

# HVM Management Command (HvmSh) Operation Guide

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# Preface

This document describes how to use the Compute Blade. (The introduction of the preface states the purpose of the document, briefly introduces the subject of the document, and provides links to the sections of the preface.)

This preface includes the following information:

- [Intended audience](#)
- [Product version](#)
- [Release notes](#)
- [Referenced documents](#)
- [Document organization](#)
- [Document conventions](#)
- [Convention for storage capacity values](#)
- [Getting help](#)
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## Intended Audience

This document is intended for the personnel who are involved in planning, managing, and performing the tasks to prepare your site for Compute Blade installation and to install the same.

This document assumes the following:

- The reader has a background in hardware installation of computer systems.
- The reader is familiar with the location where the Compute Blade will be installed, including knowledge of physical characteristics, power systems and specifications, and environmental specifications.

## Product Version

This document revision applies to HvmSh version 9.2.

## Release Notes

Read the release notes before installing and using this product. They may contain requirements or restrictions that are not fully described in this document or updates or corrections to this document.

## Referenced Documents

- BladeSymphony 1000 USER'S GUIDE
- Hitachi Compute Blade 2000 USER'S GUIDE
- Hitachi Compute Blade 320 USER'S GUIDE
- Hitachi Compute Blade 500 Series Logical partitioning manager User's Guide, MK-91CB500068
- Hitachi Compute Blade 2500 Series Logical partitioning manager User Guide, MK-99CB2500006

## Document Organization

The table below provides an overview of the contents and organization of this document. Click the chapter title in the left column to go to that chapter. The first page of each chapter provides links to the sections in that chapter.

Chapter	Description
<a href="#">Chapter 1, HvmSh Overview</a>	Overviews HvmSh functions and how to use it.
<a href="#">Chapter 2, Interfaces between HvmSh and HVM</a>	Describes HVM interfaces required in HvmSh operation.
<a href="#">Appendix A, Functions Supported by Each HvmSh Version</a>	Describes the functions covered by each HvmSh version.
<a href="#">Appendix B, Considerations Required in Using HvmSh</a>	Describes considerations required in using HvmSh.
<a href="#">Appendix C, Examples of Response Timeout Errors (Error code: 0x10020001)</a>	Shows examples of Response Timeout errors.
<a href="#">Appendix D, Example Workflow of Preparing Certificates for TLS Communication</a>	Shows an example workflow of preparing certificates for TLS communication.

## Document Conventions

This term “Compute Blade” See all the models of the Compute Blade, unless otherwise noted.

The Hitachi Virtualization Manager (HVM) name has been changed to Hitachi logical partitioning manager (LPAR manager, or LP). If you are using HVM-based logical partitioning feature, substitute references to Hitachi logical partitioning manager (LPAR manager, or LP) with those to HVM.

This document uses the following typographic conventions:

Convention	Description
<b>Regular text bold</b>	In text: keyboard key, parameter name, property name, hardware labels, hardware button, hardware switch. In a procedure: user interface item
<i>Italic</i>	Variable, emphasis, reference to document title, called-out term
Screen text	Command name and option, drive name, file name, folder name, directory name, code, file content, system and application output, user input
< > (angled brackets)	Variable (used when italic is not enough to identify variable).
[ ] (square bracket)	Optional values
{ } braces	Required or expected value
vertical bar	Choice between two or more options or arguments
_(underline)	Default value, for example, [ <u>a</u> ] b]

This document uses the following icons to draw attention to information:

Icon	Meaning	Description
	WARNING	This indicates the presence of a potential risk that might cause death or severe injury.
	CAUTION	This indicates the presence of a potential risk that might cause relatively mild or moderate injury.
<b>NOTICE</b>	NOTICE	This indicates the presence of a potential risk that might cause severe damage to the equipment and/or damage to surrounding properties.
	Note	This indicates notes not directly related to injury or severe damage to equipment.
	Tip	This indicates advice on how to make the best use of the equipment.

## Convention for storage capacity values

Physical storage capacity values (for example, disk drive capacity) are calculated based on the following values:

Physical capacity unit	Value
1 kilobyte (KB)	1,000 ( $10^3$ ) bytes
1 megabyte (MB)	1,000 KB or $1,000^2$ bytes
1 gigabyte (GB)	1,000 MB or $1,000^3$ bytes
1 terabyte (TB)	1,000 GB or $1,000^4$ bytes
1 petabyte (PB)	1,000 TB or $1,000^5$ bytes
1 exabyte (EB)	1,000 PB or $1,000^6$ bytes

Logical storage capacity values (for example, logical device capacity) are calculated based on the following values:

Logical capacity unit	Value
1 block	512 bytes
1 KB	1,024 ( $2^{10}$ ) bytes
1 MB	1,024 KB or $1,024^2$ bytes
1 GB	1,024 MB or $1,024^3$ bytes
1 TB	1,024 GB or $1,024^4$ bytes
1 PB	1,024 TB or $1,024^5$ bytes
1 EB	1,024 PB or $1,024^6$ bytes

## Getting Help

The Hitachi Data Systems customer support staff is available 24 hours a day, seven days a week. If you need technical support, log on to the Hitachi Data Systems Portal for contact information: <https://portal.hds.com>

## Comments

Please send us your comments on this document: [doc.comments@hds.com](mailto:doc.comments@hds.com). Include the document title and number including the revision level (for example, -07), and refer to specific sections and paragraphs whenever possible. All comments become the property of Hitachi Data Systems Corporation. **Thank you!**



# HvmSh Overview

This chapter overviews HvmSh functions and how to use them.

- [HvmSh command overview](#)
- [Operating environment](#)
- [Installing HvmSh](#)
- [Uninstalling HvmSh](#)
- [HVM operation by HvmSh commands](#)
- [Network protocol for HvmSh commands](#)
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## HvmSh command overview

HvmSh provides a set of commands that enable you to operate HVM from the Windows or Linux command line of the management server as well as from the HVM screen. You can acquire HVM system information or set up LPAR configurations with HvmSh commands on the remote system.

### Note:

To keep the LPAR configurations you modified with the HvmSh commands, execute "Save configuration" before closing HvmSh unless otherwise noted in the [Interfaces between HvmSh and HVM](#).

HvmSh commands end their operation after reporting their operation results on the standard output or the standard error output.

HvmSh commands use parameters; some of them are required, and others are optional. In either case, specify parameters as optional command line arguments. Optional arguments include HVM IP addresses. Also, specify an HVM interface which represents an HVM operation, definition, or definition/state acquisition request. When it takes an HVM interface a long time to complete internal HVM processing, the interface outputs the operation No., and then closes.

HvmSh commands enable you to perform operations equivalent to those available from the HVM screens as Table 1-1 shows.

**Table 1-1 HVM screens responsive to HvmSh commands**

HVM screen	Description
Logical Partition Configuration	Specifies the name, the number of processors, and the amount of memory for an LPAR. This screen also allows a variety of operations including Activate (power-on) and Deactivate (power-off) the LPAR.
Logical Processor Configuration	Assigns one or more logical processors to each LPAR.
Physical Processor Configuration	Displays the configuration and state of physical processors.
PCI Device Information	Displays PCI device information.
PCI Device Assignment	Assigns one or more PCI devices to each LPAR.
VNIC Assignment	Assigns one or more virtual NICs to each LPAR.
Shared FC Assignment	Assigns one or more shared mode FC adapters to each LPAR.
Allocated FC Information	Displays a list of the WWN of installed FC adapters.
System Configuration	Displays the system configuration of HVM.
System Service State	Displays the service state of an HVM.
Date and Time	Sets an HVM system time, which is used as a SEL time for each LPAR. The HvmSh command is used to set the difference between an LPAR's RTC (Real Time Clock) time and the system time.
HVM Options	Sets optional HVM functions.
LPAR Usage	Displays processor utilization rate. The HvmGetPerf command returns equivalent information this screen shows. HvmSh further obtains NIC and HBA utilization in addition to processor utilization.
Front Panel	Starts the OS dump collecting on LPAR and output the LPAR console log.
HVM System Logs	Displays the HVM event log.
Firmware Version Information	Displays BIOS, BMC, HVM and FC adapter versions.

## Operating environment

### Management server OS

To operate HVMs by HvmSh commands, the management server requires any of the Windows or Linux OSs listed on the table below is installed. This document uses the term "HvmSh commands for Windows" or "HvmSh commands for Linux", whenever necessary, for clarity. The HvmSh allows using its commands also in virtual environments.

**Table 1-2 HVM versions and OSs supported by HvmSh**

HvmSh version	Windows	Linux <sup>1</sup>
V6.X or lower	Windows Server ® 2008 Windows Server ® 2003 Windows VISTA ® Windows XP ®	N/A
V7.0 or higher	Windows Server ® 2012 Windows Server ® 2008 Windows Server ® 2003 Windows VISTA ® Windows XP ®	Red Hat ® Enterprise Linux ® 6.2 (x86, x86_64) <sup>2</sup> Red Hat ® Enterprise Linux ® 5.7 (x86, x86_64)
V8.0 or higher	Windows Server ® 2012 R2 Windows Server ® 2012 Windows Server ® 2008 Windows Server ® 2003 Windows VISTA ®	Red Hat ® Enterprise Linux ® 6.2 (x86, x86_64) <sup>2</sup> Red Hat ® Enterprise Linux ® 5.7 (x86, x86_64)
V8.4 or higher	Windows Server ® 2012 R2 Windows Server ® 2012 Windows Server ® 2008 Windows Server ® 2003 Windows VISTA ®	Red Hat ® Enterprise Linux ® 6.4 <sup>2</sup> Red Hat ® Enterprise Linux ® 6.2 (x86, x86_64) <sup>2</sup> Red Hat ® Enterprise Linux ® 5.7 (x86, x86_64)
V8.6 or higher	Windows Server ® 2012 R2 Windows Server ® 2012 Windows Server ® 2008 Windows Server ® 2003 Windows VISTA ®	Red Hat ® Enterprise Linux ® 6.6 <sup>2</sup> Red Hat ® Enterprise Linux ® 6.5 <sup>2</sup> Red Hat ® Enterprise Linux ® 6.4 <sup>2</sup> Red Hat ® Enterprise Linux ® 6.2 (x86, x86_64) <sup>2</sup> Red Hat ® Enterprise Linux ® 5.7 (x86, x86_64)
V9.0 or higher	Windows Server ® 2012 R2 Windows Server ® 2012 Windows Server ® 2008 Windows Server ® 2003 Windows VISTA ®	Red Hat ® Enterprise Linux ® 7.1 Red Hat ® Enterprise Linux ® 6.6 <sup>2</sup> Red Hat ® Enterprise Linux ® 6.5 <sup>2</sup> Red Hat ® Enterprise Linux ® 6.4 <sup>2</sup> Red Hat ® Enterprise Linux ® 6.2 (x86, x86_64) <sup>2</sup> Red Hat ® Enterprise Linux ® 5.7 (x86, x86_64)

**Notes:**

- For the supported combinations of HvmSh-for-Linux versions and HVM versions, see [Table B-1 HVM versions supported by HvmSh-for-Linux](#).
- To use HvmSh commands for Linux on Red Hat Enterprise Linux 6.x x86\_64 (64 bit), install the 32 bit library because the library "libstdc++-x.x.x-i686" is not installed in default. Attempting to execute an HvmSh command for Linux without installing the library fails with the following error message or other similar messages.

```
error while loading shared libraries: libstdc++.so.6: cannot open shared object file: No such file or directory
```

If you encounter the error, then you can install the library "libstdc++-x.x.x-i686" at this point of time.

## Main memory

HvmSh uses up to 8 MB of memory.

(Required amount of memory differs depending on the HVM configuration and HVM interfaces.)

## **Installing HvmSh**

HvmSh is supplied as a HVM Utility CD in a format executable from the Windows command prompt or from Linux command lines. Copy the HvmSh command file to the execution path in the management server.

## **Uninstalling HvmSh**

Remove the executable HvmSh file from the management server.

## **HVM operation by HvmSh commands**

HvmSh commands operate the designated HVMs and outputs a return code and a message indicating the results. You can manage HVMs by the operation.

## Network protocol for HvmSh commands

HvmSh V8.6 or higher supports IPv6 in combinations with HVM versions as the table below shows. In the descriptions hereinafter, "IP address" means IPv4 address, unless otherwise noted.

To use IPv6, specify IPv6 addresses in "-host=" or "-srcip=" option. Mixed use of IPv6 and IPv4 addresses in "-host=" and "-srcip=" options is not allowed.

HvmSh does not support UDP communication using IPv6 addresses. For details, see "[HvmSh command communication protocol](#)".

**Table 1-3 Combinations of IPv6 supported versions**

HvmSh version	HVM version	
	CB1000 (all versions)	-
CB2000 (all versions)	-	
CB320 (all versions)	-	
CB500 (02-20 or lower)	CB500 (02-25 or higher)	
CB2500 (02-20 or lower)	CB2500 (02-25 or higher)	
V8.5 or lower	- <sup>1</sup>	- <sup>1</sup>
V8.6 or higher	- <sup>2</sup>	√

Symbols:  
"-": IPv6 not supported.  
"√": IPv6 supported.

Notes:  
1. Using IPv6 addresses causes a "Return: 0x10010000" error.  
2. Using IPv6 addresses causes a "Return: 0x10020001" or a "Return: 0x10030003" error.

## Network configuration for HvmSh

Using HvmSh commands requires registering, in advance on the HVM System Configuration screen, the IP address of the management server in any of the following:

- BSMn IP address (n=1-4)
- HVM CLIn IP address (n=1-8)
- HVM CLIn IP address\_v6 (n=1-8)

HVMs ignore HvmSh commands from the management server without the IP address registration.

If the HVM version is any of the following and if the IP address of the management server is registered in the HCSM Servers tab of the management module screen, you can execute HvmSh commands also from the management server:

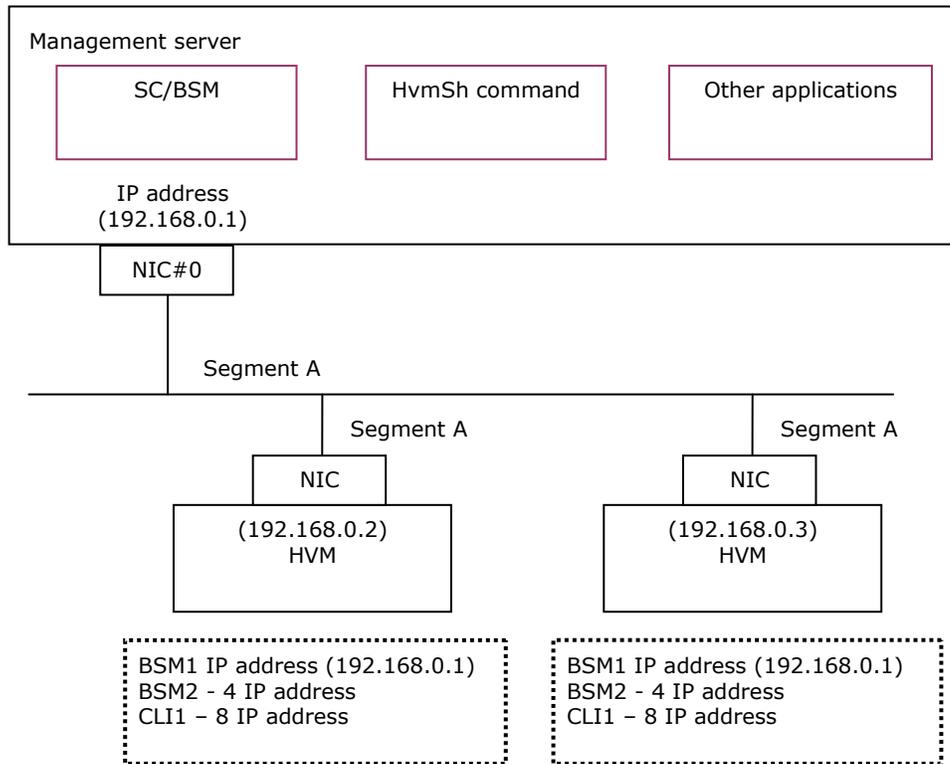
- CB2000: 59-40/79-40 or higher
- CB500: 01-51 or higher
- CB2500: Any

It is, however, recommended that HvmSh commands be executed after registering the IP address of the management server explicitly in an HVM CLIn IP address (n=1-8) or HVM CLIn IP address\_v6 (n=1-8).

It is also recommended that SC/BSM be running on the management server, if you register the IP address of the server in BSMn IP address (n=1-4). Do not run SC/BSM on the management server without doing so.

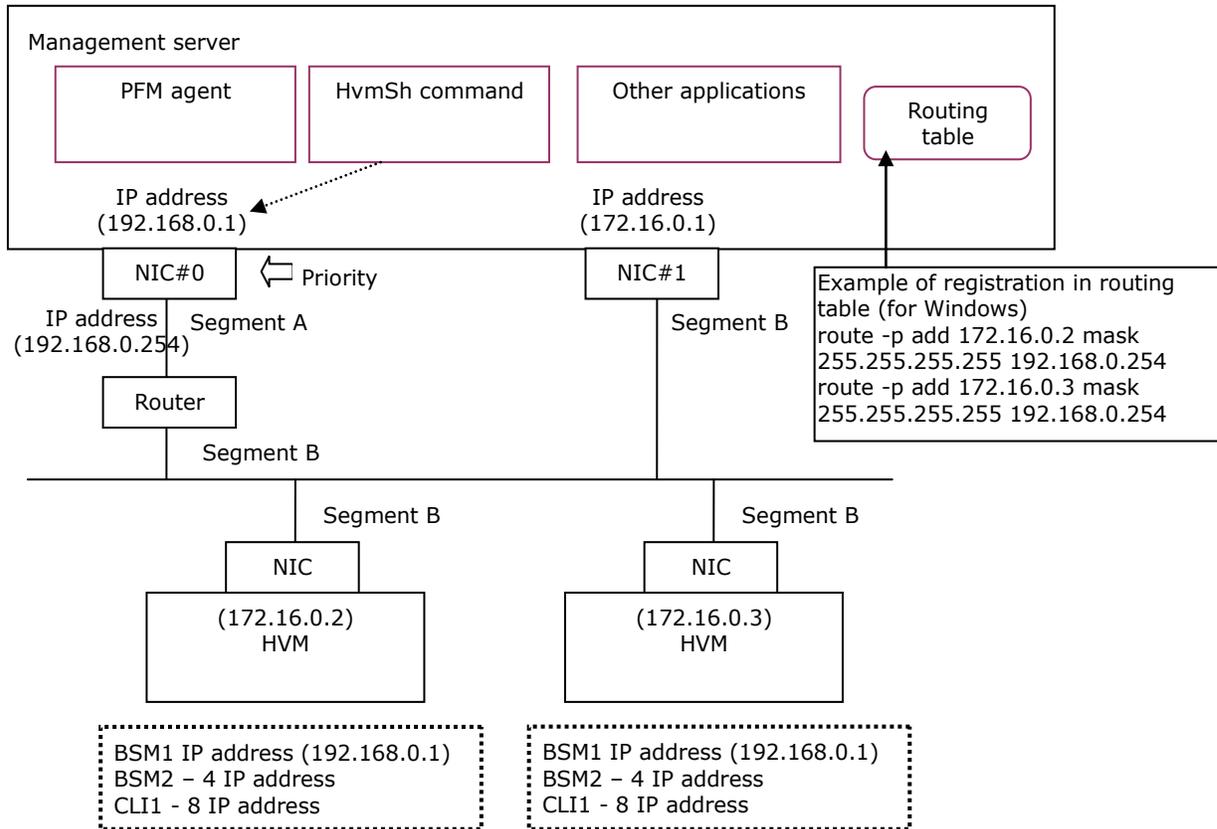
The BSMn IP addresses and the HVM CLIn IP addresses allow only IPv4. HVM CLIn IP address\_v6 allows only IPv6. For the method of the IP address registration, see the user guides listed in [Referenced documents](#).

BS1000, CB2000, and CB320 HVMs do not support IPv6.



**Figure 1-1 Internetworking of HVM and management server (recommended)**

If the management server connects to two or more segments, specify the IP address of the management server's NIC port in the "-srcip=" option of the HvmSh command. Alternatively, you may use the routing function of Windows or Linux. In such a case, however, register as many routes as the number of HVMs.



**Figure 1-2 Internetworking of HVM and management server connected to two or more segments**

## HvmSh command communication protocol

### Communication protocol

Communication protocol available between HvmSh commands and HVMs differs depending on the guest OS, Windows or Linux.

HvmSh commands for Windows communicate with HVM using UDP, TCP, or TLS protocol depending on the combination of HvmSh version, HvmSh command's option (-prot=option) setting, and the default file (-prot=option) setting as Table 1-7 shows. Note, however, that some HvmSh commands do not work with the UDP protocol as [Table A-2](#) shows. Using TCP or TLS protocol is recommended when both of the HVM version and the HvmSh version you use support either TCP or TLS protocol.

HvmSh commands for Linux communicate with HVM using TCP or TLS protocol depending on the combination of HvmSh version, HvmSh command's option (-prot=option) setting, and the default file (-prot=option) setting as Table 1-6 shows. For the HVM version not supporting TCP or TLS protocol, HvmSh commands do not work properly.

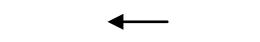
To encrypt communications between HVM-HvmSh commands using TLS protocol, see [Appendix D, Example workflow of preparing certificates for TLS communication](#).

If you enable HvmSh user authentication mode or if you use IPv6, UDP protocol communication is rejected.

**Table 1-4a Communications protocol and port number between HVM and HvmSh**

Protocol	UDP	TCP	TLS
Port number	623	23250	20670
Communication type	Unicast	Unicast	Unicast
Encryption	Not used	Not used	Used

**Table 1-4b Communication direction and port number**

Communication direction	Source port number	Destination port number
	Any	623 (UDP) 23250 (TCP) 20670 (TLS)
	623 (UDP) 23250 (TCP) 20670 (TLS)	Any

You can enable or disable a certificate verification function by `-verify=option` in the case of communication with TLS protocol. The certificate verification function checks whether the HVM server certificate matches registered certificate in a certificate installation folder of HvmSh command.

**Table 1-5 Specifying `-verify=option` and verifying HVM server certificate**

		Command option		
		No specified	Yes	No
Default file	No specified	√	√	-
	Yes	√	√	-
	No	-	√	-
√: Certificate is verified		-: Certificate is not verified		

**Table 1-6 Version-option combinations and communication protocol (HvmSh for Linux)**

HvmSh version	Command option	Default file	HVM version		
			BS1000: (All versions) CB2000DP: 58-xx or lower CB2000MP: 78-xx or lower CB320: 17-85 or lower CB500: (None) CB2500: (None)	BS1000: (None) CB2000DP: 59-00 or higher CB2000MP: 79-00 or higher CB320: 17-86 or higher CB500: 01-00 or higher CB2500: (None)	BS1000: (None) CB2000DP: 59-60 or higher CB2000MP: 79-60 or higher CB320: (None) CB500: 01-80 or higher CB2500: 02-00 or higher
V7.0 or higher	Invalid	Invalid	N/A	TCP	TCP
V8.0 or higher	<code>-prot=</code> Option not specified	Option not specified or no default file	N/A	TCP	TCP
		<code>-prot=auto</code>	N/A	TCP	TCP/TLS
		<code>-prot=tls</code>	N/A	Not connectable <sup>3</sup>	TLS (Recommended)
	<code>-prot=tls</code>	Invalid	N/A	Not connectable <sup>3</sup>	TLS (Recommended)

**Table 1-7 Version-option combinations and communication protocols (HvmSh for Windows)**

HvmSh version	Command option	Default file	HVM version		
			BS1000: (All versions) CB2000 DP: 58-xx or lower CB2000 MP: 78-xx or lower CB320: 17-85 or lower CB500: (None) CB2500: (None)	BS1000: (None) CB2000 DP: 59-00 or higher CB2000 MP: 79-00 or higher CB320: 17-86 or higher CB500: 01-00 or higher CB2500: (None)	BS1000: (None) CB2000 DP: 59-60 or higher CB2000 MP: 79-60 or higher CB320: (None) CB500: 01-80 or higher CB2500: 02-00 or higher
V5.x or lower	Not allowed	Invalid	UDP	UDP	UDP
V6.0 or higher	-prot= Option not specified	-prot= Option not specified or no default file	UDP	UDP	UDP
		-prot=auto	UDP <sup>1</sup> (Recommended)	UDP/TCP <sup>2</sup>	UDP/TCP <sup>2</sup>
		-prot=udp	UDP	UDP	UDP
		-prot=tcp	Not connectable <sup>3</sup>	TCP (Recommended)	TCP
	-prot=udp	Invalid	UDP	UDP	UDP
	-prot=tcp	Invalid	Not connectable <sup>3</sup>	TCP (Recommended)	TCP
V8.0 or higher	-prot= Option not specified	-prot= Option not specified or no default file	UDP <sup>4</sup>	UDP/TCP <sup>4</sup>	UDP/TCP/TLS <sup>4</sup>
		-prot=auto	UDP <sup>5</sup>	UDP/TCP <sup>5</sup>	UDP/TCP/TLS <sup>5</sup>
		-prot=udp	UDP <sup>4</sup>	UDP/TCP <sup>4</sup>	UDP/TCP/TLS <sup>4</sup>
		-prot=tcp	Not connectable <sup>3</sup>	TCP (Recommended)	TCP <sup>6</sup>
		-prot=tls	Not connectable <sup>3</sup>	Not connectable <sup>3</sup>	TLS (Recommended)
	-prot=udp	Invalid	UDP <sup>4</sup>	UDP	UDP/TCP/TLS <sup>4</sup>
	-prot=tcp	Invalid	Not connectable <sup>3</sup>	TCP (Recommended)	TCP <sup>6</sup>
	-prot=tls	Invalid	Not connectable <sup>3</sup>	Not connectable <sup>3</sup>	TLS (Recommended)

Notes:

1. Any HvmSh command attempts to use TCP protocol to connect to HVM. If it fails, then the command automatically uses UDP for the connection. Time for the connection using TCP is so small that the impact on HvmSh command processing can be ignored.
2. Any HvmSh command attempts to use TCP protocol to connect to HVM. If it succeeds, then the command uses TCP protocol. If it fails due to the status of the network or the HVM, then the HvmSh command automatically uses UDP.
3. The HvmSh command fails to connect (Return: 0x10020001). To use -prot=tcp option, confirm that protocolTcp or SecureComm output is "ON" in advance by get HvmFacilityMap command.
4. If you select an HVM interface supported by HvmSh V7.0 or lower and if you use IPv4, UDP might be used in communication with HVM. (If the security strength level of an HVM is set to "High", HvmSh cannot connect with the HVM.)  
If you select an HVM interface supported by the HvmSh command V7.1 or higher or if you use IPv6, it produces the same effect as specifying "-prot=auto".
5. Any HvmSh command attempts to connect with HVM using the protocol in the order of TLS -> TCP, and executes commands using the successful protocol.  
If you select an HVM interface supported by HvmSh V7.0 or lower and if you use IPv4, the command attempts to connect using UDP protocol only after failing to connect using both TLS protocol and TCP protocol. (See Note 3 of [Table A-2 HVM interfaces supported by HvmSh and HVM version combinations](#))
6. When the HVM security strength level is set to "High", the HvmSh command cannot connect with HVM.

## Retry

The table below shows the retry process by HvmSh commands when a packet loss occurs in the communication between HVM and HvmSh.

**Table 1-8 Retry processing by HvmSh commands**

Communication protocol	Command Type	Retry by HvmSh command
TCP/TLS	-	None  HvmSh commands do not perform retry processing. Retry processing will be performed with the retransmission control by Transport or lower layers.
UDP	(Get)	Once HvmSh commands transmit a request to an HVM, it will wait for the response from HVM for a certain time which is calculated with the following formula. And if a time-out occurs, the process will be repeated. $To = \text{Min}(Tr, \text{Max}(Tp/3, 5))$ Tp: -timeout=option Time to specify Tr: Tp - (Time elapsed since HvmSh command activated)= Left time Min(A,B): smaller value, A or B Max(A,B): smaller value, A or B -timeout= Time to specify and the maximum retry count is as follows. -timeout=0 to 5 ->Maximum retry number 0 -timeout=6 to14 ->Maximum retry number 1 -timeout=15 and more->Maximum retry number 2 It is recommended to specify 15 or more to -timeout= option, to make the retry processing effective.
	Setting (set/opr)	None  No retry process is performed. When a time-out occurs, get and check the target configuration, then try again.

## Parallel operation of HvmSh commands

Two or more HvmSh commands can run in parallel; however, as the number of commands running in parallel increases, so does the workload on the management server and HVM. Excessively increased workload (e.g., by 10 or more commands) can lead to abnormal end of HvmSh commands entered due to the potential connection failure with HVM. To avoid such problems, keep the condition " $c < (t / 0.2)$ " where:

- Execution time per HvmSh command = 0.2 second
- Time interval between HvmSh commands entered =  $t$  seconds
- Number of HvmSh commands running in parallel on a management server  $[n] = c_n$
- Number of all the HvmSh commands running in parallel on all the management servers =  $c$  ( $c = \sum c_n$ )

$C_n$ , the number of HvmSh commands running in parallel on a management server, must not exceed  $c/2$  when you execute HvmSh commands from two or more management servers to the same HVMs.

Since the execution time for each HvmSh command differs depending on the status of the network, it is recommended that you gradually increase the number of HvmSh commands while confirming the following:

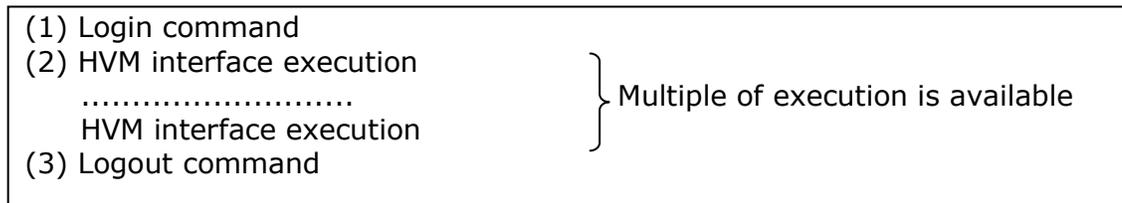
- Enough room in the management server resource
- Normal ends of HvmSh commands

If you encounter an abnormal end of an HvmSh command, decrease the number of HvmSh commands to run in parallel.

# HvmSh user authentication

## Overview of user authentication

HvmSh user authentication uses a set of user name/password registered in HVM or LDAP servers. When HvmSh user authentication mode for HVM is enabled, first specify user name/password; then, log in using them. Then, you can execute HVM interfaces. To close HVM, log out. Multiple HVM interfaces can be executed after login. And when HvmSh user authentication mode for the HVM is enabled, UDP protocol communication is rejected, and timeout (Return code: 0x10020001) occurs.



**Figure 1-3 HVM interface execution while enabling HvmSh user authentication**

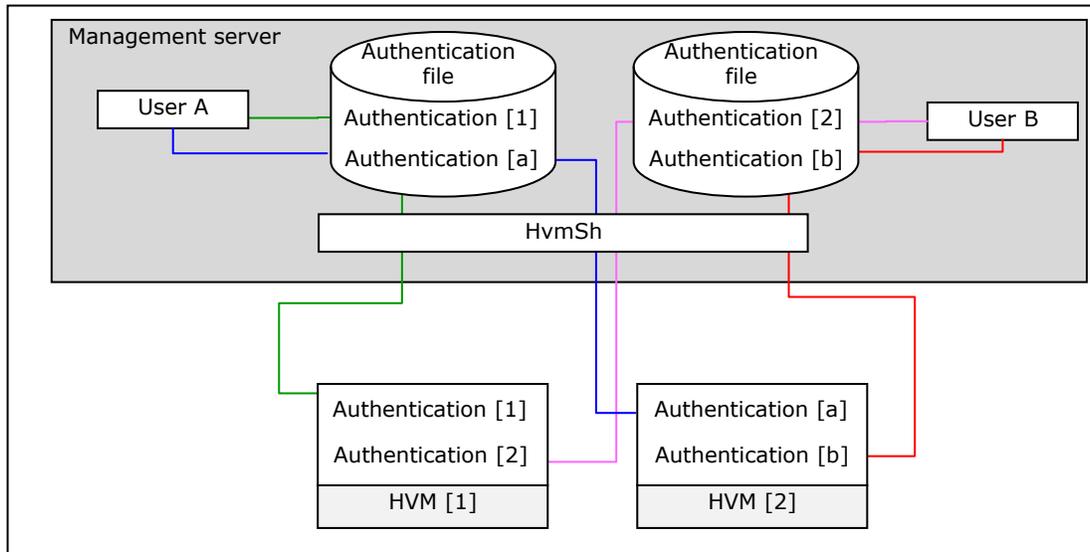
## Login

- Up to 70 users can log in an HVM at the same time.
- While operating a management server yourself, you cannot log in an HVM as two or more HVM users at the same time. If userA has already logged in an HVM and if userB logs in the same HVM without waiting for userA to log out, then a "Return: 0x10590026" error occurs. When the userA logs in again without logging out after the userA logged in, a "Return: 0x10590026" error occurs.
- A user of management server can log in different HVMs.
- Two or more users of a management server can log in an HVM as the same HVM user.
- It may take about 35 seconds to log into an HVM in which LDAP authentication is enabled. You should set the timeout period to 40 or more seconds for HVMs in which LDAP authentication is enabled.
- It may take about 120 seconds to log into an HVM in which RADIUS authentication is enabled. You should set the timeout period to 120 seconds or more seconds for HVMs in which RADIUS authentication is enabled.

## Authentication file

HvmSh stores authentication information in a specified file (hereinafter referred to as "authentication file") after successful login. Authentication file is for each user of a management server installed HvmSh command. Avoid that other users use this file.

When the HVM does not support user authentication due to performing version down of the HVM after login in the HVM for which user authentication is enabled, HvmSh command cannot be executed and timeout (exit code: 0x10020001) occurs. In this case, retry the HvmSh command after deleting the authentication file.



**Figure 1-4 Example of authentication file**

## Methods to designate authentication file

Designate the authentication file in either of the two methods the table below shows.

**Table 1-9 Methods to designate authentication file**

No.	Methods to designate authentication file
1	Set a file name at option "--filename=". Then, a file with the file name is used as the authentication file. Note that the same file name is necessary to be set
2	Define a folder with "HvmShUser.dat" file as an environment variable "HVMSH_HOME". Then, the "HvmShUser.dat" file is used as the authentication file. Note that an environment variable "HVMSH_HOME" has to be set for each user.

The file specified in the "No.1" method is used as the authentication file when the methods listed in the table above have been done. So, make sure to specify a file as the authentication file in any method of "No.1" and "No.2", namely, do not specify 2 files in both methods. Otherwise, any of the errors in user authentication process (0x10590022 to 0x10590026, 0x10590030, and 0x10590031) may occur. As a result, some commands such as login command, logout command, and so on, may become disabled. In such a case, delete both of the 2 files and then specify a file as an authentication file again.

## Login command/logout command

Login command/logout command is executed in the same command form as HVM interfaces.

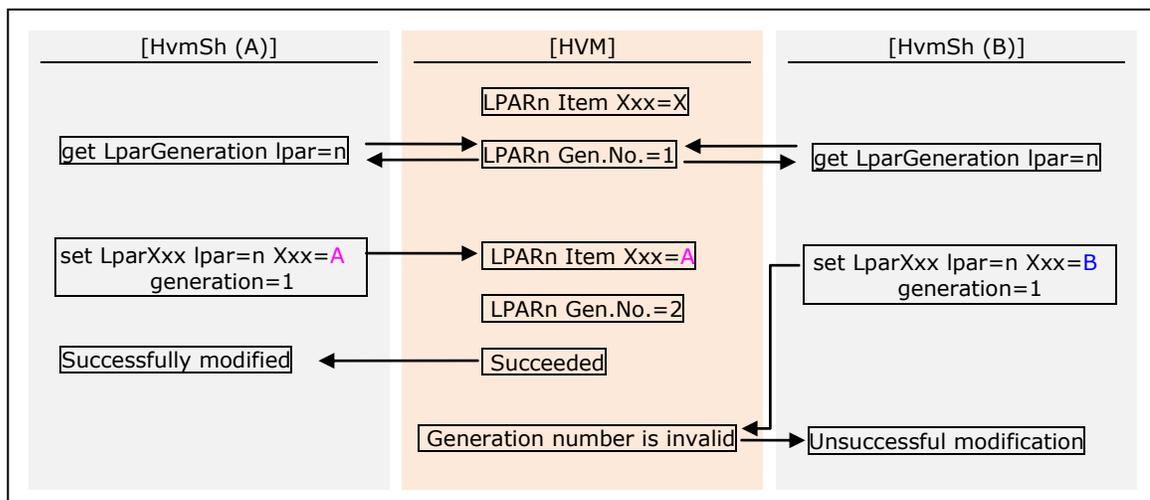
For details, see [Login command](#) and [Logout command](#) sections in [Chapter 2 Interfaces between HvmSh and HVM](#).

## LPAR generation number

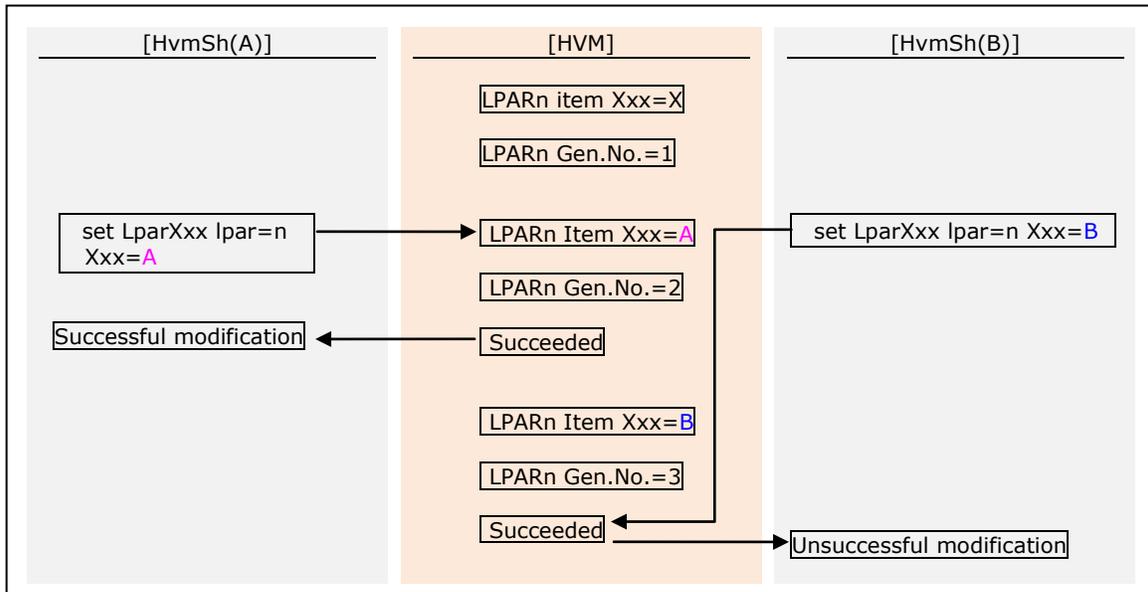
Every LPAR has an LPAR generation number ranging from 1 through 65535. It is used to prevent conflicts in modifying the configuration of LPARs. HVM increases the LPAR generation number every time a command from the HVM screen or SC/BCM or an HvmSh command from other management server changes the configuration of an LPAR.

The number can be specified by an optional "generation" parameter of HvmSh. LPAR configuration is not modified when specified number differed from the LPAR generation number. When sent HvmSh commands without specifying the number, HVM unconditionally configures LPAR in order of accepted command.

Careful attention is required to avoid conflicts when you try to modify LPAR configuration by two or more tools; for example, HVM screen, SC/BCM, or HvmSh commands from other management server.



**Figure 1-5 Conflict in modification (using the generation number)**



**Figure 1-6 Conflict in modification (without using the generation number)**

## Command syntax

In this guide, HvmSh command lines exemplified above are based on the following symbolic conventions:

[Using HVM interface]

```
HvmSh { $\Delta$ -host=IP address [ $\Delta$ -srcip=IP address] [ $\Delta$ -timeout=timeout seconds] $\Delta$ 
[ $\Delta$ -prot={udp|tcp|tls} $\Delta$ -verify={Disable|Enable}] $\Delta$ {-fileuser=authentication file
name} $\Delta$ HVM interface
```

[Not using HVM interface]

```
HvmSh { $\Delta$ -list[={opr|get|set|cert }]} | $\Delta$ -ver}
```

Bold text indicates a variable where a value or a text string must be typed.

A triangle ( $\Delta$ ) indicates one or more space characters that must be typed. There may be a space in a command example not expressed by a triangle, in which case such editorial spaces are only meant to improve readability of command examples and not to be typed in actual specifying of command strings.

A vertical bar (|) is a separator which means "or".

A pair of braces ({ }) indicates that you must select one, or a combination, of the enclosed parameters.

Parameters enclosed by braces are separated by vertical bars.

A pair of brackets ([ ]) indicates a group of optional parameters that can be omitted. When omitting all of optional parameters which can be omitted, execution of some commands for HVM configuration fails with "Return 0x11000000".

An ellipsis (...) indicates that multiple instances of the character string proceeding and following this symbol can be repeated in a command line. You can specify such multiple character strings in any order. If such multiple character strings having the same content is specified at one or more places, the last specifying takes effect.

You can specify up to 127 (or 1,024 for HvmSh command version 4.0 or higher) characters for each character string delimited by a space. If more than 127 (or 1,024 for HvmSh command version 4.0 or higher) characters are specified, an option input error will be returned.

Input character strings are not case-sensitive except an LPAR name specified by *set $\Delta$ LPARName*.

When a character string such as name is specified in command line, need to specify a shell escape depending on a platform.

Example: When specify HVM^^ as a name in Windows DOS, input HVM^^"

An option name must consist of a valid identifier preceded by a hyphen (-).

**Table 1-10 Options**

Option	Description
-host= <b>IP address</b>	<p>Specifies the HVM IP address of the HVM to operate. This is a required parameter.</p> <p>To use IPv4, specify the IP address in decimal numbers delimited by periods ("."). Example: 192.168.0.22</p> <p>To use IPv6, specify the IP address in hexadecimal numbers delimited by colons (":"). Example: fe80::1ce:c0ff:ee:I</p> <p>HvmSh uses the port number 623 (UDP), 23250 (TCP), or 20670 (TLS) for communications with the host HVM.</p> <p>For details, see <a href="#">HvmSh command communication protocol</a>.</p>
-srcip= <b>IP address</b> (V4.0 or higher)	<p>Specifies the IP address of the management server (source IP address) used for communications with the host HVM. This specifying is necessary when you want to assign a fixed IP address to an applicable management server that is configured to connect to multiple network segments.</p> <p>Specify IP addresses in IPv4 or IPv6. For details, see the "-host=IP address" option.</p>
-timeout= <b>Timeout Seconds</b>	<p>Specifies the time for timeout option if the HVM is not connected by 1 to 3600 seconds The recommended value of 30 (30 seconds) is the default. If 0 is specified, a time-out error can be detected in a short span such as tens of milliseconds to hundreds of milliseconds, so we do not recommend to specified 0.</p>
-prot={udp tcp tls} ([prot=tls]: V8.0 or higher, The others: V4.0 or higher)	<p>Specifies the protocol (UDP TCP TLS) to use in communication with the HVM.</p>
-verify={Disable Enable} (V8.0 or higher)	<p>Specifies whether to verify a certificate when HvmSh command uses TLS protocol by communication with HVM.</p>
-fileuser= <b>authentication file name</b> (V8.4 or higher)	<p>When the HvmSh user authentication mode for HVM is enabled, specifies the authentication file in which the authentication information authenticated with the login command is stored.</p> <p>Note that, at the first attempt, specify a file name for a new file. Also, be sure not to edit authentication information input by HvmSh.</p> <p>For details, see <a href="#">Methods to designate authentication file</a> of <a href="#">HvmSh command user authentication</a>.</p>
-list= <b>cert</b> (V8.0 or higher)	<p>Outputs a list of approved certificates that HvmSh command uses for a certificate authentication by TLS communication with HVM.</p> <p>This output form is the same as CERTIFICATE_HVMESH_APPROVED record of get HvmSecureCmmConfig command.</p>
-list [=]{opr   get   set}	<p>Outputs a list of HVM interfaces supplied by the HvmSh command, along with its HvmSh command version.</p> <p>The list option cannot be specified with any other option.</p> <p>If an HVM interface keyword is specified as an argument, only information related to the specified keyword is output.</p>
-ver	<p>Outputs the HvmSh version.</p> <p>-ver option cannot be specified simultaneously with the other options.</p>

## Default file

When the default file (HvmSh.ini) is saved in the directory where the execution file exists, the HvmSh command's options specified in the default file becomes effective. (HvmSh Command 6.0 or higher)

If same type of option is specified to the argument in the activation command, the argument precedes.

(Example) -prot =udp is effective in the following case.  
 Default file -prot =auto  
 > HvmSh -prot=udp -host=xx xx xx xx get System Config

Edit the default file with a text editor. Describe one option per line, following the instructed format. Be sure to add a return code at the end of each option.

**Table 1-11 Default file option**

Option	Description	HvmSh version
-prot={auto  udp tcp tls }	Specify the protocol(UDP TCP TLS) to use in communicating with HVM. See the [Communication form of the HvmSh command] for details.	[-prot=tls] V8.0 or higher [others] V6.0 or higher
-verify={Disable Enable}	Specifies whether to verify a certificate when HvmSh command uses TLS protocol by communication with HVM.	V8.0 or higher
-certificate= certificate install folder name	Designate the folder that contains certificates for communication by TLS protocol. HvmSh uses the certificates to authenticate its users. If , however, you enter "install=" option in either of "get HvmServerCertificate" and "opr CACertificateRegis" options, the file name designated in the option replaces the one designated in this "-certificate=" option.	V8.0 or higher
-perf= { cnfchg_nodata,0   cnfchg_nodata,1 }	The option specifies the operation of the command "get HvmPerfMon" (Get HVM statistical information command) after the change of the configuration or LPAR status.  This is for the management programs, such as HVM navigator or ServerConductor etc., which cooperates with HvmSh command.  See "Specifies the behavior in the case which configuration or LPAR status changes" in the HVM interface, for further details.	V6.4 or higher

Descriptions of options other than the indicated in the table above are invalid.

Since it is not noticed even if there is a spelling error and so on, please specify carefully.

## HVM interfaces

The part of a command which describes a request to be passed to HVM is called an HVM interface. You can specify only one HVM interface for each command.

The following table shows HVM interfaces.

The dual ruled lines on the right side of this table show where the information is added or altered in this edition for HvmSh command version 8.70.

**Table 1-12 HVM Interfaces**

HVM interface		Function	Related screen
opr	LPARAdd	lpar= <b>LPAR No.</b>	Logical Partition Configuration
opr	LPARRemove	lpar= <b>LPAR No.</b>	
opr	Activate	lpar= <b>LPAR No.</b> [opt={GetBootDevice   SetBootOrder}]	
opr	Deactivate	lpar= <b>LPAR No.</b>	
opr	Reactivate	lpar= <b>LPAR No.</b>	
opr	SaveConfig		
get	LPARName	lpar= <b>LPAR No.</b>	
set	LPARName	lpar= <b>LPAR No.</b> Δlparname= <b>LPAR name</b>	
get	LPARStatus	lpar= <b>LPAR No.</b>	
get	LPARShrProc	lpar= <b>LPAR No.</b>	
set	LPARShrProc	lpar= <b>LPAR No.</b> Δshrproc= <b>No. of shared mode logical processors</b>	
get	LPARDedProc	lpar= <b>LPAR No.</b>	
set	LPARDedProc	lpar= <b>LPAR No.</b> Δdedproc= <b>No. of dedicated mode logical processors</b>	
get	LPARSrv	lpar= <b>LPAR No.</b>	
set	LPARSrv	lpar= <b>LPAR No.</b> Δlparsrv= <b>LPAR service time share</b>	
get	LPARMem	lpar= <b>LPAR No.</b>	
set	LPARMem	lpar= <b>LPAR No.</b> Δlparmem= <b>amount of memory allocated to LPAR (MB)</b>	
get	LPARVNICCount	lpar= <b>LPAR No.</b>	
get	LPARID	lpar= <b>LPAR No.</b>	
set	LPARID	lpar= <b>LPAR No.</b> Δlparid={Yes   No}	
get	LPARAA	lpar= <b>LPAR No.</b>	
set	LPARAA	lpar= <b>LPAR No.</b> Δlparaa= <b>automatic activate setting</b>	
get	LPARAC	lpar= <b>LPAR No.</b>	
set	LPARAC	lpar= <b>LPAR No.</b> Δlparac={Yes   No}	

get	LPARPC	lpar= <b>LPAR No.</b>	Gets the enable/disable state of the processor capping function.	
set	LPARPC	lpar= <b>LPAR No.</b> Δlparpc={Yes   No}	Enables/disables the processor capping function.	
get	LPARPB	lpar= <b>LPAR No.</b>	Gets the pre-boot firmware selection.	
set	LPARPB	lpar= <b>LPAR No.</b> Δlparpb={BIOS   64UEFI}	Selects pre-boot firmware.	
get	LPARSchd	lpar=LPAR No.	Gets the scheduling mode of a logical processor.	
opr	LPARSchd	lpar=LPAR No.Δlparschd={ S D }	Sets the scheduling mode of a logical processor.	
get	LPARVC	<b>[lpar=LPAR No.]</b>	Gets the enabled/disabled state of the virtual COM console function.	
set	LPARVC	<b>lpar=LPAR No.Δlparvc={ Yes No   virtual COM number}</b>	Enables/disables the virtual COM console function.	
set	LPARMN	lpar= <b>LPAR No.</b> <b>lparmn={ A Node Number}</b>	Sets the Memory Node number assigned to the LPAR.	
set	LPARVTX	lpar= <b>LPAR No.</b> Δlparvtx={Yes   No}	Enables/disables the VTX function.	
set	LPAROsType	lpar= <b>LPAR No.</b> Δlparostype={Default   Solaris}	Sets the Boot OS type.	
set	LPARMshyp	lpar= <b>LPAR No.</b> prte={Yes   No}	Enables or disables LPAR PRTE function.	
set	LPARGuestNuma	lpar= <b>LPAR No.</b> guestnuma={ Yes   No }	Gets the enabled/disabled state of the Guest NUMA function.	
get	LPARNodeMem	lpar=LPAR number	Gets the memory capacity allocated to each NUMA node number.	
set	LPARNodeMem	Syntax 1 lpar= <b>LPAR No.</b> nodemem= <b>node No. memory capacity</b> Syntax 2 filename= <b>file name</b>	Allocates a memory capacity to each NUMA node number	
set	LPARGuestNuma BindLproc	lpar=LPAR No. numabind={Yes   No}	Enables/disables the logical processor topology setting mode for a guest NUMA	
set	LPARNodeLproc	lpar=LPAR No. nodelproc=node number, the number of logical processors	Sets the number of logical processors to bind to a physical NUMA node	
get	SystemMemSize	(no parameter)	Gets the total amount of memory available for an LPAR.	
get	SystemMemAlloc	(no parameter)	Gets the current memory allocation.	
set	LPARIdleMode	lpar= <b>LPAR No.</b> idlemode={ <b>halt</b>   <b>mwait</b> }	Specifies the instruction to be executed in the Guest idle mode.	
set	LPARLowLatency	lpar= <b>LPAR No.</b> LowLatency={ <b>Yes</b>   <b>No</b> }	Enables or disables LowLatency mode for an LPAR.	
set	LPAREpt1GB	lpar= <b>LPAR No.</b> Ept1GB={ <b>Yes</b>   <b>No</b> }	Enables or disables Ept1GB mode for an LPAR	
get	LPARLProc	lpar= <b>LPAR No.</b> Δlprocno= <b>logical processor No.</b>	Gets the logical processor assignment.	Logical Processor Configuration

set	LPARLProc	lpar= <b>LPAR No.</b> Δlprocno= <b>logical processor No.</b> Δlproctype={D   <b>physical processor No.</b> }	Assign a logical processor.	& Logical Partition Configuration	
		lpar= <b>LPAR No.</b> Δlproc= <b>No. of logical processors</b>			
get	SystemPProc	pprocno= <b>physical processor No.</b> [ver=Output message Version]	Gets the physical processor state.	Physical Processor Configuration	
opr	SystemPProc	pprocno= <b>physical processor No.</b> Δpprocstate={ DEA   DEG }	Changes the physical processor core state.		
get	ProcGroup	group= <b>Group No.</b>	Gets processor group information.	Logical Processor Configuration	
opr	ProcGroupAdd	group= <b>Group No.</b>	Sets processor group information	Physical Processor Configuration	
opr	ProcGroupRemove	group= <b>Group No.</b>			Adds a group definition. Removes a group definition.
set	ProcGroupName	group= <b>Group No.</b> Δname= <b>Group Name</b>			Changes the group name.
opr	ProcGroupPproc	group= <b>Group No.</b> Δpprocno= <b>Physical Processor No.</b>			Registers a physical processor core for a group.
opr	ProcGroupLpar	group= <b>group No.</b> Δlpar= <b>LPAR No.</b>	Registers an LPAR to a group.		
get	LPARPCI	lpar= <b>LPAR No.</b> Δpcino= <b>PCI device No.</b>	Gets the PCI device assignment.	PCI Device Information & PCI Device Assignment	
set	LPARPCI	lpar= <b>LPAR No.</b> Δpcino= <b>PCI device No.</b> Δpciassign={Assign   Attach   Detach   *}	Assigns a PCI device.		
get	SystemPCI	pcino= <b>PCI device No.</b> [Δver= <b>Output Message Version</b> ]	Gets the PCI device information.		
set	SystemPCI	pcino= <b>PCI device No.</b> Δpcischd={D   S}Δfilename= <b>File Name</b>	Changes the schedule mode of a PCI device.		
get	PciDeviceMapping	lpar=[ <b>LPAR No.</b>   all][opt=tab]	Gets the PCI device information for physical/logical mapping.		
set	FcCoreDedMode	slot= <b>HBA device location</b> portno= <b>HBA port No.</b> mode={Enable   Disable}	Sets HBA core dedicated mode for the FC.		
set	FcIoConnection Mode	slot= <b>HBA device location</b> portno= <b>HBA port No.</b> [vfcid=VfcID] mode={AUTO   ON   OFF}	Sets IO connection mode		
get	LPARVNICID	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No.</b>	Gets the VNIC network segment information.		VNIC Assignment
set	LPARVNICID	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No.</b> , { <b>virtual or shared NIC network segment ID</b>   * } [...Δvnicno= <b>VNIC No.</b> , { <b>virtual or shared NIC network segment ID</b>   * } ]	Sets VNIC network segment.		
get	LPARVNICMac	lpar=[ <b>LPAR No.</b>   all ] Δvnicno= <b>VNIC No.</b>	Gets the VNIC MAC address.		
set	LPARVNICMac	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No.</b> , virtual or shared NIC network segment ID Δmac= <b>MAC address</b>	Sets the VNIC MAC address.		
get	LPARVNICVlan	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No.</b>	Gets VNIC VLAN information.		
set	LPARVNICVlan	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No.</b> , virtual or shared NIC network segment ID Δvlanmode={Tag   UnTag   Undef} [vlanid= <b>VlanId</b> ,..., <b>VlanId</b> ]	Sets VNIC VLAN.		

get	LPARVNICPrm	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No.</b>	Gets the VNIC Promiscuous Mode.	
set	LPARVNICPrm	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No., virtual or shared NIC network segment ID</b> Δvnicprm={Restricted Through}	Sets a VNIC Promiscuous Mode.	
get	LPARVNICDev	lpar= <b>LPAR No.</b>	Gets the VNIC Device Type.	
set	LPARVNICDev	lpar= <b>LPAR No.</b> vnicdev={NIC1   NIC2}	Sets a VNIC Device Type.	
get	SystemSNICFilter	segment= <b>Shared NIC No.</b> Δportid={a b c d e f g h}	Gets the shared NIC packet filter.	
set	SystemSNICFilter	segment= <b>Shared NIC No.</b> Δportid={a b c d e f g h} Δsnicfilter={Disable Enable Disable(ALL) }	Sets the shared NIC packet filter.	
get	LPARVFNIC	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No.</b>	Gets VF NIC information.	
set	LPARVFNIC	lpar= <b>LPAR No.</b> Δvnicno= <b>VNIC No., VF_SEG_ID</b> Δtxrate= <b>Maximum aggregate throughput (*2)</b>	Sets a maximum aggregate throughput (Mbps) value of VF NIC.	
get	LPARSFC	lpar= <b>LPAR No.</b> Δsfcco= <b>shared FC No.</b>	Gets the shared FC assignment.	Shared FC Assignment
set	LPARSFC	lpar= <b>LPAR No.</b> Δsfcco= <b>shared FC No.</b> Δslotno= <b>device location</b> Δportno= <b>port No.</b> Δvfcid= <b>SfcVfcID</b>	Assigns a shared FC.	
get	LPARDedFC	lpar= <b>LPAR No.</b>	Gets the dedicated FC allocation.	Allocated FC Information
get	SystemFC		Gets the FC adapter configuration information.	
get	SystemConfig	[ver= <b>Output Message Version</b> ]	Gets the system configuration.	System Configuration
opr	SystemConfig	[hvmid= <b>HVM ID</b> ] [hvmip= <b>HVM IP address</b> ] [subnetmask= <b>Subnet Musk</b> ] [defaultgateway= <b>Default Gateway</b> ] [bsm1ip= <b>BSM1 IP address</b> ] [bsm1alert= <b>BSM1 alert port</b> ] [bsm2ip= <b>BSM2 IP address</b> ] [bsm2alert= <b>BSM2 alert port</b> ] [bsm3ip= <b>BSM3 IP address</b> ] [bsm3alert= <b>BSM3 alert port</b> ] [bsm4ip= <b>BSM4 IP address</b> ] [bsm4alert= <b>BSM4 alert port</b> ] [cli1ip= <b>HVM CLI1 IP Address</b> ] [cli2ip= <b>HVM CLI2 IP Address</b> ] [cli3ip= <b>HVM CLI3 IP Address</b> ] [cli4ip= <b>HVM CLI4 IP Address</b> ] [cli5ip= <b>HVM CLI5 IP Address</b> ] [cli6ip= <b>HVM CLI6 IP Address</b> ] [cli7ip= <b>HVM CLI7 IP Address</b> ] [cli8ip= <b>HVM CLI8 IP Address</b> ] [managepath= <b>Management Path</b>   Default] [vnicsysno= <b>VNIC system No.</b> ] [language= <b>Alert Language Mode</b> ] [vcport= <b>VCOM Console Port</b> ]	Sets the system configuration.	
get	SystemConfigIPv6		Gets system configuration information (IPv6)	

opr	SystemConfigIPv6	[cli1ip= <b>HVM CLI IPv6 address</b> ] [cli2ip= <b>HVM CLI IPv6 address</b> ] [cli3ip= <b>HVM CLI IPv6 address</b> ] [cli4ip= <b>HVM CLI IPv6 address</b> ] [cli5ip= <b>HVM CLI IPv6 address</b> ] [cli6ip= <b>HVM CLI IPv6 address</b> ] [cli7ip= <b>HVM CLI IPv6 address</b> ] [cli8ip= <b>HVM CLI IPv6 address</b> ]	Sets system configuration information (IPv6)	
opr	SystemConfigDNS	[DNS1ip=DNS server IPv4   IPv6 address] [DNS2ip=DNS server IPv4   IPv6 address] [DNS3ip=DNS server IPv4   IPv6 address]	Sets system configuration information (DNS server)	
opr	HvmOperatingMode	mode={Standard   Expansion}	Sets the HVM operation mode.	
get	HvmUserList		Displays a user name list.	
opr	HvmIfAuthentication	{HvmSh VC}={Disable Enable}	Sets the user authentication to Enable/Disable.	
opr	HvmPasswdExpiry	passwd_expiry= validity period (date) for user password	Sets the validity period for a user password.	
opr	HvmUserAdd	[Form 1] [-LoginValidTime=login available hours (seconds)] [Form 2] -user=user name-passwd=password [-LoginValidTime=login available hours (seconds)]	Adds a user.	
opr	HvmUserRemove	-user=user name	Deletes a user.	
opr	HvmPasswd	[Form 1] (no option) [Form 2] -passwd_new=new password -passwd=current password [Form3] -user=user name [Form4] -user=user name-passwd=new password	Changes a user password.	
get	SystemSNIC	segment= <b>shared NIC</b> No.Δportid={a b c d e f g h}	Gets the shared NIC status.	System Service State
get	SystemLANSeg	segment={V   <b>shared NIC</b> No.}Δportid={a b c d e f g h}	Gets the virtual LAN segment status.	
get	HvmStatus		Gets the status of HVM managed devices.	
opr	ForceRecovery		Activates HVM Force Recovery.	
opr	MgmtStandbyPortDiagnosis		Sets the regular diagnosis of the management path standby port.	
get	MgmtStandbyPortStatus		Gets the management path standby port status.	
get	LPARSelTime	lpar= <b>LPAR No.</b>	Gets the SEL (System Event Log) date and time.	Date and Time
set	LPARSelTime	lpar= <b>LPAR No.</b> [seltime= <b>SEL date and time</b> ] [mode={GMT   Local-Time}] [zone= <b>time zone</b> ] [generation= <b>Generation Number</b> ]	Sets a SEL (System Event Log) date and time.	
get	LPARTime	[lpar= <b>LPAR No.</b> ]	Gets the LPAR time.	
opr	LPARTimeAdjust	{lpar= <b>LPAR No.</b>   lpar=all } [src={ <b>HVMSYS</b>   <b>ZONE</b>   <b>UTC</b> }] [zone= <b>time zone</b> ]	Adjusts specified or all LPAR time to HVM system time.	

get	SystemTime		Gets the HVM system time.	
set	SystemTime	[time= <b>HVM system time</b> ] [zone= <b>time zone</b> ]	Sets the HVM system time.	
get	SystemTimeCtrl		Gets the control information of HVM system time.	
opr	SystemTimeCtrl	[ImportConfig={NONE   SVP   BMC}] [TimeSync={Disable   NTP   SVP}] [NTPServer1=NTPServer1ID] [NTPServer2=NTPServer2ID]	Sets the control information of HVM system time.	
get	OptPreState		Gets the Pre-State Auto Activation option settings.	HVM Options
set	OptPreState	prestate={Yes   No}	Sets the Pre-State Auto Activation option.	
get	OptAutoSd		Gets the HVM Auto Shutdown option settings.	
set	OptAutoSd	autosd={Yes   No}	Sets the HVM Auto Shutdown option.	
get	HvmOptions		Gets HVM Options	
set	HvmOptions	[prestate={Yes No}] [autosd={Yes No}] [shutdownstate=Ready] [errwatching={Yes No}] [activateconfirm={Yes No}] [deactivateconfirm={Yes No}] [screenswchar= <b>Character Code</b> ] [pcpucstate={Enable Disable}] [usbautoalloc={Enable Disable}] [savechangeconfig={Enable Disable}] [savetimeconfig={Enable *}] [safemode=OFF]	Sets HVM Options	
opr	TimerCounter Base	Tcbase=[TSC   CPUFrequency]	Sets a value for timer counter calculation.	
opr	LparNvramClear	lpar= <b>LPAR No.</b>	Initializes the NVRAM.	
opr	LparNvramCopy	from=source <b>LPAR No.</b> to=Destination <b>LPAR No.</b>	Copies the NVRAM.	
opr	HvmDumpToSvp		Gets an HVM dump (transfer to SVP).	
get	HvmPerfMon	filename= <b>temporary file name</b> [noconf] [nocpu] [nomem] [nonic] [nohba] [nodetail] [excpu][exio][hvm]	Gets HVM statistical information.	LPAR Usage
get	LPARLcd	lpar= <b>LPAR No.</b>	GetsLCD (Liquid Crystal Display) of LPAR	Front Panel
opr	LPARFrontPanelDump	lpar= <b>LPAR No.</b>	Instructs the guest OS to collect memory dump.	
get	LPARConsoleLog	lpar= <b>LPAR No.</b> Δfilename= <b>File Name</b>	Displays the console data of the LPAR.	
opr	LPARConsoleLog Erase	lpar= <b>LPAR No.</b>	Erases the console log data.	
get	HvmSystemLogs	type= sys [notag]	Gets the HVM System Logs.	HVM System Logs
get	ConfigAll		Gets all the configurations collectively.	System Configuration Logical Partition Configuration VNIC Assignment Shared FC Assignment etc.
get	SystemVNICA	segment={V   <b>shared NIC No.</b> }Δportid={a   b   c   d}	Gets the DMA engine availability for a virtual NIC.	None
getResult		accept= <b>operation No.</b>	Gets the HVM interface execution result.	
get	LPARGeneration	lpar= <b>LPAR No.</b>	Gets the generation number.	

get	Versions		Gets the HVM command information.	
opr	TakeHvmDump		Takes an HVM dump.	
opr	StartGuestDump		Starts a guest memory dump.	
opr	CancelGuestDump	lpar= <b>LPAR No.</b>	Cancels the guest memory dump.	
get	GuestDumpProgress		Gets the guest memory dump progress.	
opr	LparActCheck	lpar= <b>LPAR No.</b>	Checks the able/unable to LPAR activation.	None (Management program cooperation)
opr	LPARaddAndSet	lpar= <b>LPAR No.</b> * Refer to <i>HVM Interface Reference</i> for other parameters	Adds and sets an LPAR definition.	
opr	HvmShutdown		Shuts down an HVM system.	
opr	HvmRestart		Restarts an HVM System.	
get	HvmFacilityMap		Gets an HVM facility map.	
get	HvmFunctionLicense		Gets HVM facility license information.	
get	HvmScdOptions		Gets HvmScdOptions	
opr	HvmScdOptions	MULTI_QUEUE_SCD= {ON   OFF}	Sets HvmScdOptions	
get	FcBootFunction	[Syntax 1] slot= <b>HBA physical device location.</b> Δportno= <b>HBA port No.</b> {lpar= <b>LPAR No.</b>   vfcid= <b>VfcID</b> } [Syntax 2] slot=all	Gets the FC configuration. (Get bootable LU searching option)	
set	FcBootFunction	slot= <b>HBA physical device location.</b> portno= <b>HBA port No.</b> lpar= <b>LPAR No.</b> {[opt=clear]   [[bootfunc={Enable   Disable}] [wwn= <b>WWN No.</b> lu= <b>LU No.</b> ] [ConnectionType={Auto   PointToPoint   Loop   FC-AL}] [MultiplePortID={Enable Disable}] [DataRate={Auto   1G   2G   4G   8G   16G}] [SpinupDelay={Disable   10 to 2550}] [LoginDelayTime={0 to 60}] [PersistentBindings={Enable   Disable}] [ForceDefaultParameter={Enable   Disable}] [SelectBootDevice={Enable   Disable}] [BootDeviceList={ <b>WWN,LUN,WWN,UN,WWN,LUN</b> }]]] [LuidScanMode={Enable   Disable}]	Sets the FC configuration. (Set bootable LU searching option)	

opr	FcBootFunction	slot= <b>HBA device location</b> portno= <b>HBA port no.</b> lpar= <b>LPAR no.</b> {[opt=clear [pending=yes]]   [[bootfunc={Enable Disable}] [wwn=WWN no. lu=LU no.] [ConnectionType={Auto PointToPoint Loop FC-AL }] [MultiplePortID={Enable Disable}] [DataRate={Auto 1G 2G 4G 8G 16G}] [SpinupDelay={Disable 10-2550}] [LoginDelayTime={0-60}] [PersistentBindings={Enable Disable}] [ForceDefaultParameter={Enable Disable}] [SelectBootDevice={Enable Disable}] [BootDeviceList={WWN,LUN,WWN,LUN,WWN,LUN}]}][pending={commit cancel}]}} [LuidScanMode={Enable   Disable}]	Sets an FC. Set search option for Boot LU.
get	BootDevice	lpar= <b>LPAR No.</b> Δfilename= <b>Output File Name</b>	Gets bootable device information from LPAR EFI to specified text file.
set	BootOrder	lpar= <b>LPAR No.</b> Δfilename= <b>Input File Name</b>	Modifies the LPAR EFI boot order from specified text file.
opr	HVMDumpToSystem		Takes an HVM Dump in the HVM System area.
get	HVMDumpData	Syntax 1 Filename= <b>File Name</b> [dumpno=Dump Side No.] offset=Dump Data Off Set Syntax 2 Filename= <b>File Name</b>	Gets an HVM Dump from the HVM System area.
opr	HvmDumpToSystem Compress		Takes a compressed HVM Dump in the HVM System.
get	HvmDumpDate Compress	Filename= <b>File Name</b>	Gets a compressed HVM Dump in the HVM System.
get	HvmAlertList		Gets an HVM alert message list.
get	HvmSecureCmmConfig		Gets a related configuration for encrypted communication.
get	HvmServerCertificate	{Filename= <b>File Name</b> install=certificate install folder name}	Gets an HVM server certificate.
opr	HvmCSR	{paramfile= parameter file name  Subject_Country=....} [filename=output file name]	Creates/gets an HVM CSR.
opr	HvmlfSecureLevel	Syntax 1 {HvmSh BSM HCSM Migration}= {Default High} Syntax 2 http={Disable Enable} Syntax 3 LDAP={TLS1.0   TLS1.2}	Sets the configuration for each communication destination of HVM encrypted communication.
opr	HvmlfSecureVerify	{HCSM   LDAP} = {Disable   Enable}	Enables/disables certificate verification for HVM encrypted communication.
opr	HvmServerCertificate	[paramfile= parameter file name] [Subject_Country=....]	Creates an HVM self-signed certificate.

opr	HvmCACertificateRegist	filename=file name for signed certificate	Registers a CA-signed HVM certificate.
opr	HvmClientCertificateRegist	filename= file name for certificate	Registers a certificate for the HVM communication destination or a CA-signed certificate.
opr	HvmClientCertificateRemove	[Form 1] CertificateNo= certificate number [Form 1] "{Serial_number SN}= serial_number" "{Common_Name CN}=common name"	Deletes the certificate for the HVM communication destination or a CA-signed certificate.
opr	HvmSecureCmmConfigSave		Gets a related configuration for encrypted communication.
opr	CACertificateRegist	filename=file name [install= certificate installfolder name]	Registers an HVM self-signed certificate or a CA-signed certificate.
opr	VCConnectType	ConnectType={Telnet   SSH}	Sets the connection mode for virtual COM.
opr	HvmSshHostKey		. Creates the host key for SSH connection of virtual COM.
get	HvmAuthenticationLogs	[filename=output file]	Gets a user authentication log.
opr	AuditLogConfig	[server1=Information on audit log server 1 to be accessed] [server2=Information on audit log server 2 to be accessed] [port=Port number on audit log servers] [protocol={ UDP   TLS1.0   TLS1.2 }] [verify={ Disable   Enable }]	Settings for HVMS to access audit log servers
opr	External Authentication	[method={ LOCAL   LOCAL+LDAP }] [-LoginValidTime=Login available period for HvmSh commands]	LPAR configuration
opr	LdapConfig	[server1= Information on LDAP server 1 to be accessed] [server2= Information on LDAP server 2 to be accessed] [server3= Information on LDAP server 3 to be accessed] [port=Port number on LDAP servers] [login_id_attribute=Attribute of login ID] [base_dn=Base dn] [anonymous_bind=Parameter indicating whether anonymous binding is enabled or disabled.]	
opr	LdapPasswd	[bind_dn=Bind dn] [bind_passwd=Binding password]	
opr	HvmShLoginValidTime	[Form 1] -LoginValidTime=login available hours (seconds) [Form 2] -user=user name -LoginValidTime=login available hours (seconds)	Changes the login available hours (second) for HvmSh command.
(*2) VF_SEG, ID: The network segment identifier of VF NIC as (1av   1bv...).			



