC-PROCESSES        10, 28, 5
MISC-ACT-PROCESSES    11, 28, 5
MISC-PROC-BLOCK-IO    10, 46, 5
MISC-PROC-DEACT       11, 47, 4
```

```
MISC-TRANS-RATE      10, 72, 6

DISC-DEVFILE:D1      14,  2,10
DISC-IO-RATE:D1      14, 13, 4
DISC-IO%:D1          14, 18, 3
DISC-QUEUE-LEN:D1    14, 22, 4

DISC-DEVFILE:D2      14, 29,10
DISC-IO-RATE:D2      14, 40, 4
DISC-IO%:D2          14, 45, 3
DISC-QUEUE-LEN:D2    14, 49, 4

DISC-DEVFILE:D3      14, 56,10
DISC-IO-RATE:D3      14, 67, 4
DISC-IO%:D3          14, 72, 3
DISC-QUEUE-LEN:D3    14, 76, 4
```

45

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.

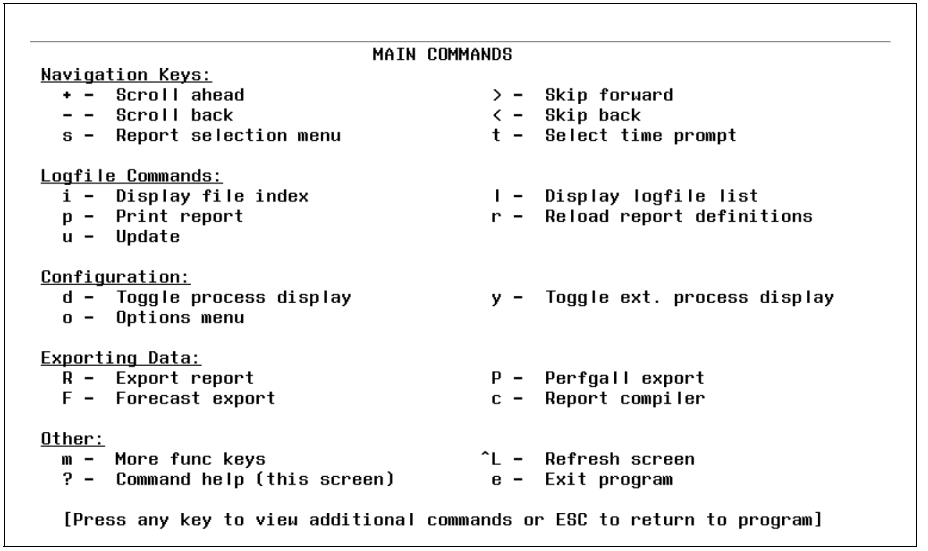


Figure 45.1 *MVLOGX MAIN COMMANDS screen*

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 45.1 *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 45.2 *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 45.3 *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 45.4 *MVLOGX data export command keys*

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

Other Commands

Table 45.5 *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.

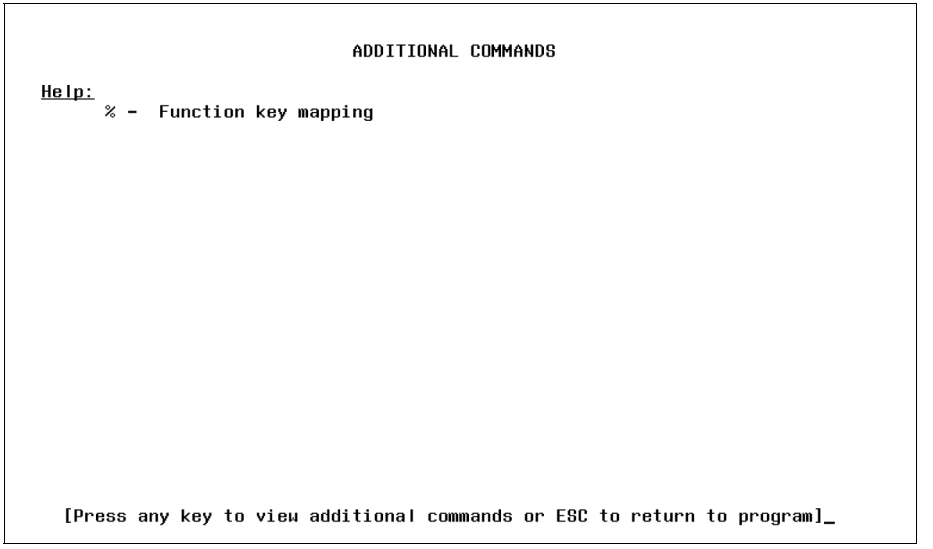


Figure 45.2 *MVHOST Additional Commands screen (example)*

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 45.6 *MVHOST screen-specific configuration command keys*

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

The MVLOGX Report Format Selection Menu

The Report Format Selection Menu contains a list of system performance data reports that can be compiled by MVLOGX.

To display the Report Format Selection Menu, type a lowercase **s** from any MVLOGX screen.

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: --/--/--  --:--
                        Report Format Selection Menu

 1 CPU Summary Chart                 13 Transactions Time Chart
 2 Global Summary                    14 FS Space Summary
 3 Memory Summary Chart              15 DNLC Summary
 4 Memory Summary                    16 System Configuration
 5 Disk Summary                      17 ORACLE Detail Cache
 6 Disk Summary Chart                18 ORACLE Database Activity
 7 Network Summary                   19 ORACLE DBWR Activity
 8 Net If Summary                    20 ORACLE Detail Events
 9 NFS Summary                       21 ORACLE LRU Latches
10 Workload Summary                  22 ORACLE Memory and Network
11 Workload Detail (INTERACT)        23 ORACLE Detail Datafiles
12 Disk Detail (c0t6d0)              24 ORACLE Detail Rollback Segments

Press return to go to main screen.
Enter report format option:
```

Figure 45.3 *MVLOGX Report Format Selection Menu screen*

To view one of the reports listed in the Report Format Selection Menu, type the report's corresponding command key at the command prompt. The reports are described in detail in "MVLOGX Reports" on page 267.

NOTE All command keys are case-sensitive.

The MVLOGX Main Option Menu

The MVLOGX MAIN OPTION MENU screen contains a set (and several subsets) of options that enable the user to configure the MVLOGX program.

To access the MVLOGX MAIN OPTION MENU, type **o** from any MVLOGX screen.

```
MAIN OPTION MENU

   1) Current log file location (/var/opt/lund/log/)
   2) Company name ()
   3) Use function keys to select reports (N)
   4) Maximum lines per report page (60)
   5) Display process information (N)
   6) Display extended process line (N)
   7) Data break configuration menu (SUBMENU)
   8) Log information exclusions (SUBMENU)
   9) Export file configuration menu (SUBMENU)
  10) Forecast data reduction configuration (SUBMENU)
  11) Performance Gallery configuration (SUBMENU)









Which Option:
```

Figure 45.4 *MVLOGX MAIN OPTION MENU*

Main Options

To enable an option:

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

Information about each option is described to assist you.

NOTE All command keys are case-sensitive.

Current log file location

The current location of the SL log file is shown in parentheses. To load a different log file:

1. From the MVLOGX MAIN OPTION MENU, type the command key for the Current file location option. Press the Enter key.
2. At the secondary prompt, type the location of the new SL file. Press the Enter key.

Company name

By default, the company name is not included in the MVLOGX reports. To add the name of your company or another brief headline for your MVLOGX reports:

1. From the MVLOGX MAIN OPTION MENU, type the command key for the Company name option. Press the Enter key.
2. At the secondary prompt, type a company name, system name, or another headline (up to 43 alpha-numeric characters). Press the Enter key.

The headline is inserted into the banner line of the MVLOGX report.

Use function keys to select reports

The function keys, when available, are displayed in the bottom portion of the MVLOGX screens. By default, they are not used to select MVLOGX reports. To enable/disable the function keys to select reports:

1. From the MVLOGX MAIN OPTION MENU, type the command key for the Use function keys to select reports option. Press the Enter key.
2. At the secondary prompt, type **Y** (Yes) to enable the option, or **N** (No) to disable the option. Press Enter.

Maximum lines per report page

By default, MVLOGX reports contain up to 60 lines of information per page. To increase or decrease the maximum threshold:

1. From the MVLOGX MAIN OPTION MENU, type the command key for the Maximum lines per report page option. Press the Enter key.
2. At the secondary prompt, type a new maximum threshold. Press Enter.

Display process information

To include/exclude PROCESS STATISTICS in the Global Summary report:

1. From the MVLOGX MAIN OPTION MENU, type the command key for the Display process information option. Press the Enter key.
2. At the secondary prompt, type **Y** (Yes) to enable the option, or **N** (No) to disable the option. Press Enter.

Display extended process line

To include/exclude PROCESS STATISTICS in the Global Summary report:

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

2 At the secondary prompt, type **Y** (Yes) to enable the option, or **N** (No) to disable the option. Press Enter.

Data break configuration (SUBMENU)

The Data break configuration submenu lists options that average the data into larger units of time, so the system performance is shown for a day, a week, or a month.

To view the Data break configuration submenu, type the command key for the data break configuration option. Press the Enter key.

```
MAIN OPTION MENU
  Data break configuration menu

   1) Force data break at end of logfile (N)
   2) Force data break at end of day (Y)









Which Option: _
```

Figure 45.5 *MVLOGX Data break configuration submenu*

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

Table 45.7 *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 45.6).

```
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:

Figure 45.6 *MVLOGX Log information exclusions submenu*

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

Table 45.8 *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 80.
Exclude day range	0=None	To exclude a range of days, type the corresponding number of the first day in the range of days. For example: 0=None (exclude no days) 1=Sunday 2=Monday 3=Tuesday 4=Wednesday 5=Thursday 6=Friday 7=Saturday
to	0=None	Type the corresponding number of the last day in the excluded day range.
Exclude time range	00:00	To exclude a specific range of time, type the start of this range in hours and minutes (hh:mm).
to	00:00	Type the end of the excluded time range (hh:mm).

Additional time ranges can be excluded. The progression of options allows up to four different time ranges to be excluded from each day or day range. For example, to report data for normal business hours only (Monday through Friday, 8:00 AM to 5:00 PM, no holidays), you would exclude data from weekends, holidays, the early morning hours, and the night-time hours.

Export file configuration menu (SUBMENU)

The options in the Export file configuration submenu will format the file that receives the logged data to be exported to a third-party application for analysis. The purpose of these options is to make the file format compatible with the import functions of popular spreadsheet, database, and graphics applications.

NOTE Do not employ these options when preparing data for export to the Performance Gallery Gold application. Ensure the default settings are enabled.

To view the Export file configuration submenu, type the command key for the Export file configuration menu option from the MVLOGX MAIN OPTION MENU.

