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CLEARVIEW TECHONOLOGIES

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### **ClearView for AIX version D.06e**

Rodica Lupea 2/23/08

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# **CLEARVIEW AGENT AND HOST FOR AIX**

# Introduction

ClearView is the performance monitoring and management application for the following host platforms: HP-UX, Solaris, Linux, AIX, and Windows.

This software collects and measures HP-UX, Solaris, Linux, and AIX performance data and provides system managers comprehensive, real-time and historical information in easy-to-read displays.

ClearView is a full-featured, performance monitoring and managing tool that has a powerful graphical client. ClearView Console runs on Windows systems. ClearView Technologies's popular graphic reporting tool, ClearView Gallery, is available as an add-on to the ClearView suite.

ClearView for AIX comprises the following components:

#### 1 ClearView Agent for AIX

ClearView Agent is the software that resides on a host to collect data, store it into SL files, and serve it on demand to ClearView clients. The cvl ogd daemon collects data and stores it into SL files. Also, there is a cvdatad daemon to read the data and serve it to clients.

#### 2 ClearView Host for AIX

ClearView 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. The program is named cvhost, located in /opt/cl rvi ew/bi n by default.

#### 3 ClearView Console

ClearView Console is the graphical client program that runs on a Java virtual machine. This is currently available for Windows PC clients. It has integrated an alerting module that runs on a Java virtual machine on a Windows system.

## Installing ClearView Agent and Host for UNIX

The ClearView for UNIX Installation and Setup Instructions provide detailed information to guide you in installing ClearView Agent and Host for UNIX onto your HP 9000, Linux, AIX, or Sun system.

To install your product(s) you will need to download the software from the ftp site provided on the web page of ClearView Technologies.

For more information about installation and setup instructions for AIX, see "Installation and Setup for AIX" on page 5.

## Installing ClearView Console

The Installation and Setup Instructions for the ClearView Console provide detailed information to guide you in installing ClearView. You can install the console on as many workstations as you require.

No license code is required to run the ClearView Console.

# **Product Support**

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

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

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# **Product Documentation**

### **User's Guide**

This document accompanies the ClearView for AIX 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 AIX operating environment.

### **Online Help System**

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

# **INSTALLATION AND SETUP INSTRUCTIONS**

# Installation and Setup for AIX

The following instructions will guide you through the installation and setup of ClearView Agent and Host on your AIX system.

### **Extracting the Setup Program**

To extract the ClearView Agent and Host for AIX 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 Change the current working directory to /tmp:

cd /tmp

3 Make a new directory under / tmp named "cv":

mkdir cv

4 Change the current working directory to /tmp/cv:

cd cv

5 Use the tar command to extract the setup program:

tar xf /ClearView/cvAgent\_AlX/cvAgent-AlX-?.???.tar ./cvsetup

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

#### Running the Setup and Installation Script (AIX)

The installation script is contained in the cvsetup 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." The current user login should be the root user, the current working directory should be /tmp/cv, and the cvsetup file should be present in the directory.

To set up ClearView Agent and Host for AIX using the cvsetup installation script:

- 1 Stop all ClearView Technologies 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 cvsetup script:
  - . /cvsetup /ClearView/cvAgent\_AIX/cvAgent-AIX-?. ???. tar
- 3 If this is the first ClearView Technologies 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 "clrview" and ask what number to set the group ID to. The default will be the highest existing group ID plus one. If ClearView 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 cvsetup script, create the "clrview" 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/clearview) is not used, the CV\_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/clearview) is not used, the CV\_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/clearview) is not used, the CV\_VAR\_PATH environment variable must be set to allow the application to run correctly and log data.

- 7 The ClearView installer will prompt during install time whether you would like the rc init file installed on your system. Type a '**y**' or '**Y**' followed by Return to choose this option. To install the script manually, simply follow the steps as outlined for the appropriate operating environment, below.
- 8 The command prompt will be returned and now the installation files may be removed.

Use the rm command with the -r parameter (rm -r) to remove the temporary cv 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/cv

9 Congratulations! ClearView Agent and Host for AIX are now installed and ready to run! Please continue with the Startup section, below. INSTALLATION AND SETUP INSTRUCTIONS

Startup

#### .

## Startup

To run the ClearView for AIX program, add CV\_OPT\_PATH/bin (/opt/clearview/bin by default) to your PATH.

For ksh, sh, and similar shells, use:

- \$ PATH=\$PATH: /opt/clearview/bin
- \$ export PATH

for csh and similar shells use:

#### % setenv path \$path:/opt/clearview/bin

You can now run the "cvlogd" collector daemon, the "cvdatad" data daemon, the interactive "cvhost" program, and the "cvlogx" historical performance data extraction utility from the command line. For example:

- \$ cvlogd -c
- \$ cvdatad
- \$ cvhost
- \$ cvl ogx



**NOTE** Before viewing system performance data with the ClearView Console, both the cvlogd and cvdatad daemons must be started on the host system.



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



# **TECHNICAL OVERVIEW**

# **ClearView Architecture**

ClearView is comprised of several programs and files. The relationships between the most significant programs and files are illustrated in Figure 3.1 and described on page 10.



Figure 3.1 ClearView for AIX relationships between key processes and files

ClearView utilizes the following executable programs: CVHOST, CVLOGD, CVMID, CVLOGX, and CVDATAD.

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

CVLOGD 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 clearview.log file.

The CVMID 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 CVMID, it will be executed automatically by any process that requires it. CVMID is a daemon process, so it executes in the background and does not interact with the user. Any informational, warning, and error messages from CVMID will be stored in the clearview.log file.

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

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

- \*.txt, ASCII text, to export data to spreadsheet applications, such as MS Excel.
- \*.pfg, to export data to ClearView Gallery, a trend analysis and graphical reporting applications by ClearView Technologies.

For information about ClearView Gallery, please refer to the ClearView Gallery User's Guide or contact your Account Manager (see "ClearView Technologies Sales Team" on page 3).

CVDATAD is the daemon process that reads the data and serves it to clients over a network connection.



**IMPORTANT** CVMID, CVHOST, and CVLOGD should not run longer than 24 continuous hours. CVHOST (with CVMID) is an interactive program and it should be shut down daily. CVLOGD can be configured to run repeatedly using the -c command line switch (see "-c Command Line Switch" on page 172) or cron.

# **OSF/1 Directory Hierarchy**

ClearView version D.06 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.

3

## **Directories**



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

For example:

CV\_OPT\_PATH=/opt/clearview

Where:

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- CV\_OPT\_PATH is the environment variable
- /opt/clearview is the default directory location

In accordance with the OSF/1 standard, ClearView Technologies files are located in three different directories, which are described in the next table.

 Table 3.1
 ClearView directory locations

Directory	Description
CV_ETC_PATH=/etc/opt/ clearview	Contains host-specific configuration files that can be modified by the user.
CV_OPT_PATH=/opt/clearview	Contains host-specific, third-party files that do not generally change.
CV_VAR_PATH=/var/opt/ clearview	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).

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### Table 3.2ClearView subdirectory listings

Directory	Subdirectory	Description
/etc/opt/clearview/	cfg	Contains configuration files used by the ClearView Technologies products. Initially, these will be the same files found under / opt/clearview/newcfg, except they are actually used by the product and can be modified by the user.
	rpt	Contains CVLOGX report files.
/opt/clearview/	bin	Contains the clearview binary files.
	contrib	Contains contributed files (helpful files that are not necessary to run ClearView Technologies products).
	lib	Contains the clearview library files.
	newcfg	Contains the configuration files as distributed by ClearView Technologies (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/clearview for more information.
/var/opt/clearview/	log	Contains log files.
	tmp	Contains temporary files.

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**Files** 

The following file listings are grouped by directory location.

Table 3.3	ClearView file listings
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Location	File	Description	
/etc/opt/clearview/ 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/clearview/	reprtdef	Contains compiled CVLOGX reports.	
rpt/	*.rpt	Contains CVLOGX reports.	
/opt/clearview/bin/	kiclean	An executable program that turns off kernel measurements and cleans up the interprocess communication (IPC) structures created by CVMID.	
	cvcheck	A program that checks the license status.	
	cvcrypt	A program	
	cvextnd	An executable program used to extend the demonstration license expiration date.	
	cvkill	An executable program that kills any ClearView daemon.	
	cvmid	A daemon that periodically reads process information from pstat and saves it.	

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Location	File	Description	
/opt/clearview/bin/	cvtrap	A script to send SNMP traps from the advice module to an event browser.	
	cvdatad	A daemon that reads the data and serves it to clients over a network connection.	
	cvhost	The character-based real-time performance tool.	
	cvlogd	A daemon that creates historical performance files.	
	cvlogx	A character-based tool to view the historical files and extract them for other formats (such as ClearView Gallery data files (*.pfg)).	
	cvrcom	The CVLOGX report compiler.	
/opt/clearview/lib/	itemlist	A list of all data items logged in historical files and usable by kip, advice, and ppoints.	
	alert_config	The configuration file for ClearView alert data and alert messages.	
	logxhelp	The CVLOGX online help file.	
	cvgitems	A list of ClearView Gallery extraction items.	
	cvhelp	The CVHOST online help file.	
	pwsalias	A list of all stored item class and names.	
	pwsitems	A list of data items returned to cvdatad clients.	
/opt/clearview/ newcfg/	cfg	The advice, ppoints, kip, and holidays configuration files as distributed by ClearView Technologies (before user customization). See /etc/opt/clearview/cfg for descriptions.	
	rpt	The reprtdef and *.rpt files as distributed by ClearView Technologies (before user customization). See /etc/opt/clearview/rpt for descriptions.	

Location	File	Description	
/var/opt/clearview/	SLLOGCAT	The log file catalog.	
log/	SL*	Contains historical log files.	
/var/opt/clearview/ 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.	
	clearview.log	Contains messages from ClearView daemons.	
	cvmid.pid	Contains the CVMID process ID.	
	cvlogd.pid	Contains CVLOGX process ID.	

# Security

UNIX software products from ClearView Technologies utilize a system group for security purposes. The "clrview" group is created during the software installation process.

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

- Modify existing ClearView reports.
- Execute kiclean to remove unnecessary overhead and used memory by CVMID when it is not able to perform cleanup prior to the last exit (when CVMID is killed using the 9 signal (kill -9 PID)).

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

# **ENVIRONMENT VARIABLES AND WORKLOAD**

# GROUPS

# **Environment Variables**

Each of the environment variables are outlined in Table 4.1. Instructions to set the environment variables are provided in the next section, "Setting the Environment Variables" on page 17.

Variable Name	Default Value	Accepted Value
PATH	\$PATH:/opt/clearview/ bin	<pre>\$PATH:/<custom directory="" name="">/bin</custom></pre>
TERM	N/A	N/A
CV_OPT_PATH	/opt/clearview	An existing, fully- qualified directory
CV_ETC_PATH	/etc/opt/clearview	
CV_VAR_PATH	/var/opt/clearview	
CV_TIME_SEP	: (colon)	Any single alpha-
CV_DATE_SEP	/ (forward slash)	numeric character
CV_DECIMAL_INDICATOR	. (period)	
CV_DATE_FMT	MDY (month day year)	MDY, DMY, or YMD

 Table 4.1
 ClearView environment variables

## **Setting the Environment Variables**

Prior to running the ClearView programs, set the appropriate environment variables:

• PATH

- TERM
- CV\_OPT\_PATH

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

CV\_ETC\_PATH

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

CV\_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 ClearView, it is necessary to set the PATH environment variable:

 If the ClearView application files were placed in the default directory (/opt/clearview) during installation, add the following line to your .profile:

#### PATH=\$PATH:/opt/clearview/bin

 If the ClearView 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 ClearView, please ask your system administrator for assistance.

### Setting the TERM Environment Variable

Prior to running ClearView, 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 CV\_OPT\_PATH, CV\_ETC\_PATH, and CV\_VAR\_PATH

In accordance with the OSF/1 standard, ClearView Technologies files are located in three different directories, which are listed in Table 4.2.

If the ClearView 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.
Workload Groups

Variable Name	Accepted Value	Default Value					
CV_OPT_PATH	An existing, fully-qualified directory	/opt/clearview					
CV_ETC_PATH		/etc/opt/clearview					
CV_VAR_PATH		/var/opt/clearview					

 Table 4.2
 ClearView custom directory PATH environment variables

# **Setting the Localization Environment Variables**

Four specific environment variables are available in ClearView 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         ClearView localization environment variable	es
---------------------------------------------------------------	----

Variable Name	Accepted Value	Default Value	
CV_TIME_SEP	Any single alpha-	: (colon)	
CV_DATE_SEP	numeric character	/ (forward slash)	
CV_DECIMAL_INDICATOR		. (period)	
CV_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/clearview/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	ClearView 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.

# **CVHOST**

# The Real-time Performance Data Utility

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

Figure 5.1 shows the Global Summary screen, the initial data screen displayed in ClearView.

							- GLI	DBAL -							
		2	10	20	30	48	50	68	78	80	90	100			
uruş wint /c		<u> </u>	02								3				
10/2															
1475						PR	iers:	с спин	0 B V						
10	Напе					User Na	ane	ITY	mni	CPU%	Hice	Pri	BSS/1	tize	Sta
16898	15					flaviu	5 1	sts/2		<	RT	68	28/	72	DEA
17878	15					flavius	5 1	ets/2		<	RT	6.8	38/	112	DEAL
17184						flavius	s '			<	RT		8/	528	DEA
4192	synce					root				0.1	RT	68	53/1	1428	RUN
8010	[rpc.	100	kd]			root				0.1	RT	68	4/	29	RUH
0	[swap	per	1			root				0.1	RT	16	57	20	RUN
1548	[gi1]					root				8.2	RT	37	14/	68	RUN
17218	cvnid	1				gabi		its/1		8.2	RT	26	9388/	34H	RUH
20772	cvlog	d				gabi		pts/1		0.9	RT	68	2398/9	5740	RUH
19898	Find					Flavius	5 1	pts/2		15.2	RT	67	63/	248	RUN
					S¥	STEH PE	ERFOR	ENANCE	ADV	16E					
he CPI	Mas	use	d a 1	tetal	0F 9	2.7 af	its	capac	ity	during	g thi	5 1N	erval		<010

Figure 5.1 CVHOST Global Summary screen

# **Data Screens**

The CVHOST application generates a variety of useful data screens. Each screen is listed in "CVHOST Screen Selection Menu" on page 31, then described in detail in Chapters 10 through 28. The conventions used in CVHOST data screens are listed and described in the next table.

	Table 5.1	ClearView 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 ClearView, because the value is less than or greater than the eligible range.
[nnn.n ]	When applicable and possible, cumulative averages are displayed in brackets ([]) next to the current interval values. For further information about cumulative averages, see "Display cumulative stats" on page 37.
В	A "B" indicates the corresponding value is measured in bytes.
К	A "KB" indicates the corresponding value is measured in KiloBytes.
М	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.

# **CVHOST MAIN COMMANDS**

# **The Main Commands Screen**

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

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

```
MAIN CONNENDS
Navigation Keys:
 g - Go to screen
                                             s - Screen nenu
Detail Screen Quick Keys:
 P - Process detail
                                            F - Process file usage
 M - Process memory usage
W - Volume group detail
                                            W - Workload detail
                                             D - Disk detail
 2 - Hog process zeen
Action Keys:
 u - Update interval data
p - Print screen
                                            r - Reset totals to zero
                                            F - Toggle update intervals on/off
<u>Other:</u>
 H - Hain on-line help
0 - Hain option menu
                                h - Context sensitive help
? - 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 CVHOST Main Commands screen

To return to the CVHOST 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 CVHOST display screen.



NOTE All command keys are case-sensitive.

# **Main Commands**

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

# **Navigation Keys**

 Table 6.1
 CVHOST navigation command keys

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

# **Detail Screen Quick Keys**

Table 6.2

CVHOST Detail screen command keys

Кеу	Command	Description
Ρ	Process detail	Type <b>P</b> (upper case) from any CVHOST 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).

Main Commands

•

Кеу	Command	Description
F	Process file usage	Type <b>F</b> (upper case) from any CVHOST 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).
М	Process memory usage	Type <b>M</b> (upper case) from any CVHOST display screen to view the Process Memory Regions screen for a specific process. Select the specific process at the secondary prompt.
V	Volume group detail	Type <b>V</b> (upper case) from any CVHOST display screen to view the Volume Detail screen for a specific volume. Select the volume from the choices displayed in the dialog box.
Z	Hog process zoom	Type <b>Z</b> (upper case) from any CVHOST 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
 CVHOST action command keys

Кеу	Command	Description
u	Update interval data	Type <b>u</b> from any CVHOST 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 37.
r	Reset totals to zero	Type <b>r</b> from any CVHOST 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 39.
р	Print screen	Type $\mathbf{p}$ from any CVHOST 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.

User's Guide

Кеу	Command	Description
f	Toggle update intervals on/off	Type <b>f</b> from any CVHOST display screen to postpone (freeze) data updates for all CVHOST screens until the f key is pressed again (to un- freeze).

# **Configuration Keys**

Table 6.4

CVHOST configuration command keys

Кеу	Command	Description
0	Main option menu	Type <b>o</b> from any CVHOST display screen to display the CVHOST Main Option Menu.

# **Other Keys**

CVHOST (other) command	keys
------------------------	------

Key(s)	Command	Description
Н	Main on-line help	Type <b>H</b> (upper case) from any CVHOST display screen to display the main online help facility for CVHOST. Follow the instructions provided on the Welcome to the CVHOST Help Facility screen to navigate throughout the help system.
h	Context- sensitive on- line help	Type <b>h</b> (lower case) from any CVHOST display screen to display the context-sensitive online help for the current screen or menu.
?	Command help	Type ? (a question mark) from any CVHOST display screen to display a list of main command keys in the Main Commands screen.
Ctrl+I	Refresh screen	Press the <b>Ctrl+I</b> shortcut keys from any CVHOST display screen to refresh the screen.
е	Exit program	Type <b>e</b> from any CVHOST display screen to exit the CVHOST 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 CVHOST display screen.

```
NODITIONAL COMMANDS

-/+ - Hove up/down one line in scrollable area

D - Options for this scroon

t - Toggle graphic/tabular display

y - Toggle extended process display

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

**Figure 6.2** *CVHOST Additional Commands screen (example)* 

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

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

# **Screen-Specific Navigation Commands**

Key(s)	Command	Description
-	Move up in scrollable area	Type the hyphen character (-) from any CVHOST 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.

 Table 6.6
 CVHOST screen-specific navigation command keys

User's Guide

Key(s)	Command	Description
+	Move down in scrollable area	Type the plus character (+) from any CVHOST 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

CVHOST screen-specific configuration command keys

Кеу	Command	Description
0	Options for this screen	Type <b>O</b> (upper case) from any of the following screens to display the CVHOST Main Option Menu screen.

# **Screen-Specific Action Commands**

Table 6.8

CVHOST screen-specific action command keys

Кеу	Command	Description	
С	Toggle NFS client/server display	Type <b>c</b> from the NFS Summary screen to toggle between NFS client data and NFS server data	
n	Select new	• Type <b>n</b> from the Process Detail screen to select a new process.	
		<ul> <li>Type n from the Workload Detail screen to select a new workgroup.</li> </ul>	
t	Toggle graphic/tabular display	Type <b>t</b> from most CVHOST display screens to display screen information in either a graphical or tabular format (if the alternative format is available).	
x	Toggle NFS call rates/ percentages display	Type <b>x</b> from the NFS Summary screen to toggle between NFS call rates and NFS call percentages.	
у	Toggle extended process display	Type <b>y</b> from the Global or the Workload Detail screen to turn the Extended Process line display on or off.	

# **CVHOST SCREEN SELECTION MENU**

# **Screen Selection Menu Screen**

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

c CPU Sunnary t Terminal Sunnary m Memory Sunnary U Volume Detail d Disk I/O Sunnary y System Configuration r Disk Adapter Sunnary p Pulse Points v Volume Sunnary k Workload Definitions s File System Space Sunnary P Process Detail 1 Metwork Sunnary F Process File Usage m MFS Sunnary M Process Memory Regions C Processor Sunnary	-			user summary
m Henory Sunmary U Volume Detail d Disk I/O Sunmary y System Coofiguration r Disk Adapter Sunmary p Pulse Points v Volume Sunmary k Workload Definitions s File System Space Sunmary P Process Detail 1 Metwork Sunmary F Process File Usage m MFS Sunmary M Process Memory Regions C Processor Sunmary	C CPU	Sunnary	t	Terminal Sunnary
d Disk I/O Summary y System Configuration r Disk Adapter Summary p Pulse Points v Dolume Summary k Workload Definitions s File System Space Summary P Process Detail 1 Network Summary F Process File Usage m HFS Summary H Process Memory Regions C Processor Summary	n Hen	ory Summary	U	Volume Detail
r Disk Adapter Sunnary p Pulse Points v Volume Sunnary k Workload Definitions s File System Space Sunnary P Process Detail 1 Hetwork Sunnary F Process File Usage m MFS Sunnary H Process Memory Regions ¢ Processor Sunnary	d bis	k I/O Summary	y	System Configuration
<ul> <li>Volume Summary</li> <li>K Norkload Definitions</li> <li>File System Space Summary</li> <li>P Process Detail</li> <li>Hetwork Summary</li> <li>HFS Summary</li> <li>HFS Summary</li> <li>Process Memory Regions</li> <li>C Processor Summary</li> </ul>	r Dist	k Adapter Sunnary	P	Pulse Points
s File System Space Sunnary P Process Betail 1 Metwork Summary F Process File Usage m MFS Sunnary N Process Memory Regions C Processor Sunnary	v Vol	une Sunmary	k	Norkload Defintions
1 Hetwork Summary F Process File Usage m HFS Summary H Process Hemory Regions C Processor Summary	s Fil	e System Space Summary	Р	Process Detail
n HFS Sunmary H Process Memory Regions © Processor Summary	1 Net	work Summary	F	Process File Usage
C Processor Summary	n HFS	Sunnary	н	Process Nemory Regions
	C Pro	cessor Summary		

Figure 7.1 CVHOST Screen Selection Menu

To return to the CVHOST 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 CVHOST Screen Selection Menu command keys

Key	Screen Title	Description
g	Global Summary	Displays a basic, overall picture of your system's performance. See "CVHOST Global Summary" on page 79.
С	CPU Summary	Reports the general state of one or more CPUs. See "CVHOST CPU Summary" on page 101.
m	Memory Summary	Provides a more detailed look at memory performance data. See "CVHOST Memory Summary" on page 107.
d	Disk I/O Summary	Displays a summary of performance data for all disks on the system. See "CVHOST Disk I/O Summary" on page 111.
r	Disk Adapter Summary	Provides a summary of performance data for each disk adapter on the system. See "CVHOST Disk Adapter Summary" on page 115.
v	Volume Summary	Displays information for each logical volume and volume group. See "CVHOST Volume Summary" on page 117.
S	File System Space Summary	Shows the block and fragment size, space usage, and inode usage for each file system. See "CVHOST File System Space Summary" on page 119.
I	Network Summary	Displays network performance information, including protocol data and network interface information. See "CVHOST Network Summary" on page 121.
n	NFS Summary	Provides information about the Network File System (NFS). See "CVHOST NFS Summary" on page 125.