- In "set LPAR"-related interface, [generation=**generation No.**] can be specified in addition to the above parameters.
- Folder and file path strings can contain up to the maximum number of characters that Windows or Linux supports.

[ver=**output message version**] parameter:

You can specify [ver=**Output Message Version**] parameter for some of the get-type HVM interfaces. If you specify it, HvmSh outputs an additional dependent message.

The additional dependent message field may be added without notice. Search by *field name=* and use the output message after "=" as an obtained data.

Note that if you execute the command to HVM version which does not support the **Output Message Version** parameter, HvmSh ends the command with *Return: 0x01010001 Invalid HVM interface version* error message. Execute the command without specifying the [ver=**Output Message Version**] parameter.

If you specify an output message version number not supported by HvmSh, HvmSh assumes ver=1 and does not output the additional dependent message.

## Output interface

Upon completion of each command execution, the HvmSh command outputs a message, which includes a return code, in the formats below. Such results are directed to the standard output. If an error occurs during command execution, the first line of the execution result is also directed to the standard error output.

Message formats:

Line 1	HvmSh[( <b>HvmSh version</b> )] $\Delta$ <b>result type</b> $\Delta$ <b>date and time of HvmSh command execution</b> $\Delta$ Return: $\Delta$ <b>return code</b> [ $\Delta$ Msg: <b>message</b> ]
Line 2	[ <b>HVM command</b> $\Delta$ <b>HVM interface version</b> $\Delta$ <b>date and time of HVM command reception</b> ]
$\geq$ Line 3	[ <b>HVM interface-dependent information</b> ]

If an HvmSh command line is executed from a command prompt or batch file, you can obtain the return code in the ERRORLEVEL environmental variable immediately after the command execution.



- “**HvmSh version**” shows the version of the HvmSh command in the (Version V.R) format as the following examples:
  - Version 3.0 or below: Not shown.
  - Version 3.1 or above: Shown.  
V and R in the (Version V.R) format indicate the HvmSh version.
- “**result type**” shows any of “Completed” (normal end), “Failed” (abend), and “Accepted” (command accepted by HVM) depending on the execution result. When “Accepted” is shown, “**return code**” shows an “operation number” that identifies each specific operation to be taken by the host HVM.
  - Operation number is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number wraps around to “1” when the maximum number assignable to operation numbers is reached or when the host HVM is rebooted. For this reason, the same operation number may be assigned to different tasks, in which case an inquiry using an overwritten operation number may not obtain the target result.
  - The result of the accepted HvmSh command can be found by specifying the above-mentioned operation number with the getResult HVM interface of a separate HvmSh command line.
- At “**date and time of HvmSh command execution**” position, the date and time of execution of the HvmSh command line are shown in “YYYY/MM/DD $\Delta$ HH:MM:SS” format.
- At “**return code**” position, a return code of either the HvmSh command or the HVM interface is shown in a hexadecimal format each beginning with “0x”.
- The information at “Msg: **message**” position is shown only in case of an abend, where “**message**” shows the content of the error detected.
- The information in line 2 and below is not shown when the command is not received by HVM. In the event of an option input error, a brief explanation is shown in line 2 and below.

- At “**HVM command**” position, the command executed by HVM in response to the specified HVM interface in the HvmSh command line is shown. Referring to this information, you can identify the corresponding HVM operation in the result obtained by executing “getResult” HVM interface. A full list of executed HVM commands can be obtained by executing “getΔVersions” HVM interface.
- At “**HVM interface version**” position, the versions of applicable HVM interface parameter, output format, and HVM command are shown. A full list of these versions in use can be obtained by executing “getΔVersions” HVM interface.
- At “**date and time of HVM command reception**” position, the date and time of reception of the HvmSh command line in HVM side are shown in “YYYY/MM/DDΔHH:MM:SSΔGMT+hh:mm” format.
- At “**HVM interface-dependent information**” position, specific information depending on the HVM interface may be shown or, depending on the HVM interface, no such information may be shown.

The output sample below shows a result of *Completed*. (normal end)

Line 1	HvmSh(Version 3.1)ΔCompleted.Δ2009/08/05Δ09:30:53ΔReturn:Δ0x00000000
Line 2	GetLparConfigΔVer.1Δ2009/08/05Δ09:30:53ΔGMT+09:00
Line 3	lparname=L5U3x86-100

The output sample below shows a result of *Failed*. (abend) due to a timeout detected during communications with HVM.

Line 1	HvmSh(Version 3.1)ΔFailed.Δ2009/08/05Δ09:30:53ΔReturn:Δ0x02020001ΔMsg:ResponseΔTimeout.
--------	---

The output sample below shows a result of *Accepted*. for the LPAR activation task accepted by HVM.

Line 1	HvmSh(Version 3.1)ΔAccepted.Δ2009/08/05Δ09:30:53ΔReturn:Δ0x00000019
Line 2	ActivateΔVer.1Δ2009/08/05Δ09:30:53ΔGMT+09:00
Line 3	accept=25

## Return codes

The HvmSh command is assumed to have ended normally if the execution result of an HVM interface is not an error and the command can output the execution result. If the command ends normally, it outputs a return code of "0". The other return codes are classified according to their meanings, as shown in the following table.

**Table 1-13 Return code classification**

Code	Description
0x00000000	Normal end
0x00000001 to 0x0000FFFF	Operation numbers
0x00010000 to 0x00FFFFFF	HVM interface status codes
0x01000000 to 0x0FFFFFFF	HVM interface error codes
0x10000000 to 0xFFFFFFFF	HvmSh command error codes

A status code is a return code returned in response to an inquiry for the execution result (getResult) when the result of an HVM interface is *Accepted*. If the last four digits of the eight hexadecimal digits are equal to 0, it indicates that the operation ended normally. If the last four digits are equal to 1, it indicates that the operation has not been completed.

**Table 1-14 Status codes**

HVM interface	Status code	Description
set SystemInfo opr SystemConfig	0x00030000	Normal end.
	0x00030001	Not completed.
	0x00030002	Error end.
opr Activate (a) (Case of option parameter had not set. Status code 0x00090001 or higher are not displayed)	0x00090000	Normal end.
	0x00090001	Not completed.
	0x00090002	Error end. Limit number of LPARs are already activated. Or the segment/port's number of the assigned VF NICs in the same NIC is exceeded the maximum. Or activation Inhibit may be set to yes for the specified LPAR.
	0x00090003	Wait for a while and retry later.
	0x00090004	Reduce the amount of memory allocated, or deactivate one or more activated LPARs, and then retry activating the LPAR.
	0x00090005	Memory allocation failed due to fragmentation. Reduce the amount of memory allocated, or deactivate one or more activated LPARs, and then retry to activate the LPAR.
	0x00090006	Since the memory size is equal to zero, the LPAR cannot be activated. Set an appropriate memory size and activate the LPAR.
	0x00090007	Activation had failed because of that logical processor number of the LPAR was zero, or physical processor could not assign to the LPAR. Changes the number of processors assigned, or deactivates one or more activated LPARs and then retry activating the LPAR.
	0x00090008	Available memory size for LPAR ("assigned memory size"- "memory size for use in system") is deficient. Increase memory size, and then activate the LPAR.
0x00090009	The number of "VF NICs" that can be assigned to physical NIC ports is exceeding the upper-limit. Perform activation after changing to assign VF NIC.	

	0x0009000C	Memory allocation failed due to the following. - Guest NUMA function is enabled, and the memory allocation size for each node is not a multiple of 1GB. - Guest NUMA is disabled, and the memory allocation size for each LPAR is not a multiple of 1GB.
	0x0009000D	You cannot activate the HVM, because it is in the safe mode. Check the NIC configuration and set the safe mode to "OFF", then retry Activate.
	0x0009000E	Invalid VfcID of the FC port, for which the HBA core dedicated mode is enabled. Set a new VfcID, then retry Activating the LPAR.
	0x0009000F	The HVM license expired. HVM cannot activate LPAR.
	0x00090010	You cannot activate the LPAR because the conditions to use the guest NUMA feature are not satisfied. Please confirm the LPAR configuration.
opr Activate (b) (Case of option parameters had set. Status code 0x00090000 or higher are also displayed)	0x00090101	Activation is in progress with obeying option commands.
	0x00090102	Error end. HVM internal error had occurred.
	0x00090103	The target LPAR had not matched between "set BootOrder" command and "opr Activate opr=SetBootOrder" command. "Set BootOrder lpar=m" command was not executed to the target LPAR or it was re-executed to the different LPAR from target.
	0x00090104	Could not get the device information of boot priority by executing the command with "opt=SetBootOrder" option. "opr Activate lpar=n opt=SetBootOrder" command might be executed without executing "set BootOrder lpar=n" command. Please confirm the command parameters.
	0x00090105	Error end. HVM internal error had occurred.
	0x00090106	Un-bootable device was assigned by "opr Activate opt=SetBootOrder" command. Please confirm the command parameters.
	0x00090107	Error end. HVM internal error had occurred.
	0x00090108	Error end. HVM internal error had occurred.
	0x00090109	Error end. HVM internal error had occurred.
	0x0009010A	The target LPAR was deactivated in the activating process.
opr Deactivate	0x000A0000	Normal end.
	0x000A0001	Not completed.
	0x000A0002	Error end.
opr SaveConfig	0x000B0000	Normal end.
	0x000B0001	Not completed.
	0x000B0002	Error end.
	0x000B0003	Wait for a while and retry later.
	0x000B0004	An attempt to save HVM configuration information failed. Wait for a while, and retry later.
	0x000B0005	The configuration data was unable to save because the HVM was in safe mode.
opr Reactivate	0x000D0000	Normal end.
	0x000D0001	Not completed.
	0x000D0002	Error end.
	0x000D0003	The HVM license expired. HVM cannot activate LPAR.
	0x000D0004	You cannot activate the LPAR because the conditions to use the guest NUMA feature are not satisfied. Please confirm the LPAR configuration.
opr TakeHvmDump	0x00190000	Normal end.
	0x00190001	Not completed.
	0x00190004	Error end. Wait for a while and retry later.
	0x00190005	Error end. Wait for a while and retry later.
	0x00190100	Error end. An HVM internal error occurred. Contact maintenance personnel.
	0x00190101	Error end. An HVM internal error occurred. Contact maintenance personnel.
	0x00190102	Error end. An HVM internal error occurred. Contact maintenance personnel.
	0x00190103	Error end. An HVM internal error occurred. Contact maintenance personnel.
	0x00190200	Error end. An attempt to connect to the FTP server failed. Check that the IP address specified for the FTP server is correct.

	0x00190201	Error end. An attempt to log in to the FTP server failed. Check that the user ID and password specified for the FTP server are correct.	
	0x00190202	Error end. The specified directory path was not found on the FTP server. Check that the directory path specified for the FTP server is correct.	
	0x00191000	Error end. A timeout error occurred during an attempt to communicate with the external FTP server. Check the network configuration between the HVM and the external FTP server. If the problem persists, check that the FTP software is running normally on the external FTP server. If the problem still persists, contact maintenance personnel.	
	0x00191nnn	Error end. An error occurred during an attempt to transfer data to the external FTP server. "nnn" is an FTP reply code (see Notes). Check the network configuration between the HVM and the external FTP server. If the problem persists, check that the FTP software is running normally on the external FTP server. If the problem still persists, contact maintenance personnel. Notes: The reply code is defined by the FTP specification (RFC 959).	
opr LparActCheck	0x00200000	Normal end.	
	0x00200001	Not completed.	
	0x00200002	Specified amount of memory allocation failed due to memory fragmentation.	
	0x00200003	Specified amount of memory allocation failed.	
	0x00200004	Failed to ensure physical processor allocates for LPAR	
	0x00200005	Activation inhibited information of the target LPAR had been set to "yes".	
	0x00200006	Target LPAR does not exist.	
	0x00200007	Target LPAR cannot activate by fatal failure.	
	0x00200008	Target LPAR is already activated.	
	0x00200009	Activation of target LPAR is inhibited because the LPAR is in migration process.	
	0x00200010	The upper-limit VF NIC numbers that can be assigned physical NIC ports are exceeded. Perform activation after changing to assign VF NIC.	
	0x0020000A	vfcWWN of shared FC is illegal value.	
	0x0020000B	Number of activated LPAR is reached to limit.	
	0x0020000C	HVM is running the shutdown process.	
	0x0020000D	Memory size of target LPAR is zero.	
		0x0020000F	Memory assigned to LPAR is deficient.
		0x00200010	The number of "VF NICs" that can be assigned to physical NIC ports is exceeding the upper-limit. Perform activation after changing to assign VF NIC.
		0x00200011	Guest NUMA is activated, and shared mode or physical processor is specified automatic allocation function.
		0x00200012	An invalid device is allocated.
	0x00200016	Safe Mode is selected for the HVM.	
	0x00200017	Invalid VfcID of the FC port, for which the HBA core dedicated mode is enabled.	
	0x00200018	The HVM license expired. HVM cannot activate LPAR.	
	0x00200019	You cannot activate the LPAR because the conditions to use the guest NUMA feature are not satisfied.	
	0x0020000E	Target LPAR cannot activate by other reason.	
opr ProcGroupAdd	0x00210000	Normal end.	
	0x00210001	Not completed.	
	0x00210002	Error end. Specified processor group No. already exists. Check the parameter and retry.	
opr ProcGroupRemove	0x00220000	Normal end.	
	0x00220001	Not completed.	
	0x00220003	Error end. Could not find the processor group of specified No. Check the parameter and retry.	
	0x00220004	Error end. Active LPAR in the processor group of specified No. Move the LPAR to other group and retry.	

	0x00220005	Error end. Could not remove processor group 0. Check the parameter and retry.
opr ProcGroupPproc	0x00240000	Normal end.
	0x00240001	Not completed.
	0x00240002	Error end. Could not find the processor core of specified No. Check the parameter and retry.
	0x00240003	Error end. Could not find the processor group of specified No. Check the parameter and retry.
	0x00240004	Error end. Specified physical processor on dedicated mode. Change the scheduling mode of the LPAR to shared mode and retry.
	0x00240005	Error end. Could not change the group No. of last physical processor core. Check the parameter and retry.
opr ProcGroupLpar	0x00250000	Normal end.
	0x00250001	Not completed.
	0x00250002	Error end. The LPAR of specified No. no longer exists. Check the parameter and retry.
	0x00250003	Error end. The processor group of specified No. no longer exists. Check the parameter and retry.
	0x00250004	Error end. Specified LPAR on dedicated mode. Change the scheduling mode of the LPAR to shared mode and retry.
	0x00250005	Error end. No shared mode processor core on specified processor group. Change the group No. of physical processor core and retry.
opr LPARSchd	0x00260000	Normal end.
	0x00260001	Not completed.
	0x00260002	Error end. The LPAR of specified No. no longer exists. Check the parameter and retry.
	0x00260005	Error end. Failed to change the scheduling mode due to insufficient resources of physical processor. Check the parameter and retry.
	0x00260006	Error end. Operation conflicts to LPAR of specified No. Check the LPAR configuration and retry.
opr HvmShutdown	0x002C0000	Normal end. (*1)
	0x002C0001	Not completed.
	0x002C0002	Error end. Could not execute due to active LPAR is exists. Wait for a while, and retry later.
	0x002C0003	Error end. Could not execute due to updating the HVM firmware. Wait for a while, and retry later.
	0x002C0004	Error end. Could not execute due to migrating LPAR. Wait for a while, and retry later.
	0x002C0005	Error end. Failed to shut down. Wait for a while, and retry later.
	0x002C0006	Error end other than the above.
opr ForceRecovery	0x002D0000	Normal end.
	0x002D0001	Not completed.
	0x002D0002	Error end other than the above.
opr SystemPProc	0x002E0000	Normal end.
	0x002E0001	Not completed.
	0x002E0002	Error end. Could not execute due to the state of physical processor core is not "WRN." Check the parameter and retry.
	0x002E0003	Error end. The physical processor core no longer exists. Check the parameter and retry.
	0x002E0004	Error end. Could not execute because the lack of physical processor core license is not occurred. Check the parameter and retry.
	0x002E0005	Error end. Could not execute d because the status of physical processor core is not "ACT." Check the parameter and retry.
	0x002E0006	Error end. Could not execute because the physical processor core is dedicated mode. Check the parameter and retry.

	0x002E0007	Error end. Could not change the last physical processor core in a processor group which active LPAR exists. Check the parameter and retry.
	0x002E0008	Error end other than the above.
opr LPARTimeAdjust	0x002F0000	Normal end.
	0x002F0001	Not completed.
	0x002F0002	Error end.
opr LPARNvram	0x00300000	Normal end.
	0x00300001	Not completed.
	0x00300002	Error end other than the above.
opr LPARFrontPanelDump	0x00310000	Normal end.
	0x00310001	Not completed.
	0x00310002	Error end.
opr HvmDumpToSvp opr HvmDumpToSystem opr HvmDumpToSystem Compress	0x00340000	Normal end.
	0x00340001	Not completed.
	0x00340002	Error end. Could not execute due to get the dump. Wait for a while, and retry later.
	0x00340004	Error end. Wait for a while and retry later.
	0x00340005	Error end. Wait for a while and retry later.
	0x00340100	Error end. An HVM internal error occurred. Contact maintenance personnel.
	0x00340101	Error end. An HVM internal error occurred. Contact maintenance personnel.
	0x00340102	Error end. An HVM internal error occurred. Contact maintenance personnel.
	0x00340103	Error end. An HVM internal error occurred. Contact maintenance personnel.
	0x00340200	Error end. Could not execute due to get the dump. Wait for a while and retry later.
opr LPARConsoleLogErase	0x00360000	Normal end.
	0x00360001	Not completed.
	0x00360002	Error end. Erase of console log had failed.
	0x00360003	Error end. Console log has not existed.
	0x00360004	Error end other than the above.
opr SystemTimeCtrl	0x00380000	Normal end.
	0x00380001	Not completed.
	0x00380002	Error end. Cannot get information from SVP / BMC which do not support this command.
	0x00380003	Error end. Getting information from SVP / BMC has failed.
	0x00380004	Error end. HVM cannot operate this command now. Wait for a while and retry later.
	0x00380005	Error end other than the above.
Opr FcBootFunction	0x003A0000	Normal end.
	0x003A0001	Not completed.
	0x003A0002	Error end. Changes to ConnectionType, MultiplePortID, and DataRat are suspended because some LPARs are still being activated. Deactivate all the LPARs, then retry.
	0x003A0003	Error end other than the above.
opr HvmOperatingMode	0x003E0000	Normal end.
	0x003E0001	Not completed.
	0x003E0002	Error end. Configuration information saving has failed.

opr HvmRestart	0x003F0000	Normal end. (*1)
	0x003F0001	Not completed.
	0x003F0002	Error end. Command cannot be executed because activated LPAR exist.
	0x003F0003	Error end. Command cannot be executed because the HVM is in progress of firmware updating.
	0x003F0004	Error end. Command cannot be executed because a LPAR migration is in progress.
	0x003F0005	Error end. HVM restart operation has failed. Wait for a while and retry later.
	0x003F0006	Error end other than the above.
opr MgmtStandbyPortDiagnosis opr SystemConfigDNS opr HvmScdOptions	0x00470000	Normal end.
	0x00470001	Not completed.
	0x00470002	Error end.
	0x0047000F	Error end other than the above.
Opr TimerCounterBase	0x00520000	Normal end.
	0x00520001	Not completed.
	0x00520002	Error end. Configuration information saving has failed.
	0x0052000F	Error end other than the above.
opr HvmIfSecureLevel opr HvmIfSecureVerify opr HvmServerCertificate opr HvmCACertificateRegister opr HvmClientCertificateRegister opr HvmClientCertificateRemove	0x00590000	Normal end.
	0x00590001	Not completed.
	0x00590002	Error end. Verification certificate capture failed because verification certificates 1 to 10 are in use.
	0x00590003	Error end. Security information capture failed. Security information may not match in HVM.
	0x00590004	Error end. In deletion of verification certificate, a certificate that corresponds with a specified parameter does not exist.
	0x00590005	Error end. HVM cannot update user authentication information.
	0x00590006	Error end. A timeout occurred in update of security information.
	0x00590011	Error end. Security information capture failed. Security information may not match in HVM.
	0x0059000F	Error end other than the above.

opr VCConnectType	0x00590000	Normal end.
opr HvmIfAuthentication	0x00590001	Not completed.
opr HvmPasswdExpiry	0x00590005	Error end. HVM cannot execute update user authentication configuration.
opr HvmUserAdd	0x00590006	Error end A timeout occurred in update of security information.
opr HvmUserRemove	0x00590100	Error end. HVM cannot execute due to operating LPAR migration. Retry later.
opr HvmPasswd	0x00590101	Error end. HVM cannot execute update user authentication configuration.
opr HvmShLoginValidTime	0x00590104	Error end. Connection mode of virtual COM or user authentication configuration of virtual COM fail to change, because there is no console port of virtual COM in the effective range. Change console port of virtual COM and retry.
opr AuditLogConfig	0x00590105	Error end. Authentication mode of virtual COM cannot be changed when connection mode of virtual COM is SSH.
opr ExternalAuthentication	0x00590106	Error end. HVM IPv4 address is not set, so changing the virtual COM connection mode or changing the virtual COM user authentication configuration failed. Set an HVM IPv4 address, and retry.
opr LdapConfig	0x00590107	Error end. Command cannot be executed. The information on security is locked due to data access from another. Wait for a while and retry later.
opr LdapPasswd	0x00590108	Error end. The role assigned to the ManagementModuleUser does not have the HVM security permission.
opr RadiusConfig	0x00590110	Error end. Invalid characters used for user name. Check parameter and retry.
opr RadiusConnectivityVerify	0x00590112	Error end. Invalid characters used for password. Check parameter and retry.
opr RoleConfig	0x00590114	Error end. Invalid value set for the validity period of the password or the role number. Check parameter and retry.
opr HvmUserConfig	0x00590120	Error end. The user name specified already exists. Check parameter and retry.
opr ManagementModuleUserRole	0x00590121	Error end. The user name specified is not registered. Check parameter and retry.
opr HvmPasswdRecovery	0x00590122	Error end. The number of registered users reaches the registration limit. Delete unneeded registered users and retry.
	0x00590123	Error end. When a single user is registered in HVM, the user cannot be deleted.
	0x00590124	Error end. Command cannot be executed because this command with the current settings would make no user with the Administrators role exist.
	0x00590130	Error end. A reserved user name of HVM is specified. Check parameter and retry.
	0x00590131	Error end. Current password cannot be specified when changing a user's password. Check parameter and retry.
	0x0059013F	Error end other than the above.
opr RadiusConnectivityVerify	0x00590000	Normal end.
	0x00590001	Not completed.
	0x00590005	Error end. HVM cannot execute update user authentication configuration.
	0x00590006	Error end. A timeout occurred in update of security information.
	0x00590140	Error end. The user authentication failed though the HVM successfully communicated with a RADIUS server.
	0x00590141	Error end. The HVM failed to communicate with the RADIUS servers.
	0x00590142	Error end. The specified RADIUS server has not been set yet.

\*1: When the status of "opr HvmShutdown" and "opr HvmRestart" changes from "Not Completed" to "Normal End", HVM immediately begins to shutdown.  
Then, in most cases, the result of "opr HvmShutdown" and "opr HvmRestart" cannot be confirmed by executing a "get Result" command.

When the “get Result” command returns “Not Completed”, the result can be considered that the HVM shuts down or reboots normally.

## **Return values**

The return values of HvmSh commands are the same as return codes.

## Usage example

### Usage example 1:

An HvmSh command executes a single HVM interface per execution. For this reason, in order to get the execution result of a command for which an operation number has been returned, you need to execute getResult.

Following usage example shows an HvmSh command which saves HVM configuration, where shaded characters mean those to be entered.

```
D:\hvmsh> HvmSh.exe -host=192.168.0.22 opr SaveConfig
HvmSh (Version 3.1) Accepted. 2007/05/05 09:33:03 Return: 0x0000001C
SaveConfig Ver. 1 2007/05/05 09:30:53 GMT+09:00
accept=25

D:\hvmsh> HvmSh.exe -host=192.168.0.22 getResult accept=25
HvmSh (Version 3.1) Completed. 2007/05/05 09:33:22 Return: 0x000B0001
GetResults Ver. 1 2007/05/05 09:31:12 GMT+09:00
SaveConfig 2007/05/05 09:30:53 GMT+09:00
:
:

D:\hvmsh> HvmSh.exe -host=192.168.0.22 getResult accept=25
HvmSh (Version 3.1) Completed. 2007/05/05 09:33:39 Return: 0x000B0000
GetResults Ver. 1 2007/05/05 09:31:28 GMT+09:00
SaveConfig 2007/05/05 09:30:53 GMT+09:00
```

Shown below is the batch file example which simplifies the set of those operations. (for Windows)

```
setlocal

rem Execute SaveConfig
hvmsh -host=%1 opr SaveConfig

rem Save return code in acceptno
set /a acceptno=%ERRORLEVEL%
if /i %acceptno% geq 0x00010000 goto confirm_completed

:looptag
rem Get execution result
hvmsh -host=%1 getResult accept=%acceptno%

rem Save status code in statuscode
set /a statuscode=%ERRORLEVEL%
if /i %statuscode% geq 0x01000000 goto confirm_completed

rem Evaluate status code
set /a statuscode="%statuscode% & 0x0000FFFF"
if /i %statuscode% neq 1 goto confirm_completed

rem Wait for 5 seconds or so
ping -n 5 localhost >nul
goto looptag
```

```
:confirm_completed
endlocal
```

You can use this text as a batch file by saving it into a text file (with an extension of .bat). If the batch file is executed with an appropriate host IP address specified as its argument, it gets an operation number and then repeats HvmSh command execution at intervals of five seconds or so until execution of the request command is completed.

## Usage example 2:

Following usage example shows the batch file which collects HVM configuration and HVM statistical information for performance analysis. (for Windows)

```
@echo off
REM --- HVM IP address
set ipadr=172.16.24.109
REM --- Interval time (s) of collecting performance data
set interval=30
REM --- Collecting count of performance data
set loopcnt=10
set cnt=0
:Loop
    set dt=%date:-0,10%
    set dt=%dt:/=%
    set tm=%time:-0,8%
    set tm=%tm:=%
    set tm=%tm: =0%
    REM execution of get HvmPerfMon
    hvmsch -host=%ipadr% get HvmPerfMon filename=%ipadr%_Perf.bin excpu
1> %ipadr%_%dt%_%tm%_Perf.txt 2>nul
    echo [%cnt%]%date%-%time% return=%errorlevel%:hvmsch -host=%ipadr% get
HvmPerfMon
    REM Retry operation when a returned value is 0x101F0001(270467073) or
0x101F0002(270467074) or 0x101F001x(270467088+a) or 0x101F002x(270467104+Alpha)
    if 270467073==%errorlevel% goto Again
    if 270467074==%errorlevel% goto Again
    set /A rcode=(%errorlevel%/16)*16
    if 270467088 == %rcode% goto Again
    if 270467104 == %rcode% goto Again
    set /A cnt=%cnt% + 1
    if %cnt% == %loopcnt% goto End

:Wait
    REM Interval time wait
    ping localhost -n %interval% > nul
goto Loop
:Again
    hvmsch -host=%ipadr% get ConfigAll > %ipadr%_%dt%_%tm%_Config.txt
    goto Loop
:End
    Exit
```

## Error messages

**Table 1-15 Error messages**

Code	Message	Description	Recommended action
0x01000000	Illegal HVM interface was requested.	The requested HVM interface is not supported.	Make sure the HVM interface is supported by the connecting HVM.
0x01010000	The specified parameter ( <b>data</b> ) is invalid.	The specified parameter is invalid.	Enter the parameters correctly.
0x01010001	Invalid HVM interface Version	The requested interface is not supported by the HVM.	Check the HVM interface. The version of the host HVM for the specified HVM interface may be old.
0x01020000	Invalid Input Data.( <b>data</b> )	The specified parameter value is not a decimal number, or its number of digits is invalid.	Check if the parameter value is decimal and the number of digits is valid. Then, retry with a valid parameter value.
0x01030000	Invalid Input Data.( <b>data</b> )	The specified parameter value is not in the valid range.	Check if the parameter value is in the valid range. Then, retry with a valid parameter value.
0x01040000	The combination of parameters is invalid.	The specified parameter value cannot be set in the existing LPAR configuration.	Check the LPAR configuration and its state. See Tip below this table.
0x01040001	A required parameter is missing.	A required parameter is not specified.	Enter the required parameter.
0x01040005	The specified device is not exist.	The boot information of the opr SetBoorOrder command, namely, the values of Bus., Dev., and Func. do not match with those of the devices in the server blade.	Retrieve the latest information with the command "get BootDevice" and then retry.
0x01040006	The specified device is not exist.	The port corresponding to the boot information of the opr SetBoorOrder command, namely, the values of Bus., Dev., and Func. does not exist in the device.	Retrieve the latest information with the command "get BootDevice" and then retry.
0x011A0000	Illegal parameter. The specified LPAR Number is out of a range.	Illegal parameter. The specified LPAR number is not in the valid range.	Check the specified LPAR number and then retry with a correct LPAR number.
0x011B0000	Illegal parameter. The specified LPAR Number is out of a range.	Illegal parameter. The specified LPAR number is not in the valid range.	Check if the specified LPAR number matches the LPAR subject to cancellation of guest memory dump. Then, retry with a correct LPAR number.
0x04000000	Target LPAR is undefined.	The target LPAR specified for LPAR operation is not defined.	Define the LPAR and then retry.
0x04000001	The accept number is invalid.	The specified operation number does not exist.	Check if the HVM specified by "-host=IP address" is the target host HVM. Also make sure to specify the correct operation code returned from the host HVM.
0x04000002	The generation number is invalid.	The specified generation number does not match.	Check the latest LPAR definition. When specifying a generation number, enter the newest one.
0x04010000	The target LPAR is being operated.	The specified LPAR is currently in operation. No operation request can be accepted.	Wait for a while and retry higher.
0x04010001	Target LPAR is active.	The target LPAR cannot be set, because it is activated.	Deactivate the LPAR and then set it.
	Active LPARs exist.	The specified operation cannot be performed while active LPARs exist.	Retry the command after all LPARs on the target HVM are deactivated.

0x04010002	Target LPAR is not active.	An attempt to deactivate an LPAR was made, but the target LPAR has already been deactivated.	Ensure the target HVM and LPAR, and specify the command to an activated LPAR.
0x04010003	The specified LPAR has already been defined.	The specified LPAR has already been defined.	Specify an unused LPAR number to add an LPAR. Or, add an LPAR without specifying an LPAR number.
0x04020000	Target LPAR or shared FC port was migrated.	Target LPAR and shared FC port not exist because those had migrated.	Confirm the target LPAR.
0x04030000	This request has been cancelled because the guest NUMA function is set to disable.	This interface cannot be used because the guest NUMA function is disabled in the target LPAR.	Confirm the target LPAR.
0x04030001	This request has been cancelled because the guest NUMA function is set to enable.	This interface cannot be used because the guest NUMA function is enabled in the target LPAR.	Confirm the target LPAR.
0x04030002	This request has been cancelled because the guest NUMA function isn't supported.	The guest NUMA cannot be enabled because the guest NUMA is not supported.	Confirm the BIOS configuration.
0x04030003	This request has been cancelled because the specified LPAR is activated and the guest NUMA function is set to enable.	This interface cannot be used because the specified LPAR is activated and the guest NUMA function is set to enable.	Confirm the target LPAR.
0x04030004	The specified LPAR cannot be activated because the guest NUMA function is enabled and one of the following conditions is fulfilled. - The scheduling mode for processor is set to share. - The function to assign physical processors automatically is enabled.	The specified LPAR cannot be activated because the guest NUMA function is enabled and one of the following conditions is fulfilled. - The scheduling mode for processor is set to share. - The function to assign physical processors automatically is enabled.	Set the scheduling mode for LPAR to dedicate, and assign logical processors to physical processors.
0x04030005	This request has been cancelled. The logical processor topology setting mode for the guest NUMA is set to the Physical NUMA Node Binding Mode.	The logical processor topology setting mode for a guest NUMA is enabled, so this interface cannot be processed.	Check the LPAR configuration.
0x04030006	You cannot activate the LPAR. The guest NUMA is enabled and the scheduling mode of processor is set to a value of shared mode.	The guest NUMA for the specified LPAR is enabled and the scheduling mode of processor for the LPAR is set to a value of shared mode.	Check the LPAR configuration.
0x04030007	This request has been cancelled. The logical processor topology setting mode for the guest NUMA is set to the Physical Processor Binding Mode.	The HVM or the LPAR does not support the logical processor topology setting mode for the guest NUMA.	Check the LPAR configuration.

0x04030008	The sum of logical processors exceeds the maximum number of logical processors assignable to an LPAR.	The number of logical processors assigned to the LPAR exceeds the maximum number of logical processors assignable to an LPAR.	Check the LPAR configuration.
0x04040001	The following settings cannot be fulfilled simultaneously. - The scheduling mode for processor is set to share. - The guest idle mode is set to MWAIT.	The following settings cannot be fulfilled simultaneously. - The scheduling mode for processor is set to share. - The guest idle mode is set to MWAIT.	Confirm the target LPAR.
0x04040002	This request has been cancelled because the specified LPAR is activated and the guest idle mode is set to MWAIT.	This interface cannot be used because the specified LPAR is activated and the guest idle mode is set to enable.	Confirm the target LPAR.
0x04040003	The guest idle mode isn't available because the logical processor idle detection function is set to enable.	The guest idle mode isn't available because the logical processor idle detection function is set to enable.	Confirm the target LPAR.
0x04040004	The guest idle mode cannot be changed from MWAIT to another and vice versa because the specified LPAR is activated	The guest idle mode cannot be changed from MWAIT to another and vice versa because the specified LPAR is activated	Confirm the target LPAR.
0x041B0000	A guest memory dump for the target LPAR is not in progress.	No guest memory dump is being taken in the specified LPAR.	A Cancel operation is allowed only while a guest memory dump is being taken. You can use the "get GuestDumpProgress" command to check whether a guest memory dump is being taken in the specified LPAR.
0x08000000	HVM is not executable condition for this request.	The HVM system is not ready to execute the request.	Wait for a while and retry higher. Check that an HVM sub-screen for a set operation is not already open.
0x08000001	Save Configuration request is already accepted. Please wait.	A request to save the HVM configuration has already been received.	Wait until the HVM configuration starts to be saved.
0x08010000	Count Over Shared NIC Config.	The scheduling mode for the specified NIC cannot be changed to share because the maximum allowable number of shared NICs (six shared NICs) already exists.	Change the scheduling mode for one of the existing shared NICs to dedicated and retry the operation. Alternatively, review and change the system configuration.
0x08010001	Select Device is Single Port NIC. Cannot change Management Path.	You cannot select the NIC for management paths due to the single path configuration.	Reconfigure the system.
0x08010002	Not Changed!! Select Device is Management Path.	You cannot change the NIC because it is used for a management path.	Reconfigure the system.
0x08010003	Cannot set port ded to off because the scheduling modes of the ports are unmatched.	In the specified device, some ports are in shared mode and the ports are in dedicated mode.	Match the scheduling modes of the ports in the specified device.

0x08020000	The name ( <b>LPAR_name</b> ) is used for other LPAR.	An attempt to set an LPAR name was made, but an LPAR with the same name already exists.	Check if the specified LPAR name does not already exist in the system. Specify a unique LPAR name.
0x08020001	The specified value is already used for other field.	The specified value was not accepted because it is already being used for another field.	Specify a different value.
0x08020004	The name (group name) is used for other group.	An attempt to set a processor group name was made, but a processor group with the same name already exists.	Check if the specified processor group name does not already exist in the system. Specify a unique processor group name.
0x08020005	The specified group does not exist	Could not operate because the specified group does not exist.	Specify a different value.
0x08030000	Change VNIC System No	You need to change the VNIC system number to a number other than 0.	Change the VNIC system number.
0x08040000	VfcWWN cannot be changed. It is necessary to set vfcId unchangeable.	Changing VfcWWN is not allowed because changing of the specified VfcID is enabled.	Disable VfcId changing and then retry.
0x08190001	HVM dump process is busy. (Other dump was in generating process.) Please retry the command higher.	The dump could not be taken because another dump is being generated.	Wait for a while and retry higher.
0x08190002	HVM dump process is busy. (Other dump was in transferring process.) Please retry the command higher.	The dump could not be taken because another dump is being transferred.	Wait for a while and retry higher.
0x08191001	HVM internal error occurred. Dump generation failed.(Null pointer error)	An HVM internal error occurred. Generating dump data failed due to a null pointer.	Contact maintenance personnel.
0x08191002	[HvmSh Ver 8.4 or lower] HVM internal error occurred. Dump generation failed. (Dump table error)  [HvmSh Ver 8.5 or higher] HVM dump has been overwritten.	An HVM internal error occurred. An attempt to generate a dump failed due to a dump table error.	Dump data was overwritten while collecting dump data by "get HvmDumpData" or "get HvmDumpDataCompress" command. Retry after a while.
0x08191003	HVM internal error occurred. Dump generation failed. (Max dump size over)	An HVM internal error occurred. An attempt to generate a dump failed because the dump was over the maximum size.	Contact maintenance personnel.
0x081A0001	A previous guest memory dump is in progress. Please retry the command higher.	The dump could not be taken because a guest memory dump is being taken.	Wait until the previous guest memory dump request is complete and then retry the command.
0x081B0001	Updating HVM firmware, Please retry the command higher.	Could not execute due to updating the HVM firmware version.	Wait for a while and retry higher.
0x081B0002	Executing LPAR migration, Please retry the command higher.	Could not execute due to migrating an LPAR.	Wait for a while and retry higher.

0x081B0003	HVM System Logs process is busy. (HVM System Logs was in generating process.) Please retry the command higher.	Could not execute due to HVM was registering logs.	Wait for a while and retry higher.
0x081C0001	Other LPAR uses the specified FC	Specified FC is using by other LPAR.	Deactivate the LPAR which is using specified FC before executing the command again.
0x081C0002	Target FC is not supported	Specified FC is not supported by the command.	Confirm the type of FC card.
0x081C0003	This Command is not supported.	The command is not supported on the target Blade.	Confirm Blade type which is operating HVM.
0x081C0005	This Command is not available on 64UEFI(PB).	The target command cannot use because the PB setting of LPAR is set to 64UEFI.	Set the PB setting of LPAR in the EFI screen in LPAR.
0x081C0006	The selected FC port which is in the HBA Core Dedicated Mode cannot be set in the Connection Type is FC-AL and Multiple PortID is Enable.	The selected FC port is in the HBA core dedicated mode, so setting both ConnectionType=FC-AL and MultiplePortID=Enable is not allowed.	Check the settings.
0x081C0007	The selected FC port, which is dedicated, cannot be set in the HBA Core Dedicated Mode.	The schedule mode of the designated FC port is "dedicated", so enabling the HBA core dedicated mode is not allowed.	Check the settings.
0x081C0008	LPARs with the selected FC port, which are activated, cannot be set in the HBA Core Dedicated Mode.	While any of the LPARs are in the activated state, changing the HBA core dedicated mode is not allowed.	Deactivate the LPAR, then retry.
0x081C0009	The selected FC port, which is in Connection Type is FC-AL and Multiple PortID is Enable, cannot be set in the HBA Core Dedicated Mode.	The setting for the specified FC port includes ConnectionType=FC-AL and MultiplePortID=Enable , so enabling the HBA core dedicated mode is not allowed.	Check the settings.
0x08200000	Cannot change HVM System Time due to NTP enabled.	HVM system time cannot be set because NTP is enabled.	Confirm NTP configurations.
0x08200001	Cannot change timezone of HVM System Time due to NTP enabled.	TimeZone of HVM system time cannot be set because NTP is enabled.	Confirm NTP configurations.
0x08200002	NTP server is not set.	NTP Server ID cannot be disabled because NTP is enabled.	Confirm NTP configurations.
0x08200003	IP address of NTP server is needed.	Specified NTP Server ID is invalid.	Specify correct ID.
0x08400000	The HVM license expired. HVM cannot activate LPAR.	HVM cannot activate LPAR due to the HVM license expiration.	Update the HVM license, and try again.
0x0C000001	Target LPAR is Failure	The target LPAR is not currently available due to an unrecoverable failure.	Contact maintenance personnel.

0x0E000000	You don't have permission to execute the command.	The user is not allowed to execute the command.	Confirm whether the user has the HVM security permission. Note that this error indicates that the user specified at the option "-user" does not have the HVM security permission for the HVM. Log into the HVM with a user with the HVM security permission for the HVM and then change the password with the command "opr HvmPasswd".
0x10010000	Invalid Option.	An invalid option is specified.	Check the option.
0x10010001	Both of IPv4, IPv6 address are specified.	Both IPv4 and IPv6 addresses are used in "-host=" and "-srcip=" options.	Use either IPv4 addresses or IPv6 addresses.
0x10020000	Target Host Unreachable.	The target host was not found.	Check whether the specified address is correct. Check that the specified target host is up and running normally.
0x10020001	Response Timeout.	There was no response from the target host. *1: This error occurs when HVM interface supported HvmSh command v7.1 or later is executed for HVM that CB1000 or TPC protocol is not supported. (see <a href="#">Table A-2 HVM interfaces supported by HvmSh and HVM version combinations</a> ) *2: This error also occurs when sending a command using UDP protocol for HVM that HvmSh user authentication mode is enabled.	Check that the specified target host is up and running normally. If running normally, retry the command. *1: The HVM does not support this HVM interface. Use the supported HVM interface. *2: Execute a login command with TCP/TLS, and then use this HVM interface.
0x10030000	Unknown Data Received.	Unexpected data was received.	Check that the specified target host is up and running normally.
0x10030001	Failed to bind.	Binding failed.	Check the communication settings.
0x10030002	Failed to activate session.	Establishing a session failed.	Check that the specified target host is up and running normally. Check the number of sessions.
0x10031yzz	There is an error report from HVM regarding message transmission.	An error was reported during message exchange with HVM. The last three digits "yzz" in the code identify the HvmSh command and an HVM internal code in hexadecimal format.	Ensure that the specified target (host HVM) is operating normally.
0x10190001	Illegal parameter. FTP IP Address input form is xxx.xxx.xxx.xxx (xxx : decimal number, the range : 0.0.0.0 - 255.255.255.254).	Illegal parameter. The IP address of the external FTP server must be in the "xxx.xxx.xxx.xxx." format (where xxx is a decimal number and xxx.xxx.xxx.xxx is in the range from 0.0.0.0 to 255.255.255.254.)	Check if a correct parameter value is specified for the IP address of the external FTP server that is the destination of transmitting and storing the HVM dump.
0x10190002	Illegal parameter. Input FTP User ID in less than 16 characters or equal.	Illegal parameter. A user ID for the external FTP server must be 16 characters or less.	Check if a correct parameter value is specified for the user ID for the external FTP server that is the destination of transmitting and storing the HVM dump.
0x10190003	Illegal parameter. Input FTP Password in less than 16 characters or equal.	Illegal parameter. A password for the external FTP server must be 16 characters or less	Check if a correct parameter value is specified for the password for the external FTP server that is the destination of transmitting and storing the HVM dump.
0x10190004	Illegal parameter. Input FTP Directory Path in less than 49 characters or equal.	Illegal parameter. A directory path string for the external FTP server must be 49 characters or less.	Check if a correct parameter value is specified for the directory path for the external FTP server that is the destination of transmitting and storing the HVM dump.

0x101A0001	Illegal parameter. FTP IP Address input form is xxx.xxx.xxx.xxx (xxx : decimal number, the range : 0.0.0.0 - 255.255.255.254).	Illegal parameter. The IP address of the external FTP server must be in the "xxx.xxx.xxx.xxx." format (where xxx is a decimal number and xxx.xxx.xxx.xxx is in the range from 0.0.0.0 to 255.255.255.254.)	Check if a correct parameter value is specified for the IP address of the external FTP server that is the destination of transmitting and storing the guest memory dump.
0x101A0002	Illegal parameter. Input FTP User ID in less than 16 characters or equal.	Illegal parameter. A user ID for the external FTP server must be 16 characters or less.	Check if a correct parameter value is specified for the user ID for the external FTP server that is the destination of transmitting and storing the guest memory dump.
0x101A0003	Illegal parameter. Input FTP Password in less than 16 characters or equal.	Illegal parameter. A password for the external FTP server must be 16 characters or less.	Check if a correct parameter value is specified for the password for the external FTP server that is the destination of transmitting and storing the guest memory dump.
0x101A0004	Illegal parameter. Input FTP Directory Path in less than 49 characters or equal.	Illegal parameter. A directory path string for the external FTP server must be 49 characters or less.	Check if a correct parameter value is specified for the directory path for the external FTP server that is the destination of transmitting and storing the guest memory dump.
0x101A0005	Illegal parameter. The specified LPAR Number is out of a range.	Illegal parameter. The specified LPAR number is not in the valid range.	Check if the specified LPAR number matches the LPAR under HVM subject to guest memory dump. Then, retry with a valid LPAR number.
0x101B0005	Illegal parameter. The specified LPAR Number is out of a range.	Illegal parameter. The specified LPAR number is not in the valid range.	Check if the specified LPAR number matches the LPAR under HVM subject to cancellation of guest memory dump. Then, retry with a valid LPAR number.
0x101B0006	Illegal parameter. LPAR Number was not specified.	Illegal parameter. No LPAR number was specified.	Specify an LPAR number.
0x101F0001	The temporary file specified in "filename=" option does not exist.	HVM statistical information was not obtained because "get HvmPerfMon" HVM interface was executed for the first time.	Execute "get HvmPerfMon" again.
0x101F0002	The content of temporary file specified in "filename=" option is now invalid.	Execution of "get HvmPerfMon" HVM interface was attempted more than 10 minutes higher than its last execution.	Execute "get HvmPerfMon" again.
0x10590000	file busy at get HvmServerCertificate	Writing to the target file or folder is competed when the "get HvmServerCertificate" command is executed.	Retry after completion of access to a file or folder.
0x10590001	The folder name specified in "install=" option is invalid	You cannot create/access the folder name specified in "install=" option using the "get HvmServerCertificate/opr CACertificateRegist" command.	Review specifying the "install=" option.
0x1059001x	HVM's security certificate is not trusted	Error occurred when verifying HVM server certificate in communication with TLS protocol.	Confirm the following items: <ul style="list-style-type: none"> <li>● HVM server certificate is registered in a certificate installation folder of HvmSh command.</li> <li>● The validity term of the certificate expires is available.</li> <li>● HVM self signed certificate that is the same as the subject is not exist.</li> </ul>
0x10590020	Illegal parameter (user/password).	User name and password is invalid.	Check whether that max characters, specifying user name, and specifying password are correct.

0x10590021	"opr login" or "opr logout" is not supported.	The HVM does not support the user authentication.	Do not execute "opr login" and "opr logout".
0x10590022	The number of login users has reached the maximum.	The number of login users has reached to the maximum number of users that are allowed to log into an HVM simultaneously.	Execute "opr logout", and then retry.
0x10590023	Error occurred at authentication file access.	Error occurred at authentication file access.	Revise specified values of "-fileuser=option" or "environment variable: HVMSH_HOME".
0x10590024	No valid authentication info.	No valid authentication information. It may not be logged in. Or login timeout may occur.	Execute login command, and retry.
0x10590025	Authentication is disabled.	Authentication user for HvmSh command is disabled.	Enable authentication user, and retry after executing login command.
0x10590026	Already logged in.	Already logged in.	Execute "opr logout", and then retry.
0x10590027	Already logged out.	You have already logged out.	No action is required.
0x10590028	Illegal parameter(secret).	The shared secret key for the RADIUS server is corrupt.	Confirm each character of the shared secret key and the number of characters.
0x10590030 0x10590031	Failed to authenticate user.	Failed to authenticate user.	Execute login command using valid user name/password, and retry.
0x105A0006 0x105A0007	HVM is not executable condition due to management path failover. Please retry the command later.	Nonexecutable due to the management LAN port is switched.	Retry after a while.
0x105A00F0	ManagePathChangeVer2 is not supported or standby port is not defined.	Nonexecutable due to the unsupported ManagePathChangeVer2 or the undefined Management Path Standby port.	Do not use the command with the configuration.
0x105A0002 0x105A0003 0x105A0004 0x105A0005 0x105A00F1 0x105A00F2	HVM internal error occurred.	An HVM internal error occurred in the "get MgmtStandbyPortStatus" command.	Follow your maintenance procedure; for example, calling your service person.
0x101F001x	Access error occurred for temporary file specified in "filename=" option	An error occurred while reading or writing the temporary file specified in "filename=" option of "get HvmPerfMon" HVM interface. The last digit "x" is a hexadecimal number for an internal code of HvmSh command.	Check if the filename specified in "filename=" option is valid, and then retry with a valid filename. If the error persists, delete the corresponding temporary file, and then execute "get HvmPerfMon" again.
0x101F002x	The content of temporary file specified in "filename=" option is invalid.	The content of the temporary file specified in "filename=" option of "get HvmPerfMon" HVM interface was found invalid. The last digit "x" is a hexadecimal number for an internal code of HvmSh command. Note: This error code will occur by the reboot of the Guest OS because the LPAR status changes in HVM internal such as "activate->deactivate->activate".	Check if the filename specified in "filename=" option is valid, and then retry with a valid filename. If the error persists, delete the corresponding temporary file, and then execute "get HvmPerfMon" again.
0x11000000	Illegal HVM interface was requested.	An invalid HVM interface was specified or a necessary HVM interface was not specified.	Check the specified HVM interface.

0x1100001x ("x" is internal code HvmSh)	Access error occurred for a file specified in "filename=" option.	Error occurred when reading or writing the file which was specified by "filename=" option.	Confirm "filename=" option.
0x1100002x ("x" is internal code HvmSh)	The content of file specified in "filename=" option is invalid.	Illegal description exist in the file which was specified by "filename=" option.	Confirm contents of specified file.
0x1100003x 0x1100004x ("x" is internal code HvmSh)	The content of file specified in "filename=" option is invalid.	Illegal description exist in the file which was specified by "filename=" option.	Confirm contents of specified file.
0x1100005x ("x" is internal code HvmSh)	Socket error occurred.	Error occurred in the TCP protocol communication between HVM and HvmSh.	Confirm that the specified host (target HVM) is operating normally. Retry when the HVM is operating normally.
0x11000060	The size of file specified in "filename=" option is invalid.	File size of the folder name specified in "install=" option is 0 GB or over when using the "get HvmServerCertificate/opr CACertificateRegist" command.	Confirm "filename=" option.
0x20030000	Error occurred at the operation about certificate.	Error occurred for the specified parameters when creating HVM server certificate (specified by the user) or CSR.	Confirm parameters, and try again.
0x20030001	The certificate doesn't match private key.	Certificate and private key are not consistent when registering HVM server certificate (signed by certificate authority).	Create CSR again. Register the certificate signed by certificate authority that got from the certificate authority after sending CSR to the certificate authority.
0x20030003	Error occurred at the "open-SSL" command.	The "open SSL" command is failed.	Confirm parameters, and try again.
0x2003000F	Error occurred at the operation about certificate.	Error other than the above occurs about certificate or CSR operation.	Confirm parameters, and try again.
0x20030010	Connection with the RADIUS server is being tested.	Connection with the RADIUS server is being tested.	Retry this operation after the connection test completes.
0x20040000	HVM internal error occurred. Getting authenticationLogs failed.(Memory allocation error).	HVM internal error occurred. Getting authenticationLogs failed.(Memory allocation error).	Wait for a while and retry.
0x20040001	HVM internal error occurred. Getting authenticationLogs failed.(Library error)	HVM internal error occurred. Getting authenticationLogs failed.(Library error)	Wait for a while and retry.
0x20040002	HVM internal error occurred. Getting authenticationLogs failed.(Null pointer error)	HVM internal error occurred. Getting authenticationLogs failed.(Null pointer error)	Wait for a while and retry.
0x20040003	HVM internal error occurred. Getting authenticationLogs failed.(Data offset error)	HVM internal error occurred. Getting authenticationLogs failed.(Data offset error)	Wait for a while and retry.

0x20040010	Multiple HvmSh execute the "get HvmAuthenticationLogs" command at the same time.	Multiple HvmShs execute the "get HvmAuthenticationLogs" command at the same time.	Wait for a while and retry.
0x200400FF	HVM internal error occurred.	An HVM internal error occurred.	Wait for a while and retry.
0x21000000	No CLI dump.	The "LPAR Dump Collection" command (Syntax3) is failed due to no LPAR Dump data.	Execute the "LPAR Dump Collection" command (system area) (Syntax2), and retry the "LPAR Dump Collection" command (Syntax3).
0x21000001 0x21000002	CLI dump is busy.	The "LPAR Dump Collection" command (Syntax3) is failed due to updating or reading the LPAR Dump data.	Retry the "LPAR Dump Collection" command (Syntax3).
0xFFFFFFFF	Unexpected Exception was raised.	An internal error or an error in the HVM occurred.	The host HVM may be encountering a severe error. Contact maintenance personnel.



If you receive Return: 0x01040000 together with the message "The combination of parameters is invalid", check that you have not specified any of the following:

- set LPARSrv for a dedicated mode LPAR
- set LPARPB for a non-Xeon HVM
- set LPARProc for a shared mode LPAR
- set LPARProc with a physical processor number higher than the number of dedicated logical processors
- set LPARProc with a logical processor number higher than the number of dedicated logical processors
- set LPARProc with a duplicate logical processor number that is within an LPAR
- set LPARPCI with a specification of Attach , Detach or Specify for an unassigned PCI device number
- set LPARPCI with a specification of Attach , Detach or Specify for a non-exclusive shared mode PCI device number
- set LPARPCI with a specification of Attach or Detach for an LPAR which is not activated
- set LPARPCI with a specification of Detach for an already Detached LPAR which is activated
- set LPARPCI with a specification of Attach for an already Attached LPAR which is activated
- set LPARPCI with a specification of Specify when usbautoalloc in the getLPOption is Enable.
- set LPARPCI with a specification of Attach for an already attached LPAR which is activated
- set LPARVNICID, LPARVNICMac, or LPARVNICVlan with a non-existing shared NIC network segment identifier
- set LPARVNICID, LPARVNICMac, or LPARVNICVlan with a duplicate shared NIC network segment identifier
- set LPARVNICID for a two-port shared NIC, without specifying both ports (for example, 1a and 1b)
- set LPARVNICMac with a duplicate MAC address of range of virtual NIC's MAC address which automatically generated by the HVM.
- set LPARVNICVlan with both vlanmode=UnTag and vlanid=ALL

- set LPARVNICVlan with vlanmode=UnTag and multiple VlanIds for vlanid
- set LPARSFC with a non-existing PCI (due to a wrong slot or port number) to which SfcVfcID is to be assigned
- set LPARSFC with an SfcVfcID already set for a different LPAR with the same slot and port numbers
- set LPARSFC requesting change of assigned VfcID for an LPAR on which change of assigned VfcID is not allowed
- get BootDevice requesting "opr Activate" command without specifying "opr=GetBootDevice" option.



## Interfaces between HvmSh and HVM

This chapter describes HVM interfaces required in HvmSh operation.

- [HVM interface reference](#)
- [Notes for HVM interface](#)

## HVM interface reference

This section provides detailed specifications of individual HVM interfaces by the order listed in Table1-12. For more details on the specifications described in this section, see the relevant HVM screen descriptions in the documents listed in [Referenced documents](#).

In the description, **LPAR No.** is a decimal number between 1 and the maximum and indicates the LPAR number of a target LPAR.

**generation No.** is a decimal number between 1 and the maximum, 65535, and indicates the generation number of a target LPAR. Usage of the generation number refers to the section "LPAR Generation Number".

For a get HVM interface, if there is no value to obtain, or it cannot obtain a value, "-" is output.

Example of service rate for a dedicated mode LPAR: `lparsrv=-`

Example of PCI device, of type `pcino=10`, which does not exist with the LPAR:  
`pcitype=-`

## Login command

Sends a user name and a password to an HVM. Then, the HVM attempts to authenticate the user. Successful authentication causes HvmSh to store information in the authentication file.

### Syntax

```
opr login [-user=user name [-passwd=password] [-fileuser=authentication file name]]
```

- **user name/password** is used for user authentication for an HVM when a user connects the HVM. If omitted, input them interactively.
- When **authentication file name** is not set at "-fileuser=option", authentication file described in No. 2 of "Table 1-9 Methods to designate authentication file" is used.

### Situation-dependent message

```
PASSWD_REMAIN=number of days left until the expiration date of password
```

When login by LDAP authentication or RADIUS authentication succeeds, "PASSWD\_REMAIN=" is displayed.

## Notes

- Attempting to log in to an HVM that does not support user authentication ends in an error "Return: 0x10590021".
- Attempting to log in to an HVM that is HvmSh user authentication disabled ends in an error "Return: 0x10590025".
- Attempting to log in to a once-logged-in-but-not-yet-logged-out HVM by using the same authentication file as the one used in the first logging in fails in an error "Return: 0x10590026". If any of the following three events occurs before the second logging in, the second logging in ends normally, returning the message "Return: 0x00000000". In this case, however, earlier version HvmSh logs an authentication failure when completing the second login. This inconvenience is corrected in combinations of HVM Ver 02-10 or higher and HvmSh Ver 8.5 or higher.
  - A valid login period has elapsed since the first login
  - Switching to enable/disable HvmSh user authentication
  - Restarting the HVM system
- It may take about 35 seconds to log into an HVM in which LDAP authentication is enabled. You should set the timeout period to 40 or more seconds for HVMs in which LDAP authentication is enabled.
- It may take about 120 seconds to log into an HVM in which RADIUS authentication is enabled. You should set the timeout period to 120 seconds or more seconds for HVMs in which RADIUS authentication is enabled.

## Logout command

### Syntax

```
oprΔlogout[Δ-fileuser=authentication file name]
```

- When **authentication file name** is not set at "-fileuser=option", authentication file described in No. 2 of "Table 1-9 Methods to designate authentication file" is used.

### Situation-dependent message

None

### Notes

- If the authentication file does not contain valid certificate, an error "Return: 0x10590024" results.
- If you use a combination of HVM Ver 02-10 or higher and HvmSh Ver 8.5 or higher and if you log in an HVM and if any of the following three events occurs before logging out, the logout command fails in an error "Return: 0x10590027". In other combinations, however, the logout command ends normally with "Return: 0x00000000"; and HvmSh logs an authentication failure when completing the second login.
  - A valid login period has elapsed since the first login
  - Switching to enable/disable HvmSh user authentication
  - Restarting the HVM system

## Add LPAR definition

Adds the LPAR definition of the specified LPAR number.

### Syntax

```
oprΔLPARAddΔlpar=LPAR No.
```

### Situation-dependent message

None

## Remove LPAR definition

Removes the LPAR definition of the specified LPAR number.

### Syntax

```
oprΔLPARRemoveΔlpar=LPAR No.[Δgeneration=generation No.]
```

### Situation-dependent message

None

## Activate LPAR

Activates the LPAR of the specified LPAR number.

### Syntax

```
opr△Activate△lpar=LPAR no. [△opt={GetBootDevice | SetBootOrder}]
```

- OS boot operation is not execute when "opt={GetBootDevice | SetBootOrder}" option was specified.
- Target LPAR is activated when "opt=GetBootDevice" option was specified for collecting bootable device information. And the LPAR is deactivated after storing information to the HVM internal buffer.
- HVM internal buffer locks the stored information for 30 seconds. If the second command for collecting information is executed within 30 seconds from the first command, the second command operates after 30 seconds from the first command, and the buffer is overwritten by the new collected information. Therefore execute "get BootDevice" command within 30 seconds from the first command for getting the BootDevice information. Details of them refer to the section "[Notes for conflict of commands](#)".
- Target LPAR is also activated when "opt=SetBootDevice" option was specified for saving bootable device information from HVM buffer to EFI. And the LPAR is deactivated after saving information to the EFI. Details of them refer to the section "[Control of LPAR boot information](#)".
- Command fails when set the option "opt={GetBootDevice |SetBootOrder}" to HVM which does not support the option.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Output example

```
HvmSh(Version 3.1)△Accepted.△2009/08/05△09:30:53△Return:△0x00000064  
Activate△Ver.1△2009/08/05△09:30:53△GMT+09:00  
accept=100
```

## Deactivate LPAR

Deactivates the LPAR of the specified LPAR number.

### Syntax

```
oprΔDeactivateΔlpar=LPAR No.
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Reactivate LPAR

Reactivates the LPAR of the specified LPAR number.

### Syntax

```
oprΔReactivateΔlpar=LPAR No.
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Save configuration

Saves the configuration.

### Syntax

```
oprΔSaveConfig (no parameter)
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Get LPAR name

Gets the LPAR name of the specified LPAR number.

### Syntax

```
getΔLPARNameΔlpar=LPAR No.
```

### Situation-dependent message

```
lparname=LPAR name
```

## Set LPAR name

Sets or changes the LPAR name of the specified LPAR number.

### Syntax

```
setΔLPARNameΔlpar=LPAR No.Δlparname=LPAR name[Δgeneration=generation No.]
```

For **LPAR name**, specify a valid LPAR name with a length of 1 to 31 characters.

### Situation-dependent message

None

## Get LPAR status

Gets the status of the LPAR for the specified LPAR number.

### Syntax

```
getΔLPARStatusΔlpar=LPAR No.
```

### Situation-dependent message

```
status={Activated | Deactivated | Failure}
```

## Get no. of shared mode logical processors of LPAR

Gets the number of shared mode logical processors assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARShrProcΔlpar=LPAR No.
```

### Situation-dependent message

```
shrproc=No. of shared mode logical processors
```

The answer comes in an integer.

## Set no. of shared mode logical processors of LPAR

Sets the number of shared mode logical processors assigned to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARShrProcΔlpar=LPAR No.Δshrproc=No. of shared mode logical processors  
[Δgeneration=generation No.]
```

Specify the **No. of shared mode logical processors** in an integer between 0 and the maximum number of logical processors available.

### Situation-dependent message

None

## Get no. of dedicated mode logical processors of LPAR

Gets the number of dedicated mode logical processors assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARDedProcΔlpar=LPAR No.
```

### Situation-dependent message

```
dedproc=No. of dedicated mode logical processors
```

## Set no. of dedicated mode logical processors of LPAR

Sets the number of dedicated mode logical processors assigned to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARDedProcΔlpar=LPAR No.Δdedproc=No. of dedicated mode logical processors  
[Δgeneration=generation No.]
```

Specify the **No. of dedicated mode logical processors** in an integer between 0 and the maximum number of logical processors available.

### Situation-dependent message

None

## Get service time share

Gets a share of service time allocated to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARSrvΔlpar=LPAR No.
```

### Situation-dependent message

```
lparsrv=LPAR service time share
```

### Notes

If the LPAR is in dedicated mode, its service time share is indicated by "-". If the LPAR is changed to shared mode, the service time share which was set before changing to dedicated mode is set. Otherwise, the default share of 100 is set. When an LPAR is changed to shared mode, check its service time share.

## Set service time share

Sets a share of service time to be allocated to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARSrvΔlpar=LPAR No.Δlparsrv=LPAR service time share[Δgeneration=generation No.]
```

Specify the **LPAR service time share** in an integer between 1 and the maximum number available.

### Situation-dependent message

None

## Get amount of memory allocated to LPAR

Gets the amount of memory allocated to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARMemΔlpar=LPAR No.
```

### Situation-dependent message

```
lparmem=amount of memory allocated to LPAR (MB)
```

## Set amount of memory allocated to LPAR

Sets the amount of memory allocated to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARMemΔlpar=LPAR No.Δlparmem=amount of memory allocated to LPAR (MB)[Δgeneration=generation No.]
```

Specify the **amount of memory to be allocated to LPAR (MB)** in a multiplier of decimal 256 within the size of unused memory.

### Situation-dependent message

None

### Notes

When guest NUMA is enabled in the target LPAR, it ends with an error of "Return: 0x04030001".

## Get no. of virtual NICs assigned

Gets the number of virtual NICs assigned to the LPAR for the specified LPAR number.

### Syntax

```
getΔLPARVNICCountΔlpar=LPAR No.
```

### Situation-dependent message

```
vniccount=No. of virtual NICs
```

## Get enable/disable state of logical processor idle detection function of LPAR

Gets the logical processor idle detection function (enable/disable) for the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARIDΔlpar=LPAR No.
```

### Situation-dependent message

```
lparid={Yes | No}
```

## Sets enable/disable logical processor idle detection function of LPAR

Enables or disables the logical processor idle detection function for the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARIDΔlpar=LPAR No.Δlparid={Yes | No}[Δgeneration=generation No.]
```

### Situation-dependent message

None

### Notes

- Guest idle mode is disabled (\*) when changing the logical processor idle detection function from **No** to **Yes**.
- When changing the logical processor idle detection function while the guest idle mode of target LPAR is MWAIT and Activate, it ends with an error of "Return: 0x04040002".

## Get automatic activate option setting of LPAR

Gets the option whether the LPAR of the specified LPAR number is to be automatically activated when the HVM boots.

### Syntax

```
getΔLPARAAΔlpar=LPAR No.
```

### Situation-dependent message

```
lparaa=automatic activate setting
```

Specify the **automatic activate setting** with an "\*" or in a number equal to or greater than 1. The "\*" does not automatically activates the LPAR, while the number automatically activates LPARs in the ascending order of it.

## Set automatic activate option setting of LPAR

Sets the option whether the LPAR of the specified LPAR number is to be automatically activated when the HVM boots.

### Syntax

```
setΔLPARAAΔlpar=LPAR No.Δlparaa=automatic activate setting[Δgeneration=generation No.]
```

Specify the **automatic activate setting** with an "\*" or in a number equal to or greater than 1.

### Situation-dependent message

None

## Get enable/disable state of automatic logical SEL clearance function of LPAR

Gets whether the automatic logical SEL clearance function is enabled or disabled for the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARACΔlpar=LPAR No.
```

### Situation-dependent message

```
lparac={Yes | No}
```

## Set enable/disable automatic logical SEL clearance function of LPAR

Sets whether the automatic logical SEL clearance function is enabled or disabled for the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARACΔlpar=LPAR No.Δlparac={Yes | No}[Δgeneration=generation No.]
```

### Situation-dependent message

None

## Get enable/disable state of processor capping function of LPAR

Gets the option whether the processor capping function is enabled or disabled for the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARPCΔlpar=LPAR No.
```

### Situation-dependent message

```
lparpc={Yes | No | *}
```

Yes: Enables processor capping for the shared mode logical processor.

No: Disables processor capping for the shared mode logical processor.

\*: Indicates the logical processor operates in dedicated mode (processor capping disabled).

## Set enable/disable processor capping function of LPAR

Sets whether the processor capping function is enabled or disabled for the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARPCΔlpar=LPAR No.Δlparpc={Yes | No}[Δgeneration=generation No.]
```

### Situation-dependent message

None

### Notes

The processor capping feature can be set even if the LPAR is in dedicated mode. However, in this case the setting received is "\*" (processor capping disable). The specified setting becomes effective when the LPAR is changed to shared mode.

## Get pre-boot firmware selection of LPAR

Gets pre-boot firmware activated for the LPAR of the specified LPAR number, which is activated by Activate LPAR.

### Syntax

```
getΔLPARPBΔlpar=LPAR No.
```

### Situation-dependent message

```
lparpb={BIOS | 64UEFI}
```

## Select pre-boot firmware of LPAR

Selects pre-boot firmware activated for the LPAR of the specified LPAR number, which is activated by Activate LPAR.

### Syntax

```
setΔLPARPBΔlpar=LPAR No.Δlparpb={BIOS | 64UEFI}[Δgeneration=generation No.]
```

### Situation-dependent message

None

### Notes

If 64UEFI is not supported for the HVM, an HVM error results if you specify 64UEFI.

## Get scheduling mode of logical processor of LPAR

Gets logical processor scheduling mode of the specified LPAR number.

### Syntax

```
getΔLPARSchdΔlpar=LPAR No.
```

### Situation-dependent message

```
lparschd={D | S}
```

S: Shared mode

D: Dedicated mode

## Set scheduling mode of logical processor of LPAR

Sets the logical processor scheduling mode of the specified LPAR Number.

### Syntax

```
oprΔLPARSchdΔlpar=LPAR No.Δlparschd={D | S}[Δgeneration=generation No.]
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Notes

- When execute this command, scheduling mode of physical processor in same processor group of specified LPAR may be changed.
- When guest NUMA is enabled and Activate in the target LPAR, it ends with an error of "Return: 0x04030003".
- When changing the setting to CPU shared mode while the guest idle mode of target LPAR is MWAIT, it ends with an error of "Return: 0x04040001".