```
MAIN OPTION MENU
  Export file configuration menu

   1) Generate item label heading line (Y)
   2) Enclose item labels in quotes (Y)
   3) Include log date in data line (N)
  --- Date format option
  --- Enclose date in quotes
   6) Include log time in data line (Y)
   7) Time format option (1-24 hr)
   8) Enclose time in quotes (Y)
   9) Separate items with commas (Y)









Which Option: _
```

Figure 45.7 *MVLOGX Export file configuration submenu*

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

Table 45.9 *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).

Forecast data reduction configuration (SUBMENU)

If you are licensed to use Forecast Capacity Planner, the Forecast data reduction configuration option is available from the MVLOGX MAIN OPTION MENU. Use this menu to set parameters for the Forecast export file.

```
MAIN OPTION MENU
  Forecast data reduction configuration

   1) Workload analysis period minimum time (10)
   2) Workload analysis period decay percentage (95)
   3) Workload analysis start buffer time (10)
   4) Workload analysis end buffer time (10)
   5) Load sample analysis period minimum time (60)
   6) Load sample analysis period decay percentage (95)
   7) Suspicious delay time warning threshold percentage (30)
   8) Memory wait warning threshold percentage (30)









Which Option: _
```

Figure 45.8 *MVLOGX Forecast data reduction configuration submenu*

Each Forecast data reduction parameter is described in the next table.

Table 45.10 *MVLOGX Forecast data reduction configuration options*

Option	Default	Description
Workload analysis period minimum time	10	Enter the minimum workload analysis period in minutes. These are periods when a specific workload is the primary if not only active workload that are used to calibrate workload physical disc I/O and overhead CPU utilization.

Option	Default	Description
Workload analysis period decay percentage	95	Enter a decay percentage to be used to determine the workload analysis period. These are periods when a specific workload is the primary if not only active workload that are used to calibrate workload physical disc I/O and CPU overhead utilization. The decay percentage is a measure of how far the workload's percentage of total logical disc I/O requests must decay from it's maximum value before marking the boundaries of the analysis period.
Workload analysis start buffer time	10	Buffer time in minutes which must be retained between the time a workload activity starts up and the beginning of the workload analysis period. This time buffer protects the workload calibration process from atypical workload demands involved in starting up the workload application.
Workload analysis end buffer time	10	Buffer time in minutes which must be retained between the end of a workload analysis period and the time all activity in that workload ceases. This time buffer protects the workload calibration process from atypical workload demands involved in shutting down the workload application.
Load sample analysis period minimum time	60	Enter the minimum sample load analysis period in minutes. These are periods of high system load that will be used to define the a computer model representing the current system load.
Load sample analysis period decay percentage	95	Enter a decay percentage to be used to determine the sample load analysis period. These are periods of high system load that will be used to define the a computer model representing the current system load. The decay percentage is a measure of how far the CPU utilization must decay from its maximum value before marking the boundaries of the analysis period.

Option	Default	Description
Suspicious delay time warning threshold percentage	30	If a workload spends a significant percentage of time waiting for resources other than disc I/O or the CPU, it may not be possible to forecast the effects of changes on it. Enter a percentage of "suspicious" delay time to allow without giving a warning message.
Memory wait warning threshold percentage	30	If a workload spends a significant percentage of time waiting for resources other than disc I/O or the CPU, it may not be possible to forecast the effects of changes on it. Enter a percentage of "suspicious" delay time to allow without giving a warning message.

Performance Gallery configuration (SUBMENU)

To view the Performance Gallery configuration submenu, type the command key for the Performance Gallery configuration option from the MVLOGX MAIN OPTION MENU.

```
MAIN OPTION MENU
  Performance Gallery configuration

   1) Export Data configuration (SUBMENU)
   2) Export Thresholds configuration (SUBMENU)









Which Option: _
```

Figure 45.9 *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 262).

- Export Thresholds configuration submenu (see "Export Thresholds configuration Submenu" on page 264).

Export Data configuration Submenu

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

```
MAIN OPTION MENU
  Performance Gallery configuration
    Export Data configuration

   1) CPU Data (Y)
   2) Buffer Cache Data (Y)
   3) VM Data (Y)
   4) Misc Data (Y)
   5) Disk Data (Y)
   6) Network Protocol Data (Y)
   7) Network Interface Data (Y)
   8) NFS Data (N)
   9) Workload Data (Y)
  10) Process Data (N)
  11) Swap Data (N)
  12) File System Space Data (N)
  13) Volume Data (N)
  14) Processor Data (N)




Which Option: _
```

Figure 45.10 *MVLOGX Export Data configuration submenu*

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

Table 45.11 *MVLOGX Export Data configuration options*

Option	Default	Description
CPU Data	Y	By default, any CPU data in the collection will be exported. To eliminate CPU data from the export file, enter **N** (No).
Buffer Cache Data	Y	By default, buffer cache data will be exported. To eliminate this data from the export file, enter **N** (No).
VM Data	Y	By default, VM (virtual memory) data will be exported. To eliminate this data from the export file, enter **N** (No).

Option	Default	Description
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).
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).
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).
Volume Data	N	By default, volume data will not be exported. To include this data in the export file, enter **Y** (Yes).
Processor Data	N	By default, processor data will not be exported. To include this data in the export file, enter **Y** (Yes).

Export Thresholds configuration Submenu

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

```
MAIN OPTION MENU
  Performance Gallery configuration
    Export Thresholds configuration

   1) Max Number of Discs Exported (100)
   2) Max Number of Network ifs Exported (10)
   3) Max Number of NFS Systems Exported (50)
   4) Max Number of Workloads Exported (50)
   5) Max Number of Processes Exported (20)
   6) Max Number of Swaps Exported (20)
   7) Max Number of File System Space Exported (100)
   8) Max Number of Volumes Exported (100)
   9) Max Number of Processors Exported (10)
  10) Performance Gallery File Size Limit (10000)









Which Option:
```

Figure 45.11 *MVLOGX Export Thresholds configuration submenu*

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

Table 45.12 *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 Volumes Exported	100
Max Number of Processors Exported	10

Option	Default Setting
Performance Gallery File Size Limit	10,000

46

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.

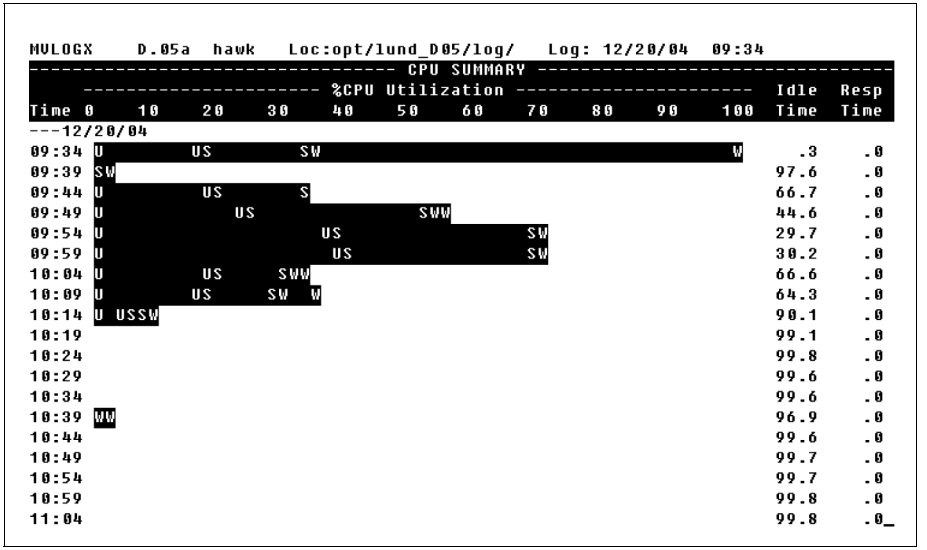


Figure 46.1 *MVLOGX CPU Summary Chart report*

For information about the MVLOGX CPU Summary Chart data, please refer to “MVHOST CPU Summary” on page 113.

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 46.2. For information about global data, refer to "MVHOST Global Summary" on page 89.

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/24/04  07:33
-------------- CPU UTILIZATION ------------------------- CPU MISC --------------
               TOTAL BUSY:    .6                    |  Capture            .6
   User       .2             Sys       .4          |  RunQ Avg          1.1
   Nice       .0             Idle    99.3          |  5 Min RunQ Avg    2.3
                                                   |  RunQ Busy %     100.0
------------------------------------ MEM/VM -----------------------------------
   Read Hit %   100.0           Page Outs      .0/s           Mem Used %  75.8
   Write Hit %   81.5           Page Ins       .1/s           VM Used %   35.6
------------------------------------ MISC -------------------------------------
  #Sessions:    3  #Procs:   114  #Wait IO:       0  Transactions:        15.1/s
  #Active:      1  #Active:   26  #Deact:         0
------------------------------------ DISK -------------------------------------
 Disk       IO/s IO% QLen | Disk       IO/s IO% QLen | Disk       IO/s IO% QLen
 c0t6d0        0  41   .5 |                          |
--------------------------------------------------------------------------------
```

Figure 46.2 *MVLOGX Global Summary report*

MVLOGX Memory Summary Chart

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

Figure 46.3 *MVLOGX Memory Summary Chart report*

For information about the data in the MVLOGX Memory Summary Chart, refer to “MVHOST Memory Summary” on page 119.

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.