### CVHOST SCREEN SELECTION MENU

Screen Selection Menu Screen

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Кеу	Screen Title	Description
С	Processor Summary	Provides information on the processor number specified by the user. In case there is only one processor on the system, the screen will automatically display the data for that processor. See "CVHOST Processor Summary" on page 137.
u	User Summary	Reveals how each user is utilizing system resources. See "CVHOST User Summary" on page 141.
t	Terminal Summary	Displays information about the activity of the individual terminals. See "CVHOST Terminal Summary" on page 143.
V	Volume Detail	Provides detailed performance numbers for a specified volume group or logical volume. See "CVHOST Volume Detail" on page 145.
У	System Configuration	Shows significant system configuration parameters. See "CVHOST System Configuration Summary" on page 149.
р	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 "CVHOST Pulse Points Summary" on page 153.
k	Workload Definitions	Displays the application workload definitions (workdefs) file. See "CVHOST Workload Definitions" on page 155.
Р	Process Detail	Displays the performance of one process in detail. See "CVHOST Process Detail" on page 157.
F	Process File Usage	Lists all of the files currently accessed by a process. See "CVHOST Process File Usage" on page 163.
М	Process Memory Regions	Displays information about the process' memory and virtual memory address space usage. See "CVHOST Process Memory Regions" on page 167.



# **CVHOST MAIN OPTION MENU**

# **CVHOST Main Option Menu Screen**

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

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

```
WHIN OPTION HENU

1) Screen refresh interval in seconds (60)

2) Display cummulative stats (N)

3) Display Key Indicators of Performance (N)

4) Display option (1-Graphic)

5) Company name ()

6) Detail display options (SUBMENU)

Which Option: _
```

Figure 8.1 CVHOST Main Option Menu

# **Main Option Commands**

To modify a main option, either temporarily or permanently:

- 1 Type the option command key from the CVHOST 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 CVHOST Main Options Menu screen.
- 4 At the Should these options be saved permanently? prompt:
  - Press the Enter key to return to the CVHOST 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 CVHOST 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 60 seconds (1 minute).



Figure 8.2 CVHOST banner: current interval (I: 01:00)

#### Setting the Length of the Interval

The CVHOST 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** CVHOST 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 CVHOST 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 CVHOST display, type u at the prompt.

The current interval indicator in the CVHOST banner (I: mm:ss) marks the time that passed from the beginning of the interval to the second the data update occurred. The example in Figure 8.3 shows that the interval data was updated after the first 53 seconds (I: 00:53) of the interval. The interval data will be updated again according to the refresh interval rate set in the CVHOST Main Options Menu.

ClearView D.06e	bluebird	FR1,	31	HAR	2005,	01:37	E:	00:13:57	1:	00:53	
	0.000 1			0		(7 00 7 2)					-

Figure 8.3 CVHOST banner: current interval after update (I: 00:53)

### **Display cumulative stats**

Cumulative statistics are accumulated from the instant the CVHOST 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 CVHOST 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.

ClearView D.@ód1	bluebird		FRI. DISK	24 1/0	FEB 201 SUNNAP	16 . IV	10:31		E: 00:00	:55	1: 00:03
Deu	1/0%		10/5		Qlen		Util%		Avg S Read	ize	(KB) Write
cd0	0		0		٠		0				0
hdiskO	[ 0]	(	0] 51	(	() ()	I.	0]	l	*] 736.7	t	7.2
	[ 100]	ſ	5]	ſ	Ø]	ſ	0]	ſ	12525]	ſ	289]
TOTALS	100	,	51			,	8		736.7		7.2
	1 1991		21	L	*1		01	L	12525]	L	2641
Enter connand: _											

Figure 8.4 CVHOST 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 CVHOST 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 CVHOST Enter command: prompt from any CVHOST screen. This reset function also updates the current interval (see "Updating Interval Data" on page 37).

## **Display Key Indicators of Performance**

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



#### Figure 8.5 CVHOST Key Indicators of Performance (KIP) line

The configuration of the KIP line is discussed in "Key Indicators of Performance (KIP) Line" on page 83.

#### **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 CVHOST 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 CVHOST 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 CVHOST screens, reports or output. It can be added.

#### Adding a Company Name to the CVHOST Banner

- 1 From the CVHOST 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 CVHOST banner.



Figure 8.6 CVHOST Company Name example (ClearView Technologies)

# **Detail display options (SUBMENU)**

To access the Detail display options submenu screen:

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

Each of these submenus is discussed further in the next section, "Detail Display Options."

# **Detail Display Options**

# **Detail display options Submenu Screen**

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

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

Detail Display Options

```
.
```

```
WMIIN OPTION HENU
Detail display options
3) Elobal display options (SUBMENU)
3) Pulse Points display options (SUBMENU)
4) User display options (SUBMENU)
5) Terminal display options (SUBMENU)
```

Figure 8.7 CVHOST 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 42.

Process display options (SUBMENU)

See "Process display options Submenu Screen" on page 48.

Pulse Points display options (SUBMENU)

See "Pulse Points display options" on page 53.

• User display options (SUBMENU)

See "User Display Options" on page 56.

• Terminal display options (SUBMENU)

See "Terminal Display Options" on page 60.

2 Press the Enter key.

# **Global Display Options**

# **Global display options Submenu Screen**

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

- 1 Type o from the CVHOST Enter command: prompt to view the CVHOST Main Option Menu screen.
- 2 From the CVHOST 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).

```
While Option HERU
Detail display options
Elobal display options
) Display advice messages (Y)
2) Display informational advice messages (Y)
3) Display OPU information on global screen (Y)
4) Display memory information on global screen (Y)
5) Display miscellaneous information on global screen (Y)
6) Display miscellaneous information on global screen (Y)
7) Maximum number of disks to display (W-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 CVHOST 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 CVHOST Main Options Menu screen.
- 6 At the Should these options be saved permanently? prompt:
  - Press the Enter key to return to the CVHOST program without saving the modifications permanently.
  - Type Y (Yes) to save the changes permanently and then press the Enter key.

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

### **Display advice messages**

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

SYSTEM PERFORMANCE ADVICE The CPU was used a total of 4.4 of its capacity during this interval (CI#1) This interval's 'hog' process is (PID 4192) with 1.0% of the CPU (PI#1) Problematic memory utilization indicated by a moderate memory load (HE#1)

Figure 8.9 CVHOST Global Summary screen: SYSTEM PERFORMANCE ADVICE messages

Advice messages are discussed further in "SYSTEM PERFORMANCE ADVICE" on page 96.

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

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

#### **Suppressing Informational Advice Messages**

To suppress informational advice messages from the Global Summary screen:

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

This option is available only when advice messages are displayed in the Global Summary screen. Press the Enter key.

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

### **Display CPU information on global screen**

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

```
------ CPU UTILIZATION ----- CPU HISC ----- CPU HISC ----- CPU HISC ----- 0.8[ <]
TOTAL BUSY: 4.8[ 5] | Capture Ratio: 0.8[ <]
User: 2.1[ 2] Sys: 2.7[ 3] | 1/5/15 Load Avg%: 0 0 0
Wait: 4.9[ 5] Idle: 90.3[ 89] |
```

Figure 8.10 CVHOST Global Summary screen: CPU statistics

Global CPU statistics are discussed in "CPU UTILIZATION" on page 91 and "CPU MISC" on page 92.

#### 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.

						HEH/UN					
Page	Outs:	4.3[	3]/s	Page	Ins:	8[	<]/s	Minor	Pg Faults:	8(	0]/s
Swap	Outs:	0(	0]/s	Swap	Ins:	8[	0]/s	Major	Pg Faults:	8	0]/s

Figure 8.11 CVHOST Global Summary screen: MEM/VM statistics

Global memory statistics are discussed in "MEM/VM" on page 93.

#### **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.

				итзе	 		
#Sessions:	2	#Procs:	58	#Wait I/0:	Transactions:	9[	<]/s
BActive:		MActive:		#Swap:			
				-			

Figure 8.12 CVHOST Global Summary screen: MISC statistics

Global miscellaneous statistics are discussed further in "MISC" on page 94.

#### **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.

			D	15				
Disk hdiskØ	10/s 7	102	Qlen Ø	ł	Disk	10/5	102	Qlen

Figure 8.13 CVHOST Global Summary screen: DISK statistics

Global disk statistics are discussed further in "DISK" on page 95.

#### **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.

		PROC	ESS SUNNAR	¥					
10	Hane	User Han	le 117	CPU%	Nice	Pri	R\$\$/\$	ize	State
1548	[gi1]	root		0.2	RT	37	14/	68	RUN
16988	cunid	gabi	pts/0	0.3	BT	26	9396/	85 H	RUN

Figure 8.14 CVHOST Global Summary screen: PROCESS SUMMARY

Global process statistics are discussed further in "PROCESS SUMMARY" on page 85.

#### 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.

		VORKLOAD SUMMARY	
Hun	Nane	CPU Z	User CPU 🎗
1	INTERACT	0[ 0]	e[ e]
2	BATCH	6 9	8[ 8]
3	DAEHON	0[ 0.5]	8[ 8]
a l	DEFAULT	6 9	8[ 8]

Figure 8.15 CVHOST Global Summary screen: WORKLOAD SUMMARY

Workload statistics are discussed further in "WORKLOAD SUMMARY" on page 90.

#### **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 CVHOST screen:

- 1 Type **o** from the CVHOST Enter command: prompt to view the CVHOST Main Option Menu screen.
- 2 Ensure the Display process information option is enabled.
- 3 From the CVHOST 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.

```
MMIN OPTION HENU
Detail display options
Process display options
1) Display total and 1/O percentage instead of read/write counts (M)
2) Display total and 1/O percentage instead of read/write counts (M)
3) Display only active processes (Y)
4) DFU 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 (A-CPU time)
10) Display processes sorted in accending order (Y)
11) Naxinum number of processes to display (#-ALL) (0)
Which Option:
```

Figure 8.16 CVHOST 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 CVHOST Main Options Menu screen.
- 6 At the Should these options be saved permanently? prompt:
  - Press the Enter key to return to the CVHOST 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.

	PID Name	User N	ane TTV	CPU2 H	tice	Pri	RSS/Size	Stat
Headings	 Group Hane	<b>BRd</b>	BWr	nlup		nsvap		CPU(ms
loudingo	17960 mvdatad	gabi	pts/8	8	RT	6.8	331/1568	RUN
	INTERACT		0			0		
Process Line –	 18674 modatad	gabi	pts/8	8	RT	6.8	162/ 888	RUN
	INTERACT	(	0			0		
	18786 telnetd	root		8	RT	6.8	121/ 464	RUN
Extended	 DAEHON		0			0		
Process Line								

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

#### Extending the PROCESS SUMMARY

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

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

### **Display only active processes**

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

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



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

#### **Displaying Both Active and Inactive Processes**

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

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

### CPU percentage required for process display

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

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



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

#### Setting the CPU Percentage Required for a Process to Display

To set the minimum CPU percentage:

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

### **Display interactive processes**

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

#### Suppressing Interactive Processes

To exclude interactive processes from the screen display:

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

### **Display non-interactive processes**

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

#### Suppressing non-interactive Processes

To exclude non-interactive processes from the screen display:

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

### Display processes which have died

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

#### **Suppressing Dead Processes**

To exclude dead processes from the screen display:

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

### **Process login filter**

The default login filter (.\*) allows all users and all processes to be displayed on the CVHOST 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 8.1). Press the Enter key.

Option	Sort Option Description	Column
1-PID#	Sort by process identification number.	PID
2-Logon terminal	Sort by terminal logon.	Tty
3-Workload group	Sort by the application workload group to which the process belongs. (Displays in the WORKLOAD SUMMARY section of the Global Summary screen.)	N/A
4-CPU time	Sort by the percentage of CPU time utilized by the process in the current sample interval.	CPU%
5-Priority	Sort by process priority.	Pri

 Table 8.1
 CVHOST process sort options

### 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:

- 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 CVHOST display screen:

- 1 Type **o** from the CVHOST Enter command: prompt to view the CVHOST Main Option Menu screen.
- 2 Ensure the Display process information option is enabled.
- 3 From the CVHOST Main Option Menu screen. select Detail display options and press Enter.
- 4 From the Detail display options submenu screen, select Pulse Points display options and press Enter. The Pulse Points display options submenu screen will display (Figure 8.18).

User's Guide

```
WMIN OPTION HENU
Detail display options
Fulse Points display options
1) Display CPU stats (V)
2) Display memory stats (V)
3) Display disk 1/0 stats (V)
4) Display network stats (V)
5) Display miscellaneous stats (V)
```

Figure 8.18 CVHOST 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 CVHOST Main Options Menu screen.
- 6 At the Should these options be saved permanently? prompt:
  - Press the Enter key to return to the CVHOST 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** 

	Indicator	I Gre	en I	Yellow	Red   Connents
Statistics	CPU Busy % Run-Q Average	1.3[	1.4]	93.6[ 91.5]	
ory Stats	Page Dut Rate Swap Dut Rate	1.5[ 0[	1.3] 0]		/sec /sec
/O Stats	Average Q-Length Disk Utilization % Disk I/O Rate (/sec)	8[ 8[ 4[	8] 8] 3]		System Vide System Vide System Vide
ork Stats	Hetwork Collision %	\$[	0]		System Wide

CPU statistics are displayed in the Pulse Points screen.

Figure 8.19 CVHOST Pulse Points screen

### **Suppressing CPU Statistics**

To suppress CPU statistics from the Pulse Points screen:

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

## **Display memory stats**

Memory statistics are displayed in the Pulse Points screen (refer to Figure 8.19).

#### **Suppressing Memory Statistics**

To suppress memory statistics from the Pulse Points screen:

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

## **Display disk I/O stats**

Disk I/O statistics are displayed in the Pulse Points screen. To see an example of this screen, refer to Figure 8.19 on page 55.

#### **Suppressing Disk I/O Statistics**

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

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

## **Display network stats**

Network statistics are displayed in the Pulse Points screen.

#### Suppressing Network Statistics

To suppress network statistics from the Pulse Points screen:

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

## **Display miscellaneous stats**

Miscellaneous statistics, when available, are displayed in the Pulse Points screen. (Miscellaneous statistics are not displayed in the example in Figure 8.19 on page 55.)

#### 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 CVHOST display screen:

- 1 Type **o** from the CVHOST Enter command: prompt to view the CVHOST Main Option Menu screen.
- 2 Ensure the Display process information option is enabled.
- 3 From the CVHOST Main Option Menu screen, select Detail display options and press the Enter key.
- 4 From the Detail display options submenu screen, select User display options and press the Enter key. The User display options submenu will appear (Figure 8.20).

Figure 8.20 CVHOST 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 "CVHOST User Summary" on page 141).

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 CVHOST Main Options Menu screen.

- 6 At the **Should these options be saved permanently?** prompt:
  - Press the Enter key to return to the CVHOST 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 8.2). Press the Enter key.

Sort Option	Description
1-User Name	Sort users alphabetically by the login name of the user.
2-UID	Sort users by the user ID number from /etc/passwd.
3-CPU time	Sort users by the amount of CPU time utilized during the last interval.
4-Process	Sort users by process name.
5-Virtual Memory VSS / (KB)	Sort users according to virtual memory usage.

#### Table 8.2 CVHOST user sort options

## 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 CVHOST display screen:

- 1 Type **o** from the CVHOST Main Option Menu screen.
- 2 Ensure the Display process information option is enabled.
- 3 From the CVHOST Main Option Menu screen. select Detail display options and press the Enter key.
- 4 From the Detail display options submenu screen, select Terminal display options and press the Enter key. The Terminal Display Options submenu screen will display (Figure 8.21).

```
Whith OPTION HERU
Detail display options
Terminal display options
1) Filter getty processes from terminal display (T)
2) Terminal sort option (1-Terminal)
3) Display terminals sorted in ascending order (N)
4) Maximum number of terminals to display (@-ALL) (0)
Which Option: __
```

Figure 8.21 CVHOST 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 "CVHOST Terminal Summary" on page 143).

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

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

## Filter getty processes from terminal display

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

#### **Including Getty Processes**

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

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

## **Terminal sort option**

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

#### **Selecting a Terminal Sort Option**

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

User's Guide

#### Table 8.3 CVHOST 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.

# **CVHOST-SPECIFIC CONFIGURATION FILES**

# **CVHOST** 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 CVHOST advice file (a portion of which is shown below) located in the /etc/opt/clearview/cfg directory.

User	***************************************
Command	 echo >/dev/consol e
Comments	 #cvtrap
	# uncomment the above line to start sending snmp trap messages with
	#notify information. You must configure cvtrap for you environment also.
	#See cvtrap for more info.
Default	 <cl01>The CPU was used a total of %s of its capacity during this interval</cl01>
Advice Specification	ALWAYS
Block	CPU-BUSY%
	Figure 9.1         CVHOST advice configuration file (example)

# **CVHOST advice File Configuration**

The CVHOST program can display a single-line message for each item-name variable (a data item selected from the /opt/clearview/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, CVHOST 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 67. The syntax of the specification blocks is outlined below using the default ME01 advice message as an example.

#### Example

```
<MEO1>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 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 CVHOST 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/consol e7

- 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)

#### Example

<CEO1> 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 (litem-name), specifies that all occurrences of this advice message will be sent through user-notification commands.

## **SNMP** Traps

ClearView 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 ClearView product.

## Installing the cvtrap File

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

1 Save the following file as /opt/clearview/bin/cvtrap 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 \

"ClearView: \$@"

2 Change the file permissions as executable:

chmod 755 cvtrap

## **Enabling the SNMP Traps**

To enable SNMP traps, perform the following steps.

- 1 Modify MGR\_HOST in /opt/clearview/bin/cvtrap to reflect the host that will receive the traps (the system running the browser).
- 2 Modify SNMPTRAP\_PATH in /opt/clearview/bin/cvtrap to reflect the path for snmptrap on the host executing ClearView. By default, cvtrap uses /opt/OV/bin/.
- 3 Modify the /etc/opt/clearview/cfg/advice file to enable cvtrap by removing the number sign character (#) in the line: #cvtrap.
- 4 Modify the /etc/opt/clearview/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:

<CEO1>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 ClearView executable program (CVHOST or CVLOGD) to which you want to send the traps, and enable advice messages within that program.
  - For instructions to enable advice messages in CVHOST, refer to "Display advice messages" on page 44.
  - For instructions to enable advice messages in CVLOGD, see "Setting Advanced Configuration Parameters" on page 173.



**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 CVLOGD only.

# **CVHOST holidays File**

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

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

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

! 2000 Hol i	days
ļ	
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	Thanksgi vi ng
12/25/00	Christmas
Figure 9.2	CVHOST holidays configuration file (example)

The purpose of the holidays file is to eliminate atypical computer performance data from the statistical analysis done by CVLOGX. 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 CVLOGX's computations by doing the following:

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

# **CVHOST** ppoints File

The /etc/opt/clearview/cfg/ppoints file contains the configuration information for the Pulse Points screen. For information about pulse points, see "CVHOST Pulse Points Summary" on page 153.

\*\*\*\*\*\*

CPU Pulse	 \$PP_CPU	CPU-BUSY%	"CPU Busy %"	85, 95	
Points Indicator Lines	\$PP_CPU	CPU-QUEUE-LEN	"Run-Q Average"	5, 10	
Memory	 \$PP_MEMORY	VM-PAGE-OUT-RATE	"Page Out Rate"	70, 100	"/sec"
Pulse Points Indicator Lines	\$PP_MEMORY	VM-SWAP-OUT-RATE	"Swap Out Rate"	1, 2	"/sec"
Disk Pulse	 \$PP_DI SC	DI SC-QUEUE-LEN	"Average Q-Length"	1, 3	"System Wide'
Points Indicator	\$PP_DI SC	DI SC-UTI L%	"Disk Utilization %"	40, 60	"System Wide'
Lines	\$PP_DI SC	DI SC-I O-RATE	"Disk I/O Rate (/sec)"	50, 100	"System Wide'
Network Pulse Points Indicator Line	 \$PP_NET	NETIF-COLLISION%	"Collision %"	3, 10	"System Wide'

**Figure 9.3** *CVHOST ppoints configuration file (example)* 

9

# **CVHOST ppoints File Configuration**

Indicator	1 664	en l	Yellow	l Red	I Connents
CPU					
PU Busy 2			93.6[ 91.5]		
un-Q Average	1.3[	1.4]			
Nenory					
age Out Rate	1.5[	1.0]			/sec
wap Out Rate	*[	0]			/sec
Disk I/O					
iverage Q-Length	s	83			System Vide
isk Utilization %	@[	0]			System Wide
isk I/D Rate (/sec)	4[	3]			System Vide
Hetwork					
ollision %	*[	0]			System Wide

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

Figure 9.4 CVHOST Pulse Points screen (example)

By default, the pulse point thresholds and messages are configured for you. You can edit the /etc/ opt/clearview/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

<secti on><val ue-spec><l abel ><yel I ow-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/clearview/cfg/ppoints file.
- 2 The first four specification fields in the pulse points indicator line must be completed. The <comments> field may be omitted.
- 3 Commas, spaces, or tabs must separate the specification fields in the pulse points indicator line to allow for "white space" in the display.
- 4 Each indicator line must begin with the name of the section in which the variable will appear in the Pulse Points screen. The section name in the <section> field must be preceded by "\$PP\_". The valid section names are:
  - \$PP CPU (CPU section)
  - \$PP\_MEMORY (Memory section) .
  - \$PP DISC (Disc I/O section) .
  - \$PP\_NET (Network section) •
  - \$PP\_MISC (Miscellaneous section)
- 5 The <value-spec> field is composed of a variable and an (optional) operator in the format:

<vari abl e>[<operator><vari abl e>]...[<operator><vari abl e>]

#### Where:

- <variable> is either the CVHOST variable name being monitored and displayed in the Pulse Points screen, or the CVHOST variable being used after the operator. A variable name must meet the following gualifications:
  - It must be included in the /opt/clearview/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: 15,20 "/sec"

\$PP\_MEMORY VM-PAGE-OUT-RATE "Page Out Rate"

"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 75.

When the scale is from high to low (the yellow-threshold value is greater than the redthreshold value), the value of the <variable> must be greater than the value for the yellow threshold.

Yellow

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

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

Red

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

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

#### Example 1

\$PP\_CPU CPU-BUSY% "CPU Busy %" 60, 85 ""

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

- CPU-BUSY% data values less than 60 will appear in the Green column in the Pulse Points screen.
- CPU-BUSY% data values equal to or greater than 60 and less than 85 will appear in the Yellow column in the Pulse Points screen.
- CPU-BUSY% data values greater than 85 will appear in the Red column in the Pulse Points screen.
- 8 The <comment> field (optional) can be used to assist in the interpretation of the pulse points indicator. Any comments must be enclosed in quotation characters (" "). For example, in the indicator line:

\$PP\_MEMORY VM-PAGE-OUT-RATE "Page Out Rate" 15,20 "/sec"

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

# **CVHOST** kip File

The /etc/opt/clearview/cfg/kip file contains the configuration information for the KIP (Key Indicators of Performance) line displayed in all CVHOST screens. For information see "Key Indicators of Performance (KIP) Line" on page 83.