## Get enable/disable state of virtual COM console function of LPAR

Gets the option whether the virtual COM console function is enabled or disabled for the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARVC[Δlpar=LPAR No.]
```

### Situation-dependent message (when lpar= LPAR No. is specified)

```
lparvc={Yes | No | virtual COM No.}  
lparvcport={ none | TCP Port No. }
```

lparvc=**No**, lparvcport=**none**: This indicates virtual COM function is disabled.

### Output example (when lpar= LPAR No. parameter is not specified)

```
LPAR Virtual COM Console  
  
TCP_Port Lpar# Name  
1 :20801 * *  
2 :20802 2 W2K8X86-L2  
3 :20803 * *  
4 :20804 4 W2K8X64-L4  
5 :20805 * *  
6 :20806 6 RL51X64-L6  
7 :20807 * *  
8 :20808 8 NO_NAME  
9 :20809 * *  
10:20810 10 NO_NAME  
11:20811 * *  
12:20812 12 RL47X86-L12  
13:20813 * *  
14:20814 14 RL54X64-L14  
15:20815 * *  
16:20816 16 NO_NAME  
  
Lpar# TCP_Port Name  
1 * W2K8Xxx-001  
2 1 :20802 W2K8X86-L2  
3 * W2K3X86-L3  
4 3 :20804 W2K8X64-L4  
5 * W2K8X86-L5  
6 5 :20806 RL51X64-L6  
7 * RL52X64-L7  
8 7 :20808 NO_NAME  
9 * NO_NAME  
10 9 :20810 NO_NAME  
11 * RL47X86-L11  
12 11:20812 RL47X86-L12  
13 * RL54X86-L13  
14 13:20814 RL54X64-L14  
15 * RL47X64-L15  
16 15:20816 NO_NAME
```

## Set enable/disable virtual COM console function of LPAR

Sets whether the virtual COM console function is enabled or disabled for the LPAR of the specified LPAR number.

### Syntax

```
set ΔLPARVC Δlpar=LPAR No. Δlparvc={Yes | No | virtual COM No.} [Δgeneration=generation No.]
```

- lparvc=**Yes**: Enables virtual COM console function by automatically allocating virtual COM's TcpPort to LPAR.
- lparvc=**No**: Disables virtual COM console function.
- lparvc=**virtual COM No.**: Enables virtual COM console function by allocating virtual COM's TcpPort which corresponding to specified virtual COM No.

### Situation-dependent message

None

## Set the Memory Node number which is assigned to the LPAR

Sets the Memory Node number assigned to the LPAR.

### Syntax

```
set LPARMN lpar=LAPR number lparmn={A|Node number} [Δgeneration=generation No.]
```

- lparmn=**A** : Specifies the Automatic memory allocation
- lparmn=**Node number**: Specifies the Memory Node number which is assigned to the LPAR.

### Situation-dependent message

None

### Notes

- When the memory in the specified node cannot be allocated, HVM activation will fail.
- When the LPAR is activated, the Node number cannot be set.
- In Non-NUMA mode, specifying "lparmn=**Node number**" is not allowed. When "lparmn=**A**" is specified in Non-NUMA mode, this command and LPAR activation will be executed normally.
- When guest NUMA is enabled in the target LPAR, it ends with an error of "Return: 0x04030001".

## Set enable/disable VT-X function of LPAR

Sets whether VT-X function is enabled or disabled for the LPAR.

### Syntax

```
setΔ LPARVTX Δlpar=LPAR No.Δlparvtx={Yes | No}[Δgeneration=generation No.]
```

### Situation-dependent message

None

### Notes

- This function cannot be set when the LPAR is deactivated.

## Set OS type to boot in LPAR

Sets the OS type to boot in the LPAR.

### Syntax

```
setΔ LPAROsType Δlpar=LPAR No.Δlparostype={Default | Solaris}[Δgeneration=generation No.]
```

### Situation-dependent message

None

### Notes

- This function cannot be set when the LPAR is activated.

## Set enable/disable LPAR PRTE

Sets the LPARMshyp parameter to enable or disable the Microsoft Hypervisor Interface: Partition Reference Time Enlightenment function of the LPAR.

### Syntax

```
set LPARMshyp lpar= LPAR No. prte={Yes | No}[Δgeneration= generation No.]
```

### Situation-dependent message

None

### Notes

- This function cannot be set when the LPAR is activated.

## Set enable/disable guest NUMA function of LPAR

Sets whether guest NUMA function is enabled or disabled for the LPAR.

### Syntax

```
setΔLPARGuestNumaΔlpar=LPAR No.Δguestnuma={Yes |  
No}[Δgeneration=generation No.]
```

### Situation-dependent message

None

### Notes

- This function cannot be set when the LPAR is activated.

## Get memory capacity allocated to LPAR for each NUMA node number

Gets the memory capacity allocated to the specified LPAR for each NUMA node number.

### Syntax

```
getΔLPARNodeMemΔlpar=LPAR No.
```

### Situation-dependent message

```
lpar= LPAR No.  
nodemem=node No., memory capacity (MB)  
...  
nodemem= node No., memory capacity (MB)
```

- Number of "nodemem=" lines are outputted the same number as mounted memory NUMA nodes. When each node is not allocated, "memory capacity" becomes "0" in the "nodemem=" line.

### Notes

- When guest NUMA is disabled in the LPAR, it ends with an error of "Return: 0x04030000".

## Set memory capacity allocated to LPAR for each NUMA node number

Sets the memory capacity allocated to the specified LPAR for each NUMA node number.

### Syntax1

```
setΔLPARNodeMemΔlpar=LPAR No.  
nodemem=node No., memory capacity (MB)  
[nodemem=node No., memory capacity (MB)]  
[Δgeneration=generation No.]
```

- In "nodemem=option", specify the memory capacity (MB) that allocated to NUMA node number and NUMA node, and connect the memory capacity (MB) with commas.
- When allocating memory capacity to multiple NUMA nodes, allocate all NUMA node numbers and NUMA nodes together. When each node is not allocated, "memory capacity" becomes "0" in the "nodemem=" line.
- The memory capacity (MB) as decimal number that allocated to NUMA node can be specified multiple of 256 until the mounted physical memory size of the NUMA node.

### [Example]

**When LPAR1 node 0, 1, 3 are allocated 512MB, 1024MB, 3768MB respectively.**

```
setΔLPARNodeMemΔlpar=1Δnodemem=0,512Δnodemem=1,1024Δnodemem=3,768
```

## Syntax2

```
setΔLPARNodeMemΔfilename=File name
```

File name written "lpar=LPAR number" or "nodemem=node No., memory capacity (MB)" is specified. Enter single command per line from the beginning column of line.

### [Example]

**When LPAR1 node 0, 1, 3 are allocated 512MB, 1024MB, 3768MB respectively.**

```
lpar=1  
nodemem=0,512  
nodemem=1,1024  
nodemem=3,768
```

## Situation-dependent message

None

## Notes

- If the guest NUMA feature is disabled in the LPAR, it ends with an error of "Return: 0x04030000".
- If the NUMA feature is disabled in the EFI in a server blade or if the HVM does not support the guest NUMA feature, it ends with an error of "Return: 0x11000000".
- If you set an unexisting node number, it ends with an error of Return: 0x11000000.
- If you set a node number multiple times for one execution, it ends with an error of "Return: 0x11000000".

## Sets Physical NUMA Node Binding Mode

Sets Physical NUMA Node Binding Mode.

### Syntax

```
setΔLPARGuestNumaBindLprocΔlpar=LPAR No.Δnumabind={Yes |  
No}[generation=generation number]
```

### Situation-dependent message

None

### Notes

- If the HVM does not support Physical NUMA Node Binding Mode, it ends with an error of "Return: 0x04030007".
- You can enable Physical NUMA Node Binding Mode only when the guest NUMA feature for the target LPAR is enabled.  
If the guest NUMA feature is disabled and the option "numabind=" is set to "Yes", it ends with "Return: 0x04030000".  
Also, if the guest NUMA feature is disabled, Physical NUMA Node Binding Mode is also disabled.
- The following HVM interfaces end with an error of "Return: 0x04030005" for LPARs for which Physical NUMA Node Binding Mode is enabled.
  - set LparShrProc
  - set LPARDedProc
  - set LparLproc
- The logical processor topology setting mode for a guest NUMA is set to **Physical NUMA Node Binding Mode** when "numabind" is set to "Yes". Whereas, the logical processor topology setting mode for a guest NUMA is set to **Physical Processor Binding Mode** when "numabind" is set to "No".
- For the modes, see in "Hitachi Compute Blade 500 Series Logical partitioning manager User's Guide" and "Hitachi Compute Blade 2500 Series Logical partitioning manager User Guide".

## Sets No. of logical processors in Physical NUMA Node Binding Mode

Sets the number of logical processors in Physical NUMA Node Binding Mode.

### Syntax

```
setΔLPARNodeLproc lpar=LPAR No.Δnode|proc=node number,the number of logical processors  
[...node|proc=node number,the number of logical processors][Δgeneration=generation number]
```

### Situation-dependent message

None

### Notes

- Specify a physical NUMA node number and the number of logical processors consecutively with a comma “,” located between them for the option “numabind=”.
- Specify all of NUMA node numbers and the number of logical processors when you assign processors to multiple physical NUMA nodes. When no value is set as the number of logical processors for a physical NUMA node, no logical processors are assigned to the physical NUMA node.
- If an HVM does not support Physical NUMA Node Binding Mode, it ends with an error of “Return: 0x04030007”.
- If Physical NUMA Node Binding Mode is disabled on an LPAR, it ends with an error of “Return: 0x04030007”.
- If you specify an unexisting node number, it ends with an error of “Return: 0x11000000”.
- If you set a node number multiple times for one execution, it ends with an error of “Return: 0x11000000”.

## Get total amount of memory available for LPARs

Gets the total amount of memory (in MBs) available for LPARs.

### Syntax

```
getΔSystemMemSize (no parameter)
```

### Situation-dependent message

```
usermem=user memory
```

## Get current memory allocation

Gets current memory allocation information in ascending order of addresses.

### Syntax

```
getΔSystemMemAlloc (no parameter)
```

### Situation-dependent message

```
memaddr=start addressΔmemsize=memory sizeΔname=user name
```

This is repeated for each of the memory areas.

#### **start address:**

Start address of allocated memory in hexadecimal form.

#### **memory size:**

Memory size in MBs in decimal form.

#### **user name:**

Name using the memory area of the size indicated by memsize, starting at the address indicated by memaddr.

The name is any one of the following:

SYS1: Used by the kernel part of the HVM system.

SYS2: Used by the network communication and service control parts of the HVM system.

LPARx: LPAR No. This is shown only for activated LPARs.

ISOLATED: This is shown for isolated memory by memory error detection.

\*\*\*\*\*: Free area (whereas in an HVM screen, free areas are displayed as hyphens ( - ), in this case, asterisks, are displayed.)

### Output example

```
memaddr=0000000000000000Δmemsize=768Δname=SYS2
memaddr=0000000030000000Δmemsize=1024Δname=LPAR1
memaddr=0000000070000000Δmemsize=256Δname=SYS1
memaddr=0000000100000000Δmemsize=512Δname=LPAR1
memaddr=0000000120000000Δmemsize=2048Δname=*****
memaddr=00000001a0000000Δmemsize=1536Δname=LPAR3
memaddr=0000000200000000Δmemsize=1792Δname=*****
memaddr=0000000270000000Δmemsize=256Δname=SYS1
```

## Set Performance tuning options for LPAR

Sets the three types of option individually for the HVM where "Performance tuning options" is available.

### Syntax1

Specifies the instruction to be executed in the Guest idle mode for the LPAR.

```
setΔLPARIdleMode Δ lpar=LPAR No.Δidlemode={halt | mwait}[Δgeneration=generation No.]
```

halt : Executes HALT instruction when a logical processor is in Guest idle mode.

mwait : Executes MWAIT instruction when a logical processor is in Guest idle mode.

### Syntax2

Enables or disables LowLatency mode for the LPAR.

```
setΔLPARLowLatencyΔlpar=LPAR No.ΔLowLatency={ Yes | No }[Δgeneration= generation No.]
```

Yes : Enables LowLatency mode.

No : Disables LowLatency mode.

### Syntax3

Enables or disables Ept1GB mode for the LPAR.

```
setΔLPAREpt1GBΔlpar=LPAR No.ΔEpt1GB={ Yes | No }[Δgeneration= generation No.]
```

Yes : Enables Ept1GB mode. (Page size of memory control is 1GB)

No : Disables Ept1GB mode. (Page size of memory control is 2MB)

### Situation-dependent message (Syntax1 to 3)

None

### Notes (Syntax1 to 3)

- When each option, as each syntax, is specified to an HVM where "Performance tuning options" is not available or to an HVM not supporting the HVM interface of "Performance tuning options", it ends with an error of "Return: x11000000".
- To check each option status, execute "get ConfigAll" command, then see the LPAR\_CONFIGURATION record.

## Get logical processor assignment for LPAR

Gets the physical processor number assigned to a logical processor for the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARLProcΔlpar=LPAR No.Δlprocno=logical processor No.
```

### Situation-dependent message

Form1.

```
lproctype={* | S | D | physical processor No.}
```

Form2.

```
lproctype={* | A | physical processor No.}
```

Form1:

\*: Unassigned (or offline)

S: Assigned in shared mode

D: Assigned in dedicated mode (Shown only when the LPAR is deactivated.)

**physical processor No.:** The physical processor number assigned is shown as a decimal. (Shown only when the LPAR is activated in dedicated mode or a physical processor number is specified manually for a deactivated LPAR.)

Form2:

\*: Unassigned (or offline)

A: Auto-assigned physical processor (In dedicated mode, shown only when the LPAR is deactivated.)

**physical processor No.:** When specifying the physical processor using in dedicated mode, shows the processor No.

## Notes

The form of situation-dependent message varies with the combination of the HVM firmware version and the HvmSh version shown below.

**Table 2-1 Form of situation-dependent message (1)**

HVM version \ HvmSh version	Compute Blade 2000 DP		Compute Blade 2000 MP		Compute Blade 500	Compute Blade 2500
	58-4x or lower	58-50 or higher	78-4x or lower	78-50 or higher	01-00 or higher	02-00 or higher
V5.0 or lower	Form 1	-	Form 1	-	-	-
V5.1 or higher	Form 1	Form 2	Form 1	Form 2	-	-
V6.0 or higher	Form 1	Form 2	Form 1	Form 2	Form 2	-
V8.e3 or higher	Form 1	Form 2	Form 1	Form 2	Form 2	Form 2

-: Not supported. Use supported version of HvmSh.

**Table 2-2 Form of situation-dependent message (2)**

HVM version \ HvmSh version	BladeSymphony 1000	Compute Blade 320	
	All version	17-4x or lower	17-61 or higher
V5.0 or lower	Form 1	Form 1	-
V5.1 or higher	Form 1	Form 1	Form 2

-: Not supported. Use HvmSh of Ver.5.1 or higher.

## Assign logical processor for LPAR

Form1. Assigns a physical processor to a logical processor for the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARLPProcΔlpar=LPAR No.Δlprocno=logical processor No.Δlproctype={D | A | physical processor No.} [Δgeneration=generation No.]
```

Form2. Changes the logical processor No. for the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARLPProcΔlpar=LPAR No.Δlprocno=logical processor No.[Δgeneration=generation No.]
```

### Situation-dependent message

None

## Notes

Available value for lproctype=option of form 1 varies with the combination of the HVM firmware version and the HvmSh version shown in below. The "P#" indicates physical processor No.

**Table 2-3 Available value (1)**

HVM version HvmSh version	Compute Blade 2000 DP		Compute Blade 2000 MP		Compute Blade 500	Compute Blade 2500
	58-4x or lower	58-50 or higher	78-4x or lower	78-50 or higher	01-00 or higher	02-00 or higher
V5.0 or lower	{D P#}	-	{D P#}	-	-	-
V5.1 or higher	{D P#}	{A P#}	{D P#}	{A P#}	-	-
V6.0 or higher	{D P#}	{A P#}	{D P#}	{A P#}	{A P#}	-
V8.3 or higher	{D P#}	{A P#}	{D P#}	{A P#}	{A P#}	{A P#}

-: Not supported. Use the supported version of HvmSh.

**Table 2-3 Available value (2)**

HVM version HvmSh version	BladeSymphony 1000	Compute Blade 320	
	All version	17-4x or lower	17-61 or higher
V5.0 or lower	{D P#}	{D P#}	-
V5.1 or higher	{D P#}	{D P#}	{A P#}

-: Not supported. Use HvmSh of Ver.5.1 or higher.

## Get physical processor state

Gets the state and the configuration of the specified physical processor.

### Syntax

```
getΔSystemPProcΔpprocno=physical processor No.[Δver=output message version]
```

Specify the **physical processor No.** with an integer between 0 and the maximum physical processor number available.

Specify the **output message version** with an integer, which selects an output format for situation-dependent message. Entering an unsupported value to the item outputs the same situation-dependent message as the one for not entering an integer.

### Situation-dependent message

pprocbld= <b>server module No.</b>	None specified output message version or Specify "ver=1"
pprocdie= <b>die No.</b>	
pproccore= <b>core No.</b>	
pprocthread= <b>thread No.</b>	
pprocstatus={RUN   FAI   ERR   OFF}	
pprocschd={D   S}	
pprocstate={ACT DEA WRN DEG}	If specify "ver=2". Outputs additional message in the left column.

pprocstatus: Physical processor status

pprocschd: Scheduling mode assigned to the physical processor

## Physical processor degeneracy

Degenerates the physical processor of pprocstate=WRN or deactivates the physical processor if it reaches the core license limit.

### Syntax

```
oprΔSystemPProc Δpprocno=Physical processor No.Δpprocstate={DEA|DEG}
```

### Situation-dependent message

```
accept=operation No.
```

#### operation No.

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal. If no setting corresponding to taxno is available, "-" is output.

## Get PCI device assignment of LPAR

Gets a PCI device which is assigned to the LPAR of a specified LPAR number.

### Syntax 1

```
getΔLPARPCIΔlpar=LPAR No.Δpcino=PCI device No.
```

### Syntax 2

```
getΔLPARPCIΔlpar=LPAR No.Δslot=device locationΔportno={port No. | *}
```

- For **PCI device No.**, specify the number which is assigned to each PCI device for identification by the HVM in decimal form.
- For specifying the option "slot", see in "Description format for device location" in "Notes for HVM interface" in "Interfaces between HvmSh and HVM".
- Specify \* at the option "slot" for a PCI device with no port number.  
Ex.) HvmSh -host=xx.xx.xx.xx get LPARPCI lpar=1 slot=U2 portno=\*

### Situation-dependent message

```
pcitype={S | N | F | U | -}  
pcisched={S | D | E | -}  
pciassign={* | A | R | -} (*1)
```

If no setting corresponding to pcino is available, "-" is output.

- \*1: For the information corresponds to the USB device assignment status "#A", "#R" displayed on HVM's PCI Device Assignment screen, get the STATUS EX field in PHYSICAL IO ASSIGN INFORMATION record with "get ConfigAll" command.

## Assign PCI device for LPAR

Assigns a PCI device to the LPAR of the specified LPAR number.

### Syntax 1

```
setΔLPARPCIΔlpar=LPAR No.Δpcino=PCI device No.Δpciassign={Assign | Attach | Detach | Specify | *}[Δgeneration=generation No.]
```

### Syntax 2

```
setΔLPARPCIΔlpar=LPAR No.Δslot=device locationΔportno={port No. | *}Δpciassign={Assign | Attach | Detach | Specify | *}[Δgeneration=generation No.]
```

- For **PCI device No.**, specify the number which is assigned to each PCI device for identification by the HVM.
- At PCI assign, select an applicable parameter per desired action as follows:

**Assign:** Assigns the USB device, the NIC in dedicated mode or the HBA device to the deactivated LPAR.

**Attach:** Attaches the USB device to the activated LPAR.

**Detach:** Detaches the USB device from the deactivated LPAR.

**\***: Deassigns the USB device, the NIC in dedicated mode or the HBA device from the deactivate LPAR.

**Specify:** Assigns the USB device.

Specify option interlocks with usbautoalloc of get HvmOptions. When Specify option is specified to an HVM not supporting the HVM interface of usbautoalloc, it ends with an error of "Return: x11000000".

Specify option is available only for the USB devices whose usbautoalloc of HVM Options is disabled. As only one LPAR is able to be assigned with (#), the existent (#) of assigned LPAR is deleted.

The HVM returns the "Return: 0x01040000" when a status is as below.

1. When an usbautoallo of the HVM Option is an Enabled mode.
2. When specify an unassigned USB Device.
3. When specify except a USB Device.
4. When specify a USB device in dedicated mode.

- For specifying the option "slot", see in "Description format for device location" in "Notes for HVM interface" in "Interfaces between HvmSh and HVM".
- Specify \* at the option "slot" for a PCI device with no port number. Ex.) HvmSh -host=xx.xx.xx.xx set LPARPCI lpar=1 slot=U2 portno=\* pciassign=Attach

### Situation-dependent message

None

**Table 2-4 Changing operation for assignment status of USB device**

		Status after operation				
		A	R	#A	#R	*
Status before operation	A	-	Attach (activate) (*1)	Specify	-	*
	R	Detach (deactivate) (reactivate) (*2)	-	-	Specify	-
	#A	Specify	-	-	Attach (activate)	*
	#R	-	Specify	Detach (deactivate)	-	-
	*	Assign	-	-	-	-

( ): Operations other than setLPARpci commands

-: No operation

\*1: When usbautoalloc of HVM Options is Disabled, the status doesn't change with "activate".

\*2: The status changes from "R" to "A" with "reactivate", only when usbautoalloc is Disabled.

## Get PCI device information

Gets a set of schedule settings for a PCI device.

### Syntax 1

```
getSystemPCIDpcino=PCI device No.[Δver=output message version]
```

### Syntax 2

```
getSystemPCIΔslot=device locationΔportno={port No. | *} [Δver=output message version]
```

- For **PCI device No.**, specify the number which is assigned to each PCI device for identification by the HVM in decimal form.
- For **output message version**, specify the decimal number which specify output format for situation-dependent message. If specifies unsupported value to **output message version**, outputs same situation-dependent message as none specified.
- Specify \* at the option "slot" for a PCI device with no port number. Ex.) HvmSh -host=xx.xx.xx.xx get SystemPCI slot=U2 portno=\*

### Situation-dependent message

pcitype= <b>PCI device type</b>	None specified output message version or Specify "ver=1"
pcischd= <b>PCI device scheduling mode</b>	
vendor= <b>vendor name</b>	
devname= <b>device name</b>	
slotno= <b>device location</b>	
bus= <b>bus No. of PCI configuration space (hex)</b>	
dev= <b>device No. of PCI configuration space (hex)</b>	
func= <b>Function No. of PCI configuration space</b>	
lpar={ <b>LPAR No.</b>   S   M}	
snic={ <b>shared NIC No.</b>   -}	
status={!   Err   -}	If specify "ver=2". Outputs additional message in the left column.

Some of these parameters have the following values:

PCI device type

S: SCSI controller

N: Network interface Card (NIC)

F: Fiber Channel

U: USB controller

PCI device scheduling mode

D: Dedicated mode

E: Exclusively shared mode

S: Shared mode

device location

For details, see [Description Format for Device Location](#).

### Status

!: hot removed, Err: error status, -: other status (includes available status)

## Notes

- If the HVM does not support ver=n supported interface, error end with *Return: 0x01000000 Illegal HVM interface was requested* message.
- "func=" shows the number of the port with the smallest number in a PCI device regardless of a specified port number. When you desire to confirm a specified port number, see in the record "PHYSICAL\_IO\_CONFIGURATION" in the command "get ConfigAll".

## Set scheduling mode of PCI device

Sets the scheduling mode of the PCI device.

### Syntax 1

```
setΔSystemPCIΔpcino=PCI device No.Δpcischd={D | S}
```

### Syntax 2

```
setΔSystemPCIΔslot=device locationΔportno={port No. | *}Δpcischd={D | S}
```

### Syntax 3

```
setΔSystemPCIΔfilename=File name
```

- For **PCI device No.**, specify the number which is assigned to each PCI device for identification by the HVM in decimal form.
- For specifying the option "slot", see in "Description format for device location" in "Notes for HVM interface" in "Interfaces between HvmSh and HVM".
- Specify \* at the option "slot" for a PCI device with no port number.
- For **File name**, specify the name of a file with up to 8 combinations of **PCI device No.** and *pcischd={D|S}* option, or the name of a file with 8 combinations of **device location**, *portno={port No. | \*}*, and *pcischd={D | S}*.

### Example 1 in Format 1

```
pcino=2 pcischd=D  
pcino=3 pcischd=S  
...  
pcino=28 pcischd=S
```

### Example 2 in Format 2

```
slot=G21 portno=0 pcischd=D  
...  
slot=2 portno=0 pcischd=S  
slot=2 portno=2 pcischd=S
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Notes

- If the command completed and changing scheduling mode of one or more devices, outputs execution result message of above sample (Accepted) format in "Syntax" line. It takes two to three minutes to reflect changing scheduling mode to HVM system (\*1) and cannot contact to HVM meanwhile. So the HvmSh command executed during this time ends with *Return: 0x10020001 Response Timeout* or *Return: 0x10030000 Unknown Data Received* message.  
  
\*1: In case of port status of shared FC is set to Link Down, operation time increases depending on the No. of LinkDown ports. Refer to "Cautions"- "Shared FC Port Status" in each model's User's Guide for details.
- Do not put file descriptions in format 1 and 2 in a file.

## Example

```
> set SystemPci pcino=1 pcino=2 pcino=3 pcisched=S
HvmSh (Version 5.0) Accepted. 2010/07/07 17:08:09 Return: 0x00000001
SetSystemInfo Ver.1 2010/07/07 17:02:50 GMT+00:00
accept=1
> hvms5.0.0.4 -host=172.16.17.27 getResult accept=1
HvmSh (Version 5.0) Failed. 2010/07/07 17:15:51 Return: 0x10020001
Msg:Response Timeout.
(Two to three minutes)
> hvms5.0.0.4 -host=172.16.17.27 getResult accept=1
HvmSh (Version 5.0) Completed. 2010/07/07 17:16:10 Return: 0x00030000
GetResults Ver.1 2010/07/07 17:10:51 GMT+00:00
```

## Set FC core dedicated-mode

Sets Enable or Disable of the HBA core dedicated mode for an FC port of the shared-mode HBA.

### Syntax

```
setΔFcCoreDedMode slot=HBA device locationΔportno=HBA port No.Δmode=  
{Enable | Disable}
```

- For specifying the option "slot", see in "Description format for device location" in "Notes for HVM interface" in "Interfaces between HvmSh and HVM".

### Situation-dependent message (example)

None

### Notes

- To check if the target HBA supports the core dedicated mode, execute "get ConfigAll" command, then see the CORE\_DED field in the PHYSICAL\_IO\_CONFIGURATION record.
- If the target HBA does not support the core dedicated mode, this command ends in an error.
- If the schedule mode of the target HBA is "Dedicated", HvmSh does not allow enabling the core dedicated mode but allows disabling the mode.
- If the FC port driver option settings are "ConnectionType=FC-AL" and "MultiplePortID=Enable", this command ends in an error.
- If changing the FC port driver options "ConnectionType", "MultiplePortID", and "DataRate" is suspended, enabling the core dedicated mode is not allowed.
- If any of the LPARs are not deactivated, this command ends in an error.
- If you assign FC ports, of which the core dedicated mode is enabled, to LPARs, assign numbers from 1 up to the number of target FC port cores to VfcIDs. If you assign any number exceeding the target FC port cores to VfcIDs, LPAR activation fails.
- When you change the FC core dedicated mode to a value of "enabled" from a value of "disabled", each vfc ID works in IO connection mode for the vfcID.
- When you change the FC core dedicated mode to a value of "disabled" from a value of "enabled", each vfcID works in IO connection mode for vfcID=1 regardless of vfcID numbers of the target FC port assigned to the target LPAR. Note that IO connection mode is not initialized when the value of the FC core dedicated mode switches.

## Set IO connection mode

Sets IO connection mode for shared HBAs.

### Syntax 1 Setting for HBA ports for which the core dedicated mode is disabled

```
setΔFcIoConnectionModeΔslot=device locationΔportno=HBA port No.  
Δmode= {AUTO | ON | OFF}
```

### Syntax 2 Setting for HBA ports for which the core dedicated mode is enabled

```
setΔFcIoConnectionModeΔslot=device locationΔportno=HBA port No.[vfcid=VfcID]  
Δmode= {AUTO | ON | OFF}
```

- AUTO: Mode for automatically switching IO connection mode depending on the load
- ON: IO connection-enabled mode
- OFF: IO connection-disabled mode
- For specifying the option "slot", see in "Description format for device location" in "Notes for HVM interface" in "Interfaces between HvmSh and HVM".

### Situation-dependent message (example)

None

### Notes

- You can set IO connection mode for the Hitachi 16Gb 2-port fibre channel adapter. Whereas, setting IO connection mode for other adapters ends with an error of "Return:0x01030000". At that time, "(relslot)" is displayed in the error message. It indicates a device location is improper.
- This interface can be processed for not only deactivated LPARs but also activated LPARs. This setting is immediately applied after execution of this interface.
- This interface ends with an error of "Return:0x01030000" if you execute this interface for dedicated HBAs. For setting IO connection mode for dedicated HBAs, see in "Hitachi Gigabit Fibre Channel Adapter USER'S GUIDE"s.
- If you apply the setting of Syntax 2 to HBAs for which the FC core dedicated-mode is disabled, this interface ends with an error of "Return:0x01040000".
- When you set no VfcID in Syntax 2, configure the FC cores for the specified HBA.
- If you set greater than or equal to the number of FC cores of the specified HBA in Syntax 2, this interface ends with an error of "Return:0x01030000".
- Setting IO connection mode to "OFF" may shorten the response time of IO.
- Setting IO connection mode to "ON" may reduce the CPU usage ratios for processes of IO interrupts.

- The setting of IO connection mode is not transferred to another LPAR in migration executions in Shutdown mode or Concurrent Maintenance mode.

## Get PCI device information for physical / logical mapping

Gets PCI device information for physical/logical mapping.

### Syntax

```
getPciDeviceMapping [lpar=[LPAR No. | all]] [Δopt=tab]
```

When specified option of "lpar=all", Pci Device Mapping for all configured LPAR is displayed.

When specified option of "opt=tab", Pci Device Mapping is displayed as a following example.

### Situation-dependent message (example)

```
[Pci Device Mapping]
[# Lparname] (1) (2)
(3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)
Type Schd ID H_Slot H_Status H_Seg H_Bus H_Dev H_Fnc L_Slot L_Status L_Seg L_Bus L_Dev L_Fnc Mig Diff
U E -- Ux 0000 00 1d 00 -> Ux 0000 00 1d 00
F D -- I101 0000 AA BB 00 -> I101 0000 AA BB 00
F D -- I101 0000 AA BB 01 -> I101 0000 AA BB 01
F S 4 I102 ! 0000 AA BB 00 -> I508 ! 0000 aa bb 00 * *
F S 10 I102 ! 0000 AA BB 01 -> I508 ! 0000 aa bb 01 * *
N D -- I103 err 0000 CC DD 00 -> I103 0000 CC DD 00
```

Hxx: Physical / Lxx: Logical

(1) LPAR No.

(2) LPAR Name

(3) Type: Type of Physical PCI Device

S: SCSI Controller / RAID Controller

N: Network Interface Card (NIC)

F: Fibre Channel Adaptor

U: USB Controller

Nv: Network Interface Card (NIC: VF NIC can be assigned)

(4) Schd: Scheduling Mode of Physical PCI Device

D: Dedicated Mode

S: Shared Mode

E: Exclusive Shared Mode

-: Virtual NIC

(5) ID: LPAR ID which is displayed when the scheduling mode of physical PCI device is "Shared Mode".

Numeral: VfcId

Numeral a- Numeral h: LAN Segment of Shared NIC

Va-Vd: LAN Segment of Virtual NIC

Numeral av- Numeral hv: LAN Segment of VF NIC

(6) (9) Slot: Slot Location of Physical / Logical PCI Device

(^` is displayed when the device is virtual NIC)

(7) (10) Status: Indicates status of PCI Device.

err: Blocked (Logical PCI Device has not a status of "Blocked")

!: Hot Removed.

(8) (11) Seg Bus Dev Fnc: Segment No., Bus No. Device No. and Function No. on PCI configuration space of physical / Logical PCI device.

- (12) Mig: '\*' indicates that the PCI device was mapped by slot specified migration.
- (13) Diff: '\*' indicates that the PCI device information of physical device and logical device are not identical.

## Set Port dedicated mode

Sets Port dedicated mode to a value of "enabled" or that of "disabled".

### Syntax

```
setΔPciPortDedModeΔslot=PCI device locationΔportno=port No.Δportded={ON | OFF}
```

- "portded=ON": Port dedicated mode is set to a value of "enabled".
- "portded=OFF": Port dedicated mode is set to a value of "disabled".
- For specifying the option "slot", see in "Description format for device location" in "Notes for HVM interface" in "Interfaces between HvmSh and HVM".

### Notes

- This command can be applied to devices for which the field "PORT\_DED" in the record "PHYSICAL\_IO\_CONFIGURATION" in the command "get ConfigAll".
- No changes can be applied to a PCI device of which ports are assigned to activated LPARs.
- When you switch the value of Port dedicated mode, PCI # also change.

Example [PHYSICAL\_IO\_CONFIGURATION]:

PCI#	PORT#	Location	TYPE	SCH_MOD	SNIC#	PORT_DED	PCI#	PORT#	Location	TYPE	SCH_MOD	SNIC#	PORT_DED
2	0	E41	N	S	1	OFF	2	0	E41	N	S	1	ON
2	1	E41	N	S	1	OFF	3	1	E41	N	S	1	ON
2	2	E41	N	S	1	OFF	4	2	E41	N	S	1	ON
2	3	E41	N	S	1	OFF	5	3	E41	N	S	1	ON
3	0	E42	F	S	*	*	6	0	E42	F	S	*	*
3	1	E42	F	S	*	*	7	1	E42	F	S	*	*

- When you desire to switch the value of Port dedicated mode from "ON" to "OFF", you are required to match all of the scheduling modes of the ports in a controller. Otherwise, it ends with an error of "Return: 0x08010003".

Example [PHYSICAL\_IO\_CONFIGURATION]:

This command is applicable.							This command is not applicable.						
PCI#	PORT#	Location	TYPE	SCH_MOD	SNIC#	PORT_DED	PCI#	PORT#	Location	TYPE	SCH_MOD	SNIC#	PORT_DED
2	0	E41	N	D 1	ON		2	0	E41	N	D 1	ON	
2	1	E41	N	D 1	ON		3	1	E41	N	D 1	ON	
2	2	E41	N	D 1	ON		4	2	E41	N	S 1	ON	
2	3	E41	N	D 1	ON		5	3	E41	N	D 1	ON	
3	0	E42	F	S	*	*	6	0	E42	F	S	*	*
3	1	E42	F	S	*	*	7	1	E42	F	S	*	*

## Get system configuration

Gets a set of optional settings available on the System Configuration screen.

### Syntax

```
getSystemConfig[Δver=output message version]
```

### Situation-dependent message

hvmid= <b>HVM ID</b> (*1)	None specified output message version or Specify "ver=1"
hvmip= <b>HVMIP address</b>	
subnetmask= <b>subnet mask</b>	
defaultgateway= <b>default gateway</b>	
svpip= <b>SVP IP address</b> (*2)	
bsm1ip= <b>BSM1 IP address</b> (*2)	
bsm1alert= <b>BSM1 alert port</b> (*2)	
bsm2ip= <b>BSM2 IP address</b> (*2)	
bsm2alert= <b>BSM2 alert port</b> (*2)	
bsm3ip= <b>BSM3 IP address</b> (*2)	
bsm3alert= <b>BSM3 alert port</b> (*2)	
bsm4ip= <b>BSM4 IP address</b> (*2)	
bsm4alert= <b>BSM4 alert port</b> (*2)	
managepath= <b>management path</b>	
vnicsysno= <b>VNIC system No.</b>	
language= <b>language mode</b> (*2)	
connect={Unknown   Success   Fail} (*2)(*4)	
link={Unknown   Yes   No} (*2) (*4)	
port={0   1} (*2) (*4)	
vcport= <b>Virtual COM console port</b>	If specify "ver=2", outputs additional message in the left column. (The addresses are shown "0.0.0.0" when specify "ver=2" to HVM which does not support the CLI IP Address)
sys3proc={Default   4  8}	
cli1ip= <b>HVM CLI1 IP Address</b>	
cli2ip= <b>HVM CLI2 IP Address</b>	
cli3ip= <b>HVM CLI3 IP Address</b>	
cli4ip= <b>HVM CLI4 IP Address</b>	
cli5ip= <b>HVM CLI5 IP Address</b>	
cli6ip= <b>HVM CLI6 IP Address</b>	
cli7ip= <b>HVM CLI7 IP Address</b>	
cli8ip= <b>HVM CLI8 IP Address</b>	
HvmOperatingMode(curr)={Standard   Expansion} (*3)	
HvmOperatingMode(next)={Standard   Expansion} (*3)	

\*1: Refer to "Notes for HVMID" – "Notes for situation-dependent message".

\*2: The following table shows the Difference on the contents displayed for BladeSymphony 1000 HVM and Compute Blade 2000 / 320 /500 HVM.

\*3: HvmOperatingMode means the operating mode of HVM. 'curr' indicates current HVM operating mode, and 'next' indicates the operating mode to be set when the HVM is rebooted next time.

Maximum VNIC number, Activatable LPAR number and some vary with the HVM operating mode. See each model's User's Guide for the details, and refer to the table below for the Support map.

\*4: Displays information of the management path active port when ManagePathChangeVer2 function is "ON" in [Function name](#).

**Table 2-5 Difference of display content**

Term	BladeSymphony 1000 HVM Compute Blade 500 HVM	Compute Blade 2000 HVM	Compute Blade 320 HVM	Compute Blade 2500 HVM
svpip	SVP IP address	Fixed value 0.0.0.0	Fixed value 0.0.0.0	SVP IP address
bsmxip (x=1-4)	BSM IP address	BSM IP address	BSM IP address	Fixed value 0.0.0.0
bsmxalert (x=1-4)	BSM	BSM	BSM IP address	Fixed value 0.
language	Language mode of BSM alert or HVM WEB system	Language mode of BSM alert or HVM WEB system	Language mode of BSM alert or HVM WEB system	Language mode of HVM WEB system
connect	Connection status for Management path	Connection status for Internal path	Connection status for Management path	Connection status for Management path
link	Link status for Management path	Link status for Internal path	Link status for Management path	Link status for Management path
port	Port No. for Management path	Port No. for Internal path (fixed value 0)	Port No. for Management path	Port No. for Management path

**Table 2-6 HVM operation mode support map (1)**

HVM ver HvmSh ver	CB2000DP/CB2000MP			CB500	
	58-50/ 78-50 or lower	58-60/ 78-60 or higher	58-71/ 78-71 or higher	01-00 or higher	02-00 or higher
V5.3 or lower	X	X	X	X	X
V5.5 or higher	X	Standard	Standard/ expansion	-	-
V6.0 or higher	X	Standard	Standard/ expansion	Expansion	-
V8.3 or higher	X	Standard	Standard/ expansion	Expansion	Expansion

X: Not displayed

-: Unsupported version

**Table 2-7 HVM operation mode support map (2)**

HVM ver HvmSh ver	BS1000	CB320		
	All versions	17-5x or lower	17-70 or higher	17-8x or higher
V5.3 or lower	X	X	X	X
V5.5 or higher	X	X	Standard	Standard/ expansion

X: Not displayed  
 -: Unsupported version

## Set system configuration

Sets option settings available the System Configuration screen.

### Syntax

```
oprΔSystemConfig[Δhvmid=HVM ID [Δhvmip=HVMIP address] [Δsubnetmask=subnet mask]
[Δdefaultgateway=default gateway]
[Δbsm1ip=BSM1 IP address] [Δbsm1alert=BSM1 alert port]
[Δbsm2ip=BSM2 IP address] [Δbsm2alert=BSM2 alert port]
[Δbsm3ip=BSM3 IP address] [Δbsm3alert=BSM3 alert port]
[Δbsm4ip=BSM4 IP address] [Δbsm4alert=BSM4 alert port]
[Δcli1ip=HVM CLI1 IP address] [Δcli2ip=HVM CLI2 IP address]
[Δcli3ip=HVM CLI3 IP address] [Δcli4ip=HVM CLI4 IP address]
[Δcli5ip=HVM CLI5 IP address] [Δcli6ip=HVM CLI6 IP address]
[Δcli7ip=HVM CLI7 IP address] [Δcli8ip=HVM CLI8 IP address]
[Δmanagepath=management path | Default] [Δvnicysno=VNIC system No. ]
[Δlanguage=alert language mode] [Δvcport=Virtual COM console port]
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Notes

- If you specify =255.255.255.255 for hvmmip, subnetmask, defaultgateway, bsm1ip, bsm2ip, bsm3ip or bsm4ip option, HvmSh abnormally ends with "Return: 0x11000000".
- The command fails with "Return: 0x1100 0000" if you specify "clixip=" option to the HVM which does not support HVM CLI IP address.
- If the command successfully ends and changing scheduling mode of one or more system configuration, outputs execution result message of above sample (Accepted) format in "Syntax" line. It takes two to three minutes to reflect changing system configuration to HVM system (\*1) and cannot contact to HVM meanwhile. So the HvmSh command executed during this time ends with *Return: 0x10020001 Response Timeout* or *Return: 0x10030000 Unknown Data Received* message. Exceptionally the system changes immediately if the option is bsmxip=**BSMx IP address** (x=1, 2, 3, 4), bsmxalert=**BSMx alert port** (x=1, 2, 3, 4) or clixip=**HVM CLIX IP address**(x=1, 2, .., 8).  
\*1: In case of port status of shared FC is set to Link Down, operation time increases depending on the No. of LinkDown ports. Refer to "Cautions"- "Shared FC Port Status" in each model's User's Guide for details.
- For CB2500 which BsmNotSupport function of "Get HVM Facility Map" is ON, BSMx IP address BSMx alert port (x=1, 2, 3, 4) and a language mode cannot be changed (error end with Return: 0x01030000 error message).
- Possible range for virtual COM console port differs depending on virtual COM connection mode or enabling/disabling user authentication.

Virtual COM connection mode	Virtual COM user authentication	Possible range for virtual COM console port
Telnet	Disable	1024 to 65520
Telnet	Enable	1024 to 65504
SSH	- (*1)	
(*1): When the virtual COM connection mode is "SSH", enabling/disabling user authentication has no effect.		

- If ManagePathChange function in [Function name](#) is "Off", HvmSh does not allow changing the management path by managepath=option.

## Get system configuration (IPv6)

Gets IPv6-related information available on the System Configuration screen.

### Syntax

```
getΔSystemConfigIPv6
```

### Situation-dependent message

static_setting={ <b>Enable</b>   <b>Disable</b> }	*Enables or disables manually setting the HVM IPv6 static address
stateless_setting={ <b>Enable</b>   <b>Disable</b> }	* Enables or disables manually setting the HVM IPv6 stateless address
hvmip_v6[static]=	<b>HVM IPv6 static address</b>
prefix_length=	<b>HVM IPv6 address subnet prefix</b>
defaultgateway_v6=	<b>HVM IPv6 address default gateway</b>
svpip_v6=	<b>SVP IPv6 address</b>
cli1ip_v6=	<b>HVM CLI IPv6 address</b>
Cli2ip_v6=	<b>HVM CLI IPv6 address</b>
Cli3ip_v6=	<b>HVM CLI IPv6 address</b>
Cli4ip_v6=	<b>HVM CLI IPv6 address</b>
Cli5ip_v6=	<b>HVM CLI IPv6 address</b>
Cli6ip_v6=	<b>HVM CLI IPv6 address</b>
Cli7ip_v6=	<b>HVM CLI IPv6 address</b>
Cli8ip_v6=	<b>HVM CLI IPv6 address</b>
cli8ip=	<b>HVM CLI8 IP address</b>
hvmip_v6[linklocal]=	<b>HVM IPv6 link local address</b>
prefix_length[linklocal]=	<b>HVM IPv6 link local address subnet prefix</b>
hvmip_v6[stateless <sub>n</sub> ]=	<b>HVM IPv6 stateless address (n=1,2,...)</b>
prefix_length[stateless <sub>n</sub> ]=	<b>HVM IPv6 stateless address subnet prefix (n=1,2,...)</b>

\*:If there are two or more HVM IPv6 stateless addresses, two or more sets of "hvmip\_v6[stateless<sub>n</sub>]=" and "prefix\_length[stateless<sub>n</sub>]=" appear.

## Set system configuration (IPv6)

Sets HVM IPv6 addresses.

### Syntax

```
oprΔSystemConfigIPv6 [cli1ip=HVM CLI IPv6 address] [cli2ip=HVM CLI IPv6 address]  
                    [cli3ip=HVM CLI IPv6 address] [cli4ip=HVM CLI IPv6 address]  
                    [cli5ip=HVM CLI IPv6 address] [cli6ip=HVM CLI IPv6 address]  
                    [cli7ip=HVM CLI IPv6 address] [cli8ip=HVM CLI IPv6 address]
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Set system configuration (DNS server)

Sets IP addresses of DNS servers for an HVM.

### Syntax

```
oprΔSystemConfigDNS [DNS1ip=DNS server IPv4 | IPv6 address]  
                   [DNS2ip=DNS DNS server IPv4 | IPv6 address]  
                   [DNS3ip=DNS DNS server IPv4 | IPv6 address]
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Notes

When you desire to disable IP addresses for DNS servers, specify no value, "NONE", or a blank as IP addresses.

## Set HVM operating mode

Sets an HVM operating mode for the next HVM reboot.

### Syntax

```
oprΔHvmOperatingMode=[Standard][Expansion]
```

### Situation-dependent message

```
accept=Operation Number
```

This command outputs "Operation Number" on decimal number which was assigned by HVM. Return code of normal completing is "Operation Number" on hex-decimal.

### Notes

Configuration information is saved after changing configuration. However the information is not saved if the mode for the next HVM reboot is same as the current mode.

Switching of the operating mode of the HVM requires rebooting the HVM after completing to change the setting with this command.

HvmSh supports this command for the combinations of HvmSh version 5.5 or higher and the following HVM versions:

- CB2000 58-71/78-71 or higher
- CB320 17-80 or higher

Attempting to execute unsupported version combination ends with "Return: 0x11000000, 0x01000000, or 0x081C0003".

CB500 and CB2500 do not support this command. Attempting to execute it ends with the error "Return: 0x081C0003".

## Get VNIC network segment information of LPAR

Gets a VNIC network segment assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARVNICIDΔlpar=LPAR No.Δvnicno=VNIC No.
```

For **VNIC No.**, specify a number in decimal between 0 and 7 (BS1000), 0 and 7 (Standard HVM operating mode, CB2000/CB320), 0 and 15 (Expansion HVM operating mode, CB2000/CB320), 0 and 15 (CB500/CB2500).

### Situation-dependent message

```
vnicno=VNIC No., network segment ID
```

This is an identifier assigned to each virtual or shared NIC network segment. If no VNIC number is assigned, "\*" is shown.

Network segment identifier:

Network segment identifier of virtual NIC or shared NIC {Va | Vb..1a | 1b..} is indicated for HvmSh V7.2 or lower.

Network segment identifier of virtual NIC or shared NIC {Va | Vb..1a|1b...1av | 1bv...} is indicated for HvmSh V7.3 or higher.

## Set VNIC network segment to LPAR

Assigns a VNIC network segment to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARVNICIDΔlpar=LPAR No.Δvnicno=VNIC No.,{network segment ID | *}  
[...Δvnicno=VNIC No.,{ network segment ID | *} ][Δgeneration=generation No.]
```

More than one vnicno parameter can be specified.

For **VNIC No.**, specify a number in decimal between 0 and 7 (BS1000), 0 and 7 (Standard HVM operating mode, CB2000/CB320), 0 and 15 (Expansion HVM operating mode, CB2000/CB320), 0 and 15 (CB500/CB2500).

#### Network segment identifier:

Network segment identifier of virtual NIC or shared NIC {Va | Vb..1a | 1b..} can be specified for HvmSh V7.2 or lower.

Network segment identifier of virtual NIC, shared NIC or VF NIC {Va | Vb..1a|1b...1av | 1bv...} can be specified for HvmSh V7.3 or higher.

### Situation-dependent message

None

### Examples

```
setΔLPARVNICIDΔlpar=1Δvnicno=0,Va
```

*Assigns Va to VNIC No. 0.*

```
setΔLPARVNICIDΔlpar=1Δvnicno=1,1aΔvnicno=2,1b
```

*Assigns 1a to VNIC No. 1 and 1b to VNIC No. 2.*

### Notes

The number of VNICs to be assigned depends on the number of physical ports. If a shared NIC has two ports, specify two 'vnicno' parameters (for example, 1a and 1b) so that two VNICs are assigned. (Only for the HVM firmware which does not support the expansion mode)

If specify already set segment when specify two or more segment at the same time, \* (undefined) may appears.

#### Example

```
# Name      Sta #VNIC      0      1      2      3      4      5      6      7  
3 LPAR3     Dea      8      1a    1b    2a 2b  Va    Vb    Vc    Vd  
| set LPARVNICID lpar=3 vnicno=2,3a vnicno=3,3b vnicno=4,4a vnicno=5,4b vnino=6,2a  
vnicno=7,2b  
# Name      Sta #VNIC      0      1      2      3      4      5      6      7  
3 LPAR3     Dea      6      1a    1b    3a    3b    4a    4b    *    *
```

To avoid to be undefined, set one segment at one time or set all VNICID as \* (undefined), then execute.

Network segment identifier of VF NIC {1av | 1bv...} can be specified when SR-IOV is enabled in the corresponding physical NIC. In CB2000, Network segment identifier of VF NIC can be specified when HVM Operating Mode is set as the expansion mode.

## Get VNIC MAC address of LPAR

Gets the MAC address of a VNIC assigned to the LPAR of the specified LPAR number.

### Syntax 1

```
getΔLPARVNICMacΔlpar=LPAR No.Δvnicno=VNIC No.
```

For **VNIC No.**, specify a number in decimal between 0 and 7 (BS1000), 0 and 7 (Standard HVM operating mode, CB2000/CB320), 0 and 15 (Expansion HVM operating mode, CB2000/CB320), 0 and 15 (CB500/CB2500).

### Syntax 1-dependent message

```
mac=MAC address
```

### Syntax 1-Limitation

In case of Syntax 1, if no VNIC is assigned to the specified VNIC number, no MAC address can be obtained.

### Syntax 2

```
getΔLPARVNICMacΔlpar=all
```

Get VNIC NO. of all LPARs that include undefined LPARs.

It is possible to get the MAC Address, even if any VNIC is not assigned to a VNIC No.

### Syntax 2-dependent message

```
[LPAR_VNIC_MACADDRESS]
```

```
L#  VNIC#  MAC
1   0      00:00:87:62:cb:00
1   1      00:00:87:62:cb:01
....
16  14     00:00:87:38:91:7e
16  15     00:00:87:38:91:7f
```

L#, VNIC# and MAC are displayed with a tab.

## Set VNIC MAC address of LPAR

Sets the MAC address of a VNIC to the LPAR of the specified LPAR number. Assign VNIC Network Segment Simultaneously. (Corresponded with set LPAR VNICID)

### Syntax

```
setΔLPARVNICMacΔlpar=LPAR No.Δvnicno=VNIC No.,network segment IDΔmac=MAC address[Δgeneration=generation No.]
```

Specify **MAC address** in `XX:XX:XX:YY:YY:ZZ` format using colons as delimiters (same as with Get).

`XX:XX:XX` may range from `00:00:00` to `FF:FF:FF`.

`YY:YY` may range from `00:00` to `FF:FF`. (Refer to Limitation below)

`ZZ` may range from `00` to `FF`.

#### Network segment identifier:

Network segment identifier of virtual NIC or shared NIC {`Va | Vb..1a | 1b..`} can be specified for HvmSh V7.2 or lower.

Network segment identifier of virtual NIC, shared NIC or VF NIC {`Va | Vb..1a|1b...1av | 1bv...`} can be specified for HvmSh V7.3 or higher.

### Situation-dependent message

None

### Limitation

It cannot specify duplicate value of virtual NIC MAC address which automatically generated by HVM to `YY:YY`. For details of virtual NIC MAC address, refer to each model's user guide.

For HVM version CB2000 59-51/79-51 or lower, CB500 01-60 or lower, the network segment is assigned simultaneously. For HVM version CB2000 59-58/79-58 or higher, CB500 01-70 or higher, CB2500 02-00 or higher, the network segment is not assigned when HVM operating mode is set as "Expansion" mode while using HvmSh V7.3 or higher. When the network segment identifier is specified including changing the network segment, an error of "Return: 0x11000000" occurs.

The MAC address of VF NIC (`1av | 1bv...`) can be changed or not depending on the physical NIC device assigned to LPAR.

Confirm the NIC device corresponded to the output of "get ConfigAll" command (PHYSICAL\_IO\_CONFIGURATION record: VF\_MAC field), and change the MAC address.

## Get VNIC VLAN ID of LPAR

Gets the VLAN ID of a VNIC assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARVNICVlanΔlpar=LPAR No.Δvnicno=VNIC No.
```

For **VNIC No.**, specify a number in decimal between 0 and 7 (BS1000), 0 and 7 (Standard HVM operating mode, CB2000/CB320), 0 and 15 (Expansion HVM operating mode, CB2000/CB320), 0 and 15 (CB500/CB2500).

### Situation-dependent message

```
vlanmode={Tag | UnTag | Undef}Δvlanid=VlanId[,...,VlanId]
```

#### VlanId:

Defined VLAN ID (decimal number). If a VLAN ID is defined as "ALL", only "ALL" is shown.

## Set VNIC VLAN ID of LPAR

Sets the VLAN ID of a VNIC assigned to the LPAR of a specified LPAR number.

### Syntax

```
setΔLPARVNICVlanΔlpar=LPAR No.Δvnicno=VNIC No.,network segment IDΔvlanmode={Tag | UnTag | Undef}[Δvlanid=VlanId,...,VlanId][Δgeneration=generation No.]
```

#### VlanId:

Assigns a VLAN ID. This is either a decimal number (1-4094) or "All." "All" allows you to get all VLAN IDs.

"All" cannot be specified when vlanmode=UnTag.

No vlanid parameter can be specified when vlanmode=Undef.

#### Network segment identifier:

Network segment identifier of virtual NIC or shared NIC {Va | Vb..1a | 1b..} can be specified for HvmSh V7.2 or lower.

Network segment identifier of virtual NIC, shared NIC or VF NIC {Va | Vb..1a|1b...1av | 1bv...} can be specified for HvmSh V7.3 or higher.

### Situation-dependent message

None

## Limitation

For HVM version CB2000 59-51/79-51 or lower, CB500 01-60 or lower, the network segment is assigned simultaneously. For HVM version CB2000 59-58/79-58 or higher, CB500 01-70 or higher, CB2500 02-00 or higher, the network segment is not assigned when HVM operating mode is set as "Expansion" mode while using HvmSh V7.3 or higher. When the network segment identifier is specified including changing the network segment, an error of "Return: 0x11000000" occurs.

The vlanmode of VF NIC (1av | 1bv...) can be changed or not depending on the physical NIC device assigned to LPAR.

Confirm the NIC device corresponded to the output of "get ConfigAll" command (PHYSICAL\_IO\_CONFIGURATION record: VF\_VLAN\_UNDEF, VF\_VLAN\_UNTAG, and VF\_VLAN\_TAG field), and change the vlanmode. When vlanmode=tag for VF NIC, only vlanid=all can be specified (numerical value cannot be specified).

VLAN ID can be set during LPAR activation. When VNIC network segment is changed, following error may appear;

Return 0x01040000: a combination of parameters is invalid,

Return 0x04010001: Active LPARs exist

Return 0x01030000: Invalid Input Data

Example

```
+-----+
|+- Virtual NIC Assignment (DBG-n) -----|
||                                     ||
|| # Name   Sta #VNIC   Device   0 1 2 3 4   ||
|| 1 LPAR1  Act   2 NIC1   1a 1b * * *   ||
||                                     ||
>hvmsh -host=172.16.16.120 set LPARVNICVlan lpar=1 vnicno=0,1a vlanmode=tag vlanid=100,200
HvmSh (Version 6.4) Completed. 2012/04/02 19:11:12 Return: 0x00000000
SetLparConfig Ver.2 2012/04/02 19:11:16 GMT+00:00

>hvmsh -host=172.16.16.120 set LPARVNICVlan lpar=1 vnicno=0,2a vlanmode=tag vlanid=100,200
HvmSh (Version 6.4) Failed. 2012/04/02 19:11:27 Return: 0x01030000 Msg: Invalid Input Data.
(VNIC)
```

## Get VNIC Promiscuous Mode for LPAR

Gets the Promiscuous Mode information of a VNIC assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARVNICPrmΔlpar=LPAR No.Δvnicno=VNIC No.
```

For **VNIC No.**, specify a number in decimal between 0 and 7 (Standard HVM operating mode, CB2000/CB320), 0 and 15 (Expansion HVM operating mode, CB2000/CB320), 0 and 15 (CB500/CB2500).

### Situation-dependent message

```
vnicprm={Restricted | Through|*}
```

\*: VNIC No. is not assigned

## Set VNIC Promiscuous Mode for LPAR

Sets the Promiscuous Mode of a VNIC assigned to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARVNICPrmΔlpar=LPAR No.Δvnicno=VNIC No., network segment IDΔvnicprm={Restricted|Through}[Δgeneration=generation No.]
```

#### Network segment identifier:

Network segment identifier of virtual NIC or shared NIC {Va | Vb..1a | 1b..} can be specified for HvmSh V7.2 or lower.

Network segment identifier of virtual NIC, shared NIC or VF NIC {Va | Vb..1a|1b...1av | 1bv...} can be specified for HvmSh V7.3 or higher.

### Situation-dependent message

None

### Limitation

For HVM version CB2000 59-51/79-51 or lower, CB500 01-60 or lower, the network segment is assigned simultaneously. For HVM version CB2000 59-58/79-58 or higher, CB500 01-70 or higher, CB2500 02-00 or higher, the network segment is not assigned when HVM operating mode is set as "Expansion" mode while using HvmSh V7.3 or higher. When the network segment identifier is specified including changing the network segment, an error of "Return: 0x11000000" occurs.

The promiscuous mode of VF NIC (1av | 1bv...) can be changed or not depending on the physical NIC device assigned to LPAR.

Confirm the NIC device corresponded to the output of "get ConfigAll" command (PHYSICAL\_IO\_CONFIGURATION record: VF\_PRM\_THROUGH and VF\_PRM\_RESTRICT field), and change the promiscuous mode.

Promiscuous Mode can be set during LPAR activation. When VNIC network segment is changed, following error may appear;

Return 0x01040000: a combination of parameters is invalid,

Return 0x04010001: Active LPARs exist

Return 0x01030000: Invalid Input Data (VNIC).

## Example

```
+-----  
|+- Virtual NIC Assignment (DBG-n) -----  
||                                     Virtual NIC Number  
|| # Name   Sta #VNIC Device 0 1 2 3 4  
|| 1 LPAR1  Act   2 NIC1  1a 1b * * *  
||  
>hvmsh -host=172.16.16.120 set LPARVNICPrm lpar=1 vnicno=0,1a vnicprm=Restricted  
HvmSh (Version 6.4) Completed. 2012/04/02 19:11:12 Return: 0x00000000  
SetLparConfig Ver.2 2012/04/02 19:11:16 GMT+00:00  
  
>hvmsh -host=172.16.16.120 set LPARVNICPrm lpar=1 vnicno=0,2a vnicprm=Restricted  
HvmSh (Version 6.4) Failed. 2012/04/02 19:11:27 Return: 0x01030000 Msg: Invalid Input Data.  
(VNIC)
```

## Get VF NIC for LPAR

Gets the VF NIC assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARVfNICPrmΔlpar=LPAR No.Δvnicno=VNIC No.
```

For **VNIC No.**, specify a number in decimal between 0 and 7 (Standard HVM operating mode, CB2000/CB320), 0 and 15 (Expansion HVM operating mode, CB2000/CB320), 0 and 15 (CB500/CB2500).

The data of VF NIC is indicated while the HVM supports the VF NIC even if VNIC specified "vnicno=" is not assigned the VF NIC.

### Situation-dependent message

```
vnicprm={Restricted | Through|*}  
vnicno= VNIC No., SEG_ID  
mac=MAC address  
vlanmode={Tag|UnTag|Undef|*}  
vlanid={VlanId[,...VlanId] |*}      For VF NIC: vlanid={VlanId |*}  
vnicprm={Restricted|Through|*}      For VF NIC: vnicprm=Restricted  
vnicpcp={Priority Code Pointe|*}  
txrate={ Maximum throughput|*}
```

**SEG\_ID**: Identifier of network segment of virtual NIC, shared NIC or VF NIC.  
{Va|Vb..1a|1b..1av|1bv...|\*}

"\*" is indicated when the network segment is not assigned to the LPAR.

mac, vlanmode, vlanid, and vnicprm: "-" is indicated when they are not assigned to the LPAR.

vnicpcp: "-" is indicated when a VF NIC is not assigned to the LPAR.

txrate: "-" is indicated when a VF NIC is not assigned to the LPAR. "-" is also indicated when txrate cannot be changed even though VF NIC is indicated in "vnicno=".

## Set VF NIC for LPAR

Sets the maximum throughput value (Mbps) of a VF NIC assigned to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARVfVNICΔlpar=LPAR No.Δvnicno=VNIC No., VF_SEG_IDΔtxrate= Maximum aggregate throughput
```

#### **VF\_SEG\_ID:**

Network segment setting of VF NIC {1av | 1bv..}

Settable range of Maximum aggregate throughput and increasing/decreasing width are indicated in "TXRATE\_MAX", "TXRATE\_MIN", and "TXRATE\_STEP" of the PHYSICAL\_IO\_CONFIGURATION record of the "get ConfigAll".

### Situation-dependent message

None

## Get shared NIC packet filter status

Gets the status of packet filtering function of the specified shared NIC.

### Syntax

```
getSystemSNICFilter segment=shared NIC No. portid={a | b | c | d | e | f | g | h}
```

For **shared NIC No.**, specify a number between 1 and 8 (CB2000 59-00/79-00 or higher, CB320 17-86 or higher, CB500, and CB2500).

For **shared NIC No.**, specify a number between 1 and 6 (Except the above mentioned versions of CB2000/320).

### Situation-dependent message

```
snicfilter={Disable | Enable | Disable (ALL) | *}
```

### Notes

If no segment is specified as an option or no LPARs with ports exist, this interface ends with an error of "Return 0x11000000".

When you specify "Disable(ALL)" for the option "snicfilter=" in use of HvmSh for Linux OS, enclose the value with a pair of double quotations.

Example:

```
/HvmSh -host=172.16.1.1 set SystemSNICFilter segment=1 portid=a  
snicfilter="Disable(All)"
```

This interface cannot get the states of the packet filters for VF NIC ports. If you specify "av | bv" and so on indicating VF NIC ports for the option "portid=", the interface ends with an error of "Return 0x11000000".

## Set shared NIC packet filter status

Sets the status of packet filtering function of the specified shared NIC.

### Syntax

```
setSystemSNICFilter segment=shared NIC No. portid={a | b | c | d | e | f | g | h} snicfilter={Disable | Enable | Disable (ALL) | *}
```

For **shared NIC No.**, specify a number between 1 and 8 (CB2000 59-00/79-00 or higher, CB320 17-86 or higher, CB500, and CB2500).

For **shared NIC No.**, specify a number between 1 and 6 (Except the above mentioned versions of CB2000/320).

### Situation-dependent message

None

### Notes

If the segment or the LPAR assigned the port which is specified with the option do not exist, it ends with an error of: "Return 0x11000000".

Enclose "Disable(ALL)" within double quotation marks when "Disable(ALL)" is specified in snicfilter=option while executing the HvmSh command for Linux. (Example) ./HvmSh -host=172.16.1.1 set SystemSNICFilter segment=1 portid=a snicfilter="Disable(All)"

The packet filter state of port corresponded the VF NIC cannot be got. When the VF NIC port indicated as "av | bv.." is assigned in "portid=option", it ends with an error of: "Return 0x11000000".

## Get VNIC device type of LPAR

Gets the device types of the VNICs assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARVNICΔlpar=LPAR No.
```

### Situation-dependent message

```
vnicdev={NIC1|NIC2|*}
```

vnicdev=\* indicates the HVM is not supported.

## Set VNIC device type of LPAR

Sets the device types of the VNICs assigned to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARVNICΔDevΔlpar=LPAR No.Δvnicdev={NIC1|NIC2}
```

### Situation-dependent message

None

### Note

When the HVM is not supported, it leads abnormal end such as "Return: 0x11000000".

## Get shared FC assignment of LPAR

Gets the setting information of the shared FC assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARSFCΔlpar=LPAR No.Δsfcno=shared FC No.
```

For **shared FC No.**, specify an FC number between 0 and its maximum in decimal.

### Situation-dependent message

slotno= <b>device location</b>
portno= <b>port No.</b>
vfcid= <b>VfcID</b>
wwpn= <b>FC WWPN</b>
wwnn= <b>FC WWN</b>
bus=PCI configuration space <b>bus No. of FC-installed PCI (hex)</b>
dev= PCI configuration space <b>device No. of FC-installed PCI (hex)</b>
func= PCI configuration space <b>function No. of FC-installed PCI (hex)</b>

#### **VfcID:**

Represents vfcWWN-ID which ranges from 1 to 7 or "\*".

#### **device location :**

For details, see [Description Format for Device Location](#).

## Set shared FC assignment of LPAR

Sets the VfcID of the shared FC assigned to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARSFCΔlpar=LPAR No.Δslotno=device locationΔportno=port No.Δvfcid=SfcVfcID[Δgeneration=generation No.]
```

#### **device location:**

Specify a slot number to be assigned to the shared FC specified.  
For details, see [Description Format for Device Location](#).

#### **port No.:**

Specify a port number to be assigned to the shared FC specified by sfcno.  
The value must be a decimal number.

#### **SfcVfcID:**

Specify a VfcID to be assigned. The value must be either a decimal number from 1 to max. VfcID or the character "\*" to specify assignment.

### Situation-dependent message

None

## Get SEL (System Event Log) date and time of LPAR

Gets a SEL time assigned to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARSELTimeΔlpar=LPAR No.
```

### Situation-dependent message

```
seltime=SEL date and time  
mode={GMT | local-Time}  
zone=time zone
```

**SEL date and time:** YYYY/MM/DD-hh:mm:ss format. "hh" is in 24-hour notation.

**time zone:** Example is "zone="+10".

## Set SEL (System Event Log) date and time of LPAR

Changes a SEL time assigned to the LPAR of the specified LPAR number.

### Syntax

```
setΔLPARselTimeΔlpar=LPAR No.[Δseltime=SEL date and time][Δmode={GMT | Local-Time}][Δzone=time zone][Δgeneration=generation No.]
```

**SEL time:** YYYY/MM/DD-hh:mm:ss format. "hh" is in 24-hour notation.

**time zone:** Specify a value between -12 and +14. A non-integer value is not allowed.

### Situation-dependent message

None

### Notes

If both of the "SEL time" and "mode" parameters are specified, the specified SEL time is set first and then rewritten, based on the mode and zone settings. If time zone 13 or 14 is specified to HVM which supported time zone range is -12 to +12, it leads abnormal end such as *Return: 0x01030000 Msg:Invalid Input Data.*

## Get LPAR time

Gets the specified LPAR time, or all LPAR and the system Time.

### Syntax

```
getΔLparTimeΔ[lpar=LPAR No.]
```

### Situation-dependent message (Not specified the LPAR No.)

```
[DATE TIME INFORMATION]
<tab>Field Name<tab>Field Name<tab>...
<tab>Field Data<tab>Field Data<tab>...
...
```

**Table 2-8 DATE\_TIME\_INFORMATION record**

Field	Contents	Data type	Max. digits
L#	LPAR No. The data means HVM system if "L#" is zero. And only data of "SET_TIME" and "SET_TIME_ZONE" become valid.	Numeric	2
NAME	LPAR Name "HVM SYSTEM" is displayed when the LPAR No. is zero.	Character	31
STATUS	LPAR Status (Asterisk ("*") is displayed when the LPAR No. is zero)	Character	10
RTC_TIME	RTC Time (yyyy/mm/dd hh:mm:ss) (Asterisk ("*") is displayed when the data could not get)	Character	20
SEL_TIME	SEL Time (yyyy/mm/dd hh:mm:ss) The data means HVM system time if "L#" is zero. (Asterisk ("*") is displayed when the data could not get)	Character	20
SEL_TIME_MODE	SEL Time Mode {GMT Local-Time} (Asterisk ("*") is displayed when the data could not get)	Character	16
SEL_TIME_ZONE	SEL Time Zone (-12-+14) The data means time zone of HVM system time if "L#" is zero. (Asterisk ("*") is displayed when the data could not get)	Character	4
LAST_ACTIVATED	Last Activated RTC Time of LPAR (yyyy/mm/dd hh:mm:ss) (Asterisk ("*") is displayed when the data could not get)	Character	20
LAST_DEACTIVATED	Last Deactivated RTC Time of LPAR (yyyy/mm/dd hh:mm:ss) (Asterisk ("*") is displayed when the data could not get)	Character	20
RTC_LAST_MODIFIED	RTC Last Modified RTC Time of LPAR (yyyy/mm/dd hh:mm:ss) (Asterisk ("*") is displayed when the data could not get)	Character	20
INIT_RTC	Difference between LPAR RTC Time and System Time (Asterisk ("*") is displayed when the data could not get)	Numeric	12
RTC_LAST_MODIFIED_SYS	HVM system time of last modifying LPAR RTC. (yyyy/mm/dd hh:mm:ss) This field is supported by HvmSh Ver.5.5 or higher. And requires the HVM firmware which supports this function. (*' is indicated if using the HVM firmware which does not support this function) Details of them refer to <i>Compute Blade CB2000 / CB320 User's Guide</i> .	Character	20
RTC_DIFF	Difference (seconds) between the LPAR RTC Time and the System time. (Asterisk ("*") is displayed when the data cannot be acquired) This field is effective with the HVM versions, CB2000 59-00/79-00 or higher, CB320 17-86 or higher. With the HVM versions lower than the above, * is always displayed.	Numeric	12

### Situation-dependent message (specified the LPAR No.)

Example of the result is below (details of them refer to the table above).

```
HvmSh(Version 5.3) Completed. 2011/01/28 20:46:42 Return: 0x00000000
GetLPARDateAndTime Ver.1 2011/01/28 20:45:15 GMT+00:00
L#=1
NAME=LPAR1111
STATUS=ACT
RTC_TIME=2011/01/28 20:45:15
SEL_TIME=2011/01/28 20:45:15
SEL_TIME_MODE=Local-Time
SEL_TIME_ZONE=+0
LAST_ACTIVATED=2011/01/28 20:45:12
LAST_DEACTIVATED=2011/01/28 20:44:53
RTC_LAST_MODIFIED=2011/01/28 20:45:12
INIT_RTCNot=0
RTC_LAST_MOD_SYS=2011/01/28 20:45:12
```

### Notes

Command fails with "Return: 0x1100 0000" when specify **LPAR No.** more than limit of the HVM (320/2000DP:16, 2000MP:60) or specified LPAR does not exist.

## Adjust LPAR time to the HVM system

Adjusts specify SEL time and RTC time of LPAR time to the HVM System Time.

### Syntax

```
oprΔLPARTimeAdjustΔ[|par=LPAR No. |  
|par=all][Δsrc={ HVMSYS|ZONE|UTC }][Δzone=timezone][Δgeneration=Generati  
on No.]
```

- All of LPAR's time are adjusted to the HVM system time if specify "lpar=all" option to adjust all LPAR time.
- You cannot specify "generation=**Generation No.**" option when specifying if specify "lpar=all" option. Command fails with "Return: 0x1100 0000" when specifying both of them.
- Specify "src=option" for the original time to adjust. When you do not specify this option, the HVM system time is set as the original time.  
src=HVMSYS : HVM system time is set as the original time  
src=ZONE : The sum value of specified value of "zone=option" and HVM system time is set as the original time  
src=UTC: UTC time is set as the original time
- "zone=option" can be specified when "src=ZONE" is specified.

### Situation-dependent message

```
accept=Operation No.
```

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Notes

- Command clears the specified LPAR's last activated RTC time, last deactivated RTC time and last adjusted RTC time.
- Command fails with "Return: 0x1100 0000" when specify LPAR No. more than limit of the HVM.
- The "src=option" and "zone=option" can be specified while enabling LparTimeAdjustSrc function in [Function name](#).  
Error of "Return: 0x01010001 Msg: Invalid HVM interface version" occurs when "src=option" or "zone=option" are specified to HVM in which LparTimeAdjustSrc function is disabled.

## Get HVM system time

Gets the HVM System Time and Time Zone.

### Syntax

```
getΔSystemTime (no parameter)
```

### Situation-dependent message

```
time=HVM system time  
zone=time zone
```

**HVM system time:** YYYY/MM/DD hh:mm:ss  
**time zone:** -12 to +14.

## Set HVM system time

Sets the HVM System Time and Time Zone.

### Syntax

```
setΔSystemTimeΔ[time=HVM system time][Δzone=time zone]
```

**HVM system time:** YYYY/MM/DD-hh:mm:ss  
**time zone:** -12 to +14. A non-integer value is not allowed.

### Situation-dependent message

None

### Notes

Accuracy of time adjustment by using HvmSh is not guaranteed digit of seconds. Command is delayed to reaching the specified HVM. Set HVM system time by using HVM screen if accuracy of time is required on digit of seconds.

Accepted time of command on the HVM by using the system time is displayed before the system time is adjusted. Adjusted system time is used after this command.