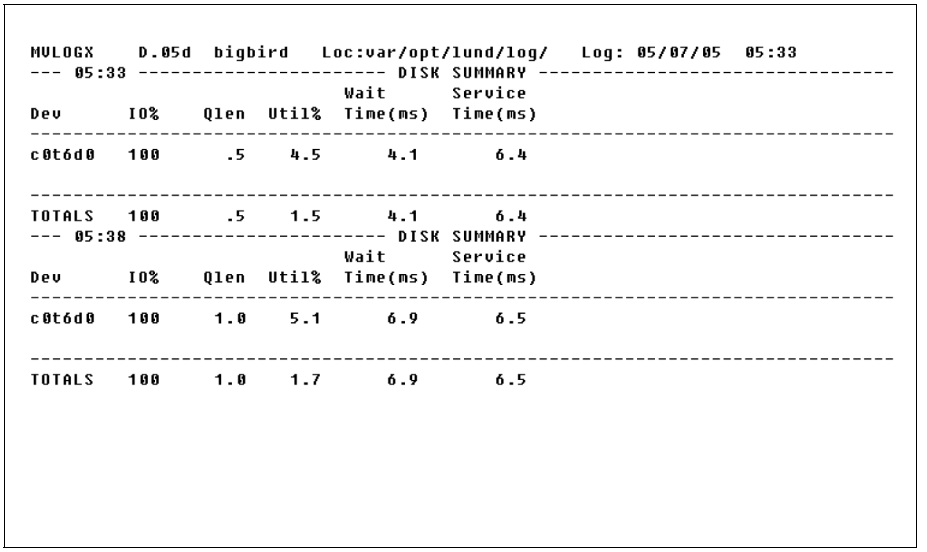
```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/20/04  09:34
---12/20/04
---------------- MEM/VM ALLOCATION ---------------------- PROC MEM STATUS ------
          Size     User      Sys    Buffer      Free  |           Run  Sleep  Total
  Mem   262144   104796    26272     80988     50088  | Loaded    11     99    110
  VM    699568   264508        0            435060  |
------------------------------------ PAGING ------------------------------------
           In(/s)    Out(/s)     In(byte/s)   Out(byte/s)      #In        #Out
  Pg Flts  173.9                                              580
  Pages     37.2         .0         152249             0        124           0
  VM I/O       .0        .0              0             0          0           0
  Forks      1.5                    995328                       0
--------------------------------- PAGE SCANNER ---------------------------------
  Page Recs     59.4/s                                    Page Scans       .0/s
--------------------------- SYSV BUFFER CACHE CONFIG ---------------------------
  Read Cache Hit %    99.8                            Write Cache Hit %    98.7
  headers 15300     size 20247      DBC min size  3276     DBC max size 32768
--------------------------- MEMORY MANAGEMENT CONFIG ---------------------------
 lotsfree:  3208                 desfree:   802                   minfree:   200
     umem:  1304                                                page size:  4096
--------------------------------------------------------------------------------
```

Figure 46.4 *MVLOGX Memory Summary report*

For information about the data in the MVLOGX Memory Summary Chart, refer to "MVHOST Memory Summary" on page 119.

MVLOGX Disk Summary

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



```
MVLOGX     D.05d  bigbird   Loc:var/opt/lund/log/   Log: 05/07/05  05:33
--- 05:33 ----------------------- DISK SUMMARY ---------------------------------
                                Wait       Service
Dev       IO%     Qlen  Util%  Time(ms)   Time(ms)
-------------------------------------------------------------------------------
c0t6d0    100       .5    4.5       4.1        6.4

-------------------------------------------------------------------------------
TOTALS    100       .5    1.5       4.1        6.4
--- 05:38 ----------------------- DISK SUMMARY ---------------------------------
                                Wait       Service
Dev       IO%     Qlen  Util%  Time(ms)   Time(ms)
-------------------------------------------------------------------------------
c0t6d0    100      1.0    5.1       6.9        6.5

-------------------------------------------------------------------------------
TOTALS    100      1.0    1.7       6.9        6.5
```

Figure 46.5 *MVLOGX Disk Summary report*

For information about the data presented in the MVLOGX Disk Summary, refer to “MVHOST Disk I/O Summary” on page 125.

MVLOGX Disk Summary Chart

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

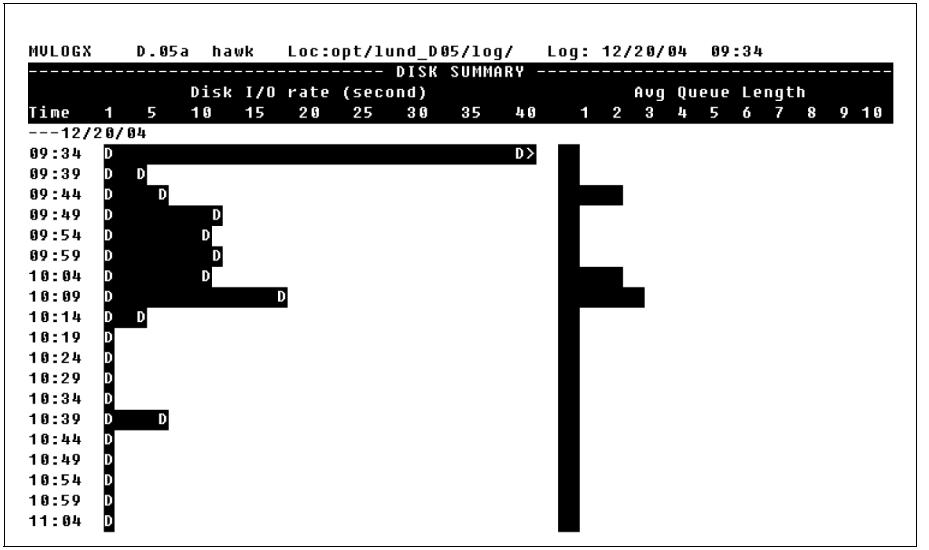


Figure 46.6 *MVLOGX Disk Summary Chart report*

For information about the data presented in the MVLOGX Disk Summary, refer to "MVHOST Disk I/O Summary" on page 125.

MVLOGX Network Summary

The Network Summary in MVLOGX displays network performance information.

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/20/04  09:34
---12/20/04
--- 09:34 --------------------- NETWORK SUMMARY --------------------------------
  Protocol       Packets in/s   Packets out/s      Errors In%     Errors Out%
-------------------------------------------------------------------------------
  IP                      2.3             4.7             .00             .00
  TCP/IP                  2.3             4.7             .00             .00
  ICMP                    1.3             1.3             .00             .00
  UDP                      .0              .0             .00             N/A
-------------------------------------------------------------------------------
--- 09:39 --------------------- NETWORK SUMMARY --------------------------------
  Protocol       Packets in/s   Packets out/s      Errors In%     Errors Out%
-------------------------------------------------------------------------------
  IP                      4.4             4.3             .00             .00
  TCP/IP                  4.4             4.3             .00             .00
  ICMP                     .0              .0             .00             .00
  UDP                      .1              .0             .00             N/A
-------------------------------------------------------------------------------
```

Figure 46.7 *MVLOGX Network Summary report*

For information about the data displayed in the MVLOGX Network Summary, please refer to “MVHOST Network Summary” on page 137.

MVLOGX Net If (Network Interface) Summary

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

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/20/04  09:34
---12/20/04
--- 09:34 ---------------- NETWORK INTERFACE SUMMARY ----------------------------
Interf    Packts In/s   Packts Out/s    Collision%    Error In%    Error Out%
-------------------------------------------------------------------------------


lo0               2.7            2.7           .00          .00           .00
lan0              2.3            4.7           .00          .00           .00
-------------------------------------------------------------------------------
TOTAL             5.0            7.3           .00          .00           .00
--- 09:39 ---------------- NETWORK INTERFACE SUMMARY ----------------------------
Interf    Packts In/s   Packts Out/s    Collision%    Error In%    Error Out%
-------------------------------------------------------------------------------


lo0                .0             .0           .00          .00           .00
lan0              4.5            4.5           .00          .00           .00
-------------------------------------------------------------------------------
TOTAL             4.5            4.5           .00          .00           .00_
```

Figure 46.8 *MVLOGX Net If Summary report*

For information about the data displayed in the MVLOGX Net If Summary, please refer to "NETWORK INTERFACES" on page 138.

MVLOGX NFS Client Summary

The NFS Client Summary in MVLOGX displays bad NFS call information associated with the NFS client.

Bad NFS Calls

The Bad NFS Calls data item represents:

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

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/28/04  08:08
---12/28/04
--- 08:08 ---------------------- 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   42.9 STATTR     .0 LOOKUP   10.7 ACCESS   35.7 RDLINK     .0
READ      7.1 WRITE     3.6 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    7.3    Bad Calls     .0    Retrans     .0    Timeouts     .0    Badxids     .0
--------------------------------------------------------------------------------
```

Figure 46.9 *MVLOGX NFS Client Summary report*

For information about MVLOGX NFS Client data, refer to “MVHOST NFS Summary” on page 139.

MVLOGX Workload Summary

The Workload Summary in MVLOGX displays workload statistics.

```
MVLOGX    D.05d  bigbird   Loc:var/opt/lund/log/   Log: 05/07/05  00:03
---05/07/05
--- 00:03 -------------------- WORKLOAD SUMMARY --------------------------------
No Group Name     %CPU       %User CPU    %Disk I/O    Mem (KB)       VM (KB)
 1:INTERACT         .0            .0           .0           108          112
 2:BATCH            .0            .0           .0             0            0
 3:DAEMON           .3           2.4         100.0         86148       103532
 4:DEFAULT          .0            .0           .0             0            0
 5:
--- 00:08 -------------------- WORKLOAD SUMMARY --------------------------------
No Group Name     %CPU       %User CPU    %Disk I/O    Mem (KB)       VM (KB)
 1:INTERACT         .0            .0           .0           108          112
 2:BATCH            .0            .0           .0             0            0
 3:DAEMON           .3           3.0         100.0         86068       103564
 4:DEFAULT          .0            .0           .0             0            0
 5:
--- 00:13 -------------------- WORKLOAD SUMMARY --------------------------------
No Group Name     %CPU       %User CPU    %Disk I/O    Mem (KB)       VM (KB)
 1:INTERACT         .0            .0           .0           108          112
 2:BATCH            .0            .0           .0             0            0
 3:DAEMON           .3           3.6         100.0         85444       102640
 4:DEFAULT          .0            .0           .0             0            0
 5:
```

Figure 46.10 *MVLOGX Workload Summary report*

For information about the MVLOGX Workload Summary statistics, refer to "WORKLOAD SUMMARY Data Items" on page 101.

MVLOGX Workload Detail

The Workload Detail in MVLOGX displays detailed information about a specific workload.

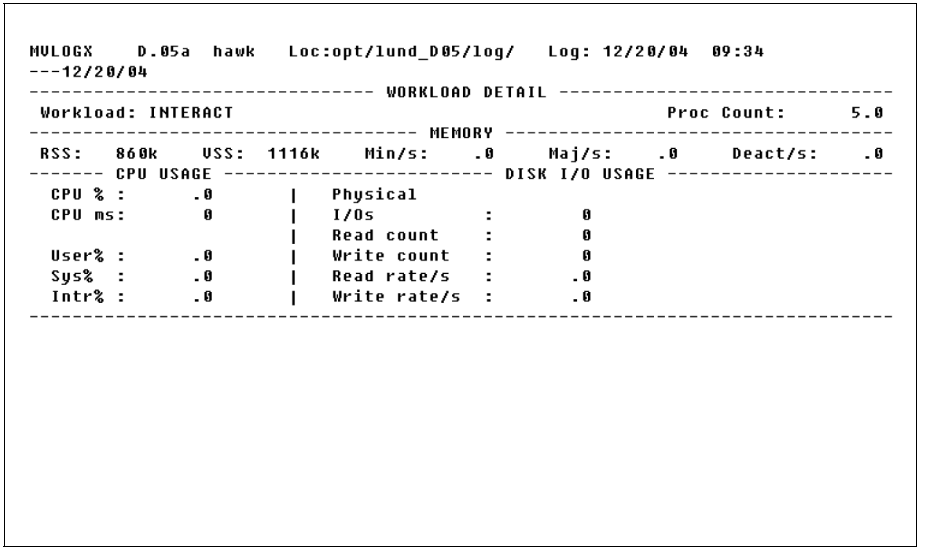


Figure 46.11 *MVLOGX Workload Detail report*

For information about the data presented in the MVLOGX Workload Detail report, refer to “MVHOST Workload Detail” on page 187.

MVLOGX Disk Detail

The Disk Detail report in MVLOGX displays detailed information about a specific disk.

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/20/04  09:34
---12/20/04
--- 09:34 ---------------------- DISK DETAIL ----------------------------------
  Disk Dev                    IO%      Qlen  Util%  WaitTime  ServiceTime
  c0t6d0                        4         .5   60.0       4.0          7.5
-------------------------------------------------------------------------------
--- 09:39 ---------------------- DISK DETAIL ----------------------------------
  Disk Dev                    IO%      Qlen  Util%  WaitTime  ServiceTime
  c0t6d0                       23         .7    3.3       3.2          3.7
-------------------------------------------------------------------------------
--- 09:44 ---------------------- DISK DETAIL ----------------------------------
  Disk Dev                    IO%      Qlen  Util%  WaitTime  ServiceTime
  c0t6d0                       70        2.6   20.9      14.3          5.4
-------------------------------------------------------------------------------
--- 09:49 ---------------------- DISK DETAIL ----------------------------------
  Disk Dev                    IO%      Qlen  Util%  WaitTime  ServiceTime
  c0t6d0                       58        1.1   41.4       6.6          6.6
-------------------------------------------------------------------------------
--- 09:54 ---------------------- DISK DETAIL ----------------------------------
  Disk Dev                    IO%      Qlen  Util%  WaitTime  ServiceTime
  c0t6d0                       28         .6   14.1       2.8          5.4
-------------------------------------------------------------------------------
```