# Var_name	row, col umn, wi dth
CPU-BUSY%	ROW, 13, WI DTH
VM-USED-MEM%	ROW, 41, WI DTH
VM-SWAP-OUTS	ROW, 68, WI DTH

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, WI DTH
-----------	-----------------

#### **Syntax**

<variable> row, column, width

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

All kip variable items:

- Must be found in /opt/clearview/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	CVHOST kip attribution c	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.

CVHOST-SPECIFIC CONFIGURATION FILES

## CVHOST kip File

•

•

Command	Description
\$INVERSE	Displays the KIP line in reverse video.
\$UNDERLINE	Underlines the KIP line.
\$HALF	Displays the line in half bright mode.
\$NORMAL	Displays the line in normal text mode (overrides all previous attribute commands).
\$LEFT	Left-justifies text lines.
\$RIGHT	Right-justifies text lines.
\$CENTER	Centers text lines.



# **CVHOST GLOBAL SUMMARY**

# **The Global Summary Screen**

The CVHOST 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 CVHOST 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 CVHOST display screen:

- 1 Type **s** from the CVHOST 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.

### User's Guide

# **Graphical Format**

learView	D.@6e	b1:	sebird		FRI,	31	NAR 28	186 ,	01:35	E	: ##:	:11:04		01:00
					ClearU	100	Techno	10gi	.05					
						- 61	OBAL -							
	2	10	20	30	40	50	60	78	80	90	100			
CPU3,	ц	20								5				
wBut/s														
10/5														
					PR	OCES	S SUNN	ARY						
LD Han	6				User M	laine	TTY		CPU% I	lice	Pri	RSS/3	ize	stat
16898 15					flaviu	5	pts/2		<	RT	68	20/	72	DEAD
17878 15				1	flaviu	16	pts/2		<	RT	68	38/	112	DEAD
17104					flaviu	5			<	RT		0/	528	DEAD
4192 syn	cd				root				8.1	RT	68	53/1	428	RUN
8010 [rp	c.10c	kd]		1	root				0.1	RT	68	4/	29	RUH
0 [su	apper	1			root				0.1	RT	16	57	20	RUN
1548 [gi]	1]				root				0.2	RT	37	14/	6.8	RUN
17218 CVR	id				gabi		pts/1		8.2	RT	26	9388/	34H	RUH
20772 cvl	ogd				gabi		pts/1		0.9	RT	68	2398/5	740	RUN
19898 Fin	d				Flaviu	8	pts/2		15.2	RT	67	63/	248	RUN
				- SY	STEH P	ERFO	RHAHCE	ADV	10E					
he CPU wa	s use	d a t	tetal	OF 9	2.7 af	its	capac	ity	during	l thi	s int	terval		<0101
his inter	val's	'hee	1° pro	CPSS	is (P	10.1	9898)	with	15.23	10	the (	2P U		CP101
													4.0	a

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

Figure 10.1 CVHOST Global Summary screen (graphical format)

The graphical Global Summary screen can show the following information:

- The CVHOST banner
- The company name (optional)
- 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 82.

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# **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.

ClearView D.@6e bluebird	FR[, 31	MAR 2006, 01:3	N E: 00:	10:04 1:	01:00
	ClearView	Technologies			
CPU UTILIZATION -			CPU HISC -		
TOTAL BUSY: 91.7[ 91	] [ 64	pture Ratio:		0.1	[ ]
User: 6.0[ 7] Sys: 04.	9[ 84]   1/5	;/15 Load Avg%:		1.0 1.	0 1.0
Wait: 0.1[ <] Idle: 8.	2[ 9] ]				
	NE	N/UN			
Page Duts: 1.0[ 1]/s P	age Ins:	0[ 0]/s Hin	or Pg Fault	s: 6211[	6K]/s
Swap Duts: 0[ 0]/s S	wap Insi	0[ 0]/s Haj	er Pg Fault	s: 0[	0]/s
		(1sc			
Sessions: 2 Procs:	52 #Walt	1/0: 0 1	ransactions	: 139.2[ 1	12]/s
Enclive: 2 Enclive:	7 #Swap:				
		15K			
015k 10/5	10% Q1en	DISK	10/	5 10%	Qlen
hdisk0 2	100 0				
	PROCES	S SUMMARY			
PED Hane	User Name	TTY CPUQ	HICO PP1	155/5120	State
1/210 CON10	9301	pts/1 0.2	KI 20	9380/ 34H	KUN
19898 Find	Flavius	pts/2 14.9	RT 74	58/ 228	RUN
	SYSTEM PERFE	KHANCE ADVICE			
ine CPU was used a total of	91.7 of 1ts	capacity duri	ng this int	61.031	CC1012
THIS INCORVAL'S 'Hog' proce	755 15 (PID 1	9898) uith 14.	PS OF the C	20	CP1012
Enter connand: _		(5h	owing lines	16 - 21 0	F 21)

Figure 10.2 CVHOST Global Summary screen (tabular format)

The tabular Global Summary screen can show the following information:

- The CVHOST banner
- The company name (optional)
- 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 82.

# **Global Summary Screen Display Items**

# **CVHOST Banner**

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



Figure 10.3 CVHOST Global Summary screen: CVHOST banner

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

## Product Version Number (ClearView V.nnx)

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

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

The ClearView version number displayed in the example (refer to Figure 10.3) is D.06e. 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 CVHOST 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 bluebird.

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

The third item in the CVHOST 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 CVHOST 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 CVHOST. This elapsed time measurement is especially valuable when viewing cumulative statistics. For further information, refer to "Display cumulative stats" on page 37.

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

### Current Interval (I: MM:SS)

The last item displayed in the CVHOST banner is the current interval (I: MM:SS). The current interval is the amount of time in minutes and seconds accumulated since CVHOST last updated the screen. The measurements reported on any CVHOST 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 36.

Assuming the interval refresh rate is 60 seconds, the current interval displayed in the CVHOST 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 CVHOST 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 CVHOST 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 CVHOST banner. This option is invoked when the Display Key Indicators of Performance option is enabled from the CVHOST Main Option Menu screen.

ClearView D.06d1 bluebird	FRI, 24 FEB 2006, 10:01	E: 00:17:27	I: 01:00
Total Busy: 93.4%	Used men : 57.0%	Page Ins:	8

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

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

#### **Total Busy**

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

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

#### **Used mem**

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

#### Page Ins

The Page Ins value displayed in the KIP line is the number of page ins (page fault that requires disk access) per second.



**NOTE** By editing the kip text file located in the /etc/opt/clearview/ cfg directory, you can redefine the variables to display in the KIP line. For information about editing the kip file, see "CVHOST kip File" on page 76.

# GLOBAL

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

#### CPU%

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



Figure 10.5 CVHOST Global Summary screen: GLOBAL (left column)

Each letter-width space on the CPU% bar graph represents approximately 2 percent of the CPUs time for the current interval. The code letters correspond to the CPU activities described in Table 10.1. Where a block of spaces on the bar graph is bordered by two instances of one code letter

(e.g., S...S), that corresponding activity (e.g., executing system calls and code) would account for the CPU% range bordered by the two letters.

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

- 2 percent of CPU time was spent executing user code.
- 4 percent of CPU time was spent executing system calls and code (in kernel mode).
- 4 percent of idle time the CPU spent waiting for an I/O operation to complete.

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

Table 10.1CPU% states or activities

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

#### SwOut/s

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

### IO/s

The IO/s bar represents the disk I/O rate. This is the number of physical reads and writes per second for each type of physical I/O. Similarly to the CPU% bar (see "CPU%" on page 84), a specific code letter in the bar graph tell you how many of physical I/Os were accumulated in the current interval. Each of these code letters are listed and secribed in Table 10.2.

Table 10.2 Physical I/Os

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

## **PROCESS SUMMARY**

After reviewing the general state of global resources, the next logical step in analyzing a system's performance is to observe individual processes. It is important to find out which users are running

which programs and what kinds of resources those programs are consuming. The primary purpose of the PROCESS SUMMARY portion of the Global Summary screen is to help you to identify key resources consumed by various processes on the system.

To examine the CPU usage and disk I/O usage information for a process, open the Process Detail screen. For further information, see "CVHOST Process Detail" on page 157.

## **PROCESS SUMMARY Display Options**

The PROCESS SUMMARY section is included in the Global Summary screen by default when the CVHOST program is started. However, this information can be suppressed. For instructions, refer to "Display process information" on page 47.

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

- Display or suppress the extended process line.
- Display all processes or only the active processes.
- Set the CPU percetange required for process display.
- Display or suppress interactive processes.
- Display or suppress non-interactive processes.
- Display or suppress system processes.
- Display or suppress processes that have died.
- Apply a process logon filter.
- Apply a process sort option.
- Display sorted processes in either ascending or descending order.
- Set a maximum number of processes to display.

For information about these options, please refer to "Process Display Options" on page 49.

## **PROCESS SUMMARY Data Items**

		PROC	ESS SUNNAR	¥				
10	Hane	User Ha	ie TTY	CPU%	Hice	Pri	#\$\$/\$ize	State
1548	[gi1]	root		0.2	RT	37	14/ 68	RUN
16988	cunid	gabi	pts/0	0.3	BT	26	9396/ 35H	RUN

Figure 10.6 CVHOST Global Summary screen: PROCESS SUMMARY

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

## Global Summary Screen Display Items

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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.
ТТҮ	"TTY" is defined in CVHOST as the special device file of the terminal to which the process is attached. The TTY column will show three dashes () for processes that are not attached to a terminal (processes such as daemons and batch jobs).
CPU%	The CPU% column shows the percentage of system-wide CPU time that was used by each process. This is normalized for multiple-processors. In other words, all CPU% values added together should never exceed 100 (percent).
Nice	<ul> <li>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.</li> <li>A process with a larger nice value will receive a higher</li> </ul>
	priority (resulting in a lower-priority status).
	<ul> <li>A process with a smaller nice value will receive a lower priority (resulting in a higher-priority status).</li> </ul>
	A process that slows system response time can be "niced" to lower its priority and allow other processes to be executed more quickly.

## **Table 10.3**CVHOST Process Summary data items

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Data Item	Description
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.
State	The state the current state of the process. Possible values are:
	RUN - running on the CPU;
	SLEEP - the process is waiting for a resource or event (sleeping);
	USLEP - the process is waiting for a resource or event, but it cannot be preempted by the scheduler (unintrerruptible sleeping);
	STOP - the process is suspended because of the job control it is being traced;
	ZOMB - the process is dead, but still contains a table process entry;
	SWAP - the process is swapped.

•

## **Extended Process Statistics Lines**

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

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

	PED Name	User 1	Same TTY	CPUL N	ice Pri	RSS/Size	Stat
	Group Hane	#Rd	#Wr	nlwp	nsvap	(	PU(ms
	17960 mvdatad	gabi	pts/0	8	RT 68	221/1568	RUN
	INTERACT		0		0		
cess Line	 18674 medatad	gabi	pts/0	8	RT 68	162/ 888	RUN
andad	INTERACT	0	0		0		
	18706 telnetd	root		8	RT 60	121/ 464	RUN
cess Line	 DAEHOH		0		0		

Figure 10.7 CVHOST 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 CVHOST 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.

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

**Table 10.4***Extended process column headings* 

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

- Process 20501 is in the DAEMON workload group.
- Process was swapped 0 (zero) times.
- Process consumed 70 ms of the CPU time during the current interval.

Additional information about a process can be viewed in the Process Detail screen, which is discussed in "CVHOST Process Detail" on page 157.

# WORKLOAD SUMMARY

The CVHOST program is able to track process statistics by application workloads. Workloads was discussed in "Workload Groups" on page 21. Workload statistics can be displayed in the WORKLOAD SUMMARY portion of the Global Summary screen.

## WORKLOAD SUMMARY Display Options

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

		VORKLOAD SUMMARY	
Hun	Hane	CPU %	User CPU 🎗
1	INTERACT	0[ 0]	0[ 0]
2	BATCH	0[ 0]	e[ e]
3	DAENOH	0[ 0.5]	0(0)
ła –	DEFAULT	( a)	6 6

Figure 10.8 CVHOST 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 CVHOST 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.

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

 Table 10.5
 CVHOST Workload Summary data items

# **CPU UTILIZATION**

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

```
----- CPU UTILIZATION -----
TOTAL BUSY: 4.8[ 5]
User: 2.0[ 2] Sys: 2.8[ 3]
Wait: 4.9[ 5] Idle: 90.3[ 90]
```

Figure 10.9 CVHOST 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	CVHOST CPU	Utilization	data items
------------	------------	-------------	------------

Data Item	Description
TOTAL BUSY	The percentage of time the CPU was busy (not idle) during the current (nn.n) and elapsed intervals ([nn]). The TOTAL BUSY value is the sum of the values reported for User and Sys values reported in the same area of the Global Summary screen.
User	The percentage of time the CPU spent executing in user mode (nice <=0).
Sys	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.
Wait	The amount of idle time the CPU spent waiting for a I/O operation to complete.

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Data Item	Description
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.

# **CPU MISC**

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

Capture Ratio: 0.7[ <] 1/5/15 Load Rugt: 0.1 0.1 Figure 10.10 CVHOST 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.
Global Summary Screen Display Items

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

#### Table 10.7 CVHOST CPU Miscellaneous data items

#### 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 "CVHOST Memory Summary" on page 107.

						NEN/UN					
Page	Outs:	4.3[	3]/s	Page	Ins:	9[	<]/s	Minor	Pg Faults:	9[	0]/s
Swap	Outs:	8[	0]/s	Swap	Ins:	9[	0]/s	Najor	Pg Faults:	9[	0]/s

Figure 10.11 Global Summary screen: MEM/VM

#### **MEM/VM Display Options**

To display or suppress the MEM/VM statistics in the Global Summary screen, enable/disable the Display memory information on global screen option from the CVHOST 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
 CVHOST Memory/Virtual Memory data items

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

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Data Item	Description
Swap Outs	The number of processes swapped out per second.
Page Ins	The number of page ins per second.
Swap Ins	The number of processes swapped in per second.
Minor Pg Faults	The number of minor page faults per second.
Major Pg Faults	The number of major page faults per second.

#### **MISC**

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

				1	NISC				
#Sessions:	2	<b>#Procs</b> :	58	#Vait	1/0:	8	Transactions:	9[	<]/s
#Active:	0	#Active:	e	#Swap:	:	Ð		-	-

Figure 10.12 CVHOST 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 CVHOST 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	CVHOST Miscellaneous data	items
------------	---------------------------	-------

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

#### Global Summary Screen Display Items

Data Item	Description
#Active	The #Active value (displayed below the #Sessions value) represents the current number of active sessions (sessions that used at least 0.0 percent of CPU time).
#Procs	The current number of processes present on the system.
#Active	The #Active value (displayed below the #Procs value) represents the current number of active processes (processes that used at least 0.0 percent CPU).
#Wait I/O	The current number of processes that waited on disk I/O.
#Swap	The current number of processes that were swapped.
Transactions	The number of transactions per second that occurred during the current interval. A transaction is defined as a character read or write, or a process death.

## DISK

The DISK portion of the tabular Global Summary screen presents a few statistics for each configured disk drive on the system (see Figure 10.13). This information can help answer:

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

			D	ISK			
Disk hdisk0	10/s 7	10% 100	Qlen Ø	Disk	10/s	102	Qlen

Figure 10.13 CVHOST 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 CVHOST 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 CVHOST 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.
10%	The percentage of disk I/Os performed by the disk compared to all other disks on the system.
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:
	<ul> <li>Excessive disk arm movement due to heavily hit files. You might achieve better I/O balance by placing complementary files on separate drives.</li> </ul>
	<ul> <li>Database inefficiencies. Implement better database maintenance.</li> </ul>
	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 PERFORNANCE ADVICE	
The CPU was used a total of A.A of its capacity during this interval	<0101
his interval's 'bog' process is (PID 4192) with 1.0% of the CPU	<pi01< td=""></pi01<>
roblematic memory utilization indicated by a moderate memory load	<he 012<="" td=""></he>

Figure 10.14 CVHOST 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 97 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 CVHOST 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 CVHOST Main Options Menu screen.

#### SYSTEM PERFORMANCE ADVICE Message Configuration

The SYSTEM PERFORMANCE ADVICE messages are located in the CVHOST 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 "CVHOST advice File" on page 65.

#### System Performance Advice Message Interpretations



**RECOMMENDATION** The standard SYSTEM PERFORMANCE ADVICE messages that are contained in the CVHOST advice file (described below) are generic. These messages should be customized for the system using the instructions found in "CVHOST advice File" on page 65.

<CEO1> CPU Queue length indicates %s %s CPU bottleneck

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

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

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

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

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

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

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

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

Advice message ME03 is generated to alert the user when the virtual memory page out rate for the current interval is in the range of 10-50 page outs per second.

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

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

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

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

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

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

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

<NEO4> Write percent high, consider solution to speed-up disk writes (ie. NVRAM)

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

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

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

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<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.



# **CVHOST 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 CVHOST display screen:

- 1 Type **s** from the CVHOST 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 102 (next page) and "Tabular Format" on page 103.

# **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.

	1 10	20	30	48	50	68	78	80	98	100	ł	Bus	y t
1	U US										L	94.4[	77
fotal	u us										L	94.4[	77
										-			

Figure 11.1 CVHOST CPU Summary screen (graphical format)

#### **CPU SUMMARY**

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

#### Table 11.1 CVHOST CPU SUMMARY (graphical format) data items

Data Item	Description
CPU	The CPU column contains the sequential identification numbers assigned to the individual CPUs by CVHOST. 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.

CPU Summary Display Items

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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 87.
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.

BUSY			ISER 77		545			WAIT			IDLE	
[ 77]	94.4 7.7 77] [7]		69	[ 78]		ر °ر]			[ 22]			
1/5/15 H	in Avg	: 1.0/	1.2/1.3	1 1		RI RI	inų: 75	Sw	pQ: Ø			
C Sws:	18.898	665]	Calls:	5670.0[4	799]	Forks:	73.7[	59]	Execs:	73.8[	208K]	
SysRd: 4 d-lnt:	415.4[ 81	393]	SysWr: s-lnt:	73.7[	62] 81	RdCh:	129 BK [	18]	WrCh :	5627.9[	14K]	
8 Rd:	eľ.	0j	B Mr:	0	Ξĵ	L Rd:	0[	0]	LWYI	90	0]	
Inode:	0.3[	~ 1	Unode:	1423.8[1	215]	DirBk:	2.5[	2]	T 00.		943	
KSchi	1	<1	KOVFI	9[	0]	KEwit:		<1	Traps:	27.2[	(0) (0)	
CPU		8051	r	USER	0.01	ILIZATIC SYS	1N	MA	11	IDLE		
1		94.4		7.7		86.6	5		.1	5.5		
		[ 77]	1	[ 7]		[ 70]	1	1	<1	[ 22]		

Figure 11.2 CVHOST 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 37. Each data item is described in the following table.

 Table 11.2
 CVHOST CPU Utilization data items

Data Item	Description
BUSY	The total percentage of time the CPU was busy (not idle) during the interval. The TOTAL BUSY value is the sum of the values reported for USER and SYS values reported in the same area of the Global Summary screen.
USER	The percentage of time the CPU spent executing user code with a nice value of 20 and without any special priority status.
SYS	The percentage of time the CPU spent in system/kernel mode.
WAIT	The amount of idle time the CPU spent waiting for an I/O operation to complete.
IDLE	The percentage of time the CPU was not in use.

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#### **CPU LOAD AVG**

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

Table 11.3         CVHOST CPU LOAD AVG data iter
--------------------------------------------------

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

#### **MISC STATISTICS**

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

Data Item	Description
C Sws	The number of context switches per second.
Calls	The number of system calls per second.
Forks	The number of forks per second.
Execs	The number of exec system calls per second.
SysRd	The number of read system calls per second.
SysWr	The number of write system calls per second.
RdCh	The number of characters trasferred with read system call.
WrCh	The number of characters trasferred with write system call.
d-Int	The number of device interrupts.
s-Int	The number of software interrupts.
B Rd	The number of block reads.
B Wr	The number of block writes.

	Table 11.4	CVHOST MISC STATISTICS data it	ems
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User's Guide

Data Item	Description
L Rd	The number of logical read requests.
L Wr	The number of logical write requests.
Inode	The number of inode lookups.
Vnode	The number of vnode lookups from a path name.
DirBk	The number of block reads by the directory search routine.
T RI	The number of TTY receive interrupts.
т хі	The number of TTY transmit interrupts.
TIC	The number of TTY raw input characters.
тос	The number of TTY raw output characters.
KSch	The number of kernel processes created.
KOvf	The kernel process creation attempts (failures).
KExit	The number of kernel processes that became zombies.
Traps	The number of traps per second.

#### PER CPU UTILIZATION

The PER CPU UTILIZATION portion of the tabular CPU Summary screen displays the same data listed in the CPU SUMMARY portion of the screen for each CPU on the system. Please refer to "CPU SUMMARY" on page 104 for a description of each data item.



# **CVHOST MEMORY SUMMARY**

# **The Memory Summary Screen**

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

erearvier	0.4001 01	06011.0	- HEH/UH	ALLOCA	TION			1010510		
Hen	Size 524288K	Used 299252K	Free 225 8368		S248	ize OOK	299	Used 328K	22	Free 5488K
Real Hen	System 341296K	User 828544K	Process 85856K		Pin 782	ned D4K	299	nuse 252K	12	Files 8072K
Loaded	Run 47	Sleep Ø	Total 47		Swapped	R	iun Ø	Sleep B	T	otal Ø
_	In(/s)	Out(/s)	In(byt	e/s)	Out(byte	/s)		#In		#Out
Pages Swaps Hinor F	0[0] 0[0] 9 Flts:	1.1[1] 0[0] 6171[5	0[ 0[ K]/s	0] 0] Hajor	۹[ Ø[ Pg Flts:	6] 8]	9[ 9[ 9[	0] 0]/s	9[ 63[	0] 0]
Pg Scar Pg Repl	ns: Lace Cycles:	9[ 9[	0]/s 0]/s	Pg Ste	als:		6(	0]/s		
inter com	anand :									

Figure 12.1 CVHOST Memory Summary screen

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

- 1 Type **s** from the CVHOST 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 C	CVHOST MI	EM/VM ALLC	OCATION	data items
--------------	-----------	------------	---------	------------

Data Item		Description
Mem	Size	Megabytes of RAM on the system.
	Used	Megabytes of RAM used by user processes.
	Free	Megabytes of unused RAM.
VM	Size	Megabytes of virtual memory (swap space) configured on the system.
	Used	Megabytes of virtual memory used by user processes.
	Free	Megabytes of unused virtual memory.
Real Mem	System	Megabytes of real memory configured on the system.
	User	Megabytes of real memory used by user processes.
	Process	Megabytes of real memory used by process segments.
	Pinned	Megabytes of real memory which is pinned.
	Inuse	Megabytes of real memory which is in use.
	Files	Megabytes of real memory used for file frames.

#### **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.

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

#### Table 12.2 CVHOST PROC MEM STATUS data items

#### 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.

Da	ta item	Description
Pages	In (/s)	The number of page ins per second.
	Out (/s)	The number of page outs per second.
	In (byte/s)	The rate of page ins in bytes per second.
	Out (byte/s)	The rate of page outs in bytes per second.
	#In	The number of page ins.
	#Out	The number of page outs.
Swaps	In (/s)	The number of swaps ins reads per second.
	Out (/s)	The number of swaps outs per second.
	In (byte/s)	The rate of bytes swapped in per second.
	Out (byte/s)	The rate of bytes swapped out per second.
	#In	The number of swap ins
	#Out	The number of swap outs.