Example:

```
>hvmsh5.3 -host=172.16.18.28 set systemtime time=2080/03/01-15:30:00  
HvmSh (Version 5.3) Completed. 2011/01/28 13:55:40 Return: 0x00000000  
SetSystemInfo Ver.2 2011/01/28 13:55:40 GMT+00:00
```

```
>hvmsh5.3 -host=172.16.18.28 get systemtime  
HvmSh (Version 5.3) Completed. 2011/01/28 13:56:05 Return: 0x00000000  
GetSystemInfo Ver.1 2080/03/01 15:30:24 GMT+00:00  
time=2080/03/01 15:30:24  
zone=+0
```

## Get control information of HVM system time

Gets control information of HVM system time.

### Syntax

```
getΔSystemTimeCtrl
```

### Situation-dependent message

TimeSync={ <b>Disable</b>   <b>NTP</b>   <b>SVP</b> }
NTPServer1= <b>NTP Server 1 ID</b>
NTPServer2= <b>NTP Server 2 ID</b>
ImportConfig={ <b>None</b>   <b>SVP</b>   <b>BMC</b> }

TimeSync indicates NTP option status.

Disable: Not using the NTP option.

NTP: Adjusting HVM system time to the NTP server which is specified by NTP server ID.

SVP: Adjusting HVM system time to the NTP server which is specified by SVP.

ImportConfig indicates import source for control information.

None: Not importing control information.

SVP: Importing control information from SVP.

BMC: Importing control information from BMC.

NTP Server X ID indicates IP address of NTP Server X. 'None' is indicated when NTP servers have not been set.

## Set control information of HVM system time

Sets control information of HVM system time. After the setting, HVM immediately synchronizes the system time to NTP server if it is available.

### Syntax

oprΔSystemTimeCtrlΔ[TimeSync={ <b>Disable</b>   <b>NTP</b>   <b>SVP</b> }]
[NTPServer1= <b>NTP Server 1 ID</b> ]
[NTPServer2= <b>NTP Server 2 ID</b> ]
[ImportConfig={ <b>None</b>   <b>SVP</b>   <b>BMC</b> }]

IP address of NTP Servers set to "**NTP Server 1 / 2 ID**".

When erasing a "**NTP Server 1 / 2 ID**", set 'None', '\Δ' or nothing to "**NTP Server 1 / 2 ID**".

### Situation-dependent message

None

### Notes

"ImportConfig" and other options cannot be specified simultaneously. If specifying them simultaneously, result of command becomes "Error End", and returns error code "0x11000000".

"ImportConfig=BMC" option cannot be applied to CB320 because the CB320 has not equipped BMC.

## Get Pre-State Auto Activation option setting

Gets the Pre-State Auto Activation option setting.

### Syntax

getΔOptPreState (no parameter)

### Situation-dependent message

prestate={Yes | No}

## Set Pre-State Auto Activation option setting

Sets the Pre-State Auto Activation option setting.

### Syntax

setΔOptPreStateΔprestate={Yes | No}

### Situation-dependent message

None

## Get HVM Auto Shutdown option setting

Gets the HVM Auto Shutdown option setting.

### Syntax

```
getΔOptAutoSd (no parameter)
```

### Situation-dependent message

```
autosd={Yes | No}
```

## Set HVM Auto Shutdown option setting

Sets the HVM Auto Shutdown option setting.

### Syntax

```
setΔOptAutoSdΔautosd={Yes | No}
```

### Situation-dependent message

None

## Get HVM Option setting

Gets the HVM Option setting.

### Syntax

```
getΔHvmOptions (no parameter)
```

### Situation-dependent message

```
prestate={Yes | No}
autosd={Yes | No}
shutdownstate={Ready | InProgress | -}
errwatching={Yes | No}
activateconfirm={Yes | No}
deactivateconfirm={Yes | No}
screenswchar= character code
pcpucstate={Enable | Disable|*}
usbautoalloc={Enable | Disable | *}
savechangedconfig={Enable | Disable | *}
savetimeconfig={Enable | Disable | *}
safemode={ON | OFF | *}
```

### Notes

The Situation-dependent message varies with HVM firmware version. Refer to Notes in "Set HVM Option setting."

If the HVM does not support BSM, HvmSh displays "shutdownstate=-".

If the HVM does not support the function, "\*" appears.

**Table 2-9 Relations with HVM Option screen display**

<b>Dependent message item</b>	<b>HVM Options screen display item</b>
prestate	Pre-State Auto Activation
autosd	HVM Auto Shutdown
errwatching	HVM ErrorWatching
shutdownstate	Shutdown State
activateconfirm	Confirmation- Activation
deactivateconfirm	Confirmation - Deactivation and Reactivation
screenswchar	Screen Switching Character
pcpucstate	PhyCPU C-State ( $\geq$ C3)
usbautoalloc	USB Auto Allocation to LPAR
savechangedconfig	Save Changed Config Format
savetimeconfig	Save Time Config
safemode	Safe Mode

## Set HVM Option setting

Sets HVM Options.

### Syntax

```
setHvmOptions[Δprestate={Yes | No}][Δautosd={Yes | No}][Δshutdownstate=Ready]
[Δerrwatching={Yes | No}][Δactivateconfirm={Yes | No}]
[Δdeactivateconfirm={Yes | No}][Δscreenswchar= character code]
[Δpcpucstate={Enable|Disable}][Δusbautoalloc={Enable|Disable}]
[Δsavechangedconfig={Enable|Disable}]
[Δsavetimeconfig={Enable|Disable}]
[Δsafemode=OFF]
```

### Notes

shutdownstate= **Ready** option works only when the status of option is *shutdownstate=InProgress*. Available options differ depending on the platform and HVM firmware version. For details, see the table below.

**Table 2-10 HVM Option support map (1)**

HvmSh Option	HVM version HvmSh ver.	CB2000 DP CB2000 MP				CB500		CB2500	CB500, CB2500
		58-4x, 78-4x or lower	58-50, 78-50 or higher	59-00, 79-00 or higher	59-50, 79-50 or higher	01-00 or higher	01-70 or higher	02-00 or higher	02-10 or higher
prestate	V5.1 or higher	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
autosd	V5.1 or higher	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
errwatching	V5.1 or higher	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
shutdownstate	V5.1 or higher	No	Yes	Yes	Yes	Yes	Yes	No (*2)	No (*2)
activateconfirm	V5.1 or higher	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
deactivateconfirm	V5.1 or higher	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Screenswchar	V5.1 or higher	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
pcpucstate (*1)	V6.0 or higher	No	No	Yes	Yes	Yes	Yes	Yes	Yes
usbautoalloc (*1)	V6.0 or higher	No	No	Yes	Yes	Yes	Yes	Yes	Yes
savechangedconfig (*1)	V6.0 or higher	No	No	Yes	Yes	Yes	Yes	Yes	Yes
savetimeconfig (*1)	V7.3 or higher	No	No	No	Yes	No	Yes	Yes	Yes
safemode (*3)	V8.5 or higher	No	No	No	No	No	No	No	Yes

YES: Setting/Getting is possible, NO: Setting/Getting is impossible

- (\*1): It ends with an error of "Return: 0x11000000" if these are specified to an HVM not supporting the HVM interfaces of pcpucstate, usbautoalloc, savechangedconfig, and savetimeconfig.
- (\*2): For CB2500, of which BsmNotSupport function of [Function name](#) is ON, attempting to change shutdownstate fails in an error (Return: 0x08000000).
- (\*3): If HVM is not running in the Safe mode, you cannot change the safemode setting.

**Table 2-10 HVM Option support map (2)**

HvmSh Option	HVM version	HvmSh ver.	BS1000	CB320		
			All version	17-4x or lower	17-60 or higher	17-86 or higher
prestate		V5.1 or higher	Yes	Yes	Yes	Yes
autosd		V5.1 or higher	Yes	Yes	Yes	Yes
errwatching		V5.1 or higher	No	No	Yes	Yes
Shutdownstate		V5.1 or higher	No	No	Yes	Yes
Activateconfirm		V5.1 or higher	No	No	Yes	Yes
deactivateconfirm		V5.1 or higher	No	No	Yes	Yes
Screenswchar		V5.1 or higher	No	No	Yes	Yes
pcpucstate (*1)		V6.0 or higher	No	No	No	Yes
usbautoalloc (*1)		V6.0 or higher	No	No	No	Yes
savechangedconfig (*1)		V6.0 or higher	No	No	No	Yes
savetimeconfig(*1)		V7.3 or higher	No	No	No	No

Yes: Setting/getting is possible  
 No: Setting/getting is impossible

- (\*1): It ends with an error of "Return: 0x11000000" if these are specified to an HVM not supporting the HVM interfaces of pcpucstate, usbautoalloc, savechangedconfig, and savetimeconfig.

## Set HVM Timercounter Base

Sets the base for calculating the HVM Timercounter.

### Syntax

```
oprΔTimerCounterBaseΔtobase=[TSC | CPUFrequency]
```

### Notes

The configuration information is saved when the HVM Timercounter Base is changed. However, the configuration information is not saved when the HVM Timercounter Base is set the same before.

For changing the HVM Timercounter Base, you should reboot the HVM after changing the HVM Timercounter Base by this command.

"Get HVM Timercounter Base" is not supported.

Check the current value of HVM Timercounter Base in the "TC\_BASE\_CURR" field of "HVM\_CONFIGURATION" record in the "get ConfigAll" as the configuration information.

## Operates NVRAM of LPAR

Operates an NVRAM of defined LPAR of the specified LPAR number. The form 1 initializes NVRAM and the form 2 specifies the copy of NVRAM.

### Syntax

Form 1.

```
oprΔLparNvramClearΔlpar=LPAR No.
```

Form 2.

```
oprΔLparNvramCopyΔfrom=source LPAR No.Δto=destination LPAR No.
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Notes

It cannot be specified same LPAR No. to source and destination LPAR No. for form 2. If the same LPAR No. is specified, error ends with *Return: 0x11000000* error code.

## Take HVM dump (SVP)

Transfers an HVM dump to SVP. The same as TakeHvmDump on HVM Option screen.

### Syntax

```
oprΔHvmDumpToSvp
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Get shared NIC status

Gets the status of the specified shared NIC.

### Syntax

```
getSystemSNICsegment=shared NIC No.portid={a|b|c|d|e|f|g|h}
```

For **shared NIC No.**, specify a number between 1 and 8 (CB2000 59-00/79-00 or higher, CB320 17-86 or higher, CB500, or CB2500).

For **shared NIC No.**, specify a number between 1 and 6 (the other versions of CB2000 and CB320).

### Situation-dependent message

```
snicstate={U | D | * | -}
```

U: Link up

D: Link down

\*: Unknown ("- " is shown on an HVM screen.)

-: Undefined or port is inexistent (Blank on an HVM screen.)

## Get virtual LAN segment status

Gets the state of a virtual LAN segment.

### Syntax

```
getSystemLANSegsegment={V | shared NIC No.}portid={a|b|c|d|e|f|g|h}
```

For **shared NIC No.**, specify a number between 1 and 8 (CB2000 59-00/79-00 or higher, CB320 17-86 or higher, CB500, or CB2500).

For **shared NIC No.**, specify a number between 1 and 6 (the other versions of CB2000 and CB320).

### Situation-dependent message

```
lansegstate={A | S | D | -}
```

A: Active

S: Standby

D: Down

F: Fault

-: Non-shared NIC or no port (Blank on an HVM screen.)

## Get HVM system status

Gets the state of HVM system, including part of status displayed on System Service State screen.

### Syntax

```
getΔHvmStatus (no parameter)
```

### Situation-dependent message

```
CoDLicenseShortage={Yes|No}  
CoDAvailableCoresShortage={Yes|No}  
ErrorEventDetected={Yes|No}  
SVPAccess={ Run | Stop | Error | Unknown }  
BSMAccess={ Run | Stop | Error | Unknown } (*4)  
HAMonitor={ Run | Stop | Error | Unknown }  
BMC={ Run | Error }  
InternalPathPort={ port No. | Default | * }  
InternalPathConnect={ Success|Fail }  
InternalPathLink={ Yes|No }  
LatestSysLogNo=No. of last system log  
LatestSysLogTime=Time of last system log  
CoDLiceShortageCore=Shortage of licensed core number. (*1)  
NTP={ NoSync | Sync | Error | Inactive |- } (*2) (*3)
```

- \*1: This item is displayed when HvmSh Version is 5.3 or higher.  
(This item is displayed as zero when HvmSh Version is 5.2 or lower)
- \*2: This item is displayed when HvmSh Version is 5.5 or higher. Also requires the HVM firmware which supports NTP function.  
(`-' is displayed if using the HVM firmware which does not support NTP function)
- \*3: "-" is displayed depending on the combination of HVM version and HvmSh version when NTP is Inactive in the HVM screen. Refer to the following table for details.
- \*4: For CB2500 which BsmNotSupport function of "Get HVM Facility Map" is ON, Mgmt I/F in Service State screen of HVM is corresponded.

**Table 2-11 Situation-dependent messages when NTP is inactive on the HVM screen**

HVM version HvmSh version	Compute Blade 2000 DP		Compute Blade 2000 MP		Compute Blade 320		Compute Blade 500		Compute Blade 2500
	59-4x or lower	59-50 or higher	79-4x or lower	79-50 or higher	17-8x or lower	17-90 or higher	01-6x or lower	01-70 or higher	02-00 or higher
V7.2 or lower	(A)	-	(A)	-	(A)	-	(A)	-	-
V7.3 or higher	(A)	Inactive	(A)	Inactive	(A)	Inactive	(A)	Inactive	Inactive

(A)= {NoSync | Sync | Error}

## Activate HVM Force Recovery

Activates Force Recovery function of HVM system.

### Syntax

```
oprΔForceRecovery
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Notes

If the command completed, outputs execution result message of above sample (Accepted) format in "Syntax" line. It takes two to three minutes to complete (\*1) and cannot contact to HVM meanwhile. So the HvmSh command executed during this time ends with *Return: 0x10020001 Response Timeout* or *Return: 0x10030000 Unknown Data Received* message.

\*1: In case of port status of shared FC is set to Link Down, operation time increases depending on the No. of LinkDown ports. Refer to "Cautions"- "Shared FC Port Status" in each model's User's Guide for details.

## Regular diagnosis of management path standby port

Sets either Enable or Disable of the management path standby port.

### Syntax

```
oprΔMgmtStandbyPortDiagnosisΔdiagnosis={Enable|Disable}
```

### Situation-dependent message

```
accept=operation No.
```

Displays the **operation No.** assigned when HVM accepted the request of the operation. A normal end of the operation returns the **operation No.** in the hexadecimal format.

## Get management path standby port status

Diagnoses the management path standby port status, and displays the results.

### Syntax

```
getΔMgmtStandbyPortStatus
```

### Situation-dependent message

```
Status= {Standby|Error|Linkdown|Unknown}
```

## Get dedicated FC allocation

Gets information on dedicated FC(s) allocated to the LPAR of the specified LPAR number.

### Syntax

```
getΔLPARDedFCΔlpar=LPAR No.
```

### Situation-dependent message

```
slotno=device locationΔportno=port  
No.Δwwpn=WWPNΔwwnn=WWNN
```

This is repeated for each of the dedicated FCs allocated.

If no dedicated FC is allocated to the LPAR, no situation-dependent message is output.

#### **device location:**

- For details, see [Description Format for Device Location](#).

## Get FC adapter configuration of LPAR

Gets FC adapter assignment information.

### Syntax

```
getSystemFC (no parameter)
```

### Situation-dependent message

```
lpar=LPAR No.Δslotno=device locationΔportno=port No.Δshcmd={D | S}Δvfcid=VfcIDΔwwpn=FC WWPNΔwwnn=FC WWNΔportstatus={A | D | C | E}
```

This is repeated for each of the FCs.

For an FC which is not assigned to any LPAR, its **LPAR No.** is displayed as "-".

For a non-shared FC, its **VfcID** is displayed as "-".

#### **device location:**

For details, see [Description Format for Device Location](#).

For a non-shared FC, its **VfcID** is displayed as "-".

### Output example

```
lpar=1Δslotno=4Δportno=0Δshcmd=SΔvfcid=1Δwwpn=2301000087020000Δwwnn=2301000087020001Δportstatus=A
```

```
lpar=-  
Δslotno=4Δportno=0Δshcmd=SΔvfcid=2Δwwpn=2302000087020000Δwwnn=2302000087020001Δportstatus=D
```

```
lpar=2Δslotno=13Δportno=0Δshcmd=DΔvfcid=-  
Δwwpn=2302000087020000Δwwnn=2302000087020001Δportstatus=C
```

```
lpar=2Δslotno=13Δportno=1Δshcmd=DΔvfcid=-  
Δwwpn=2302000087020000Δwwnn=2302000087020001Δportstatus=E
```

### Note

For the information on Migration WWN displayed on the HVM Allocated FC Information screen, get the MG\_WWP/ MG\_WWNN field in FC\_ASSIGN\_INFORMATION record with "get ConfigAll" command.

## Get HVM system log

Gets the latest HVM system log, which HVM holds in the memory.

### Syntax

```
getΔHvmSystemLogsΔtype=sys[Δnotag]
```

For *type* =**sys** option, specify an event log type to get.

- **sys**: Specify the system log.
- **notag**: If specify the option, output situation-dependent message except tag which indicates by <xxxxx> or </xxxxx>.

### Situation-dependent message

Indicates system log, agent event or operation history.

Syntax for system log (type=sys)

```
<SysLog>
<Number>
008
</Number>
<Time>
2010/08/09 20:37:49
</Time>
<Level>
INFO
</Level>
<Title>
PCI Express Error Isolation was detected.
</Title>
<Contents>
CI Express Error Isolation was detected.(Slot Power On) Bridge ConfigAddr=00000800.
Isolated Devices: From Bus#:01 To Bus#:02.
</Contents>
</SysLog>
```

### Notes

None

## Get DMA engine availability for virtual NIC

Gets the availability of a DMA engine for a virtual NIC network segment.

### Syntax

```
getSystemVNICAΔsegment={V | shared NIC No.}Δportid={a | b | c | d}
```

For **shared NIC No.**, specify a number between 1 and 6.

### Situation-dependent message

```
vnica={-}
```

-: Not able to get the DMA engine availability.

### Notes

Not supported by HVM. Always shows "-".

Even if the physical NIC corresponding to the shared NIC number specified with the segment parameter has 4 or 8 ports, 'c' to 'h' cannot be specified as a portid.

If it is specified, it ends with an error of Return: 0x11000000 error code.

## Get HVM interface execution result

Acquires the execution result of an HVM interface accepted and identified by the specified operation number.

### Syntax

```
getResultΔaccept=operation No.
```

For **operation No.**, specify an operation number between 1 and its maximum managed by the HVM.

### Situation-dependent message

An HVM command corresponding to the operation number and a date and time when the HVM accepts the operation request (response example below).

```
ActivateΔ2007/05/01Δ12:10:12ΔGMT+09:00
```

## Get generation number

Gets the generation number of the LPAR for the specified LPAR number.

### Syntax

```
getLPARGenerationΔlpar=LPAR No.
```

### Situation-dependent message

```
generation=generation No.
```

## Get HVM command information

Returns a list of commands and their versions supported by the HVM.

### Syntax

`getΔVersions` (no parameter)

### Situation-dependent message

A sample response is shown below.

GetSystemInfoΔVer.1
SetSystemInfoΔVer.1
GetLPARConfigΔVer.1
SetLPARConfigΔVer.1
GetPerfΔVer.1
GetOptionΔVer.1
ActivateΔVer.1
SaveConfigΔVer.1
GetResultsΔVer.1

## Take HVM dump (FTP server)

Transfers an HVM dump to an external server for saving.

### Syntax

```
oprΔTakeHvmDump
```

### Parameters

Parameters are entered interactively. The parameters to be entered are as follows:

IP address of the external FTP server to which the HVM dump is to be transferred for saving

User ID for the external FTP server to which the HVM dump is to be transferred for saving

Password for the external FTP server to which the HVM dump is to be transferred for saving

Directory path for the external FTP server to which the HVM dump is to be transferred for saving

The user ID and password can contain up to 16 characters. The directory path string can contain up to 49 characters.

### Situation-dependent message

```
accept=operation No.
```

#### operation No.:

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task.

The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Example

The following example shows how to use this command, where shaded characters mean those to be entered and blank lines are skipped.

```
Line 1 > ΔHvmShΔ-host=xxx.xxx.xxx.xxxΔoprΔTakeHvmDump
2 FTPΔIPΔAddressΔ: Δxxx.xxx.xxx.xxx
3 FTPΔUserΔIDΔ: Δxxxxxxxxx
4 FTPΔPasswordΔ: Δ*****
5 FTPΔDirectoryΔPathΔ: Δxxx/xxx/
6 FTPΔIPΔAddressΔ: Δxxx.xxx.xxx.xxx
7 FTPΔUserΔIDΔ: Δxxxxxxxxx
8 FTPΔPasswordΔ:
9 FTPΔDirectoryΔPathΔ: Δxxx/xxx/
10 Confirm?Δ(Y/[N])Δ: ΔY
```

Line 1:

A sample TakeHvmDump command is entered. For the "-host" parameter, specify the IP address of the HVM for which an HVM dump is to be taken. For example, -host=192.168.0.22.

Line 2:

Enter the IP address of the external FTP server. Example)  
10.206.12.164

Line 3:

Enter your user ID for the external FTP server.

Line 4:

Enter your password for the external FTP server. Entered characters are displayed as "\*".

Line 5:

Enter the directory path for the external FTP server.

Lines 6 to 9:

Data inputs in Line 2 to Line 5 are displayed, except the password entered in Line 4.

Line 10:

Check that the entered information is correct. Enter "Y" to proceed to the HVM dump operation. Enter "N" to cancel the HVM dump operation.

## Notes

Execute the HvmSh command *Get execution result* to confirm the dump collecting result after this *Take HVM dump* command executed.

## Start guest memory dump

Starts collecting guest memory dump on the LPAR of the specified LPAR number. The dump that was taken is transferred to an external FTP server for saving.

### Syntax

```
oprΔStartGuestDump
```

### Parameters

Parameters are entered interactively. The parameters to be entered are as follows:

LPAR number of the LPAR on which a guest memory dump is to be taken

IP address of the external FTP server

User ID for the external FTP server (up to 16 characters)

Password for the external FTP server (up to 16 characters)

Directory path for the external FTP server (up to 49 characters)

### Situation-dependent message

```
accept=operation No.
```

#### operation No.:

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Example

The following example shows how to use this command, where shaded characters mean those to be entered and blank lines are skipped.

```
Line 1 >ΔHvmShΔ-host=xxx.xxx.xxx.xxxΔoprΔStartGuestDump
2 LPARΔNumber:Δxx
3 FTPΔIPΔAddressΔ:Δxxx.xxx.xxx.xxx
4 FTPΔUserΔIDΔ:Δxxxxxxxx
5 FTPΔPasswordΔ:Δ*****
6 FTPΔDirectoryΔPathΔ:Δxxx/xxx/
7 LPARΔNumber:Δxx
8 FTPΔIPΔAddressΔ:Δxxx.xxx.xxx.xxx
9 FTPΔUserΔIDΔ:Δxxxxxxxx
10 FTPΔPasswordΔ:
11 FTPΔDirectoryΔPathΔ:Δxxx/xxx/
12 Confirm?Δ(Y/[N])Δ:ΔY
```

#### Line 1:

A sample StartGuestDump command is entered. For the “-host” parameter, specify the IP address of the HVM containing the LPAR on which the guest memory dump is to be taken. For example, -host=192.168.0.22.

Line 2:

Enter the LPAR number of the LPAR on which the guest memory dump is to be taken.

Line 3:

Enter the IP address of the external FTP server. Example) 10.206.12.164

Line 4:

Enter your user ID for the external FTP server.

Line 5:

Enter your password for the external FTP server. Entered characters are displayed as "\*".

Line 6:

Enter the directory path for the external FTP server.

Lines 7 to 11:

Data inputs in Line 2 to Line 6 are displayed, except the password entered in Line 5.

Line 12:

Check that the entered information is correct. Enter "Y" to proceed to the guest memory dump operation. Enter "N" to cancel the guest memory dump operation.

## Notes

Execute the HvmSh command "Get guest memory dump progress" regularly to confirm the dump collecting progress after this "Start guest memory dump" command executed.

## Cancel guest memory dump

Cancels collecting guest memory dump on the LPAR of the specified LPAR number.

## Syntax

```
oprΔCancelGuestDumpΔlpar=LPAR No.
```

## Notes

Execute the HvmSh command *Get guest memory dump progress* to confirm the dump collecting stops after this *Cancel guest memory dump* command executed.

## Get guest memory dump progress

Obtains guest memory dump progress information.

### Syntax

```
getΔGuestDumpProgress
```

### Situation-dependent message

condition= <b>state (LPAR No.)</b>
status= <b>status (message)</b>
totalΔsize= <b>total size</b>
finishedΔsize= <b>amount transferred (% transferred)</b>

#### **state (LPAR No.):**

Indicates one of the following combinations of the current state of the guest memory dump and the target LPAR number.

No executing (no LPAR No.):

No guest memory dump operation is being performed on any LPAR.

Executing (LparNN):

A guest memory dump operation is in progress on the target LPAR number indicated in parentheses.

Completed (LparNN):

A guest memory dump operation has been completed on the target LPAR number indicated in parentheses.

Cancelled (LparNN):

A guest memory dump operation has been cancelled on the target LPAR number indicated in parentheses.

Failed (LparNN):

A guest memory dump operation has failed on the target LPAR number indicated in parentheses.

#### **status (message):**

Shows a status code and a message indicating the execution result of the guest memory dump. For details, see the following table.

#### **total size:**

Indicates the total size of the guest memory dump (MB).

#### **amount transferred (% transferred):**

Indicates how much of the guest memory dump has been transferred in MB and, in parentheses, the percentage transferred (amount transferred/total amount in percentage).

**Table 2-12 Status codes and messages**

Code	Message	Description	Recommended action
0x00000000	Normal Completed. Guest dump transferred successfully.	Guest memory dump operation completed successfully.	This is normal so nothing special needs to be done.
0x00000001	Not Completed.	Guest memory dump operation has not completed.	Wait until the guest memory dump operation is complete.
0x00000002	Guest dump was cancelled.	Guest memory dump operation was cancelled by a user.	This is normal so nothing special needs to be done.
0x00000004	Inhibit Guest dump request. (HVM Assist not ready)	Guest memory dump request was rejected.	Wait for a while and retry higher.

0x00000005	Inhibit Guest dump request. (Inhibit ICV request)	Guest memory dump request was rejected.	Wait for a while and retry higher.
0x00000100	Guest dump failed. HVM internal timeout occurred. (ICV completion timeout)	Error end. An HVM internal error occurred.	Contact maintenance personnel.
0x00000102	Guest dump failed. HVM internal error occurred. (HVM Assist panic occurred.)	Error end. An HVM internal error occurred.	Contact maintenance personnel.
0x00000103	Guest dump failed. HVM internal error occurred. (HVM Assist hang occurred.)	Error end. An HVM internal error occurred.	Contact maintenance personnel.
0x00000110	Guest dump failed. HVM internal error occurred. (Guest dump initiation failed.)	Error end. An HVM internal error occurred.	Contact maintenance personnel.
0x00000111	Guest dump failed. HVM internal error occurred. (Guest dump hang occurred.)	Error end. An HVM internal error occurred.	Contact maintenance personnel.
0x00000120	Guest dump failed. HVM Assist changed to 'not ready' status.	Error end. HVM Assist is not ready.	Wait for a while and retry higher.
0x00000121	Guest dump failed. Target LPAR was deactivated.	Error end. The target LPAR was deactivated. Data on the guest memory no longer exists.	Do not deactivate the target LPAR during guest memory dump operation.
0x00000122	Guest dump failed. The stop of all logical CPU of the target LPAR failed.	Error end. An HVM internal error occurred.	Contact maintenance personnel.
0x00000123	Guest dump failed. Guest register dump generation failed.	Error end. An HVM internal error occurred.	Contact maintenance personnel.
0x00000200	FTP connection failed. Confirm specified FTP IP Address.	Error end. An attempt to connect to the external FTP server failed.	Check that the specified IP address of the FTP server is correct.
0x00000201	FTP Login failed. Confirm specified FTP UserID and Password.	Error end. An attempt to log in to the external FTP server failed.	Check that the specified user ID and password for the FTP server are correct.
0x00000202	FTP Directory Path is not found. Confirm specified FTP Directory Path.	Error end. The specified directory path was not found on the external FTP server.	Check that the specified directory path on the FTP server is correct.
0x00000300	Guest dump failed. HVM internal error occurred. (Guest dump internal error)	Error end. An HVM internal error occurred.	Contact maintenance personnel.
0x00001000	Guest dump failed. FTP network timeout occurred.	Error end. A timeout error occurred during an attempt to communicate with the external FTP server.	Check the network configuration between the HVM and the external FTP server. If the problem persists, make sure the FTP software is running normally on the external FTP server. If the problem still persists, contact maintenance personnel.
0x00001nnn	Guest dump failed. FTP error occurred. (nnn : FTP reply code)	Error end. An error occurred during an attempt to transfer data to the external FTP server, where nnn is an FTP reply code defined by the FTP specification (RFC 959).	Check the network configuration between the HVM and the external FTP server. If the problem persists, make sure the FTP software is running normally on the external FTP server. If the problem still persists, contact maintenance personnel.
0x0000FFFF	No executing condition of any Guest dump.	No guest memory dump operation is being performed on any LPAR.	This is normal so nothing special needs to be done.
Others	This status is unknown.	The status could not be determined.	Contact maintenance personnel.

## Get HVM statistical information

Gets HVM statistical information.

### Syntax

```
getHvmPerfMonΔfilename=temporary file name [Δnoconf] [Δnocpu] [Δnomem] [Δnonic]
[Δnohba] [Δnodetail] [Δexcpu] [Δexio] [Δhvm]
```

#### temporary file name:

Specify an absolute file path from the root directory to the target temporary filename.

A maximum size of the result file is 1,600KB (1.6MB) when not specifying 'excpu' or 'HVM' option, or 1,850KB (1.85MB) when specifying 'excpu' of 'HVM' option.

**Table 2-13 Output suppression/extension options for HvmPerfMon HVM interface**

HVM statistical information	Application of output suppression options						Output extension options		
	noconf	nocpu	nomem	nonic	nohba	nodetail	excpu	exio	hvm
MONITORING_INFORMATION									
SYSTEM_CONFIGURATION	X								
LPAR_CONFIGURATION	X								
SYSTEM_USAGE_SUMMARY								O (*5)	
SYSTEM_CPU_USAGE		X					O (*4)		O (*7)
SYSTEM_MEM_USAGE			X						
LPAR_CPU_USAGE		X					O (*1)		O (*8)
PHYSICAL_CPU_USAGE		X					O (*3)		
PHYSICAL_NIC_USAGE				X				O (*3)	O (*4)
PHYSICAL_HBA_USAGE					X			O (*3)	
LOGICAL_CPU_USAGE		X					O (*6)		
LOGICAL_NIC_USAGE				X				O (*3)	
LOGICAL_HBA_USAGE					X			O (*5)	
PHYSICAL_CPU_DETAIL		X				X	O (*3)		
LOGICAL_CPU_DETAIL		X				X	O (*2) (*8)		
GROUP_USAGE		X				X	O (*3)		
PHYSICAL_CPU_GROUP_USAGE		X				X	O (*3)		
LPAR_CPU_GROUP_USAGE		X				X			
VF_NIC_USAGE								O (*9)	

X: Not output

O: Output extended field by specifying output suppression/extension options.

\*1: Supported by HvmSh Ver. 5.0 or higher.

\*2: Supported by HvmSh Ver. 5.1 or higher.

\*3: Supported by HvmSh Ver. 5.5 or higher.

\*4: Supported by HvmSh Ver. 5.6 or higher.

\*5: Supported by HvmSh Ver. 6.4 or higher.

\*6: Supported by HvmSh Ver. 6.4 or higher.

\*7: Supported by HvmSh Ver. 7.1 or higher.

\*8: Supported by HvmSh Ver. 7.3 or higher.

\*9: Supported by HvmSh Ver. 8.3 or higher.

## Notes

If numerical figures showing rates (%) are 999.99% or over, all of the numerical figures are displayed 999.99%.

When the "excpu" option is specified, the indication of "LOGICAL\_CPU\_DETAIL" record is different between HvmSh Ver 5.1-7.2 and Ver 7.3 or higher. For details, see [LOGICAL\\_CPU\\_DETAIL record](#).

## Situation-dependent message

The output message (temporary file) consists of tab-delimited lines of text with CRLF at each end of line. You can import such temporary file in a spreadsheet application. The beginning and ending part of output temporary file is shown below, followed by a full output imported in a spreadsheet application (certain fields are truncated without adjusting the column width). Table 2-5 provides a summary explanation of HVM statistical information records in the output file. Table 2-15 through Table 2-34 provide details of each HVM statistical information record.