Figure 46.12 *MVLOGX Disk Detail report*

For information about the data contained in this report, see "MVHOST Disk Detail" on page 191.

MVLOGX Transaction Time Chart

The Transaction Time Chart in MVLOGX displays the number of transactions per second recorded.

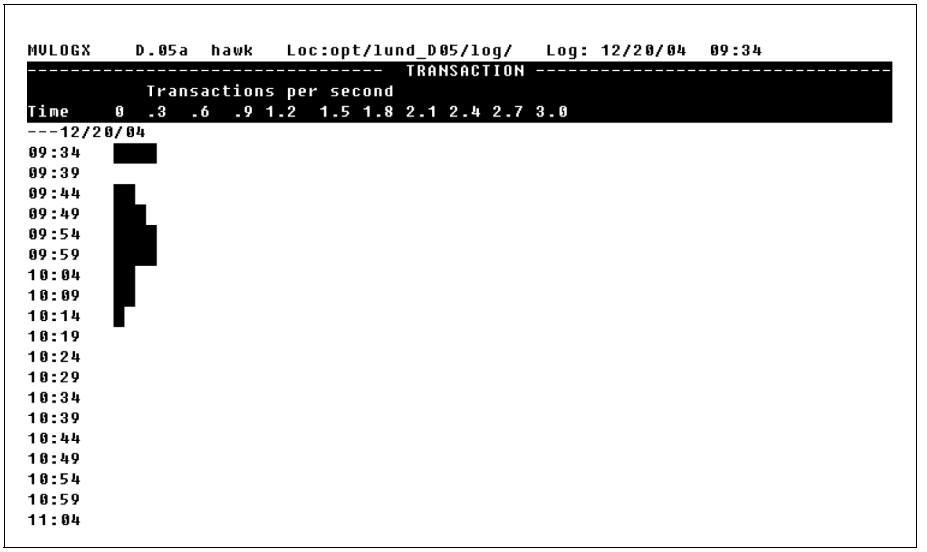


Figure 46.13 *MVLOGX Transaction Time Chart report*

For descriptions of this data item, please refer to “Transactions” on page 106.

MVLOGX FS Space Summary

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

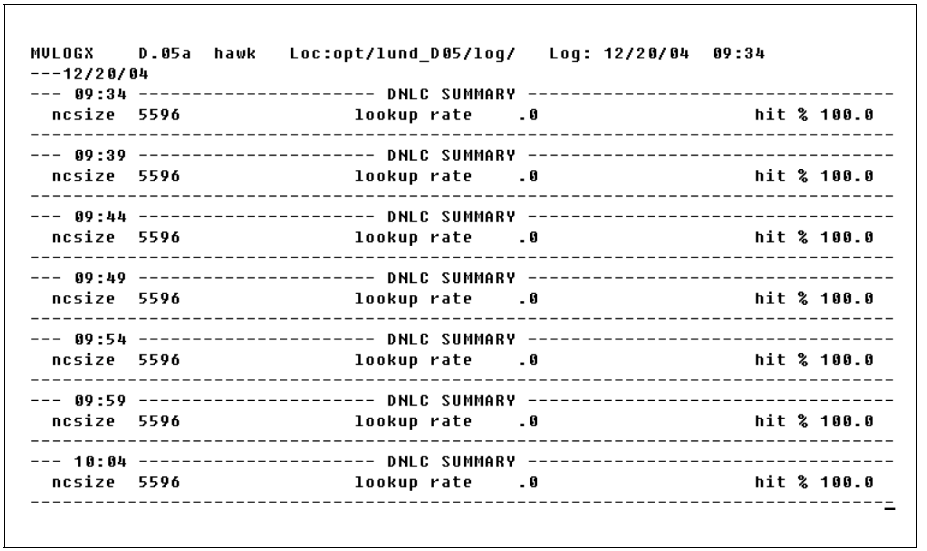
```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/20/04  09:34
---12/20/04
--- 09:34 ----------------- FILE SYSTEM SPACE SUMMARY --------------------------
                          Block/Frag                                  Free su
Mount                      Size/Size    Size (KB)   Free (KB)        (KB)    Used%
-------------------------------------------------------------------------------
/                         8192/ 1024      143360       95748      102127      29
/stand                    8192/ 1024      111637       67379       78543      30
/var_old                  8192/ 1024      512000      478590      502032       2
-------------------------------------------------------------------------------

--- 09:39 ----------------- FILE SYSTEM SPACE SUMMARY --------------------------
                          Block/Frag                                  Free su
Mount                      Size/Size    Size (KB)   Free (KB)        (KB)    Used%
-------------------------------------------------------------------------------
/                         8192/ 1024      143360       95748      102127      29
/stand                    8192/ 1024      111637       67379       78543      30
/var_old                  8192/ 1024      512000      478590      502032       2
-------------------------------------------------------------------------------
_
```

Figure 46.14 *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 135.

MVLOGX DNLC Summary

The DNLC Summary in MVLOGX displays information about the DNLC (dynamic name lookup cache).



```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/20/04  09:34
---12/20/04
--- 09:34 ---------------------- DNLC SUMMARY ----------------------------------
  ncsize  5596                lookup rate    .0                     hit % 100.0
-------------------------------------------------------------------------------
--- 09:39 ---------------------- DNLC SUMMARY ----------------------------------
  ncsize  5596                lookup rate    .0                     hit % 100.0
-------------------------------------------------------------------------------
--- 09:44 ---------------------- DNLC SUMMARY ----------------------------------
  ncsize  5596                lookup rate    .0                     hit % 100.0
-------------------------------------------------------------------------------
--- 09:49 ---------------------- DNLC SUMMARY ----------------------------------
  ncsize  5596                lookup rate    .0                     hit % 100.0
-------------------------------------------------------------------------------
--- 09:54 ---------------------- DNLC SUMMARY ----------------------------------
  ncsize  5596                lookup rate    .0                     hit % 100.0
-------------------------------------------------------------------------------
--- 09:59 ---------------------- DNLC SUMMARY ----------------------------------
  ncsize  5596                lookup rate    .0                     hit % 100.0
-------------------------------------------------------------------------------
--- 10:04 ---------------------- DNLC SUMMARY ----------------------------------
  ncsize  5596                lookup rate    .0                     hit % 100.0
-------------------------------------------------------------------------------
```

Figure 46.15 *MVLOGX DNLC Summary report*

The data items in the MVLOGX DNLC Summary are described in “DNLC CACHE SUMMARY” on page 159.

MVLOGX System Configuration

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

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/20/04  09:34
---12/20/04
--- 09:34 ------------------ SYSTEM CONFIGURATION -------------------------------
 system name: hawk        os version: B.11.11                cpu type: 9000/782
  serial num: 2007483984   boot time: 09:33 30 NOV 2004     run level: 3
---------------------------- MEMORY MANAGEMENT CONFIG ---------------------------
 lotsfree:  3208                desfree:   802                   minfree:   200
     umem:  1304                                             page size:  4096
------------------------ SYSV BUFFER CACHE CONFIGURATION -----------------------
 nbuf: 15300        bufpages: 20247        dbc min:  3276        dbc max: 32768
------------------------------ FS CONFIGURATION -------------------------------
 fs_async: 0                       nfile:   920                     ninod:   476
------------------------------ PROCESS CONFIGURATION --------------------------
 timeslice:    10                 maxfiles:    60              maxtsiz:   2048
   maxuprc:    75               maxfiles_lim:  1024              maxdsiz:  16384
     nproc:   276                                              maxssiz: 262144
------------------------------- IPC CONFIGURATION -----------------------------
     MESSAGES      msgmap:    42 |   SEMAPHORES   semvmx: 32767 |   SHARED MEM
 msgmax:  8192     msgmni:    50 | semmap:   66   semaem: 16384 | max:  67108864
 msgmnb: 16384     msgseg:  2048 | semmni:   64   semmnu:    30 | shmmni:    200
  msgsz:     8     msgtql:    40 | semmns:  128   semume:    10 | shmseg:    120
-------------------------------------------------------------------------------
```

Figure 46.16 *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 161.

MVLOGX ORACLE Detail Cache

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

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/28/04  09:38
--- 09:38 ------------------------------ INSTANCE_NAME devpx.lund.com
          Row Cache                             Library Cache
DB BLOCK GETS:         347              User Calls:             933
CONSISTENT GETS:       196              Recursive calls:         75
PHYSICAL READS:      12003              Exec Count:               0
                                        Parse Cnt (tot):          0
         Redo Buffer                    Parse Cnt (hard):       344
Redo Syn Wrts:           0              Pins:                     0
Redo Logspc Req:        97              Reloads:                 37

           Waits                                Data Dict Cache
Free List:               0              Gets:                     0
Sys Undo Block:          0              Get Misses:             511
Sys Undo Header:         0
Undo Block:              0
Undo Header:          5540
-------------------------------------------------------------------------------
```

Figure 46.17 *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 215.