#### Table 12.3 CVHOST PAGING data items

User's Guide

Data item	Description
Minor Pg Faults	The number of minor page faults per second.
Major Pg Faults	The number of major page faults per second.
Pg Scans	The number of page scans per second.
Pg Steals	The number of page steals per second.
Pg Replace Cycles	The number of page replace cycles per second.



# **CVHOST 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 CVHOST display screen:

- 1 Type **s** from the CVHOST 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 112 (next page) and "Disk I/O Summary Screen Display Items" on page 112.

# **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.

ClearView D.#6d1	bluet	ird	FRI	. 24	FEB 20	86, 10	1:30	E: 0	1:06:55	5 1:0	10:02
Device	Perce	nt Ut	ilizəti	8 1/0 08	ZUNNA	RY	1/05	per se	cond		
	2	28	40	60	88	100	1	100	200	300	400
cd0											
nd15kU											
TOTALS											
Enter command:											

Figure 13.1 CVHOST 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 CVHOST DISK I/O SUMMARY data items

Data I tem	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.

#### Disk I/O Summary Screen Display Items

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Data Item	Description
I/Os per second	<ul> <li>The number of physical disk I/Os on the disk per second.</li> <li>Similarly to the IO/s bar graph in the Global Summary screen, specific code letters in the bar graph tell you how many of each type of physical I/Os were accumulated in the current interval. The code letters are:</li> <li>R represents the number of physical reads per second.</li> <li>W represents the number of physical writes per second.</li> </ul>
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.

ClearView D.06d1	bluebi	rd	FRI,	24	FEB 200 SUNNAB	6. V	10:31		E: 00:0	1:55	1: 00:0
Dev	1/	0%	10/5	.,,	01en		Utilt		Avg S Read	ize	(KB) Write
0.05			0				0				0
ALC: N	· .	11	0]	t		L	0]	ι		t i	
101580	1 10		51						106.7		7.2
	L 10	41 L	21	L	41	L	0]	L	12525]	L	203]
TOTALS	1		51		8				736.7		7.2
	[ 10	0] [	5]	ſ.	0]	1	0]	£	12525]	1	289]
inter command: _											

Figure 13.2 CVHOST 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	CVHOST DISK I/O SUMMARY data items

Data Item	Description
Dev	The device identification number for each disk on the system.
I/O%	The percentage of all disk I/Os on the system performed by each disk during the interval.
Qlen	The average number of disk requests waiting to be serviced by each disk.
Util%	The percentage of time each disk was in use during the interval.
Avg Size (KB) Read	The average size of the physical reads from the disk.
Avg Size (KB) Write	The average size of the physical writes to the disk.
TOTALS	The totals for each column in the tabular DISK I/O SUMMARY.



# **CVHOST DISK ADAPTER SUMMARY**

# The Disk Adapters Summary Screen

The Disk Adapters Summary screen displays a summary of performance data for each disk adapter on the system.

ClearView D.	.06d1 bluebird	FR	ADAPTERS	2006,	10:32	E: Ø	0:07:55	1: 01:0
Hane	Description	Disks	Size	Free	Xrate	Xfers	<b>Rblks</b>	Wblks
sesil	Vide/Fast-28	2	\$672	8		8		8
TOTALS		2	8672		0		0	0
inter connar	1d: _							

Figure 14.1 CVHOST Disk Adapter Summary screen

To access the Disk Adapters Summary screen from any CVHOST display screen:

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

# **Disk Adapters Summary Screen Display Items**

#### **DISK ADAPTERS SUMMARY**

The data items in the Disk Adapters Summary screen are described in the following table.

Data Item	Description
Name	The device file corresponding to the disk adapter.
Description	The percentage of all disk I/Os on the system performed by each disk controller.
Disks	The number of physical reads per second performed by each disk controller during the interval.
Size	The average size of the device.
Free	The free amount of all disks.
Xrate	Total kbytes/sec transfer rate capability.
Xfers	Rate of transfers to/fram disk.
Rblks	The amount read via adapter.
Wblks	The amonut written via adapter.
TOTALS	The TOTALS line sums up the activities of all disk adapters for the interval.

#### Table 14.1 CVHOST DISK ADAPTERS SUMMARY data items



# **CVHOST VOLUME SUMMARY**

# **The Volume Summary Screen**

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

ClearView D.06d1 blo	sebird FRI,	2% FEB 2006, 10:32 E: 00:08:55 1	: 01:
la] fromp/log Ha]	Phy Rd (/s)	ERDUP SUMMARY	
var ereep/cog var	rny nu (/3/	· · · · · · · · · · · · · · · · · · ·	
/dev/rootvg	(1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)     (1)	1.4 [ 1.6]	
/dew/hd8	0 ( 0)	0.7 [ 1.0]	
/dev/hd4	0 [ 0]	0.3 [ 0.3]	
/dev/hd3	8 ( 8)	0.1 [ 0.1]	
/dew/hd2	0 [ 0]	0.3 [ 0.2]	
/dev/hd9var	0 [ 0]	0.1 [ 0.1]	
/dev/hd19opt		< ( )	
/dew/hd6	0 [ 0]	0 [ 0]	
/dev/hd1	8 [ 8]	0 [ 0]	
/dev/hd5	8 [ 8]	0 [ 0]	
Enter command:			
tates connand:			

Figure 15.1 CVHOST Volume Summary screen

To access the Volume Summary screen from any CVHOST display screen:

- 1 Type **s** from the CVHOST 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 CVHOST 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.
Phy Wr (/s)	The number of physical writes per second.

# 16

# **CVHOST 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.

erearaten pragot	FILI	SYSTEM S	PACE SUM	HARY			
	Block Frag					Total	Free
File System	Size/Size	Size	Free	Free(su)	Üsed%	Inodes	Inodes
1	4896/4896	161	58	58	63	8192	6755
/usr	4896/4896	14081	7038	7828	58	358448	33869
/var	4896/4896	1281	1028	1821	28	32768	3230
/tmp	4896/4896	1281	1138	113H	11	32768	32636
/apt	4896/ 512	32 BH	4.00	401	87	81928	7468
/hone	4896/4896	342678	28837H	283801	17	4394888	4222582
/swdew	4896/4896	7806H	67888	68661	12	1012736	980303
Enter connand: _							

Figure 16.1 CVHOST File System Space Summary screen

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

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

# File System Space Summary Screen Display Items

#### FILE SYSTEM SPACE SUMMARY

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

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

 Table 16.1
 CVHOST FILE SYSTEM SPACE SUMMARY data items



# **CVHOST NETWORK SUMMARY**

# **The Network Summary Screen**

The Network Summary screen displays network performance information.

Pretec	0	1		Pack	ets	i In/s	1	Packets	0	ut/s		Error	s I (	s.	Errer	s Out
1.P				269.3	2[	229]		272.9[		200]		9[		8]	10	
TCP/IP				269.3	2[	229]		272.9[		233]		0[		0]	0[	
I C NP					96	0]		90		0]				6[	<1	
UDP					38	<1		30		C]		9[	92.1	86]	90	92.8
	-					NI	ETI	PORK IN	Ē	RFACES						
InterF		Packet:	5		6	ivg Paci	ke	t Size		Errors						
		1n/s		Out/s		lecv	1	Sent		1nt –	0	ut\$	C	0112		
en O		269.5		272.9		211		171				0				
	ľ	229]	I	233]	E	286]	L	172]	l	0 J	I.	0]	0	@]		
eto				0		<		<								
	Ĺ	0]	ſ	0]	ſ	0]	ſ	0]	ſ	0]	ſ	0]	ſ	0]		
108						<		<								
	Ľ	8]	t	0]	t	e]	t	0]	Ľ	<b>8</b> ]	t	0]	t.	8 J		
TOTALS		269.5		272.9		211	_	171				0		8		
	E	229]	t	233]	E	206]	r	172]	t	0]	I.	0]	E	• 1		
	E	229]	ſ	233]	£	286]	t	172]	ſ	<b>e</b> ]	t	0]	t	0]		

Figure 17.1 CVHOST Network Summary screen

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

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

# **Network Summary Screen Display Items**

#### **NETWORK SUMMARY**

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

 Table 17.1
 CVHOST NETWORK SUMMARY data items

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

#### **NETWORK INTERFACES**

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

Table 17.2         CVHOST NETWORK INTE	ERFACES data items
----------------------------------------	--------------------

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

#### CVHOST NETWORK SUMMARY

#### Network Summary Screen Display Items

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Data Item	Description
Error Out%	The percentage of packets written during the interval that resulted in error.
Collision%	The number of output packets sent that resulted in a collision.
TOTALS	Data values from a system-wide perspective.



# **CVHOST NFS SUMMARY**

# The NFS Summary Screen

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

		Bad HFS Cal	15 <		
		NFS U2 PER	CENT		
OULL.	8 GTATTE 8	STATTR 8 RDD1	8.10	OKUP 8	ROLINK Ø
EAD	Ø NCACHE Ø	NRITE O CREA	TE D RE	NOVE 0	REMANE 0
INK	Ø SLINK Ø	MKDIR B RMD1	R 8 89	OIR 8	STATES 0
		NFS V3 PER	CENT		
WLL.	Ø GTATTR 38.0	STATTR 0 LOOP	UP 57.6 AC	CESS 2.9	ROLINK 0
IE AD	Ø NRITE Ø	CREATE 8 MKD1	R Ø SL	INK Ø	HKN00 Ø
EHOVE	8 RHDIR 9	RENAME 0 LINK		01R 8	RODIRP 1.5
SSTAT	< FSINF0 0	PCONF 0 CONF	IT 0		
		RPC -			
		STREAM			
CALL	1675 BADCALL	< BADX 1	TIMEO	< HCRED	0
BADVE	8 TIHER	& NOHEH 0	CCONN	< INTRS	0
		DATAG	IAN		
CALL	8 BADCALL	Ø RETR Ø	BADX	0 TIMEO	0
NCRED	8 BADUE	@ TIMER 0	NOHEH	8 CSEND	8

Figure 18.1 CVHOST NFS CLIENT Summary screen

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

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

#### Additional Command Keys for the NFS Summary Screen

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

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

## **NFS Summary Screen Display Items**

The NFS CLIENT SUMMARY data items are described in this section. The data items for the NFS SERVER SUMMARY are described in the next section, "NFS Server Summary Screen Display Items" on page 131.

#### NFS CLIENT SUMMARY

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

#### **Bad NFS Calls**

The Bad NFS Calls data item represents:

- The number of bad NFS calls accumulated during the current interval, when the screen is set to display NFS call rates (see "Additional Command Keys for the NFS Summary Screen" on page 126).
- The percentage of NFS calls that are bad NFS calls, when the screen is displaying NFS calls percentages.

#### **NFS V2 RATE or PERCENT**

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

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

#### Table 18.1 CVHOST (Client) NFS V2 RATE and PERCENT data items

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

#### **NFS V3 RATE or PERCENT**

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

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.

Table 18.2	CVHOST	(Client)	NFS V2	RATE and	PERCENT	data items
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#### NFS Summary Screen Display Items

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Data Item	RATE Definition	PERCENT Definition
MKNOD	The number of mknod calls per second.	The percentage of all NFS V3 calls that are mknod calls.
REMOVE	The number of remove calls per second.	The percentage of all NFS V3 calls that are remove calls.
RMDIR	The number of rmdir calls per second.	The percentage of all NFS V3 calls that are rmdir calls.
RENAME	The number of rename calls per second.	The percentage of all NFS V3 calls that are rename calls.
LINK	The number of link calls per second.	The percentage of all NFS V3 calls that are link calls.
RDDIR	The number of readdir calls per second.	The percentage of all NFS V3 calls that are readdir calls.
RDDIRP	The number of readdirplus calls per second.	The percentage of all NFS V3 calls that are readdirplus calls.
FSSTAT	The number of fsstat calls per second.	The percentage of all NFS V3 calls that are fsstat calls.
FSINFO	The number of fsinfo calls per second.	The percentage of all NFS V3 calls that are fsinfo calls.
PCONF	The number of pathconf calls per second.	The percentage of all NFS V3 calls that are pathconf calls.
СОММІТ	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. It contains the STREAM and DATAGRAM data items.

#### STREAM

Each STREAM data item is described in the following table.

#### Table 18.3 CVHOST (Client) STREAM data items

Data Item	Description
CALL	The number of client RPC calls made per second.

User's Guide

Data Item	Description
BADCALL	The number of times the RPC client had to retransmit the security credentials.
BADX	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.
TIMEO	Timed out NFS client RPC calls with no reply.
NCRED	Total NFS client RPC authentication refreshes.
BADVE	Total NFS client RPC bad verifier in response.
TIMER	NFS client RPC timeout grater than the timeout value.
NOMEM	NFS client RPC calls memory allocation failure.
CCONN	Failed NFS client RPC calls.
INTRS	NFS client RPC calls fail due to interrupt.

#### DATAGRAM

Each DATAGRAM data item is described in the following table.

#### Table 18.4 CVHOST (Client) DATAGRAM data items

Data Item	Description
CALL	Total NFS client RPC connectionless calls.
BADCALL	Rejected NFS client RPC calls.
RETR	Retransmitted NFS client RPC calls.
BADX	Bad NFS client RPC call responses.
TIMEO	Timed out NFS client RPC calls with no reply.
NCRED	Total NFS client RPC authentication refreshes.
BADVE	Total NFS client RPC bad verifier in response.
TIMER	NFS client RPC timeout greater that timeout value.
NOMEM	NFS client RPC calls memory allocation failure.
CSEND	NFS client RPC calls not sent.

# **NFS Server Summary Screen Display Items**

		NFS : 8ad	SERVER SUNHAR	,		
		N	FS W2 RATES -			
00 L.L.	<b>B</b> GTATTR	<b>BITATER</b>	8 RDDT	8 LOOKUP	8 ROLINK	
EAD	Ø NCACHE	0 WRITE	O CREATE	O RENOVE	<b>Ø REHANE</b>	
INK	Ø SLINK	8 MKDIR	8 RMD1R	B RODIR	Ø STATES	
		N	FS VO RATES -			
WLL.	Ø GTATTR	0 STATTR	O LOOKUP	O ACCESS	Ø ROLINK	
EAD	Ø NRITE	0 CREATE	8 MKD1R	Ø SLINK	@ HKN00	
EHOVE	8 RHDIR	9 RENAME	0 LINK	8 80018	e RODIRP	
SSTAT	0 FSINF0	0 PCONF	O CONNIT			
			RPC			
			- STREAM			
CALL	8 BADCALL	Ø HULL	0 BADLE	H O XDR	0	
DUPCK	e DUPRQ					
			- DATAGRAH			
CALL	Ø BADCALL	Ø HULL	0 BADLE	N O XDR	0	
DUPCK	e DUPRQ					

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

Figure 18.2 CHVOST NFS Summary screen: NFS SERVER SUMMARY

### NFS SERVER SUMMARY

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

#### **Bad NFS Calls**

The Bad NFS Calls data item represents:

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

### **NFS V2 RATE or PERCENT**

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

#### Table 18.5 CVHOST (Server) NFS V2 RATE and PERCENT data items

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

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

### **NFS V3 RATE or PERCENT**

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

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.

 Table 18.6
 CVHOST (Server) NFS V2 RATE and PERCENT data items

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

### RPC

The RPC portion of the NFS SERVER SUMMARY provides remote procedure call (RPC) information. It contains the STREAM and DATAGRAM data items.

#### STREAM

Each STREAM data item is described in the following table.

#### Table 18.7 CVHOST (Server) STREAM data items

Data Item	Description
CALL	Total NFS server RPC connection-oriented requests.

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NFS Server Summary Screen Display Items

Data I tem	Description
BADCALL	Rejected NFS server RPC responses.
NULL	NFS server RPC calls failed due to unavailable packet.
BADLEN	NFS server RPC requests failed due to bad length.
XDR	NFS server RPC requests failed due to bad header.
DUPCK	NFS server RPC calls found in request cache.
DUPRQ	Total NFS server RPC call duplicates.

NFS server RPC requests failed due to bad length.

NFS server RPC requests failed due to bad header.

NFS server RPC calls found in request cache.

Total NFS server RPC call duplicates.

#### DATAGRAM

BADLEN

DUPCK

DUPRQ

XDR

Each DATAGRAM data item is described in the following table.

Data Item	Description
CALL	Total NFS server RPC connectionless requests.
BADCALL	Rejected NFS server RPC requests.
NULL	NFS server RPC calls failed due to unavailable packet.

 Table 18.8
 CVHOST (Server) DATAGRAM data items



# **CVHOST PROCESSOR SUMMARY**

## **The Processor Summary Screen**

The Processor Summary screen provides information on the processor number specified by the user. In case there is only one processor on the system, the screen will automatically display the data for that processor.

		PER PRO	ICESSOR U	TILIZATION		
BUSY	USER		542	WAIT		IDLE
93.5	7.5		\$5.9	0.1		6.4
[ 89]	[ 7]		[ 82]	[ ]	t	10]
		MISC	STATISTIC	S per sec		
Context s	witch rate:	818.2[	794.51	Fork rate:	73.3[	69.9
System cal	11 rate:	5141.1[9	5130.1]	Exec rate:	73.4	70.1
System rea	ad rate:	279.4[	323.11	Raw read rate:	692584	48988
System ur:	te rate:	73.51	71.81	Raw write rate:	5642.0[	18456
inode lool	up rate:	0.2[	0.2]	Block read rate:	jo j	
Unode look	kup rate:	1395.5[1	1361.7]	Block write rate:	0[	
Blocks rea	ad,dir search:	2.2[	1.6]	Logical read rate:	Di la contra c	
IPC msg o	perations:	<i< td=""><td>&lt;1</td><td>Logical write rate:</td><td>0Ē</td><td></td></i<>	<1	Logical write rate:	0Ē	
IPC sen o	perations:	0.5[	0.51	Physical read rate:	8.9[	1.1
		-	-	Physical write rate:	0[	
IPC nsg o IPC sen o	perations: perations:	*[ e.5[	<] 0.5]	Logical write rate: Physical read rate: Physical write rate:	0 0 0.9 0 0	

Figure 19.1 CVHOST Processor Summary screen

To access the Processor Summary screen from any CVHOST display screen:

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

# **Processor Summary Screen Display Items**

### **PROCESSOR DETAIL**

The PROCESSOR DETAIL portion of the Processor Summary screen provides information related to processor number and total CPU time (ms)

### PER PROCESSOR UTILIZATION

The PER PROCESSOR UTILIZATION portion of the Processor Summary screen provides information for each processor device. Each data item is described in the next table.

Data Item	Description
BUSY	The total percentage of time the CPU was busy (not idle) during the interval. The TOTAL BUSY value is the sum of the values reported for USER and SYS values reported in the same area of the Global Summary screen.
USER	The percentage of time the CPU spent executing user code with a nice value of 20 and without any special priority status.
SYS	The percentage of time the CPU spent in system/kernel mode.
WAIT	The amount of idle time the CPU spent waiting for an I/O

 Table 19.1
 CVHOST PER PROCESSOR UTILIZATION data items

operation to complete.

#### **MISC STATISTICS per sec**

IDLE

The MISC STATISTICS per sec portion of the Processor Summary screen provides miscellaneous CPU statistics of the selected processor. Each data item is described in the next table.

The percentage of time the CPU was not in use.

Table 19.2	CVHOST MISC STATISTICS per sec data item.
------------	-------------------------------------------

Data Item	Description
Context switch rate	Context switches per second
System call rate	System calls per second
System read rate	Read system calls per second
System write rate	Write system calls per second

#### CVHOST PROCESSOR SUMMARY

### Processor Summary Screen Display Items

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Data Item	Description
Inode lookup rate	No inode lookups
Vnode lookup rate	No vnode lookups rate from a path name
Blocks read,dir search	No block reads rate by the directory search routine
IPC msg operations	No IPC messages operations rate
IPC sem operations	No IPC semaphore operations rate
Fork rate	Forks per second
Exec rate	Exec system calls per second
Raw read rate	No chars transferred with read system call
Raw write rate	No chars transferred with write system call
Block read rate	No block reads rate
Block write rate	No block write rate
Logical read rate	No logical read requests rate
Logical write rate	No logical write requests rate
Physical read rate	No physical read requests rate
Physical write rate	No physical write requests rate



# **CVHOST USER SUMMARY**

# The User Summary Screen

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

ClearView D.@ód1	01w	ebird	HON, 23	FEB 2006,	84:15	E: 00	19:16	1: 00:0
User Hane	010	CPUZ	Phys 1/0	Tern I/0	Precs	Sess	RSS(KB)	USS(KB)
reet		0.5		8	41	8	1	29
gabi	2.05	0.5	0	82 88 8	4	1	13	47
innadn	188		8		1		< 8	< K
flavius	334		0		2	1	CH	<k< td=""></k<>
daenon	1		0		1		< 8	1
Enter connand: _								

Figure 20.1 CVHOST User Summary screen

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

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

# **User Summary Screen Display Items**

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

### **USER SUMMARY**

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

Table 20.1 CV	HOST USER	SUMMARY	data items
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Data Item	Description
User Name	The name of the user.
UID	The Unix user identification number associated with the user.
CPU%	The total percentage of the CPU resources consumed by the user.
Phys I/O	The total number of physical I/Os by the user.
Term I/O	The total number of terminal I/Os by the user.
Procs	The number of processes owned by the user.
Sess	The number of sessions opened by the user.
RSS (KB)	The amount of RAM (KiloBytes) consumed by the user (this data may underestimate memory usage, because shared pages are not counted).
VSS (KB)	The amount of virtual memory (KiloBytes) consumed by the user.



# **CVHOST TERMINAL SUMMARY**

# **The Terminal Summary Screen**

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

		Logia	Idle		TTY
ferminal	User Name	Time	Time	Processes	iech/s
ots/2	flavius	458:13:16	69:18:33	4[ 0]	0[ 0
)ts/0	gabi	458:51:47	133:48:04	4[ 0]	1.8K[ 897.3

Figure 21.1 CVHOST Terminal Summary screen

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

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

## **Terminal Summary Screen Display Items**

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

### **TERMINAL SUMMARY**

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

 Table 21.1
 CVHOST 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 CVHOST was started will equal the elapsed time (E: hh:mm) displayed in the CVHOST banner (the time elapsed since CVHOST 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.



# **CVHOST VOLUME DETAIL**

# **The Volume Detail Screen**

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

ClearView D.#6d1	bluebird	HON, 27	FEB 2006,	84:16	E: 00:20:16	1: 01:0
Volume Dev File /dev/hd8	NWC Size	HVC QLee	NWC Hits	HWC Niss	es Size(MB) 16384	Phy.ext
Read Rate(/s) Ø	Write Rate	(/s) #	vg Read Si	ze (KB) B	Avg Write Si:	e (KB) 4
[ •]	1	<]	INFORMATT	0) 08	1	4]
TTC 30376H 1	Swap device					
iir system i	Swap device					

Figure 22.1 CVHOST Volume Detail screen

To access the Volume Detail screen from any CVHOST display screen:

- 1 Type **s** from the CVHOST 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 22.1.

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.

Data I tem	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.
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.