```
Begin<tab>1.0<CRLF>
[MONITORING_INFORMATION]<CRLF>
<tab>HVM_ID<tab>PRODUCT<tab>CURR_DATE_TIME<tab>PREV_DATE_TIME<tab>INTERV
AL_TIME<CRLF>
<tab>HVM1921681<tab>HVM 57-30(00-00)<tab>2009/07/23 18:07:48
GMT+00:00<tab>2009/07/23 18:07:38 GMT+00:00<tab>10<CRLF>
[SYSTEM_CONFIGURATION]<CRLF>
<tab>COREs<tab>CPUs<tab>NICs<tab>HBAs<tab>MEM<tab>DEF_LPARs<tab>ACT_LPARs
<tab>CPU_CAP<tab>NIC_CAP<tab>HBA_CAP<tab>CORE_CAP<tab>SYS_MEM<tab>LPAR_
MEM<CRLF>
<tab>8<tab>16<tab>15<tab>2<tab>12288<tab>15<tab>5<tab>38400<tab>14100<tab
>8000<tab>4800<tab>1280<tab>11008<CRLF>
[LPAR_CONFIGURATION]<CRLF>
<tab>L#<tab>NAME<tab>STATE<tab>MODE<tab>COREs<tab>CPUs<tab>NICs<tab>HBAs
<tab>MEM<tab>CPU_CAP<tab>CPU_MAX<tab>CPU_WIGHT<tab>CPU_SRV<tab>CPU_SRV
%<tab>CPU_MAX%<tab>CPU_SRVs<tab>CC<tab>ID<tab>NIC_CAP<tab>HBA_CAP<tab>
AFFINITY<tab>INFORMATION<CRLF>
<tab>1<tab>W2K3x64<tab>ACT<tab>S<tab>2<tab>4<tab>2<tab>1<tab>1024<tab>96
00<tab>9600<tab>100<tab>7680<tab>20<tab>100<tab>480<tab>N<tab>Y<tab>2000<
tab>4000<tab>*<tab>*<CRLF>
<tab>2<tab>W2K8x86<tab>ACT<tab>S<tab>2<tab>4<tab>2<tab>1<tab>1024<tab>96
00<tab>9600<tab>100<tab>7680<tab>20<tab>100<tab>480<tab>N<tab>Y<tab>2000<
tab>4000<tab>*<tab>Windows(x86)<CRLF>
<tab>3<tab>RH52x86<tab>ACT<tab>S<tab>2<tab>4<tab>2<tab>1<tab>1024<tab>960
0<tab>9600<tab>100<tab>7680<tab>20<tab>100<tab>480<tab>N<tab>Y<tab>2000<t
ab>4000<tab>*<tab>Linux(x86)<CRLF>
:
:
End<CRLF>
```

[MONITORING_INFORMATION]																						
LP_ID	PRODUCT	CORE_DATE_STR	PREV_DATE_STR	INTERNAL_ID																		
1	LP	20080523	20080523	10																		
1	57-30	08:00:00	18:07:48	10																		
1	00-00	08:00:00	08:00:00	10																		
[SYSTEM_CONFIGURATION]																						
CORE#	CPU#	MEM#	HBA#	MEM	DEF_LPAR	ACT_LPAR#	CPU_CAP	MEM_CAP	HBA_CAP	CORE_CAP	SVS_MEM	LPAR_MEM										
8	16	15	2	12288	15	5	38400	14100	8000	4800	1280	11008										
[LPAR_CONFIGURATION]																						
LP#	NAME	STATE	MODE	CORE#	CPU#	MEM#	HBA#	MEM	CPU_CAP	CPU_MAX	CPU_USAGE	CPU_SERV	CPU_SERV%	CPU_MAX%	CPU_SERV%	CC	ID	NIC_CAP	HBA_CAP	AFFINITY	INFORMATION	
1	WKS364	ACT	S	2	4	2	1	1024	9000	9000	100	7680	20	100	480	N	Y	2000	4000	*	*	Windows(46)
2	WKS365	ACT	S	2	4	2	1	1024	9000	9000	100	7680	20	100	480	N	Y	2000	4000	*	*	Windows(46)
3	RHS246	ACT	S	2	4	2	1	1024	9000	9000	100	7680	20	100	480	N	Y	2000	4000	*	*	Linux(46)
4	RHS244	ACT	S	2	4	2	1	1024	9000	9000	100	7680	20	100	480	N	Y	2000	4000	*	*	Linux(44)
5	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
6	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
7	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
8	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
9	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
10	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
11	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
12	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
13	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
14	NO_NAM	DEACT	D	1	1	0	0	1024	2400	2400	*	*	*	100	*	*	Y	0	0	*	*	
15	NO_NAM	ACT	S	2	4	2	0	1024	9000	9000	100	7680	20	100	480	N	Y	2000	0	*	*	
[SYSTEM_USAGE_SUMMARY]																						
NAME	CAPACITY	USED	UNUSED	INUP%	USED%	UNUSED%	INUP%															
CPU	38400	6148	32252	16.01	63.99	0.24																
MEM	12288	6400	5888	*	52.08	47.92	*															
NIC	14100	0	14100	*	0	100	*															
HBA	8000	*	*	*	*	*	*															
[SYSTEM_CPU_USAGE]																						
NAME	CORE#	CPU#	CAPACITY	USED	USED%	USED_CORE%	MODE_USED%															
SVS1	8	16	100	0.26	0.02	*																
SVS2	8	16	100	0.21	0.02	*																
SVS_LPAR	8	16	38400	5989	15.54	1.24	15.54															
DED_LPAR	0	0	0	0	0	0	0															
[SYSTEM_MEM_USAGE]																						
NAME	USED	USED%	LPAR_USED%																			
SVS	1280	10.42	*																			
LPAR	5120	41.67	46.51																			
[LPAR_CPU_USAGE]																						
LP#	NAME	USED	MODE	DELAY	CORE%	HIT_USED%	SVR_USED%	SYS_USED%	USED%	ROB%	DELAT%	IOLE%	IOHW%	NOHW%	C_SERV%	C_SERV%	OVER%					
1	WKS364	2396	0	4	0.3	6.24	6.24	31.2	24.96	0	0.04	0	0	75	24.96	75.04	0					
2	WKS365	893	0	15	0.19	2.33	2.33	11.63	9.3	0	0.16	5.58	11.14	73.82	9.3	90.7	1.82					
3	RHS246	734	0	47	0.15	1.91	1.91	9.56	7.65	0	0.49	86.51	1.05	4.3	7.65	92.35	6.52					
4	RHS244	1940	0	24	0.4	5.05	5.05	25.28	20.21	0	0.25	75.53	1.28	4.73	20.21	79.79	1.34					
15	NO_NAM	6	0	0	0	0.02	0.02	0.08	0.06	0	0	0	0	99.94	0.06	99.94	0					
[PHYSICAL_CPU_USAGE]																						
CORE#	CAPACITY	MODE	USED	UNUSED	USED%	UNUSED%	NAME															
0	4800	S	870	3930	18.12	61.88	166(%) Xeon® CPU E5330 @ 2.40GHz															
1	4800	S	1456	3344	30.33	69.67	166(%) Xeon® CPU E5330 @ 2.40GHz															
2	4800	S	747	4053	15.56	84.44	166(%) Xeon® CPU E5330 @ 2.40GHz															
3	4800	S	618	4182	12.88	87.12	166(%) Xeon® CPU E5330 @ 2.40GHz															
4	4800	S	243	4557	7.15	92.85	166(%) Xeon® CPU E5330 @ 2.40GHz															
5	4800	S	887	3913	18.48	81.52	166(%) Xeon® CPU E5330 @ 2.40GHz															
6	4800	S	932	4268	12.13	87.87	166(%) Xeon® CPU E5330 @ 2.40GHz															
7	4800	S	645	4155	13.44	86.56	166(%) Xeon® CPU E5330 @ 2.40GHz															
[PHYSICAL_NIC_USAGE]																						
SD	P#	CAPACITY	MODE	USED	UNUSED	USED%	UNUSED%	REQ	INT	R_BYTE	S_BYTE	T_BYTE	R_PACKET	S_PACKET	T_PACKET	NAME						
X40	0	1000	D	*	*	*	*	*	16	*	*	*	*	*	*	ED10						
G40	0	1000	S	0	1000	0	100	*	16	2	0	2	14	0	14	NIC						
G40	1	1000	S	0	1000	0	100	*	16	2	0	2	16	0	16	NIC						
8	2	1000	D	*	*	*	*	*	*	*	*	*	*	*	*	NIC						
8	3	1000	D	*	*	*	*	*	0	*	*	*	*	*	*	NIC						
8	0	1000	D	*	*	*	*	*	0	*	*	*	*	*	*	NIC						
8	1	1000	D	*	*	*	*	*	0	*	*	*	*	*	*	NIC						
E40	2	1000	S	0	1000	0	100	*	16	2	0	2	17	0	17	NIC						
E40	3	1000	S	0	1000	0	100	*	16	2	0	2	17	0	17	NIC						
E40	0	1000	S	0	1000	0	100	*	16	1	0	1	14	0	14	NIC						
E40	1	1000	S	0	1000	0	100	*	16	2	0	2	14	0	14	NIC						
E41	2	1000	S	0	1000	0	100	*	16	2	0	2	17	0	17	NIC						
E41	3	1000	S	0	1000	0	100	*	0	0	0	0	0	0	0	NIC						
E41	0	1000	S	0	1000	0	100	*	16	2	0	2	17	0	17	NIC						
E41	1	1000	S	0	1000	0	100	*	0	0	0	0	0	0	0	NIC						
[PHYSICAL_HBA_USAGE]																						
SD	P#	CAPACITY	MODE	USED	UNUSED	USED%	UNUSED%	REQ	INT	R_BYTE	W_BYTE	T_BYTE	R_FRAME	W_FRAME	T_FRAME	NAME						
9	0	4000	S	*	*	*	*	*	1568	*	*	*	*	*	*	Flare Connect S2600 FPC(5)						
9	1	4000	S	*	*	*	*	*	*	*	*	*	*	*	*	Flare Connect S2600 FPC(5)						
[LOGICAL_CPU_USAGE]																						
LP#	NAME	CPU#	USED	MODE	DELAY	IOLE	IOHW	NOHW	C_SERV	USED%	ROB%	DELAT%	IOLE%	IOHW%	NOHW%	C_SERV%	C_SERV%	OVER%				
1	WKS364	0	2396	0	4	0	0	0	2396	98.83	0	0.17	0	0	0	99.83	0.17	0				
1	WKS364	1	0	0	0	119	0	2281	0	0	0	0	4.96	0	95.04	0	100	0				
1	WKS364	2	0	0	0	119	0	2281	0	0	0	0	4.96	0	95.04	0	100	0				
1	WKS364	3	0	0	0	119	0	2281	0	0	0	0	4.96	0	95.04	0	100	0				
2	WKS365	0	174	0	2	592	148	1484	174	7.25	0	0.08	24.67	6.17	63.83	7.25	92.75	1.1				
2	WKS365	1	298	0	3	3	295	1801	298	12.42	0	0.12	0.12	12.29	75.05	12.42	87.58	0.97				
2	WKS365	2	147	0	5	9	48	2191	147	6.13	0	0.21	0.27	7	61.29	6.13	93.87	1.45				
2	WKS365	3	274	0	5	10	536	1555	274	11.42	0	0.21	0.42	23.17	61.78	11.42	88.58	1.84				
3	RHS246	0	180	0	18	2116	34	52	180	7.5	0	0.75	88.16	1.42	2.17	7.5	92.3	10				
3	RHS246	1	254	0	10	1992	16	128	254	10.58	0	0.42	83	0.67	5.33	10.58	89.42	1.97				
3	RHS246	2	127	0	14	2107	14	138	127	5.29	0	0.58	87.8	0.58	5.75	5.29	94.71	10.96				
3	RHS246	3	173	0	5	2049	28	145	173	7.21	0	0.21	85.37	1.17	6.04	7.21	92.79	2.91				
4	RHS244	0	480	0	10	1799	77	34	480	20	0	0.42	74.95	3.21	1.42	20	80	2.1				
4	RHS244	1	153	0	5	2107	0	135	153	6.38	0	0.31	87.78	0	5.63	6.38	93.62	3.29				
4	RHS244	2	229	0	6	1974	0	191	229	9.54	0	0.25	82.25	0	7.96	9.54	90.46	3.62				
4	RHS244	3	1038	0	3	1151	0	187	1038	46.82	0	0.12	46	0	43.66	44.82	55.58	6.37				
15	NO_NAM	0	6	0	0	0	0	2394	6	0.25	0	0	0	0	99.75	0.25	99.75	0				

NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.	NO.
15	NO_NAM	1	0	0	0	0	119	0	2281	0	0	0	0	436	0	95.04	0
15	NO_NAM	2	0	0	0	0	119	0	2281	0	0	0	0	436	0	95.04	0
15	NO_NAM	3	0	0	0	0	119	0	2281	0	0	0	0	436	0	95.04	0
[LOGICAL_MSA_USAGE]																	
L#	NAME	SD	PF	USED	USED%	REQ	INT	R_BYTE	S_BYTE	T_BYTE	R_PACKET	S_PACKET	T_PACKET	TIME1	TIME2		
1	WK3464	G40	0	0	0	0	0	0	0	0	0	0	0	0	0		
1	WK3464	G40	1	0	0	0	0	0	0	0	0	0	0	0	0		
2	WK3466	G40	0	0	0	0	9	1	0	1	9	0	9	5438.29	3.13		
2	WK3466	G40	1	0	0	0	9	1	0	1	9	0	9	2.3	2.17		
3	RHS246	G40	0	0	0	0	0	0	0	0	0	0	0	0	0		
3	RHS246	G40	1	0	0	0	0	0	0	0	0	0	0	0	0		
4	RHS244	G40	0	0	0	0	0	0	0	0	0	0	0	0	0		
4	RHS244	G40	1	0	0	0	0	0	0	0	0	0	0	0	0		
15	NO_NAM	G40	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	NO_NAM	E	0	0	0	0	0	0	0	0	0	0	0	0	0		
[LOGICAL_MSA_USAGE]																	
L#	NAME	SD	PF	USED	USED%	REQ	INT	R_BYTE	W_BYTE	T_BYTE	R_FRAME	W_FRAME	T_FRAME	TIME1	TIME2		
1	WK3464	9	0	*	*	*	1347	*	*	*	*	*	*	215.14	31.37		
2	WK3466	9	0	*	*	*	185	*	*	*	*	*	*	7116.14	23.63		
3	RHS246	9	0	*	*	*	57	*	*	*	*	*	*	7600.28	15.88		
4	RHS244	9	0	*	*	*	88	*	*	*	*	*	*	6861.66	18.26		
[PHYSICAL_CPU_DETAILS]																	
CPU#	CORE#	L_ALL	L_NIC	L_MSA	L_SBB	L_IP1	L_IPM	L_OTM	L_USED	L_USED%							
0	0	4097	7	99	*	1731	2260	0	15	0.31							
1	0	3388	9	99	*	1578	1647	55	12	0.25							
2	1	3288	12	99	*	1009	948	0	6	0.12							
3	1	1645	4	99	*	239	1463	0	0	0.09							
4	2	2263	7	99	*	779	1878	0	10	0.21							
5	2	3135	12	99	*	1348	1696	0	10	0.21							
6	3	1883	7	99	*	824	953	0	5	0.1							
7	3	1515	10	99	*	495	911	0	5	0.1							
8	4	1400	10	99	*	143	1148	0	7	0.15							
9	4	1597	11	100	*	440	1046	0	6	0.12							
10	5	1794	9	101	*	396	1278	0	8	0.17							
11	5	2179	12	101	*	1031	1026	0	6	0.12							
12	6	1342	4	99	*	471	768	0	5	0.1							
13	6	1023	10	99	*	131	783	0	5	0.1							
14	7	1218	11	99	*	278	830	0	5	0.1							
15	7	1347	10	99	*	364	874	0	5	0.1							
[LOGICAL_CPU_DETAILS]																	
L#	NAME	CPU#	X_ALL	X_M01	X_M02	X_M03	X_D0P	X_IP1	X_EXTG	X_EXTM	X_M01T	X_M02T	X_OTM	X_USED	X_USED%		
1	WK3464	0	31214	0	0	2095	138189	0	0	2	0	0	31017	1838	78.71		
1	WK3464	1	0	0	0	0	0	0	0	0	0	0	0	0	0		
1	WK3464	2	0	0	0	0	0	0	0	0	0	0	0	0	0		
1	WK3464	3	0	0	0	0	0	0	0	0	0	0	0	0	0		
2	WK3466	0	21194	4641	0	90	7758	233	203	0	221	2142	16039	113	64.94		
2	WK3466	1	18622	347	0	144	647	4458	111	0	239	23	9881	70	23.49		
2	WK3466	2	21083	0	0	0	8610	5	121	0	247	3050	20715	99	67.35		
2	WK3466	3	21416	4639	0	279	7948	183	196	0	236	2154	16046	112	60.88		
3	RHS246	0	7074	2091	0	237	2092	59	53	0	1970	12	2723	84	46.67		
3	RHS246	1	4751	1067	0	237	10	54	7	0	679	4	481	48	18.6		
3	RHS246	2	2524	1078	0	23	0	62	10	0	1036	5	377	41	12.25		
3	RHS246	3	2609	1087	0	52	0	73	12	0	1025	2	433	33	19.08		
4	RHS244	0	16945	2130	0	6099	4708	130	79	1	1766	40	6850	112	23.33		
4	RHS244	1	4626	1089	0	1847	130	65	14	0	1036	23	660	39	25.49		
4	RHS244	2	3372	1133	0	171	0	112	23	0	1009	40	1036	37	16.38		
4	RHS244	3	3545	1127	0	188	0	111	25	1	640	44	1364	30	2.78		
15	NO_NAM	0	771	0	0	0	452	0	18	0	19	0	734	4	66.67		
15	NO_NAM	1	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	NO_NAM	2	0	0	0	0	0	0	0	0	0	0	0	0	0		
15	NO_NAM	E	0	0	0	0	0	0	0	0	0	0	0	0	0		

**Table 2-14 Summary of HVM statistical information records**

Record name	Content	Number of records
MONITORING_INFORMATION	Information on statistical information monitoring.	1
SYSTEM_CONFIGURATION	HVM system information.	1
LPAR_CONFIGURATION	LPAR configuration information.	No. of defined LPARs (*1)
SYSTEM_USAGE_SUMMARY	Resource usage of HVM.	4
SYSTEM_CPU_USAGE	CPU usage of HVM.	4
SYSTEM_MEM_USAGE	Memory usage of HVM.	2
LPAR_CPU_USAGE	CPU usage of LPAR.	No. of activated LPARs (*2)
PHYSICAL_CPU_USAGE	CPU usage in physical layer.	No. of physical CPU cores
PHYSICAL_NIC_USAGE	NIC usage in physical layer.	No. of physical NIC ports
PHYSICAL_HBA_USAGE	HBA usage in physical layer.	No. of physical HBA ports (*3)
LOGICAL_CPU_USAGE	CPU usage in logical layer.	No. of logical CPUs (*2)
LOGICAL_NIC_USAGE	NIC usage in logical layer.	No. of logical NIC ports (*2, *4)
LOGICAL_HBA_USAGE	HBA usage in logical layer.	No. of logical HBA ports (*2, *5)
PHYSICAL_CPU_DETAIL	Details of CPU usage in physical layer.	No. of physical CPUs
LOGICAL_CPU_DETAIL	Details of CPU usage in logical layer.	No. of logical CPUs (*2)
GROUP_USAGE	CPU usage of processor group.	No. of defined processor group
PHYSICAL_CPU_GROUP_USAGE	CPU usage in physical layer of each processor group.	No. of physical CPU cores
LPAR_CPU_GROUP_USAGE	CPU usage in logical layer of each processor group.	No. of logical CPUs (*2)
VF_NIC_USAGE	SR-IOV usage in SR-IOV.	No. of VF NIC ports

- \*1: When there is no defined LPAR, only the record name and the field titles are shown without content.
- \*2: When there is no activated LPAR, only the record name and the field titles are shown without content.
- \*3: When there is no installed HBA, only the record name and the field titles are shown without content.
- \*4: No record is shown for NICs allocated as dedicated NICs or VF NICs.
- \*5: No record is shown for HBAs allocated as dedicated HBAs.

**Table 2-15 MONITORING\_INFORMATION record**

Field	Content	Data type	Max. digits
HVM_ID	HVM identifier. *: Refer to "Notes for HVM ID" – "Notes for situation-dependent message".	Character	16
PRODUCT	Product name e.g. "HVM 57-30(00-00)".	Character	64
CURR_DATE_TIME	Date and time when HVM statistical information is created by HvmPerfMon HVM interface this time.	Date and time (*)	29
PREV_DATE_TIME	Date and time when HVM statistical information was created by HvmPerfMon HVM interface last time.	Date and time (*)	29
INTERVAL_TIME	Interval time from PREV_DATE_TIME to CURR_DATE_TIME.	Numeric (seconds)	3

\* YYYY/MM/DDΔHH:MM:SSΔGMT+hh:mm

**Table 2-16 SYSTEM\_CONFIGURATION record**

Field	Content	Data type	Max. digits
CORES	No. of physical CPU cores allocatable to LPARs. Not include No. of spare cores for capacity on Demand.(*1) Not include No. of degenerated cores.(*1)	Numeric	3
CPUs	No. of physical CPUs allocatable to LPARs. The quantity depends on whether SMT (simultaneous multithreading) is enabled or not. <ul style="list-style-type: none"> <li>• When SMT is enabled: No. of threads.</li> <li>• When SMT is disabled: No. of cores.</li> </ul>	Numeric	3
NICs	No. of NIC ports installed in the server blade. Not include PCI device ports which in PCI block or hot remove status.(*2)	Numeric	3
HBAs	No. of HBA ports installed in the server blade. Not include PCI device ports which in PCI block or hot remove status.(*2)	Numeric	3
MEM	Amount of memory installed in the server blade.	Numeric (MB)	6
DEF_LPARs	No. of defined LPARs.	Numeric	2
ACT_LPARs	No. of activated LPARs.	Numeric	2
CPU_CAP	Total amount of CPU resource installed in the server blade ( <i>CORE_CAP</i> × <i>CORES</i> ).	Numeric (MHz)	6
NIC_CAP	Maximum aggregate throughput of NICs installed in the server blade.	Numeric (Mbps)	6
HBA_CAP	Maximum aggregate throughput of HBAs installed in the server blade.	Numeric (Mbps)	6
CORE_CAP	Amount of CPU resource per CPU core (reference frequency).	Numeric (MHz)	6
SYS_MEM	Amount of memory used by HVM system layer.	Numeric (MB)	6
LPAR_MEM	Amount of memory allocatable to LPARs.	Numeric (MB)	6

\*1: In case of "core activation" or "core degenerate" occurs at a given time, the first execution of "GetHvmperfMon" command ends operation with "0x101F002x" error code

\*2: In case of "PCI block" or "hot remove" occurs at a given time, the first execution "GetHvmPerfMon" command ends operation with "0x101F002x" error code

**Table 2-17 LPAR\_CONFIGURATION record**

Field	Content	Data type	Max. digits																																																															
L#	LPAR No. of defined LPAR.	Numeric	2																																																															
NAME	LPAR name.	Character	31																																																															
STATE	LPAR status. <ul style="list-style-type: none"> <li>• ACT: Activated.</li> <li>• DEACT: Deactivated.</li> <li>• ACTPEND: Activation pending (in progress).</li> <li>• DEACTPEND: Deactivation pending (in progress).</li> <li>• FAILURE: Failing.</li> </ul>	Character	10																																																															
MODE	Mode of CPU allocation. <ul style="list-style-type: none"> <li>• S: Shared.</li> <li>• D: Dedicated.</li> </ul>	Character	1																																																															
COREs	No. of CPU cores for this LPAR.	Numeric	3																																																															
CPUs	No. of CPUs for this LPAR.	Numeric	3																																																															
NICs	No. of shared NIC ports allocated to this LPAR.	Numeric	3																																																															
HBAs	No. of shared HBA ports allocated to this LPAR.	Numeric	3																																																															
MEM	Amount of memory allocated to this LPAR.	Numeric (MB)	6																																																															
CPU_CAP	Amount of CPU resource allocated to this LPAR. The value depends on whether SMT (simultaneous multithreading) is enabled or not. <ul style="list-style-type: none"> <li>• When SMT is enabled: The value is derived from the formula "<i>CORE_CAP in SYSTEM_CONFIGURATION record / 2 × CPUs</i>".</li> <li>• When SMT is disabled: The value is derived from the formula "<i>CORE_CAP in SYSTEM_CONFIGURATION record × CPUs</i>".</li> </ul>	Numeric (MHz)	6																																																															
CPU_MAX	Maximum amount of CPU resource usable by this LPAR. If a shared-mode CPU is allocated to this LPAR, the value of CPU_MAX is determined by the combination of MODE, CC, and CPU_CAP settings as follows: <ul style="list-style-type: none"> <li>• When MODE=D, the value of CPU_MAX is the value of CPU_CAP.</li> <li>• When MODE=S and CC=N, the value of CPU_MAX is the value of CPU_CAP.</li> <li>• When MODE=S and CC=Y: <ul style="list-style-type: none"> <li>• If CPU_CAP is equal to or smaller than CPU_SRV, the value of CPU_MAX is the value of CPU_CAP.</li> <li>• If CPU_CAP is greater than CPU_SRV, the value of CPU_MAX is the value of CPU_SRV.</li> </ul> </li> </ul> Shown below are sample allocations of shared-mode CPU. Case 1: <table border="0"> <tr> <td>COREs</td> <td>CPU_CAP</td> <td>CPU_WIGHT</td> <td>CPU_SRV%</td> <td>CPU_SRV</td> <td>CC</td> <td>CPU_MAX</td> </tr> <tr> <td>LPAR1</td> <td>1</td> <td>3160</td> <td>100</td> <td>12.50</td> <td>1580</td> <td>N 3160</td> </tr> <tr> <td>LPAR2</td> <td>3</td> <td>9480</td> <td>700</td> <td>87.50</td> <td>2765</td> <td>N 9480</td> </tr> </table> Case 2: <table border="0"> <tr> <td>COREs</td> <td>CPU_CAP</td> <td>CPU_WIGHT</td> <td>CPU_SRV%</td> <td>CPU_SRV</td> <td>CC</td> <td>CPU_MAX</td> </tr> <tr> <td>LPAR1</td> <td>1</td> <td>3160</td> <td>100</td> <td>12.50</td> <td>1580</td> <td>Y 1580</td> </tr> <tr> <td>LPAR2</td> <td>3</td> <td>9480</td> <td>700</td> <td>87.50</td> <td>2765</td> <td>N 9480</td> </tr> </table> Case 3: <table border="0"> <tr> <td>COREs</td> <td>CPU_CAP</td> <td>CPU_WIGHT</td> <td>CPU_SRV%</td> <td>CPU_SRV</td> <td>CC</td> <td>CPU_MAX</td> </tr> <tr> <td>LPAR1</td> <td>1</td> <td>3160</td> <td>100</td> <td>50.00</td> <td>6320</td> <td>Y 3160</td> </tr> <tr> <td>LPAR2</td> <td>3</td> <td>9480</td> <td>100</td> <td>50.00</td> <td>6320</td> <td>N 9480</td> </tr> </table>	COREs	CPU_CAP	CPU_WIGHT	CPU_SRV%	CPU_SRV	CC	CPU_MAX	LPAR1	1	3160	100	12.50	1580	N 3160	LPAR2	3	9480	700	87.50	2765	N 9480	COREs	CPU_CAP	CPU_WIGHT	CPU_SRV%	CPU_SRV	CC	CPU_MAX	LPAR1	1	3160	100	12.50	1580	Y 1580	LPAR2	3	9480	700	87.50	2765	N 9480	COREs	CPU_CAP	CPU_WIGHT	CPU_SRV%	CPU_SRV	CC	CPU_MAX	LPAR1	1	3160	100	50.00	6320	Y 3160	LPAR2	3	9480	100	50.00	6320	N 9480	Numeric (MHz)	6
COREs	CPU_CAP	CPU_WIGHT	CPU_SRV%	CPU_SRV	CC	CPU_MAX																																																												
LPAR1	1	3160	100	12.50	1580	N 3160																																																												
LPAR2	3	9480	700	87.50	2765	N 9480																																																												
COREs	CPU_CAP	CPU_WIGHT	CPU_SRV%	CPU_SRV	CC	CPU_MAX																																																												
LPAR1	1	3160	100	12.50	1580	Y 1580																																																												
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COREs	CPU_CAP	CPU_WIGHT	CPU_SRV%	CPU_SRV	CC	CPU_MAX																																																												
LPAR1	1	3160	100	50.00	6320	Y 3160																																																												
LPAR2	3	9480	100	50.00	6320	N 9480																																																												
CPU_WIGHT	Guaranteed weight for using CPU resource in the event of contention among LPARs on a shared-mode CPU (same value as that of "Service Ratio" displayed on HVM screen). On an LPAR allocated to a dedicated-mode CPU, "*" is shown.	Numeric	3																																																															

CPU_SRV	Guaranteed amount of CPU resource in the event of contention among LPARs on a shared-mode CPU. CPU_SRV value becomes same to the CPU SRV field in the LPAR CPU GROUP USAGE when processor group exist. On an LPAR allocated to a dedicated-mode CPU, "*" is shown.	Numeric (MHz)	6
CPU_SRV%	Guaranteed ratio of CPU resource in the event of contention among LPARs on a shared-mode CPU, derived from the formula " <i>CPU_SRV / CAPACITY in SHR_LPAR line of SYSTEM_CPU_USAGE record</i> ". On an LPAR allocated to a dedicated-mode CPU, "*" is shown.	Numeric (%)	3 for integer, 2 for fraction
CPU_MAX%	Ratio of maximum amount of CPU resource usable by this LPAR derived from the formula " <i>CPU_MAX / CPU_CAP</i> ".	Numeric (%)	3 for integer, 2 for fraction
CPU_SRVs	Guaranteed No. of CPU cores for CPU resource in the event of contention among LPARs on a shared-mode CPU, derived from the formula " <i>CPU_SRV / CORE_CAP in SYSTEM_CONFIGURATION record</i> ". On an LPAR allocated to a dedicated-mode CPU, "*" is shown.	Numeric	3 for integer, 2 for fraction
CC	Capping status of shared-mode CPU. <ul style="list-style-type: none"> <li>N: Disabled.</li> <li>Y: Enabled.</li> </ul> On an LPAR allocated to a dedicated-mode CPU, "*" is shown.	Character	1
ID	Action on detection of CPU idle state. <ul style="list-style-type: none"> <li>N: Does not allow resources of idle-state CPU to be used by other LPARs.</li> <li>Y: Allows resources of idle-state CPU to be used by other LPARs.</li> </ul>	Character	1
NIC_CAP	Aggregate throughput of NICs usable by this LPAR, derived from the summation of CAPACITY in PHYSICAL_NIC_USAGE record for NICs allocated to this LPAR.	Numeric (Mbps)	6
HBA_CAP	Aggregate throughput of HBAs usable by this LPAR, derived from the summation of CAPACITY in PHYSICAL_HBA_USAGE record for HBAs allocated to this LPAR.	Numeric (Mbps)	6
AFFINITY	List of physical CPUs usable by this LPAR. Not supported on this version. "*" is shown.	Character	32
INFORMATION	OS type in combination of the following factors: <ul style="list-style-type: none"> <li>Windows or Linux</li> <li>32-bit mode or 64-bit mode</li> </ul> Example: "Windows (x86)" or "Linux (x64)" On an LPAR running EFI pre-boot firmware or unknown OS type, "*" is shown.	Character	64

**Table 2-18 SYSTEM\_USAGE\_SUMMARY record**

Field title	Content	Data type	Max. digits
NAME	Resource identifier. <ul style="list-style-type: none"> <li>• CPU: CPU.</li> <li>• MEM: Memory.</li> <li>• NIC: NIC.</li> <li>• HBA: HBA.</li> </ul>	Character	3
CAPACITY	Total amount of resource. <ul style="list-style-type: none"> <li>• CPU: Clock frequency of CPU cores.</li> <li>• MEM: Total memory capacity.</li> <li>• NIC: Total NIC throughput.</li> <li>• HBA: Total HBA throughput.</li> </ul>	Numeric (MHz, MB, or Mbps)	6
USED	Used amount of resource. See (*1), when a resource identifier is HBA.	Numeric (MHz, MB, or Mbps)	6
UNUSED	Unused amount of resource. See (*1), when a resource identifier is HBA.	Numeric (MHz, MB, or Mbps)	6
INSUFF	Insufficient amount of resource. <ul style="list-style-type: none"> <li>• CPU: Clock frequency of CPU, or "999999" when exceeded.</li> <li>• MEM, NIC, and HBA: "*" is shown.</li> </ul>	Numeric (MHz, MB, or Mbps)	6
USED%	Ratio of used resource derived from the formula "USED / CAPACITY". See (*1), when a resource identifier is HBA.	Numeric (%)	3 for integer, 2 for fraction
UNUSED%	Ratio of unused resource (USED% + UNUSED% = 100). See (*1), when a resource identifier is HBA.	Numeric (%)	3 for integer, 2 for fraction
INSUFF%	Ratio of insufficient resource. <ul style="list-style-type: none"> <li>• CPU: Value derived from the formula "INSUFF / CAPACITY", or "999.99" when exceeded.</li> <li>• MEM, NIC, and HBA: "*" is shown.</li> </ul>	Numeric (%)	3 for integer, 2 for fraction

(\*1) When resource identifier is HBA, displays as follows;  
 When exio option is not specified, "\*" is shown.  
 When exio option is specified, USED and UNUSED are shown as follows;  
 • USED: Sum value of the record of "LOGICAL\_HBA\_USAGE: USED". (USED = ΣLOGICAL\_HBA\_USAGE: USED)  
 • UNUSED: CAPACITY-USED  
 "\*" is shown, when all values of "LOGICAL\_HBA\_USAGE:USED" are "\*".

See [HBA statistical support map](#) for the condition to be able to show the values.

If output extension option "excpu" is specified, additional output below is added to above records.

Field Title	Content	Data Type	Max. Digits
COREs_USED	Value of CPU core number which was converted from used CPU resource. (USED / (CORE_CAP of SYSTEM_CONFIGURATION)) MEM, NIC & HBA of NAME: Output as '*'	Numeric	2 for integer, 2 for fraction
COREs_UNUSED	Value of CPU core number which was converted from unused CPU resource. (UNUSED / (CORE_CAP of SYSTEM_CONFIGURATION)) MEM, NIC & HBA of NAME: Output as '*'	Numeric	2 for integer, 2 for fraction
COREs_INSUFF	Value of CPU core number which was converted from insufficient CPU resource. (INSUFF / (CORE_CAP of SYSTEM_CONFIGURATION)) MEM, NIC & HBA of NAME: Output as '*'	Numeric	2 for integer, 2 for fraction
CPUs_USED	Value of physical CPU number which was converted from used CPU resource. (USED / (CORE_CAP of SYSTEM_CONFIGURATION * COREs / CPUs))	Numeric	2 for integer, 2 for fraction
CPUs_UNUSED	Value of physical CPU number which was converted from unused CPU resource. (UNUSED / (CORE_CAP of SYSTEM_CONFIGURATION * COREs / CPUs)) MEM,NIC,HBA: "*" is displayed. HvmSh V5.6 or higher	Numeric	2 for integer, 2 for fraction
CPUs_INSUFF	Value of physical CPU number which was converted from insufficient CPU resource. (INSUFF / (CORE_CAP of SYSTEM_CONFIGURATION * COREs / CPUs)) MEM,NIC,HBA: "*" is displayed. *HvmSh V5.6 or higher	Numeric	2 for integer, 2 for fraction

**Table 2-19 SYSTEM\_CPU\_USAGE record**

Field	Content	Data type	Max. digits
NAME	HVM system identifier (*1). <ul style="list-style-type: none"> <li>• SYS1: HVM system layer for other than shared NIC.</li> <li>• SYS2: HVM system layer for shared NIC.</li> <li>• SHR_LPAR: All LPARs to use shared-mode CPUs.</li> <li>• DED_LPAR: All LPARs to use dedicated-mode CPUs.</li> </ul>	Character	8
COREs	No. of CPU cores usable by HVM system. <ul style="list-style-type: none"> <li>• SYS1: No. of physical CPU cores usable by SYS1 HVM.</li> <li>• SYS2: No. of physical CPU cores usable by SYS2 HVM.</li> <li>• SHR_LPAR: No. of physical CPU cores running in shared mode.</li> <li>• DED_LPAR: No. of physical CPU cores running in dedicated mode.</li> </ul> Not include No. of spare cores for capacity on Demand. Not include No. of degenerated cores.	Character	3
CPUs	No. of CPUs usable by HVM system. <ul style="list-style-type: none"> <li>• SYS1: No. of physical CPUs usable by SYS1 HVM.</li> <li>• SYS2: No. of physical CPUs usable by SYS2 HVM.</li> <li>• SHR_LPAR: No. of physical CPUs running in shared mode.</li> <li>• DED_LPAR: No. of physical CPUs running in dedicated mode.</li> </ul>	Character	3
CAPACITY	Amount of CPU resource used by LPARs. <ul style="list-style-type: none"> <li>• SYS1: "*" is shown.</li> <li>• SYS2: "*" is shown.</li> <li>• SHR_LPAR: Amount of resource used by shared-mode CPU.</li> <li>• DED_LPAR: Amount of resource used by dedicated-mode CPU.</li> </ul>	Numeric	3
USED	Amount of CPU resource used by HVM system.	Numeric (MHz)	6
USED%	Ratio of CPU resource used by HVM system, derived from the formula " <i>USED / CPU_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
USED_COREs	No. of CPU cores for CPU resource used by HVM system, derived from the formula " <i>USED / CORE_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric	2 for integer, 2 for fraction
MODE_USED%	Ratio of CPU resource used by LPARs based on CPU scheduling mode. <ul style="list-style-type: none"> <li>• SYS1: "*" is shown.</li> <li>• SYS2: "*" is shown.</li> <li>• SHR_LPAR: Ratio of resource used by shared-mode CPU, derived from the formula "<i>USED / CAPACITY</i>".</li> <li>• DED_LPAR: Ratio of resource used by dedicated-mode CPU, derived from the formula "<i>USED / CAPACITY</i>".</li> </ul>	Numeric (%)	3 for integer, 2 for fraction

If the Output Extension Option "excpu" is specified on HvmSh Ver 5.6 or higher, the following is outputted in addition to the above.

Field Title	Content	Data Type	Max. Digits
CPUs_USED	Value of physical CPU number which was converted from used CPU resource. (USED / (CORE_CAP of SYSTEM_CONFIGURATION * COREs / CPUs))	Numeric	2 for integer, 2 for fraction

(\*1) When the Output Extension Option "hvm" is specified on HvmSh Ver 7.1 or higher, the output of "SYS2[n](n=0,1...)" as the child process of SYS2 is added.

**Table 2-20 SYSTEM\_MEM\_USAGE record**

Field	Content	Data type	Max. digits
NAME	HVM component identifier. <ul style="list-style-type: none"><li>• SYS: HVM system layer.</li><li>• LPAR: LPAR layer.</li></ul>	Character	8
USED	Amount of memory used.	Numeric (MB)	6
USED%	Ratio of memory used by HVM system, derived from the formula " <i>USED / MEM in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
LPAR_USED%	Ratio of memory used by LPAR. <ul style="list-style-type: none"><li>• SYS: "*" is shown.</li><li>• LPAR: Value derived from the formula "<i>USED / LPAR_MEM in SYSTEM_CONFIGURATION record</i>".</li></ul>	Numeric (%)	3 for integer, 2 for fraction

**Table 2-21 LPAR\_CPU\_USAGE record**

Field	Content	Data type	Max. digits
L#	LPAR No.	Numeric	2
NAME	LPAR name.	Character	31
USED	Amount of CPU resource used by this LPAR.	Numeric (MHz)	6
ROB	Amount of CPU resource-1 for which command execution was disrupted.	Numeric (MHz)	6
DELAY	Amount of CPU resource-2 for which command execution was suspended.	Numeric (MHz)	6
CORES	No. of CPU cores for CPU resource used by this LPAR, derived from the formula " <i>USED / CORE_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric	2 for integer, 2 for fraction
HST_USED%	Used ratio of CPU utilization on the basis of standard ratio for all CPUs, derived from the formula " <i>USED / CPU_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
SHR_USED%	Used ratio of CPU utilization for shared-mode CPUs allocated to this LPAR, derived from the formula " <i>USED / CAPACITY in SHR_LPAR line of SYSTEM_CPU_USAGE record</i> ". On an LPAR allocated to a dedicated-mode CPU, "*" is shown.	Numeric (%)	3 for integer, 2 for fraction
SRV_USED%	Used service ratio of CPU utilization for shared-mode CPUs allocated to this LPAR, derived from the formula " <i>USED / CPU_SRV of applicable LPAR in LPAR_CONFIGURATION record</i> ". On an LPAR allocated to a dedicated-mode CPU, "*" is shown.	Numeric (%)	3 for integer, 2 for fraction
USED%	Used ratio of CPU utilization for CPUs allocated to this LPAR, derived from the formula " <i>USED / CPU_CAP of applicable LPAR in LPAR_CONFIGURATION record</i> ". ( <i>USED% + ROB% + DELAY% + IDLE% + IOW% + NIOW% = 100</i> )	Numeric (%)	3 for integer, 2 for fraction
ROB%	Ratio of CPU resource-1 for which command execution was disrupted, derived from the formula " <i>ROB / CPU_CAP of applicable LPAR in LPAR_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
DELAY%	Ratio of CPU resource-2 for which command execution was suspended, derived from the formula " <i>DELAY / CPU_CAP of applicable LPAR in LPAR_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
IDLE%	Ratio of CPU resource which entered an idle state, derived from the formula " <i>IDLE / CPU_CAP of applicable LPAR in LPAR_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
IOW%	Ratio of CPU resource which entered an I/O wait state, derived from the formula " <i>IOW / CPU_CAP of applicable LPAR in LPAR_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
NIOW%	Ratio of CPU resource which entered a wait state other than I/O wait, derived from the formula " <i>NIOW / CPU_CAP of applicable LPAR in LPAR_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
G_RUN%	Ratio of (virtual) CPU utilization viewed by guest OS, derived from the formula " <i>G_RUN / CPU_CAP of applicable LPAR in LPAR_CONFIGURATION record</i> ". ( <i>G_RUN% + G_IDLE% = 100</i> )	Numeric (%)	3 for integer, 2 for fraction
G_IDLE%	Unused ratio of (virtual) CPU utilization viewed by guest OS.	Numeric (%)	3 for integer, 2 for fraction
OVER%	Ratio of overhead increase due to CPU resource shortage, derived from the formula " <i>(ROB% + DELAY%) / USED%</i> ".	Numeric (%)	3 for integer, 2 for fraction

If output extension option "excpu" is specified, additional output below is added to above records.

Field Title	Content	Data Type	Max. Digits
INSUFF	Total amount of insufficient CPU resource.	Numeric (MHz)	6
INSUFF%	Ratio of insufficient CPU resource derived from the formula " <i>INSUFF/CPU_CAP of applicable LPAR in LPAR_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
HST_INSUFF%	Ratio of insufficient CPU resource derived from the formula " <i>INSUFF/CPU_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
SRV_INSUFF%	Ratio of Insufficient CPU resource. (INSUFF / CPU SRV of SHR_LPAR in SYSTEM_CPU_USAGE) Dedicated CPU is indicated by '*' character on LPAR. (This field is supported by HvmSh Ver. 5.5 or higher)	Numeric (%)	3 for integer, 2 for fraction
COREs_INSUFF%	Ratio of Insufficient CPU resource. (INSUFF / SHR_LPAR of CAPACITY in SYSTEM_CPU_USAGE) (This field is supported by HvmSh Ver. 5.5 or higher)	Numeric	2 for integer, 2 for fraction
CPUs_USED	Value of physical CPU number which was converted from used CPU resource. (USED / (CORE_CAP of SYSTEM_CONFIGURATION * COREs / CPUs) *HvmSh V5.6 or higher	Numeric	2 for integer, 2 for fraction
CPUs_INSUFF	Value of physical CPU number which was converted from insufficient CPU resource. (INSUFF / (CORE_CAP of SYSTEM_CONFIGURATION * COREs / CPUs) *HvmSh V5.6 or higher	Numeric	2 for integer, 2 for fraction
SWITCH	CPU resource used for the process switching. * This is included in "ROB+DELAY".	Numeric (MHz)	6
COREs_VMMODE	The value that converts the needed CPU resource for the VM mode (VMentry to VMexit) into the number of CPU cores (the total value of all "COREs_VMMODE" fields in the "LOGICAL_CPU_DETAIL" record) *HvmSh V7.3 or higher	Numeric	2 for integer, 2 for fraction
CPUs_VMMODE	The value that converts the needed CPU resource for the VM mode (VMentry to VMexit) into the number of CPUs (the total value of all "CPUs_VMMODE" fields in the "LOGICAL_CPU_DETAIL" record) *HvmSh V7.3 or higher	Numeric	2 for integer, 2 for fraction
INT_RUN	CPU resource -3 in suspended state *HvmSh V8.3 or higher * V8.1 or earlier: included in "ROB", V8.3 or higher: independent of "ROB"	Numeric (MHz)	6
INT_RUN%	Ratio of CPU resource -3 in suspended state *HvmSh V8.3 or higher * V8.1 or earlier: included in "ROB", V8.3 or higher: independent of "ROB"	Numeric (%)	3 for integer, 2 for fraction

If [output extension option "hvm"] is specified, additional output below is added to above records.

Field title	Content	Data type	Max. digits
REG0	The statistical information for the HVM internal operation evaluation. REG0 to REG7 are indicated as the number of times for occurrence per second or the value that converts the used CPU resource into the number of physical CPU.	Numeric (times/s)	7
REG1			
REG2			
REG3			
REG4	Note: Data Type of REG0 to REG7 are decided either "Numeric (times/s)" or "Numeric" depending on HVM implementation (or version). For an integer representation (example: 0), an occurrence frequency per second is displayed. For a fixed point representation (example: 0.00), a value that CPU resource of use is converted into number of physical CPU is displayed.	Numeric	2 for integer, 2 for fraction
REG5			
REG6			
REG7			

**Table 2-22 PHYSICAL\_CPU\_USAGE record**

Field	Content	Data type	Max. digits																	
CORE#	CPU core No.	Numeric	3																	
CAPACITY	Amount of CPU resource per CPU core (reference frequency), having the same value as CORE_CAP in SYSTEM_CONFIGURATION record.	Numeric (MHz)	6																	
MODE	<p>Mode for assigning a CPU core.</p> <ul style="list-style-type: none"> <li>S: Shared.</li> <li>D: Dedicated.</li> </ul> <p>When the processor is broken, "*" is shown.</p> <p>Note that the value of this field varies depending on the mode for assigning each thread in the CPU core with SMT enabled in a server blade.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">Mode for assigning each thread in a CPU core</td> <td rowspan="2">Mode for assigning a CPU core</td> </tr> <tr> <td>#0</td> <td>#1</td> </tr> <tr> <td>Dedicated</td> <td>Dedicated</td> <td>Dedicated</td> </tr> <tr> <td>Dedicated</td> <td>Shared</td> <td>Shared</td> </tr> <tr> <td>Shared</td> <td>Dedicated</td> <td>Shared</td> </tr> <tr> <td>Shared</td> <td>Shared</td> <td>Shared</td> </tr> </table>	Mode for assigning each thread in a CPU core		Mode for assigning a CPU core	#0	#1	Dedicated	Dedicated	Dedicated	Dedicated	Shared	Shared	Shared	Dedicated	Shared	Shared	Shared	Shared	Character	1
Mode for assigning each thread in a CPU core		Mode for assigning a CPU core																		
#0	#1																			
Dedicated	Dedicated	Dedicated																		
Dedicated	Shared	Shared																		
Shared	Dedicated	Shared																		
Shared	Shared	Shared																		
USED	Used amount of CPU resource.	Numeric (MHz)	6																	
UNUSED	Unused amount of CPU resource. ( $CAPACITY = USED + UNUSED$ )	Numeric (MHz)	6																	
USED%	Used ratio of CPU resource ( $USED / CAPACITY$ ).	Numeric (%)	3 for integer, 2 for fraction																	
UNUSED%	Unused ratio of CPU resource ( $UNUSED / CAPACITY$ ).	Numeric (%)	3 for integer, 2 for fraction																	
NAME	CPU name that is designated by SMBIOS and may include space characters.	Character	64																	

If [output extension option "excpu"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 5.5 or higher)

Field Title	Content	Data Type	Max. Digits
SYS1_USED	CPU resource which was used by HVM system layer except shared NIC.	Numeric (MHz)	6
SYS2_USED	CPU resource which was used by only shared NIC of HVM system layer.	Numeric (MHz)	6
LPAR_USED	CPU resource which was used by LPARs. (*1)	Numeric (MHz)	6
SYS1_USED%	Used ratio of CPU resource which was used by HVM system layer except shared NIC. ( $SYS1\_USED / CAPACITY$ )	Numeric (%)	3 for integer, 2 for fraction
SYS2_USED%	Used ratio of CPU resource which was used by only shared NIC of HVM system layer. ( $SYS1\_USED / CAPACITY$ )	Numeric (%)	3 for integer, 2 for fraction
LPAR_USED%	Used ratio of CPU resource which was used by LPAR. ( $LPAR\_USED / CAPACITY$ )	Numeric (%)	3 for integer, 2 for fraction
SWITCH	CPU resource used for the process switching.	Numeric	6

	* This is included in SYS1_USED.	(MHz)	
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\*1: '\*' is displayed when using HVM firmware version is 58-60/78-60 or lower (CB 2000) or 17-70 or lower (CB 320).

**Table 2-23 PHYSICAL\_NIC\_USAGE record**

Field	Content	Data type	Max. digits
SID	Installed location of NIC. <ul style="list-style-type: none"> <li>• Gxn: Onboard NIC n of server blade x.</li> <li>• Exn: Mezzanine slot n of server blade x.</li> <li>• n: Riser slot n. ( 0 ≤ n ≤ 15)</li> <li>• ##X: IOBD(IO Board Module) (01≤##≤14, X=Aor B)</li> <li>• Xxn: HVM NIC n of server blade x. (*1)</li> <li>• inn: Slot nn of IO Slot Expansion Unit (i+1) ( 1 ≤ i ≤ 7)                          100 to 115: IO Slot Expansion Unit 0 ( slot 0 through 15)                          200 to 215: IO Slot Expansion Unit 1 ( slot 0 through 15)                          300 to 315: IO Slot Expansion Unit 2 ( slot 0 through 15)                          .....</li> </ul> <b>Note:</b> Contents of this filed not accord to <i>Description of Device Equipped Locations</i> at section <i>Note for HVM Interface</i> of this document. <b>Note:</b> For CB2000, CB500, and CB320, server blade number x is decimal digit. For CB2500, server blade number x is hexadecimal (1 to 9, A to F).	Character	3
P#	NIC port No. (0 through 7).	Numeric	1
CAPACITY	Maximum throughput of NIC (dependent on NIC type). (*4)	Numeric (Mbps)	6
MODE	Mode of NIC allocation. S: Shared. D: Dedicated. 'D' is always outputted to NICs of HVM. (*2)	Character	1
USED	Used amount of NIC for transmitting and receiving. For NIC in dedicated mode, "*" is shown. (*4)	Numeric (Mbps)	6
UNUSED	Unused amount of NIC for transmitting and receiving (CAPACITY – USED). For NIC in dedicated mode, "*" is shown.	Numeric (Mbps)	6
USED%	Used ratio of NIC for transmitting and receiving (USED / CAPACITY). For NIC in dedicated mode, "*" is shown. (*4)	Numeric (%)	3 for integer, 2 for fraction
UNUSED%	Unused ratio of NIC in shared mode (100 – USED%). For NIC in dedicated mode, "*" is shown.	Numeric (%)	3 for integer, 2 for fraction
REQ	No. of activations per second. "*" is always shown.	Numeric (times/s)	7
INT	No. of interrupts per second.	Numeric (times/s)	7
R_BYTE	No. of bytes received by NIC in shared mode per second. For NIC in dedicated mode, "*" is shown.	Numeric (KB/s)	7
S_BYTE	No. of bytes sent by NIC in shared mode per second. For NIC in dedicated mode, "*" is shown.	Numeric (KB/s)	7
T_BYTE	No. of bytes sent and received by NIC in shared mode per second. For NIC in dedicated mode, "*" is shown.	Numeric (KB/s)	7
R_PACKET	No. of packets received by NIC in shared mode per second. For NIC in dedicated mode, "*" is shown.	Numeric (packets/s)	7
S_PACKET	No. of packets sent by NIC in shared mode per second. For NIC in dedicated mode, "*" is shown.	Numeric (packets/s)	7
T_PACKET	No. of packets sent and received by NIC in shared mode per second. (T_PACKET=R_PACKET+S_PACKET) For NIC in dedicated mode, "*" is shown.	Numeric (packets/s)	7
NAME	NIC name (same as that displayed on HVM screen).	Character	31

If [output extension option "exio"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 5.5 or higher)

Field Title	Content	Data Type	Max. Digits
Location	Equipped location of NICs  For details, see <a href="#">Description Format for Device Location</a> .	Character	6
PCI_SEG	Segment number of Config address (Hex-decimal) (*3)	Numeric	2
PCI_BUS	Bus number of Config address (Hex-decimal) (*3)	Numeric	2
PCI_DEV	Device number of Config address (Hex-decimal) (*3)	Numeric	2
PCI_FNC	Function number of Config address (Hex-decimal) (*3)	Numeric	1

If [output extension option "exio"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 6.1 or higher)

Field Title	Content	Data Type	Max. Digits
R_USED	Used amount of NIC for receiving. For NIC in dedicated mode, "*" is shown.	Numeric (Mbps)	6
S_USED	Used amount of NIC for transmitting. For NIC in dedicated mode, "*" is shown.	Numeric (Mbps)	6
R_USED%	Used ratio of NIC for receiving. (USED / CAPACITY) For NIC in dedicated mode, "*" is shown.	Numeric (%)	3 for integer, 2 for fraction
S_USED%	Used ratio of NIC for transmitting. (USED / CAPACITY) For NIC in dedicated mode, "*" is shown.	Numeric (%)	3 for integer, 2 for fraction

- \*1: 'Xnn' indicates management LAN which is only equipped on CB 2000. The management LAN is used by SVP, SC/BSM and HvmSh for communicating to HVM.
- \*2: '\*' is also displayed on NIC of HVM like as dedicated NIC of each field.
- \*3: Those are same as PHYSICAL\_IO\_CONFIGURATION record of output which is outputted by executing "get ConfigAll" command.  
And, when the hvm option is specified on HvmSh Ver5.6 or higher, a numerical value is displayed to NIC of HVM as well.
- \*4: NIC maximum transfer rate (CAPACITY) is indicated maximum transfer rate of transmitting or receiving. NIC usage (USED) or NIC usage percentage (USED%) is indicated totaled usage or totaled usage percentage of transmitting or receiving. Therefore, NIC usage (USED) exceeds CAPACITY, and NIC usage percentage (USED%) may exceed 100%. In that case, UNUSED and UNUSED% are indicated by "0".

**Table 2-24 PHYSICAL\_HBA\_USAGE record**

Field	Content	Data type	Max. digits
SID	<p>Installed location of HBA.</p> <ul style="list-style-type: none"> <li>• Exn: Mezzanine slot n of server blade x.</li> <li>• n: Riser slot n. ( <math>0 \leq n \leq 15</math> )</li> <li>• ##X: IOBD(IO Board Module) (<math>01 \leq ## \leq 14</math>, X=A or B)</li> <li>• inn: Slot nn of IO Slot Expansion Unit (i+1) ( <math>1 \leq i \leq 7</math> )            100 to 115: IO Slot Expansion Unit 0 ( slot 0 through 15)            200 to 215: IO Slot Expansion Unit 1 ( slot 0 through 15)            300 to 315: IO Slot Expansion Unit 2 ( slot 0 through 15)</li> </ul> <p>.....</p> <p><b>Note:</b> Contents of this field not accord to <i>Description of Device Equipped Locations</i> at section <i>Note for HVM Interface</i> of this document.</p> <p><b>Note:</b> For CB2000, CB500, and CB320, server blade number x is decimal digit. For CB2500, server blade number x is hexadecimal (1 to 9, A to F).</p>	Character	3
P#	HBA port No. (0 through 3).	Numeric	1
CAPACITY	Maximum throughput of HBA (dependent on HBA type).	Numeric (Mbps)	6
MODE	<p>Mode of HBA allocation.</p> <ul style="list-style-type: none"> <li>• S: Shared.</li> <li>• D: Dedicated.</li> </ul>	Character	1
USED	Used amount of HBA. *2	Numeric (Mbps)	6
UNUSED	Unused amount of HBA ( $CAPACITY - USED$ ). *2	Numeric (Mbps)	6
USED%	Used ratio of HBA ( $USED / CAPACITY$ ). *2	Numeric (%)	3 for integer, 2 for fraction
UNUSED%	Unused ratio of HBA ( $100 - USED\%$ ). *2	Numeric (%)	3 for integer, 2 for fraction
REQ	No. of activations per second. "*" is always shown.	Numeric (times/s)	7
INT	No. of interrupts per second.	Numeric (times/s)	7
R_BYTE	No. of bytes read per second. *2	Numeric (KB/s)	7
W_BYTE	No. of bytes written per second. *2	Numeric (KB/s)	7
T_BYTE	No. of bytes read and written per second. *2	Numeric (KB/s)	7
R_FRAME	No. of frames read per second. *2	Numeric (frames/s)	7
W_FRAME	No. of frames written per second. *2	Numeric (frames/s)	7
T_FRAME	No. of frames read and written per second. *2	Numeric (frames/s)	7
NAME	HBA name (same as that displayed on HVM screen).	Character	31

If [output extension option "exio"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 5.5 or higher)

Field Title	Content	Data Type	Max. Digits
Location	Equipped location of NICs For details, see <a href="#">Description Format for Device Location</a> .	Character	6
PCI_SEG	Segment number of Config address (Hex-decimal) (*1)	Numeric	2
PCI_BUS	Bus number of Config address (Hex-decimal) (*1)	Numeric	2
PCI_DEV	Device number of Config address (Hex-decimal) (*1)	Numeric	2
PCI_FNC	Function number of Config address (Hex-decimal) (*1)	Numeric	1

\*1: Those are same as PHYSICAL\_IO\_CONFIGURATION record of output which is outputted by executing "get ConfigAll" command.

\*2: When exio option is not specified, "\*" is displayed.

When exio option is specified, the each sum value of the target field in the record "LOGICAL\_HBA\_USAGE" is displayed.

"\*" is displayed, when all values of the target field in "LOGICAL\_HBA\_USAGE" are "\*".

See [HBA statistical support map](#) for the condition to be able to show the values.

**Table 2-25 LOGICAL\_CPU\_USAGE record**

Field	Content	Data type	Max. digits
L#	LPAR No.	Numeric	2
NAME	LPAR name.	Character	31
CPU#	Logical CPU No.	Numeric	2
USED	Used amount of CPU resource.	Numeric (MHz)	6
ROB	Amount of CPU resource-1 for which command execution was disrupted (lacking amount of resource).	Numeric (MHz)	6
DELAY	Amount of CPU resource-2 for which command execution was suspended (lacking amount of resource).	Numeric (MHz)	6
IDLE	Amount of CPU resource which entered an idle state (unused amount of resource)	Numeric (MHz)	6
IOW	Amount of CPU resource which entered an I/O wait state.	Numeric (MHz)	6
NIOW	Amount of CPU resource which entered a wait state other than I/O wait.	Numeric (MHz)	6
G_RUN	Amount of (virtual) CPU utilization viewed by guest OS ( <i>USED + ROB</i> ).	Numeric (MHz)	6
USED%	Used ratio of CPU resource, derived from the formula " <i>USED / CORE_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
ROB%	Ratio of CPU resource-1 for which command execution was disrupted, derived from the formula " <i>ROB / CORE_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
DELAY%	Ratio of CPU resource-2 for which command execution was suspended, derived from the formula " <i>DELAY / CORE_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
IDLE%	Ratio of CPU resource which entered an idle state, derived from the formula " <i>IDLE / CORE_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
IOW%	Ratio of CPU resource which entered an I/O wait state, derived from the formula " <i>IOW / CORE_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
NIOW%	Ratio of CPU resource which entered a wait state other than I/O wait, derived from the formula " <i>NIOW / CORE_CAP in SYSTEM_CONFIGURATION record</i> ".	Numeric (%)	3 for integer, 2 for fraction
G_RUN%	Ratio of (virtual) CPU utilization viewed by guest OS, derived from the formula " <i>G_RUN / CORE_CAP in SYSTEM_CONFIGURATION record</i> ". ( <i>G_RUN%</i> + <i>G_IDLE%</i> = 100)	Numeric (%)	3 for integer, 2 for fraction
G_IDLE%	Unused ratio of (virtual) CPU utilization viewed by guest OS.	Numeric (%)	3 for integer, 2 for fraction
OVER%	Ratio of overhead increase due to CPU resource shortage, derived from the formula " <i>(ROB% + DELAY%) / USED%</i> ".	Numeric (%)	3 for integer, 2 for fraction

When the expansion option "excpu" is specified, adds the following display to the above.

SWITCH	CPU resource used for the process switching. * This is included in (ROB+DELAY).	Numeric (MHz)	6
INT_RUN	CPU resource -3 in suspended state *HvmSh V8.3 or higher * V8.1 or earlier: included in "ROB", V8.3 or higher: independent of "ROB"	Numeric (MHz)	6
INT_RUN%	Ratio of CPU resource -3 in suspended state *HvmSh V8.3 or higher * V8.1 or earlier: included in "ROB", V8.3 or higher: independent of "ROB"	Numeric (%)	3 for integer, 2 for fraction
L_CPU_CAP	Logical CPU resource For SMT Enable: (CORE_CAP of SYSTEM_CONFIGURATION / 2) For SMT Disable: (CORE_CAP of SYSTEM_CONFIGURATION)	Numeric (MHz)	6

**Table 2-26 LOGICAL\_NIC\_USAGE record**

Field	Content	Data type	Max. digits
L#	LPAR No.	Numeric	2
NAME	LPAR name.	Character	31
SID	<p>Installed location of NIC.</p> <ul style="list-style-type: none"> <li>• Gxn: Onboard NIC n of server blade x.</li> <li>• Exn: Mezzanine slot n of server blade x.</li> <li>• n: Riser slot n. ( 0 ≤ n ≤ 15)</li> <li>• ##X: IOBD(IO Board Module) (01≤##≤14, X=Aor B)</li> <li>• inn: Slot nn of IO Slot Expansion Unit (i+1) ( 1 ≤ i ≤ 7)            100 to 115: IO Slot Expansion Unit 0 ( slot 0 through 15)            200 to 215: IO Slot Expansion Unit 1 ( slot 0 through 15)            300 to 315: IO Slot Expansion Unit 2 ( slot 0 through 15)            .....</li> </ul> <p><b>Note:</b> Contents of this filed not accord to <i>Description of Device Equipped Locations</i> at section <i>Note for HVM Interface</i> of this document.</p> <p><b>Note:</b> For CB2000, CB500, and CB320, server blade number x is decimal digit. For CB2500, server blade number x is hexadecimal (1 to 9, A to F).</p>	Character	3
P#	NIC port No. (0 through 3).	Numeric	1
USED (*1)	Used amount of NIC. (*2)	Numeric (Mbps)	6
USED% (*1)	Used ratio of NIC ( <i>USED / CAPACITY</i> in <i>PHYSICAL_NIC_USAGE</i> record). (*2)	Numeric (%)	3 for integer, 2 for fraction
REQ (*1)	No. of activations per second. For LPAR allocated to CPU in dedicated mode, "*" is shown.	Numeric (times/s)	7
INT (*1)	No. of interrupts per second.	Numeric (times/s)	7
R_BYTE (*1)	No. of bytes received per second.	Numeric (KB/s)	7
S_BYTE (*1)	No. of bytes sent per second.	Numeric (KB/s)	7
T_BYTE (*1)	No. of bytes sent and received per second. ( <i>T_BYTE = R_BYTE + S_BYTE</i> )	Numeric (KB/s)	7
R_PACKET (*1)	No. of packets received per second.	Numeric (packets/s)	7
S_PACKET (*1)	No. of packets sent per second.	Numeric (packets/s)	7
T_PACKET (*1)	No. of packets sent and received per second. ( <i>T_PACKET = R_PACKET + S_PACKET</i> )	Numeric (packets/s)	7
TIME1 (*1)	Average I/O transaction time1 in microseconds or 999999.99 if in excess of 1 second.	Numeric (microseconds)	6 for integer, 2 for fraction
TIME2 (*1)	Average I/O transaction time2 in microseconds or 999999.99 if in excess of 1 second.	Numeric (microseconds)	6 for integer, 2 for fraction

\*1: When duplicate assigning of shared NIC is performed, values of each field are sum of logical NICs on LPAR. Specify 'exio' option for outputting values per logical NICs.

When specifying 'exio' option, following field is added to the record above. (Those are supported by HvmSh Ver. 5.5 or higher)

\*2: NIC maximum transfer rate (CAPACITY) is indicated maximum transfer rate of transmitting or receiving. NIC usage (USED) or NIC usage percentage (USED%) is indicated totaled usage or totaled usage percentage of transmitting or receiving. Therefore, NIC usage (USED) exceeds CAPACITY, and NIC usage percentage (USED%) may exceed 100%. In that case, UNUSED and UNUSED% are indicated by "0".

Field Title	Content	Data type	Max. digits
VNIC#	Virtual NIC No. If duplicate assigning of shared NICs is not supported, "*" appears.	Numeric	2

If [output extension option "exio"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 8.1 or higher).

Field Title	Content	Data type	Max. digits
R_USED	Used amount of NIC for receiving. For NIC in dedicated mode, "*" is shown.	Numeric (Mbps)	6
S_USED	Used amount of NIC for transmitting. For NIC in dedicated mode, "*" is shown.	Numeric (Mbps)	6
R_USED%	Used ratio of NIC for receiving. (USED / CAPACITY) For NIC in dedicated mode, "*" is shown.	Numeric (%)	3 for integer, 2 for fraction
S_USED%	Used ratio of NIC for transmitting. For NIC in dedicated mode, "*" is shown.	Numeric (%)	3 for integer, 2 for fraction

If [output extension option "exio"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 8.3 or higher).

TIME_CNT	I/O operation times for "TIME1" and "TIME2" * TIME1 = I/O operation time1 / TIME_CNT * TIME1 = I/O operation time2 / TIME_CNT * The same as CB2000 59-7x/79-7x or earlier, CB500 01-84 or earlier.	Numeric (times/s)	7
Location	Equipped location of NICs For details, see <a href="#">Description Format for Device Location</a> .	Character	6

**Table 2-27 LOGICAL\_HBA\_USAGE record**

Field	Content	Data type	Max. digits
L#	LPAR No.	Numeric	2
NAME	LPAR name.	Character	31
SID	<p>Installed location of HBA.</p> <ul style="list-style-type: none"> <li>• Exn: Mezzanine slot n of server blade x.</li> <li>• n: Riser slot n. ( 0 ≤ n ≤ 15)</li> <li>• ##X: IOBD(IO Board Module) (01≤##≤14, X=Aor B)</li> <li>• inn: Slot nn of IO Slot Expansion Unit (i+1) ( 1 ≤ i ≤ 7)            100 to 115: IO Slot Expansion Unit 0 ( slot 0 through 15)            200 to 215: IO Slot Expansion Unit 1 ( slot 0 through 15)            300 to 315: IO Slot Expansion Unit 2 ( slot 0 through 15)</li> </ul> <p>.....</p> <p><b>Note:</b> Contents of this filed not accord to <i>Description of Device Equipped Locations</i> at section <i>Note for HVM Interface</i> of this document.</p> <p><b>Note:</b> For CB2000, CB500, and CB320, server blade number x is decimal digit. For CB2500, server blade number x is hexadecimal (1 to 9, A to F).</p>	Character	3
P#	HBA port No. (0 through 3).	Numeric	1
USED	Used amount of HBA. *1	Numeric (Mbps)	6
USED%	Used ratio of HBA ( <i>USED / CAPACITY in PHYSICAL_HBA_USAGE record</i> ). *1	Numeric (%)	3 for integer, 2 for fraction
REQ	No. of activations per second. *1	Numeric (times/s)	7
INT	No. of interrupts per second.	Numeric (times/s)	7
R_BYTE	No. of bytes read per second. *1	Numeric (KB/s)	7
W_BYTE	No. of bytes written per second. *1	Numeric (KB/s)	7
T_BYTE	No. of bytes read and written per second. *1 ( <i>T_BYTE = R_BYTE + W_BYTE</i> )	Numeric (KB/s)	7
R_FRAME	No. of frames read per second. *1	Numeric (frames/s)	7
W_FRAME	No. of frames written per second. *1	Numeric (frames/s)	7
T_FRAME	No. of frames read and written per second. *1 ( <i>T_FRAME = R_FRAME + W_FRAME</i> )	Numeric (frames/s)	7
TIME1	Average I/O transaction time1 in microseconds or 999999.99 if in excess of 1 second.	Numeric (microseconds)	6 for integer, 2 for fraction
TIME2	Average I/O transaction time2 in microseconds or 999999.99 if in excess of 1 second.	Numeric (microseconds)	6 for integer, 2 for fraction

In addition to the above, the following is displayed when exio option is specified.  
(HvmSh V6.4 or higher)

DRV_STAT E	<p>Hexadecimal data which shows the status about getting HBA driver statistical information.</p> <p>This information is for cooperating with HVM Navigator.</p>	Numeric (Hexadecimal number)	4
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If [output extension option "exio"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 8.3 or higher).

TIME_CNT	<p>I/O operation times for "TIME1" and "TIME2"</p> <ul style="list-style-type: none"> <li>* TIME1 = I/O operation time1 / TIME_CNT</li> <li>* TIME1 = I/O operation time2 / TIME_CNT</li> <li>* The same as CB2000 59-7x/79-7x or earlier, CB500 01-84 or earlier.</li> </ul>	Numeric (times/s)	7
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Location	Equipped location of NICs For details, see <a href="#">Description Format for Device Location</a> .	Character	6
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(\*1) When the HBA driver in whom HVM supported statistical information has been operated and HVM FW is in the version which supported the HBA statistical information, appropriate value will be displayed. Otherwise, "\*" is displayed.

See the support map below.

**Table 2-28 HBA statistical support map**

HvmSh version	exio option	HVM version	HBA driver version	Statistics information display
Ver.6.0 or lower	invalid specification	All versions	All versions	*
Ver.6.4 or higher	Not specified	All versions	All versions	*
	specified	CB2000 58-xx or lower /78-xx or lower CB320 17-85 or lower	All versions	*
		CB2000 59-00 or higher /79-00 or higher CB320 18-86 or higher CB500 01-00 or higher CB2500 02-00 or higher	except below	*
		Windows: x.y.6.840 or higher RHEL5: x.5.16.1268 or higher RHEL6: x.6.17.2092 or higher	Numeric	

**Table 2-29 PHYSICAL\_CPU\_DETAIL record**

Field	Content	Data type	Max. digits
CPU#	CPU No. The value depends on whether SMT (simultaneous multithreading) is enabled or not. <ul style="list-style-type: none"> <li>When SMT is enabled: Sequence No. of threads.</li> <li>When SMT is disabled: Sequence No. of cores.</li> </ul>	Numeric	3
CORE#	CPU core No.	Numeric	3
I_ALL	Frequency of all interrupt events to CPU ( $I\_ALL = I\_NIC + I\_HBA + I\_USB + I\_IPI + I\_TIM + I\_OTH$ ).	Numeric (times/s)	6
I_NIC	Frequency of NIC interrupt event to CPU.	Numeric (times/s)	6
I_HBA	Frequency of HBA interrupt event to CPU.	Numeric (times/s)	6
I_USB	Frequency of USB interrupt event to CPU. "*" is always shown.	Numeric (times/s)	6
I_IPI	Frequency of IPI interrupt event to CPU.	Numeric (times/s)	6
I_TIM	Frequency of timer interrupt event to CPU.	Numeric (times/s)	6
I_OTH	Frequency of other device interrupt events to CPU.	Numeric (times/s)	6
I_USED	Amount of CPU resource used for interrupt event handling.	Numeric (MHz)	6
I_USED%	Ratio of CPU resource used for interrupt handling ( $I\_USED / CORE\_CAP$ in <i>SYSTEM_CONFIGURATION</i> record).	Numeric (%)	3 for integer, 2 for fraction

If [output extension option "excpu"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 5.5 or higher)

Field	Content	Data type	Max. digits
CAPACITY	Resource of CPU core. Case of SMT is Enabled: 1/2 Value of CORE_CAP field on SYSTEM_CONFIGURATION Case of SMT is Disabled: Value of CORE_CAP field on SYSTEM_CONFIGURATION	Numeric (MHz)	6
MODE	Assigning mode of CPU core S: Shared D: Dedicated *: Processor failure	Character	1
USED	Used CPU resource	Numeric (MHz)	6
USED%	Used ratio of CPU resource (USED / CAPACITY)	Numeric (%)	3 for integer, 2 for fraction
PTHD_USED (*1)	Case of SMT is Disabled or is not supported by HVM: 0 Case of SMT is Enabled: Used CPU resource which is used by the other thread of a same core.	Numeric (MHz)	6
PTHD_USED% (*1)	Case of SMT is Disabled or is not supported by HVM: 0 Case of SMT is Enabled: PTHD_USED / CAPACITY	Numeric (%)	3 for integer, 2 for fraction
SYS1_USED (*1)	CPU resource which was used by HVM system layer except shared NIC.	Numeric (MHz)	6
SYS2_USED (*1)	CPU resource which was used by only shared NIC of HVM system layer.	Numeric (MHz)	6
LPAR_USED (*1)	CPU resource which was used by LPARs.	Numeric (MHz)	6
SYS1_USED% (*1)	Used ratio of CPU resource which was used by HVM system layer except shared NIC. (SYS1_USED / CAPACITY)	Numeric (%)	3 for integer, 2 for fraction
SYS2_USED% (*1)	Used ratio of CPU resource which was used by only shared NIC of HVM system layer. (SYS1_USED / CAPACITY)	Numeric (%)	3 for integer, 2 for fraction
LPAR_USED% (*1)	Used ratio of CPU resource which was used by LPAR. (LPAR_USED / CAPACITY)	Numeric (%)	3 for integer, 2 for fraction

\*1: '\*' is displayed when using HVM firmware version is 58-60/78-60 or lower (CB 2000) or 17-70 or lower (CB 320).

**Table 2-30 LOGICAL\_CPU\_DETAIL record**

Field	Content	Data type	Max. digits
L#	LPAR No.	Numeric	2
NAME	LPAR name.	Character	31
CPU#	Logical CPU No.	Numeric	2
X_ALL (*2)	Frequency of all HVM events to logical CPU	Numeric (times/s)	7
X_MM1	Frequency of MMIO1 HVM event to logical CPU.	Numeric (times/s)	7
X_MM2	Frequency of MMIO2 HVM event to logical CPU.	Numeric (times/s)	7
X_MM3	Frequency of MMIO3 HVM event to logical CPU.	Numeric (times/s)	7
X_IOP	Frequency of I/O Port HVM event to logical CPU.	Numeric (times/s)	7
X_IPI	Frequency of IPI HVM event to logical CPU.	Numeric (times/s)	7
X_EXTG	Frequency of Guest EX HVM event to logical CPU.	Numeric (times/s)	7
X_EXTH	Frequency of Host Ex HVM event to logical CPU.	Numeric (times/s)	7
X_HALT1	Frequency of HALT1 HVM event to logical CPU.	Numeric (times/s)	7
X_HALT2	Frequency of HALT2 HVM event to logical CPU.	Numeric (times/s)	7
X_OTH (*3)	Frequency of other HVM events to logical CPU.	Numeric (times/s)	7
X_USED	Amount of CPU resource used for HVM event handling.	Numeric (MHz)	6
X_USED%	Ratio of CPU resource used for interrupt handling ( $X\_USED /$ Logical CPU resource (*1)).	Numeric (%)	3 for integer, 2 for fraction

\*1: Logical CPU resource

For SMT Enable: CORE\_CAP in SYSTEM\_CONFIGURATION/ 2

For SMT Disable: CORE\_CAP in SYSTEM\_CONFIGURATION

\*2: If *excpu* option is specified, *X\_ALL* indicates below:

[HvmSh Ver. 7.2 or lower]

$X\_ALL = X\_MM1 + X\_MM2 + X\_MM3 + X\_IOP + X\_IPI + X\_EXTG + X\_EXTH + X\_HALT + X\_OTH + X\_CPUID + X\_EXCEPT$

[HvmSh Ver. 7.3 or higher]

$X\_ALL = X\_MM1 + X\_MM2 + X\_MM3 + X\_IOP + X\_IPI + X\_EXTG + X\_HALT + X\_OTH + X\_CPUID + X\_EXCEPT + X\_EXTINT + X\_MSR + X\_VMCALL + X\_VMX + X\_EPT$

\*3: If *excpu* option is not specified, *X\_OTH* indicates the frequency including

( $X\_CPUID + X\_EXCEPT + X\_EXTINT + X\_MSR + X\_VMCALL + X\_VMX + X\_EPT$ ).

If [output extension option "excpu"] is specified, following output is added after *X\_OTH* to the above.

(*X\_EXTINT* to *X\_EPT* are supported by HvmSh Ver. 7.3 or higher)

Field	Content	Data type	Max. digits
X_CPUID	Frequency of CPUID HVM event to logical CPU.	Numeric (times/s)	7
X_EXCEPT	Frequency of program exception HVM event to logical CPU.	Numeric (times/s)	7
X_EXTINT	Frequency of external interrupt HVM event to logical CPU.	Numeric (times/s)	7
X_MSR	Frequency of RDMSR/WRMSR instruction HVM event to logical CPU.	Numeric (times/s)	7
X_VMCALL	Frequency of VMCALL instruction HVM event to logical CPU.	Numeric (times/s)	7
X_VMX	Frequency of VMX instruction except VMCALL instruction HVM event to logical CPU.	Numeric (times/s)	7

X_EPT	Frequency of Page Walk of a guest EPT HVM event to logical CPU.	Numeric (times/s)	7
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If [output extension option "excpu"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 5.5 or higher)

Field	Content	Data type	Max. digits
X_RUN1	Value1 of logical CPU operation (only for analysis of performance).	Numeric (ms/s)	4
X_RUN2	Value2 of logical CPU operation (only for analysis of performance).	Numeric (count/s)	7
X_RUN3	Value3 of logical CPU operation (only for analysis of performance).	Numeric (us)	7
COREs_VMM ODE	The value that converts the needed CPU resource for the VM mode (VMentry to VMexit) into the number of CPU cores. HvmSh Ver.7.3 or higher	Numeric	2 for integer, 2 for fraction
CPUs_VMM ODE	The value that converts the needed CPU resource for the VM mode (VMentry to VMexit) into the number of CPUs. HvmSh Ver.7.3 or higher	Numeric	2 for integer, 2 for fraction

**Table 2-31 GROUP\_USAGE record**

Field	Content	Data type	Max. digits
GROUP#	Processor group No.	Numeric	3
GRP NAME	Processor group name.	Character	31
DED CORE	No. of cores on dedicated mode in the group. (*1)	Numeric	3
SHR CORE	No. of cores on shared mode in the group. (*1)	Numeric	3
GRP CAP	CPU resource of the group. ( <i>CORE CAP X of SYSTEM CONFIGURATION(DED CORE + SHR CORE)</i> )	Numeric (MHz)	6
USED	Used group resource.	Numeric (MHz)	6
UNUSED	Unused group resource. ( <i>GRP CAP=USED + UNUSED</i> )	Numeric (MHz)	6
INSUFF	Insufficient group resource. Indicates 999999 if exceed 999999.	Numeric (MHz)	6
USED%	Used ratio of group resource. ( <i>USED/GRP CAP</i> )	Numeric (%)	3 for integer, 2 for fraction
UNUSED%	Unused ratio of group resource. ( <i>UNUSED/GRP CAP</i> )	Numeric (%)	3 for integer, 2 for fraction
HST USED%	Used ratio of group resource based on entire system. ( <i>USED/CPU CAP in SYSTEM CONFIGURATION</i> )	Numeric (%)	3 for integer, 2 for fraction
INSUFF%	Insufficient ratio of group resource. ( <i>INSUFF/GRP CAP</i> )	Numeric (%)	3 for integer, 2 for fraction
HST INSUFF%	Insufficient ratio of group resource based on entire system. ( <i>INSUFF/CPU CAP in SYSTEM CONFIGURATION</i> )	Numeric (%)	3 for integer, 2 for fraction

No record is displayed for undefined processor group.

\*1: If allocating threads of same CPU core to different mode (Shared/Dedicated) on SMT Enable status, the core is treated as shared according to MODE in *PHYSICAL\_CPU\_USAGE* record and it is counted as SHR CORE.

If [output extension option "excpu"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 5.5 or higher)

Field	Content	Data type	Max. digits
SYS1_USED (*1)	CPU resource which was used by HVM system layer except shared NIC.	Numeric (MHz)	6
SYS2_USED (*1)	CPU resource which was used by only shared NIC of HVM system layer.	Numeric (MHz)	6
LPAR_USED (*1)	CPU resource which was used by LPARs.	Numeric (MHz)	6
SYS1_USED% (*1)	Used ratio of CPU resource which was used by HVM system layer except shared NIC. (SYS1_USED / CAPACITY)	Numeric (%)	3 for integer, 2 for fraction
SYS2_USED% (*1)	Used ratio of CPU resource which was used by only shared NIC of HVM system layer. (SYS1_USED / CAPACITY)	Numeric (%)	3 for integer, 2 for fraction
LPAR_USED% (*1)	Used ratio of CPU resource which was used by LPAR. (LPAR_USED / CAPACITY)	Numeric (%)	3 for integer, 2 for fraction

\*1: '\*' is displayed when using HVM firmware version is 58-60/78-60 or lower (CB 2000) or 17-70 or lower (CB 320).

When output extension option "excpu" is specified to HvmSh version 6.4 or higher, the following outputs are added to above.

Field	Content	Data type	Max. digits
COREs_USED	The number of the CPU cores converted from the used group resource. {USED / (CORE_CAP in SYSTEM_CONFIGURATION ) }	Numeric	2 for integer, 2 for fraction
CPUs_USED	The number of the physical CPUs converted from the used group resource. {USED / (CORE_CAP in SYSTEM_CONFIGURATION ×COREs / CPUs )}	Numeric	2 for integer, 2 for fraction

When output extension option "excpu" is specified to HvmSh version 7.1 or higher, the following outputs are added to above.

Field Title	Content	Data Type	Max. Digits
COREs_INSUFF	The number of the CPU cores converted from the insufficient group resource. {INSUFF / (CORE_CAP in SYSTEM_CONFIGURATION ) }	Numeric	2 for integer, 2 for fraction
CPUs_INSUFF	The number of the physical CPUs converted from the insufficient group resource. { INSUFF / (CORE_CAP in SYSTEM_CONFIGURATION ×COREs / CPUs )}	Numeric	2 for integer, 2 for fraction

**Table 2-32 PHYSICAL\_CPU\_GROUP\_USAGE record**

Field	Content	Data type	Max. digits
GROUP#	Processor group No.	Numeric	3
GRP NAME	Processor group name.	Character	31
CORE#	CPU core No. (Same value as CORE# in PHYSICAL_CPU_USAGE record)	Numeric	3
CAPACITY	Amount of CPU resource per CPU core, having the same value as CAPACITY in PHYSICAL_CPU_USAGE record.	Numeric (MHz)	6
MODE	Mode of CPU core allocation (Same value as MODE in PHYSICAL_CPU_USAGE record)	Character	1
USED	Used amount of CPU resource. (Same value as USED in PHYSICAL_CPU_USAGE record)	Numeric (MHz)	6
UNUSED	Unused amount of CPU resource. (Same value as UNUSED in PHYSICAL_CPU_USAGE record) ( $CAPACITY=USED + UNUSED$ )	Numeric (MHz)	6
GRP USED%	Used ratio of CPU resource based on group CPU resource. ( $USED/GRP\ CAP$ in <i>GROUP_USAGE</i> )	Numeric (%)	3 for integer, 2 for fraction
GRP UNUSED%	Unused ratio of CPU resource based on group CPU resource. ( $UNUSED/GRP\ CAP$ in <i>GROUP_USAGE</i> )	Numeric (%)	3 for integer, 2 for fraction
HST USED%	Used ratio of CPU resource based on entire system. ( $USED/CPU\ CAP$ in <i>SYSTEM CONFIGURATION</i> )	Numeric (%)	3 for integer, 2 for fraction

If [output extension option "excpu"] is specified, additional output below is added to above records.

(Those are supported by HvmSh Ver. 5.5 or higher)

Field	Content	Data type	Max. digits
SYS1_USED (*1)	CPU resource which was used by HVM system layer except shared NIC.	Numeric (MHz)	6
SYS2_USED (*1)	CPU resource which was used by only shared NIC of HVM system layer.	Numeric (MHz)	6
LPAR_USED (*1)	CPU resource which was used by LPARs.	Numeric (MHz)	6
SYS1_USED% (*1)	Used ratio of CPU resource which was used by HVM system layer except shared NIC. ( $SYS1\_USED / CAPACITY$ )	Numeric (%)	3 for integer, 2 for fraction
SYS2_USED% (*1)	Used ratio of CPU resource which was used by only shared NIC of HVM system layer. ( $SYS1\_USED / CAPACITY$ )	Numeric (%)	3 for integer, 2 for fraction
LPAR_USED% (*1)	Used ratio of CPU resource which was used by LPAR. ( $LPAR\_USED / CAPACITY$ )	Numeric (%)	3 for integer, 2 for fraction

\*1: '\*' is displayed when using HVM firmware version is 58-60/78-60 or lower (CB 2000) or 17-70 or lower (CB 320).

When output extension option "excpu" is specified to HvmSh version 6.4 or higher, the following outputs are added to above.

Field	Content	Data type	Max. digits
COREs_USED	The number of the CPU cores converted from the used group resource. {USED / (CORE_CAP in SYSTEM_CONFIGURATION ) }	Numeric	2 for integer, 2 for fraction
CPUs_USED	The number of the physical CPUs converted from the used group resource. {USED / (CORE_CAP in SYSTEM_CONFIGURATION ×COREs / CPUs )}	Numeric	2 for integer, 2 for fraction

**Table 2-33 LPAR\_CPU\_GROUP\_USAGE record**

Field	Content	Data type	Max. digits
GROUP#	Processor group No.	Numeric	3
GRP NAME	Processor group name.	Character	31
L#	LAPR No.	Numeric	2
NAME	LPAR name.	Character	31
USED	Amount of CPU resource used by this LPAR. (Same value as USED in LPAR_CPU_USAGE record)	Numeric (MHz)	6
GRP USED%	Used ratio of CPU resource based on group CPU resource. (USED/GRP CAP in GROUP_USAGE)	Numeric (%)	3 for integer, 2 for fraction
HST USED%	Used ratio of CPU resource based on entire system. (USED/CPU CAP in SYSTEM CONFIGURATION)	Numeric (%)	3 for integer, 2 for fraction

Two fields are also added to output when using HvmSh version 5.3 or higher.

Field	Content	Data type	Max. digits
SRV_USED%	CPU usage rate (based on service rate) SRV_USED%=USED / CPU_SRV ("999.99" is displayed when 999.99% or higher)	Numeric (%)	3 for integer, 2 for fraction
CPU_SRV	Guaranteed amount of CPU resource in the event of contention among LPARs on a shared-mode CPU. ((CORE_CAP of SYSTEM_CONFIGURATION) × (SHR_CORE of GROUP_USAGE)) / (CPU_WIGHT of LPAR_CONFIGURATION) On an LPAR allocated to a dedicated-mode CPU, "*" is shown.	Numeric (MHz)	6

When output extension option "excpu" is specified to HvmSh version 6.4 or higher, the following outputs are added to above.

Field	Content	Data type	Max. digits
COREs_USED	The number of the CPU cores converted from the used group resource. {USED / (CORE_CAP in SYSTEM_CONFIGURATION ) }	Numeric	2 for integer, 2 for fraction
CPUs_USED	The number of the physical CPUs converted from the used group resource. {USED / (CORE_CAP in SYSTEM_CONFIGURATION ×COREs / CPUs )}	Numeric	2 for integer, 2 for fraction

**Table 2-34 VF\_NIC\_USAGE record**

Field	Content	Data type	Max. digits
Location	Installed location of PCI device. Note: For details, see <a href="#">Description Format for Device Location</a> .	Character	6
P#	VF NIC port 0 to n (n: maximum number of VF NIC port per physical port)	Numeric	1
CAPACITY	VF NIC maximum transfer rate *Same as CAPACITY of PF NIC	Numeric (MHz)	6
MODE	VF NIC allocation mode * Always show "D" S: Shared allocation D: Dedicated allocation	Character	1
INT	Interrupt times per second	Numeric (times/s)	7
PCI_SEG	Segment number of PCI device Config address (hexadecimal)	Numeric	2
PCI_BUS	Bus number of PCI device Config address (hexadecimal)	Numeric	2
PCI_DEV	Device number of PCI device Config address (hexadecimal)	Numeric	2
PCI_FNC	Function number of PCI device Config address (hexadecimal)	Numeric	1

## Limitation

Enable/disable status of the following functions does not affect the CPU clock frequency display:

- Power capping
- CPU Turbo

The USED field value in LOGICAL\_NIC\_USAGE record may sometimes exceed the maximum throughput of the NIC, leading to a more than 100% display in the USED% field. This symptom occurs when communication is performed over the network between LPARs using this NIC in shared mode.

When SMT (simultaneous multithreading) function for the CPU is enabled, the values in the following fields may indicate up to twice the values of the case when SMT is disabled. This does not mean that the CPU performance doubles.

Record	Field
SYSTEM_CONFIGURATION	CPU_CAP, CORE_CAP
LPAR_CONFIGURATION	CPU_CAP, CPU_MAX, CPU_SRV
SYSTEM_USAGE_SUMMARY	CAPACITY, USED, UNUSED, INSUFF
SYSTEM_CPU_USAGE	CAPACITY, USED
PHYSICAL_CPU_USAGE	CAPACITY, USED, UNUSED

## Notes:

Acquisition of HVM statistical information is available for the sampling interval time ranging from 1 second to 10 minutes (5 seconds or greater is recommended). If your acquisition attempt with HvmSh command exceeds 10 minutes from the last attempt, the command ends with return code 0x101F0002. In such a case, retry your acquisition.

When HVM interface of getting HVM statistical information is executed with HvmSh command for the first time, the command ends with return code 0x101F0001. In such a case, retry your acquisition.

HvmSh command may end with return code 0x101F002x when LPAR configuration or LPAR status has been changed (examples below). In such a case, retry your acquisition.

- Activation, deactivation, or failure of LPAR.
- Reboot guest OS
- Change in NIC scheduling mode (dedicated or shared)
- LPAR Migration

When setting interval times for sampling information to t0, t1, t2,..., acquired information are as None, average of t0 through t1, average of t1 through t2,...,.

See HVM getting statistical information operation.

## Procedure of "Get HVM statistical information"

HvmSh calculates the amount of resource used in unit time from the increments of the amount of accumulation resource used.

When "get HVM statistical information" commands are issued, HvmSh acquires the performance data which HVM is sampling and accumulating. HvmSh calculates the "amount of resources used in unit time" from 2 times of data.

For example;

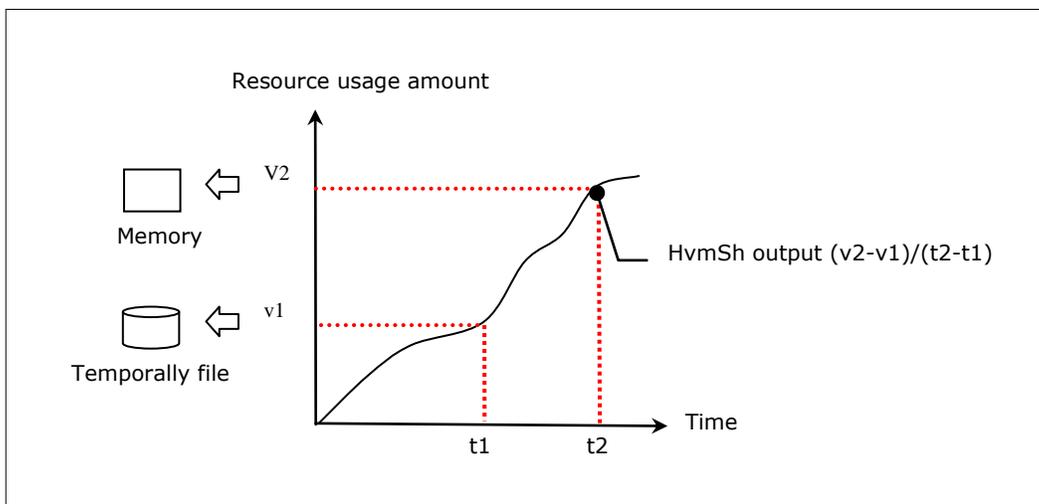
The amount of resource used in unit time is calculated as " $(v2-v1) / (t2-t1)$ " where

- $t1, t2$  : the time in which command is issued and data is acquired
- $v1, v2$  : the amount of accumulation resource used at time  $t1, t2$

Therefore, by this method, the upper layer programs which issue HvmSh such as HVM Navigator can determine the interval of measurement time by themselves.

The HvmSh command executes the following procedures;

- At the time  $t1$ , saves the performance data  $v1$  to the temporary file.
  - At the time  $t2$ , gets the performance data  $v2$  and writes to memory.
  - From both data  $v1$  and  $v2$  above, calculates  $(v2-v1)/(t2-t1)$  and outputs as statistical information.
  - Writes the performance data  $v1$  to memory.
  - Saves the performance data  $v2$  to the temporary file.



**Figure 2-1 Outline of getting statistical information in HvmSh**

## Specifies the behavior in the case which configuration or LPAR status changes

It is possible to specify the behavior in the case with the error code "0x101F002x" after the configuration or LPAR status changes, by specifying the option "-perf={cnfchg\_nodata,0 | cnfchg\_nodata,1}" to the initial file. This function is for the specific program with which HvmSh cooperates, and is available in HvmSh Ver.6.4 or higher.

When you specify the option "-perf={cnfchg\_nodata,0 | cnfchg\_nodata,1}" to the initial file, displays only the specific field in the specific record as follows.

- (1) MONITORING\_INFORMATION record: HVM\_ID PRODUCT field
- (2) SYSTEM\_CONFIGURATION record: DEF\_LPARs ACT\_LPARs field
- (3) LPAR\_CONFIGURATION record: L# NAME STATE INFORMATION field

\*1: "\*" are displayed in the fields except the fields above.

\*2: Only the field names are displayed in the record except the records above.

When "-perf=cnfchg\_nodata 0" is specified, the return code is 0x00000000.

When "-perf=cnfchg\_nodata 1" is specified, the return code is 0x101F002x.

**Table 2-35 Operation after configuration or LPAR status changes**

HvmSh version	-perf=option	Return code	Statistical information record display
Ver.6.0 or higher	Invalid specification	0x101F002x	None
Ver.6.4 or higher	Not specified	0x101F002x	None
	-perf=cnfchg_nodata,0	0x00000000	Yes (Specific field only)
	-perf=cnfchg_nodata,1	0x101F002x	

Output example : the case specifying "-perf=cnfchg nodata,0 "

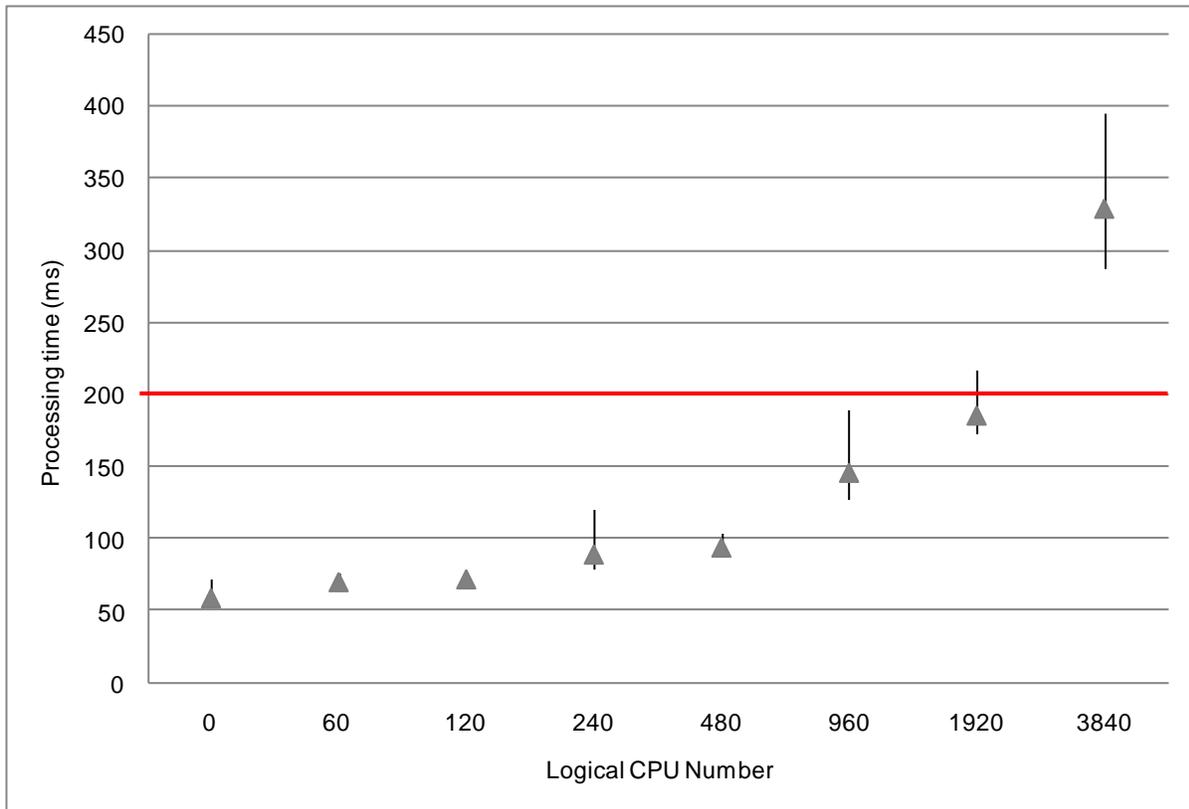
```
HvmSh(Version 6.4) Completed. 2012/04/06 21:10:43 Return: 0x00000000 ← First line
GetPerfData Ver.1 2012/04/06 21:06:48 GMT+09:00
Begin 1.0
[MONITORING_INFORMATION]
HVM_ID          PRODUCT          CURR_DATE_TIME  PREV_DATE_TIME  INTERVAL_TIME
HVM_172161832  Virtage 94-01(26-13) *          *          *
[SYSTEM_CONFIGURATION]
COREs CPUs NICs HBAs MEM DEF_LPARs ACT_LPARs CPU_CAP NIC_CAP HBA_CAP CORE_CAP SYS_MEM LPAR_MEM
*      *      *      *      *      5          5          *      *      *      *      *      *
[LPAR_CONFIGURATION]
L# NAME          STATE MODE (Omission)          INFORMATION
3  u3x6-009 ACT    * * * * * * * * * * * * * * * * * * * * Linux(x64)
4  u3x6-109 ACT    * * * * * * * * * * * * * * * * * * * *
5  u4x8-006 ACT    * * * * * * * * * * * * * * * * * * * * Linux(x86)
22 w8x8-113 ACT   * * * * * * * * * * * * * * * * * * * * Windows(x86)
23 w8x6-015 ACT   * * * * * * * * * * * * * * * * * * * * Windows(x64)
[SYSTEM_USAGE_SUMMARY]
NAME CAPACITY USED UNUSED INSUFF USED% UNUSED% INSUFF%
[SYSTEM_CPU_USAGE]
NAME COREs CPUs CAPACITY USED USED% USED_COREs MODE_USED%
[SYSTEM_MEM_USAGE]
NAME USED USED% LPAR_USED%
[LPAR_CPU_USAGE]
L# NAME USED ROB DELAY COREs HST_USED% SHR_USED% SRV_USED% USED% ROB% DELAY% IDLE% IOW% NIOW% G_RUN%
G_IDLE% OVER%
[PHYSICAL_CPU_USAGE]
CORE# CAPACITY MODE USED UNUSED USED% UNUSED% NAME
[PHYSICAL_NIC_USAGE]
SID P# CAPACITY MODE USED UNUSED USED% UNUSED% REQ INT R_BYTE S_BYTE T_BYTE R_PACKET S_PACKET T_PACKET
NAME
[PHYSICAL_HBA_USAGE]
SID P# CAPACITY MODE USED UNUSED USED% UNUSED% REQ INT R_BYTE W_BYTE T_BYTE R_FRAME W_FRAME T_FRAME
NAME
[LOGICAL_CPU_USAGE]
L# NAME CPU# USED ROB DELAY IDLE IOW NIOW G_RUN USED% ROB% DELAY% IDLE% IOW% NIOW% G_RUN% G_IDLE%
OVER%
[LOGICAL_NIC_USAGE]
L# NAME SID P# USED USED% REQ INT R_BYTE S_BYTE T_BYTE R_PACKET S_PACKET T_PACKET TIME1 TIME2
[LOGICAL_HBA_USAGE]
L# NAME SID P# USED USED% REQ INT R_BYTE W_BYTE T_BYTE R_FRAME W_FRAME T_FRAME TIME1 TIME2
[PHYSICAL_CPU_DETAIL]
CPU# CORE# I_ALL I_NIC I_HBA I_USB I_IPI I_TIM I_OTH I_USED I_USED%
[LOGICAL_CPU_DETAIL]
L# NAME CPU# X_ALL X_MM1 X_MM2 X_MM3 X_IOP X_IPI X_EXTG X_EXTH X_HALT1 X_HALT2 X_OTH X_USED X_USED%
[GROUP_USAGE]
GROUP# GRP_NAME DED_CORE SHR_CORE GRP_CAP USED UNUSED INSUFF USED% UNUSED% HST_USED% INSUFF%
HST_INSUFF%
[PHYSICAL_CPU_GROUP_USAGE]
GROUP# GRP_NAME CORE# CAPACITY MODE USED UNUSED GRP_USED% GRP_UNUSED% HST_USED%
[LPAR_CPU_GROUP_USAGE]
GROUP# GRP_NAME L# NAME USED GRP_USED% HST_USED% SRV_USED% CPU_SRV
End
```

When option “-perf=cnfchg\_nodata1” is specified, the first line is described as follows. Other lines are same as the case where the option “perf=cnfchg\_nodata,0” is specified.

```
HvmSh(Version 6.4) Failed.    2012/04/06 21:10:43    Return: 0x101F002E Msg:The content of temporary file specified in "filename=" is invalid.
```

### HVM configuration and processing time

LPAR configuration effects processing time for display of HVM statistics information. Actual processing times are below. (No network load to the sharing NIC in this case)



**Figure 2-2 Processing time for display of statistics information**

Processing time exceeds 200ms when logical CPU number on the HVM is 1,000 or more. Don't display the HVM statistics information frequently in this case. Set interval of each processing to 10 sec or more in this case.

## Field Support Status

Some parts of acquired statistic information are different depending on HvmSh version and HVM firmware version. Details of them are as follows.

**Table 2-36 Support status and versions of each HVM statistics information fields**

Record	Field	HvmSh Command version	Required HVM firmware version				
			CB2000DP	CB2000MP	CB320	CB500	CB2500
MONITORING_INFORMATION		V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	HVM_ID	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	PRODUCT	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CURR_DATE_TIME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	PREV_DATE_TIME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	INTERVAL_TIME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
SYSTEM_CONFIGURATION		V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	COREs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPUs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NICs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	HBA s	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	MEM	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	DEF_LPARs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	ACT_LPARs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU_CAP	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NIC_CAP	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	HBA_CAP	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CORE_CAP	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	SYS_MEM	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	LPAR_MEM	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
LPAR_CONFIGURATION		V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	L#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	STATE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	MODE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	COREs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-

	CPU_S	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NIC_S	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	HBA_S	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	MEM	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU_CAP	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU_MAX	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU_WIGHT	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU_SRV	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU_SRV%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU_MAX%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU_SRVs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CC	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	ID	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NIC_CAP	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	HBA_CAP	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
(*)	AFFINITY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	INFORMATION	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	SYSTEM_USAGE_SUMMARY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CAPACITY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
HBA*1	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
HBA*1	UNUSED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	INSUFF	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
HBA*1	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
HBA*1	UNUSED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	INSUFF%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_USED	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_UNUSED	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_INSUFF	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_USED	V5.6 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_UNUSED	V5.6 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_INSUFF	V5.6 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-

SYSTEM_CPU_USAGE		V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	COREs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPUs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CAPACITY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED_COREs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	MODE_USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_USED	V5.6 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
SYSTEM_MEM_USAGE		V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	LPAR_USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
LPAR_CPU_USAGE		V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	L#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	ROB	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	DELAY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	COREs	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	HST_USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	SHR_USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	SRV_USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	ROB%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	DELAY%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	IDLE%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	IOW%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
NIOW%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-	
G_RUN%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-	

	G_IDLE%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	OVER%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	INSUFF	V5.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	INSUFF%	V5.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	HST_INSUFF%	V5.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	SRV_INSUFF%	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_INSUFF	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_USED	V5.6 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_INSUFF	V5.6 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	SWITCH	V6.4 or higher	59-10 or higher	79-10 or higher	17-86 or higher	01-20 or higher	-
excpu	COREs_VMMODE	V7.3 or higher	-	-	-	-	-
excpu	CPUes_VMMODE	V7.3 or higher	-	-	-	-	-
excpu	INT_RUN	V8.3 or higher	58-50 or higher	78-50 or higher	-	-	-
excpu	INT_RUN%	V8.3 or higher	58-50 or higher	78-50 or higher	-	-	-
hvm	RE G0 to RE G7	V7.3 or higher	-	-	-	-	-
	PHYSICAL_CPU_USAGE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CORE#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CAPACITY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	MODE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	UNUSED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	UNUSED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	SYS1_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS2_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	LPAR_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS1_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS2_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	LPAR_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SWITCH	V6.4 or higher	59-10 or higher	79-10 or higher	17-86 or higher	01-20 or higher	-
	PHYSICAL_NIC_USAGE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-

	SID	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	P#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CAPACITY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	MODE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	UNUSED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	UNUSED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
(*)	REQ	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	INT	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	R_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	S_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	T_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	R_PACKET	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	S_PACKET	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	T_PACKET	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	Location	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	PCI_SEG	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	PCI_BUS	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	PCI_DEV	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	PCI_FNC	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	R_USED	V8.1 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	S_USED	V8.1 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	R_USED%	V8.1 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	S_USED%	V8.1 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	PHYSICAL_HBA_USAGE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	SID	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	P#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CAPACITY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	MODE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-

*1	UNUSED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	UNUSED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
(*)	REQ	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	INT	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	R_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	W_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	T_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	R_FRAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	W_FRAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	T_FRAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	Location	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	PCI_SEG	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	PCI_BUS	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	PCI_DEV	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	PCI_FNC	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
LOGICAL_CPU_USAGE		V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	L#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	ROB	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	DELAY	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	IDLE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	IOW	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NIOW	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	G_RUN	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	ROB%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	DELAY%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	IDLE%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-

	IOW%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NIOW%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	G_RUN%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	G_IDLE%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	OVER%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	SWITCH	V6.4 or higher	59-10 or higher	79-10 or higher	17-86 or higher	01-20 or higher	-
excpu	INT_RUN	V8.3 or higher	58-50 or higher	78-50 or higher	-	-	-
excpu	INT_RUN%	V8.3 or higher	58-50 or higher	78-50 or higher	-	-	-
excpu	L_CPU_CAP	V8.3 or higher	-	-	-	-	-
LOGICAL	NIC_USAGE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	L#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	SID	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	P#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	REQ	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	INT	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	R_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	S_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	T_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	R_PACKET	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	S_PACKET	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	T_PACKET	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	TIME1	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	TIME2	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	VNIC#	V5.5 or higher	58-71 or higher	78-71 or higher	17-80 or higher	-	-
exio	R_USED	V8.1 or higher	57-30 or higher	78-10	17-40 or higher	-	-
exio	S_USED	V8.1 or higher	57-30 or higher	78-10	17-40 or higher	-	-
exio	R_USED%	V8.1 or higher	57-30 or higher	78-10	17-40 or higher	-	-
exio	S_USED%	V8.1 or higher	57-30 or higher	78-10	17-40 or higher	-	-
exio	TIME_CNT	V8.3 or higher	(Not support)	(Not support)	(Not support)	02-00 or higher	-

	LOGICAL_HBA_USAGE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	L#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	SID	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	P#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	REQ	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	INT	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	R_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	W_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	T_BYTE	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	R_FRAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	W_FRAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
*1	T_FRAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	TIME1	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	TIME2	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
exio	TIME_CNT	V8.3 or higher	(Not support)	(Not support)	(Not support)	02-00 or higher	-
	PHYSICAL_CPU_DETAIL	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CORE#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	I_ALL	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	I_NIC	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	I_HBA	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
(*)	I_USB	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	I_IPI	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	I_TIM	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	I_OTH	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	I_USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	I_USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	CAPACITY	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	MODE	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-

excpu	USED	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	USED%	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	PTHD_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	PTHD_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS1_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS2_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	LPAR_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS1_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS2_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	LPAR_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
LOGICAL_CPU_DETAIL		V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	L#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	NAME	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	CPU#	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_ALL	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_MM1	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_MM2	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_MM3	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_IOP	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_IPI	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_EXTG	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_EXTH	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_HALT1	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_HALT2	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_OTH	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	X_CPUID	V5.1 or higher	58-50 or higher	78-50 or higher	17-60 or higher	-	-
excpu	X_EXCEPT	V5.1 or higher	58-50 or higher	78-50 or higher	17-60 or higher	-	-
excpu	X_EXTINT	V7.3 or higher	-	-	-	-	-
excpu	X_MSR	V7.3 or higher	-	-	-	-	-
excpu	X_VMCALL	V7.3 or higher	-	-	-	-	-
excpu	X_VMX	V7.3 or higher	-	-	-	-	-
excpu	X_EPT	V7.3 or higher	-	-	-	-	-

	X_USED	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
	X_USED%	V4.0 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	X_RUN1	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	X_RUN2	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	X_RUN3	V5.5 or higher	57-30 or higher	78-10 or higher	17-40 or higher	-	-
excpu	COREs_VMMODE	V7.3 or higher	-	-	-	-	-
excpu	CPU_s_VMMODE	V7.3 or higher	-	-	-	-	-
excpu	X_FAST	V8.3 or higher	(Not support)	(Not support)	(Not support)	02-00 or higher	-
excpu	X_FAST_USED	V8.3 or higher	(Not support)	(Not support)	(Not support)	02-00 or higher	-
excpu	X_FAST_USED%	V8.3 or higher	(Not support)	(Not support)	(Not support)	02-00 or higher	-
GROUP_USAGE		V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GROUP#	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GRP_NAME	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	DED_CORE	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	SHR_CORE	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GRP_CAP	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	USED	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	UNUSED	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	INSUFF	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	USED%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	UNUSED%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	HST_USED%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	INSUFF%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	HST_INSUFF%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
excpu	SYS1_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS2_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	LPAR_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS1_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS2_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	LPAR_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
PHYSICAL_CPU_GROUP_USAGE		V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GROUP#	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-

	GRP_NAME	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	CORE#	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	CAPACITY	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	MODE	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	USED	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	UNUSED	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GRP_USED%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GRP_UNUSED%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
excpu	HST_USED%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	SYS1_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS2_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	LPAR_USED	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS1_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	SYS2_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
excpu	LPAR_USED%	V5.5 or higher	58-70 or higher	78-70 or higher	17-80 or higher	-	-
LPAR_CPU_GROUP_USAGE		V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GROUP#	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GRP_NAME	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	L#	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	NAME	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	USED	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	GRP_USED%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	HST_USED%	V5.0 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	SRV_USED%	V5.3 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
	CPU_SRV	V5.3 or higher	58-31 or higher	78-31 or higher	17-60 or higher	-	-
VF_NIC_USAGE exio		V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-
exio	Location	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-
exio	P#	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-
exio	CAPACITY	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-
exio	MODE	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-
exio	INT	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-
exio	PCI_SEG	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-

exio	PCI_BUS	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-
exio	PCI_DEV	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-
exio	PCI_FNC	V8.3 or higher	59-70 or higher	79-70 or higher	(Not support)	01-84 or higher	-

- : Not depend on Version

\*: Always displaying '\*' when using HVM firmware version which are described on the table above.

\*1: See Table 2-28 HBA statistical support map

excpu: Content is displayed only when specifying 'excpu' option.

exio: Content is displayed only when specifying 'exio' option.

## Get all configurations

Gets all configurations collectively.

### Syntax

```
getΔConfigAll
```

### Situation-dependent message

The output message (temporary file) consists of tab-delimited lines of text with CRLF at each end of line. You can import such temporary file in a spreadsheet application. The beginning and ending part of output temporary file is shown below, followed by a full output imported in a spreadsheet application (certain fields are truncated without adjusting the column width). "\*" is shown at unsupported fields by HVM.

Table 2-14 provides a summary explanation of HVM configuration information records in the output file. Table 2-15 through 34 provide details of each HVM configuration record.