MVLOGX ORACLE Database Activity

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

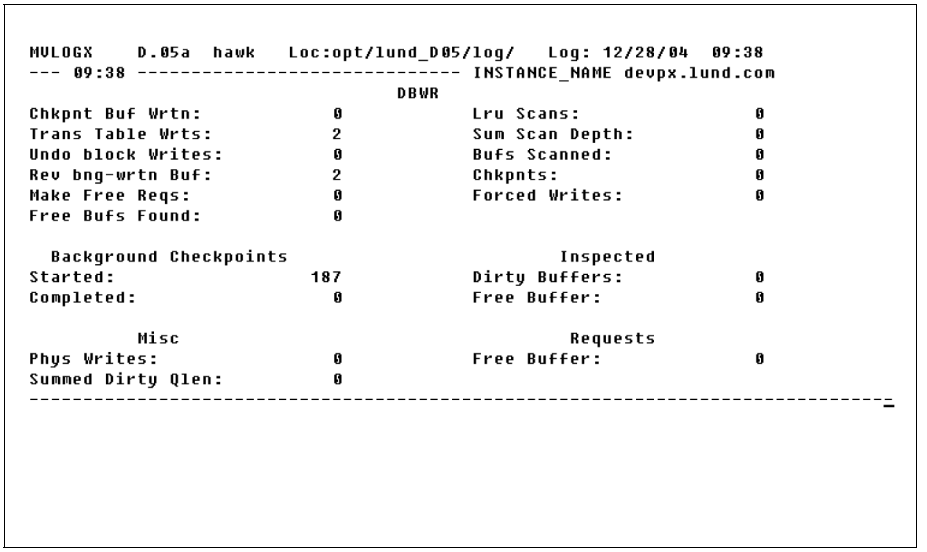
```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/28/04  09:38
--- 09:38 ------------------------------ INSTANCE_NAME devpx.lund.com
  Transaction Management                          Locking
Opened Cursors:          8              Current Locks:              9
User Commits:            0              Enq Requests:              76
User Rollbacks:          0              Enq Releases:               1
                                        Enq Waits:                 77
         Sorts                          Enqueue Timeouts:           0
Memory:                  2
Disk:                 2874                        Rollback
Rows:                   14               Gets:                    128
                                         Waits:                    53
      Table Scans                        Writes:                    0
Short Tables:            1
Long Tables:           127


--------------------------------------------------------------------------------
```

Figure 46.18 *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 205.

MVLOGX ORACLE DBWR Activity

The ORACLE DBWR Activity report in MVLOGX provides statistics about the DBWR process; the process that writes the modified buffers into a database.



```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/28/04  09:38
--- 09:38 ------------------------------ INSTANCE_NAME devpx.lund.com
                                  DBWR
Chkpnt Buf Wrtn:              0             Lru Scans:                 0
Trans Table Wrts:             2             Sum Scan Depth:            0
Undo block Writes:            0             Bufs Scanned:              0
Rev bng-wrtn Buf:             2             Chkpnts:                   0
Make Free Reqs:               0             Forced Writes:             0
Free Bufs Found:              0

  Background Checkpoints                            Inspected
Started:                    187             Dirty Buffers:             0
Completed:                    0             Free Buffer:               0

          Misc                                       Requests
Phys Writes:                  0             Free Buffer:               0
Summed Dirty Qlen:            0
--------------------------------------------------------------------------------
```

Figure 46.19 *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 225.

MVLOGX ORACLE Detail Events

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

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/28/04  09:38
--- 09:38 ------------------------------ INSTANCE_NAME devpx.lund.com
        DB File                                 Log File
Sequential Read:           0                Sequential Read:              0
Scattered Read:           11                Sync:                         4
Parallel Read:             1
Single Write:              0                Single Write:                 8
Parallel Write:           24                Parallel Write:               0

         File                                     Control File
Identify:                  9                Sequential Real:              0
Open:                      8                Parallel Write:              24
                                            Refresh Command:             20

                              Net Events
SQL*Net break/reset to client:                    48
SQL*Net message from client:                      48
SQL*Net message to client:                         0
-------------------------------------------------------------------------------
```

Figure 46.20 *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 221.

MVLOGX ORACLE LRU Latches

The ORACLE LRU Latches report in MVLOGX presents latches statistics.

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/28/04  09:38
--- 09:38 ------------------------------ INSTANCE_NAME devpx.lund.com
                            Lru Latches
    Cache Buffer Chains                      Cache Buffer Handles
Gets:                    0              Gets:                      0
Misses:                  0              Misses:                  341
Im Gets:                 0              Im Gets:                   0
Im Misses:            1340              Im Misses:                 0
  Cache Protection Latch                    Cache Buffers Lru Chain
Gets:                    0              Gets:                      0
Misses:                  0              Misses:                    0
Im Gets:                 0              Im Gets:                   0
Im Misses:               0              Im Misses:               155
                        Redo Log Buffer Latches
   Redo Allocation                                 Redo Copy
Gets:                    0              Gets:                      0
Misses:                  0              Misses:                   42
Im Gets:                 0              Im Gets:                   0
Im Misses:               0              Im Misses:               430
                           Redo Writing
Gets:                    0              Im Gets:                   0
Misses:                  0              Im Misses:                 8
```

Figure 46.21 *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 201.

MVLOGX ORACLE Memory and Network

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

```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 12/28/04  09:38
--- 09:38 ------------------------------ INSTANCE_NAME devpx.lund.com
                                 MEMORY
          SGA                                      Session
Free Memory:          41368              UGA Memory:             52889
DB Buffers:           16384              UGA Memory Max:        206610
Log Buffers:            160              PGA Memory:           1125808
Dict Cache:             408              PGA Memory Max:       1125821
SQL Area:              1888
Lib Cache:             1769

                               NETWORK
Bytes sent via SQL*Net to client:                  10124
Bytes received via SQL*Net from client:               48
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
-------------------------------------------------------------------------------
```

Figure 46.22 *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 209.

MVLOGX ORACLE Detail Datafiles

The ORACLE Detail Datafiles report in MVLOGX displays the first 10 datafiles in order of their activity, listing the most active first.

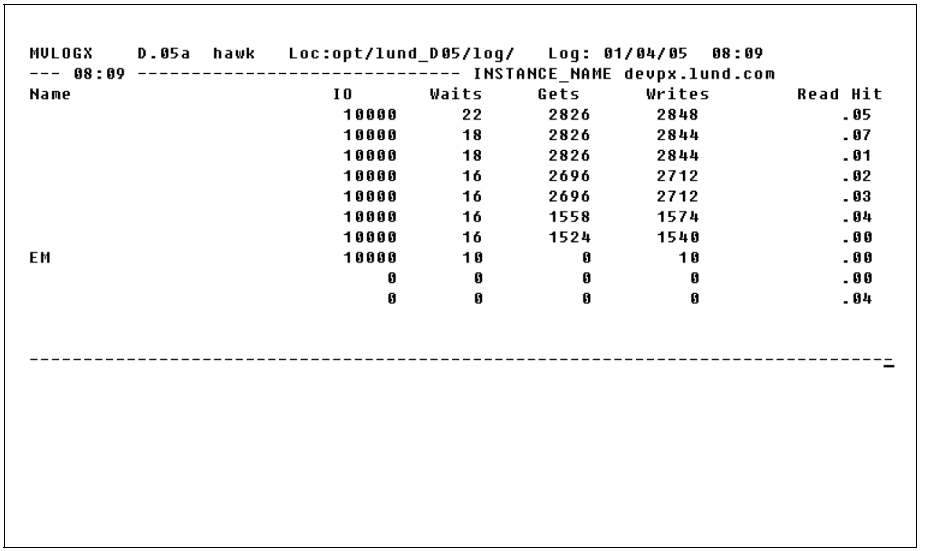
```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 01/04/05  08:09
--- 08:09 ------------------------------ INSTANCE_NAME devpx.lund.com

No  Name         Tablespace     Reads     Writes  Blk Reads   Blk Writes     Size
*** 01.dbf                        54          51         54           69          15
*** 1.dbf                         8           0          8            8           0
*** em01.dbf     EM               4           0          4            4           0
*** s01.dbf      S                0           0          0            0           0
*** s01.dbf      S                0           0          0            0           0
*** 01.dbf                        0           0          0            0           0
*** s01.dbf      S                0           0          0            0           0
  0                               0           0          0            0           0
  0                               0           0          0            0           0
  0                               0           0          0            0           0
-------------------------------------------------------------------------------
```

Figure 46.23 *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 229.

MVLOGX ORACLE Detail Rollback Segments

The ORACLE Detail Rollback Segments report in MVLOGX provides consistent data for the other readers and in case of a rollback it is used to bring the data to its previous state.



```
MVLOGX    D.05a  hawk   Loc:opt/lund_D05/log/   Log: 01/04/05  08:09
--- 08:09 ------------------------------ INSTANCE_NAME devpx.lund.com
Name                          IO       Waits      Gets       Writes        Read Hit
                           10000          22      2826         2848             .05
                           10000          18      2826         2844             .07
                           10000          18      2826         2844             .01
                           10000          16      2696         2712             .02
                           10000          16      2696         2712             .03
                           10000          16      1558         1574             .04
                           10000          16      1524         1540             .00
EM                         10000          10         0           10             .00
                               0           0         0            0             .00
                               0           0         0            0             .04


--------------------------------------------------------------------------------
```

Figure 46.24 *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 213.

A

META-VIEW FOR HP-UX 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 169.

The following HP-UX pulse points are provided by Lund Performance Solutions. The performance ranges are generic for all HP-UX systems—customizing them for your system is recommended. Please refer to the configuration instructions in “MVHOST ppoints File” on page 82.