Volume Detail Display Items

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



# **CVHOST System Configuration Summary**

## **The System Configuration Screen**

The System Configuration screen displays various configurable kernel parameters. Figure 23.1 shows an example of the screen.

Classifian D	45.14	bleshi	e el		4.7			- 17		4-46	1. 01.0
clearvien b	. 800 1		5	EV S T I	CH CON	LICUBO.	00, 04 TION -	- 17 - 6		1 . 10	1: 01:0
system nam	e: blue	bird	DS VO	rsie	01:2				cpu t	upe: O	0080128
serial nu	n: 17	237248	boot	t tir	ne: 18	:39 86	0CT 2	005	run le	vel: 2	
			HEP	1087	HANAGE	EHENT	CONFIG				
men frames	1	0 R	ax free	11	128	nin	free:	120	вах	pint:	
nax pernî		0 ni	n pernî	£ ::		nax	clt%:		160	bekt:	1316
ps blocks	:	0	ps kill	1:	1824	ps	warns	4896		pta:	58
framesets	1	0 R	empools	51	0	lgpg	size:		1gpg	regsi	
nspc dseg	:	0									
			1	PROCE	222 00	HFIGUR	ATION				
100	1	6	nsens	51	256	S	tream:	32K	1	timer:	32
threads	: 32	K d	atakey:	52	45.0		open:	62K		upre:	262K
				IPC	CONFI	CURATI	OH				
	NESSAGE	5	-	!		SHA	RED ME	N	. !	SEMAP	NURES
nnsg	1 ms	gssz		1	nshn	9	58	msez 709	2	nsen	8
Enter conna	nd: _										

Figure 23.1 CVHOST System Configuration screen

To access the System Configuration screen from any CVHOST display screen:

- 1 Type **s** from the CVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **y** (System Configuration). The System Configuration screen will display.

# **System Configuration Screen Display Items**

### SYSTEM CONFIGURATION

The SYSTEM CONFIGURATION portion of the System Configuration screen displays system configuration parameters.

Table 23.1	CVHOST SYSTEM CONFIGURAITON data items
------------	----------------------------------------

Data Item	Description
system name	The specific name of the system assigned during the system installation.
os version	The version of the operating system.
serial num	The serial number of the system.
boot time	The time of the last system reboot.
cpu type	The type of CPU hardware and model.
run level	The Unix state of operation. For information about run levels, please refer to the "inittab" Unix man page.

### **MEMORY MANAGEMENT CONFIG**

The MEMORY MANAGEMENT CONFIG portion of the System Configuration screen displays memory management parameters.

Table 23.2	CVHOST MEMORY MANAGEMENT	data items
TUDIC LU.L	Critobi memori minnoementi	uuiu iicms

Data Item	Description
mem frames	The number of memory frames.
max free	The number of frames in the free list at which to stop frame stealing (4K pages).
min free	The minimum number of frames in the free list (4K pages).
max pin%	The maximum percentage of the real memory that can be pinned.
max perm%	The point above which the page stealing algorithm steals only file pages.
min perm%	The point below which file pages are protected from the repage algorithm.

#### CVHOST SYSTEM CONFIGURATION SUMMARY

#### System Configuration Screen Display Items

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Data Item	Description
max clt%	The point above which the page stealing algorithm steals only client file pages.
lru bckt	The size of the least recently used (LRU) page replacement bucket size (4K pages).
ps blocks	The number of free paging-space pages.
ps kill	The number of paging space pages at which to begin killing processes (4K pages).
ps warn	The number of free paging space pages at which SIGDANGER signal is sent to processes (4K pages).
pta	The point at which a new PTA segment is allocated (%pta segment).
framesets	The number of framesets per memory pool.
mempools	Obsolete from AIX 5.3.
Igpg size	The size of hardware supported large pages (bytes).
lgpg regs	The number of large pages to be reserved.
nspc dseg	The number of special data segment identifiers to reserve.

### **PROCESS CONFIGURATION**

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

Table 23.3	CVHOST PROCESS CONFIGURATION data items

Data Item	Description
iov	The iov data item represents the soft limit maximum open files allowed by a process.
nsems	The nsems data item represents the hard limit maximum open files allowed by a process. Only processes with root privileges can exceed rlim_fd_cur and use rlim_fd_max.
stream	The stream data item represents the maximum number of processes any one user can own.

User's Guide

Data Item	Description
timer	The timer data item represents the maximum possible number of entries for the process table. The size of the process table is dynamic.
threads	The threads data item represents
datakeys	The datakeys data item represents
open	The open data item represents
uprc	The uprc data item represents

### **IPC CONFIGURATION**

In AIX, IPC parameters are only displayed as information because they are not configurable. AIX has an automatic IPC management mechanism that does not make possible any IPC tunning.

Table 23.4	CVHOST IPC CO	ONFIGURATION	data items
------------	---------------	--------------	------------

Data Ite	em	Description
MESSAGES	nmsg	The maximum size (in bytes) of a single message.
	msgssz	The size (bytes) of each message segment. The message buffer cache size is calculated: Message Buffer Cache Size (bytes) = msgseg * msgssz
SHARED MEM	nshm	The maximum shared memory segment size (bytes).
	shmsez	The configured number of shared memory identifiers.
SEMAPHORES	nsem	The configured number of semaphore map entries.



# **CVHOST 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.

	 	- PU	IL SI	FOIN	13				0	
Indicator	Gr	een		Ye1	109		Ked	- 1	Comments	
CFU	 									
tro buty t	9.5			49.00	¥1.	2)				
Num-ų kverage Nemoru	 • a [									
Page But Bate	SI	1.1	11						sec	
Swap But Rate			й.						sec	
Disk 1/0	 									
Average D-Length	er		11						usten Vid	
Disk Utilization %	٩ĉ		ú.					1	ystem Wid	e
Disk I/D Rate (/sec)	аĒ	3	ij.						ystem Vid	e - 1
Hetwork	 									
Collision %	9[		I]					1	ystem Wid	e

Figure 24.1 CVHOST Pulse Points screen

To access the Pulse Points screen from any CVHOST display screen:

- 1 Type **s** from the CVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **p** (Pulse Points). The Pulse Points screen will display. An example of the screen is shown in Figure 24.1.

## **Pulse Points Screen Display Items**

Data items displayed in the Pulse Points screen are described elsewhere in this manual and in the online help, therefore, the pulse point indicators are not documented in this chapter. If the meaning of a pulse point indicator is unclear, please refer to the documentation for the indicator's corresponding CVHOST screen. For example, for information about the CPU Busy % indicator, refer to "CVHOST CPU Summary" on page 101.

The pulse points indicators are configurable. For configuration guidelines, refer to "CVHOST ppoints File" on page 72.

### **Pulse Points Screen Column Headings**

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

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.

 Table 24.1
 CVHOST Pulse Points screen column headings



# **CVHOST 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/clearview/cfg/workdefs file.

GlearVi	eu D.06d1 bl:	uebird HON, 2	7 FEB 2006, 04:20 E: 00:24:16 ]: 01:00
		NORKLOAD	DEFINITIONS
Number	Hane	Type	Specifications
1	INTERACT	INTERACT	
2	BATCH	BATCH	
			NICE=21-39
3	DAEHON	DAEHON	
4	DEFAULT	MEX	
Enter c	onnand:		

Figure 25.1 CVHOST Workload Definitions screen

To access the Workload Definitions screen from any CVHOST display screen:

- 1 Type **s** from the CVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter **k** (Workload Definitions). The Workload Definitions screen will display. An example of the screen is shown in Figure 25.1.

# **Workload Definitions Screen Display Items**

### WORKLOAD DEFINITIONS

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

Data Item	Description
Number	The unique, sequential identification number assigned to the workload.
Name	The name of the workload group.
Туре	The type of workload (for information about workload types, refer to "Workload Groups" on page 21).
Specifications	The other specifications that define the workload (for information about workload types, refer to "Creating a Workload Group Definition File" on page 20).

 Table 25.1
 CVHOST WORKLOAD DEFINITIONS data items



# **CVHOST PROCESS DETAIL**

## **The Process Detail Screen**

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

PID					10						TERHIMA	L
Pid:	18678	1	Cnd:		opt/	lund/	bin,	/cvmid	I	tty:	pts	/0
PPID:	28974	1 0	ser:					gabi	I	State:	a	11
		Gr	eup:					18678	ı			
	CPU				HE HO	IRT				SCHE	DULLING	
CPU %:	8.3[	0.0]			155:	93	96		1	Nice:		
CPU ASI	198[	5260]			1881	358	48		1	Pri:		2
User %:	31.6[	26.4]		Sta	ite:	R	UN		1	Sched:		
Sys %:	68.4[	73.6]		Hir	i/s:		.1		ı	wchan:		
				Maj	/s:		0		1	LWPSI		
Last:	65535			Swp	/s:				I			
Affin:	65535		1						I	BUCSN:		2
dispot:	-1		1						ī	miwoswi		3
	DISK -										IPC -	
10 %:	9[	0]		In	Rt:		9[	8)	I	nsgsnd:		
iech:	0.28[	111.5j		Out	Rt:		0Ē	• j	ï	nsgrov:		
		-					_	_	ī	nsigs:		1
	THREAD											
SCount:	-1			NT <sub>3</sub>	ipe:	н	/8			Fpuct:		-

Figure 26.1 CVHOST Process Detail screen

To access this screen from any CVHOST display screen:

- 1 Type **s** from the CVHOST Enter command: prompt to view the Screen Selection Menu screen.
- 2 From the Screen Selection Menu screen, enter P (Process Detail).
- 3 At the secondary prompt:
  - Press the Enter key to display the process detail information for the given process.

• Or, enter the PID of another process.

## **Process Detail Screen Display Items**

### PID

The PID portion of the Process Detail screen displays process identification. Each data item is described in the following table.

Table 26.1	CVHOST PID data items

Data Item	Description
Pid	The identification number for the specified process.
PPID	The identification number for the parent process.

#### ID

The ID portion of the Process Detail screen displays additional identification information. Each data item is described in the following table.

Table 26.2	CVHOST ID data iter	ns

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

### TERMINAL

The TERMINAL portion of the Process Detail screen displays terminal information related to the process. Each data item is described in the next table.

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.

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Process Detail Screen Display Items

Data Item	Description	
State	The terminal state:	
	DET - detached from a terminal.	
	ATT - attached to a terminal.	

### CPU

The CPU portion of the Process Detail screen displays process and workload CPU information. Using the c command key toggles between two sets of data: a detailed breakdown of CPU usage and a list of response and transaction data. Each data item is described in the following table.

Table 26.4CVHOST CPU data items

Data Item	Description
CPU %	The percentage of the current interval that the process was executing. This value is normalized for multiple processors—the sum of the CPU% values should not exceed 100.
CPU ms	The number of milliseconds the process was executing. The value in brackets, [], is a cumulative value, not an averaged cumulative value.
User %	The percentage of the process' execution time spent in user mode. This includes real, nice, and negative nice time.
Sys %	The percentage of the process' execution time spent in system/ kernel mode. This includes memory and trap time.

#### **MEMORY**

The MEMORY portion of the Process Detail screen displays process and workload memory information. Each data item is described in the following table.

 Table 26.5
 CVHOST MEMORY data items

Data I tem	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.

User's Guide

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.
	RUN - the process runs.
Min /s	The number of minor page faults experienced by the process, per second.
Maj /s	The number of major page faults experienced by the process, per second.
Swp /s	The number of processes swapped out per second.

### SCHEDULING

The SCHEDULING portion of the Process Detail screen displays scheduling information. Each data item is described in Table 26.6.

Table 26.6 Cl	VHOST SCHEDULING	data	items
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Data Item	Description
Nice	The nice value. A value of R indicates the process has a real time prority—the nice value is not used. For information about the nice utility, see the Unix man page, "nice".
Pri	The priority of the process. The value depends on the scheduling policy.
LWPs	The number of threads.
Sched	<ul> <li>The scheduling policy of the process. Possible values are:</li> <li>FIFO - real time, FIFO (queue) scheduling.</li> <li>RR - real time, round robin scheduling.</li> <li>OTHER - "normal", timeshare scheduling.</li> <li>For information about the scheduling, see the Unix man page, "sched_setscheduler".</li> </ul>
wchan	The name of the kernel function on which the process is waiting.

Process Detail Screen Display Items

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Data Item	Description
nvcsw	The number of voluntary context switches. Voluntary context switches are those context switches on which the process relenguishes the CPU for a reason other than its timeslice expiring.
nivcsw	The number of involuntary context switches. Involuntary context switches are those context switches for which the process has its CPU timeslice expired.

### DISK

The DISK portion of the Process Detail screen displays process and workload DISK information. Each data item is described in the following table.

 Table 26.7
 CVHOST DISK data items

Data Item	Description
IO %	The number of I/O system-wide performed by this process.
ioch	
In Rt	The number of disk reads per second.
Out Rt	The number of disk writes per second.

### IPC

The IPC portion of the Process Detail screen displays process and workload IPC information. Each data item is described in the following table.

#### Table 26.8 CVHOST IPC data items

Data Item	Description
msgsnd	The number of messages sent by the process.
msgrcv	The number of messages received by the process.
nsigs	The number of signals received by the process.



# **CVHOST PROCESS FILE USAGE**

# The Process File Usage Screen

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

learView D.06	d1 bluebird	HON, 27 PROCESS F	FEB 2006, ILE USAGE	84:21	E: 00:25:16	1: 01;
PID: 18678	Name: conid		ser Hame:	gabi	Tty: pts/	0
File		Type	ACCESS	Size	HRefs	
[2]		Char	RV	152	1	
[3]		Char	RW		1	
iter command:	-					

Figure 27.1 CVHOST Process File Usage screen

To access this screen from any CVHOST display screen:

- 1 Type **s** from the CVHOST 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 27.1
 CVHOST PROCESS FILE USAGE data items

Data Item	Description
PID	The product identification number of the process.
Name	The name of the process—the command used to create the process.
User Name	The name of the user that owns the process.
Tty	The device file associated with the terminal to which the process is attached. If no terminal is associated with the process, three dashes () will display.

### **OPEN FILES**

The OPEN FILES portion of the Process File Usage screen displays information about each open file. Each data item is described in Table 27.2.

Table 27.2         CVHOST OPEN FILES da	lata items
-----------------------------------------	------------

Data Item	Description
File	The descriptor of the file.
Туре	<ul><li>The Type data item denotes the type of file:</li><li>Block - a block device file</li></ul>
	<ul><li>Char - a character device file</li><li>Dir - a directory</li></ul>
	<ul><li>FIFO - a FIFO (first in, first out) file</li><li>Link - a symbolic link</li></ul>
	<ul> <li>Proc - a process</li> <li>Regular - a regular file</li> <li>Societation - a constant</li> </ul>
### Process File Usage Screen Display Items

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Data Item	Description
Access	<ul> <li>The type of access the process has to the open file:</li> <li>R - read only</li> <li>W - write only</li> <li>RW - read and write</li> </ul>
Size	The size of the file (bytes).
#Refs	The number of references to the file.



# **CVHOST PROCESS MEMORY REGIONS**

## **The Process Memory Regions Screen**

The Process Memory Regions screen displays information about the memory regions accessed by a specific process.

Slearview D.#6d1	bluebird B	UN, 27 FEB 2000, 04:2 ESS NENDRY REGIONS		E: 00:25:16  : 01:
PID: 18678	Name: cymid	User Hane: gab	i.	Tty: pts/0
		MENORY REGIONS		
ront Store File		Type	229	Virtual Address
(jfs.18.5.4191)		HINA P	61	0x000000000000000000000000000000000000
(jfs.10.5.4191)		HING P	29	9×8888888886666164668
(jfs.10.5.4196>		HIMA P	71	0×000000000095100
(jfs.10.5.4196>		HIMA P	21	0x0000000f0203220
(jfs.10.5.4770)		HING P	43	9×0000000000154100
(jfs.10.5.4770)		HIMA P	6	0x00000000f02dba68
(jfs.10.5.4188)		HIMA P	28	0x000000000012e4c0
(jfs.10.5.4188)		HING P	4	9x88888888866616a9c8
(jfs.10.5.4159)		HIMA P	169	9×8888888888848846888
(jfs.10.5.4159)		HINA P	28	0x000000000000000000000000000000000000
(jfs.10.5.4159)		HINA P	14	9×000000000042000
(jfs.10.5.4159)		HIMA P	392	0x000000000000000000000000000000000000
(jfs.10.5.a1aa)		HINA P	2	8x8222288888888718F8
(jfs.10.5.4144>		FIRST P	<	0x0000000000169508
(jfs.10.5.4132)		HIMA P	1942	0x0000000001cdbe0
(jfs.10.5.4132)		HINA P	557	@x @@@@@@@@f 016d@a@
inter command:		(Sh	owing	lines 5 - 21 of 21

Figure 28.1 CVHOST Process Memory Regions screen

To access the Process Memory Regions screen from any CVHOST display screen:

- 1 Type **s** from the CVHOST 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:

• Or, enter the PID of another process.

The Process Memory Regions screen will display. An example of the screen is shown in Figure 28.1.

## **Process Memory Regions Screen Display Items**

### **PROCESS MEMORY REGIONS**

The PROCESS MEMORY REGIONS portion of the Process Memory Regions screen contains identification information about the selected process. Each data item is described in the following table.

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.

 Table 28.1
 CVHOST PROCESS MEMORY REGIONS data items

### **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.

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Data I tem	Description
Front Store File	<ul> <li>The file path that corresponds to the memory region.</li> <li>This is the program name for data and text regions and the library name for shared libraries.</li> <li>If a file name is not associated with the region, the type of region will be displayed.</li> <li>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.</li> </ul>
Туре	<ul> <li>The type of memory region:</li> <li>HEAP - the region is a heap</li> <li>STACK - stack region</li> <li>ANON - the region is anonymous; not associated with a file</li> <li>MMAP - memory mapped region</li> </ul>
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.

#### Table 28.2 CVHOST MEMORY REGIONS data items



# CVLOGD

## The Historical Performance Data Logging Utility

The ClearView application suite includes a data logging utility called CVLOGD. CVLOGD 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 CVLOGX or CVDATAD.

Data can be logged three ways:

A single, one-time-only, session.

The length of the data collection period is determined by the user.

Continuously, 24 hours a day.

The logging job must be stopped manually with the cvkill command.

Scheduled, using the cron facility.

For example, Monday through Friday, 06:30 AM to 6:30 PM.

## **SL Files**

CVLOGD creates one logical file record for every batch interval. The default interval is 5 minutes (300 seconds). The log file is saved in the ClearView log directory and named using the format *SLyyjjjs*.

- SL represents the ClearView 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 **cvlogd** at the shell prompt of your home directory. It is assumed that your path statements are set up properly.

## **Configuring CVLOGD Run Time**

By default, CVLOGD will run, collecting host data, until midnight (23:59), according to the local system clock. 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 **cvlogd** -**c** at the shell prompt of your home directory to modify the CVLOGD 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**. The cron command should be used if the user wants cvlogd to run only during specific hours. For example, to run cvlogd 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.

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 restart.
-h	Display all available command line switches	
-0	Display the default configuration.	Display the configuration parameters in the .cvlogdrc file.

 Table 29.1
 CVLOGD command line switch functions

## **Viewing Default Configuration Parameters**

Type **cvlogd** -o to view the default configuration parameters for your system. The default parameters are described in Table 29.2.

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 restart itself immediately.
Interval time in seconds (300)	The program will take a sample and write a log record every 5 minutes.
Company name ( )	The company name is blank, by default.
Display advice messages (Y)	CVLOGD will display advice messages.

#### Table 29.2 CVLOGD default configuration parameters

## **Setting Advanced Configuration Parameters**

To create a custom configuration parameter file:

- 1 Create a custom file (.cvlogdrc) with your editing program, listing the parameters as described:
  - RunTime The amount of time (minutes) ClearView 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 .cvlogdrc file in your home directory (the same directory as cvlogd) to enable batch logging parameters.
- 3 To change the configuration, edit the parameters in the .cvlogdrc 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 29.3 can be found in the .cvlogdrc file.

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 Table 29.3
 CVLOGD default configuration variables

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



# CVLOGX

## The Historical Performance Data Extraction Utility

CVLOGX is the historical data counterpart to CVHOST. It provides the means for reviewing performance data stored in the log files that cvlogd has collected. The user interface is similar in many ways to CVHOST. The main difference is that the CVLOGX screens do not display current samples of online performance data. Instead, they display historical data collected by CVLOGD.

The primary functions of CVLOGX 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 ClearView Gallery, a 32-bit, fullcolor graphical analysis and reporting application from ClearView Technologies.

## **Getting Started**

To run CVLOGX:

1 Type **cvlogx** (lowercase) at the prompt. The initial CVLOGX screen will display (see Figure 30.1)



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



Figure 30.1 CVLOGX initial screen

- 2 When CVLOGX 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, CVLOGX 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 CVLOGX data report, the CPU Summary screen, will display. Information about each CVLOGX report is provided in "CVLOGX Reports" on page 205.

The CVLOGX commands and menus are described in "CVLOGX Menus and Options" on page 187.

## **Command Line Switches**

Use command line switches to modify the CVLOGX configuration. Enter **cvlogx** -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 30.1.

Switch	Function
-h	Displays available command line switches.
-j	Forces CVLOGX into job mode. <b>NOTE</b> When input is redirected from a pipe or a file (not from a terminal), CVLOGX 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).
-0	Displays configuration options on startup (batch mode).
-u <filename></filename>	Specifies alternate user configuration filename.
-x	Enables process export file report.
-y <filename></filename>	Specifies alternate system configuration filename.
-z	Disables the "Are you sure you want to exit?" dialog.

#### Table 30.1 CVLOGX command line switch functions.

## **Browsing CVLOGX Reports**

- 1 The first CVLOGX report displayed is the CPU Summary report. Begin by scrolling through this report using the commands keys.
  - The commands shown in the CVLOGX Main Commands screen are discussed in "CVLOGX Menus and Options" on page 187.
  - 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 CVLOGX reports, which can be selected from the CVLOGX Report Format Selection Menu.
  - The Report Format Selection Menu is explained in "CVLOGX Menus and Options" on page 187.
  - Each CVLOGX report is described in "CVLOGX Reports" on page 205.
- 3 The appearance of the reports displayed can be modified. Use the display options described in "CVLOGX Menus and Options" on page 187.

## **Preparing Logged Data for Export**

The data logged by CVLOGD can be prepared in CVLOGX for export to either ClearView Gallery or another third-party application.

## **Exporting Data to ClearView Gallery**

### Setting the ClearView Gallery Configuration

If needed, you can change the configuration of the export file with the options provided in CVLOGX.

- 1 From any CVLOGX report display, type o to access the CVLOGX MAIN OPTION MENU.
- 2 Select the ClearView 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 200.) Press the Enter key to exit the submenu.
- 5 From the ClearView 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 203.) Press the Enter key to exit the submenu.
- 7 Press the Enter key to exit the ClearView Gallery configuration submenu.
- 8 Press the Enter key again to exit the CVLOGX MAIN OPTION MENU.

### **Creating the ClearView Gallery Export File**

From any CVLOGX report display, type P to start the process. Respond to the following prompts:

- Enter ClearView Gallery export file (CVLOGX will append a .pfg file extension to the file name)
- Enter start date for ClearView Gallery (mm/dd/yy)
- Enter start time for ClearView Gallery (hh:mm)
- Enter end date for ClearView Gallery (mm/dd/yy)
- Enter end time for ClearView Gallery (hh:mm)

CVLOGX 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 CVLOGX.