```
Begin<tab>1.0<CRLF>
[RECORD_NAME]<CRLF>
<tab>FIELD_NAME<tab>FIELD_NAME<tab>...<CRLF>
<tab>FIELD_VALUE<tab>FIELD_VALUE<tab>...<CRLF>
:
End<CRLF>
```

HvmSh(Version 5.0) Completed. 2010/08/19 09:52:38 Return: 0x00000000

GetHvmPerfMon Ver.1 2010/08/19 09:59:06 GMT+00:00

Begin 1.0

[HVM\_INFORMATION]

```

HVM_ID                HVM_IP                HVM_SN                PRODUCT
                CURR_DATE_TIME
HVM_1721616124        172.016.016.124 46000000                Virtage 78-40(00-02)
2010/08/19 09:59:06 GMT+00:00
```

[CHASSIE\_CONFIGURATION]

```

CHA_SN                ID
TYPE    SVP_IP                MAX_BLADE_CNT
cb2000-35                CB2000#35-HVM                CB2000 000.000.000.000 *
```

[BLADE\_CONFIGURATION]

```

BLADE_SN                CHA_SN                TYPE
LOCATION
0123456789ABCDEFGHIJ cb2000-35                CB2000-MP                4
```

[HVM\_CONFIGURATION]

```

HVM_SN                CHA_SN                BLADE_SN
HVM_IP                SUB_MASK                DEF_GW                VNIC_SYSTEM_NO

BLADE_CNT                MAXLPARCOUNT CPU                TOTAL_MEM                SYS_MEM                USER_MEM
```

```

AUTOSHUTDOWNPRESTATE      BMCIP  LICENSETYPE  VALIDTHRU
46000000      cb2000-35      0123456789ABCDEFHJIJ  172.016.016.124
255.255.000.000 000.000.000.000 24
4              16
129536         OFF              OFF          128    131072    *    1536
Enterprise     9999/99

```

[GROUP\_CONFIGURATION]

```

GROUP# GRP_NAME  DED_CORE  SHR_CORE
0      GROUP0 0      4
1      GROUP1 0      4
2      GROUP2 0      4
3      GROUP3 0      4
4      GROUP4 0      4
5      GROUP5 0      4
6      GROUP6 0      4
7      GROUP7 0      4
8      GROUP8 0      4
9      GROUP9 0      4
10     GROUPA 0      4
11     GROUPB 0      4
12     GROUPE 0     4
13     GROUPE 0     4
14     GROUPE 0     4
15     GROUPE 0     4

```

[LPAR\_CONFIGURATION]

```

L#  NAME  STATUS  MEM  DED_CPU  SHR_CPU  SRV  ID  PC
AA  AC    PB      VC      VC_PORT  GROUP  GENERATION
1   LPAR1  ACT     4096   0        8       100    ON
OFF OFF   OFF     BIOS   *        *       1       95
2   LPAR2  ACT     4096   0        8       100    ON
OFF OFF   OFF     BIOS   *        *       2       64
3   LPAR3  DEACT   4096   0        8       100    ON  OFF
OFF OFF   BIOS   *        *       3       67
4   LPAR4  DEACT   4096   0        8       100    ON  OFF
OFF OFF   BIOS   *        *       4       49
5   LPAR5  ACT     4096   0        8       100    ON
OFF OFF   OFF     BIOS   *        *       5       47
6   LPAR6  ACT     4096   0        8       100    ON
OFF OFF   OFF     BIOS   *        *       6       47
7   LPAR7  ACT     4096   0        8       100    ON
OFF OFF   OFF     BIOS   *        *       7       63

```

[BSM\_CONFIGURATION]

```

Name  IP          PORT
BSM1  172.016.021.072 20079
BSM2  172.016.000.250 20079
BSM3  172.016.002.041 20079
BSM4  172.016.000.254 20079

```

[FW\_VERSION\_INFORMATION]

```

Name  Version
HVM F/W      78-40(00-02)
HVM F/W(Alt)94-01(11-08)
BIOS        03-08
BMC         04-30

```

[PHYSICAL\_CPU\_CONFIGURATION]

```

CPU#  BLADE#  DIE#  CORE#  THREAD#  STATUS  SCHD  GHZ  GROUP
STATE
0      4      0      0      0      0      0      0      RUN
S      2.27   0      0      ACT    0      0      0      RUN
1      4      0      0      0      0      1      0      RUN
S      2.27   0      0      ACT    1      0      0      RUN
2      4      0      0      0      1      0      0      RUN
S      2.27   0      0      ACT    1      1      1      RUN
3      4      0      0      0      1      1      1      RUN
S      2.27   0      0      ACT
.....
124    7      1      6      0      0      0      RUN

```

```

S          2.27  15          ACT
125        7          1          6          1          RUN
S          2.27  15          ACT
126        7          1          7          0          RUN
S          2.27  15          ACT
127        7          1          7          1          RUN
S          2.27  15          ACT
[VNIC_SEGMENT_INFORMATION]
SEG#      STATUS
1a         A
1b         A
2a         A
2b         A
.....
6a         D
6b         D
Va         D
Vb         D
Vc         D
Vd         D
[PHYSICAL_IO_CONFIGURATION]
PCI#      PORT#  Location PCI_SEG PCI_BUS PCI_DEV PCI_FNCTYPE  VENDOR_NAME  DEV_NAME
SCH_MOD   SNIC#  PORT_ID_1  PORT_ID_2  FW_VER
0          0          *          U          G4          Intel Corp.  0          USB Controller  E          1d
*          *          *          *          *          *          *
1          0          0          N          G4          Intel Corp.  0          GbE Controller  S          0
*          *          *          *          *          *          *
1          1          1          N          G4          Intel Corp.  0          GbE Controller  S          0
*          *          *          *          *          *          *
.....
12         0          0          I000          0          Intel Corp.  db          GbE Controller  D          0
*          *          *          *          *          *          *
12         1          1          I000          0          Intel Corp.  db          GbE Controller  D          0
*          *          *          *          *          *          *
13         0          0          I001          0          Intel Corp.  df          GbE Controller  D          0
*          *          *          *          *          *          *
13         1          1          I001          0          Intel Corp.  df          GbE Controller  D          0
*          *          *          *          *          *          *
[PHYSICAL_IO_ASSIGN_INFORMATION]
PCI#      PORT#  L#      STATUS
0          *          *          1          A
0          *          *          2          A
0          *          *          3          A
.....
13         0          15       *
13         1          15       *
13         0          16       *
13         1          16       *
[VFC_ASSIGN_INFORMATION]
PCI#      PORT#  VFC#  L#      LOCATION  SCH_MOD  WWPN
WWNN      PORT_STATUS
6          0          1          2338000087030c82  1          I101      S
2338000087030c82  2338000087030c83  A
6          1          14         2338000087030cbd  1          I101      S
2338000087030cbc  2338000087030cbd  A
6          0          2          2338000087030c84  2          I101      S
2338000087030c84  2338000087030c85  A
6          1          13         2338000087030c85  2          I101      S
2338000087030cba  2338000087030cbb  A
.....

```

```

6          0          3          *          I101          S
2338000087030c86  2338000087030c87  A
6          0          4          *          I101          S
2338000087030c88  2338000087030c89  A
6          1          11         *          I101          S
2338000087030cb6  2338000087030cb7  A
6          1          12         *          I101          S
2338000087030cb8  2338000087030cb9  A
[VNIC_ASSIGN_INFORMATION]
L#        VNIC#    SEG#    MAC                                VLAN_MODE    VLAN_IDS
PRM
1         0          *       1a                                00:00:87:62:97:00  OFF          *
1         1          *       1b                                00:00:87:62:97:01  OFF          *
1         2          *       2a                                00:00:87:62:97:02  OFF          *
1         3          *       2b                                00:00:87:62:97:03  OFF          *
.....
16        4          *       3a                                00:00:87:62:d7:7c  OFF          *
16        5          *       3b                                00:00:87:62:d7:7d  OFF          *
16        6          *       4a                                00:00:87:62:d7:7e  OFF          *
16        7          *       4b                                00:00:87:62:d7:7f  OFF          *
[LOGICAL_CPU_CONFIGURATION]
L#        CPU#    STATUS
1         0          S
1         1          S
1         2          S
1         3          S
.....
16        4          *
16        5          *
16        6          *
16        7          *
End

```

**Table 2-37 Summary of HVM configuration information records**

Record name	Content	Number of records
HVM_INFORMATION	Information on HVM information obtaining.	1
CHASSIE_CONFIGURATION	Chassis configuration information.	1
BLADE_CONFIGURATION	Server blade configuration information.	1
HVM_CONFIGURATION	HVM configuration information.	1
GROUP CONFIGURATION (*2)	Processor group configuration information.	No. of defined processor group
LPAR_CONFIGURATION	LPAR configuration information.	Max. No. of definable LPARs
BSM_CONFIGURATION	SC/BSM configuration information.	4
FW_VERSION_INFORMATION	HVM firmware version	1
PHYSICAL_CPU_CONFIGURATION	Configuration information of physical CPU	No. of physical CPU threads
VNIC_SEGMENT_INFORMATION	Segment condition of virtual NIC.	No. of VNIC segment
PHYSICAL_IO_CONFIGURATION	Configuration information of physical IO devices.	No. of PCI ports
PHYSICAL_IO_ASSIGN_INFORMATION	Assignment information of physical IO devices.	No. of defined LPARs x No. of PCI
VFC_ASSIGN_INFORMATION	Assignment information of VFC.	Total of Max. No. of VfcId per physical FC adapter port
VNIC_ASSIGN_INFORMATION	Assignment information of VNIC.	No. of defined LPARs x No. of defined VNIC
LOGICAL_CPU_CONFIGURATION	Configuration information of logical CPU	No. of defined LPARs x No. of physical CPUs
MEMORY_ASSIGN_INFORMATION(*3)	Assignment information of memory.	Max. No. of assigned memory block
VCOM_ASSIGN_INFORMATION(*3)	Assignment information of VCOM.	Max. No. of VCOM
MAX_VALUE_INFORMATION(*3)	Max. value information of HVM.	Max. No. of information
HVM_FACILITY_INFORMATION(*3)	Facility information of HVM.	Max. No. of information
LPAR_INITIAL_INFORMATION(*3)	The configuration information initial value of LPAR is displayed	1
LOGICAL_CPUID_INFORMATION(*3)	Logical CPUID information of LPAR is output.	Max. No. of definable LPARs
AVAILABLE_LIST(*3)	Available configuration list	2
LPAR_NUMA_MEMORY_ASSIGN_INFORMATION(*3)	Assignment information of memory of LPAR whose guest NUMA is available.	No. of LPARs whose guest NUMA is available x No. of memory nodes
LPAR_NUMA_CPU_ASSIGN_INFORMATION(*8)	Information regarding the logical processors assigned to LPARs for which the logical processor topology setting mode for a guest NUMA is enabled.	No. of LPARs for which the logical processor topology setting mode for a guest NUMA is enabled x No. of processor nodes
SEC_MODE (*3)	Mode for encryption communication	1
CERTIFICATE(*3)	Certificates information for encryption communication	Max. 11
SSH_HOST_KEY(*3)	Host key information for SSH communication of virtual COM	1
AUDIT_LOG_CONFIGURATION (*8)	Information on audit logs	1
LDAP_CONFIGURATION (*9)	Information on LDAP authentication	1
RADIUS_CONFIGURATION(*10)	Information on RADIUS authentication	3
ROLE_CONFIGURATION(*11)	Information on the user-defined roles	The supported number of user-defined roles
CURRENT_PERMISSION(*11)	Permissions of the current login user	1
MANAGEMENT_PATH (*4)	Management path information	1
IPV6_CONFIGURATION (*5)	Outputs information regarding the HVM IPv6.	5
NETWORK_PORT_INFORMATION (*6)	Outputs information regarding the HVM	5

	network port.	
DNS_CONFIGURATION (*7)	Outputs information regarding DNS servers	3

\*1,\*2,\*3: You cannot get the target record of the HVM which does not support the interfaces to get the record.

\*4: If the ManagePathChangeVer2 function in the [Function name turned](#) is "Off", this record does not exist.

\*5: This record is not displayed if HVM does not support IPv6.

\*6: This record is not displayed if HVM does not support network port change.

\*7: This record is not displayed if HVM does not support the DNS client feature.

\*8: This record is not displayed if HVM does not support the audit log feature.

\*9: This record is not displayed if HVM does not support the LDAP authentication feature.

10: This record is not displayed if HVM does not support the RADIUS authentication feature.

11: This record is not displayed if HVM does not support the RBAC feature.

Note that, when a user without the HVM security permission executes this command, (1) to (6) of the following records on security information are not output.

- |                        |                             |
|------------------------|-----------------------------|
| (1) SEC_MODE           | (2) CERTIFICATE             |
| (3) SSH_HOST_KEY       | (4) AUDIT_LOG_CONFIGURATION |
| (5) LDAP_CONFIGURATION | (6) RADIUS_CONFIGURATION    |
| (7) ROLE_CONFIGURATION |                             |

**Table 2-38 HVM\_INFORMATION record**

Field	Content	Data type	Max. digits
HVM_ID	HVM identifier. *: Refer to "Notes for HVM ID" – "Notes for situation-dependent message".	Character	16
HVM_IP	HVM IP address. Format: AAA.BBB.CCC.DDD (Dot delimited. Fill up unspecified values with zero) e.g. 192.168.000.001	Character	15
HVM_SN	HVM serial number.	Character	8
PRODUCT	Product name e.g. "HVM 57-30(00-00)".	Character	64
CURR_DATE_TIME	Date and time when HVM configuration information is created by ConfigAll. Equivalent of HVM system time.	Date and time (*)	29

- YYYY/MM/DDΔHH:MM:SSΔGMT+hh:mm

**Table 2-39 CHASSIS\_CONFIGURATION record**

Field	Content	Data type	Max. digits
CHA_SN	Chassis serial number.	Character	20
ID	Available chassis ID for SVP.	Character	20

	Note: Chassis ID is default value at the time of HVM activation. The value in this field does not change even if the chassis ID has changed after HVM activation.		
TYPE	Chassis type (CB2000/ CB320/ CB500/ CB2500)	Character	10
SVP_IP	SVP IP address Format: AAA.BBB.CCC.DDD (Dot delimited. Fill up unspecified values with zero) e.g. 192.168.000.001	Character	15
MAX_BLADE_CNT	Max. No. of mountable blade for the chassis	Numeric	2
SVP_IPv6	{SVP IPv6 static address   *} e.g. fe80::1ce:c0ff:ee:cafe  *: "*" appears if the HVM does not support IPv6.	Character	40

**Table 2-40 BLADE\_CONFIGURATION record**

Field	Content	Data type	Max. digits
BLADE_SN	Server blade serial number.	Character	20
CHA_SN	Chassis serial number.	Character	20
TYPE	Server blade type (CB2000-DP/ CB2000-MP/ CB320/ CB500-EP/ CB500-EN/ CB500-EP4S/ CB520X /CB2500-EX/ CB2500-EP)	Character	10
LOCATION	Location of server blade	Numeric	2
NUMA	NUMA or Non-NUMA (ON/OFF/*) "*" is displayed when NUMA is not supported on HVM.	Character	3
PRODUCT_NAME	Product name of blade example:520XA1 "*" is displayed when GETIF is not supported on HVM.	Character	32

**Note:** Shows information of primary blade if configured SMP.

**Table 2-41 HVM\_CONFIGURATION record**

Field	Content	Data type	Max. digits
HVM_SN	HVM serial number.	Character	8
CHA_SN	Chassis serial number.	Character	20
BLADE_SN	Server blade serial number.	Character	20
HVM_IP	HVM IP address. Format: AAA.BBB.CCC.DDD (Dot delimited. Fill up unspecified values with zero) e.g. 192.168.000.001	Character	15
SUB_MASK	Subnet mask of HVM IP address. Format: AAA.BBB.CCC.DDD (Dot delimited. Fill up unspecified values with zero) e.g. 255.255.255.000	Character	15
DEF_GW	Default gateway for HVM. Format: AAA.BBB.CCC.DDD (Dot delimited. Fill up unspecified values with zero) e.g. 192.168.000.001	Character	15
VNIC_SYSTEM_NO	VNIC system number.	Numeric	3

BLADE_CNT	Number of blades which configuring SMP. Shows "1" if not configured SMP.	Numeric	2
MAXLPARCOUNT	Maximum Number of definable LPARs.	Numeric	2
CPU	No. of physical CPUs allocable to LPARs. The quantity depends on whether SMT (simultaneous multithreading) is enabled or not. When SMT is enabled: No. of threads. When SMT is disabled: No. of cores.	Numeric	3
TOTAL_MEM	Total amount of memory.	Numeric (MB)	6
SYS_MEM	Amount of memory used by HVM.	Numeric (MB)	6
USER_MEM	Amount of memory allocable to LPARs.	Numeric (MB)	6
AUTOSHUTDOWN	Auto-shutdown function setting status. (ON/OFF)	Character	3
PRESTATE	Pre-state function setting status. (ON/OFF)	Character	3
BMCIP	BMC IP address Format: AAA.BBB.CCC.DDD (Dot delimited. Fill up unspecified values with zero) e.g. 192.168.000.001	Character	15
LICENSETYPE	HVM license type. (Enterprise/Essential/Advanced)	Character	32
VALIDTHRU	Expiration day of HVM license. Format: YYYY/MM 9999/99 indicates unlimited duration.  Note: When the temporary license is available, use VALIDTHRU_DD.	Date and time	29
VFC_SEED	Vfc seed information; { Vfc seed information   *} "*" appears for "HVM version" lower than those in <a href="#">Table 2-68 Supported status and versions of each field</a> . If CB500 or CB2500 HVM_SN (hexadecimal) is greater than 0000FFFF and if the HvmSh version is 8.5 or lower, the field shows "*"; if 8.6 or higher, it shows Vfc seed information.	Numeric	3
MANG_PATH	PCI No. of NIC for management path   Default Note: PCI no. of the management path active port   Default, if the ManagePathChangeVer2 function in <a href="#">Function name</a> is On.	Character	16
LANG	Alert language mode "Japanese" or "English"	Character	16
VC_PORT	TCP port address allocate for VCOM No.1. (Decimal)	Numeric	5
MANG_PATH_DF	PCI No. of NIC for management bus. (Displays PCI No. even if the management bus is default) However, the field displays "*" if the HVM does not support this function. Note: PCI no. of the management path active port, if the ManagePathChangeVer2 function in <a href="#">Function name</a> is On.	Numeric	3
IMPORT_CONFIG	Configured NTP source. (NONE / SVP / BMC) '*' is displayed if HVM does not support NTP function.	Character	8
TIME_SYNC	Configured NTP option. (OFF / NTP / SVP) '*' is displayed if HVM does not support NTP function.	Character	8
NTP1SERVER	IPv4 or IPv6 address of NTP Server 1. 'NONE' is displayed if IP address is not configured. '*' is displayed if HVM does not support NTP function.	Character	256
NTP2SERVER	IPv4 or IPv6 address of NTP Server 2. 'NONE' is displayed if IP address is not configured. '*' is displayed if HVM does not support NTP function.	Character	256

HVM_OPERATING_MODE_CURR (*1)	Current operating mode of HVM. (standard / expansion)	Character	16
HVM_OPERATING_MODE_NEXT (*1)	HVM operating mode after rebooting. (standard / expansion)	Character	16
PCPU_CSTATE	Corresponding to "PhyCPU C-State" displayed on the Options screen of HVM. {Disable Enable *} (*2)	Character	16
USB_AUTO_ALLOC	Corresponding to "USB Auto Allocation to LPAR" displayed on the Options screen of HVM. {Disable Enable  *} (*2)	Character	16
SAVE_CHANGED_CONFIG	Corresponding to "Save Changed Config Format" displayed on the Options screen of HVM. {Disable Enable  *} (*2)	Character	16
TC_BASE_CURR	Base value of Timercounter in the current HVM. {TSC   CPUFrequency   *} (*3) Corresponding to "HVM TimerCounter Base" displayed on the HVM Options screen.	Character	16
TC_BASE_NEXT	Base value of Timercounter when booting HVM next time. {TSC   CPUFrequency   *} (*3) Corresponding to "HVM TimerCounter Base" displayed on the HVM Options screen.	Character	16
ERROR_WATCHING	Detection setting of HVM hang-up state. (ON/OFF) Corresponding to "HVM ErrorWatching" displayed on the HVM Options screen.	Character	3
SAVE_TIME_CONFIG	When adjusting the HVM system time or the LPAR time, the adjusted time information is saved automatically in the physical RTC or the HVM configuration information. {Disable   Enable   *} (*4) Corresponding to "Save Time Config" displayed on the HVM Options screen.	Character	16
SYS2_PROC	Maximum CPU resource usage of SYS2. {Default(2)   2   4   8   *} (*4) Corresponding to "SYS2 Processors" displayed on the System Configuration screen.	Character	16
PASSWD_EXPIRY	User password's term of validity (days). {1 - 365   Infinite *} - When there is no limit for user password's term of validity, "Infinite" is displayed. - "*" is displayed for HVM that does not support user authentication.	Character	16
MGMT_DIAG	Regular diagnosis of the management path standby port. {Disable Enable  *} (*4)	Character	16
SAFE_MODE	HVM activation temporarily suspended. {ON OFF *} Displays "*" if SAFE mode is not supported on the HVM.	Character	8
HVM_SVP_COMMUN	The Internet protocol version for SVP-HVM communication { IPv4   IPv6 } If the HVM does not support IPv6, "*" appears.	Character	8
IPv6_STATIC	HVM IPv6 static address validity setting {ON   OFF   *} ON: Valid OFF: Invalid If the HVM does not support IPv6, "*" appears.	Character	8
IPv6_STATELESS	HVM IPv6 stateless address validity setting {ON   OFF   *} ON: Valid OFF: Invalid If the HVM does not support IPv6, "*" appears.	Character	8

VALIDTHRU_DD	Expiration date of HVM license. Format: YYYY/MM/DD 9999/99/99 indicates unlimited duration.  Note: This field is displayed only when temporary HVM license is available.	Date and time	29
VALIDTHRU_EXPIRED	Status of HVM license validity { Expired   NotExpired }  Note: This field is displayed only when temporary HVM license is available.	Character	32
PERF_TUNING	Contents of <b>Performance tuning options</b> (Decimal) 0: <b>Performance tuning options</b> are not available. 1: <b>Performance tuning options</b> are available. Note: This field is displayed only when HVM license is Enterprise.	Numeric	3
MULTI_QUEUE_SCD	Multiple queue scheduling { ON   OFF   * } ON: Enabled OFF: Disabled Note: If the HVM does not support Multiple queue scheduling, "*" appears.	Character	8
AUTHENTICATION_METHOD	Method of user authentication (*5)(*6) { "LOCAL"   "LOCAL+LDAP"   LOCAL+RADIUS   * } HvmSh V9.2 or higher are planned to support "LOCAL+RADIUS".	Character	32
AUTHENTICATION_LOGIN_VALID_TIME	The accessible time for HvmSh commands to log in an LDAP server (sec) {30 to 86400   Infinite} (*5)(*6) Note: When the accessible time is unlimited, "*" appears.	Numeric	5
MMUSER_ROLE#	Role number for the ManagementModuleUser (*6) {0 to the supported number of user-defined roles   *} (3opr login) Note that 0 is the role number with all permissions in an HVM.	Numeric	3
MMUSER_ROLE_NAME	Role name for the ManagementModuleUser (*6) Note that "Administrators" is displayed when the field "MMUSER_ROLE" shows 0.	Character	32

\*1: "standard" is displayed when it is executed to an HVM version not supporting the operating mode extension for HVM of CB2000 and CB320.  
For CB500 and CB2500, "expansion" is displayed regardless of the version of HVM, and HvmOperatingMode cannot be changed.

\*2: The option to an HVM not supporting the HVM interfaces, "PhyCPU C-State", "USB Auto Allocation to LPAR", and "Save Changed Config Format", displays \*. Refer to "HVM option support map" for the details.

\*3: "\*" is displayed in the target field for the HVM that does not support the HVM interface of getting/setting "TimerCounter Base".

\*4: "\*" is displayed in the target field for the HVM that does not support the HVM interface for getting/setting information.

\*5: \* is displayed when LDAPAuthentication in [Function name](#) is set to "OFF".

\*6: \* is displayed when a user without the HVM security permission executes this command.

**Table 2-42 GROUP\_CONFIGURATION record**

<b>Field</b>	<b>Content</b>	<b>Data type</b>	<b>Max. digits</b>
GROUP#	Processor group No.	Numeric	3
GROUP NAME	Processor group name.	Character	31
DED CORE	No. of cores on dedicated mode in the group.	Numeric	3
SHR CORE	No. of cores on shared mode in the group.	Numeric	3

**Table 2-43 LPAR\_CONFIGURATION record**

Field	Content	Data type	Max. digits
L#	LPAR number. If the LPAR is undefined, "*" is shown in following all fields.	Numeric	2
NAME	LPAR name.	Character	31
STATUS	LPAR status.	Character	10
MEM	Amount of memory allocated to this LPAR.	Numeric (MB)	8
DED_CPU	No. of dedicated CPU.	Numeric	3
SHR_CPU	No. of shared CPU.	Numeric	3
SRV	Service ratio. In dedicated mode, "*" is shown. (*1)	Numeric Character	3
ID	Idle detection function. (ON/OFF)	Character	3
PC	Processor capping function.(ON/OFF/*) In dedicated mode, "*" is shown.	Character	3
AA	Auto-activate setting. (OFF/Numeric)	Character	3
AC	Auto-clear function of SEL. (ON/OFF)	Character	3
PB	Pre-boot firmware setting.	Character	10
VC	Virtual COM No. or OFF.	Character	3
VC_PORT	Port No. for accessing to Virtual COM.	Numeric	5
GROUP	Processor group No.	Numeric	3
GENERATION	Generation No. (1 to 65535 decimal)	Numeric	6
VNIC_DEVTYP	Virtual NIC Device Type (NIC1/NIC2/*)	Character	8
MN_CONF	MN_CONF shows the Memory Node information specified by users for allocating memory in NUMA mode. (Node number/A/*) Node number – NUMA Memory Node number specified by user .of the allocating memory 'A' – Automatic assignment is specified. '*' – NUMA is not supported on HVM, or – Guest NUMA is available.	Character	3
PN_CONF	PN_CONF shows the Node information of the processor for assigning processor in NUMA mode. (A/*) 'A' – Automatic assignment is specified. '*' – NUMA is not supported on HVM.	Character	3
MN	MN shows the status of Memory Node concerning memory allocation. (Node number/M/A/*) Node number – Memory in this Node has been allocated to the LPAR. 'M' – Memory has been allocated in multiple nodes. 'A' – Memory will be allocated automatically in the activation. '*' – NUMA is not supported on HVM, or – Guest NUMA is available.  Note: MN is same as MN_CONF when the LPAR is in deactivated status.	Character	3

PN	PN show the status of Node concerning assigning processor. (Node number/M/A/*) Node number – Physical processors in this Node have been assigned to the LPAR. 'M' – Physical processors in multiple nodes have been assigned. 'A' – Physical processors will be assigned automatically in the activation. '*' – NUMA is not supported on HVM.  Note: PN is same as PN_CONF when the LPAR is in deactivated status.	Character	3
UUID	UUID (hexadecimal, 16 bytes)  Note: "*" is displayed when I/F to get UUID is not supported on HVM.	Numeric (hexadecimal)	32
VT_X	Intel(R) Virtualization Technology setting. (ON/OFF/*)  Note: "*" is displayed when Virtual XT-x is not supported on HVM.	Character	3
OS_TYPE	Setting of OS type to boot in HVM. (Default/Solaris/*) 'Default' – Default supported OS (Linux, Windows) 'Solaris' – Oracle Solaris '*' – Other than the default supported OS is not supported on HVM.	Character	16
GUEST_NUMA	Setting of Guest NUMA (ON/ OFF/ *) ON – Enable OFF– Disable '*' – Guest NUMA is not supported.	Character	3
IDLE_MODE	Setting of Guest IDLE mode (HALT/ MWAIT/*) '*' – Guest IDLE mode is not supported, or Idle detection function (ID) is ON.	Character	8
MSHYP_PRTE	Hypervisor Interface: Partition Reference Time Enlightenment (ON/OFF/*) '*' - "*" appears if MSHYP_PRTE (in <a href="#">Function name</a> ) of the HVM is OFF.	Character	3
LOW_LATENCY	Setting of Low Latency mode. (ON/OFF) ON – Enable OFF– Disable  Note: This field is displayed only when HVM license is Enterprise.	Character	8
EPT_1GB	Setting of EPT 1GB (Extended Page Table 1G) mode (ON/OFF). ON – Enable (EPT 1GB) OFF– Disable (EPT 2MB)  Note: This field is displayed only when HVM license is Enterprise.	Character	8
NUMA_BIND_LPROC (*2)	Physical NUMA Node Binding Mode (ON/OFF/*) Note: "*" is displayed if the HVM does not support Physical NUMA Node Binding Mode. "*" is displayed if the guest NUMA feature is disabled.	Character	3

\*1: If the HVM firmware version is 58-50 /78-50/17-60 or higher, service ratio can be displayed in dedicated mode.

\*2: The mode of the logical processor topology setting mode for a guest NUMA when the guest NUMA feature is enabled.

NUMA_BIND_LPROC	Feature of assigning logical processors
-----------------	---

ON	Physical NUMA Node Binding Mode
OFF	Physical Processor Node Binding Mode

**Table 2-44 BSM\_CONFIGURATION record**

Field	Content	Data type	Max. digits
Name	Name (BSM1/BSM2/BSM3/BSM4/CLI1/CLI2/.../CLI8)	Character	32
IP	IP address. (*1) Format: AAA.BBB.CCC.DDD (Dot delimited. Fill up unspecified values with zero) e.g. 192.168.000.001 Name field are not displayed when the HVM is not supporting CLI IP address.	Character	15
PORT	Alert port No. (*1) Displays "*" when name field is CLIx.	Numeric	5

\*1: When "HvmClip" in [Function name](#) shows "OFF", the rows "CLIx" are not displayed.

\*2: When "BsmNotSupport" in [Function name](#) shows "ON", the field "IP" for the record "BSMx" that is shown at the field "Name" shows "000.000.000.000" and the field "PORT" for the record shows "0".

**Table 2-45 FW\_VERSION\_INFORMATION record**

Field	Content	Data type	Max. digits
Name	Firmware name	Character	64
Version	Firmware version	Character	64

**Table 2-46 PHYSICAL\_CPU\_CONFIGURATION record**

Field	Content	Data type	Max. digits
CPU#	Physical CPU No.	Numeric	3
BLADE#	Server blade No.	Numeric	2
DIE#	Die No. (Socket No.)	Numeric	2
CORE#	Core No.	Numeric	2
THREAD#	Thread No.	Numeric	1
STATUS	CPU status. (RUN/FAILURE/ERROR/*)	Character	10
SCHD	Scheduling mode. <ul style="list-style-type: none"> <li>• S: Shared.</li> <li>• D: Dedicated.</li> </ul>	Character	1
GHZ	Frequency. e.g. 2.26	Numeric (GHz)	3 for integer, 2 for fraction
GROUP	Processor group No. Displays "*" when group No. is not configured. (Requires HvmSh version 5.3 or higher)	Numeric	3
STATE	CPU core status. <ul style="list-style-type: none"> <li>• DEA: Spare core for Capacity on Demand</li> <li>• ACT: Normal operation status.</li> <li>• WRN: A core which No. of recoverable error exceeds the threshold value. (abnormal core)</li> <li>• DEG: degenerated processor core.</li> <li>• "*" is displayed if "Capacity on Demand" is not supported on HVM..</li> </ul>	Character	3
RUN_STATUS	Additional information when CPU status is <i>RUN</i> . <ul style="list-style-type: none"> <li>• HIG: Physical CPU runs in high speed</li> <li>• Mnn.: Physical CPU runs in intermediate speed. (nn=01,02..)</li> <li>• LOW: Physical CPU runs in low speed</li> </ul> *: CPU status is not <i>RUN</i> .	Character	3
FREQ	Current operating frequency of Physical CPU.	Numeric (GHz)	3 for integer, 2 for fraction
NODE#	The Node number to which the Physical CPU belongs. "*" is displayed when NUMA is not supported on HVM. "*" is displayed when the configurations Non-NUMA.	Numeric	3

**Table 2-47 VNIC\_SEGMENT\_INFORMATION record**

Field	Content	Data type	Max. digits
SEG#	Virtual LAN segment No. (1a/1b.../ Va ...)(*1)	Character	3
STATUS	Virtual LAN segment status. <ul style="list-style-type: none"> <li>• S: Standby.</li> <li>• D: Down</li> <li>• A: Active</li> <li>• F: Fault</li> <li>• *: Undefined</li> </ul> Note: Content of this field corresponds to "VLAN Segment" on "System Service State" screen.	Character	10
PORT_STATUS	Port status. <ul style="list-style-type: none"> <li>• U: Link Up.</li> <li>• D: Link Down</li> <li>• -: Condition is not fixed</li> <li>• E: unrecoverable error status</li> <li>• *: Others</li> </ul> Note: Content of this field corresponds to "Shared PCI Device Port State" on "System Service State" screen.	Character	10
FILTER	Shared NIC communication packet filter status. ( Disable   Enable   Disable(ALL)   *)	Character	16

\*1: VF NIC LAN segment (SEG#=1va/2av...) information is not displayed. A port status of VF virtual LAN segment is equal to a port status of virtual LAN segment. Packet filter status is fixed as 'Disable'.

**Table 2-48 PHYSICAL\_IO\_CONFIGURATION record**

Field	Content	Data type	Max. digits
PCI#	PCI device No.	Numeric	3
PORT#	Port No.	Numeric	2
Location	Installed location of PCI device. <b>Note:</b> For details, see <a href="#">Description Format for Device Location</a> .	Character	6
PCI_SEG	Segment No. of Config address for PCI device (hex-decimal)	Numeric	2
PCI_BUS	Bus No. of Config address for PCI device (hex-decimal)	Numeric	2
PCI_DEV	Device No. of Config address for PCI device (hex-decimal)	Numeric	2
PCI_FNC	Function No. of Config address for PCI device (hex-decimal)	Numeric	1
TYPE	PCI device type. (*4) <ul style="list-style-type: none"> <li>• S: SCSI controller.</li> <li>• N: Network interface Card (NIC).</li> <li>• F: Fibre Channel.</li> <li>• U: USB controller.</li> </ul>	Character	1
VENDOR_NAME	Vender name of PCI device.	Character	32
DEV_NAME	Device name of PCI device.	Character	64
SCH_MOD	Scheduling mode of PCI device. <ul style="list-style-type: none"> <li>• S: Shared.</li> <li>• D: Dedicated.</li> <li>• E: Exclusively sharing</li> </ul> *: For devices for which Port dedicated mode is enabled, the scheduling mode for each port is displayed.	Character	1
SNIC#	Shared NIC No. For NIC in dedicated or exclusively sharing mode, "*" is shown.	Character	2
PORT_ID_1	For HBA: WWPN. (*1) For NIC: MAC. (*3) For others, "*" is shown.	Character	64
PORT_ID_2	For HBA: WWNN. (*1) For NIC: MAC. (*3) For others, "*" is shown.	Character	64
FW_VER	For HBA: Firmware version. For others, "*" is shown.	Character	64
Status	PCI device status. <ul style="list-style-type: none"> <li>• Err: Error closed.</li> <li>• !: Removed.</li> <li>• *: Others.</li> </ul>	Character	3
SCH_CHG	Changeable or cannot to be changed the schedule mode. <ul style="list-style-type: none"> <li>• +: Changeable</li> <li>• : Cannot be changed.(space)</li> <li>• *: Invalid. (*2)</li> </ul>	Character	1
SEG#	Segment identifier of shared NIC (1a/1b/...) For others, "*" is shown.	Character	3
VENDOR_ID	VendorID (Hexadecimal) of PCI Device `*': Invalid (*2)	Numeric	4
DEVICE_ID	DeviceID (Hexadecimal) of PCI Device `*': Invalid (*2)	Numeric	4
REVISION_ID	RevisionID (Hexadecimal) of PCI Device `*': Invalid (*2)	Numeric	2
SUBSYSTEM_ID	SubsystemID (Hexadecimal) of PCI Device. `*': Invalid (*2)	Numeric	4

VF	Whether VF NIC can be allocated or not. <ul style="list-style-type: none"> <li>• `v`: Allocatable</li> <li>• `*`: Invalid</li> </ul>	Character	3
VF_VLAN_UNDEF	For the VF NIC allocated to the PCI device, "vlanmode=undef" can be set or not. <ul style="list-style-type: none"> <li>• `ON`: Settable</li> <li>• `OFF`: Unsettable</li> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v'.	Character	8
VF_VLAN_UNTAG	For the VF NIC allocated to the PCI device, "vlanmode=untag" can be set or not. <ul style="list-style-type: none"> <li>• `ON`: Settable</li> <li>• `OFF`: Unsettable</li> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v'.	Character	8
VF_VLAN_TAG	For the VF NIC allocated to the PCI device, "vlanmode=tag" can be set or not. <ul style="list-style-type: none"> <li>• `ON`: Settable</li> <li>• `OFF`: Unsettable</li> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v'.	Character	8
VF_PRM_THROUGH	For the VF NIC allocated to the PCI device, "prm=through" can be set or not. <ul style="list-style-type: none"> <li>• `ON`: Settable</li> <li>• `OFF`: Unsettable</li> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v'.	Character	8
VF_PRM_RESTRICT	For the VF NIC allocated to the PCI device, "prm= Restricted" can be set or not. <ul style="list-style-type: none"> <li>• `ON`: Settable</li> <li>• `OFF`: Unsettable</li> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v'.	Character	8
VF_MAC	For the VF NIC allocated to the PCI device, the MAC setting can be set or not. <ul style="list-style-type: none"> <li>• `ON`: Settable</li> <li>• `OFF`: Unsettable</li> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v'.	Character	8
VF_TXRATE	For the VF NIC allocated to the PCI device, the TXRATE setting can be set or not. <ul style="list-style-type: none"> <li>• `ON`: Settable</li> <li>• `OFF`: Unsettable</li> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v'.	Character	8
TXRATE_MAX	Maximum settable value of TXRATE of VF NIC. <ul style="list-style-type: none"> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v' and the TXRATE field is `ON`.	Numeric	10
TXRATE_MIN	Minimum settable value of TXRATE of VF NIC. <ul style="list-style-type: none"> <li>• `*`: Invalid</li> </ul> Note: Only enabled when the VF field is 'v' and the TXRATE field is `ON`.	Numeric	10

TXRATE_STEP	Increasing/decreasing width of TXRATE of VF NIC. <ul style="list-style-type: none"> <li>'*': Invalid</li> </ul> Note: Only enabled when the VF field is 'v' and the TXRATE field is 'ON'.	Numeric	10
OFFLOAD	The offload setting status of shared NIC. <ul style="list-style-type: none"> <li>'Default': Recommended settings of the system unit</li> <li>'Enable': Offload of NIC is enabled</li> <li>'Disable': Offload of NIC is disabled</li> <li>'*': Invalid data</li> </ul>	Character	8
CORE_DED	If the PCI device is an FC, the field displays whether or not it supports HBA core dedicated mode: 'ON' : Supported 'OFF' : Not supported '*' : Invalid (when the target PCI device is not FC, or HBA core dedicated mode is disable, etc.)	Character	8
CORE_NUM	Displays the number of cores when the PCI device supports the HBA core dedicated mode. '*' : Invalid (when the target PCI device is not FC, or HBA core dedicated mode is disable, etc.)	Numeric	2
IO_CONNECT	Displays whether the PCI device is a target to which IO connection mode is applied. "ON": The PCI device is a target. "OFF": The PCI device is not a target. Note: * is displayed if the HVM does not support IO connection mode.	Character	8
LUID_SCAN	Displays whether the fibre channel device supports setting and display of "LUID Scan Mode". "ON": The fibre channel device supports setting and display of "LUID Scan mode". "OFF": The fibre channel device does not support setting and display of "LUID Scan mode". Note: * is displayed if the device is not a fibre channel device or the HVM does not support this function.	Character	6
PERSONALITY	Displays the personality of a PCI device. {NONE   NIC   FCoE   iSCSI   CUSTOM   *} Note: * is displayed for PCI devices with no personality.	Character	16
PORT_DED	Displays the value of Port dedicated mode for a PCI device. {ON   OFF   *} "ON": Port dedicated mode is enabled. "OFF": Port dedicated mode is disabled, that is, the PCI device is in device dedicated mode. Note: * is displayed when the PCI device does not support Port dedicated mode.	Character	6

\*1: If HBA is shared, WWPN/WWNN corresponding to VfcID=0 is set. If HBA is dedicated, WWPN/WWNN corresponding to VfcID=1 is set. If HBA is not shared, '\*' is set.

\*2: If execute for unsupported HVM firmware version, "\*" is shown.

\*3: MAC address of PORT\_ID\_1 means hardware information which is written in an EEPROM. And MAC address of PORT\_ID\_2 means network address which is used for network accesses. Both MAC addresses become equal when the NIC is shared mode. MAC address of PORT\_ID\_2 is set by OS on the LPAR when the NIC is

dedicated mode and enabled. And MAC address of PORT\_ID\_2 is displayed only when the NIC was enabled on the assigned LPAR.

- \*4: The situation that "TYPE field: 'N'" and "VF field: 'v'" are set corresponds to "PCI Type: 'Nv'" on "HVM screen: PCI Device Assignment".

**Table 2-49 PHYSICAL\_IO\_ASSIGN\_INFORMATION record**

Field	Content	Data type	Max. digits
PCI#	PCI device No.	Numeric	3
PORT#	Port No.	Numeric	2
L#	LPAR No.	Numeric	2
STATUS	Allocation status>(*1) <ul style="list-style-type: none"> <li>• A: Allocated (Unused).</li> <li>• R: Allocated (Being used)</li> <li>• -: Unable to allocate</li> <li>• *: Unallocated</li> </ul>	Character	1
REMOVE	Assigning status of removable logical PCI device. !: Removed *: Others Displays "*" except allocation status is "R".	Character	3
STATUS_EX	Allocation status [When the USB_AUTO_ALLOC field is Enable or *] - The same contents as STATUS Field are displayed. [When USB_AUTO_ALLOC Field is Disable] The same contents as STATUS Field are displayed except USB Device. - When USB Device 'A': Allocated (Unused) 'R': Allocated (Being used) '#A': Designated Allocation (Unused) '#R': Designated Allocation (Being used) '*': Unallocated	Character	3
PCI_SEG	The segment number of the Config address in a PCI device in hexadecimal notation	Numeric	2
PCI_BUS	The bus number of the Config address in a PCI device in hexadecimal notation	Numeric	2
PCI_DEV	The device number of the Config address in a PCI device in hexadecimal notation	Numeric	2
PCI_FNC	The function number of the Config address in a PCI device in hexadecimal notation	Numeric	1

\*1: Characters show allocation states are same as the Device Assignment displayed on the PCI Device Assignment screen.  
 However, when the USB\_AUTO\_ALLO field in USB HVM\_CONFIGURATION record is Disable, '#A' and '#R' are not displayed.  
 For allocation status containing '#A' and '#R', use the STATUS\_EX.

**Table 2-50 VFC\_ASSIGN\_INFORMATION record**

Field	Content	Data type	Max. digits
PCI#	PCI device No.	Numeric	3
PORT#	Port No.	Numeric	2
VFC#	VFC ID No. "*" is displayed in dedicated mode	Numeric	2
L#	LPAR No. "*" is shown when VFC ID is unallocated.	Numeric	2
Location	Installed location of PCI device. Note: For details, see <a href="#">Description Format for Device Location</a> .	Character	6
SCH_MOD	Scheduling mode of VFC. <ul style="list-style-type: none"> <li>S: Shared.</li> <li>D: Dedicated.</li> </ul>	Character	1
WWPN	WWPN "*" is displayed when it is not defined.	Character	64
WWNN	WWNN "*" is displayed when it is not defined.	Character	64
PORT_STATUS	Port status. <ul style="list-style-type: none"> <li>A: Available</li> <li>C: ConfigCheck.</li> <li>D: LinkDown.</li> <li>E: ErrorCheck</li> <li>-: Condition is not fixed</li> <li>*: Others</li> </ul> Always displays "*" when the device is dedicated mode. Note: Content of this field corresponds to "Shared PCI Device Port State" on "System Service State" screen.	Character	1
REMOVE	Status of removable logical PCI device which is shared mode. !: Removed *: Others Always displays "*" when the device is dedicated mode.	Character	3
CORE_DED	Displays whether the HBA-core dedicated mode of the target PCI device. {Enable   Enable!   Disable} "Enable": enabled (No. of cores activatable >= No. of VFC ID.) "Enable!": enabled (No. of cores unactivatable < No. of VFC ID.) "Disable": disabled Note that "*" is displayed if the HVM or the PCI device does not support the HBA-core dedicated mode.	Character	8
IO_CONNECT	Status of IO connection mode {AUTO   ON   OFF} Note that "*" is displayed if the HVM or the PCI device does not support IO connection mode or the PCI device is in dedicated mode.	Character	8
MG_WWPN	WWPN used by LPAR Migration (Concurrent maintenance) '*1' is shown if the HVM does not support LPAR migration (concurrent maintenance).	Character	64
MG_WWNN	WWNN used by LPAR Migration (Concurrent maintenance) '*1' is shown if the HVM does not support LPAR migration (concurrent maintenance).	Character	64
DRV_SUPPORT	Function map of the concerned VFC driver '*1' is shown when the allocated LPAR is deactivated or the Driver activation is not completed. Information for the cooperation to HVM Navigator	Numeric (hexadecimal)	8

WWN_STATUS	Shows an effective wwn (HvmSh V6.4 or higher) { ORIGINAL   MIGRATION   UNKNOWWN   * }		Data Type	10
	Information to cooperate with HVM Navigator. ORIGINAL	The values displayed in the WWPN field and the WWNN field are effective as wwn.		
	MIGRATION	The values displayed in MG_WWPN field and MG_WWNN field are effective as wwn.		
	UNKNOWN	Unknown		
	*	Unable to get information (Not supported)		
PCI_SEG	The segment number of the Config address in a PCI device in hexadecimal notation	Numeric	2	
PCI_BUS	The bus number of the Config address in a PCI device in hexadecimal notation	Numeric	2	
PCI_DEV	The device number of the Config address in a PCI device in hexadecimal notation	Numeric	2	
PCI_FNC	The function number of the Config address in a PCI device in hexadecimal notation	Numeric	1	

**Table 2-51 VNIC\_ASSIGN\_INFORMATION record**

Field	Content	Data type	Max. digits
L#	LPAR No.	Numeric	2
VNIC#	VNIC No.	Numeric	2
SEG#	Segment No. (Va/Vb/1a/...) (*2) "" is shown when VNIC is unallocated to LPAR.	Character	3
MAC	MAC address of VNIC. "" is shown when VNIC is unallocated to LPAR. (*1)	Character	17
VLAN_MODE	VLAN mode of VNIC. (Tagged/Untagged/OFF) • OFF: Not using VLAN • Tagged • UnTagged "" is shown when VNIC is unallocated to LPAR.	Character	8
VLAN_IDS	VLAN ID of VNIC. (comma-delimited numeric) "" is shown when VNIC is unallocated to LPAR.	Character	128
PRM	Status of VNIC promiscuous mode. (Through /Restricted ) "" is shown when VNIC is unallocated to LPAR.	Character	3
REMOVE	Status of removable virtual NIC. !: Removed *: Others	Character	3
VF	VF NIC (*2) • 'v': VF NIC • '*': Others	Character	3
PCP	Priority Code Point of VF NIC (0 to 7) Note: "" is shown when the VF field is 'v'.	Numeric	2
TX_RATE	Maximum transfer rate of VF NIC (100 to 1000) Note: "" is shown when TXRATE setting for VF NIC is not available. Note: "" is shown when the VF field is 'v'.	Numeric	8

\*1: If the HVM firmware version is 58-50 /78/50/17-61 or higher, MAC address is displayed even though the VNIC is unallocated.

\*2: The situation that "SEG# field: '1a'" and "VF field: 'v'" are set corresponds to "PCI Type: '1av'" on "HVM screen: VNIC Assignment".

**Table 2-52 LOGICAL\_CPU\_CONFIGURATION record**

Field	Content	Data type	Max. digits
L#	LPAR No.	Numeric	2
CPU#	Logical CPU No.	Numeric	2
STATUS (*1)	<p>Logical CPU Status.</p> <p>[Form 1] { *   S   D   Physical processor No. }</p> <ul style="list-style-type: none"> <li>S: Assigned in shared mode.</li> <li>D: Assigned in dedicated mode (Shown only when LPAR is in deactivated).</li> <li>physical processor No.: Shows the No. of physical processor (in decimal) (Shown only when physical processor is specified manually, or when LPAR is in Activated)</li> <li>*: Unassigned (or offline)</li> </ul> <p>[Form 2] { *   A   Physical processor No. }</p> <ul style="list-style-type: none"> <li>A: Automatically assigns physical processors (Shown only when Logical CPU is in dedicated mode and LPAR is in deactivated).</li> <li>physical processor No.: Shows the No. of physical processor (in decimal) (Shown only when physical processor is specified manually, or when LPAR is in Activated)</li> <li>*: Unassigned (or offline)</li> </ul> <p>Note: This field in Form2 is meaningless when Logical CPU is in shared mode</p>	Character	3
SETTING	<p>Shows the way of assigning physical processor numbers displayed in the STATUS field. { M   A   * }</p> <p>M: Manually assigns (specifying physical processor)</p> <p>A: Automatically assigns (not specifying physical processor)</p> <p>"" is displayed when this field is not supported on HVM.</p> <p>Note: This field is meaningless when Logical CPU is in shared mode</p>	Character	3

\*1: It may be displayed as {S | No.} or {A | No.} depends on the HVM and HvmSh firmware version. See the table "Form of situation-dependent message" in the command "get LPARLProc" to confirm the combination of them.

**Table 2-53 MEMORY\_ASSIGN\_INFORMATION record**

Field	Content	Data type	Max. digits
ORG_ADDR	Memory start address (4 bytes-delimited hexadecimal)	Numeric	17
SIZE	Memory size (Decimal)	Numeric	8
L#	LPAR No. which uses memory area specified by ORG_ADDR,SIZE. "" is shown when other than LPAR used or unused.	Character	3
NAME	<p>Name of the system which using memory area specified by ORG_ADDR,SIZE</p> <ul style="list-style-type: none"> <li>ISOLATED: Isolated memory by memory failure detection.</li> </ul>	Character	31
NODE#	<p>The Node number to which memory belongs.</p> <p>"" is displayed when NUMA is not supported on HVM.</p> <p>"" is displayed when the configurations Non-NUMA.</p>	Numeric	3

**Table 2-54 VCOM\_ASSIGN\_INFORMATION record**

<b>Field</b>	<b>Content</b>	<b>Data type</b>	<b>Max. digits</b>
VC#	VCOM No. (1 to definable Max. VCOM No.)	Numeric	3
TCP_PORT	TCP port address assigned to VCOM (Decimal)	Numeric	5
L#	VCOM allocated LPAR No. "*" is shown when VCOM is unallocated to LPAR.	Character	3
NAME	VCOM allocated LPAR name "*" is shown when VCOM is unallocated to LPAR.	Character	31

**Table 2-55 MAX\_VALUE\_INFORMATION record**

Field	Content	Data type	Max. digits
NAME	Max. value name <ul style="list-style-type: none"> <li>• LPAR_DEF: No. of definable LPAR.</li> <li>• LPAR_ACT: No. of activatable LPAR.</li> <li>• PHY_CPU: Max. No. of physical CPU.</li> <li>• LOG_CPU: Max. No. of logical CPU per LPAR.</li> <li>• DEV: Max. No. of device.</li> <li>• SFC: No. of shareable FC.</li> <li>• SHR_NIC: No. of shareable NIC.</li> <li>• VIR_NIC: No. of definable VNIC per LPAR.</li> <li>• PROC_GROUP: Max. No. of processor group.</li> <li>• VNIC_SYSTEM_NO: VNIC system No.</li> <li>• ACCOUNT: Max. No. of account ("0" is displayed in HVMs that do not support the user authentication)</li> <li>• "MaxUserDefRole": the supported number of user-defined roles Note that 0 is displayed in HVMs that do not support the user authentication.</li> </ul>	Character	31
MAX	Max. value	Numeric	8

**Table 2-56 HVM\_FACILITY\_INFORMATION record**

Field	Content	Data type	Max. digits
NAME	Function name Refer to "HVM Interface Reference: get HvmFacilityMap" for details.	Character	31
VALUE	Enable / Disable the function ON: Enable OFF: Disable	Character	8

**Table 2-57 LPAR\_INITIAL\_INFORMATION record**

Shows the default value of the LPAR configuration when adding LPAR definition.

Field	Content	Data type	Max. digits
NAME	Default value of LPAR Name	Character	31
STATUS	Default value of LPAR Status	Character	10
MEM	Default value of allocated memory capacity (MB)	Numeric	8
DED_CPU	Default value of dedicated CPU number	Numeric	3
SHR_CPU	Default value of shared CPU number	Numeric	3
SRV	Default value of service rate	Numeric Character	3
ID	Default value of idle detecting function (ON/OFF)	Character	3
PC	Default value of processor capping function (ON/OFF/*) '*' when dedicated mode	Character	3
AA	Default value of automatic activation setting (OFF/ Numeric)	Character	3
AC	Default value of SEL automatic clearing function (ON/OFF)	Character	3
PB	Default value of pre-boot firmware setting	Character	10
VC	Default value of virtual COM No. 'OFF' when no virtual COM allocated	Character	3
VC_PORT	Port No. to access to virtual COM	Numeric	5
GROUP	Default value of processor group No.	Numeric	3
VNIC_DEV TYP	Default value of virtual NIC device type (NIC1/NIC2/*)	Character	8
VLAN_MODE	Default value of virtual NIC VLAN mode (Tagged/Untagged/OFF)	Character	8
VLAN_IDS	Default value of virtual VLAN ID (Values divided by commas/*)	Character	128
PRM	Default value of virtual NIC in promiscuous mode (Through /Restricted )	Character	16
MN_CONF	The default value of Node number in the processor assignment. (A/*)	Character	3
PN_CONF	The default value of Node number in the memory allocation (A/*)	Character	3

This record is not displayed when HVM does not support the interface for this record.

**Table 2-58 LOGICAL\_CPUID\_INFORMATION record**

Field	Content	Data type	Max. digits
L#	LPARNo. or "MASK"	Numeric Character	2 5
INITIAL_EAX	Value corresponding to the value set in EAX register when LPAR issues CPUID command.	Numeric (Hexadecimal)	8
EAX	[When L# field is a LPAR No.] Value corresponding to the value set in EAX register after LPAR issued CPUID command. [When L# field is "MASK"] Mask data which has the value set in EAX register with the alteration bit "1".	Numeric (Hexadecimal)	8
EBX	[When L# field is a LPAR No.] Value corresponding to the value set in EBX register after LPAR issued CPUID command. [When L# field is "MASK"] Mask data which has the value set in EBX register with the alteration bit "1".	Numeric (Hexadecimal)	8
ECX	[When L# field is a LPAR No.] Value corresponding to the value set in ECX register after LPAR issued CPUID command. [When L# field is "MASK"] Mask data which has the value set in ECX register with the alteration bit "1".	Numeric (Hexadecimal)	8
EDX	[When L# field is a LPAR No.] Value corresponding to the value set in EDX register after LPAR issued CPUID command. [When L# field is "MASK"] Mask data which has the value set in EDX register with the alteration bit "1".	Numeric (Hexadecimal)	8

This record is not displayed when HVM does not support.

For the bits in the fields from EAX to EDX varying with each logical CPU, the values of logical CPU#0 are displayed.

This record does not display all the CPUIDs which LPAR can get, and only display the CPUIDs which HVM management program needs to control.

**Table 2-59 AVAILABLE\_LIST**

Field	Contents	Data type	Max. digits
MN_CONF	The Number list of Memory Node which exists in the configuration. (The list is separated by comma)	Character	128
PC_CONF	The Node Number list of Physical CPU which exists in the configuration. (The list is separated by comma)	Character	128
OS_TYPE	List of OS type to boot on LPAR (The list is separated by comma) Example: Default, Solaris	Character	128

**Table 2-60 LPAR\_NUMA\_MEMORY\_ASSIGN\_INFORMATION record**

Field	Contents	Data type	Max. digits
L#	LPAR number	Numeric	2
NODE#	NUMA node number	Numeric	2
SIZE	Memory size to be assigned to the target node (MB, Decimal)	Numeric (MB)	9

**Table 2-61 LPAR\_NUMA\_CPU\_ASSIGN\_INFORMATION record**

Field	Contents	Data type	Max. digits
L#	LPAR number	Numeric	2
NODE#	NUMA node number	Numeric	2
SIZE	The number of logical processors to be assigned to the target node	Numeric (MB)	3

**Table 2-62 SEC\_MODE record**

Field	Contents	Data type	Max. digits
IF_NAME *1	HVM communication destination name {HvmSh BSM HCSM Migration http VC LDAP AuditLog}	Character	16
LEVEL	Communication security strength {{Default High} {Telnet SSH} {TLS1.0 TLS1.2 UDP}}	Character	8
VERIFY	Server certificate verification enabled/disabled {Enable Disable *}	Character	8
SESSTO	Session timeout (second)	Numeric	6
AUTHENTICATION	User authentication enabled/disabled {Enable   Disable *}	Character	8

The rows "LDAP" and "AuditLog" in the "IF NAME" field are displayed respectively when the HVM supports the LDAP authentication feature and the audit log feature.

**Table 2-63 Contents in SEC\_MODE record**

IF_NAME	LEVEL	VERIFY	SESSTO	AUTHENTICATION
HvmSh	{Default   High}	{Disable   Enable}	Numeric	{Disable   Enable} *2
BSM	{Default   High}	{Disable   Enable}	Numeric	*
HCSM	{Default   High}	{Disable   Enable}	Numeric	*
Migration	{Default   High}	{Disable   Enable}	Numeric	*
http	{Default   Enable}	*	*	*
VC	Telnet	*	*	{Disable   Enable} *2
	SSH	*	*	*
LDAP	{TLS1.0   TLS1.2}	{Disable   Enable}	*	*
AuditLog	{TLS1.0   TLS1.2}	{Disable   Enable}	*	*
	UDP	*	*	*

Note that "\*" is displayed for HVMs not supporting the user authentication feature.

**Table 2-64 CERTIFICATE record**

Field	Contents	Data type	Max. digits
#	Certificate number that HVM manages {0 to 9 S} S: HVM server certificate 0 to 9: The management number that HVM add for the server certificate of HVM communication destination	Numeric	3
Version	Version	Character	12
Serial_number	Serial number	Numeric (Hexadecimal)	32
Signature_Algorithm	Signature algorithm	Character	64
Public_key_algorithm	Public key algorithm	Character	32
Validity_Not_before	Validity (Not before)	Character	20
Validity_Not_after	Validity (Not after)	Character	20
Common_Name	Common Name (CN) of Issuer	Character	64
Common_Name_Subject	Common Name (CN) of Subject	Character	64
Country	Country(C) of Subject	Character	4
State_or_Province	State or province(ST) of Subject	Character	64
Locality	Locality(L) of Subject	Character	64

**Table 2-65 SSH\_HOST\_KEY record**

Field	Contents	Data type	Max. digits
#	Key number of SSH host under management from HVM (fixed number)	Numeric	3
Fingerprint	Fingerprint for SSH host public key	Character	64

**Table 2-66 MANAGEMENT\_PATH record**

Field	Contents	Data type	Max. digits
MGMNT#	The management path ID {0 1}	Character	8
Location (*1)	The location for the NIC to be installed and to be used as the management path. For the displayed output and the meaning, see <a href="#">Description format for device location</a> .	Character	6
PORT# (*1)	The NIC port no. to be as the used management path	Numeric	2
Status (*1)	The status of the management path NIC port. {Active Standby Error Linkdown Unknown}	Character	16
Type	Management path setting {Default Specified} Default: Default setting Specified: User's setting	Character	16

(\*1): If management path redundancy is not configured, the fields output a "\*".

**Table 2-67 IPV6\_ CONFIGURATION record**

Field	Contents	Data type	Max. digits
NAME	IP addresses of the HVM and its communication counterpart "HVM_IP": HVM IP address "DEF_GW": HVM default gateway "SVP_IP ": SVP IP address "CLIn_IP ": CLI IP address (n=1,2...8) "ROUTER_GW": Router default gateway detected by router searching	Character	16
METHOD	If the NAME field contains an "HVM_IP" address, this field shows the method of assigning an IP address. {STATIC   STATELESS   LINK_LOCAL   *}  If NAME field does not say "HVM_IP", this field shows "*".	Character	16
IP	IPv6 IP address e.g. fe80::1ce:c0ff:ee:cafe	Character	40
PREFIX_LEN	If the NAME field contains an "HVM_IP" address, this field shows the length of the subnet prefix. If NAME field does not say "HVM_IP", this field shows "*".	Numeric	3

**Table 2-68 NETWORK\_PORT\_INFORMATION record**

Field	Contents	Data type	Max. digits
NAME	HVM communication interface name {“SVP1”   “SVP2”   “HVM1”   “HVM2”   “HVM3”}	Character	16
PORT	Port No.	Numeric	5

**Table 2-69 DNS\_CONFIGURATION record**

Field	Contents	Data type	Max. digits
NAME	The names for the IP addresses of DNS servers {“DNS1_IP”   “DNS2_IP”   “DNS3_IP”}	Character	16
IP	The names for the IPv4 or IPv6 addresses of DNS serveres e.g. fe80::1ce:c0ff:ee:café or 192.168.000.001 Note that “NONE” is displayed if you configure no setting.	Character	40

**Table 2-70 AUDIT\_LOG\_CONFIGURATION record**

Field	Contents	Data type	Max. digits
SERVER1	Information on Audit log server 1 to be accessed (The IPv4 address, the IPv6 address, or the host name) Note that “*” is displayed if you configure no setting.	Character	256
SERVER2	Information on Autdit log server 2 to be accessed (The IPv4 address, the IPv6 address, or the host name) Note that “*” is displayed if you configure no setting.	Character	256
PORT	The port number to be used on audit log servers (one of 1 to 65535)	Numeric	5
PROTOCOL	The protocol to be used for communication with audit log servers {UDP   TLS1.0   TLS1.2}	Character	8
VERIFY	Whether verification of certificate is enabled or disabled	Character	8
POLICY	Event to be retrieved as audit log	Character	16

**Table 2-71 LDAP\_CONFIGURATION record**

Field	Contents	Data type	Max. digits
SERVER1	Information on LDAP server 1 (The IPv4 address, the IPv6 address, or the host name) Note that “*” is displayed if you configure no setting.	Character	256
SERVER2	Information on LDAP server 2 (The IPv4 address, the IPv6 address, or the host	Character	256

	name) Note that "*" is displayed if you configure no setting.		
SERVER3	Information on LDAP server 3 (The IPv4 address, the IPv6 address, or the host name) Note that "*" is displayed if you configure no setting.	Character	256
PORT	Port numbers of LDAP servers (one of 1 to 65535)	Numeric	5
ANONYMOUS_BIND	Whether anonymous binding is enabled or disabled	Character	8
LOGIN_ID_ATTRIBUTE	Attribution of login ID Note that a blank is displayed if you configure no setting.	Character	64
BASE_DN	Base DN Note that a blank is displayed if you configure no setting.	Character	254
BIND_DN	BIND DN Note that a blank is displayed if you configure no setting.	Character	254
COMMON_ROLE#	Role number indicating a user authenticated by LDAP {0 to the supported number of user-defined roles   *} Note the following two items. - 0 is the role number with all permissions in an HVM. - * is displayed when RoleBasedAccessControl is set to "OFF".	Numeric	3
COMMON_ROLE_NAME	Role name indicating a user authenticated by LDAP Note that "Administrators" is displayed when the field "COMMON_ROLE#" shows 0.	Character	32

**Table 2-72 RADIUS\_CONFIGURATION record**

Field	Contents	Data type	Max. digits
#	Number of RADIUS server {1 to 3} This number is used for HVM to manage RADIUS servers.	Numeric	1
SERVER	Network information on RADIUS server {IPv4 address   IPv6 address   host name} Note that "*" is displayed when no value is set.	Character	256
PORT	Port number of RADIUS server {1 to 65535}	Numeric	5
RETRY	The times of retries in failure of communication with RADIUS servers	Numeric	3
TIMEOUT	The timeout period for determining a failure of communication with RADIUS servers {1 to 10 seconds}	Numeric	3
METHOD	Protocol for RADIUS authentication	Character	16
COMMON_ROLE#	Role number indicating a user authenticated by RADIUS {0 to the supported number of user-defined roles	Numeric	3

	*} Note the following two items. - 0 is the role number with all permissions in an HVM. - This value is shared by all RADIUS servers.		
COMMON_ROLE_NAME	Role name indicating a user authenticated by LDAP Note that "Administrators" is displayed when the field "COMMON_ROLE#" shows 0.	Character	32

**Table 2-73 ROLE\_CONFIGURATION record**

Field	Contents	Data type	Max. digits
ROLE#	Role number, which is originally equipped with HVM or is defined by a user, indicating a user {0 to the supported number of user-defined roles   *} Note that 0 is the role number with all permissions in an HVM.	Numeric	3
NAME	Role name indicating a user Note the following two items. - A blank " " is displayed when no value is set. - "Administrators" is displayed when the field "COMMON_ROLE#" shows 0.	Character	32
RBAC_Security	Whether the HVM security permission is enabled or disabled {ON   OFF}	Character	3

**Table 2-74 CURRENT\_PERMISSION record**

Field	Contents	Data type	Max. digits
NAME	Characters indicating security permissions assigned to the current login user "RBAC_Security": the HVM security permission	Character	32
VALUE	Value indicating whether a security permission is assigned to the current login user. "ON": A security permission is assigned "OFF": A security permission is not assigned	Character	3

## Supported status and versions

The following table shows the supported status and versions of each field on the platforms.

**Table 2-75 Supported status and versions of each field**

Record	Field	HvmSh command version	HVM version					
			BS	Compute Blade				
			1000	2000 DP	2000 MP	320	500	2500
HVM_INFORMATION		Ver.4.0 or higher	All	All	All	All	All	All
	HVM_ID	Ver.4.0 or higher	All	All	All	All	All	All
	HVM_IP	Ver.4.0 or higher	All	All	All	All	All	All
	HVM_SN	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
	PRODUCT	Ver.4.0 or higher	No	57-30 or higher	78-22 or higher	17-41 or higher	All	All
	CURR_DATE_TIME	Ver.4.0 or higher	All	All	All	All	All	All
CHASSIE_CONFIGURATION		Ver.4.0 or higher	All	All	All	All	All	
	CHA_SN	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
	ID	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
	TYPE	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All (*3)	All
	SVP_IP	(*1)	No	No	No	No	All	All
	MAX_BLADE_CNT	Ver.4.0 or higher	No	No	No	No	All	All
	SVP_IPv6	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
BLADE_CONFIGURATION		Ver.4.0 or higher	All	All	All	All	All	All
	BLADE_SN	Ver.4.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	CHA_SN	Ver.4.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	TYPE	Ver.4.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All (*3)	All
	LOCATION	Ver.4.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	NUMA	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
HVM_CONFIGURATION		Ver.4.0 or higher	All	All	All	All	All	All
	HVM_SN	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
	CHA_SN	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
	BLADE_SN	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All

HVM_IP	Ver.4.0 or higher	All	All	All	All	All	All
SUB_MASK	Ver.4.0 or higher	All	All	All	All	All	All
DEF_GW	Ver.4.0 or higher	All	All	All	All	All	All
VNIC_SYSTEM_NO	Ver.4.0 or higher	All	All	All	All	All	All
BLADE_CNT	Ver.4.0 or higher	All	All	All	All	All	All
MAXLPARCOUNT	Ver.4.0 or higher	All	All	All	All	All	All
CPU	Ver.4.0 or higher	All	All	All	All	All	All
TOTAL_MEM	Ver.4.0 or higher	All	All	All	All	All	All
SYS_MEM	Ver.4.0 or higher	All	All	All	All	All	All
USER_MEM	Ver.4.0 or higher	All	All	All	All	All	All
AUTOSHUTDOWN	Ver.4.0 or higher	All	All	All	All	All	All
PRESTATE	Ver.4.0 or higher	All	All	All	All	All	All
BMCIP	Ver.4.0 or higher	No	No	No	No	All	All
LICENSETYPE	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
VALIDTHRU	Ver.4.0 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
VFC_SEED	Ver.5.1 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
MANG_PATH	Ver.5.1 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
LANG	Ver.5.1 or higher	No	58-20 or higher	78-22 or higher	17-41 or higher	All	All
VC_PORT	Ver.5.1 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
MANG_PATH_DF	Ver.5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	All	All
IMPORT_CONFIG	Ver.5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	All	All
TIME_SYNC	Ver.5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	All	All
NTP1SERVER	Ver.5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	All	All
NTP2SERVER	Ver.5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	All	All
HVM_OPERATING_MODE_CURR	Ver.5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	All	All
HVM_OPERATING_MODE_NEXT	Ver.5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	All	All
PCPU_CSTATE	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
USB_AUTO_ALLOC	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All

SAVE_CHANGED_CONFIG	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
TC_BASE_CURR	Ver.6.5 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-30 or higher	All
TC_BASE_NEXT	Ver.6.5 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-30 or higher	All
ERROR_WATCHING	Ver.7.2 or higher	All	All	All	All	All	All
SAVE_TIME_CONFIG	Ver.7.3 or higher	No	59-50 or higher	79-50 or higher	No	01-70 or higher	All
SYS2_PROC	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
PASSWD_EXPIRY	Ver.8.4 or higher	No	No	No	No	02-05 or higher	02-05 or higher
HVM_SVP_COMMUN	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
IPv6_STATIC	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
IPv6_STATELESS	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
VALIDTHRU_DD	Ver.8.7 or higher	No	No	No	No	02-27 or higher	02-27 or higher
VALIDTHRU_EXPIRED	Ver.8.7 or higher	No	No	No	No	02-27 or higher	02-27 or higher
PERF_TUNING	Ver.8.7 or higher	No	No	No	No	02-27 or higher	02-27 or higher
AUTHENTICATION_METHOD	Ver.9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
AUTHENTICATION_LOGIN_VALID_TIME	Ver.9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
GROUP_CONFIGURATION (*2)	Ver.5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	GROUP#	Ver.5.0 or higher	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	GRP_NAME	Ver.5.0 or higher	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	DED_CORE	Ver.5.0 or higher	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	SHR_CORE	Ver.5.0 or higher	58-40 or higher	78-40 or higher	17-61 or higher	All	All
LPAR_CONFIGURATION	Ver.4.0 or higher	All	All	All	All	All	All
	L#	Ver.4.0 or higher	All	All	All	All	All
	NAME	Ver.4.0 or higher	All	All	All	All	All
	STATUS	Ver.4.0 or higher	All	All	All	All	All
	MEM	Ver.4.0 or higher	All	All	All	All	All
	DED_CPU	Ver.4.0 or higher	All	All	All	All	All
	SHR_CPU	Ver.4.0 or higher	All	All	All	All	All

SRV	Ver.4.0 or higher	All	All	All	All	All	All
ID	Ver.4.0 or higher	All	All	All	All	All	All
PC	Ver.4.0 or higher	All	All	All	All	All	All
AA	Ver.4.0 or higher	All	All	All	All	All	All
AC	Ver.4.0 or higher	All	All	All	All	All	All
PB	Ver.4.0 or higher	All	All	All	All	All	All
VC	Ver.4.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
VC_PORT	Ver.4.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
GROUP	Ver.5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
GENERATION	Ver.5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
VNIC_DEVTYPE	Ver.5.6 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
MN_CONF	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
PN_CONF	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
MN	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
PN	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
UUID	Ver.7.2 or higher	No	59-40 or higher	79-40 or higher	No	01-50 or higher	All
VT_X	Ver.7.3 or higher	No	59-50 or higher	79-50 or higher	No	01-70 or higher	All
OS_TYPE	Ver.7.3 or higher	No	59-50 or higher	79-50 or higher	No	01-70 or higher	All
GUEST_NUMA	Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
IDLE_MODE	Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
MSHYP_PRTE	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
LOW_LATENCY	Ver.8.7 or higher	No	No	No	No	02-27 or higher	02-27 or higher
EPT_1GB	Ver.8.7 or higher	No	No	No	No	02-27 or higher	02-27 or higher
NUMA_BIND_LPROC	Ver.9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
BSM_CONFIGURATION	Ver.4.0 or higher	All	All	All	All	All	All
	Name	Ver.4.0 or higher	All	All	All	All	All
	IP	Ver.4.0 or higher	All	All	All	All	All
	PORT	Ver.4.0 or higher	All	All	All	All	All

FW_VERSION_INFORMATION		Ver.4.0 or higher	All	All	All	All	All	All
	Name	Ver.4.0 or higher	No	57-30 or higher	78-22 or higher	17-41 or higher	All	All
	Version	Ver.4.0 or higher	No	57-30 or higher	78-22 or higher	17-41 or higher	All	All
PHYSICAL_CPU_CONFIGURATION		Ver.4.0 or higher	All	All	All	All	All	All
	CPU_NO	Ver.4.0 or higher	All	All	All	All	All	All
	BLADE_NO	Ver.4.0 or higher	All	All	All	All	All	All
	DIE_NO	Ver.4.0 or higher	All	All	All	All	All	All
	CORE_NO	Ver.4.0 or higher	All	All	All	All	All	All
	THREAD_NO	Ver.4.0 or higher	All	All	All	All	All	All
	STATUS	Ver.4.0 or higher	All	All	All	All	All	All
	SCHD	Ver.4.0 or higher	All	All	All	All	All	All
	GHZ	Ver.4.0 or higher	No	57-30 or higher	78-22 or higher	17-41 or higher	All	All
	GROUP	Ver.4.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	STATE	Ver.5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	RUN_STATUS	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
	FREQ	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
	NODE#	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
VNIC_SEGMENT_INFORMATION		Ver.4.0 or higher	All	All	All	All	All	All
	SEG#	Ver.4.0 or higher	All	All	All	All	All	All
	STATUS	Ver.4.0 or higher	All	All	All	All	All	All
	PORT_STATUS	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
	FILTER	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
PHYSICAL_IO_CONFIGURATION		Ver.4.0 or higher	All	All	All	All	All	All
	PCI#	Ver.4.0 or higher	All	All	All	All	All	All
	PORT#	Ver.4.0 or higher	No	All	All	All	All	All
	Location	Ver.4.0 or higher	All	All	All	All	All	All
	PCI_SEG	Ver.4.0 or higher	All	All	All	All	All	All
	PCI_BUS	Ver.4.0 or higher	All	All	All	All	All	All

PCI_DEV	Ver.4.0 or higher	All	All	All	All	All	All
PCI_FNC	Ver.4.0 or higher	All	All	All	All	All	All
TYPE	Ver.4.0 or higher	All	All	All	All	All	All
VENDOR_NAME	Ver.4.0 or higher	All	All	All	All	All	All
DEV_NAME	Ver.4.0 or higher	All	All	All	All	All	All
SCH_MOD	Ver.4.0 or higher	All	All	All	All	All	All
SNIC#	Ver.4.0 or higher	All	All	All	All	All	All
PORT_ID_1(HBA)	Ver.5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
PORT_ID_1(NIC)	Ver.5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	All	All
PORT_ID_2(HBA)	Ver.5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
PORT_ID_2(NIC)	Ver.5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	All	All
FW_VER	Ver.4.0 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
Status	Ver.5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
SCH_CHG	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
SEG#	Ver.6.0 or higher	No	58-50 or higher	78-50 or higher	17-60 or higher	All	All
VENDOR_ID	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
DEVICE_ID	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
REVISION_ID	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
SUBSYSTEM_ID	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
VF	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
VF_VLAN_UNDEF	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
VF_VLAN_UNTAG	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
VF_VLAN_TAG	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
VF_PRM_THROUGH	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
VF_PRM_RESTRICT	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
VF_MAC	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
VF_TXRATE	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
TXRATE_MAX	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
TXRATE_MIN	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All

	TXRATE_STEP	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
	OFFLOAD	Ver.7.4 or higher	No	59-60 or higher	79-60 or higher	No	01-70 or higher	All
	CORE_DED	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
	CORE_NUM	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
	IO_CONNECT	Ver.9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
	PERSONALITY	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PORT_DED	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
PHYSICAL_IO_ASSIGN_INFORMATION		Ver.4.0 or higher	All	All	All	All	All	All
	PCI#	Ver.4.0 or higher	All	All	All	All	All	All
	PORT#	Ver.4.0 or higher	No	All	All	All	All	All
	L#	Ver.4.0 or higher	All	All	All	All	All	All
	STATUS	Ver.4.0 or higher	All	All	All	All	All	All
	REMOVE	Ver.5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	All	All
	STATUS_EX	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
	PORT_DED	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PCI_SEG	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PCI_BUS	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PCI_DEV	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
VFC_ASSIGN_INFORMATION		Ver.4.0 or higher	All	All	All	All	All	All
	PCI#	Ver.4.0 or higher	All	All	All	All	All	All
	PORT#	Ver.4.0 or higher	All	All	All	All	All	All
	VFC#	Ver.4.0 or higher	All	All	All	All	All	All
	L#	Ver.4.0 or higher	All	All	All	All	All	All
	Location	Ver.4.0 or higher	All	All	All	All	All	All
	SCH_MOD	Ver.4.0 or higher	All	All	All	All	All	All
	WWPN	Ver.4.0 or higher	All	All	All	All	All	All
	WWNN	Ver.4.0 or higher	All	All	All	All	All	All
	PORT_STATUS	Ver.4.0 or higher	All	All	All	All	All	All

	REMOVE	Ver.5.3 or higher	No	58-60 or higher	78-60 or higher	17-70 or higher	All	All
	MG_WWPN	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
	MG_WWNN	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
	DRV_SUPPORT	Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
	WWN_STATUS	Ver.6.4 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	No	All
	CORE_NUM	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
	IO_CONNECT	Ver.9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
	LUID_SCAN	Ver.9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
	PORT_DED	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PCI_SEG	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PCI_BUS	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PCI_DEV	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
VNIC_ASSIGN_INFORMATION		Ver.4.0 or higher	All	All	All	All	All	All
	L#	Ver.4.0 or higher	All	All	All	All	All	All
	VNIC#	Ver.4.0 or higher	All	All	All	All	All	All
	SEG#	Ver.4.0 or higher	All	All	All	All	All	All
	MAC	Ver.4.0 or higher	All	All	All	All	All	All
	VLAN_MODE	Ver.4.0 or higher	All	All	All	All	All	All
	VLAN_IDS	Ver.4.0 or higher	All	All	All	All	All	All
	PRM	Ver.4.0 or higher	No	58-50 or higher	78-50 or higher	17-60 or higher	All	All
	REMOVE	Ver.5.3 or higher	No	58-60 or higher	78-60 or higher	17-70 or higher	All	All
	VF	Ver.7.3 or higher	No	59-58 or higher	79-58 or higher	No	01-70 or higher	All
LOGICAL_CPU_CONFIGURATION		Ver.4.0 or higher	All	All	All	All	All	All
	L#	Ver.4.0 or higher	All	All	All	All	All	All
	CPU#	Ver.4.0 or higher	All	All	All	All	All	All
	STATUS	Ver.4.0 or higher	All	All	All	All	All	All
	SETTING	Ver.8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
MEMORY_ASSIGN_INFORMATION		Ver.5.1 or higher	All	All	All	All	All	All

	ORG_ADDR	Ver.5.1 or higher	All	All	All	All	All	All
	SIZE	Ver.5.1 or higher	All	All	All	All	All	All
	L#	Ver.5.1 or higher	All	All	All	All	All	All
	NAME	Ver.5.1 or higher	All	All	All	All	All	All
	NODE#	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
VCOM_ASSIGN_INFORMATION (*2)		Ver.5.1 or higher	No	All	All	All	All	All
	VC#	Ver.5.1 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	TCP_PORT	Ver.5.1 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	L#	Ver.5.1 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
	LPAR_NAME	Ver.5.1 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	All	All
MAX_VALUE_INFORMATION (*2)		Ver.5.1 or higher	No	All	All	All	All	All
	NAME	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
	Max	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
HVM_FACILITY_INFORMATION (*2)		Ver.5.1 or higher	No	All	All	All	All	All
	NAME	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All
	VALUE	Ver.5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	All	All

LPAR_INITIAL_INFORMATION (*2)		Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
	MN_CONF	Ver.6.4 or higher	No	59-20 or higher	17-86 or higher	17-86 or higher	01-20 or higher	All
	PN_CONF	Ver.6.4 or higher	No	59-20 or higher	17-86 or higher	17-86 or higher	01-20 or higher	All
	Except the above	Ver.6.0 or higher	No	59-00 or higher	17-86 or higher	17-86 or higher	All	All
LOGICAL_CPUID_INFORMATION (*2)		Ver.6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	All	All
	All fields	Ver.6.0 or higher	No	59-00 or higher	17-86 or higher	17-86 or higher	All	All
AVAILABLE_LIST (*2)		Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
	MN_CONF	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
	PC_CONF	Ver.6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	All
	OS_TYPE	Ver.7.3 or higher	No	59-50 or higher	79-50 or higher	No	01-70 or higher	All
LPAR_NUMA_MEMORY_ASSIGN_INFORMATION (*2)		Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
	L#	Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
	NODE#	Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
	SIZE	Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
LPAR_NUMA_CPU_ASSIGN_INFORMATION (*2)		V9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
	All fields	V9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
SEC_MODE (*2)		Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
	AUTHENTICATION	Ver.8.4 or higher	No	No	No	No	02-05 or higher	02-05 or higher
	Other than the above	Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
CERTIFICATE (*2)		Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
	All fields	Ver.8.0 or higher	No	59-60 or higher	79-60 or higher	No	01-80 or higher	All
SSH_HOST_KEY (*2)		Ver.8.4 or higher	No	No	No	No	02-05 or higher	02-05 or higher
	All fields	Ver.8.4 or higher	No	No	No	No	02-05 or higher	02-05 or higher
MANAGEMENT_PATH (*2)		Ver8.5 or higher	No	No	No	No	02-20 or higher	02-20 or higher
	PCI_SEG	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PCI_BUS	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	PCI_DEV	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	Other than the above	Ver8.5 or higher	No	No	No	No	02-20 or higher	02-20 or higher

IPV6_CONFIGURATION		Ver8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
	All fields	Ver8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
NETWORK_PORT_INFORMATION (*2)		Ver8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
	All fields	Ver8.6 or higher	No	No	No	No	02-25 or higher	02-25 or higher
DNS_CONFIGURATION (*2)		Ver9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
	All fields	Ver9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
AUDIT_LOG_CONFIGURATION (*2)		Ver9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
	All fields	Ver9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
LDAP_CONFIGURATION (*2)		Ver9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
	COMMON_ROLE#	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	COMMON_ROLE_NAME	V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
	Other than the above	Ver9.0 or higher	No	No	No	No	02-40 or higher	02-40 or higher
RADIUS_CONFIGURATION (*2)		V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
ROLE_CONFIGURATION(*2)		V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher
CURRENT_PERMISSION(*2)		V9.2 or higher	No	No	No	No	02-45 or higher	02-45 or higher

No: Not supported.

All: With no version dependence

\*1: Not supported. Shows 000.000.000.000.

\*2: The record is not outputted on the version in which HVM does not support.

\*3: "\*" is displayed when HvmSh version is V5.x or lower.

## Get processor group information

Gets processor group information. If not specify the group number, gets information of all defined groups.

### Syntax