Table A.1 *Meta-View for HP-UX 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: • Processing user and system process code. • Managing main memory. • Scheduling and dispatching processes (interrupts). • Processing context switches and overhead (external device activity).	less than 60	60 to 85	greater than 85
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/second 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 15	15 to 20	greater than 20
Read Hit % The percentage of time that requests for information were satisfied in main memory. A Read Hit percentage less than 90 could indicate a data locality problem or a shortage of memory.	greater than 90	90-80	less than 80
Disk Performance			
Average Wait Time The average number of milliseconds an I/O request had to wait in the disk queue before being serviced.	less than 30	30 to 40	greater than 40
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 processes in the request queue for a particular disk drive.	less than 40	40 to 60	greater than 60

Performance Indicator	Performance Ranges		
	Normal	Problematic	Unacceptable
Disk I/O Rate/second The number of physical reads and writes per second for each type of physical I/O.	less than 40	40 to 60	greater than 60
Network Performance			
Collision % The number of output packets sent that resulted in a collision.	less than 15	15 to 30	greater than 30

B

META-VIEW HP-UX 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,
!              l = 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 -    Disc device code
DISC-IOS              1    2    2   5 0 -    Disc physical IO activity (IO's)
DISC-IO-RATE          1    4    2   2 0 -    Disc physical IO rate (IO/s)
DISC-QUEUE-LEN        1    6   -1   6 1 -    Disc request queue length
DISC-IO%              1    7    1   3 0 -    Total disc I/O %
DISC-UTIL%            1    8    1   5 1 -    Disk utilization %
DISC-AVG-SERV-TIME    1    9   -1   6 1 -    Average disk service time (ms)
DISC-AVG-WAIT-TIME    1   10   -1   6 1 -    Average disk wait time (ms)
DISC-FILLER           1   11    1   0 0 -    Not used
```

DISC-SERV-TIME	1	12	2	9	0	-	Total disk service time (ms)
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 low priority value
GRP-HIGH-PRI	2	2	-1	2	0	-	Workload high priority value
GRP-CPU%	2	3	-1	5	1	-	Workload CPU %
GRP-DISC%	2	4	-1	5	1	-	Workload Disk IO %
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-DEACT-RATE	2	16	2	5	1	-	Workload deactivation rate (/s)
GRP-TYPE	2	18	-1	1	0	-	Workload type (/s)
GRP-FILLER	2	19	1	0	0	-	Not used
GRP-CPU	2	20	2	9	0	-	Workload CPU time (ms)
GRP-USER-CPU%	2	22	-1	5	1	-	Workload user CPU percentage
GRP-SYS-CPU%	2	23	-1	5	1	-	Workload system CPU percentage
GRP-FILLER	2	24	1	0	0	-	Not used
GRP-INT-CPU%	2	25	-1	5	1	-	Workload interrupt CPU percentage
GRP-PHY-IO-CNT	2	26	2	4	0	-	Workload physical IO count (IO's)
GRP-PHY-RD-CNT	2	28	2	4	0	-	Workload physical read count
GRP-PHY-WR-CNT	2	30	2	4	0	-	Workload physical write count
GRP-PHY-RD-RATE	2	32	2	5	1	-	Workload physical read rate (/s)
GRP-PHY-WR-RATE	2	34	2	5	1	-	Workload physical write rate (/s)

```
GRP-TRANS            2  36   2  5 0 -    Workload transactions

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 console
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 disk IO's
PROC-STATE           3  33   1  2 0 -    Process 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 %
PROC-TRANS-CNT       3  38   2  8 0 -    Process transaction count
PROC-NLWP            3  40   2  8 0 -    Process thread numbers
PROC-IOCH            3  42   2  8 0 -    Process IO char blk/s (IO/s)

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 process %
```

CPU-WAIT%	6	4	-1	5	1	-	CPU wait %
CPU-IDLE%	6	5	-1	5	1	-	CPU idle %
CPU-BUSY	6	6	2	6	0	-	Total CPU 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-QUEUE-BUSY%	6	11	-1	5	1	-	CPU ready queue occupied %
CPU-CAPTURE	6	12	-1	5	1	-	CPU capture (user/sys CPU)
CPU-FILLER	6	13	1	0	0	-	Not used
CPU-FORK-RATE	6	14	2	4	1	-	CPU fork rate (/s)
CPU-CSW-RATE	6	16	2	4	1	-	CPU context switch rate (/s)
CPU-INTERRUPT-RATE	6	18	2	4	1	-	CPU interrupt rate (/s)
CPU-TRAP-RATE	6	20	2	4	1	-	CPU trap rate (/s)
CPU-SYSCALL-RATE	6	22	2	4	1	-	CPU system call rate (/s)
CPU-COUNT	6	2000	-1	3	0	-	CPU count
VM-USED-MEM%	7	0	1	4	1	-	Physical memory used %
VM-USED-VM%	7	1	1	4	1	-	Virtual memory used %
VM-USER-MEM	7	2	2	6	0	-	Physical memory used by user processes (KB)
VM-SYS-MEM	7	4	2	6	0	-	Physical memory used by the OS (KB)
VM-BUF-MEM	7	6	2	6	0	-	Physical memory used by the buffer cache (KB)
VM-FREE-MEM	7	8	2	6	0	-	Free physical memory (KB)
VM-USER-VM	7	10	2	6	0	-	Virtual memory used by user processes (KB)
VM-SYS-VM	7	12	2	6	0	-	Virtual memory used by the OS (KB)
VM-FREE-VM	7	14	2	6	0	-	Free virtual memory (KB)
VM-PS-LOADED-RUN	7	16	-1	3	0	-	Number of procs loaded and runnable
VM-PS-LOADED-SLEEP	7	17	-1	3	0	-	Number of procs loaded and sleeping

```
VM-PS-LOADED          7  18  -1  3  0 -   Number of procs loaded
VM-PAGE-FAULT-RATE    7  20   2  4  1 -   Virtual memory page fault rate (/s)
VM-PAGE-FAULTS        7  22   2  3  0 -   Virtual memory page faults
VM-PAGE-IN-RATE       7  24   2  4  1 -   Virtual memory page in rate (/s)
VM-PAGE-OUT-RATE      7  26   2  4  1 -   Virtual memory page out rate (/s)
VM-PAGE-IN-BPS        7  28   2  5  0 -  Virtual memory page in size rate (B/s)
VM-PAGE-OUT-BPS       7  30   2  5  0 -  Virtual memory page out size rate (B/s)
VM-PAGE-INS           7  32   2  3  0 -   Virtual memory page ins
VM-PAGE-OUTS          7  34   2  3  0 -   Virtual memory page outs
VM-VM-READ-RATE       7  36   2  4  1 -   Virtual memory read rate (/s)
VM-VM-WRITE-RATE      7  38   2  4  1 -   Virtual memory write rate (/s)
VM-VM-READ-BPS        7  40   2  5  0 -   Virtual memory read size rate (B/s)
VM-VM-WRITE-BPS       7  42   2  5  0 -   Virtual memory write size rate (B/s)
VM-VM-READS           7  44   2  3  0 -   Virtual memory reads
VM-VM-WRITES          7  46   2  3  0 -   Virtual memory writes
VM-FORK-RATE          7  48   2  4  1 -   Process fork rate (/s)
VM-FORKS              7  50   2  3  0 -   Process forks
VM-FORK-BPS           7  52   2  5 -2 -   Process fork size rate (B/s)
VM-PG-REC-RATE        7  54   2  5  1 0   Virtual memory page reclaim rate (/s)
VM-PG-SCAN-RATE       7  56   2  5  1 0   Virtual memory page scan rate (/s)
VM-VM-SIZE            7  58   2  5  0 -   Total virtual memory (KB)

VM-LOTSFREE           7 2000  2  5  0 -  Trigger for system paging to begin
                                          (PG's)
VM-DESFREE            7 2002  2  5  0 -  Memory to be free at all times (PG's)
VM-MINFREE            7 2004  2  5  0 -  Minimum acceptable memory level (PG's)
VM-UMEM               7 2006  2  5  0 -  Physical memory that may be locked
                                          (PG's)
VM-PG-SIZE            7 2008  2  5  0 -  Virtual memory page size (B)
VM-MEM-SIZE           7 2010  2  6  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-DEACT        8   5   1  4 0 -    Processes deactivated
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)

VOL-DEV                9   0   2  9 0 -    Volume device code
VOL-PHY-RD-RATE        9   2   2  5 1 -    Volume physical read rate (/s)
VOL-PHY-WR-RATE        9   4   2  5 1 -    Volume physical write rate (/s)
VOL-PHY-AVG-RD-SIZE    9   6   2  5 0 -    Average volume physical read rate (B)
VOL-PHY-AVG-WR-SIZE    9   8   2  5 0 -    Average volume physical write rate (B)

VOL-DEV2               9 2000  2  9 0 -    Volume device code
VOL-DEVFILE            9 2002  0 24 0 -    Volume device filename

NETP-IP-IN-PKT-RT     10   0   2  5 1 -    IP packet in rate (/s)
NETP-IP-OUT-PKT-RT    10   2   2  5 1 -    IP packet 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 packet in rate (/s)
NETP-ICMP-OUT-PKT-RT  10   8   2  5 1 -    ICMP packet 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-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 error 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-PRI              11 2017  1  3 0 -    Swap priority
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-IN-ERR%         12   6  -1  6 2 -    NetIf packet in error %
NETIF-OUT-ERR%        12   7  -1  6 2 -    NetIf packet out error %
NETIF-COLLISION%      12   8  -1  6 2 -    NetIf packet collision %