- 1 From any CVLOGX report display, type o to access the CVLOGX 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 200.) Press the Enter key to exit the submenu.
- 4 Press the Enter key again to exit the CVLOGX MAIN OPTION MENU.

### **Creating the Export File**

From any CVLOGX 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)

CVLOGX 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 CVLOGX are user-configurable.

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



**NOTE** The cvrcom report compiler must be run in the clearview file structure in order to update the report definition file, reprtdef, used by CVLOGX.

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

**Table 30.2***cvrcom report compiler commands* 

Command	Description
ADD <file name=""></file>	Adds the specified configuration file to the master report definition file, reprtdef.

Command	Description
DEL <report name=""></report>	Deletes the specified configuration file from reprtdef.
DUMP <report name=""></report>	Dumps existing report internal information.
EXIT	Exits the report compiler, cvrcom.
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=""></file>	Updates the existing configuration file to reprtdef.

## **CVLOGX 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).

- <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 sis 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.

### **CVLOGX Report File Example**

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

\$TITLE "Global Summary" \$KEY " GLOBAL ", "SUMMARY ", 11 \$TEXT TOTAL BUSY: XXX. X | Capture Ratio XXXX. X | 1/5/15 Load Avg% xx. x/xx. x/xx. x User xxx.x Sys xxx.x Wait xxx.x ldle xxx.x |----- MEM/VM ------- | Page Outs xxxx.x/s Page Ixs xxxx.x/s Swap Outs xxx. x/s Swap Ixs xxx. x/s |----- MI SC ------ I #Sessioxs: xxxx #Procs: xxxx #Wait 10: xxxxx Traxsactioxs: xxxx.x/s #Active: xxxx #Active: xxxx #Swap: xxxxx Avg Respoxse Time: xxxx.x |-----| DI SK ------| 10/s 10% QLen Disk Di sk 10/s 10% QLen ......

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#### \$END

\$DEFINE D1 hdisk0

\$DEFINE D2 cd0

CPU-BUSY%	2,	21,	5	
CPU-CAPTURE	2,	74,	6	
CPU-USER%	3,	9,	5	
CPU-SYS%	3,	27,	5	
CPU-QUEUE-LEN	3,	66,	4	
CPU-QUEUE-5M	3,	71,	4	
CPU-QUEUE-15M	3,	76,	4	
CPU-WAI T%	4,	9,	5	
CPU-IDLE%	4,	27,	5	
VM-PAGE-OUT-RATE	6,	21,	6	
VM-PAGE-IN-RATE	6,	61,	6	
VM-SWAP-OUT-RATE	7,	22,	5	
VM-SWAP-IN-RATE	7,	62,	5	
MI SC-SESSI ONS	9,	13,	5	
MI SC-PROCESSES	9,	28,	5	
MI SC-PROC-BLOCK-I 0	9,	45,	5	
MI SC-TRANS-RATE	9,	72,	5	
MESC-ACT-SESSLONS	10.	13.	5	
MLSC-ACT-PROCESSES	10	28	5	
MI SC-PROC-SWAPPED	10	45	5	
MI SC-RESP-TIME	10	72	6	
	,	,	0	

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DI SC-DEVFI LE: D1	13,	2, 16
DI SC-I O-RATE: D1	13,	20, 5
DI SC-I 0%: D1	13,	29, 3
DI SC-QUEUE-LEN: D1	13,	34, 5
DI SC-DEVFI LE: D2	13,	43, 16
DI SC-I O-RATE: D2	13,	61, 5
DI SC-I 0%: D2	13,	70, 3

DI SC-QUEUE-LEN: D2 13, 75, 5



# **CVLOGX MENUS AND OPTIONS**

## The CVLOGX Main Commands Screen

The MAIN COMMANDS screen in CVLOGX contains a list of single-key shortcut commands that can be invoked from any CVLOGX display screen.

To display the MAIN COMMANDS menu, type ? from any CVLOGX screen.

	MAIN COMMANDS	
Navigation Keys:		
+ - Scroll ahead	> -	Skip forward
Scroll back	ć -	Skin back
s - Report selection menu	£ -	Select time prompt
Logfile Conmands:		
i - Display file index	1 -	Display logfile list
p - Print report	r -	Reload report definitions
w - Update		
Configuration:		
d - Toggle process display	U -	Toggle ext. process display
e - Options menu	2	
Exporting Data:		
8 - Export report	P -	ClearView Gallery export
c - Report compiler		
Other:		
m – Hore Func keys	^L -	Refresh screen
? - Command help (this scree	n) e -	Exit program
[Press ES	C to return to	program]

Figure 31.1 CVLOGX MAIN COMMANDS screen

Each command is described in the next section of this chapter.

## **Main Commands**

The Curses library enables ClearView to run with non-HP terminals. Host systems using non-HP terminals will not have function keys available to them, therefore, the CVLOGX 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 31.1 CVLOGX 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 31.2	CVLOGX logfile command l	keys
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Key(s)	Command
i	Display the file index
Ι	Display the logfile list
р	Print the report
r	Reload the report definitions
u	Update the report

### **Configuration Commands**

 Table 31.3
 CVLOGX configuration command keys

Key(s)	Command
d	Toggle the process display

#### The CVLOGX Report Format Selection Menu

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Key(s)	Command
0	Display the Options menu
У	Toggle the extended process display

### **Data Export Commands**

Table 31.4	CVLOGX da	ta export	command	keys
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Key(s)	Command
R	Export report
Р	Export ClearView Gallery data
с	Compile the report

### **Other Commands**

Table 31.5         CVLOGX other command keep	eys
----------------------------------------------	-----

Key(s)	Command
?	Display the Main Commands screen
Ctrl+I	Refresh the screen
е	Exit the program
m	Cycle through the function keys

## The CVLOGX Report Format Selection Menu

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

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

```
CULOEX
         D.#6e bluebird Loc:var/opt/lund/log/ Log: --/--/-- --:--
                        Report Format Selection Henu
1 Clobal Summary
                                     7 HFS Glient Sunnary
2 Nemory Summary Chart
                                    8 CPU Sunmary Chart
3 Nemory Summary
                                     9 Disk Summary
A System Configuration
                                    10 FS Space Summary
5 Net If Summary
                                    11 Workload Summary
6 Network Sunmary
Press return to go to main screen.
Enter report format option:
```

Figure 31.2 CVLOGX Report Format Selection Menu screen

To view one of the reports listed in the Report Format Selection Menu, type the report's corresponding command key at the command prompt. Each screen is described briefly in Table 31.6. The reports are described in detail in "CVLOGX Reports" on page 205.



**NOTE** All command keys are case-sensitive.

<b>Table 31.6</b> C	CVLOGX Report	Format Selection	Menu c	command	keys
---------------------	---------------	------------------	--------	---------	------

Кеу	Report Format	Description
1	Global Summary	The Global Summary report contains a basic, overall picture of your system's performance. For more information, see "CVLOGX Global Summary" on page 205.
2	Memory Summary Chart	The Memory Summary Chart displays memory performance data in graphical format. For more information, see "CVLOGX Memory Summary Chart" on page 207.

CVLOGX MENUS AND OPTIONS

### The CVLOGX Report Format Selection Menu

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Кеу	Report Format	Description
3	Memory Summary	The Memory Summary report provides a detailed look at memory performance data in tabular format. For more information, "CVLOGX Memory Summary" on page 208.
4	System Configuration	Shows the current system configuration parameters. For more information, see "CVLOGX System Configuration" on page 209.
5	Net If Summary	The Net If Summary report contains information about the network interface. For more information, see "CVLOGX Net If (Network Interface) Summary" on page 210.
6	Network Summary	The Network Summary report displays network performance information, including protocol data and network interface information. For more information, see "CVLOGX Network Summary" on page 211.
7	NFS Client Summary	The NFS Client Summary report provides information about the Network File System (NFS). For more information, see "CVLOGX NFS Client Summary" on page 212.
8	CPU Summary Chart	The CPU Summary Chart reports the general state of one or more CPUs. For more information, see "CVLOGX Global Summary" on page 205.
9	Disk Summary	The Disk Summary report contains a table of performance data for all disks on the system. For more information, see "CVLOGX CPU Summary Chart" on page 213.
10	FS Space Summary	The FS Space Summary contains general information about the block and fragment size, space usage, and inode usage for each file system. For more information, see "CVLOGX FS Space Summary" on page 215.

Кеу	Report Format	Description
11	Workload Summary	The Workload Summary report provides general workload information. For more information, see "CVLOGX Workload Summary" on page 216.

## The CVLOGX Main Option Menu

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

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

```
WMIN OPTION HENU
1) Current log file location (/war/opt/clearview/log/)
2) Company name ()
3) Use function keys to select reports (N)
4) Naxinum lines per report page (60)
5) Display process information (N)
6) Display extended process line (N)
7) Data break configuration menu (SUBNEHU)
8) Log information exclusions (SUBNEHU)
9) Export file configuration menu (SUBNEHU)
10) ClearView Gallery configuration (SUBNEHU)
Which Option:
```

Figure 31.3 CVLOGX MAIN OPTION MENU

### **Main Options**

To enable an option:

- 1 Type the option command key from the CVLOGX 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 CVLOGX MAIN OPTION MENU.

- 4 At the Should these options be saved permanently? prompt:
  - Press the Enter key to return to the CVLOGX 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 CVLOGX 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 CVLOGX reports. To add the name of your company or another brief headline for your CVLOGX reports:

- 1 From the CVLOGX 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 CVLOGX report.

#### Use function keys to select reports

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

- 1 From the CVLOGX 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, CVLOGX reports contain up to 60 lines of information per page. To increase or decrease the maximum threshold:

- 1 From the CVLOGX 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 CVLOGX 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 CVLOGX 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.

The CVLOGX Main Option Menu

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```
Which Option: _
```

Figure 31.4 CVLOGX Data break configuration submenu

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

Table 31.7	CVLOGX Data break configuration of	options
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Option	Default	Description
Force data break at end of logfile	Ν	By default, the boundary between datafiles is transparent, or "invisible", to the user. To force a break between datafiles on the report screen, enter <b>Y</b> (Yes).
Force data break at end of day	Y	By default, there is a break after the last data record for each day. To remove this break, enter ${f N}$ (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 CVLOGX 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 ClearView Gallery 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 CVLOGX MAIN OPTION MENU (see Figure 31.5).

```
MAIN OPTION MENU
  Log information exclusions
   1) Exclusions enabled (H)
  --- Exclude holidays
  ---- Exclude day range
  ____
                      te
  --- Exclude time range
                       to
  ---- Exclude time range
  ----
                       te
  --- Exclude time range
  ---
                       te
  --- Exclude time range
  ---
                       to
Which Option: _
```

Figure 31.5CVLOGX Log information exclusions submenu

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

Table 31.8 CVLOGX Log inform	nation exclusion options
------------------------------	--------------------------

Option	Default	Description
Exclusions enabled	Ν	By default, exclusions are disabled. To set and enable one or more exclusions, type <b>Y</b> (Yes) and press Enter—the subsequent options will be activated.
Exclude holidays	Ν	To exclude holidays (as defined in the holidays.dat file), type <b>Y</b> (Yes) and press Enter. For information about the holiday.dat file, see "CVHOST holidays File" on page 70.

The CVLOGX Main Option Menu

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

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

#### Export file configuration menu (SUBMENU)

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



**NOTE Do** not employ these options when preparing data for export to the ClearView Gallery 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 CVLOGX MAIN OPTION MENU.

```
MMIN OPTION MENU

Export file configuration meanu

1) Generate item label heading line (Y)

2) Enclose item labels in quotes (Y)

3) Include log date in data line (H)

---- 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 31.6 CVLOGX Export file configuration submenu

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

Table 31.9	CVLOGX 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 <b>N</b> (No).
Enclose item labels in quotes	Y	The data item labels are enclosed in quotation marks (" "). To eliminate the quotation marks, choose ${f N}$ (No).
Include log date in data line	Ν	To include the log date in the data line, enter <b>Y</b> (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

The CVLOGX Main Option Menu

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Option	Default	Description
Enclose date in quotes	Y	The log date will be enclosed in quotation marks, by default. To remove the quotation marks, enter ${f N}$ (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 ${\bf N}$ (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 ${\bf N}$ (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 ${f N}$ (No).

#### **ClearView Gallery configuration (SUBMENU)**

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

```
MMIN OPTION HENU
ElearView Gallery conFiguration
1) Export Data configuration (SUBMENU)
2) Export Thresholds configuration (SUBMENU)
Which Option:
```

Figure 31.7 CVLOGX ClearView Gallery configuration submenu

From the ClearView Gallery configuration submenu, you can access the following configuration menus:

- Export Data configuration submenu (see "Export Data configuration Submenu" on page 200).
- Export Thresholds configuration submenu (see "Export Thresholds configuration Submenu" on page 203).

#### **Export Data configuration Submenu**

To display the Export Data configuration submenu, type the corresponding command key from the CVLOGX ClearView Gallery configuration submenu.
The CVLOGX Main Option Menu

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```
MAIN OPTION MENU
 ClearView Gallery conFiguration
   Export Data configuration
  1) CPU Data (Y)
  2) Buffer Cache Data (Y)
  3) UH Data (Y)
  4) Misc Data (Y)
  5) Disk Data (Y)
  6) Network Protocol Data (Y)
  7) Network Interface Data (Y)

 HFS Data (H)

  9) Workload Data (9)
 18) Process Data (N)
 11) Swap Data (M)
 12) File System Space Data (N)
 13) Volume Data (M)
 14) Processor Data (H)
Which Option:
```

Figure 31.8 CVLOGX Export Data configuration submenu

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

Table 31.10	CVLOGX Export	t 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 ${\bf N}$ (No).
Buffer Cache Data	Y	By default, the buffer cache data will be exported. To eliminate this data from the export file, enter ${f N}$ (No).
VM Data	Y	By default, VM (virtual memory) data will be exported. To eliminate this data from the export file, enter ${f N}$ (No).
Misc Data	Y	By default, miscellaneous data will be exported. To eliminate this data from the export file, enter <b>N</b> (No).
Disk Data	Y	By default, disk data will be exported. To eliminate this data from the export file, enter <b>N</b> (No).

Option	Default	Description
Network Protocol Data	Y	By default, network protocol data will be exported. To eliminate this data from the export file, enter ${f N}$ (No).
Network Interface Data	Y	By default, network interface data will be exported. To eliminate this data from the export file, enter ${f N}$ (No).
NFS Data	Ν	By default, NFS (network file system) will not be exported. To include this data in the export file, enter <b>Y</b> (Yes).
Workload Data	Y	By default, workload data will be exported. To eliminate this data from the export file, enter <b>N</b> (No).
Process Data	Ν	By default, process data will not be exported. To include this data in the export file, enter ${\bf Y}$ (Yes).
Swap Data	Ν	By default, swap data will not be exported. To include this data in the export file, enter <b>Y</b> (Yes).
File Systems Space Data	Ν	By default, file systems space data will not be exported. To include this data in the export file, enter $\mathbf{Y}$ (Yes).
Volume data	Ν	By default, volume data will not be exported. To include this data in the export file, enter ${\bf Y}$ (Yes).
Processor Data	Ν	By default, processor data will not be exported. To include this data in the export file, enter ${\bf Y}$ (Yes).

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**Export Thresholds configuration Submenu** 

To display the Export Thresholds configuration submenu, type the corresponding command key from the CVLOGX ClearView Gallery configuration submenu.

Figure 31.9 CVLOGX Export Thresholds configuration submenu

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

 Table 31.11
 CVLOGX Export Thresholds configuration options

Option	Default Setting
Max number of Discs Exported	100
Max number of Network Ifs (interfaces) Exported	10
Max Number of NFS Systems Exported	50
Max Number of Workloads Exported	50
Max Number of Processes Exported	20
Max Number of Swaps Exported	20
Max Number of File System Space Exported	100
Max Number of Processors Exported	10
ClearView Gallery File Size Limit	10,000



# **CVLOGX REPORTS**

# **CVLOGX Global Summary**

The Global Summary in CVLOGX displays system-wide performance data, similar to the Global Summary in CVHOST:

- CPU utilization statistics
- CPU miscellaneous statistics
- Memory and virtual memory statistics
- Miscellaneous statistics
- Disk statistics
- Process statistics
- Workload statistics

An example CVLOGX Global Summary screen is shown in Figure 32.1. For information about global data, refer to "CVHOST Global Summary" on page 79.

	0059- 24 0		Casture	Patia:	PU HISC	
	L BUSY: 21.0		capcure	Ratio:		
USEF: 0.9	598:	19.1	1/5/15	road and it:	-	1/ .0/ .
Walt: 15.2	10101	63.8 I	NEW ZOW			
Pane	Auts: 3.6	/s	NEN/ VN	Page	Inc. B/s	
Swan	Outs: .0	/ 5		Swam	Ins: .8/s	
		, <i>.</i> 	- NISC -			
#Sessions:	8 #Precs:	<b>A8 89</b> 4	it 1/0:		Transaction	5: 39.8/5
Bactive:	1 #Active:	3 150	201		Response Tim	
			- DISK -			
Disk	10/5	10% 01	en   Di	≤k	10/5	10% 01e
hdisk0	20	100	.0 j cd			0 .
		**** Prace	ss Stati	stics *****		
	User Nan	# 11Y	CPUZ	Nice Pri	RSS/ Size	State
ID Name		pts/2	8.8	41 60	920/ 3280	RUH
ED Name 0198 cvlogd	9401					
D198 cvlogd 7818 cvnid	gabi gabi	pts/2	0.2	41 26	8989/35724	KUN

Figure 32.1 CVLOGX Global Summary report

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### **CVLOGX Memory Summary Chart**

CULOEX D.06d1 bluebird Loc:var/opt/lund/log/ Leg: 02/13/06 82:56 HENORY SUNNARY Swap Outs/sec Page Outs/sec line 5 10 20 25 . ς 18 15 20 --02/13/06 82:56 03:0183:06 83:11 83:16 03:21 83:26 83:31 83:37 83:42 83:47 03:52 83:57 84:82 Bh: 87 84:12 84:17

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

Figure 32.2 CVLOGX Memory Summary Chart report

84:22

For information about the data in the CVLOGX Memory Summary Chart report, refer to "CVHOST Memory Summary" on page 107.

### **CVLOGX Memory Summary**

The Memory Summary in CVLOGX displays a detailed look at memory and virtual memory performance, similar to the Memory Summary in CVHOST.

Figure 32.3 CVLOGX Memory Summary report

For information about the data in the CVLOGX Memory Summary Chart, refer to "CVHOST Memory Summary" on page 107.

# **CVLOGX System Configuration**

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

CULOEX D.@6d1 blue	bird Loc:var/opt/lu	nd/log/ Leg: 02	/13/06 02:56
82/13/86			
82:56	SYSTEN CONFLU	URATION	
sector paper bluch	and and a second s	JOHN I LON	
system name: urueu			
Rernel Version: 2	cpu typ	: 00000120	
serial num: 172372	vs boot time	e: 18:39 06 OCT 2	995 run level: 2
	PROCESS CONF	IGURATION	
max_nup/uid:	max_nthread:	maxfile:	max_nproc:
	IPC CONFIGU	RATION	
HESSAGES		SHARED MEM	SENAPHORES
nsgnni: 1 ns	şssz: €  shmnni:	9 shaseg:	7892 semmi: 8
03:01	SYSTEM CONFID	SURATION	
system name: blueb	ird		
kernel version: 2	cas tun	·: ######128	
serial pup: 173373	bast tin	· 40-30 B4 BFT 3	aat run lausl: 5
Series num. Treare	BROCETT COME	CUBATION	any run rever. 2
	PROCESS CONF	CONNIION	
max_nup/uid:	max_nthread:	Max+11e:	nax_nprec:
	IPC CONFIGU	RATION	
HESSAGES	1	SHARED HEM	SEMAPHORES
nsgnni: 1 ns	SSZ: 0  Shmmni:	9 shaseg:	7092   semmn1: 8
			-

Figure 32.4 CVLOGX System Configuration report

For information about the data items presented in the CVLOGX System Configuration report, refer to "CVHOST System Configuration Summary" on page 149.

### **CVLOGX Net If (Network Interface) Summary**

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

```
D.#6e bluebird Loc:var/opt/lund/log/ Log: 03/19/#6 09:31
CULBEX
---- 82/19/86
--- 09:31 ----- METWORK INTERFACE SUMMARY -----
InterF Packets Avg Packet Size Errors
                                              Bit
     In/s Out/s Recy Sent Int
                               Gut &
                                         Defer% rate
                              _____
                                        _____
en D
     285.2 284.4 194 167 .88 .00
.8 .9 8 9 .88 .00
                                          . 88
eto
                                          . 00
                                              .
TOTALS 205.2 284.4 194
                                .00
                                           . 88
                                              . .
                    167 .88
--- 09:36 ----- NETWORK INTERFACE SUMMARY -----
InterF Packets Avg Packet Size Errors
                                              Dit.
     In/s dut/s Recy Sent
                          Int
                               Out2
                                         Defer% rate
             _____
                               _____
                                          . 00
                283
en B
     248.9 252.6
                      171 .88 .00
                                              . .
                                              .
                .
                      .
                                . 00
                                          . 88
etB
     . ...
_____
                                ------
TOTALS 248.9 252.6 283 171
                           . 88
                                 .00
                                          . 88
                                                æ
```

Figure 32.5 CVLOGX Net If Summary report

For information about the data displayed in the CVLOGX Net If Summary report, please refer to "CVHOST Network Summary" on page 121. **CVLOGX Network Summary** 

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The Network Summary in CVLOGX displays network performance information.

	Packets 1	n/s 1	Packets	OUC/S	Errers I	n 5.	Errors	0005
18		4.2		2.8				. 00
TCP/1P		. 0		. 0				
ICHP		. 0						
101								H/A
- 03.01			NF T MORE	SUNNARY				
Pretecel	Packets i	n/s i	Packets	out/s	Errors 1	5n	Errors	Outt
18		1.1		.8		aa		. 00
TCP/1P								
ICHP		. 0					. 8	
895								H/A

Figure 32.6 CVLOGX Network Summary report

For information about the data displayed in the CVLOGX Network Summary, please refer to "CVHOST Network Summary" on page 121. The NFS Client Summary in CVLOGX 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.