```
getΔProcGroup[Δgroup=group No.]
```

### Situation-dependent message

```
Group#group No.: group name (*1)
```

Total $\Delta$ Pproc= <b>total amount of No. of dedicated/shared physical processor</b>							
Ded $\Delta$ Pproc= <b>No. of dedicated mode physical processor</b>							
Shr $\Delta$ Pproc= <b>No. of shared mode physical processor</b>							
LparNum= <b>LPAR No.</b>							
Physical Processor Configuration (*A)							
Processor#	Blade#	Socket#	Core#	Thread#	State	Status	Schedule
Processor No.	Blade No.	Socket No.	Core No.	Thread No.	{DEA   ACT   WAN   DEG}	{RUN   FAILURE   ERROR}	{D   S}
Lpar Configuration (*B)							
Lpar#	Name	Status	Ded LProc		Shr LProc		
LPAR No.	LPAR Name	{ACT   DEACT   FAILURE}	No. of dedicated logical processor		No. of shared logical processor		

## Notes

If specify nonexistent group No. or system max. group No. for [ $\Delta$ group=group No.] option, it leads

Return:0x11000000 Illegal HVM interface was requested Error.

- In case of Total Pproc=0, Physical Processor Configuration record (\*A) is not output.
- In case of Lpar Num=0, Lpar Configuration record (\*B) is not output.
- \*1: Information of physical processors which are not defined group number is displayed on the "Group#-" record.

## Set processor group information

Sets processor group information. Shown below are references of five HVM interfaces for processor group information settings. For four HVM interfaces except *Change processor group name*, the operation result will be *Accepted* and return code shows **operation No.** For the details of operation results, refer to [Status codes](#).

## Add processor group definition

Adds processor group definition.

### Syntax

```
oprΔProcGroupAddΔgroup=group No.
```

NO\_NAME (default) is set to the group name.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Remove processor group definition

Removes the processor group definition.

### Syntax

```
oprΔProcGroupRemoveΔgroup=group No.
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Change processor group name

Changes the processor group name.

### Syntax

```
setΔProcGroupNameΔgroup=group No.Δname=group name
```

If specify the string has 31 or more characters for group name, 32nd or higher is ignored.

### Situation-dependent message

None

## Change group of physical processor core

Changes the group no. of physical processor core.

### Syntax

```
oprΔProcGroupPprocΔgroup=group No.Δprcno=physical processor No.
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Notes

If the CPU's SMT (Simultaneous Multithreading) function is enabled, group number of another physical processor which is in a same processor core of specified physical processor will change. If a physical processor that has different scheduling mode (Dedicated/Shared) in a core, the group number cannot be changed.

## Change LPAR group No.

Changes the LPAR group No.

### Syntax

```
oprΔProcGroupLparΔgroup=group No.Δlpar=LPAR No.[Δgeneration=generation No.]
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

## Check LPAR Activate

Check whether the LPAR of specified LPAR no. can be activated. If the LPAR cannot be activated, it determines the cause from 1 to 3 below. If it has multiple factors, report the high priority one.

Cause of activation fail

1. Specified amount of memory allocation failed due to memory fragmentation.
2. Specified amount of memory allocation failed.
3. Failed to ensure physical processor allocates for LPAR

### Syntax

```
oprΔLparActCheckΔlpar=LPAR No.
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Notes

Check the result of LPAR activate by return code of *getResult*. For details of the return code, refer to [Status codes](#). Note that it cannot check interfere with activate condition by configuration change of other LPARs (includes Activate/Deactivate).

### Examples

1. opr ActCheck lpar=1 -> Able to Activate (possible)
2. opr ActCheck lpar=2 -> Able to Activate (possible)
3. opr Activate lpar=1 -> Activate completed.
4. opr Activate lpar=2 -> Activate failed. (memory shortage)

## Add LPAR definition and set LPAR configuration

Adds LPAR definition of specified LPAR No. and sets LPAR configuration according to the parameter.

### Syntax

```
oprΔLPARaddAndSetΔlpar=LPAR No.  
[Δlparname=LPAR name]  
[Δlparmem=amount of memory allocate to LPAR (MB)]  
[Δlparsrv=LPAR service time allocation]  
[Δshrproc=No. of logical processor in shared mode | dedproc= No. of logical  
processor in dedicated mode]  
[Δvnicno=VNIC No.{network segment identifier of virtual NIC/shared NIC|*}]  
[Δslotno=device locationΔportno=port No.Δvfcid=SfcVfcID]
```

- If not specify lparname parameter, LPAR name is NO\_NAME.
- If specify lparsrv parameter, shrproc parameter must be specified.
- Vnicno parameter can specify a number between 0 and 7 or 0 and 15 in decimal according to the HVM operation mode.
- For the options  
device location, port No. and vfcid parameters are for allocating shared FC.  
The three parameters must be specified when allocating a shared FC. For  
details of each parameter, refer to "[Set shared FC assignment of LPAR](#)". slotno,  
portno and vfcid parameters can be specified up to 8 sets.

### Examples

```
HvmShΔ-host=192.168.0.122Δ  
oprΔLPARaddAndSetΔlpar=1Δlparname=LPAR1Δlparmem=1024Δshrproc=4Δvnicno=0,  
1aΔvnicno=1,1bΔvnicno=2,2aΔvnicno=3,  
2bΔslotno=10Δportno=0Δvfcid=1Δslotno=10Δportno=1Δvfcid=4
```

### Situation-dependent message

```
generation=generation No.
```

### Notes

The network segment identifier of VF NIC (1av | 1bv...) cannot be specified in "vnicno=option".

## Get HVM facility map

Gets the HVM facility map.

### Syntax

```
getΔHvmFacilityMap
```

### Situation-dependent message

```
Function name={ON|OFF}
```

ON: The function is enabled

OFF: The function is disabled or it is not supported.

**Table 2-76 Function name**

Function name	Description	HvmSh support start version
VnaviScreenAssist	HVM screen function of HVM Navigator	HvmSh Ver.5.1 or higher
ManagePathChange	Management path changing function	HvmSh Ver.5.1 or higher
HvmCliIp	HVM CLI IP Address function	HvmSh Ver.5.3 or higher
EfiBootSetting	EFI boot configuration function	HvmSh Ver.5.3 or higher
PciDeviceMapping	PCI Device Mapping Screen function	HvmSh Ver.5.5 or higher
NTP	HVM System Time adjusting function by using NTP	HvmSh Ver.5.5 or higher
HvmOperatingMode	Configuration of HVM Operating Mode function (Standard / Expansion)	HvmSh Ver.5.5 or higher
VnicMultiSegment	Multi Segment / Assigning per Port Function for Shared NIC	HvmSh Ver.5.5 or higher
HvmRestart	Restarting HVM function	HvmSh Ver.5.5 or higher
VnicDeviceChange	Device type of Virtual NIC changing function	HvmSh Ver.5.6 or higher
GetHvmDumpData	Dump data collecting function on HVM memory	HvmSh Ver.5.6 or higher
CMainteMigration	LPAR Migration (Concurrent maintenance) function	HvmSh Ver.6.0 or higher
iScsiBootSetting	iSCSI boot setting function (limited-function)	HvmSh Ver.6.0 or higher
ProtocolTcp	Communication function between HVM and HvmSh by TCP protocol	HvmSh Ver.6.0 or higher
HvmIpChangeInhibit	The inhibiting function of changing an HVM system configuration (HVM_IP, Subnet Mask, Default Gateway) for LAN	HvmSh Ver.6.0 or higher
LparMigrationInfo	Getting function for LPAR Migration information *Function to cooperate with HVM Navigator	HvmSh Ver.6.4 or higher
HostNuma	Memory and processor assignment function suitable for NUMA.	HvmSh Ver.6.4 or higher
TimerCounterBase	TimerCounter Base select function	HvmSh Ver.6.5 or higher

iScsiBoot	iSCSI boot setting function (without DHCP function)	HvmSh Ver.6.5 or higher
iScsiBootDhcp	iSCSI boot setting function (with DHCP function)	HvmSh Ver.6.5 or higher
KeylessVerUp	Version up function without version up key	HvmSh Ver.7.1 or higher
HvmDumpCompress	Function of compressing and acquiring HVM dump *When this function is "ON", Syntax 2 command of "Collecting HVM dump (to save in HVM)" and Syntax 3 command of "Saving HVM dump data in file" are executable.	HvmSh Ver.7.2 or higher
LparVT-x	VT-x (Intel(R) Virtualization Technology) function in LPAR *When this function is "ON", VT-x function can individually be set enable or disable in each LPAR.	HvmSh Ver.7.3 or higher
SolarisBoot	Solaris boot function in LPAR *When this function is "ON", Solaris can be selected from boot OS types in each LPAR.	HvmSh Ver.7.3 or higher
SaveTimeConfig	Auto save function that the adjusted time information is saved in physical RTC or HVM configuration information when HVM system time or LPAR time is adjusted. *When this function is "ON", HVM configuration auto save function can be set enable or disable while adjusting time.	HvmSh Ver.7.3 or higher
LparTimeAdjustSrc	Select original time function when adjusting LPAR time *When this function is "ON", an original time to adjust can be specified for adjusting LPAR time using opr LparTimeAdjust command.	HvmSh Ver.7.3 or higher
VfVnic	VF NIC assignment function for NIC corresponded to SR- IOV	HvmSh Ver.7.3 or higher
Sys2Proc	Setting function for CPU resource limit that SYS2 uses	HvmSh Ver.7.3 or higher
SNicOffload	Shared NIC offload setting function	HvmSh Ver.7.4 or higher
GuestNuma	Guest NUMA function that guest OS recognize the physical NUMA configuration of allocated memory and allocated CPU in LPAR.	HvmSh Ver.8.0 or higher
SecureComm	Encryption communications function between HVM and server management application.	HvmSh Ver.8.0 or higher
GuestIdleMode	Guest idle mode function	HvmSh Ver.8.0 or higher
Efi64Boot	OS boot function that the LPAR pre-boot firmware boot OS using EFI64	HvmSh Ver.8.0 or higher
Efi64BootSetting	EFI boot function that the LPAR pre-boot firmware boot EFI using EFI64	HvmSh Ver.8.0 or higher
Efi64iScsiBootSetting	iSCSI boot function that the LPAR pre-boot firmware boot iSCSI using EFI64	HvmSh Ver.8.0 or higher

PrebootChange	Changing function for the LPAR pre-boot firmware settings	HvmSh Ver.8.0 or higher
82576NIC_SR_IOV	Supported an enabling function of Intel 82576 NIC SR-IOV	HvmSh Ver.8.1 or higher
BsmNotSupport	Not supported a connecting function to BSM *When this function is "ON", this connecting function is not supported.	HvmSh Ver.8.3 or higher
HvmFunctionLicense	License setup function for each function of HVM	HvmSh Ver.8.4 or higher
Authentication	User authentication function for HVM	HvmSh Ver.8.4 or higher
VCSshConnctcion	Function for connecting to virtual COM by SSH	HvmSh Ver.8.4 or higher
MigrationTLS	Function that select TLS protocol during data communication performed between HVMS when LPAR migration	HvmSh Ver.8.4 or higher
ManagePathChangeVer2	Ver2 enhancement of the function to change the management path.  Note: If it is ON, the web console of the system allows you designate a NIC for the HVM management path.	HvmSh Ver.8.5 or higher
EfiBootSettingVer2	Ver2 enhancement of the function to set the EFI boot.  Note: If it is ON, it enables you to change the Correction type and the DataRate of the FC driver option information to the shared mode FC. For details, see <a href="#">FC driver option setting</a> .	HvmSh Ver.8.5 or higher
IPv6	Allows using IPv6 network protocol for the connection between HVM and management interface.	HvmSh Ver.8.6 or higher
MSHYP_PRTE	Function to set Microsoft Hypervisor Interface : Partition Reference Time Enlightenment(PRTE) of LPAR	HvmSh Ver.8.6 or higher
PerformanceTuning	Function for setting Performance tuning options	HvmSh Ver.8.7 or higher
LowLatency	Function for setting LowLatency mode	HvmSh Ver.8.7 or higher
Ept1GB	Function for setting Ept1GB mode	HvmSh Ver.8.7 or higher
IoConnectionMode	Function for setting IO connection mode	HvmSh Ver.9.0 or higher
DNSClient	Function for setting DNS clients	HvmSh Ver.9.0 or higher
NumaBindLproc	Function for assigning logical processors in Physical NUMA Node Binding Mod e	HvmSh Ver.9.0 or higher
LDAPAuthentication	LPAR authentication	HvmSh Ver.9.0 or higher
AuditLog	Audit log	HvmSh Ver.9.0 or higher
RADIUSAuthentication	RADIUS authentication	HvmSh Ver.9.2 or higher
RoleBasedAccessControl	Function for controlling access to an HVM by role	HvmSh Ver.9.2 or higher
PciPortDed	PCI port dedicated mode	HvmSh Ver.9.2 or higher
RBAC_Security	Function for enabling the HVM security permission for Role based access control	HvmSh Ver.9.2 or higher
PciCommandForm2	Shows whether Format 2, in which a device is specified with a device location and a port number, in PCI commands such as "get LPARPCI", "set LPARPCI, get" "SystemPci", and "set SystemPci", is enabled.	HvmSh Ver.9.2 or higher

**Note**

The number of function names will increase as needed in version update of HVM firmware.

## Get function license information for HVM

Gets the function license information for HVM

### Syntax

```
getΔHvmFunctionLicense
```

### Situation-dependent message

```
Function name={ON|OFF}
```

- ON: The function is enabled.
- OFF: The function is disabled.
- For the function name, see the following table.

**Table 2-77 List of license function name**

Function name	Contents	Supported HvmSh version
HANA	HANA license	V8.4

### Notes

- When you execute this command to the HVM in which any HVM function license is not supported, it ends with an error of "Return: 0x11000000".

## Get scheduling option

Gets the scheduling option for HVM.

### Syntax

```
getΔHvmScdOptions
```

### Situation-dependent message

```
MULTI_QUEUE_SCD={ ON | OFF | * }
```

"\*" is displayed if the HVM does not support the multiple queue scheduling feature.

## Set scheduling option

Sets the scheduling option for HVM.

### Syntax

```
oprΔHvmScdOptionsΔMULTI_QUEUE_SCD={ ON | OFF }
```

MULTI\_QUEUE\_SCD: the multiple queue scheduling feature

- ON: The function is enabled.
- OFF: The function is disabled.

### Situation-dependent message

```
accept=Operation number
```

### Notes

- You can execute this command only when no activated LPARs exist.
- In a 4-blade SMP configuration, the default value of the multiple queue scheduling feature is "ON" regardless of server blade type.
- HVMs manage the scheduling queue for each processor that the HVMs manage respectively when MULTI\_QUEUE\_SCD is set to "ON". This may enable performance improvement against overhead caused by queue conflict and dispatch delay.

## Shutdown HVM System

Shuts down the HVM system.

### Syntax

```
oprΔHvmShutdown
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicate an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hex-decimal.

### Notes

When the HVM starts shutdown operation, HvmSh command will be time out.

## Restarting HVM system

Restarts the HVM system.

### Syntax

```
oprΔHvmRestart
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicate an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hex-decimal. However result of this command cannot be confirmed after restarting the HVM because the operation number is cleared by restarting.

### Notes

When the HVM starts restarting operation, HvmSh command will be time out (Return: 0x1002 0001 Response Timeout) or error end (Return: 0x1003 0000 Unknown Data Received) till the restarting operation has finished.

## Get optional information of FC driver

Gets optional information of the FC driver for HBA.

### Syntax 1

```
getΔFcBootFunctionΔslot=HBA physical device locationΔportno=HBA port No.Δ{par=lpar No. | vfcid=VfcID | vfcid=all}
```

### Syntax 2

```
getΔFcBootFunctionΔslot=all
```

### Situation-dependent message (Syntax 1: without specifying vfcid=all)

```
bootfunc={Enabled | Disable}
ConnectionType={{Auto | PointToPoint | Loop} | {Auto|PointToPoint|FC-AL} }
MultiplePortID={Enable|Disable|*}
#Added by HvmSh Ver8.5 or higher.
DataRate={Auto | 1G | 2G | 4G | 8G | 16G}
SpinupDelay={10 - 2550 | Disable}
LoginDelayTime=3 - 60
PersistentBindings={Enable | Disable}
ForceDefaultParameter={Enable | Disable}
SelectBootDevice={Enable | Disable}
LuidScanMode={Enable | Disable | *} *: HvmSh Ver.9.0 or higher
<<BootDeviceList>>(LUN:decimal)
1-WWPN:50060E801025A260-LUN:0000
2-WWPN:0000000000000000-LUN:0000
3-WWPN:0000000000000000-LUN:0000
4-WWPN:0000000000000000-LUN:0000
5-WWPN:0000000000000000-LUN:0000
6-WWPN:0000000000000000-LUN:0000
7-WWPN:0000000000000000-LUN:0000
8-WWPN:0000000000000000-LUN:0000
*: HvmSh Ver.9.0 or higher
1-LUID:{Type3|Type1|Invalid|Error|*}-
{010203040506070809101112131415010203040506070809101112131415|Error|*}
2-LUID:{Type3|Type1|Invalid|Error|*}-
{0000000000000000000000000000000000000000000000000000000000000000|Error|*}
3-LUID:{Type3|Type1|Invalid|Error|*}-
{0000000000000000000000000000000000000000000000000000000000000000|Error|*}
4-LUID:{Type3|Type1|Invalid|Error|*}-
{0000000000000000000000000000000000000000000000000000000000000000|Error|*}
5-LUID:{Type3|Type1|Invalid|Error|*}-
{0000000000000000000000000000000000000000000000000000000000000000|Error|*}
6-LUID:{Type3|Type1|Invalid|Error|*}-
{0000000000000000000000000000000000000000000000000000000000000000|Error|*}
7-LUID:{Type3|Type1|Invalid|Error|*}-
{0000000000000000000000000000000000000000000000000000000000000000|Error|*}
8-LUID:{Type3|Type1|Invalid|Error|*}-
{0000000000000000000000000000000000000000000000000000000000000000|Error|*}
```

### Situation-dependent message (Syntax 1: specifying vfcid=all)

[FC_BOOT_FUNCTION ( <b>device location, port No.</b> )]<CRLF> *: the part ( <b>device location, port No.</b> ) can be applied to only Syntax 3.
<tab> <b>Field Name</b> <tab> <b>Field Name</b> <tab>...<CRLF>
<tab> <b>Field Data</b> <tab> <b>Field Data</b> <tab>...<CRLF>
...

### Situation-dependent message (Specifying Syntax 2)

[FC_BOOT_FUNCTION]<CRLF>
<tab> <b>Field Name</b> <tab> <b>Field Name</b> <tab>...<CRLF>
<tab> <b>Field Data</b> <tab> <b>Field Data</b> <tab>...<CRLF>
...

The following table includes field names and values. For the character strings to be displayed, see Situation-dependent message (Syntax 1: "vfcid=all" not specified).

**Table 2-78 FC BOOT FUNCTION record**

Field	Contents	Data type	Max. digits
ID	VfcId (1 through the largest number of vfcID)	Numeric	2
FUNC	bootfunc	Character	8
TYPE	ConnectionType	Character	12
RATE	DataRate	Character	8
SDELAY	SpinupDelay	Character	8
LDELAY	LoginDelayTime	Character	8
BINDINGS	PresistentBindings	Character	8
PARAM	ForceDefaultParameter	Character	8
SELECT	SelectBootDevice	Character	8
WWPN1	WWPN1	Character	16
LUN1	LUN1	Character	4
WWPN2	WWPN2	Character	16
LUN2	LUN2	Character	4
WWPN3	WWPN3	Character	16
LUN3	LUN3	Character	4
WWPN4	WWPN4	Character	16
LUN4	LUN4	Character	4
WWPN5	WWPN5	Character	16
LUN5	LUN5	Character	4
WWPN6	WWPN6	Character	16
LUN6	LUN6	Character	4
WWPN7	WWPN7	Character	16
LUN7	LUN7	Character	4
WWPN8	WWPN8	Character	16
LUN8	LUN8	Character	4

When you specify Syntax 2, the following outputs are added to above.

Field Title	Content	Data Type	Max. Digits
Location	PCI mounting position  <b>Note:</b> For details, see <a href="#">Description Format for Device Location</a> .	Character	6
PORT#	Port number	Numeric	2
L#	LPAR number "*" is indicated when the network segment is not assigned to the LPAR.	Numeric	2

When you specify Syntax 1 (with vfcid=All setting) or Syntax 2, the following outputs are added to the above. The fields "MULTI\_PORT\_ID" to "PEND\_RATE" are added for HvmSh Ver. 8.5 or higher. Also, the fields "LUID\_SCAN" to "LUID8\_DATA" are added for HvmSh Ver. 9.0 or higher.

Field title	Content	Data type	Max. digits
MULTI_PORT_ID	MultiplePortID	Character	16
PEND_TYPE	ConnectionType is displayed when change is suspended. "*" is displayed when not suspended.	Character	12
PEND_MULTI_PORT_ID	MultiplePortID is displayed when change is suspended.	Character	16

	"*" is displayed when not suspended.		
PEND_RATE	DataRate is displayed when change is suspended. "*" is displayed when not suspended.	Character	8
LUID_SCAN	LuidScanMode	Character	8
LUID1_TYPE	TYPE1	Character	8
LUID1_DATA	LUID1	Character	60
LUID2_TYPE	TYPE2	Character	8
LUID2_DATA	LUID2	Character	60
LUID3_TYPE	TYPE3	Character	8
LUID3_DATA	LUID3	Character	60
LUID4_TYPE	TYPE4	Character	8
LUID4_DATA	LUID4	Character	60
LUID5_TYPE	TYPE5	Character	8
LUID5_DATA	LUID5	Character	60
LUID6_TYPE	TYPE6	Character	8
LUID6_DATA	LUID6	Character	60
LUID7_TYPE	TYPE7	Character	8
LUID7_DATA	LUID7	Character	60
LUID8_TYPE	TYPE8	Character	8
LUID8_DATA	LUID8	Character	60

## Notes

- When the target HBA is in dedicated mode, specifying "lpar=" and "vfcid=" is not required; however, if you need to specify those parameters, set "lpar=**LPAR No.** (to which the HBA is dedicated)" or "vfcid=1".
- When the target HBA is in shared mode, specify either "lpar=" or "vfcid=".
- Command failure with the return code 0x0103 0000 (Invalid Input Data/LPAR) indicates an 'Invalid LPAR No.' or 'VfcId is not assigned to the LPAR' error.
- Designating an FC, which is not HBA, results in a failure with the return code 0x081C 0002.
- Specifying an HBA not supporting shared mode results in a failure with the return code 0x081C0002.
- In using Syntax 2 (slot=All), you cannot specify "portno=", "lpar=", and "vfcid=option" options.
- MultiplePortID shows {Enable|Disable} only for 16Gbps FC HBAs; however, it shows an asterisk (\*) for other HBAs.
- ConnectionType shows {Auto|PointToPoint|FC-AL} for 16Gbps FC HBAs; however, it shows {Auto|PointToPoint|LOOP} for other HBAs.

## Set optional information of FC driver

Sets optional information of FC driver to the optional ROM.  
(This operation is equivalent with driver configuration by EFI commands.)

### Syntax 1

```
setΔFcBootFunctionΔslot=HBA device locationΔportno=HBA port No.Δlpar=LPAR No.
  Δ[opt=clear]
  Δ[bootfunc={Enable | Disable}]
  Δ[wwn=CTL/Port WWN of storageΔlu=LU No.]
  Δ[ConnectionType={Auto | PointToPoint | Loop | FC-AL}] (*1)
  Δ[MultiplePortID={Enable|Disable}] (*1)
  Δ[DataRate={Auto | 1G| 2G| 4G| 8G| 16G}] (*1)
  Δ[SpinupDelay={Disable | 10 through 2,550}]Δ[LoginDelayTime={0 | 3 through 60}]
  Δ[PresistentBndings={Enable | Disable}Δ[ForceDefaultParameter={Enable | Disable}]
  Δ[SelectBootDevice={Enable | Disable}]
  Δ[BootDeviceList={WWN_LU, WWN_LU,...,WWN_LU}]
  Δ[LuidScanMode={Enable | Disable}] (*2)
  Δ[generation=generation No.]
```

- Using “opt=**clear**” option disables specifying options other than “slot=”, “portno=”, “lpar=”, and “generation=”.
- \*1: HvmSh Ver. 8.5 or higher allows specifying “ConnectionType=FC-AL”, “MultiplePortID={Enable|Disable}”, and “DataRate=16G”.
- \*2: HvmSh Ver. 9.0 or higher allows specifying “LuidScanMode={Enable | Disable}”. If the option is enabled for HVMS not supporting setting and displaying “LuidScanMode”, it ends with an error of "Return: 0x11000000". Whereas, if the option is enabled for devices not supporting setting and displaying “LuidScanMode”, it ends with an error of “Return: 0x01030000”.

### Situation-dependent message (Syntax 1)

None

## Syntax 2

HVMs with their EfiBootSettingVer2 in [Function name](#) being ON allows you setting in Syntax 2 below. Syntax 2 differs from Syntax 1 on the following: a. you can set ConnectionType, MultiplePortID, and DataRate of a shared mode HBA; b. it reports the operation No. as a situation-dependent-message.

```
oprΔFcBootFunctionΔslot=HBA device locationΔportno=HBA port No.Δlpar=LPAR No.Δ[opt=clear]  
  Δ[bootfunc={Enable|Disable}]  
  Δ[wwn=CTL/Port WWN of storageΔlu=LU No.]  
  Δ[ConnectionType={Auto|PointToPoint|Loop|FC-AL}]  
  Δ[MultiplePortID={Enable|Disable}]  
  Δ[DataRate={Auto|1G|2G|4G|8G|16G}]  
  Δ[SpinupDelay={Disable|10 through 2,550}]Δ[LoginDelayTime={0|3 through 60}]  
  Δ[PresistentBndings={Enable|Disable}]Δ[ForceDefaultParameter={Enable|Disable}]  
  Δ[SelectBootDevice={Enable|Disable}]Δ[BootDeviceList={WWN_LU, WWN_LU,...,WWN_LU}]  
  Δ[generation=generation No.]  
  Δ[LuidScanMode={Enable|Disable}]  
  Δ[pending=yes]
```

- Using "opt=**clear**" option disables specifying options other than "slot=", "portno=", "lpar=", and "generation=".
- Using {pending=**yes**} option temporarily holds to reflect the changes by ConnectionType, MultiplePortID, and DataRate of a shared mode HBA onto the HVM system. To make the reflection occur, use Syntax 3 with {pending=**commit**} option.

## Syntax 3

```
oprΔFcBootFunctionΔpending={ commit|cancel}
```

- Using {pending=**commit**} option reflects the suspended changes to ConnectionType, MultiplePortID, and DataRate of a shared mode HBA onto the HVM system. If two or more changes are suspended, {pending=**commit**} option causes HvmSh to reflect them all.
- Using {pending=**cancel**} option invalidates changes to ConnectionType, MultiplePortID, and DataRate.
- If there is no suspended change to ConnectionType, MultiplePortID, and DataRate, the command ends normally.

## Situation-dependent message (Syntax 2 and Syntax 3)

```
accept=operation No.
```

- Returns the operation No. (decimal) assigned when HVM accepted. At a normal end of the operation, the return code comes in hexadecimal.

## Notes (for both Syntax 1 and Syntax 2)

- This command can be executed only when the target LPAR is deactivated.
- HBA slot No. has to be specified to the No. (6, E05, I014, or something) which is displayed on the HVM screen. For details, see [Description Format for Device Location](#).
- "SpinupDelay" has to be specified per 10 seconds.
- If you use Loop or FC-AL in ConnectionType=option, HvmSh sets FC-AL for 16Gbps FC HBA and sets Loop for other cases.
- If you set MultiplePortID for other than 16Gbps FC HBA, it causes an error.
- Values allowed for DataRate differs depending on the type of FC:

16Gbps FC HBA	DataRate={Auto 4G 8G 16G}
8Gbps FC HBA	DataRate={Auto 2G 4G 8G}
4Gbps FC HBA	DataRate={Auto 1G 2G 4G}
- ConnectionType, MultiplePortID, and DataRate set physical ports of the HBA; changes to HBA ports are reflected to all the LPARs sharing the HBA.
- Both "wwn=" and "lu=" options are required when have specified them. Either only one option cannot be specified.
- Changed item in the BootDeviceList comes to top of the list.
- Option of "BootDeviceList=" can be specified to maximum 8 wwn/lun combinations.
- Both "wwn=, lu=" and "BootDeviceList=" options cannot be specified at the same time. However "BootDeviceList=" can specify one "WWN, LUN" combination.
- "bootfunc" can be specified by "wwn=, lu=" or "BootDeviceList=" option.
- "SelectBootDevice" is changed to "Enable" when specified "wwn=, lu=" and not specified "SelectBootDevice".
- Available range of "wwn" is 0x0000 0000 0000 0000 through 0xFFFF FFFF FFFF FFFE (0xFFFF FFFF FFFF FFFF is not specified to "wwn". EFI command can set it)
- This command stores specified information to the optional ROM. Therefore modified information does not change by LPAR activation or changing HBA assigning.
- If the command fails with "Return: 0x0103 0000", LPAR No. is incorrect, VfcId is not assigned to target LPAR or dedicated mode HBA is not assign to target LPAR.
- When executing the command with no option except "slot=", "portno=", "lpar=", or "generation=" options, it finishes normally with "Return: 0x0000 0000". The optional ROM setting is not executed.
- "LoginDelayTime" is set to default value (3 seconds) when it set to zero.
- Command fails with "Return: 0x081C 0002" when specify the FC which is not HBA.

- Command fails with "Return: 0x081C 0002" if the HBA does not support the shared mode.
- The Link Speed of 16Gbps Fibre Channel can be set with DataRate=option.

### Notes (for Syntax 1)

- Changes to ConnectionType, MultiplePortID, and DataRate are effective only for HBAs in dedicated mode; they are ignored for HBAs in shared mode.
- Behavior for opt=clear option differs depending on the mode of the target HBA.
  - For HBA in dedicated mode, all of the BootFunctions become initial state.
  - For HBA in shared mode, the BootFunction other than ConnectionType, MultiplePortID, and DataRate become initial state.

### Notes (for Syntax 2 and Syntax 3)

- Changes to any of ConnectionType, MultiplePortID, and DataRate for the target HBA in shared mode, which includes opt=clear and pending=commit options, requires the following considerations:
  - If some LPARs are in activated state in spite of a target HBA is assigned, changes to connectionType, MultiplePortID, and DataRate are not performed, although other settings are performed. If the status code 0x003A0002 comes, Activate all the LPARs and execute pending=commit.
  - Reflecting changes to the HVM system usually takes two to three minutes; during the time, it becomes unable to communicate with HVMs. The commands executed during the time fail in either of the errors, Response Timeout (Return:0x10020001) and Unknown Data Received (Return: 0x10030000), if {pending=yes} option is not used.
  - If you change ConnectionType, MultiplePortID, or DataRate of ports of an HBA, all the changes, including those to other HBA ports suspended, will be reflected to the HVM.
- If you repeat changing ConnectionType, MultiplePortID, or DataRate to the same HBA, specifying {pending=yes} option, HvmSh reflects only the value entered last.
- If the HBA core dedicated mode of the HBA port to be changed is enabled, you cannot change the ConnectionType and the MultiplePortID.

## Initialized status of BootFunction

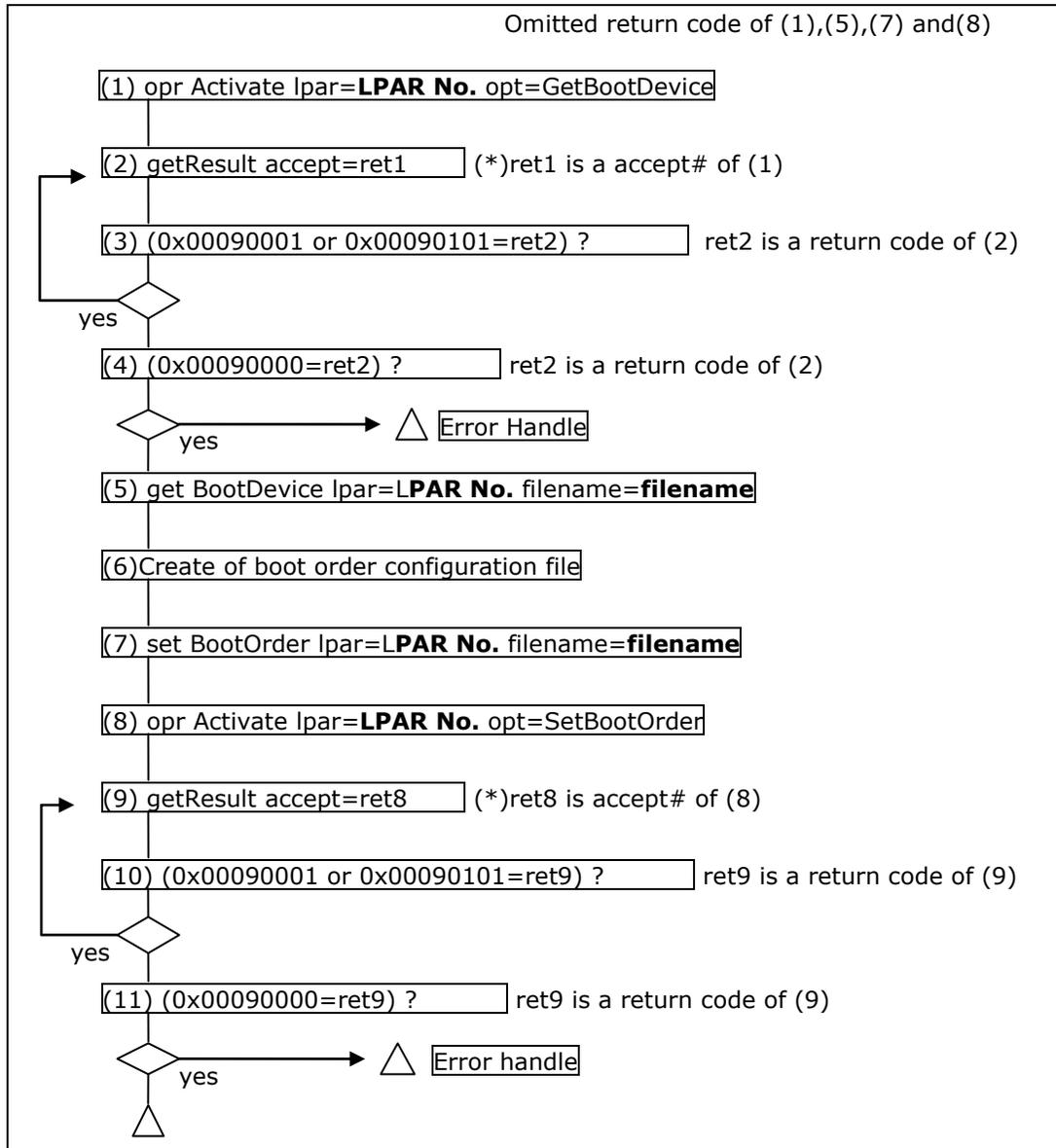
```
bootfunc=Disable
ConnectionType=Auto (*1)
MultiplePortID=Disable (*1)
DataRate=Auto (*1)
SpinupDelay=Disable
LoginDelayTime=3sec
PersistentBindings=Enable
ForceDefaultParameter=Disable
SelectBootDevice=Disable
<<BootDeviceList>>(LUN:decimal)
1-WWPN:0000000000000000-LUN:0000
2-WWPN:0000000000000000-LUN:0000
3-WWPN:0000000000000000-LUN:0000
4-WWPN:0000000000000000-LUN:0000
5-WWPN:0000000000000000-LUN:0000
6-WWPN:0000000000000000-LUN:0000
7-WWPN:0000000000000000-LUN:0000
8-WWPN:0000000000000000-LUN:0000
```

\*1: If you execute a command with {opt=clear} option in Syntax 1 (set FcBootFunction) to a shared mode HBA, it does not result in the initial state.

## Control of LPAR boot information

HvmSh controls LPAR boot information by "opr Activate", "get BootDevice" and "set BootOrder" command.

Sample of HvmSh command sequence is below.



**Figure 2-3 Control sequence of LPAR boot information**

## Notes about conflict of commands

When 3 commands for control of LPAR boot information are executed to HVM, the third command waits maximum 30 seconds finish of the second command.

(1) Case of get boot information.

1<sup>st</sup> command : "opr Activate opt=GetBootDevice"

2<sup>nd</sup> command : "get BootDevice"

3<sup>rd</sup> command : "opr Activate opt=GetBootDevice"

(Target LPAR of 1<sup>st</sup> and 3<sup>rd</sup> are different)

If 2<sup>nd</sup> command is executed after finish of 3<sup>rd</sup> command, 2<sup>nd</sup> command fails with "Return: 0x0104 0000".

(2) Case of set boot information.

1<sup>st</sup> command : "set BootOrder"

2<sup>nd</sup> command : "opr Activate opt=SetBootOrder"

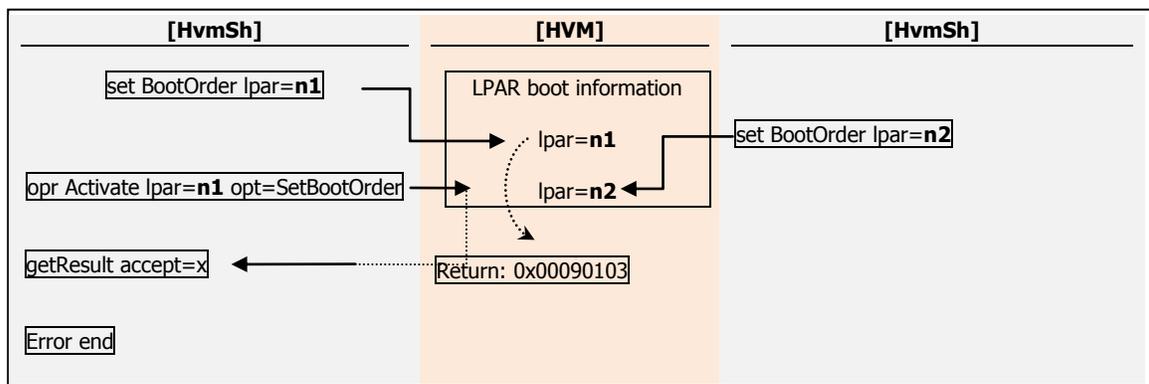
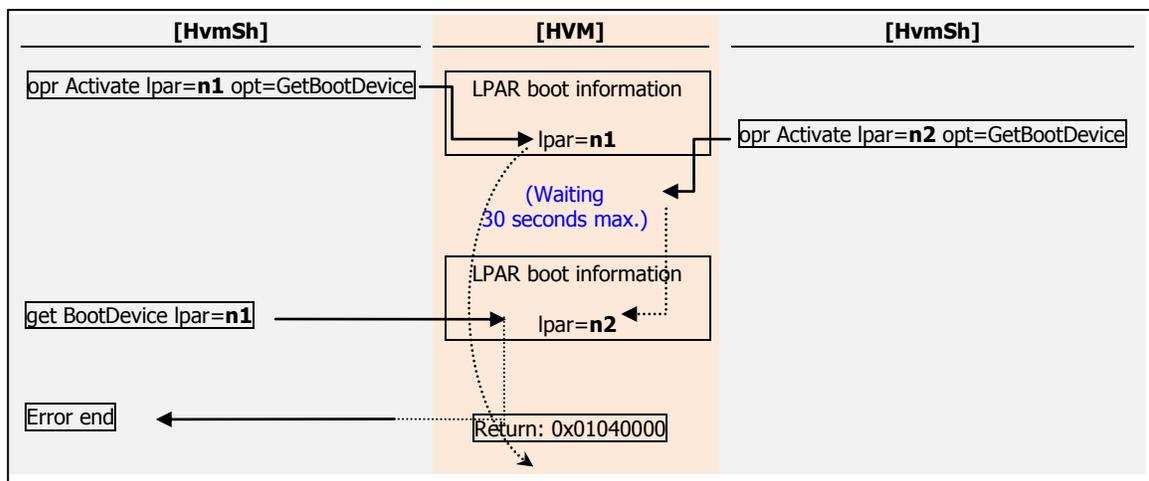
3<sup>rd</sup> command : "set BootOrder"

(Target LPAR of 1<sup>st</sup> and 3<sup>rd</sup> are also different)

If 2<sup>nd</sup> command is executed after finish of 3<sup>rd</sup> command, 2<sup>nd</sup> command fails with "Return: 0x0009 0103".

Therefore don't execute the command for control of LPAR boot information at the same time to the different LPAR. It causes conflict of commands.

Example of command conflict is below.



**Figure 2-4 Example of command conflict**

## File format for control of boot information

Samples of file for control of boot information are below.

### (1) File for "get BootDevice"

```
[Boot Table Device List]
1:LU* 5      1      50060e801025a260  0
      "Acpi(PNP0A08,0x0)/Pci(0x3,0x0)/Pci(0x0,0x2)/Pci(0x4,0x1)/Fibre(0x50060E801025A260,0x0
)"      "0 5 4 1"      five
*:LU 5      1      50060e801025a260  0
      "Acpi(PNP0A08,0x0)/Pci(0x3,0x0)/Pci(0x0,0x2)/Pci(0x4,0x1)/Fibre(0x50060E801025A260,0x0
)/HD(1,MBR,0x0001B789,0x3F,0x32F8E)"      "0 5 4 1"
*:LU 5      1      50060e801025a260  0
      "Acpi(PNP0A08,0x0)/Pci(0x3,0x0)/Pci(0x0,0x2)/Pci(0x4,0x1)/Fibre(0x50060E801025A260,0x0
)/HD(2,MBR,0x0001B789,0x32FCD,0x27C9BE5)"      "0 5 4 1"

*:PXE* 00-00-87-62-e7-00  "PciRoot(0x1)/Pci(0x4,0x0)/Pci(0x1,0x0)/MAC(00008762E700,0x0)"
      "0 7f 1 0"
*:PXE* 00-00-87-62-e7-01  "PciRoot(0x1)/Pci(0x4,0x0)/Pci(0x2,0x0)/MAC(00008762E701,0x0)"
      "0 7f 2 0"
2:EFI-SHELL
```

### (2) File for "set BootOrder"

```
[Boot Table Device List]

1:LU* 5      1      50060e801025a260  0
      "Acpi(PNP0A08,0x0)/Pci(0x3,0x0)/Pci(0x0,0x2)/Pci(0x4,0x1)/Fibre(0x50060E801025A260,0x0
)"      "0 5 4 1"      five

2:EFI-SHELL

3:PXE* 00-00-87-62-e7-00  "PciRoot(0x1)/Pci(0x4,0x0)/Pci(0x1,0x0)/MAC(00008762E700,0x0)"
      "0 7f 1 0"
4:PXE* 00-00-87-62-e7-01  "PciRoot(0x1)/Pci(0x4,0x0)/Pci(0x2,0x0)/MAC(00008762E701,0x0)"
      "0 7f 2 0"
```

**Table 2-79 File format for control of boot information**

No.	File format
1	ASCII text file
2	Return code is MSDOS mode (CR+LF)
3	All characters are 1byte code
4	Mac address uses small letter
5	For "get BootDevice": Maximum device number is 512 For "set BootDevice": Maximum device number is 16
6	Boot order begins from No.1. (Don't use No.0) Boot order is not admit lack number. "*" are displayed for item which has not the boot order number. (for "get BootDevice" file)
7	Device information format is below. Boot order No.: Boot ID<tab>Data<tab>Data<tab>..."DevicePath"<tab>"segΔbusΔdevΔfunc"<tab>Boot Name<CR+LF>
8	Maximum Boot Name is 75 characters. (containing NULL end code) Specific character (!"#\$\$%&'()- _{ }?*' +><.,/\:];[@\^^-) can use to Boot Name. Boot Name is set automatically when it has not been set. (to XXXX000#, XXXX: Device type, #: hex number) Examples of automatically named device names. PXE: NIC0001 LU: FC0002 iSCSI: iSCSI0003 CD/DVD-KVM: KVM0004 CD/DVD-Front: USB0005
9	Don't describe the device information which has not set to BootOrder. (for "Set BootOrder" file)
10	Cannot set device information to the un-bootable device (without "*" mark) except EFI-SHELL. (for "Set BootOrder" file)

**Table 2-80 Boot ID**

No.	Boot ID	Device type
1	PXE	Network device
2	LU	FC device
3	iSCSI	iSCSI device
4	CD/DVD-KVM	KVM-CD/DVD device
5	CD/DVD-Front	Front USB-CD/DVD device
6	EFI-SHELL	EFI shell

**Table 2-81 PXE data format**

Field	Contents	Format	Length
1	Boor order	Decimal data	2
2	:	Character	1
3	PXE or PXE*	Character	3 or 4
-	<tab>	<tab>	1
4	MAC address	Mac format (xx-xx-xx-xx-xx-xx)	17
-	<tab>	<tab>	1
5	"Device path"	Character	300
-	<tab>	<tab>	1
6	"seg bus dev func"	Hex data	13
-	<tab>	<tab>	1
7	Boot name	Character (available omission)	75
-	Return	<CR+LF>	2

**Table 2-82 LU data format**

Field	Contents	Format	Length
1	Boor order	Decimal data	2
2	:	Character	1
3	LU or LU*	Character	2 or 3
-	<tab>	<tab>	1
4	Slot No.	Hex data   Exx   Ixxx	3
-	<tab>	<tab>	1
5	Port No.	Hex data	1
-	<tab>	<tab>	1
6	SANRISE Prot WWN	Hex data	16
-	<tab>	<tab>	1
7	LU No.	Decimal data	3
-	<tab>	<tab>	1
8	"Device path"	Character	300
-	<tab>	<tab>	1
9	"seg bus dev func"	Hex data	13
-	<tab>	<tab>	1
10	Boot name	Character (available omission)	75
-	Return	<CR+LF>	2

**Table 2-83 iSCSI data format**

Field	Contents	Format	Length
1	Boor order	Decimal data	2
2	:	Character	1
3	iSCSI or iSCSI*	Character	5 or 6
-	<tab>	<tab>	1
4	MAC address	Mac format (xx-xx-xx-xx-xx-xx)	17
-	<tab>	<tab>	1
5	LU No.	Decimal data	3
-	<tab>	<tab>	1
6	"Device path"	Character	300
-	<tab>	<tab>	1
7	"seg bus dev func"	Hex data	13
-	<tab>	<tab>	1
8	Boot name	Character (available omission)	75
-	Return	<CR+LF>	2

**Table 2-84 CD/DVD-KVM data format**

Field	Contents	Format	Length
1	Boor order	Decimal data	2
2	:	Character	1
3	CD/DVD-KVM or CD/DVD-KVM*	Character	10 or 11
-	<tab>	<tab>	1
4	"Device path"	Character	300
-	<tab>	<tab>	1
5	"seg bus dev func"	Hex data	13
-	<tab>	<tab>	1
6	Boot name	Character (available omission)	75
-	Return	<CR+LF>	2

**Table 2-85 CD/DVD-Front data format**

Field	Contents	Format	Length
1	Boor order	Decimal data	2
2	:	Character	1
3	CD/DVD-Front or CD/DVD-Front*	Character	12 or 13
-	<tab>	<tab>	1
4	Port No.	Decimal data	1
-	<tab>	<tab>	1
5	"Device path"	Character	300
-	<tab>	<tab>	1
6	"seg bus dev func"	Hex data	13
-	<tab>	<tab>	1
7	Boot name	Character (available omission)	75
-	Return	<CR+LF>	2

**Table 2-86 EFI-SHELL data format**

Field	Contents	Format	Length
1	Boor order	Decimal data	2
2	:	Character	1
3	EFI-SHELL	Character	9
-	Return	<CR+LF>	2

**Get bootable device information**

Gets bootable device information from buffered data in the HVM. Buffered data is collected by "opt=GetBootDevice" command.

**Syntax**

```
getΔBootDeviceΔlpar=LPAR No.Δfilename=filename
```

**Situation-dependent message**

None.

(Information of the bootable devices is saved to specified "filename". If the "filename" existed, it overwrite)

**Notes**

If executes the command without "opt=GetBootDevice" command, "NULL" is written to the specified file.

Getting information of HBA is followed by "set FcBootFunction" command. ("bootfunc" had to be "Enable")

Boot order is reflected by "set BootOrder" command before.

## Change LPAR boot order

Stores LPAR boot order information to the internal buffer of HVM. Stored information is configured to the logical EFI by executing "opt=SetBootOrder" command. Configured boot order information is stored to the NVRAM automatically.

### Syntax

```
setΔBootOrderΔlpar=LPAR No.Δfilename=filename
```

### Situation-dependent message

None.

### Notes

Specified file with "filename=" option has to be described following to "File format for control of boot information". Especially take care for 3 points below.

- (1) Don't change the information except boot order that is obtained by "get BootDevice" command.
- (2) Boot order number is not permitted overlap and lack.  
(Delete the device information which does not specify the boot order)
- (3) Don't describe the "un-bootable" devices (No "\*" marked) except EFI-SHELL to the specified file.

Failed return codes by file format are below.

- 0x1100 0020: First line is not the [Boot Table Device List].
- 0x1100 0021: Device information number is zero.
- 0x1100 0022: Device information number is over 16.
- 0x1100 0023: Boot order is not ascending order from No.1.
- 0x1100 0024: Un-bootable device except EFI-SHELL is described in the file
- 0x1100 0025: Format of device information is invalid.
- 0x1100 0026: Format of "seg bus dev func" is invalid.
- 0x1100 0027: Same device is described double.
- 0x1100 0028: Out of supported Boot ID is described.
- 0x1100 002F: Other error.

## Get LCD information

Gets the LCD information of the LPAR.

### Syntax

```
setΔLPARLcdΔ[|par=LPAR No.]
```

Gets the LCD information of all LPAR when omitted the **LPAR No.**

### Situation-dependent message (omitted LPAR No.)

Data output format is below.

```
[LPAR_LCD_INFORMATION]<CRLF>  
<tab>Field name<tab>Field name<tab>.....<CRLF>  
<tab>Field data<tab>Field data<tab>.....<CRLF>  
...
```

Details of Filed name and Filed data are below.

**Table 2-87 LCD information record**

Field	Contents	Type	Length
L#	LPAR No.	Numeric	2
NAME	LPAR name	Character	31
LCD	LPAR status Example: "S0001           Active           " "B0002           System Power-off"	Character	32

### Situation-dependent message (specified LPAR No.)

Data output format is below.

```
HvmSh (Version 5.3) Completed. 2011/01/28 20:46:42 Return: 0x00000000  
GetLPARDataAndTime Ver.1 2011/01/28 20:45:15 GMT+00:00  
L#=1  
NAME=LPAR1111  
STATUS=ACT  
LCD=S0001           Active
```

For details, refer to [LCD information record](#).

### Notes

If specified LPAR No. more than specification of HVM (2000DP/320:16, 2000MP:60) or specified LPAR not exist, the command fails with "Return: 0x1100 0000".

## Get guest OS dump

Gets guest OS dump on the specified LPAR.

### Syntax

```
oprΔLPARFrontPanelDumpΔlpar=LPAR No.
```

### Situation-dependent message

```
accept=operation No.
```

Output the operation No. by decimal data when the command accepted to the HVM.

And output the operation No. by hex data when the command normally finished.

### Notes

“Return: 0x0031 0000” means the order has sent to the HVM. It not means the completion of the guest OS dump.

## Get console log data

Gets console log data of the specified LPAR.

### Syntax

```
oprΔLPARConsoleLogΔlpar=LPAR No.[Δfilename=filename]
```

### Situation-dependent message

Console log data is displayed with transferring character code from Unicode UCS-2 to Unicode UTF8.

Data is written to the specified filename without transferring character code.

## Erase console log data

Erases console log data on the specified LPAR.

### Syntax

```
oprΔLPARConsoleLogEraseΔlpar=LPAR No.
```

### Situation-dependent message

```
accept=operation No.
```

Output the operation No. by decimal data when the command accepted to the HVM.

And output the operation No. by hex data when the command normally finished.

## Collecting HVM dump (to save in HVM)

Hvm dump is collected by executing the following command. HVM dump is saved in HVM and is not saved in HVM management module. It is recommended to execute the command for checking HVM's operating status during performance analysis, because the critical dump data (dump data saved automatically when a failure occurs etc.,) in the management module is not overwritten.

### Syntax 1

```
oprΔHvmDumpToSystem
```

### Syntax 2

```
oprΔHvmDumpToSystemCompress
```

### Situation-dependent message (Syntax 1 and Syntax 2)

```
accept=Operation Number
```

### Notes

When HVM does not support this command, it ends with an error of "Return: 0x01010001".

"Collecting HVM dump" executed by HvmSh is not recorded in HVM system log.

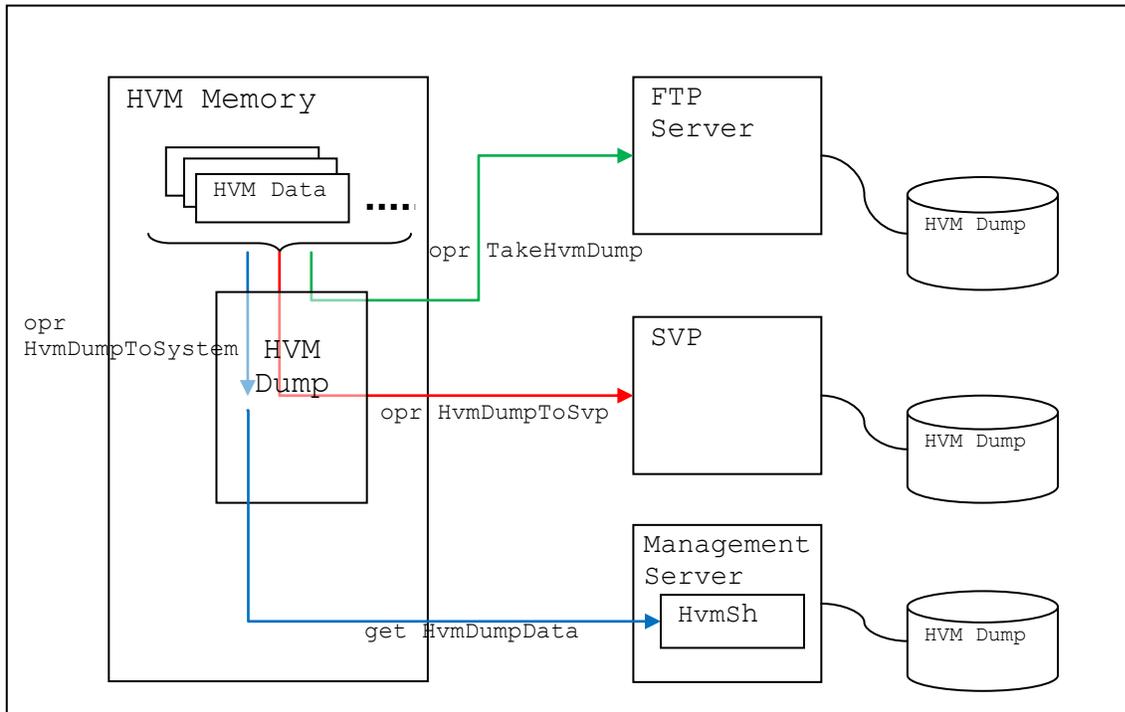
The dump title for HVM dump file collected by executing HvmSh is "CLI HvmDumpToSys".

The following chart and diagram show the difference among the three types of "Collecting HVM dump" (opr HvmDumpToSvp, opr TakehvmDump, opr HvmDumpToSystem).

Two sides 0 and 1 of data dump are taken, when using CB2000 HVM version 59-00/ 79-00 or higher, or CB320 HVM version 17-86 or higher.

Get the both sides of the dump, when you use the command "get HvmDumpData". (Automatic collection by Syntax 2 is recommended.)

Syntax 2: opr HvmDumpToSystemCompress is only available when HvmDumpCompress function is enabled in Facility information of HVM. When HvmDumpCompress function is none or disabled, error code "Return: 0x01000000" occur.



**Figure 2-5 Types of HVM dump collection**

**Table 2-88 Types of HVM dump collection**

No.	Command name	Dump transfer destination	Data compression	remarks
1	opr TakeHvmDump	FTP Server	YES	-
2	opr HvmDumpToSvp	SVP	YES	Options Screen of HVM Equivalent to Take HVM Dump
3	opr HvmDumpToSystem	(NO)	NO	Use opr HvmDumpToSystem and get HvmDumpData
	get HvmDumpData	The management server which is executing the HvmSh command	NO	
4	opr HvmDumpToSystemCompress	(NO)	YES	Use opr HvmDumpToSystemCompress and get HvmDumpDataCompress
	get HvmDumpDataCompress	The management server which is executing the HvmSh command	YES	

## Saving HVM dump data in file

HVM dump data saved in HVM is written in a file specified with "file name" option by executing this command.

### Syntax 1

```
getHvmDumpData filename=File name [dumpno=No.of bank saving dump data in] offset=offset of HVM dump data
```

### Syntax 2

```
getHvmDumpData filename=File name
```

### Syntax 3

```
getHvmDumpData Compress filename=File name
```

### Situation-dependent message (Syntax 1)

```
dumpno= No.of bank saving dump data in  
dumpsize=Size of HVM dump data  
offset= off set of HVM dump data  
size=size of data written in file
```

### Situation-dependent message (Syntax 2)

```
dumpno=0  
dumpsize=size of HVM dump data 0  
offset= 0  
size=size of data 0 written in file  
  
dumpno=1  
dumpsize=size of HVM dump data 1  
offset= 0  
size=size of data 1 written in file
```

### Situation-dependent message (Syntax 3)

```
dumpsize=Size of HVM dump data  
offset= off set of HVM dump data  
size=size of data written in file
```

### Notes (Syntax 1)

When this command ends normally, "Return: 0x1200nnnn" is returned. "nnnn" shows the size of data.

Before executing this command, it is necessary that HVM dump data is saved in HVM dump data area by executing "opr HvmDumpToSystem", "opr HvmDumpToSVP", manual dump using HVM screen, or etc.

The maximum size of data is 0x3800 (14K)B. Collecting HVM dump data has been done normally, when the data file size shows less than 0x3800.

Specify "0" or "1" for the "dumpno". When you don't specify "dumpno", the bank used for the last HVM dump is selected.

### Notes (Syntax 2)

Supported the syntax 2 which does not require specifying "dumpno =" or "offset=option" in HvmSh command V6.4 or higher.

In syntax 2, HvmSh increases the offset automatically from 0 to 14336(14K) in command and gets the dump data on both sides 0/1.

When an error occurred during operation, the command aborts with corresponding error code. Note that an incomplete data has been saved in the file then.

When executing the command of syntax 2, creates 2 files whose name are followings;

- The name (specified by file name option) + "\_01"
- The name (specified by file name option) + "\_02"

Rule of naming the file

1. When file name includes ".", add "\_01" or "\_02" before ".".  
Example) filename=HvmDump.bin -> HvmDump\_01.bin , HvmDump\_02.bin
2. When file name does not include ".", add "\_01" or "\_02" at the end of file name.  
Example) filename=HvmDump -> HvmDump\_01, HvmDump\_02

When using syntax 2, set enough timeout time (-timeout = 30 or more) for Hvmsh command executions (the dump size/ 14K x 2 times).

### Notes (Syntax 3)

Syntax 3: get HvmDumpDataCompress is only available when HvmDumpCompress function of "Get HVM Facility Map" is ON.

Error code "Return: 0x01000000" occur when "Get HVM Facility Map" has no information or HvmDumpCompress function is OFF.

### Notes (Syntax 1, 2 and 3)

If any HVM dump data is overwritten by the new failure while executing this command, the error code "0x08191002" is returned, but there is no impact on next HVM dump.

The offset should start and increase from "0" by 14336B (14KB), otherwise the contents of the data are not assured.

If you specify the offset exceeding the maximum, the command will end with return code "0x1200000 (data size = 0)".