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-SERV-TIME	13	6	2	5	2	-	NFS server service time (s)
NFS-CLIENT-RD-RATE	13	8	2	5	1	-	NFS client read rate (/s)
NFS-CLIENT-WR-RATE	13	10	2	5	1	-	NFS client write rate (/s)
NFS-CLIENT-SERV-TIME	13	12	2	5	2	-	NFS client service time (s)
NFS-CLIENT-NET-TIME	13	14	2	5	2	-	NFS client network time (s)
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-BUFPAGES	15	2	2	5	0	-	Buffer cache headers

```
BC-RHIT%              15   4  -1  5  1 0   Buffer cache read hit %
BC-WHIT%              15   5  -1  5  1 0   Buffer cache write hit %
BC-HIT%               15   6  -1  5  1 0   Buffer cache hit %

BC-NODBC              15 2000  1  0  0 -   Disable dynamic buffer cache
BC-FILLER2            15 2001  1  0  0 -   Not used
BC-DBC-MIN-SIZE       15 2002  2  5  0 -   Dynamic buffer cache min size (KB)
BC-DBC-MAX-SIZE       15 2004  2  5  0 -   Dynamic buffer cache max size (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-USED       17   0   2  5  0 -   Used inode cache entries
IC-ENTRIES-HIGH       17   2   2  5  0 -   Max # of inode cache entries ever used

IC-NINODE             17 2000  2  5  0 -   Inodes cache size

FSG-FSASYNC           18 2000 -1  1  0 -    Enable asynchronous write IO

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 -    System OS 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	2000	2	5	0	- Total message entries (ID's)
IPC-SEM-ENTRIES	20	2002	2	5	0	- Total semaphore entries (ID's)
IPC-SHM-ENTRIES	20	2004	2	5	0	- Total shared memory entries (ID's)
IPC-MSGMAX	20	2006	2	5	0	- Maximum message size (B)
IPC-MSGMNB	20	2008	2	5	0	- Maximum message queue size
IPC-MSGSSZ	20	2010	2	5	0	- Message segment size (B)
IPC-MSGMAP	20	2012	2	5	0	- Entries to track free message space
IPC-MSGMNI	20	2014	2	5	0	- Max number of message queue identifiers (ID's)
IPC-MSGSEG	20	2016	2	5	0	- Max number of message segments in system
IPC-MSGTQL	20	2018	2	5	0	- Max number of messages in system
IPC-SEMMAP	20	2020	2	5	0	- Entries to track free semaphore memory
IPC-SEMMNI	20	2022	2	5	0	- Max number of semaphore identifiers (ID's)
IPC-SEMMNS	20	2024	2	5	0	- Max number of semaphores in the system
IPC-SEMVMX	20	2026	2	5	0	- Max semaphore value
IPC-SEMAEM	20	2028	2	5	0	- Max semaphore value in an undo structure
IPC-SEMMNU	20	2030	2	5	0	- Number of semaphore undo structures
IPC-SEMUME	20	2032	2	5	0	- Max semaphore undo structures per process
IPC-SHMMAX	20	2034	2	5	0	- Max size of a shared memory segment
IPC-SHMMNI	20	2036	2	5	0	- Max number of shared memory identifiers (ID's)

IPC-SHMSEG	20	2038	2	5	0	-	Max number of shared memory segments per process (ID's)
FTBL-ENTRIES-USED	21	0	2	5	0	-	Used file table entries
FTBL-ENTRIES-HIGH	21	2	2	5	0	-	Max number of file table entries ever used
FLOCK-ENTRIES-USED	21	4	2	5	0	-	Used file lock entries
FLOCK-ENTRIES-HIGH	21	6	2	5	0	-	Max number of file lock entries ever used
PTY-ENTRIES-USED	21	8	2	5	0	-	Used pseudo TTY entries
PTY-ENTRIES-HIGH	21	10	2	5	0	-	Max number of pseudo TTY entries ever used
FTBL-NFILE	21	2000	2	5	0	-	File table size
FLOCK-NFLOCK	21	2002	2	5	0	-	File lock table size
PTY-NPTY	21	2004	2	5	0	-	Pseudo TTY table size
PTBL-ENTRIES-USED	22	0	2	5	0	-	Used process table entries
PTBL-ENTRIES-HIGH	22	2	2	5	0	-	Max process table entries ever used
PTBL-NPROC	22	2000	2	5	0	-	Maximum process number
PTBL-TIMESLICE	22	2002	2	5	0	-	Process scheduling interval
PTBL-MAXUPRC	22	2004	2	5	0	-	Max number of user processes per user id
PTBL-MAXFILES	22	2006	2	5	0	-	Process open file descriptor soft limit
PTBL-MAXFILES-LIM	22	2008	2	5	0	-	Process open file descriptor hard limit
PTBL-MAXTSIZ	22	2010	2	5	0	-	Process maximum text segment size (B)
PTBL-MAXDSIZ	22	2012	2	5	0	-	Process maximum data segment size (B)
PTBL-MAXSSIZ	22	2014	2	5	0	-	Process maximum stack segment size (B)

```
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-CLNT-CALL-RT     23   4   2  5  1 -   RPC calls sent (/s)
RPC-CLNT-BADCALL-RT  23   6   2  5  1 -   Bad RPC calls sent (/s)
RPC-CLNT-RETRAN-RT   23   8   2  5  1 -   RPC retransmissions (/s)
RPC-CLNT-TIMEOUT%    23  10  -1  5  1 -   RPC call timeout %
RPC-CLNT-BADXID%     23  11  -1  5  1 -   RPC duplicate acknowledge timeouts %

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-READDRP% 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-READDIR% 24  76  -1  5 1 -    NFS v3 server readdir 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_MEM      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)
FILLER_01            25  34   2  0 0 -    Not used
LOGONS_CURRENT       25  36   2  8 0 -    Oracle current logons
ROLLBACK_1_USN       25  38   2  8 0 -    Oracle rollback_1 segment number
ROLLBACK_1_NAME      25  40   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              25 221   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 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 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 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 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 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
TABLESPACE_6_NUMBER	25	574	2	8	0	- Oracle tablespace number where file_6 belongs
TABLESPACE_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 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

```
TABLESPACE_7_NUMBER   25 622   2  8 0 -    Oracle tablespace number where file_7
                                            belongs
TABLESPACE_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 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
TABLESPACE_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 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 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)
PHYS_READS_10	25	786	2	8	0	- Oracle file_10 physical reads
PHYS_WRITES_10	25	788	2	8	0	- Oracle file_10 physical writes
PHYS_BLK_READS_10	25	790	2	8	0	- Oracle file_10 physical block reads
PHYS_BLK_WRITES_10	25	792	2	8	0	- Oracle file_10 physical block writes
IO_NUMBER_10	25	794	2	8	0	- Oracle file_10 IO
CACHE_BUFCHAINS_GETS	25	796	4	8	0	- Oracle cache buffer chain gets
CACHE_BUFCHAINS_MIS	25	800	4	8	0	- Oracle cache buffer chain misses
CACHEBUFCHAINSIMGETS	25	804	4	8	0	- Oracle cache buffer chain immediate gets
CACHEBUFCHAINSIMMIS	25	808	4	8	0	- Oracle cache buffer chain immediate misses
CACHE_BUFHANDLESGETS	25	812	4	8	0	- Oracle cache buffer handle gets
CACHE_BUFHANDLES_MIS	25	816	4	8	0	- Oracle cache buffer handle misses

```
CACHEBUFHANDLESIMGET  25 820   4  8 0 -   Oracle cache buffer handle immediate
                                           gets
CACHE_BUFHANDLESIMMI  25 824   4  8 0 -   Oracle cache buffer handle immediate
                                           misses
CACHE_PROTLATCH_GETS  25 828   4  8 0 -   Oracle cache protection latch gets
CACHE_PROTLATCH_MISS  25 832   4  8 0 -   Oracle cache protection latch misses
CACHEPROTLATCHIMGETS  25 836   4  8 0 -   Oracle cache protection latch
                                           immediate gets
CACHEPROTLATCHIMMISS  25 840   4  8 0 -   Oracle cache protection latch
                                           immediate misses
CACHEBUFLRUCHAINGETS  25 844   4  8 0 -   Oracle cache buffer lru chain gets
CACHEBUFLRUCHAINMIS   25 848   4  8 0 -   Oracle cache buffer lru chain misses
CACHEBUFLRUCHNIMGETS  25 852   4  8 0 -   Oracle cache buffer lru chain
                                           immediate gets
CACHEBUFLRUCHNIMMIS   25 856   4  8 0 -   Oracle cache buffer lru chain
                                           immediate misses
REDO_ALLOC_GETS       25 860   4  8 0 -   Oracle redo allocation gets
REDO_ALLOC_MISSES     25 864   4  8 0 -   Oracle redo allocation misses
REDO_ALLOC_IMGETS     25 868   4  8 0 -   Oracle redo allocation immediate
                                           gets
REDO_ALLOC_IMMISSES   25 872   4  8 0 -   Oracle redo allocation immediate
                                           misses
REDO_COPY_GETS        25 876   4  8 0 -   Oracle redo copy gets
REDO_COPY_MISSES      25 880   4  8 0 -   Oracle redo copy misses
REDO_COPY_IMGETS      25 884   4  8 0 -   Oracle redo copy immediate gets
REDO_COPY_IMMISSES    25 888   4  8 0 -   Oracle redo copy immediate misses
REDO_WRT_GETS         25 892   4  8 0 -   Oracle redo write gets
REDO_WRT_MISSES       25 896   4  8 0 -   Oracle redo write misses
REDO_WRT_IMGETS       25 900   4  8 0 -   Oracle redo write immediate gets
REDO_WRT_IMMISSES     25 904   4  8 0 -   Oracle redo write immediate misses
REDO_SYNCH_WRITES     25 908   4  8 0 -   Oracle redo entries to be synced on
                                          disk
```

REDO_LOGSPACE_REQ	25	912	4	8	0	- Oracle redo logspace requests
CNTRLFILEPARWRTTOTWT	25	916	4	8	0	- Oracle controlfile parallel write total waits
CNTRLFILESEQRDTOTWTS	25	920	4	8	0	- Oracle controlfile sequential read total waits
DBFILE_PARLRDTOTWTS	25	924	4	8	0	- Oracle databasefile parallel read total waits
DBFILE_PARLWRTTOTWTS	25	928	4	8	0	- Oracle databasefile parallel write total waits
DBFILE_SCATRDTOTWTS	25	932	4	8	0	- Oracle databasefile scattered read total waits
DBFILE_SEQ_RDTOTWTS	25	936	4	8	0	- Oracle databasefile sequential read total waits
DBFILE_SNGLWRTTOTWTS	25	940	4	8	0	- Oracle databasefile single write total waits
FILE_IDENT_TOT_WTS	25	944	4	8	0	- Oracle file ident waits
FILE_OPEN_TOT_WTS	25	948	4	8	0	- Oracle file open waits
LOGFILE_PARWRTTOTWTS	25	952	4	8	0	- Oracle log file parallel write total waits (s)
LOGFILE_SEQRDTOTWTS	25	956	4	8	0	- Oracle log file sequential read total waits
LOGFILE_SNGLWRTTOTWT	25	960	4	8	0	- Oracle log file single write total waits
LOGFILE_SYNC_TOT_WTS	25	964	4	8	0	- Oracle log file synchronization total waits
REFRSHCNTRLFCOMTOTWT	25	968	4	8	0	- Oracle controlfile refresh command total waits
DBWR_CHKPOINTBUFWRIT	25	972	4	8	0	- Oracle DBWR checkpoint buffers written
DBWR_TRANSTABLE_WRT	25	976	4	8	0	- Oracle DBWR transaction table writes
DBWR_UNDO_BLOCK_WRT	25	980	4	8	0	- Oracle DBWR undo block writes
DBWR_REV_BNGWRTBUF	25	984	4	8	0	- Oracle DBWR revisited being written buffer
DBWR_MAKE_FREEREQ	25	988	4	8	0	- Oracle DBWR make free requests