```
CVLOEX D.#6d1 bluebird Loc:var/opt/lund/log/ Log: 02/13/06 02:56
---- 82/13/86
--- 02:56 ----- NFS CLIENT SUNMARY ---
                       Bad NFS Calls
                                  . 0
NFS U2 PERCENT
MULL .0 GTATTR .0 STATTR .0 RODT
                                   .0 LOOKUP .0 ROLINK
                                                      .0
                         .0 CREATE
READ
      .0 NCACHE .0 NRITE
                                 .0 RENOVE .0 RENAME
                                                      .@ SLINK .@ MKDIR
                         .0 RHDIR .0 RDDIR
                                            .0 STATES
                                                      . 8
LINK
         NFS #3 PERCENT -----
                                                      ____
                                   .0 ACCESS
NULL
      .0 GTATTR .0 STATTR
                        .0 LOOKUP
                                             .0 ROLINK 60.0
      .0 WHITE .0 CREATE .0 NKDIR
.0 RHOIR .0 REHAME .0 LINK
.0 FSINFO .0 PCONF 40.0 CDHHIT
READ
                                   .0 SLINK
                                             . 8 HKN00
                                                      . 8
                                   .0 R001R
RENOVE
                                             .0 RDDIRP
                                                      .0
                                   . 0
ESSTAT
             ----- RPC ------
Calls *****
                                                   Rad .....
-
```

Figure 32.7 CVLOGX NFS Client Summary report

For information about CVLOGX NFS Client data, refer to "NFS Summary Screen Display Items" on page 126.

## **CVLOGX CPU Summary Chart**

The CPU Summary Chart in CVLOGX displays general CPU statistics in graphical format, similar to the CPU SUMMARY in CVHOST.

				- CPU	SUNNAR	V				
			%CPU	Utili	zation					1010
ne O	10 2	0 30	40	50	60	78	80	98	100	Tine
- 02/13/	16		_							
:56	18	85	5							63.8
:01										98.6
106 8										98.4
:11										98.8
:16										98.8
121 85										97.5
:26 8										98.9
:31 8										98.8
:37										99.0
:42										98.9
:47 🛛										98.8
:52 8										98.9
:57										98.9
:02										98.8
:07										98.9
12										98.9

Figure 32.8 CVLOGX CPU Summary Chart report

For information about the CVLOGX CPU Summary Chart data, please refer to "CVHOST CPU Summary" on page 101.

## **CVLOGX Disk Summary**

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

D.#6e bluebird Loc:var/opt/lund/log/ Log: 03/19/#6 09:31 CULDEX ---- 82/19/86 --- D9:81 ----- DISK SUNNARY -----Rates (/s) Avg Size(kb) 10% Qlen Util% 0.00 10's 10 10 size Read Write hdiskO 100 .0 .0 102 28 . 7367 72 cd B 0.0.0 . a 0 . TOTALS 100 .0 .0 102 7367 72 20 8 --- 09:36 ----- DISK SUNNARY -----Rates (/s) Avg Size(kb) 0.0--10% Qlen Util% 10's 10 10 size Read Write hdisk8 100 .0 .0 397 1 . 7367 1032 0 . . 0.0.0 . cd8 \_\_\_\_\_ \_\_\_\_\_ TOTALS 188 .8 .8 397 1 . 7367 1032 -

Figure 32.9 CVLOGX Disk Summary report

For information about the data presented in the CVLOGX Disk Summary, refer to "CVHOST Disk I/O Summary" on page 111.

## **CVLOGX FS Space Summary**

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

	Block/Frag			Free su	
lount	Size/Size	Size (KB)	Free (KB)	(88)	Used
,	4896/ 4896	16384	6552	6552	68
457	4896/ 4896	1441792	720588	720588	58
'var	4896/ 4896	131072	114996	114996	12
	FILE SYSTI	EN SPACE SUN	HARY		
	Block/Frag			Free su	
lount	Size/Size	Size (KB)	Free (KB)	(88)	Usedi
,	4896/ 4896	16384	6552	6552	68
usr	4896/ 4896	1441792	720588	728588	58
'var	4296/ 4896	131072	114996	114996	12

Figure 32.10 CVLOGX FS Space Summary report

For information about the data contained in the CVLOGX FS Space Summary report, refer to "CVHOST File System Space Summary" on page 119.

## **CVLOGX Workload Summary**

The Workload Summary in CVLOGX displays workload statistics.

WORKLOAD SUMMARY           Mo Group Hane         SCPU         SUser CPU         Nem (kb)         UH (i           1:INTERACT         .4         27.0         11293         51           2:BATCH         .0         .0         0         0           3:DAEHOH         .1         7.0         1446         214           4:DEFAULT         .0         .0         0         0           3:DAEHOH         .1         7.0         1446         214           4:DEFAULT         .0         .0         0         0           5:         .0         .0         0         0	CULDEX D.06d1	bluebird	Loc:var/opt/lund/log/	Log: 02/13/06	05:07
He Croup Hane         SCPU         SUSEr CPU         Hen (kb)         UH (A           1:INTERACT         .4         27.0         11293         51           2:DATCH         .0         .0         0         21           3:DAEENOH         .1         7.0         1446         214           4:DEFAULT         .0         .0         0         214           4:DEFAULT         .0         .0         0         214           4:DEFAULT         .0         .0         0         214           5:           VORKLOAD SUHHARY	05:07		VORKLOAD SUMMARY		
1:INTERACT       .4       27.0       11293       51         2:BRTCH       .0       .0       0       3108EH0H       .1       7.0       1446       214         3:DREFAULT       .0       .0       .0       0       0       214         4:DEFAULT       .0       .0       .0       0       0       0         5:        05:12        VORKLORD SUMMARY           No Group Hane       %CPU       %User CPU       Nen (kb)       UH (b       1140       51         No Group Hane       %CPU       %User CPU       Nen (kb)       UH (b       51         2:BATCH       .0       .0       0       0       51         2:BATCH       .0       .0       0       0       51         2:BATCH       .0       .0       0       0       51         3:BAEHON       .2       1.6       1446       214         4:DEFAULT       .0       .0       0       5:	No Group Hane	3.CPU	<b>LUSER CPU</b>	Hen (kb)	UN (kb)
2:0ATCH .0 .0 0 3:DAREHOH .1 7.0 1446 214 4:DEFAULT .0 .0 0 5: 05:12 VORKLOAD SUMMARY	1: INTERACT	.4	27.0	11293	5181
3:D#EHOH .1 7.0 1446 214 A:DEFAULT .0 .0 0 5: 05:12	2:DATCH	. 8	- 8		
4:DEFAULT .0 .0 0 5: 05:12	3:DAENOH	.1	7.0	1446	21440
5: 05:12 VORKLOAD SUNHARY	A:DEFAULT	. 0	.0		
05:12	5:				
No Group Hane SCPU SUSer CPU Hen (kb) UH (1 111HTERACT .4 21.1 11320 51 2184TCH .0 .0 0 3104EHOH .2 1.6 1446 214 A10EFAULT .0 .0 0 5: -	05:12		VORKLOAD SUMMARY		
1:INTERACT .4 21.1 11820 51 2:BATCH .0 .0 0 3:DAEHOH .2 1.6 1446 214 4:DEFAULT .0 .0 0 5: -	No Group Hane	3,CPU	Quser CPU	Hen (kb)	UH (kb)
2:84TCH .0 .0 0 3:04EMDH .2 1.6 1446 214 4:DEFAULT .0 .0 0 5: -	1: INTERACT	. 4	21.1	11320	5181
3:04EHDH .2 1.6 1446 214 A:0EFAULT .0 .0 0 5: -	2:BATCH	. 0	.0		
4:DEFAULT .0 .0 0 5: -	3:DRENDH	.2	1.6	1446	21448
5:	4:DEFAULT	. 0	.0		0
-	5:				

Figure 32.11 CVLOGX Workload Summary report

For information about the CVLOGX Workload Summary statistics, refer to "WORKLOAD SUMMARY Data Items" on page 90.



# **CLEARVIEW FOR AIX PULSE POINTS**

Pulse points are the indicators of performance displayed in the CVHOST Pulse Points screen. For information about pulse point performance indicators, see "CVHOST Pulse Points Summary" on page 153.

The following AIX pulse points are provided by ClearView Technologies. The performance ranges are generic for all AIX systems—customizing them for your system is recommended. Please refer to the configuration instructions in "CVHOST ppoints File" on page 72.

	Per	formance Ran	ges
Performance Indicator	Normal	Problematic	Unacceptable
Processor Performance			
CPU Busy %	less than 85	85 to 95	greater than 95
The percentage of time the CPU spent executing the following activities instead of being in a pause or idle state:			
<ul> <li>Processing user and system process code.</li> </ul>			
Managing main memory.			
<ul> <li>Scheduling and dispatching processes (interrupts).</li> </ul>			
<ul> <li>Processing context switches and overhead (external device activity).</li> </ul>			
Run Queue Average	less than 5	5 to 10	greater than 10
The average number of executable processes that waited for the CPU during a collection interval.			

#### Table A.1ClearView for AIX Pulse Points

	Per	rformance Ran	ges
Performance Indicator	Normal	Problematic	Unacceptable
Memory Performance			
Page Out Rate The number of instances per second that a page out occurred during the collection interval. A page out is performed to move the least-needed pages from memory by writing them to swap space or to the file system. A page out occurs when physical memory becomes scarce.	less than 70	70 to 100	greater than 100
Swap Out Rate The number of processes swapped out of memory to disk in order to satisfy extreme memory shortages.	less than 1	1 to 2	greater than 2
Disk Performance			
Average Queue Length The average number of processes in the request queue for a particular disk drive.	less than 1	1 to 3	greater than 3
Disk Utilization % The percentage of disk utilization.	less than 40	40 to 60	greater than 60
Disk I/O Rate The number of disk I/O (reads and writes to disk) per second.	less than 50	50 to 100	greater than 100
Network Performance			

	Per	formance Ran	ges
Performance Indicator	Normal	Problematic	Unacceptable
Collision % The number of output packets sent that resulted in a collision.	less than 3	3 to 10	greater than 10

# **AIX DATA ITEMS**

The following is the contents of the /opt/clearview/lib/itemlist file. All possible data items monitored by ClearView 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 ClearView Technologies periodically and without notice to users.

```
WARNI NG!
                       Į.
L
! File Structure:
Į.
! Column 1
Į.
  Item Name (used by CVLOGX reports and other functions)
Į.
      (20 character MAX)
! Column 2
  Block Number (Must be in sorted order from 0 to n)
Į.
Į.
! Column 3
  Offset in 16 bit words (Must be in sorted order with no holes or overlaps)
Į.
! Column 4
```

```
Į.
      Type of variable (1 = short,
                                      (16 bits, signed)
Į.
                         2 = I \text{ ong},
                                       (32 bits, signed)
Į.
                         4 = \text{longint}, (64 \text{ bits}, \text{signed})
L.
                        -1 = ushort,
                                       (16 bits, unsigned)
Į.
                         0 = string)
! Column 5
L.
      Total display length in characters (including dec pt and dec places)
Į.
           (Should never be greater than 11 for non-string types!)
L Column 6
      Implied decimal places
L
! Column 7
Į.
      fl ags
             - = none,
Į.
              I = peak values are low
Į.
              0 = treat 0% like 100%
                                                     (for pulse points)
! Column 8
L.
      Comments
GLOB-ELAPSED-TIME
                      0 0 2 9 0 -
                                          Elapsed time (ms)
GLOB-MODEL
                      0 2000 0 8 0 -
                                          System model
DI SC-DEV
                      1
                          0
                              2 8 0 -
                                          Disk device code
DI SC-PHY-AVG-RD-SI ZE 1
                              2 5 0 -
                                          Average disk physical read size (B)
                          2
DI SC-PHY-AVG-WR-SI ZE 1
                          4
                              2 5 0 -
                                          Average disk physical write size (B)
DISC-IOS
                      1
                          6
                              2 5 0 -
                                           Disk physical IO activity (IO's)
DI SC-I O-RATE
                          8
                              2 6 0 -
                                          Disk physical IO rate (IO/s)
                      1
DI SC-I O-RATE-SI ZE
                              2 6 0 -
                      1 10
                                          kbytes/sec xfer rate capability
DI SC-10%
                      1 12
                              1 3 0 -
                                          Percent of total disc I/O
DI SC-QUEUE-LEN
                      1 13 -1 6 1 -
                                          Disk request queue length
DI SC-UTI L%
                      1 14
                              151-
                                          Disk utilization %
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DI SC-DEV2	1	2000	2	8	0 -	Di sc devi ce code
DI SC-DEVFI LE	1	2002	0	16	0 -	Disc device filename
GROUP	2	0	1	3	0 -	Workload group number
GRP-LOW-PRI	2	1	-1	2	0 -	Workload high priority
GRP-HI GH-PRI	2	2	-1	2	0 -	Workload low priority
GRP-CPU%	2	3	-1	5	1 -	Workload CPU %
GRP-DI SC%	2	4	-1	5	1 -	Workload disk 10 %
GRP-PROC-COUNT	2	5	-1	6	1 -	Workload active process count
GRP-MEM	2	6	2	9	0 -	Memory used by procs in workload (KB)
GRP-VM	2	8	2	9	0 -	VM used by procs in workload (KB)
GRP-MEM%	2	10	-1	5	1 -	% Memory used by procs in workload
GRP-VM%	2	11	-1	5	1 -	% VM used by procs in workload
GRP-MAJFLT-RATE	2	12	2	5	1 -	Workload major page fault rate (/s)
GRP-MINFLT-RATE	2	14	2	5	1 -	Workload minor page fault rate (/s)
GRP-SWAP-RATE	2	16	2	5	1 -	Workload swap out rate (/s)
GRP-CPU	2	18	2	9	0 -	Workload CPU time (ms)
GRP-TYPE	2	20	-1	1	0 -	Workgroup type
GRP-USER-CPU%	2	21	-1	5	1 -	Workload user CPU percentage
GRP-SYS-CPU%	2	22	-1	5	1 -	Workload system CPU percentage
GRP-TRAP-CPU%	2	23	-1	5	1 -	Workload CSW CPU percentage
GRP-PHY-IO-CNT	2	24	2	4	0 -	Workload physical 10 count (10's)
GRP-PHY-RD-CNT	2	26	2	4	0 -	Workload physical read count
GRP-PHY-WR-CNT	2	28	2	4	0 -	Workload physical write count
GRP-PHY-RD-RATE	2	30	2	5	1 -	Workload physical read rate (/s)
GRP-PHY-WR-RATE	2	32	2	5	1 -	Workload physical write rate (/s)
GRP-CPU-LI VE%	2	34	-1	3	0 -	Workload process alive on CPU %
GRP-PRE-WT%	2	35	-1	3	0 -	Workload preempted wait %
GRP-TPGFLT-WT%	2	36	-1	3	0 -	Workload text page fault wait %

GRP-DPGFLT-WT%	2	37	-1	3	0	-	Workload data page fault wait %
GRP-KPGFLT-WT%	2	38	-1	3	0	-	Workload kernel page fault wait %
GRP-ULCK-WT%	2	39	-1	3	0	-	Workload user lock wait %
GRP-JOB-WT%	2	40	-1	3	0	-	Workload job control wait %
GRP-OTHR-WT%	2	41	-1	3	0	-	Workload other wait %
GRP-LIVE-TIME	2	42	2	9	0	-	Workload process live time (ms)
GRP-PRE-TIME	2	44	2	9	0	-	Workload preempted time (ms)
GRP-TPGFLT-TI ME	2	46	2	9	0 -	-	Workload text page fault wait time (ms)
GRP-DPGFLT-TI ME	2	48	2	9	0 -	-	Workload data page fault wait time (ms)
GRP-KPGFLT-TIME	2	50	2	9	0	-	Workload kernel page fault wait time (ms)
GRP-ULCK-TI ME	2	52	2	9	0	-	Workload user lock wait time (ms)
GRP-JOB-TIME	2	54	2	9	0	-	Workload job control wait time (ms)
GRP-OTHR-TI ME	2	56	2	9	0	-	Workload procs other wait time (ms)
GRP-TRANS	2	58	2	5	0	-	Workload transactions
GRP-RESP-TIME	2	60	-1	5	1	-	Average workload prompt response time (s)
GRP-FI LLER	2	61	1	0	0	-	Not used
GRP-TOT-RESP	2	62	2	9	0	-	Workload lifetime response time (ms)
GROUP2	2	2000	1	3	0	-	Workload group number
GRP-NAME	2	2001	0	12	0	-	Workload name
PROC-PI D	3	0	2	5	0	-	Process PID
PROC-NAME	3	2	0	14	0	-	Process name
PROC-USER	3	9	0	10	0	-	Process user name
PROC-TTY	3	14	0	12	0	-	Process terminal device code
PROC-CPU-PCT	3	20	1	5	1	-	Process CPU %
PROC-NI CE	3	21	1	3	0	-	Process ni ce val ue
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-SI ZE	3	26	2	6	0 -	Process virtual memory used (KB)
PROC-PHY-READS	3	28	2	6	0 -	Process physical disk reads
PROC-PHY-WRITES	3	30	2	6	0 -	Process physical disk writes
PROC-IO-PCT	3	32	1	3	0 -	Process % of physical IO's
PROC-WAI T-STATE	3	33	1	2	0 -	Process wait state
PROC-CPU-TIME	3	34	2	8	0 -	Process CPU time (ms)
PROC-USR-PCT	3	36	1	5	1 -	Process user mode wait %
PROC-SYS-PCT	3	37	1	5	1 -	Process sys mode wait %
PROC-MIN-FAULTS	3	38	2	5	0 -	Process minor faults
PROC-MAJ-FAULTS	3	40	2	5	0 -	Process major faults
PROC-NSWAP	3	42	2	6	0 -	Process number of swaps
PROC-VCSW	3	44	2	6	0 -	Process voluntary context switches
PROC-I VCSW	3	46	2	6	0 -	Process involuntary context switches
PROC-NLWP	3	48	2	6	0 -	Process number of threads
PROC-I OCH	3	50	2	8	0 -	Process 10 char per sec
PROC-TH-SCOUNT	3	52	2	8	0 -	LWP suspend counts
PROC-TH-WTYPE	3	54	0	8	0 -	LWP wait type
PROC-TH-CPUI D	3	58	1	4	0 -	Processor on which LWP is bound
PROC-TH-AFFINITY	3	59	1	4	0 -	Processor on which LWP last ran
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-WAI T%	6	3	-1	5	1 -	CPU wait %
CPU-I DLE%	6	4	-1	5	1 -	CPU idle %
CPU-FI LLER	6	5	1	0	0 -	Not used
CPU-BUSY	6	6	2	6	0 -	Total CPU busy time (ms)
CPU-CAPTURE	6	8	-1	5	1 I	CPU capture (user/sys CPU)

CPU-FI LLER2	6	9	1	0	0	-	Not used
CPU-CSW-RATE	6	10	2	4	1	-	CPU context switch rate (/s)
CPU-SYSCALL-RATE	6	12	2	4	1	-	CPU system call rate (/s)
CPU-SYS-READ-RATE	6	14	2	4	1	-	CPU system read rate (/s)
CPU-SYS-WRI TE-RATE	6	16	2	4	1	-	CPU system write rate (/s)
CPU-FORK-RATE	6	18	2	4	1	-	CPU fork rate (/s)
CPU-EXEC-RATE	6	20	2	4	1	-	CPU exec rate (/s)
CPU-READ-CHAR-RATE	6	22	2	4	1	-	no chars transfered by read system call (/s)
CPU-WRITE-CHAR-RATE	6	24	2	4	1	-	no chars transfered by write system call (/s)
CPU-DEV-INTR-RATE	6	26	2	4	1	-	CPU dev-interrupt rate (/s)
CPU-SOFT-INTR-RATE	6	28	2	4	1	-	CPU soft-interrupt rate (/s)
CPU-QUEUE-LEN	6	30	-1	5	1	-	Average CPU 1 min ready queue length
CPU-QUEUE-5M	6	31	-1	5	1	-	Average CPU 5 min ready queue length
CPU-QUEUE-15M	6	32	-1	5	1	-	Average CPU 15 min ready queue length
CPU-RUN-QUEUE	6	33	-1	5	1	-	CPU ready run queue
CPU-SWAP-QUEUE	6	34	-1	5	1	-	CPU ready swap queue
CPU-FI LLER3	6	35	1	0	0	-	Not used
CPU-BLK-READ-RATE	6	36	2	5	1	-	Block read rate (/s)
CPU-BLK-WRI TE-RATE	6	38	2	5	1	-	Block write rate (/s)
CPU-LOG-READ-RATE	6	40	2	5	1	-	Logical reads rate (/s)
CPU-LOG-WRI TE-RATE	6	42	2	5	1	-	Logical writes rate (/s)
CPU-PHY-READ-RATE	6	44	2	5	1	-	Physical reads rate (/s)
CPU-PHY-WRI TE-RATE	6	46	2	5	1	-	Physical writes rate (/s)
CPU-INODE-LOOKUP-RATE	6	48	2	5	1	-	lNode Lookups rate (/s)
CPU-VNODE-LOOKUP-RATE	6	50	2	5	1	-	VNode Lookups rate (/s)
CPU-DI R-BLKS-RATE	6	52	2	5	1 -	-	Block reads by dir search routine (/s)
CPU-IPC-MSG-RATE	6	54	2	5	1	-	IPC msg operations (/s)
CPU-IPC-SEM-RATE	6	56	2	5	1	-	IPC sem operations (/s)

CPU-TTY-RCV-INTR-RATE	6	58	2	5	1	-	TTY receive interrupts (/s)
CPU-TTY-XMT-INTR-RATE	6	60	2	5	1	-	TTY transmit interrupts (/s)
CPU-TTY-RAWI-CH-RATE	6	62	2	5	1	-	TTY raw input chars (/s)
CPU-TTY-RAWO-CH-RATE	6	64	2	5	1	-	TTY raw output chars (/s)
CPU-MDM-INTR-RATE	6	66	2	5	1	-	Modem interrupts (/s)
CPU-KPROCS-SCHED-RATE	6	68	2	5	1	-	Kernel processes created (/s)
CPU-KPROCS-OVERF-RATE	6	70	2	5	1	-	Kernel processes creation attempts(/s)
CPU-KPROCS-EXIT-RATE	6	72	2	5	1	-	Kernel processes that became zombie (/s)
CPU-BLK-R-READ-RATE	6	74	2	5	1	-	Remote block read (/s)
CPU-BLK-R-WRI TE-RATE	6	76	2	5	1	-	Remote block write (/s)
CPU-BLK-RC-READ-RATE	6	78	2	5	1	-	Remote cache block read (/s)
CPU-BLK-RC-WRITE-RATE	6	80	2	5	1	-	Remote cache block write (/s)
CPU-TRAP-RATE	6	82	2	5	1	-	CPU trap rate (/s)
CPU-COUNT	6	2000	-1	3	0	-	CPU count
VM-USED-MEM%	7	0	-1	4	1	-	Physical memory used %
VM-USED-VM%	7	1	-1	4	1	-	Virtual memory used %
VM-USED-MEM	7	2	2	8	0	-	Physical memory used (KB)
VM-USED-VM	7	4	2	8	0	-	Virtual memory used (KB)
VM-FREE-MEM	7	6	2	8	0	-	Free physical memory (KB)
VM-FREE-VM	7	8	2	8	0	-	Free virtual memory (KB)
VM-PS-LOADED-RUN	7	10	-1	3	0	-	Number of procs loaded and runnable
VM-PS-LOADED-SLEEP	7	11	-1	3	0	-	Number of procs loaded and sleeping
VM-PS-LOADED	7	12	-1	3	0	-	Number of procs loaded
VM-PS-SWAP-RUN	7	13	-1	3	0	-	Number of procs swapped and runnable
VM-PS-SWAP-SLEEP	7	14	-1	3	0	-	Number of procs swapped and sleeping
VM-PS-SWAP	7	15	-1	3	0	-	Number of procs swapped
VM-PAGE-IN-RATE	7	16	2	4	1	-	Virtual memory page in rate (/s)

VM-PAGE-OUT-RATE	7	18	2	4	1 -	Virtual memory page out rate (/s)
VM-PAGE-IN-BPS	7	20	2	5	0 -	Virtual memory page in size rate (B/s)
VM-PAGE-OUT-BPS	7	22	2	5 (	0 -	Virtual memory page out size rate (B/s)
VM-PAGE-INS	7	24	2	5	0 -	Virtual memory page ins
VM-PAGE-OUTS	7	26	2	5	0 -	Virtual memory page outs
VM-SWAP-IN-RATE	7	28	2	4	1 -	Virtual memory swap in rate (/s)
VM-SWAP-OUT-RATE	7	30	2	4	1 -	Virtual memory swap out rate (/s)
VM-SWAP-IN-BPS	7	32	2	5	0 -	Virtual memory swap in rate (B/s)
VM-SWAP-OUT-BPS	7	34	2	5	0 -	Virtual memory swap out rate (B/s)
VM-SWAP-INS	7	36	2	3	0 -	Virtual memory swap ins
VM-SWAP-OUTS	7	38	2	3	0 -	Virtual memory swap outs
VM-MIN-PG-FLT-RATE	7	40	2	5	1 -	Virtual memory minor page fault rate (/s)
VM-MAJ-PG-FLT-RATE	7	42	2	5	1 -	Virtual memory major page fault rate (/s)
VM-PG-SCAN-RATE	7	44	2	5	1 -	Virtual memory page scan rate (/s)
VM-PG-REPL-CYC-RATE	7	46	2	5	1 -	Virtual memory page replacement cycle
VM-PG-STEALS-RATE	7	48	2	5	1 -	Average VM page residence time (s)
VM-FILE-FRAMES	7	50	2	8	0 -	Number of frames used for files (KB)
VM-REAL-SYSTEM	7	52	2	8	0 -	Real memory used by system segments (KB)
VM-REAL-USER	7	54	2	8 (	- C	Real memory used by non-system segments (KB)
VM-REAL-PROCESS	7	56	2	8	0 -	Real memory used by process segments (KB)
VM-REAL-PI NNED	7	58	2	8	0 -	Real memory which is pinned (KB)
VM-REAL-INUSE	7	60	2	8	0 -	Real memory which is in use (KB)
VM-VM-SIZE	7	62	2	8	0 -	Total virtual memory (KB)
VM-MEM-FRAMES	7	2000	2	8	0 -	VM frames (KB)
VM-MAX-FREE	7	2002	2	8	0 -	VM max-free (KB)

VM-MIN-FREE	7 2004	2	8	0 -	VM min-free (KB)
VM-MAX-PERM-PRCNT	7 2006	1	4	1 -	VM max-perm %
VM-MIN-PERM-PRCNT	7 2007	1	4	1 -	VM min-perm %
VM-MAX-PIN-PRCNT	7 2008	1	4	1 -	VM max pinned %
VM-MAX-CLI ENT-PRCNT	7 2009	1	4	1 -	VM max-client %
VM-LRU-BUCKET	7 2010	2	8	0 -	VM Iru bucket (KB)
VM-PS-BLOCKS	7 2012	2	8	0 -	VM ps blocks (KB)
VM-PS-KI LL	7 2014	2	8	0 -	VM ps kill (KB)
VM-PS-WARN	7 2016	2	8	0 -	VM ps warn (KB)
VM-PTA-BALANCE-THRES	7 2018	2	4	1 -	VM %pta balance threshold
VM-FRAMESETS	7 2020	2	3	0 -	VM no framesets
VM-MEMPOOLS	7 2022	2	3	0 -	VM no mem pools
VM-LGPG-SI ZE	7 2024	2	8	0 -	VM Igpg size (KB)
VM-LGPG-REGI ONS	7 2026	2	8	0 -	VM no large pages reserved
VM-NSPEC_DATASEG	7 2028	2	8	0 -	VM no special data segment identifiers
VM-MEM-SIZE	7 2030	2	8	0 -	Total physical memory (KB)

MI SC-SESSI ONS	8	0	1	5	0 -	Sessi ons
MISC-ACT-SESSIONS	8	1	1	5	0 -	Active sessions
MI SC-PROCESSES	8	2	1	5	0 -	Processes
MI SC-ACT-PROCESSES	8	3	1	5	0 -	Active processes
MI SC-PROC-BLOCK-I O	8	4	1	5	0 -	Processes blocked on 10
MISC-PROC-SWAPPED	8	5	1	4	0 -	Swapped processes
MI SC-TRANSACTI ONS	8	6	2	6	0 -	Transaction count
MI SC-TRANS-RATE	8	8	2	6	1 -	Transaction rate (/s)
MISC-TOT-RESP-TIME	8	10	2	6	0 -	Total response time (s)
MISC-RESP-TIME	8	12	2	6	1 -	Average response time (s)
NETP-I P-I N-PKT-RT	10	0	2	5	1 -	IP packets in rate (/s)
NETP-I P-OUT-PKT-RT	10	2	2	5	1 -	IP packets out rate (/s)

NETP-IP-IN-ERR%	10	4	1	5	1	-	IP error in %
NETP-I P-OUT-ERR%	10	5	1	5	1	-	IP error out %
NETP-IP-IN-Q-OVER%	10	6	1	5	1	-	IP no input queue overflows rate
NETP-FI LLER1	10	7	1	5	1	-	Not used
NETP-I CMP-I N-PKT-RT	10	8	2	5	1	-	ICMP packet in rate (/s)
NETP-I CMP-OUT-PKT-RT	10	10	2	5	1	-	ICMP packet out rate (/s)
NETP-I CMP-ERR%	10	12	1	5	1	-	ICMP packet err rate (/s)
NETP-FI LLER2	10	13	1	5	1	-	Not used
NETP-UDP-IN-PKT-RT	10	14	2	5	1	-	UDP packet in rate (/s)
NETP-UDP-OUT-PKT-RT	10	16	2	5	1	-	UDP packet out rate (/s)
NETP-UDP-IN-ERR%	10	18	1	5	1	-	UDP error in rate (/s)
NETP-UDP-NO-SOCKET%	10	19	1	0	0	-	UDP no socket err rate
NETP-TCP-IN-PKT-RT	10	20	2	5	1	-	TCP packet in rate (/s)
NETP-TCP-OUT-PKT-RT	10	22	2	5	1	-	TCP packet out rate (/s)
NETP-TCP-IN-ERR%	10	24	1	5	1	-	TCP error rate
NETP-TCP-INITIATE%	10	25	1	5	1	-	TCP initiate connection rate
NETP-TCP-ACCEPT%	10	26	1	5	1	-	TCP accept connection rate
NETP-TCP-ESTABLI SH%	10	27	1	5	1	-	TCP establish connection rate
NETP-TCP-DROP%	10	28	1	5	1	-	TCP drop connection rate
SWAP-DEV	11	0	2	8	0	-	Swap device code
SWAP-USED	11	2	2	5	0	-	Swap space used (MB)
SWAP-FREE	11	4	2	5	0	-	Swap space free (MB)
SWAP-DEV2	11	2000	2	8	0	-	Swap device code
SWAP-DEVFILE	11	2002	0	24	0	-	Swap device filename
SWAP-TYPE	11	2014	0	6	0	-	Swap type
SWAP-FILLER	11	2017	1	0	0	-	Not used
SWAP-SIZE	11	2018	2	5	0	_	Swap size (MB)

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NETI F-I NDEX	12	0	2	8	0	-	Netlfindex
NETI F-PCKTS-I N-RATE	12	2	2	6	1	-	Netlf packet in rate (/s)
NETI F-PCKTS-OUT-RATE	12	4	2	6	1	-	Netlf packet out rate (/s)
NETIF-PCKT-IN-SZ	12	6	2	7	0	-	Netlf in average packet size
NETI F-PCKT-OUT-SZ	12	8	2	7	0	-	Netlf out average packet size
NETIF-IN-ERR%	12	10	-1	6	2	-	Netlf packet in error %
NETI F-OUT-ERR%	12	11	-1	6	2	-	Netlf packet out error %
NETI F-COLLI SI ON%	12	12	-1	6	2	-	Netlf packet collision %
NETI F-BI T-RATE	12	13	-1	6	0	-	Netlf bit rate
NETIF-INDEX2	12	2000	2	8	0	-	Netlfindex
NETI F-I FNAME	12	2002	0	16	0	-	Netlf name
DSPC-DEV	14	0	2	8	0	-	Partition device code
DSPC-AVAI L-KB	14	2	2	8 (	) -		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-AVAI L-I NODES	14	10	2	8	0	-	Partition available inodes
DSPC-FREE-I NODES	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-BSI ZE	14	2014	2	8	0	-	Partition block size (KB)
DSPC-FSI ZE	14	2016	2	8	0	-	Partition frag size (KB)
DSPC-SIZE-KB	14	2018	2	8	0	-	Partition size (KB)
DSPC-I NODES	14	2020	2	8	0	_	Partition configured inode number

BC-NBUF	15 0 2 5 0 -	Buffer cache size
BC-RHI T%	15 2 -1 5 1 0	Buffer cache read hit %
BC-WHI T%	15 3 -1 5 1 0	Buffer cache write hit %
ВС-НІ Т%	15 4 -1 5 1 0	Buffer cache hit %
BC-BUFHWM	15 2000 2 5 0 0	Memory to be used for buffer cache
		(KB)
IC-ENTRIES	17 0 2 5 0 -	
IC-ENTRIES-USED	1/ 2 2 5 0 -	Used inode cache entries
I C-ENTRI ES-HI GH	17 4 2 5 0 -	Max number of icache entries ever used
ІС-НІТ%	17 6 -1 5 1 -	Inode cache hit %
IC-IPF%	17 7 -1 5 1 -	Inodes w/pages attached when freed %
I C-UFS-NI NODE	17 2000 2 5 0 -	Inodes cache in memory
FSG-UFS-LW	18 2000 2 5 0 -	Maximum size to complete write IO
FSG-UFS-HW	18 2002 2 50 -	Minimum size to defer write IO
FSG-AUTOUP	18 2004 2 50 -	Interval between dirty page checks (s)
FSG-T-FSFLUSHR	18 2006 2 50 -	Interval between fsflush invocations
		(s)
FSG-DOI FLUSH	18 2008 -1 10 -	Update inode information during
		fsfl ush
FSG-DOPAGEFLUSH	18 2009 -1 10 -	Check memory for modified pages during
		1311 4311
SYS_NAME	19 2000 0 12 0 -	System name
	17 2006 0 12 0 -	System name
SIS-SERIAL-INUM	17 2000 2 10 0 -	
SYS-US-VERSI UN	19 2008 0 10 0 -	System US Version
SYS-BOOT-TIME	19 2013 0 10 0 -	System boot time

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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
I PC-MSG-ENTRI ES-USED	20	0	2	5	0	-	Message entries used (ID's)
I PC-MSG-ENTRI ES-HI GH	20	2	2	5	0	-	Maximum message entries used (ID's)
I PC-SEM-ENTRI ES-USED	20	4	2	5	0	-	Semaphore entries used (ID's)
I PC-SEM-ENTRI ES-HI GH	20	6	2	5	0	-	Maximum semaphore entries used (ID's)
I PC-SHM-ENTRI ES-USED	20	8	2	5	0	-	Shared memory entries used (ID's)
I PC-SHM-ENTRI ES-HI GH	20	10	2	5	0	-	Maximum shared memory entries used (ID's)
I PC-MSG-ENTRI ES	20	12	2	5	0	-	Total message entries (ID's)
I PC-SEM-ENTRI ES	20	14	2	5	0	-	Total semaphore entries (ID's)
I PC-SHM-ENTRI ES	20	16	2	5	0	-	Total shared memory entries (ID's)
I PC-MSGMAX	20	18	2	5	0	-	Maximum message size (B)
I PC-MSGMNB	20	20	2	5	0	-	Maximum message queue size
I PC-MSGSSZ	20	22	2	5	0	-	Message segment size (B)
I PC-MSGMAP	20	24	2	5	0	-	Entries to track free message space
I PC-MSGMNI	20	26 2	25	0	-		Max number of message queue identifiers (ID's)
I PC-MSGSEG	20	28	2	5	0	-	Max number of message segments in system
I PC-MSGTQL	20	30	2	5	0	-	Max number of messages in system
I PC-SEMMAP	20	32	2 5	5 (	0 -	-	Entries to track free semaphore memory
I PC-SEMMNI	20	34	2	5	0	-	Max number of semaphore identifiers (ID's)
I PC-SEMMNS	20	36	2 5	5 (	0 -	-	Max number of semaphores in the system
I PC-SEMVMX	20	38	2	5	0	-	Max semaphore value
I PC-SEMAEM	20	40	2	5	0	-	Max semaphore value in an undo structure
I PC-SEMMNU	20	42	2	5	0	-	Number of semaphore undo structures

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I PC-SEMUME	20	44	2	5	0 -	Max semaphore undo structures per process
I PC-SHMMAX	20	46	2	5	0 -	Max size of a shared memory segment
I PC-SHMMNI	20	48	25	5 C	) –	Max number of shared memory identifiers (ID's)
I PC-SHMSEG	20	50	2	5	0 -	Max number of shared memory segments per process (ID's)
FCACHE-ENTRI ES	21	0	2	5	0 -	File cache entries
FCACHE-ENTRI ES-USED	21	2	2	5	0 -	Used file cache entries
FCACHE-ENTRI ES-HI GH	21	4	2	5	0 -	Max number of file cache entries ever used
RCACHE-ENTRI ES	21	6	2	5	0 -	Rnode cache entries
RCACHE-ENTRI ES-USED	21	8	2	5	0 -	Used rnode cache entries
RCACHE-ENTRI ES-HI GH	21	10	2	5	0 -	Max number of rnode cache entries ever used
PCACHE-ENTRI ES	22	0	2	5	0 -	Process cache entries
PCACHE-ENTRI ES-USED	22	2	2	5	0 -	Used process cache entries
PCACHE-ENTRI ES-HI GH	22	4	2	5	0 -	Maximum process cache entries ever used
PCACHE-MAX-NPROC	22	2000	2	5	0 -	Maximum process number
PCACHE-MAX-I OVEC	22	2002	2	5	0 -	Process open file descriptor soft limit
PCACHE-MAX-STREAM	22	2004	2	5	0 -	Process open file descriptor hard limit
PCACHE-MAX-TI MER	22	2006	2	5	0 -	Max number of user processes per user id
PCACHE-MAX-THREADS	22	2008	2	5	0 -	Max number of threads per proc
PCACHE-MAX-DATAKEYS	22	2010	2	5	0 -	Max number of data keys per proc
PCACHE-MAX-FILES	22	2012	2	5	0 -	Max number of opened files per proc

PCACHE-MAXUPROC	22	2014	2	50-	Max number of procs per uid */
RPC-SRVR-SM-CALL-RT	23	0	2	51-	RPC stream server, calls requests (/s)
RPC-SRVR-SM-BAD-RT	23	2	2	51-	Bad stream server, bad calls requests (/s)
RPC-SRVR-SM-NULL-RT	23	4	2	51-	Bad stream server, unavailable packets (/s)
RPC-SRVR-SM-BADL-RT	23	6	2	51-	Bad stream server, bad length failures (/s)
RPC-SRVR-SM-XDR-RT	23	8	2	51-	RPC stream server, bad header failures (/s)
RPC-SRVR-SM-DUPCK-RT	23	10	2	51-	RPC stream server, dup requests in cache (/s)
RPC-SRVR-SM-DUPRQ-RT	23	12	2	51-	RPC stream server, duplicates (/s)
RPC-SRVR-DM-CALL-RT	23	14	2	51-	RPC dgram server, calls requests (/s)
RPC-SRVR-DM-BAD-RT	23	16	2	51-	Bad dgram server, bad calls requests (/s)
RPC-SRVR-DM-NULL-RT	23	18	2	51-	Bad dgram server, unavailable packets (/s)
RPC-SRVR-DM-BADL-RT	23	20	2	51-	Bad dgram server, bad length failures (/s)
RPC-SRVR-DM-XDR-RT	23	22	2	51-	RPC dgram server, bad header failures (/s)
RPC-SRVR-DM-DUPCK-RT	23	24	2	51-	RPC dgram server, dup requests in cache (/s)
RPC-SRVR-SM-DUPRQ-RT	23	26	2	51-	RPC dgram server, duplicates (/s)
RPC-CLNT-SM-CALL-RT	23	28	2	51-	RPC stream client, calls (/s)
RPC-CLNT-SM-BAD-RT	23	30	2	51-	RPC stream client, rejected calls (/s)
RPC-CLNT-SM-BADX-RT	23	32	2	51-	RPC stream client, bad RPC call responses (/s)
RPC-CLNT-SM-TIMEO-RT	23	34	2	51-	RPC stream client, timeout calls (/s)
RPC-CLNT-SM-NCRED-RT	23	36	2	51-	RPC stream client, authentication refreshes (/s)

RPC-CLNT-SM-BADVE-RT	23	38	2	5	1	-	RPC stream client, bad verifier in response (/s)
RPC-CLNT-SM-TIMER-RT	23	40	2	5	1	-	RPC stream client, timeout > timeout_value (/s)
RPC-CLNT-SM-NOMEM-RT	23	42	2	5	1	-	RPC stream client, mem allocation failure (/s)
RPC-CLNT-SM-CCONN-RT	23	44	2	5	1	-	RPC stream client, failed RPC calls (/s)
RPC-CLNT-SM-INTRS-RT	23	46	2	5	1	-	RPC stream client, failed calls due interrupt (/s)
RPC-CLNT-DM-CALL-RT	23	48	2	5	1	-	RPC dgram client, calls (/s)
RPC-CLNT-DM-BAD-RT	23	50	2	5	1	-	RPC dgram client, rejected calls (/s)
RPC-CLNT-DM-RETR-RT	23	52	2	5	1	-	RPC dgram client, retransmitted calls (/s) $% \left( \left( {{\left( {{\left( {{\left( {{\left( {{\left( {{\left( {{$
RPC-CLNT-DM-BADX-RT	23	54	2	5	1	-	RPC dgram client, bad RPC call responses (/s)
RPC-CLNT-DM-TI MEO-RT	23	56	2	5	1	-	RPC dgram client, timeout calls (/s)
RPC-CLNT-DM-NCRED-RT	23	58	2	5	1	-	RPC dgram client, authentication refreshes (/s)
RPC-CLNT-DM-BADVE-RT	23	60	2	5	1	-	RPC dgram client, bad verifier in response (/s)
RPC-CLNT-DM-TIMER-RT	23	62	2	5	1	-	RPC dgram client, timeout > timeout_value (/s)
RPC-CLNT-DM-NOMEM-RT	23	64	2	5	1	-	RPC dgram client, mem allocation failure (/s)
RPC-CLNT-DM-CSEND-RT	23	66	2	5	1	-	RPC dgram client, calls not send (/s)
NFSG-CLT-BAD-CALL%	24	0	-1	5	1	-	NFS client bad call %
NFSG-CLT-V2-NULL%	24	1	-1	5	1	-	NFS client null call %
NFSG-CLT-V2-GETATTR%	24	2	-1	5	1	-	NFS client getattr call %
NFSG-CLT-V2-SETATTR%	24	3	-1	5	1	-	NFS client setattr call %
NFSG-CLT-V2-ROOT%	24	4	-1	5	1	-	NFS client root call %
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NFSG-CLT-V2-LOOKUP%	24	5	-1	5	1	-	NFS client lookup call %
NFSG-CLT-V2-RDLI NK%	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-WRI TE%	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-SYMLI NK%	24	14	-1	5	1	-	NFS client symlink call %
NFSG-CLT-V2-MKDI R%	24	15	-1	5	1	-	NFS client mkdir call %
NFSG-CLT-V2-RMDI R%	24	16	-1	5	1	-	NFS client rmdir call %
NFSG-CLT-V2-READDI R%	24	17	-1	5	1	-	NFS client readdir call %
NFSG-CLT-V2-STATFS%	24	18	-1	5	1	-	NFS client statfs call %
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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-R00T%	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-RDLI NK%	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-WRI TE%	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-MKDI R%	24	34	-1	5	1	-	NFS server mkdir call %

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NFSG-SRV-V2-RMDIR%	24	35	-1	5	1	-	NFS server rmdir call %
NFSG-SRV-V2-READDI R%	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-READDI R%	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-FSI NF0%	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 %

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NFSG-SRV-V3-RDLI NK%	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-WRI TE%	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-MKDI R%	24	69	-1	5	1 -	NFS v3 server mkdir call %
NFSG-SRV-V3-SYMLI NK%	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-RMDI R%	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-READDI R%	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-FSI NF0%	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-COMMI T%	24	81	-1	5	1 -	NFS v3 server commit call %

PROCESSOR-NUMBER	26	0	2	5	0 -	CPU number
PROCESSOR-BUSY%	26	2	2	5	1 -	Total CPU %
PROCESSOR-USER%	26	4	-1	5	1 -	User CPU %
PROCESSOR-SYS%	26	5	-1	5	1 -	System CPU %
PROCESSOR-WAI T%	26	6	-1	5	1 -	CPU disk wait %
PROCESSOR-I DLE%	26	7	-1	5	1 -	CPU idle %
PROCESSOR-BUSY-TI ME	26	8	2	6	0 -	Total CPU time (ms)
PROCESSOR-CSWTCH-RT	26	10	2	5	1 -	CPU context switch rate (/s)
PROCESSOR-SYSCALL-RT	26	12	2	5	1 -	CPU system call rate (/s)
PROCESSOR-SYSRD-RT	26	14	2	5	1 -	CPU system read rate (/s)
PROCESSOR-SYSWR-RT	26	16	2	5	1 -	CPU system write rate (/s)
PROCESSOR-FORK-RT	26	18	2	5	1 -	CPU fork rate (/s)

PROCESSOR-EXEC-RT	26	20	2	5	1	-	-	CPU exec rate (/s)
PROCESSOR-RDCH-RT	26	22	2	5	1	-	-	CPU raw read rate (/s)
PROCESSOR-WRCH-RT	26	24	2	5	1	-	-	CPU raw write rate (/s)
PROCESSOR-BRD-RT	26	26	2	5	1	-	-	Block read rate (/s)
PROCESSOR-BWR-RT	26	28	2	5	1	-	-	Block write rate (/s)
PROCESSOR-LRD-RT	26	30	2	5	1	-	-	Logical read rate (/s)
PROCESSOR-LWR-RT	26	32	2	5	1	-	-	Logical write rate (/s)
PROCESSOR-PHRD-RT	26	34	2	5	1	-	-	Physical read rate (/s)
PROCESSOR-PHWR-RT	26	36	2	5	1	-	-	Physical write rate (/s)
PROCESSOR-I GET-RT	26	38	2	5	1	-	-	Inode Lookup rate (/s)
PROCESSOR-NAMEI-RT	26	40	2	5	1	-	-	Vnode Lookup rate (/s)
PROCESSOR-DI RBLK-RT	26	42	2	5	1	-		Block reads by dir search routine(/s) $% \left( \frac{1}{2}\right) = \left( \frac{1}{2}\right) $
PROCESSOR-I PC-MSG-RT	26	44	2	5	1	-	-	IPC msg operations (/s)
PROCESSOR-I PC-SEM-RT	26	46	2	5	1	-	-	IPC sem operations (/s)
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