```
DBWR_FREE_BUFFOUND    25  992  4  8 0 -   Oracle DBWR free buffers found
DBWR_LRU_SCANS        25  996  4  8 0 -   Oracle DBWR lru scans
DBWR_SUM_SCANDPTH     25 1000  4  8 0 -   Oracle DBWR summed scan depth
DBWR_BUF_SCANNED      25 1004  4  8 0 -   Oracle DBWR buffers scanned
DBWR_CHECKPOINTS      25 1008  4  8 0 -   Oracle DBWR checkpoints
DBWR_FORCED_WRITES    25 1012  4  8 0 -   Oracle DBWR forced writes
BKGNDCHKPNTCOMPLTD    25 1016  4  8 0 -   Oracle background checkpoints
                                          completed
BKGNDCHKPNTSTARTED    25 1020  4  8 0 -   Oracle background checkpoints started
DIRTY_BUF_INSPECTED   25 1024  4  8 0 -   Oracle dirty buffers inspected
FREE_BUF_INSPECTED    25 1028  4  8 0 -   Oracle free buffers inspected
FREE_BUF_REQUESTED    25 1032  4  8 0 -   Oracle free buffers requested
PHYSICAL_WRITES       25 1036  4  8 0 -   Oracle physical disk writes
SUM_DIRTY_QUEUE_LNG   25 1040  4  8 0 -   Oracle dirty queue length
FREE_LIST             25 1044  4  8 0 -   Oracle free list
SYSTEM_UNDO_BLOCK     25 1048  4  8 0 -   Oracle system undo block
SYSTEM_UNDO_HEADER    25 1052  4  8 0 -   Oracle system undo header
UNDO_BLOCK            25 1056  4  8 0 -   Oracle undo block
UNDO_HEADER           25 1060  4  8 0 -   Oracle undo header
ROLLBACK_WRITES       25 1064  4  8 0 -   Oracle rollback writes
ROLLBACK_WAITS        25 1068  4  8 0 -   Oracle rollback waits
ROLLBACK_GETS         25 1072  4  8 0 -   Oracle rollback gets
USER_CALLS            25 1076  4  8 0 -   Oracle user calls
RECURSIVE_CALLS       25 1080  4  8 0 -   Oracle recursive calls
EXECUTE_COUNT         25 1084  4  8 0 -   Oracle execute count
SES_CURSORCACHE_HITS  25 1088  4  8 0 -   Oracle session cursor cache hits
SES_CURSORCACHE_CNT   25 1092  4  8 0 -   Oracle session cursor cache count
PARSE_COUNT_TOTAL     25 1096  4  8 0 -   Oracle (total) parse count
PARSE_COUNT_HARD      25 1100  4  8 0 -   Oracle (hard) parse count
PINS_SUM              25 1104  4  8 0 -   Oracle library cache PIN requests
```

RELOADS_SUM	25	1108	4	8	0	- Oracle library cache object disk reloads
GETS_SUM	25	1112	4	8	0	- Oracle data dictionary cache requests
GETMISSES_SUM	25	1116	4	8	0	- Oracle data dictionary cache request misses
SES_LOGICAL_READS	25	1120	4	8	0	- Oracle session logical reads
DB_BLOCK_GETS	25	1124	4	8	0	- Oracle blocks obtained in CURRENT mode
CONSISTENT_GETS	25	1128	4	8	0	- Oracle consistent block reads requested
PHYSICAL_READS	25	1132	4	8	0	- Oracle physical reads
B_SENT_VIASQLNTOCLNT	25	1136	4	8	0	- Oracle data sent via SQL*Net (B)
BRCVDVIASQLNFROMCLNT	25	1140	4	8	0	- Oracle data received via SQL*Net (B)
SQLNRNDTRIPSTFRMCLNT	25	1144	4	8	0	- Oracle exchanged data via SQL*Net
BSENTVIASQLNTODBLINK	25	1148	4	8	0	- Oracle data sent to dblink via SQL*Net (B)
BRCVDVIASQLNFRMDBLNK	25	1152	4	8	0	- Oracle data received from dblink via SQL*Net (B)
SQLNRNDTRPTOFRMDBLNK	25	1156	4	8	0	- Oracle exchanged data with bdlink via SQL*Net
SQLNBREAKRSTTOCLNT	25	1160	4	8	0	- Oracle break/reset sent to client via SQL*Net
SQLNMSGFROMCLNT	25	1164	4	8	0	- Oracle SQL*Net messages received
SQLNMSGTOCLNT	25	1168	4	8	0	- Oracle SQL*Net messages sent
FREE_LIST_WAITS	25	1172	4	8	0	- Oracle free list waits (for free blocks)
SORTS_MEMORY	25	1176	4	8	0	- Oracle sorts performed in memory
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
ENQUEUE_WAITS         25 1208  4   8 0 -    Oracle enqueue waits
ENQUEUE_REQUESTS      25 1212  4   8 0 -    Oracle enqueue requests
ENQUEUE_RELEASES      25 1216  4   8 0 -    Oracle enqueue releases
ENQUEUE_TIMEOUTS      25 1220  4   8 0 -    Oracle enqueue tiemouts
LOGONS_CUMULATIVE     25 1224  4   8 0 -    Oracle cumulative logons

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  -1   5 1 -    Total CPU %
PROCESSOR_USER%       26   3  -1   5 1 -    User CPU %
PROCESSOR_SYS%        26   4  -1   5 1 -    System CPU %
PROCESSOR_NICE%       26   5  -1   5 1 -    CPU nice %
PROCESSOR_WAIT%       26   6  -1   5 1 -    CPU disk wait %
PROCESSOR_IDLE%       26   7  -1   5 1 -    CPU idle %
PROCESSOR_QLEN_1MIN   26   8  -1   5 1 -    Average CPU 1 min ready queue length
PROCESSOR_QLEN_5MIN   26   9  -1   5 1 -    Average CPU 5 min ready queue length
PROCESSOR_QLEN_15MIN  26  10  -1   5 1 -    Average CPU 15 min ready queue length

PROCESSOR_NUMBER2     26 2000  2   5 0 -    CPU number
PROCESSOR_NAME        26 2002  0 16 0 -    CPU name
```

C

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

GLOSSARY OF TERMS

CPU Terms

The CPU terms defined in this glossary are specific to the performance data provided by MVHOST.

capture ratio

A ratio of time a CPU spent in user mode to system/kernel mode. The capture ratio value is calculated:

$$Capture\ Ratio = (User + Real + Nice) / Sys$$

A capture ratio value equal to one or greater indicates the system is spending more than half its time on useful system work. A value of less than one means the system is spending more than half its time on overhead.

context switch

A context switch occurs when a process relinquishes a CPU.

context switch time

The amount of time a CPU spends managing context switches.

idle time

The amount of time a CPU has nothing to do.

interrupt

Interrupt s occur when a high priority event must have control of a CPU. The current running process is forced to temporarily suspend execution while the interrupt is processed. The most well known interrupt is a disk I/O completion interrupt.

interrupt CPU time

The amount of time a CPU spends processing interrupts.

nice time

The amount of time a CPU spends in user mode for a process that has a nice level of 21-40. Refer to the **nice** man page for more information.

real time

The amount of time a CPU spends in in user mode for "real time" priority processes.

system time

The amount of time a CPU spends in kernel mode which does not fall under interrupt, trap, and memory times.

trap

Similar to an interrupt. The difference is that the process currently running on a CPU causes the trap. Interrupts are not caused by the process that is interrupted.

trap time

The amount of time a CPU spends processing traps.

user time

The amount of time a CPU spends in user mode (excluding nice, negative nice, and real times).

wait time

The amount of time the CPU had processed waiting on I/O operations such as VM paging/ swaping operations, block I/O or raw I/O.

Memory Terms

The memory terms defined in this glossary are specific to the performance data provided by MVHOST.

activation

An activation occurs when a process is reactivated from a deactivation. See “deactivation” on page 327.

buffer cache

A pool of buffers in memory with the purpose of maintaining data in memory to avoid disk access.

buffer cache headers

The headers associated with each set of data within the buffer cache.

buffer cache hit

A buffer cache hit occurs when data is found in the buffer cache as opposed to disk. Read hit percentages lower than 90 can indicate the need for a larger buffer cache. Write hit percentage lower than 65 also indicates the potential need to increase the buffer cache size.

deactivation

A deactivation occurs when a process is removed from the list of runable processes because of memory or CPU contention. It will not be scheduled until it is CPU and/or memory contention subsides. Deactivations indicate CPU and/or memory bottlenecks.

desfree

The lower bound for paging. When free memory drops below desfree, paging begins.

dynamic buffer cache (DBC)

The buffer cache is configured in a manner that allows the kernel to dynamically change the buffer cache size. The buffer cache grows as a result of page faults. It shrinks as the vhand process finds unused pages.

fixed size buffer cache

The "fixed size buffer cache" means the size is fixed and will not change without a reconfiguration and recompilation of the kernel.

lotsfree

The upper bound for paging. Once paging has begun, it will continue until free memory is larger than lotsfree.

major page fault

Page faults that require disk access.

minfree

The threshold at which the system considers itself "out of memory". At this point, the system will start swapping processes.

minor page fault

Page faults that are satisfied in memory; for example, via page reclaims.

page fault

Page faults occur when a page is not found in the buffer cache; the pages are satisfied in memory and disk.

page in

A page in is a page fault that requires disk access.

page out

A page out occurs when the amount of memory required is greater than the amount available. Data within the page is written to disk and the page is made available for use. Excessive page outs indicates a memory bottleneck.

page reclaim

A page reclaim occurs when a requested page exists on the free list. A page reclaim results in a page fault being satisfied in memory.

page scan

A page scan occurs when the vhand process searches through used pages for candidates to page out. Excessive page scanning can be an indicator of a memory bottleneck.

unlockable memory

The amount of memory that cannot be locked. Physical memory that may be locked is called "lockable memory". Locked memory holds frequently-accessed programs or data structures, such as the operating system code. Lockable memory is never more than 3/4 of the available memory. Allowing too much locked memory could lead to a system deadlock. Unlockable memory is used for swapping pages but lockable memory cannot be used for swapping pages.

VM I/O

A physical disk I/O that is a result of virtual memory management.

Disk Terms

The disk terms defined in this glossary are specific to the performance data provided by MVHOST.

logical I/O

An I/O that is satisfied in memory or disk.

physical I/O

An I/O that requires disk access. Physical I/Os include User, Sys, VM, and RAW.

raw I/O

A disk I/O that bypasses the buffer cache.

service time

The amount of time an I/O request takes to be serviced once it begins to be processed by the disk (removed from the disk queue), excluding wait time.

system I/O

A disk I/O that is the result of system overhead in managing files (i.e., super-block reads/writes).

user I/O

A disk I/O that is a result of user file reads/writes.

virtual memory I/O

A disk I/O that is a result of virtual memory management.

Network Terms

The network terms defined in this glossary are specific to the performance data provided by MVHOST.

collision

A network collisions occurs when the system sends a packet at the same time as another system. When collisions occur, the system dispatching them waits a random amount of time to retransmit the packet. Excessive collision percentages indicate a network bottleneck.

Process Terms

The process terms defined in this glossary are specific to the performance data provided by MVHOST.

priority

The CPU scheduling priority of the process. High priority numbers indicate low priority status, and vice versa.

think time

The amount of time a process is waiting for user input.

timeslice

The maximum amount of time one process is allowed to run before the scheduler searches for other higher priority processes. The process may give up the CPU sooner if it enters kernel mode.

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