```

@echo OFF
set ipadr=172.16.16.125
set HvmShVer=
set odir=dump

REM      It assumes performing with the folder composition below REM.
REM      +--HvmSh.exe
REM      +-- dump      *Change by folder name inquiry is possible.

set /P ANSER= Is HVMIP right at %ipadr% ?
if %ANSER% == y goto Start01
if %ANSER% == Y goto Start01
if %ANSER% == q exit(-1)
if %ANSER% == Q exit(-1)
set ipadr=%ANSER%
:Start01
set dt=%date:-0,10%
set dt=%dt:/=%
set tm=%time:-0,8%
set tm=%tm:=%
set tm=%tm: =0%
set ofile=%ipadr%dump_%dt%%tm%
:Start02
set /P ANSER= Out-put folder is.\%odir% (Y/Folder name/Q)?
if %ANSER% == y goto Start03
if %ANSER% == Y goto Start03
if %ANSER% == q exit(-1)
if %ANSER% == Q exit(-1)
set odir=%ANSER%
:Start03
mkdir .\%odir%
set ofile=%odir%\%ipadr%dump_%dt%%tm%
REM goto Start04
      REM ----- Take the Dump -----
      echo HvmSh%HvmShVer% -host=%ipadr% opr HvmDumpToSystem >> %ofile%.txt
      echo HvmSh%HvmShVer% -host=%ipadr% opr HvmDumpToSystem >> %ofile%Err.txt
      HvmSh%HvmShVer% -host=%ipadr% opr HvmDumpToSystem 1>>%ofile%.txt 2>>%ofile%Err.txt
      set Accept=%errorlevel%
      if 0 == %errorlevel%      exit(%errorlevel%)
      if 65536 LSS %errorlevel% exit(%errorlevel%)

:WaitResult
      REM ----- Wait for take Dump finishing -----
      echo HvmSh%HvmShVer% -host=%ipadr% getResult accept=%Accept% msg=yes >> %ofile%.txt
      echo HvmSh%HvmShVer% -host=%ipadr% getResult accept=%Accept% msg=yes >> %ofile%Err.txt
      HvmSh%HvmShVer% -host=%ipadr% getResult accept=%Accept% msg=yes 1>>%ofile%.txt
2>>%ofile%Err.txt
      if 0 == %errorlevel% goto Start04
      set /A State=%errorlevel%-(%errorlevel%/65536)*65536
      ping -n 1 localhost >nul
      if 1 == %State% goto WaitResult
      if 257 == %State% goto WaitResult

      echo Takes few minutes for get all Dump datas.

pause
:Start04
      del /Q %ofile%
      echo Start of the Dump data getting %date% %time% >> %ofile%Err.txt
      set offset=0

      REM ----- Getting the dump data (Syntax 2) When unsupported, Syntax 1-----
      del /Q %ofile%
      echo Start of the Dump data getting %date% %time% >> %ofile%Err.txt
      set offset=0

```

```

echo HvmSh%HvmShVer% -host=%ipadr% get HvmDumpData filename=%ofile% >> %ofile%.txt
echo HvmSh%HvmShVer% -host=%ipadr% get HvmDumpData filename=%ofile% >> %ofile%Err.txt
HvmSh%HvmShVer% -host=%ipadr% get HvmDumpData filename=%ofile% >>%ofile%.txt
2>>%ofile%Err.txt
if 0 EQU %errorlevel% goto Start06
if 285212672 NEQ %errorlevel% exit(%errorlevel%)

REM ----- Getting the dump data (Syntax 1)-----

:DumpLoop00
    echo HvmSh%HvmShVer% -host=%ipadr% get HvmDumpData filename=%ofile% offset=%offset%
>> %ofile%.txt
    echo HvmSh%HvmShVer% -host=%ipadr% get HvmDumpData filename=%ofile% offset=%offset%
>> %ofile%Err.txt
    HvmSh%HvmShVer% -host=%ipadr% get HvmDumpData filename=%ofile% offset=%offset%
1>>%ofile%.txt 2>>%ofile%Err.txt
    set /A size=%errorlevel%-(%errorlevel%/301989888)*301989888
    set /A retcode=%errorlevel%-%size%
    if 301989888 NEQ %retcode% exit(%errorlevel%)
    if 14336 NEQ %size% goto Start05
    set /A offset=%offset%+%size%
    echo offset=%offset%

    goto DumpLoop00
:Start05
echo End of the Dump data getting %date% %time%
echo Out-put file 3files below
echo %-dp0
echo %ofile%(dumpdata),
echo %ofile%.txt(stdout)
echo %ofile%Err.txt(stderr)
echo End of the Dump data getting %date% %time% >> %ofile%Err.txt
pause
exit (0)
:Start06
echo End of the Dump data getting %date% %time%
echo Out-put file 4files below
echo %-dp0
echo %ofile%01(dumpdata),
echo %ofile%02(dumpdata),
echo %ofile%.txt(stdout)
echo %ofile%Err.txt(stderr)
echo End of the Dump data getting %date% %time% >> %ofile%Err.txt
pause
exit (0)

```

**Figure 2-6 Example of batch file for “Saving HVM dump data” [for Windows] (including “collecting HVM dump”)**

## Get HVM alert list

Gets an HVM alert message list that an HVM sent to HCSM.

### Syntax

```
getΔHvmAlertList
```

### Situation-dependent message

The following shows the output format. "\*" is displayed in the situation dependent message when the field is not supported by the HVM.

```
Begin<tab>1.0<CRLF>
[record name]<CRLF>
<tab>field name<tab>field name<tab>....<CRLF>
<tab>field value<tab>field value<tab>....<CRLF>
.
.
.
End<CRLF>
```

### Notes

A character code of alert message is UTF-8. When you cannot read an alert message in a situation dependent message, save an output of termination message in a file. Check the content using an editor that UTF-8 can be indicated.

**Table 2-89 HCSM\_ALERT\_VERSION record**

Field	Contents	Type	Length
ALERT_VERSION	Alert message version Example: 01-12	Character	8
ALERT_COUNT	Number of alert message	Numeric	3
LANG	Alert language mode { 'Japanese'   'English' }	Character	16

**Table 2-90 HCSM\_ALERT\_LIST**

Field	Contents	Type	Length
ALERT_ID	Alert type code (hexadecimal)	Numeric	4
ALERT_LEVEL	Alert level character string { 'INFO' 'WARN' 'ERROR' } 'INFO': Information 'WARN': Warning 'ERROR': Error	Character	8
ALERT_LPAR	Whether there is LPAR information (LPAR number, UUID) or not in an alert data. 'ON': Displayed LPAR information 'OFF': No displayed LPAR information	Character	4
ALERT_MESSAGE	Alert message	Character	140

HCSM\_SERVER\_SETTING record outputs HCSM server setting information of SVP

**Table 2-91 HCSM\_SERVER\_SETTING record**

Field	Contents	Type	Length
IP	HCSM server IPv4 or IPv6 address <IPv4 address> Format: AAA.BBB.CCC.DDD Note: Without setting an address, an '*' appears in the field. (components of the dotted / zero padding) Example: 192.168.000.001  <IPv6 address> Example: fe80::1ce:c0ff:ee:cafe	Character	15
PORT	Alert port number Note: '*' is displayed when no setting.	Numeric	5
REST	Setting / unsetting alert inhibit 'ON': Setting an alert inhibit (No sending an alert) 'OFF': Unsetting an alert inhibit (Sending an alert) '*': No setting	Character	4
SESSION	Connection state of SVP and HCSM 'ON': Connect 'OFF': Disconnect '*': No setting	Character	7
LEVEL	Alert notification level 'INFO+WARN+ERROR': Information, warning, and error 'WARN'+ERROR': Warning and error 'ERROR': Only error 'NONE': No notification '*': No setting	Character	16
hINTERVAL	Alert retry interval (second)	Numeric	4
DURATION	Alert retry duration (second)	Numeric	4

Control commands for HVM encryption communicationFor HVM interfaces as the following table shows, they can only be executed in HVM set ON to "SecureComm" that is described in [Function name](#). If executing HVM interface on HVM set OFF to "SecureComm", error of "Return: 0x11000000 " occur.

**Table 2-92 HVM interfaces**

HVM interface	Contents	Required permission (*2)
getΔHvmSecureCmmConfig	Gets the configuration for HVM encryption communication	LPAR manager security permission
getΔHvmServerCertificate	Gets HVM Server Certificate	LPAR manager security permission
oprΔHvmIfSecureLevel (*1)	Sets the Secure Level for HVM encryption communication	LPAR manager security permission
oprΔHvmIfSecureVerify(*1)	Sets Effectiveness of verifying the certificate of the other system	LPAR manager security permission
oprΔHvmServerCertificate (*1)	Creates HVM self-signed Certificate	LPAR manager security permission
oprΔHvmCSR	Creates and obtains HVM CSR	LPAR manager security permission
oprΔHvmCACertificateRegist (*1)	Registers the server certificate signed by CA (certificate authority)	LPAR manager security permission
oprΔHvmClientCertificateRegist	Registers the certificate of the other system or CA	LPAR manager security permission
oprΔHvmClientCertificateRemove	Removes the certificate of the other system or CA	LPAR manager security permission
oprΔHvmSecureCmmConfigSave	Saves the configuration for HVM encryption communication	No permission
oprΔCACertificateRegist	Registers the configuration for HVM encryption communication	No permission
oprΔVCCconnectType	Sets connection mode (Telnet/SSH) of virtual COM.	LPAR manager security permission
oprΔHvmSshHostKey	Creates a host key when connecting virtual COM by SSH.	LPAR manager security permission

\*1: For HVM communication, it may take about 30 seconds until the setting change or the HVM new certificate become valid after status codes of each command are changed to 0x00590000.

\*2: Users without the HVM security permission cannot execute the HVM interfaces for which "LPAR manager security permission" is written in the column "Required permission".

## Get configuration for HVM encryption communication

Gets the contents of certificates for an HVM, the security strength for the HVM, and the information on the control of access to the HVM. All of them are used in HVM encryption communication.

### Syntax

```
getΔHvmSecureCmmConfig
```

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
Begin<tab>1.0<CRLF>
[record name]<CRLF>
<tab>field name<tab>field name<tab>....<CRLF>
<tab>field value<tab>field value<tab>....<CRLF>
.
.
.
End<CRLF>
```

**Table 2-93 Encryption communication configuration record**

Field	Contents	Number of records
SEC_MODE (*1)	Encrypted communication mode	1
CERTIFICATE (*1)	Certificates information of encrypted communication	Max. 11
SSH_HOST_KEY (*1)	Host key information about SSH connection of virtual COM	1
AUDIT_LOG_CONFIGURATION (*1)	Outputs information on audit log	1
LDAP_CONFIGURATION (*1)	Outputs information on LDAP authentication	1
AUTHENTICATION_CONFIGURATION	Outputs common information for authentication	1
CERTIFICATE_HVMESH_APPROVED	Certificates information registered in CERTIFICATE folder for verification.	The number of certificates files
RADIUS_CONFIGURATION (*1)	Information for RADIUS authentication	3
ROLE_CONFIGURATION (*1)	Information for a role	The supported number of user-defined roles

\*1: These record contents are the same as the get ConfigAll command's records. See [SEC\\_MODE record](#), [CERTIFICATE record](#), [SSH\\_HOST\\_KEY record](#), [AUDIT\\_LOG\\_CONFIGURATION](#), [LDAP\\_CONFIGURATION](#), [RADIUS\\_CONFIGURATION](#), and [ROLE\\_CONFIGURATION](#).

**Table 2-94 AUTHENTICATION\_CONFIGURATION record**

Field	Contents	Type	Length
METHOD (*1)	Method for user authentication { "LOCAL"   "LOCAL+LDAP"   "LOCAL+RADIUS" } Note that "*" is displayed if the HVM does not support the LDAP authentication feature.	Character	32
LOGIN_VALID_TIME (*1)	An accessible time for HvmSh commands to log in an LDAP server, in user authentication (LDAP authentication) [sec] [30 to 86400   Infinite]  Note that "*" is displayed if the HVM does not support the LDAP authentication feature. Note that "Infinite" is displayed when the time period for login is unlimited.	Numeric	5

\*1: The same content as AUTHENTICATION xxx (xxx indicates a field name) in the HVM CONFIGURATION record in the "get ConfigAll" command.

**Table 2-95 CERTIFICATE\_HVMESH\_APPROVED record**

Field	Contents	Type	Length
FilePath	Certificate file name This file name is displayed including its path.	Character	Max. length of file path
Version	Version	Character	12
Serial_number	Serial number	Numeric (Hexadecimal)	32
Signature_Algorithm	Signature algorithm	Character	64
Public_key_algorithm	Public key algorithm	Character	32
Validity_Not_before	Validity (Not before)	Character	20
Validity_Not_after	Validity (Not after)	Character	20
Common_Name	Common Name (CN) of Issuer	Character	64
Common_Name_Subject	Common Name (CN) of Subject	Character	64
Country	Country(C) of Subject	Character	4
State_or_Province	State or province(ST) of Subject	Character	64
Locality	Locality(L) of Subject	Character	64

## Get HVM server certificate

Gets HVM server certificate, and display its contents as "situation-dependent message".

### Syntax

```
getΔHvmServerCertificateΔ{filename= CertificateFilename |  
install=Foldername}
```

When you want to save the HVM server certificate information displayed in this command as a certificate file, specify 'filename=' option.

When you want to use the obtained certificate for HVM server certificate verification in communication with HVM and HvmSh command, specify 'install=' option.

When you don't specify either but there is the folder registered in HvmSh Default file, the certificate file is saved in the folder.

#### CertificateFilename ('filename=' option):

Specify the file name in which you want to save the certificate information, as **CertificateFilename**. At this time, the information is saved as DER format.

If you specify the same 'CertificateFilename' as this command in **opr HvmClientCertificateRegist** command to the other HVM, this certificate information also can be registered into the other HVM.

#### Foldername ('install=' option):

Specify the folder name in which you want to save the certificate information, as **Foldername**. This folder is the "CERTIFICATE folder for verification" used in HVM encryption communication.

A file name isn't required in this option, since the file whose name does not overlap to the other file in the folder is created.

When the folder has not existed, a new folder is created as specified name, and the folder name is registered to the HvmSh's **Default file**.

At this time, the file is saved as PEM format.

Note that the HVM security permission is required to execute this command.

## Situation-dependent message

filename= <b>Filename</b> of certificate
Version= <b>Version</b>
Serial number= <b>Serial number</b>
Signature_Algorithm= <b>Signature algorithm</b>
Public_key_algorithm= <b>Public key algorithm</b>
Validity_Not_before= <b>Validity (Not before)</b>
Validity_Not_after= <b>Validity (Not after)</b>
Common_Name= <b>Common Name (CN) of Issuer</b>
Subject_Country= <b>Country(C) of Subject</b>
State_or_province= <b>State or province(ST) of Subject</b>
Locality= <b>Locality(L) of Subject</b>

## Notes

Verification of the certificate in the communication after the registration may fail, if you register the multiple self-signed certificates which overlap the subject elements of common name (CN), country (C), state or province (ST), locality (L), organization (O), organizational unit (OU).

## Set security strength for HVM encrypted communication

**Syntax 1** Sets security strength for the management interfaces.

```
oprΔHvmIfSecureLevelΔ{HvmSh|BSM|HCSM|Migration}={Default|High}
```

You can set security strength to multiple interfaces simultaneously.

**Syntax 2** Sets to enable or disable HVM communication by http

```
oprΔHvmIfSecureLevelΔhttp={Disable|Enable}
```

HVM has to be restarted to enable setting change of http communication enable/disable.

**Syntax 3** Sets security strength with LDAP authentication

```
oprΔHvmIfSecureLevelΔLDAP={TLS1.0 | TLS1.2}
```

The value **TLS1.2** indicates TLS1.2 or higher.

Note that the HVM security permission is required to execute this command.

**Syntax 4**

```
oprΔHvmIfSecureVerifyΔ{HCSM | LDAP}={Disable | Enable}
```

**Disable:** "Certificate Verification of the other system" is disabled.

**Enable:** "Certificate Verification of the other system" is enabled.

Note that the HVM security permission is required to execute this command.

**Situation-dependent message**

```
accept=operation No.
```

**operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

**Note**

- For Syntax 1  
The option setting on data communication between the source and the destination HVMs during LPAR migration in Concurrent Maintenance

mode "Migration=" is enabled for only HVMs for which "MigrationTLS" is set to "ON". "MigrationTLS" is an item in [Function name](#). If the option setting "Migration=" is set for HVMs which "MigrationTLS" is set to "OFF", an error of "Return: 0x11000000" occurs.

- For Syntax 3 and 4  
Syntax 3 or 4 work only when LDAPAuthentication in [Function name](#) is set to "ON". When you specify Syntax 3 or 4 for an HVM for which LDAPAuthentication is set to "OFF", it ends with an error of "Return 0x11000000".

## Create and obtain HVM CSR

Requests to create CSR (Certificate Signing Request) to HVM, and obtains the result. You can get the CSR by a file or command arguments.

### Syntax

```
oprΔHvmCSRΔ{paramfile=ParameterFileName | File_type={PEM | DER}  
ΔSubject_Country=...}Δ[filename=OutputFileName]
```

Note that the HVM security permission is required to execute this command.

#### Parameter file name:

When specifying `paramfile=` option, specify the file name which described the CSR parameters as **ParameterFileName**.

When you don't specify this, you need to specify the parameters by the arguments of this command.

When you specify CSR parameter, describe like followings;

-Parameter name="Specified Value"

-Abbreviation="Specified Value"

Close the specified value by the double quotation (" ").

Refer to the next table for details of the parameter and abbreviation.

When specifying **ParameterFileName**, describe one parameter per line, and fill them from the top column.

#### OutputFileName:

When specifying `filename=` option, specify the name of the file in which the CSR should be outputted, as **OutputFileName**.

### Situation-dependent message

```
-----BEGIN CERTIFICATE REQUEST -----  
<CSR>  
-----END CERTIFICATE REQUEST -----
```

### Note

Be sure to specify the common name (CN) of Subject uniquely in all the HVMs.

**Table 2-96 CSR parameter**

Parameter name	Abbreviation	Contents	Format	omission
File_type	-	CSR file format	{PEM   DER}	Not allowed
Validity	-	Validity	Number of year: number of day * 1:2 (1 year: 2 days) is the same as 0: 367 (367 days). * The default is 15 years. * 0:0 is specified 31 days. * When set over 65536 days, Return: 0x1100000 occur. * The base point is HVM time when creating.	allowed
Subject_Country	C	Country name of Subject	2 uppercase letters	allowed
State_or_province	ST	State or province of Subject	Up to 60 alphanumeric characters and symbols (*1)	allowed
Locality	L	Locality of Subject	Up to 60 alphanumeric characters and symbols (*1)	allowed
Organization	O	Organization of Subject	Up to 60 alphanumeric characters and symbols (*1)	allowed
Organizational_Unit	OU	Organizational_Unit of Subject	Up to 60 alphanumeric characters and symbols (*1)	allowed
Common_Name	CN	Common Name of Subject	1 to 60 alphanumeric characters, (-) dash, and period (.)	Not allowed
E-mail_address	-	E-mail_address of Subject	Max. 60 Characters of ASCII	allowed
DN_qualifier	-	DN_qualifier of Subject	Up to 60 alphanumeric characters and symbols (*1)	allowed
Surname	-	Surname	Up to 60 alphanumeric characters and symbols (*1)	allowed
Given_name	-	Given name	Up to 60 alphanumeric characters and symbols (*1)	allowed
Initials	-	Initials	Up to 60 alphanumeric characters and symbols (*1)	allowed
Unstructure_name	-	Unstructure_name	Up to 60 alphanumeric characters and symbols (*1)	allowed
Challenge_password	-	Challenge_password	Up to 60 alphanumeric characters and symbols (*1)	allowed

\*1: Available symbols are as follows for State or province (ST), Locality (L), Organization (O), Organizational Unit (OU), DN qualifier, Surname, Given name, and Initials.

(o) blank symbol, (') apostrophe, (-) dash, (,) comma, (=) equal, (/) slash, (())parenthesis, (.) period, (:) colon, (+) plus, and (?) question
---

## Create HVM self-signed Certificate

Creates the HVM self-signed certificate. You can specify the parameters by a file or command arguments.

### Syntax

```
oprΔHvmServerCertificateΔ[paramfile=ParameterFileName][ΔSubject_Country  
=]....
```

Note that the HVM security permission is required to execute this command.

#### **ParameterFileName:**

When specifying `paramfile=` option, specify the file name which described the parameters for creating certificate as **ParameterFileName**.

When you don't specify this, you need to specify the parameters by the arguments of this command.

When you specify each parameter, describe like followings;

-Parameter name="**Specified Value**"

-Abbreviation="**Specified Value**"

Close the specified value by the double quotation (" ").

When specifying **ParameterFileName**, describe one parameter per line, and fill them from the top column.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Note

Be sure to specify the common name (CN) of Subject uniquely in all the HVMs.

**Table 2-97 Parameter of self-signed certificate**

Parameter name	Abbreviation	Contents/format	omission
File_type	-	CSR file format {PEM   DER}	Not allowed
Validity	-	Number of year: number of day * 1:2 (1 year: 2 days) is the same as 0:367 (367 days). * The default is 15 years. * 0:0 is specified 31 days. * When set over 65536 days, "Return: 0x1100000" occur. * The base point is HVM time when creating.	allowed
Subject_Country	C	2 uppercase letters	allowed
State_or_province	ST	Up to 60 alphanumeric characters and symbols (*1)	allowed
Locality	L	Up to 60 alphanumeric characters and symbols (*1)	allowed
Organization	O	Up to 60 alphanumeric characters and symbols (*1)	allowed
Organizational_Unit	OU	Up to 60 alphanumeric characters and symbols (*1)	allowed
Common_Name	CN	1 to 60 alphanumeric characters, (-) dash, and period (.)	Not allowed
E-mail_address	-	Max. 60 Characters of ASCII	allowed
DN_qualifier	-	Up to 60 alphanumeric characters and symbols (*1)	allowed
Surname	-	Up to 60 alphanumeric characters and symbols (*1)	allowed
Given_name	-	Up to 60 alphanumeric characters and symbols (*1)	allowed
Initials	-	Up to 60 alphanumeric characters and symbols (*1)	allowed
Unstructure_name	-	Up to 60 alphanumeric characters and symbols (*1)	allowed
Challenge_password	-	Up to 60 alphanumeric characters and symbols (*1)	allowed

\*1: Available symbols are as follows for State or province (ST), Locality (L), Organization (O), Organizational Unit (OU), DN qualifier, Surname, Given name, and Initials.

(o) blank symbol, (') apostrophe, (-) dash, (,) comma, (=) equal, (/) slash, (()parenthesis, (.) period, (:) colon, (+) plus, and (?) question
--

## Register the server certificate signed by CA (certificate authority)

Registers the "server certificate signed by CA" into HVM. The certificate is what you obtain through the following processes;

- (1) Get the CSR using "opr HvmCSR" command.
- (2) Send the CSR to CA.
- (3) CA creates and signs the server certificate from CSR.
- (4) Receives it from CA.

### Syntax

```
oprΔHvmCACertificateRegistΔfilename=CASignedFilename]
```

Note that the HVM security permission is required to execute this command.

#### **CASignedFilename:**

Specify the file name of the server certificate signed by CA as **CASignedFilename**. You can register the certificate of the format PEM or DER.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Note

This command ends with error "Return: 0x20030001", when the consistency between followings cannot be taken.

- The contents of the file "certificate signed by CA".
- The "private key" generated when creating CSR.

In order to connect to the HVM which is the target of this command, actually using TLS protocol (-verify=yes), it is necessary to register the signed CA "certificate" into the HvmSh's "CERTIFICATE folder for verification".

## Register the certificate of the other system or CA

Registers the certificate of the other system or the certificate of CA, into HVM.

### Syntax

```
oprΔHvmClientCertificateRegistΔfilename=CertificateFilename]
```

Note that the HVM security permission is required to execute this command.

#### **CertificateFilename:**

Specify the file name of the certificate as **CertificateFilename**.  
You can register the certificate of the format PEM or DER.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Note

Maximum number of certificates which you can register is ten (10).

The status code which you can see by "getResult" command will be "0x00590002", when you execute this command, although ten certificates have already been registered. Remove an unnecessary certificate in this case.

"Verification of the certificate" may fail in sending the "Alert" to HCSM, after you register the multiple self-signed certificates which overlap the subject elements of common name (CN), country (C), state or province (ST), locality (L), organization (O), or organizational unit (OU).

## Remove the certificate of the other system or CA

Removes the certificate of the other system or the certificate of CA in HVM. Be sure to confirm the contents of the certificate which you want to remove by checking the CERTIFICATE record in "get HvmSecureCmmConfig" command, and then perform this command.

### Syntax1

```
oprΔHvmClientCertificateRemoveΔCertificateNo=CertificateNo
```

**CertificateNo** is 0 to 9.

### Syntax2

```
oprΔHvmClientCertificateRemoveΔ{Serial_number | SN}=SerialNo  
Δ{Common_name | CN}=CommonNameOfIssuer
```

The certificate is deleted only when specification of both SN and CN is right.

Be sure to specify **SerialNo** and **CommonNameOfIssuer** with double-quotation.

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Note

The status code which you can see by "getResult" command, is "0x00590004", when there is no certificate file which matches the "CertificateNo" or which matches "SerialNo" and "CommonNameOfIssuer".

When there are multiple certificates files which match both SerialNo and CommonNameOfIssuer in case of syntax 2, only one certificate of the smallest certificate number is removed.

## Save the configuration for HVM encryption communication

Saves the configuration about HVM encryption communication in the HVM configuration file.

### Syntax1

```
oprΔ HvmSecureCmmConfigSave
```

Note that the HVM security permission is not required to execute this command.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the host HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Note

This command saves only the configuration about HVM encryption communication. Any other configurations, such as "LPAR configuration" etc., are not saved.

The "opr SaveConfig" command saves all configurations including the configuration about HVM encryption communication.

## Register the configuration for HVM encryption communication

Registers the "HVM self-signed certificate" or the "certificate of CA" into the "certificate folder" of HvmSh. The "certificate folder" means the "CERTIFICATE folder for verification" which is used in HVM encryption communication.

### Syntax

```
oprΔCACertificateRegistΔfilename=FilenameΔ[install=Foldername]
```

#### **Filename ('filename=' option):**

Specify the file name of "HVM self-signed certificate" or the "certificate of CA" as **Filename**. They mean followings each;

- "HVM self-signed certificate" for the HVM which communicates with HvmSh
- "Certificate of CA" which signed "the HVM certificate signed by CA".

#### **Foldername ('install=' option):**

Specify the folder name of the "CERTIFICATE folder for verification" used in HVM encryption communication, as **Foldername**.

To copy the certificate information specified by **Filename**, a new file is created with the name which does not overlap within "CERTIFICATE folder for verification". The name of the created file is outputted in the situation dependent message.

When the "CERTIFICATE folder for verification" has not existed, a new folder is created as specified Foldername, and the folder name is registered to the HvmSh Default file.

When you don't specify this option but the "CERTIFICATE folder for verification" has been already registered in HvmSh Default file, a new file is registered in the folder.

Note that HvmAuthenticationLogs is required to execute this command.

### Situation-dependent message

```
install=CreatedCertificateFileName
```

**CreatedCertificateFileName**, the accepted serial number of this command, is displayed as decimal numeric in situation dependent message.

However, keep in mind that this **operation number** is displayed as a hexadecimal number in the return code.

### Note

Specifying the HVM IP address using the '-host=' option is not required in this command, since this command does not communicate with HVM firmware.

Verification of the certificate in the communication after the registration may fail, if you register the multiple self-signed certificates which overlap the subject elements of common name (CN), country (C), state or province (ST), locality (L), organization (O), organizational unit (OU).

## Set the communication mode for virtual COM

### Syntax

```
oprΔVCConnectTypeΔConnectType={Telnet|SSH}
```

HvmSh of Ver.8.5 or higher allows entering just "type=" instead of "ConnectType=".

Note that the HVM security permission is not required to execute this command.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Note

This command can be only executed on HVM set ON to "VCSshConnctcion". If executing it for HVM set OFF to "VCSshConnctcion", error of "Return: 0x11000000" occur.

## Create a host key when connecting virtual COM by SSH

### Syntax1

```
oprΔHvmSshHostKey
```

Note that the HVM security permission is not required to execute this command.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

Indicates an operation number that is a sequential number automatically taken by the HVM when the host HVM receives a time-consuming task. The operation number in *accept=* field is decimal. The operation number in the return code field is hexadecimal.

### Note

This command can be only executed on HVM set ON to "VCSshConnctcion". If executing it for HVM set OFF to "VCSshConnctcion", error of "Return: 0x11000000" occur.

## HVM interfaces concerning user authentication of HVM & RBAC(Role Based Access control)

The HVM interfaces for HVM-user authentication configuration control in the table below can be executed only if Authentication in [Function name](#) is ON. Attempting to execute any of the interfaces on an HVM, for which Authentication is OFF, the interface fails with the error "Return 0x01010001".

**Table 2-98 HVM interfaces concerning user authentication of HVM**

HVM interface	Contents	Required permission (*2)
getΔ HvmUserList	Shows the user list.	LPAR manager security permission (*3)
getΔ HvmIfAuthentication	Sets the user authentication configuration (enable/disable) each communication destination.	LPAR manager security permission
oprΔ HvmPasswdExpiry	Sets the expiration date of user password.	LPAR manager security permission
oprΔ HvmUserAdd (*1)	Adds the user.	LPAR manager security permission
oprΔ HvmUserRemove	Deletes the user.	LPAR manager security permission
oprΔ HvmPasswd (*1)	Changes the user's password.	LPAR manager security permission (*4)
oprΔ HvmShLoginValidTime	Changes the login available hours (seconds) of HvmSh command.	LPAR manager security permission
getΔ HvmAuthenticationLogs	Gets the user authentication logs.	LPAR manager security permission
oprΔ AuditLogConfig	Configures the settings for the audit log feature.	LPAR manager security permission
oprΔ LdapConfig oprΔ LdapPasswd	Configures the settings for the LDAP authentication feature.	LPAR manager security permission
setΔ PciPortDedMode		LPAR manager security permission
oprΔ HvmPasswdRecovery		LPAR manager security permission
oprΔ RadiusConfig		LPAR manager security permission
oprΔ RadiusConnectivityVerify		LPAR manager security permission
oprΔ RoleConfig		LPAR manager security permission
oprΔ HvmUserConfig		LPAR manager security permission
oprΔ ManagementModuleAnonymousUserRole		LPAR manager security permission

\*1: For user name, limit number of characters for password, and allowed characters, see the following table.

\*2: Users without the HVM security permission cannot execute the HVM interfaces for which "LPAR manager security permission" is written in the column "Required permission".

\*3: When a user without the HVM security permission executes the command, the information on the user is displayed.

\*4: When a user desires to change the password for another user, the HVM security permission is required. Whereas, when a user desires to change the password for the user, the HVM security permission is not required.

	<b>User name</b>	<b>Password</b>
Number of characters	1 to 31	1 to 31
Allowed characters	Alphanumeric character . (period) - (hyphen) _ (underbar)	Symbol without alphanumeric character and blank (ASCII code: 0x21 - 0x7E)
Other limitation	First character position of line is alphabet letter.	-

Details of each HVM interface in the above table are described below.

## Get the user list for HVM

Shows the user list for HVM.

### Syntax1

```
getΔHvmUserList
```

Note that the HVM security permission is required to execute this command. When a user without the HVM security permission executes this command, the information on the user, which has executed the command, is displayed.

### Situation-dependent message

```
Begin<tab>1.0<CRLF>
[HVM_USER_LIST]<CRLF>
<tab>field name<tab>field name<tab>.....<CRLF>
<tab>field value<tab>field value<tab>.....<CRLF>
.
.
<tab>field value<tab>field value<tab>.....<CRLF>
.
.
End<CRLF>
```

**Table 2-99 HVM\_USER\_LIST record**

Field	Contents	Type	Length
NAME	User name	Character	32
REMAIN	Number of days left until password's expiration date. <ul style="list-style-type: none"> <li>- Numerical value: number of days left (14 or more days)</li> <li>- Numerical value*: number of days left (less than 14 days)</li> <li>- "Infinite"</li> <li>- "Expired"</li> <li>- "NaN": No indication</li> </ul>	Character	16
LOGIN_VALID_TIME	Login hours expiration for HvmSh command (seconds) {30 to 86400 Infinite} <ul style="list-style-type: none"> <li>- When there is no limit for login hours expiration, "Infinite" is displayed.</li> </ul>	Character	16
ROLE#	Role number to be assigned to users {0 to the supported number of user-defined roles   *} (*1) Note that 0 is the role number with all permissions in an HVM.	Numeric	3
ROLE_NAME	Role name to be assigned to users (*1) Note that "Administrators" is displayed when	Character	32

	the field "ROLE#" shows 0.		
--	----------------------------	--	--

(\*1): When "RoleBasedAccessControl" in [Function name](#) shows "OFF" or a user without the HVM security permission executes this command, "\*" is displayed.

**Note**

When a user without the HVM security permission executes this command, only the information on the user is displayed.

## Set user authentication

Sets user authentication for the communication counterpart.

### Syntax

```
oprΔHvmIfAuthenticationΔ{HvmSh|VC}={Disable|Enable}
```

The left side of the equation shows a communication counterpart. the right side shows if a user authentication is enabled or disabled.

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

An operation number, which an HVM has assigned to when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

## Set validity period for user password

Sets a validity period for a user password.

### Syntax

```
oprΔHvmPasswdExpiryΔpasswd_expiry=validity period (days)
```

0 or, 1 to 365 can be set as a validity period for a user password. Note that a validity period becomes unlimited when 0 is set as the validity period.

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

An operation number, which an HVM has assigned to when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

## Add user to HVM

Adds a user for an HVM. When you issue the 1st syntax command, you are requested to input a user name and a password interactively.

### Syntax1

```
oprΔHvmUserAddΔ[-LoginValidTime=accessible time after login  
(seconds)][Δrole=role No.]
```

- 0 or, 30 to 86400 can be set as an accessible time after login. Note that 0 is the value showing an indefinite time and a value "3600 seconds" is set by default.
- You are requested to input a user name and a password interactively. An input example is as follows.

[Example]

```
>HvmSh -host=xx.xx.xx.xx opr HvmUserAdd      (1) Command  
user name: xxxxxx                            (2) User name  
password:                                     (3) Password  
                                              Any input value isn't echoed back.  
password(again):                             (4) Password  
                                              Any input value isn't echoed back.
```

- When "RoleBasedAccessControl" in [Function name](#) is set to "ON", the option "role" works. When you desire to assign a role to a user, set one of 0 to the supported number of user-defined roles for the user. Note that 0 is the role number with all permissions in an HVM. Also, when you do not set a value for the option "role", 0 is automatically set for the option "role".

### Syntax2

```
oprΔHvmUserAddΔ-user=usernameΔ-passwd=password[Δ-  
LoginValidTime=accessible time after login (seconds)][Δrole=role No.]
```

- 0 or, 30 to 86400 can be set as an accessible time after login. Note that 0 is the value showing an indefinite time and a value "3600 seconds" is set by default.
- When "RoleBasedAccessControl" in [Function name](#) is set to "ON", the option "role" works. When you desire to assign a role to a user, set one of 0 to the supported number of user-defined roles for the user. Note that 0 is the role number with all permissions in an HVM. Also, when you do not set a value for the option "role", 0 is automatically set for the option "role".

Note that the HVM security permission is required to execute this command.

## Situation-dependent message

`accept=operation No.`

An operation number, which an HVM has assigned to when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

## Note

When you issue the 2nd syntax command, anyone can obtain a password which you set. Therefore, the 1st syntax command can add a user more safely than the 2nd syntax command.

## Remove user from HVM

Removes a user from HVM.

### Syntax

```
oprΔHvmUserRemoveΔ-user=username
```

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

An operation number, which an HVM has assigned to when the HVM has received this command, is output in decimal system.

The end code showing a normal end is an operation number in hexadecimal system.

## Change password for user

Changes the password for a user. When a user issues the 1st or 2nd syntax command, it changes a password for the user. Whereas, when an administration user issues the 3rd or 4th command, it changes a password for another user. You are requested to input a user name and a password interactively when you issue the 1st or 3rd syntax command.

### Syntax1

```
oprΔHvmPasswd
```

[Example]

```
>HvmSh -host=xx.xx.xx.xx opr HvmUserAdd      (1) Command
current password:                             (2) Current Password
new password:                                  (3) New Password
                                             Any input value isn't echoed back.
new password(again):                          (4) New Password
                                             Any input value isn't echoed back.
```

### Syntax2

```
oprΔHvmPasswdΔ-passwd_new=new passwordΔ-passwd=current password
```

\* If the HvmSh version is 8.5 or higher, you can enter "-new=" for "-passwd\_new=" option and "-cur=" for "-passwd=".

### Syntax3

```
oprΔHvmPasswdΔ-user=user name
```

[Example]

```
>HvmSh -host=xx.xx.xx.xx opr HvmPasswd -user=xxxxx (1) Command
```

password: (2) New password

Any input value isn't echoed back.

password(again): (3) New password

Any input value isn't echoed back.

### Syntax4

```
oprΔHvmPasswdΔ-user=user nameΔ-passwd=new password
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

An operation number, which an HVM has assigned to when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

### Note

- The current password cannot be set as a new password.
- When you issue the 2nd or 4th syntax command, anyone can obtain a password which you set. Therefore, the 1st and 3rd syntax commands can add a user more safely than the 2nd and 4th syntax command.
- When a password, which a user has logged in an HVM, has been changed, the HVM recognizes that the user is operating the HVM as a user with the old password. However, in such a case, it is recommended to log in the HVM as a user with a new password again in advance of changing the new password again by issuing the 1st or the 2nd syntax command.
- When a user desires to change the password for another user, the user is required to have the HVM security permission. Whereas, when a user desires to change the password for the user, the user is not required to have the HVM security permission.

## Recover HVM password

Changes the passwords for users without logging into an HVM. When the passwords for all users to whom the HVM security permission is assigned have expired, you should execute this command to enable the users again. User authentication is processed with a specified user name and the password for the user name. At that time, the expiration of the password is not confirmed.

### Syntax

```
oprΔHvmPasswdRecoveryΔ-user=user name[Δ-cur=current passwordΔnew=new password]
```

When you do not specify the options “cur” or “-new”, you are required to interactively input some information. The interactive method is as shown below.

[Example] Note that the passwords (2), (3), and (4) are not echoed back.

```
>HvmSh -host=xx.xx.xx.xx opr HvmPasswdRecovery -user=xxxx
(1) Command execution
current password: (2) Password in use
new password: (3) New password
new password(again): (4) New password
```

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

An operation number, which an HVM has assigned to when the HVM has received this command, is output in decimal system.

The end code showing a normal end is an operation number in hexadecimal system.

### Note

- This command does not work for HVMs in which the user authentication is disabled.
- The HVM security permission is required for a user to change the password for a user specified with the options “-user” and “-cur”. Whereas, the HVM security permission is not required for a user to change the password for the user.

## Change accessible time after login by HvmSh

Changes an accessible time after login by an HvmSh command. When a user issues the 1st syntax command, it changes an accessible time after login for the user. Whereas, when an administration user issues the 2nd syntax command, it changes an accessible time after login for another user.

### Syntax1

```
oprΔHvmShLoginValidTimeΔ-LoginValidTime=accessible time after login  
(seconds)
```

HvmSh of Ver.8.5 or higher allows entering just "-time=" instead of "-LoginValidTime =".

### Syntax2

```
oprΔHvmShLoginValidTimeΔ-user=user nameΔ-LoginValidTime=accessible time  
after login (seconds)
```

HvmSh of Ver.8.5 or higher allows entering just "-time=" instead of "-LoginValidTime =".

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
accept=operation No.
```

#### **operation No.:**

An operation number, which an HVM has assigned to when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

## Get user authentication logs

Gets user authentication logs on an HVM.

### Syntax1

```
getΔHvmAuthenticationLogs[Δfilename=name of file to be output]
```

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
Begin<tab>1.0<CRLF>  
[AUTHENTICATION_LOGS]<CRLF>  
<tab>field name<tab>field name<tab>.....<CRLF>  
<tab>field value<tab>field value<tab>.....<CRLF>  
. .  
<tab>field value<tab>field value<tab>.....<CRLF>  
. .  
End<CRLF>
```

Also, the fields in the AUTHENTICATION\_LOGS record are shown in the following table.

**Table 2-100 AUTHENTICATION\_LOGS record**

Field	Contents	Type	Length
NAME	User name	string	32
From	Source IPv4 or IPv6 address <IPv4 address> Format:AAA.BBB.CCC.DDD (dot delimited/Any blanks are filled in with 0.) Example: 192.168.000.001  <IPv6 address> Example: fe80::1ce:c0ff:ee:cafe	Character	40
Interface	Source interface { HvmSh VC http Mgmt}	Character	16
Port	Source port number "*" is displayed in a failure of authentication.	Numeric	5
LPAR	LPAR number - When the interface is "VC (Virtual COM)", an LPAR No., which the virtual COM is assigned to, is displayed. - When the interface isn't "VC (Virtual COM)", * is displayed.	Numeric	2
Result	Authentication result in a connection { Success Fail } Success: Success in a connection Fail: Failure in a connection	Character	16
Login	Connection start date and time (HVM system time)	date and time	19
Logout	Connection end date and time (HVM system time) - "Logged in" is displayed in a connection. - "*" is displayed in a failure of authentication.	date and time	19
Note	Additional data { Network shutdown - * } - "Network shutdown" is displayed when a connection has been terminated, caused by shutdown of the network management module for HVM. - "-" is displayed when there is no additional information. - "*" is displayed in the other case.	Character	32

Date and time format: YYYY/MM/DD HH:MM:SS

**Note**

- When multiple HvmSh interfaces issue this command "Get user authentication logs" simultaneously, an error code may be returned.
- If an authentication log contains IPv6 communication, HvmSh of version 8.5 or lower cannot output the IP address. To avoid the problem, if you enable IPv6 communication, use HvmSh of version 8.6 or higher.

## Configure audit log setting

Configures the audit log settings for on an HVM.

### Syntax1

```
oprΔAuditLogConfigΔ[server1=Information on audit log server 1 to be accessed]  
Δ[server2=Information on audit log server 2 to be accessed]  
Δ[port=port number on audit log servers]  
Δ[protocol={UDP | TLS1.0 | TLS1.2}]  
Δ[verify={Disable | Enable}]
```

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
Accept= operation No.
```

#### **operation No.:**

An operation number, which an HVM has assigned to when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

### Note

- If the HVM does not support the LDAP authentication feature, it ends with an error of "Return: 0x11000000".
- Specify an IPv4 address, an IPv6 address, or a host name as the elements on audit log servers. When you disable each element, set no value after =.

## Configure LDAP setting

Configures the information for accessing LDAP servers.

### Syntax

```
oprΔLdapConfigΔ [server1=Information on LDAP server 1 to be accessed]  (※1)
Δ[server2=Information on LDAP server 2 to be accessed]                (※1)
Δ[server3=Information on LDAP server 3 to be accessed]                (※1)
Δ[port=port number on LDAP servers]
Δ[login_id_attribute=Login ID attribution for LDAP servers]  (※1)
Δ[base_dn=Base dn]                                               (※1)
Δ[anonymous_bind=whether anonymous bind is enabled or disabled]
Δ[role=role number]          (0 to the supported number of user-defined roles)
```

Note that when you disable each setting information, set no value after =.

### Syntax

```
oprΔLdapPasswdΔ[bind_dn=bind dn]          (*1)
[bind_passwd=bind password]  (*1)
```

Note that when you do not set the “bind-passwd” option, input a bind dn and a password in interactive operation.

When you disable each setting information, set no value after =.

[Example]

```
>HvmSh -host=xx.xx.xx.xx opr LdapPasswd //Command
bind dn: xxxxxx //Bind dn
bind passwd: //Bind password
```

Note that the HVM security permission is required to execute this command.

## Situation-dependent message

Accept= operation No.

### operation No.:

An operation number, to which an HVM has assigned when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

### Note

- This command does not change any settings of LDAP servers.
- If the HVM does not support the LDAP authentication feature, it ends with an error of "Return: 0x11000000".
- When you set the "bind passwd" option, it may allow another person to see the password by commands indicating the statuses of processes on a server for managing HVMs. Interactive operation has greater advantage of security.
- Set an IPv4 address, an IPv6 address, or a host name as an element of information on LDAP servers.
- When "RoleBasedAccessControl" in [Function name](#) is set to "ON", the option "role" works. When you desire to assign a role to a user, set one of 0 to the supported number of user-defined roles for the user. Note that 0 is the role number with all permissions in an HVM.

**Table 2-101 Characters allowed in options**

Option	Characters allowed in option
LDAP server	1 to 63 of characters for a dot-separated label
Host name	Characters allowed in labels: a to z, A to Z, 0 to 9, and - (hyphen). Note that hyphen is not allowed at the beginning and the end of each label.
	Up to 255 of characters in total excluding "Null" at the end
Login id attribute	Characters allowed in labels: a to z and A to Z at the beginning, and a to z, A to Z, and 0 to 9 at the second or later
	0 to 64 of characters in total excluding "Null" at the end
base dn	Can specify ASCII codes for display (*1)
bind dn	A blank is not allowed at the beginning and the end.
	0 to 254 of characters in total excluding "Null" at the end
bind passwd	Can specify ASCII codes for display (*1)
	A blank is not allowed at the beginning and the end.
	0 to 64 of characters in total excluding "Null" at the end

\*1: When you specify codes with a command line option, enclose a character string with double quotations `""`. When you desire to set double quotation in a character string, put a backslash before the double quotation. Whereas, in interactive operation, specify codes with the codes not enclosed with double quotations `""`.

Ex.) When you specify characters `abcdef\""ghi` for `base_dn`, set `base_dn="abcdef\""ghi"` as the option.

## Configure ExternalAuthentication access method

Sets "METHOD" and "LOGIN\_VALID\_TIME" of the information required for an HVM to access external servers, such as LDAP servers and RADIUS servers.

### Syntax1

```
oprΔExternalAuthentication  
Δ[method= { LOCAL | LOCAL+LDAP | LOCAL+RADIUS } ]  
Δ[-LoginValidTime = Login available period for HvmSh commands]
```

- "method=LOCAL" : The user authentication is performed.
- "method=LOCAL+LDAP" : When the user authentication fails, LDAP authentication is performed.
- "method=LOCAL+RADIUS" : When the user authentication fails, RADIUS authentication is performed.

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
Accept= operation No.
```

#### **operation No.:**

An operation number, to which an HVM has assigned when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

### Note

- This command does not change any settings of LDAP servers.

## Configure RADIUS setting

Sets information required for an HVM to access RADIUS server 1, 2, and 3.

### Syntax1

You are required to interactively set the shared secret keys.

```
oprΔRadiusConfigΔ{secret1 | secret2 | secret3}
```

The interactive method for setting the shared secret key for one RADIUS server is as shown below.

[Example] Note that the shared secret key (2) is not echoed back.

```
>HvmSh -host=xx.xx.xx.xx opr RadiusConfig secret1
```

(1) Command execution

secret:

(2) A shared secret key

### Syntax2

```
opr RadiusConfig
[server1=RADIUS server 1 access information]
[server2=RADIUS server 2 access information]
[server3=RADIUS server 3 access information]
[secret1=RADIUS server 1 shared secret key]
[secret2=RADIUS server 2 shared secret key]
[secret3=RADIUS server 3 shared secret key]
[port1=RADIUS server 1 port number]           (1 to 65535)
[port2=RADIUS server 2 port number]           (1 to 65535)
[port3=RADIUS server 3 port number]           (1 to 65535)
[retry1=RADIUS server 1 No. of retries]       (0 to 3)
[retry2=RADIUS server 2 No. of retries]       (0 to 3)
[retry3=RADIUS server 3 No. of retries]       (0 to 3)
[timeout1=RADIUS server 1 timeout period]     (1 to 10 seconds)
[timeout2=RADIUS server 2 timeout period]     (1 to 10 seconds)
[timeout3=RADIUS server 3 timeout period]     (1 to 10 seconds)
[method1=RADIUS server 1 Protocol]            ({PAP | CHAP | MS-CHAPv2})
[method2=RADIUS server 2 Protocol]            ({PAP| CHAP | MS-CHAPv2})
[method3=RADIUS server 3 Protocol]            ({PAP| CHAP | MS-CHAPv2})
[role=role number] (0 to the supported number of user-defined roles) *: Common setting for
RADIUS server 1, 2, and 3
```

- Set information required for an HVM to access RADIUS server 1, 2, or 3, namely, the IPv4 address, IPv6 address, or the host name at the option server1, server2, or server3, respectively.
- Set a role number that is applied to all users authenticated by RADIUS at the option "role". 0 is the role number with all permissions in an HVM. A role is valid for RADIUS server 1, 2, and 3.

- In Syntax 2, you are allowed to consecutively set the same parameters for RADIUS server 1, 2, and 3 in a row.

[Example]

```
"port3=333 port1=111 port2=222"
```

In this case, the port number "111" is applied to RADIUS server 1, the port number "222" is applied to RADIUS server 2, and the port number "333" is applied to RADIUS server 3.

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

Accept= <b>operation No.</b>
------------------------------

#### operation No.:

An operation number, to which an HVM has assigned when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

### Note

- When you set shared secret keys in Syntax 1, it is feared that someone obtain the passwords with features for confirmation of the process states in management servers to which are connected to this HVM. In this point, you can configure the settings in Syntax 2 more safely.
- When you do not set any options in Syntax 2, it ends with an error.
- Valid characters for options

Option	Valid characters and limit on No. of characters
host name for server 1 to 3	The same valid characters as those for the command "opr LdapConfig"
secret 1 to 3	<ul style="list-style-type: none"> <li>- Alphabetical and numerical characters, and printable articles (ASCII codes 0x21 to 0x7e)</li> <li>- Up to 64 characters or articles</li> </ul>

## Verify connectivity with RADIUS servers

Verifies connectivity with RADIUS servers. The outcome is displayed in the status code of the command "getResult".

### Syntax

```
oprΔRadiusConnectivityVerify{server1 | server2 | server3}  
Δ[-user=user name -passwd=password]
```

- Set RADIUS servers with which you desire to verify the connectivity at server1, server2, or server3.
- When you do not set the option "-user" or "-passwd", you are required to interactively set them. The interactive method for setting the options "-user" and "-passwd" is as shown below.

[Example] Note that the password (3) is not echoed back.

```
>HvmSh -host=xx.xx.xx.xx opr RadiusConnectivityVerify server1  
                                                                    (1) Command execution  
user name: xxxxxx                                                    (2) User name  
password:                                                            (3) Password
```

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
Accept= operation No.
```

#### **operation No.:**

An operation number, to which an HVM has assigned when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

## Change value of security permission for user-defined role

Changes the value of the HVM security permission for a user-defined role.

### Syntax

```
oprΔRoleConfig role=Role valueΔRBAC_Security={ON | OFF}
```

- Set a user-defined role value between 0 to the supported number of user-defined roles at the option "RoleConfig role". 0 is the role number with all permissions in an HVM.
- Set "ON" as a value of "enabled" of the HVM security permission or "OFF" as a value of "disabled" of the HVM security permission, at the option "RBAC\_Security".

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
Accept= operation No.
```

#### **operation No.:**

An operation number, to which an HVM has assigned when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

### Note

- When a user desires to change the permissions for the user, the changes are applied in the next login operation. If you desire to immediately apply changes to a user after changing, log out from an HVM and then log in to the HVM.
- When you set only the option "role" without setting the other options, it ends with an error of "Return: 0x11000000".

## Change role for user

Changes the role for a user.

### Syntax1

```
oprΔHvmUserConfigΔ-user=user nameΔrole=role number
```

- Set a user name for which to change the role at the option “-user”.
- Set a role value between 0 to the supported number of user-defined roles. 0 is the role number with all permissions in an HVM.

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
Accept= operation No.
```

#### **operation No.:**

An operation number, to which an HVM has assigned when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

## Change role for HVM-unlogged ManagementModuleUser

Changes the role for the ManagementModuleUser that has not logged into the target HVM.

### Syntax1

```
oprΔManagementModuleUserRoleΔrole=role number
```

- Set a role value between 0 to the supported number of user-defined roles. 0 is the role number with all permissions in an HVM.

Note that the HVM security permission is required to execute this command.

### Situation-dependent message

```
Accept=operation No.
```

#### **operation No.:**

An operation number, to which an HVM has assigned when the HVM has received this command, is output in decimal system. The end code showing a normal end is an operation number in hexadecimal system.

## Notes for HVM interface

### Notes on LPAR relocation

Followings are the commands only for LPAR relocation. Do not use them except in script for LPAR relocation.

CB500 and CB2500 does not support LPAP re-allocation.

```
get VfcWWN
set VfcWWN
get ActInhibit
set ActInhibit
get LPARRTCdiff
set LPARRTCdiff
get autoVnicMac
set autoVnicMac
get VfcIdChangeInhibit
set VfcIdChangeInhibit
get RelativeSlot
```

LPAR migration and LPAR relocation are exclusive operations. Therefore don't use those commands to the LPAR which has been migrated.

If execute either of those commands to the LPAR which has been migrated, command fails with return code 0x0402 0000 (CB2000DP: Ver.58-61 or higher / CB2000MP: Ver.78-61 or higher / CB320: Ver.17-71 or higher), or the HVM might become unstable condition (previous HVM Ver.).

LPAR relocation by Linux HvmSh command does not guarantee normal operation.

### Notes on HVM ID

You can get an HVM ID with one of the following three HVM interfaces, but there is difference in whether adding trailing spaces.

**Table 2-102 HVM ID format**

HVM interface	Trailing spaces	Specification
get SystemConfig	Yes	Displays HVM ID as 16 characters by adding trailing spaces to HVM ID displaying followed by <i>hvmid=</i> .
get ConfigAll	Yes	For HVM ID on HVM INFORMATION record, displays HVM ID as 16 characters by adding trailing spaces
get HvmPerfMon	No	For HVM_ID on MONITORING_INFORMATION record, displays HVM ID only.

## Description format for device location

Description format of Device location on HvmSh commands are as follows except specifying in individual cases.

**Table 2-103 Description format for device location**

Device type	Description format	Value
PCI Slot CB 2000: Rear side of Chassis CB 320: Front Side of Blade	□	□ = 0 - 9 PCI Slot No. on rear side of Chassis. (CB 2000)
	□□	□□ = 10 - 15 PCI Slot No. on rear side of Chassis. (CB 2000)
	Δ	Δ = 0 - 9 PCI Slot No. on front side of Blade. (CB 320)
Onboard NIC	GΔ	Δ = 0 - 9 Blade No. (No.8 & 9 are only for CB 320, for CB2500 No.0 is none.) ΔΔ = 10-15 Blade No. (for CB2500) ☆ = Onboard GbE Controller No. (0 or 1) (Only for CB 320 and CB500 EP4S)
	GΔΔ	
	GΔ☆	
USB, Remote KVM	UΔ	Δ = 0 - 9 Blade No. (No.8 & 9 are only for CB 320, for CB2500 No.0 is none.) ΔΔ = 10-15 Blade No. (for CB2500)
	UΔΔ	
	UKΔ	
	UKΔΔ	
Mezzanine Slot	EΔ◇	Δ = 0 - 9 Blade No. (No.8 & 9 are only for CB 320, for CB2500 No.0 is none.) ΔΔ = 10-15 Blade No. (for CB2500) ◇ = 0 - 2 Mezzanine Slot No. (2 for CB 500)
	EΔΔ◇	
IOBD (IO Board Module)	ΔΔA	ΔΔ = 01 to 14 (Blade No.) or (Blade No.+1) A or B = Identifier for IOBD device location * IOBD mounting is only for CB2500 * (Blade No.+1) is only for full wide blade
	ΔΔB	

**Table 2-104 Description format for individual cases**

Command	Target	Description format
get SystemPCI	slotno [Optional parameter] slot	Standard Format
set SystemPCI	[Optional parameter] slot	Standard Format
get PciDeviceMapping	H_Slot, L_Slot	Standard Format
get LPARSFC	slotno	Standard Format
get LPARPCI	[Optional parameter] slot	Standard Format
set LPARPCI	[Optional parameter] slot	Standard Format
set LPARSFC	slotno	Standard Format
get LPARDedFC	slotno	Standard Format
get SystemFC	slotno	Standard Format
get HvmPerfMon	PHYSICAL_NIC_USAGE, PHYSICAL_HBA_USAGE, LOGICAL_NIC_USAGE, SID of LOGICAL_HBA_USAGE	Specified Format
	PHYSICAL_NIC_USAGE, Location of PHYSICAL_HBA_USAGE	Standard Format
get ConfigAll	PHYSICAL_IO_CONFIGURATION, Location of VFC_ASSIGN_INFORMATION	Standard Format
	LocationEx of PHYSICAL_IO_CONFIGURATION Record, and VFC_ASSIGN_INFORMATION Record	Specified Format
opr LPARaddAndSet	slotno	Standard Format

get FcBootFunction	slot	Standard Format
set/opr FcBootFunction	slot	Standard Format
set FcCoreDedMode	slot	Standard Format
set FcIoConnectionMode	slotno	Standard Format
set PciPortDedMode	[Optional parameter] slot	Standard Format





# Functions Supported by HvmSh Versions

This appendix describes the functions supported by HvmSh versions.

- [Appendix A: Functions supported by HvmSh versions](#)

## Appendix A: Functions supported by HvmSh versions

The table below shows HvmSh command options supported by HvmSh versions.

**Table A-1 Functions supported by each HvmSh version**

HvmSh command option	HvmSh version					
	1.0	3.x	4.0 or higher	6.0 or higher	8.0 or higher	8.4 or higher
Maximum no. of characters for each character string delimited by a space in HvmSh command line	127	127	1024	1024	1024	1024
Output of HvmSh command version in execution result	No	No	Yes	Yes	Yes	Yes
-srcip option	No	No	Yes	Yes	Yes	Yes
-prot option	No	No	No	Yes	Yes	Yes
-ver option	No	No	No	Yes	Yes	Yes
-verify option	No	No	No	No	Yes	Yes
-fileuser option	No	No	No	No	No	Yes

The table below shows HVM interfaces supported by HvmSh and HVM version combinations.

**Table A-2 HVM interfaces supported by HvmSh and HVM version combinations**

HVM interface		HvmSh version	Prerequisite HVM version					
			BS	Compute Blade				
				1000	2000 DP	2000 MP	320	500
opr	TakeHvmDump	Ver. 3.0 or higher	56-00 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
opr	StartGuestDump	Ver. 3.0 or higher	56-00 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
opr	CancelGuestDump	Ver. 3.0 or higher	56-00 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
get	GuestDumpProgress	Ver. 3.0 or higher	56-00 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
get	HvmPerfMon	Ver. 4.0 or higher	No	57-30 or higher	78-10 or higher	17-40 or higher	01-00 or higher	02-00 or higher
get	ConfigAll	Ver. 4.1 or higher	54-01 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
get	LPARSchd	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	LPARSchd	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
get	LPARVC	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
set	LPARVC	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
set	LPARLproc Form2	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
set	SystemPCI Form1	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
set	SystemPCI Form2	Ver. 5.1 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher

get	ProcGroup	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	ProcGroupAdd	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	ProcGroupRemove	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
set	ProcGroupName	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	ProcGroupPproc	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	ProcGroupLpar	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	LparActCheck	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	LPARaddAndSet	Ver. 5.0 or higher	No	58-40 or higher	78-40 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	LparNvramClear	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	LparNvramCopy	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	SystemPProc	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	SystemConfig	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	SystemConfig (ver=option) (*1)	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
opr	SystemConfig (clixip=option, x=1,2,...,8)	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
get	LPARVNICPrm	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
set	LPARVNICPrm	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
get	SystemSNICFilter	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
set	SystemSNICFilter	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
get	HvmFacilityMap	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
get	HvmOptions	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
set	HvmOptions	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
	"savetimeconfig=" option	Ver. 7.3 or higher	No	59-50 or higher	79-50 or higher	-	01-70 or higher	02-00 or higher
	"safemode=" option	Ver. 8.5 or higher	No	59-50 or higher	79-50 or higher	-	01-70 or higher	02-00 or higher
get	HvmStatus	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	HvmShutdown	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher

get	HvmSystemLogs	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	ForceRecovery	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
opr	HvmDumpToSvp	Ver. 5.1 or higher	No	58-50 or higher	78-50 or higher	17-61 or higher	01-00 or higher	02-00 or higher
get	FcBootFunction Form 1	Ver. 5.3 or higher	No	58-60 or higher	78-60 or higher	17-70 or higher	01-00 or higher	02-00 or higher
get	FcBootFunction Form 2	Ver. 6.5 or higher	No	58-60 or higher	78-60 or higher	17-70 or higher	01-00 or higher	02-00 or higher
set	FcBootFunction	Ver. 5.3 or higher	No	58-60 or higher	78-60 or higher	17-70 or higher	01-00 or higher	02-00 or higher
	"MultiplePortID=" option	Ver. 8.5 or higher	No	58-60 or higher	78-60 or higher	17-70 or higher	01-00 or higher	02-00 or higher
opr	FcBootFunction	Ver. 8.5 or higher(*3)	No	No	No	No	02-10 or higher	02-10 or higher
get	BootDevice	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
set	BootOrder	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
opr	Activate (opt=option) (*1)	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
set	SystemTime	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
get	LPARTime	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
opr	LPARTimeAdjust	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
	src=, zone=option	Ver. 7.3 or higher	No	59-50 or higher	79-50 or higher	-	01-70 or higher	02-00 or higher
get	LPARLcd	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
opr	LPARFrontPanelDump	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
get	LPARConsoleLog	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
opr	LPARConsoleLogErase	Ver. 5.3 or higher	No	58-61 or higher	78-61 or higher	17-71 or higher	01-00 or higher	02-00 or higher
get	SystemTimeCtrl	Ver. 5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	01-00 or higher	02-00 or higher
opr	SystemTimeCtrl	Ver. 5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	01-00 or higher	02-00 or higher
get	PciDeviceMapping	Ver. 5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	01-00 or higher	02-00 or higher
opr	HvmRestart	Ver. 5.5 or higher	No	58-70 or higher	78-70 or higher	17-80 or higher	01-00 or higher	02-00 or higher
opr	HvmOperatingMode	Ver. 5.5 or higher	No	58-71 or higher	78-71 or higher	17-80 or higher	No	No
get	LPARVNICMac	Ver. 6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	01-00 or higher	02-00 or higher

get	LPARVNICDev	Ver. 6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	No	No
set	LPARVNICDev	Ver. 6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	No	No
opr	HvmDumpToSystem	Ver. 6.0 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	01-00 or higher	02-00 or higher
get	HvmDumpData (Syntax1) HvmDumpData (Syntax2)	Ver. 6.0 or higher Ver. 6.4 or higher	No	59-00 or higher	79-00 or higher	17-86 or higher	01-00 or higher *2	02-00 or higher
set	LPARMN	Ver. 6.4 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-20 or higher	02-00 or higher
opr	TimerCounterBase	Ver. 6.5 or higher	No	59-20 or higher	79-20 or higher	17-86 or higher	01-30 or higher	02-00 or higher
get	HvmAlertList	Ver. 7.2 or higher(*3)	No	59-40 or higher	79-40 or higher	-	01-50 or higher	02-00 or higher
opr	HvmDumpToSystem Compress	Ver. 7.2 or higher(*3)	No	59-40 or higher	79-40 or higher	-	01-60 or higher	02-00 or higher
get	HvmDumpDataCompress	Ver. 7.2 or higher(*3)	No	59-40 or higher	79-40 or higher	-	01-60 or higher	02-00 or higher
set	LPARVTX	Ver. 7.3 or higher(*3)	No	59-50 or higher	79-50 or higher	-	01-70 or higher	02-00 or higher
set	LPAROsType	Ver. 7.3 or higher(*3)	No	59-50 or higher	79-50 or higher	-	01-70 or higher	02-00 or higher
get	LPARVFNIC	Ver. 7.3 or higher(*3)	No	59-58 or higher	79-58 or higher	-	01-70 or higher	02-00 or higher
set	LPARVFNIC	Ver. 7.3 or higher(*3)	No	59-58 or higher	79-58 or higher	-	01-70 or higher	02-00 or higher
get	HvmSecureCmmConfig	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
get	HvmServerCertificate	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
get	HvmCSR	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
opr	HvmIfSecureLevel	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
opr	HvmIfSecureVerify	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
opr	HvmServerCertificate	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
opr	HvmCACertificateRegister	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
opr	HvmClientCertificateRegister	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
opr	HvmClientCertificateRemove	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
opr	HvmSecureCmmConfigSave	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher
opr	CACertificateRegister	Ver. 8.0 or higher(*3)	No	59-60 or higher	79-60 or higher	-	01-80 or higher	02-00 or higher

set	LPARGuestNuma	Ver. 8.3 or higher(*3)	No	No	No	No	02-00 or higher	02-00 or higher
get	LPARNodeMem	Ver. 8.3 or higher(*3)	No	No	No	No	02-00 or higher	02-00 or higher
set	LPARNodeMem	Ver. 8.3 or higher(*3)	No	No	No	No	02-00 or higher	02-00 or higher
opr	login	Ver. 8.3 or higher(*3)	No	No	No	No	02-00 or higher	02-00 or higher
opr	logout	Ver. 8.3 or higher(*3)	No	No	No	No	02-00 or higher	02-00 or higher
get	HvmFunctionLicense	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	VCConnectType	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	HvmSshHostKey	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
get	HvmUserList	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	HvmIfAuthentication	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	HvmPasswdExpiry	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	HvmUserAdd	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	HvmUserRemove	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	HvmPasswd	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
get	HvmAuthenticationLogs	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	HvmShLoginValidTime	Ver. 8.4 or higher(*3)	No	No	No	No	02-05 or higher	02-05 or higher
opr	MgmtStandbyPortDiagnosis	Ver. 8.5 or higher(*3)	No	No	No	No	02-10 or higher	02-10 or higher
get	MgmtStandbyPortStatus	Ver. 8.5 or higher(*3)	No	No	No	No	02-10 or higher	02-10 or higher
set	LPARMshyp	Ver. 8.6 or higher(*3)	No	No	No	No	02-25 or higher	02-25 or higher
set	FcCoreDedMode	Ver. 8.6 or higher(*3)	No	No	No	No	02-25 or higher	02-25 or higher
get	SystemConfigIPv6	Ver. 8.6 or higher(*3)	No	No	No	No	02-25 or higher	02-25 or higher
opr	SystemConfigIPv6	Ver. 8.6 or higher(*3)	No	No	No	No	02-25 or higher	02-25 or higher
set	LPARIdleMode	Ver. 8.7or higher(*3)	No	No	No	No	02-27or higher	02-27or higher
set	LPARLowLatency	Ver. 8.7or higher(*3)	No	No	No	No	02-27or higher	02-27or higher
set	LPAREpt1GB	Ver. 8.7or higher(*3)	No	No	No	No	02-27or higher	02-27or higher

set	LPARGuestNumaBin dLproc	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
set	LPARNodeLproc	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
set	FcIoConnectionMode	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
opr	SystemConfigDNS	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
get	HvmScdOptions	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
opr	HvmScdOptions	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
opr	AuditLogConfig	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
opr	ExternalAuthenticati on	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
opr	LdapConfig	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
opr	LdapPasswd	Ver. 9.0or higher(*3)	No	No	No	No	02-40 or higher	02-40 or higher
set	PciPortDedMode	Ver. 9.2or higher(*3)	No	No	No	No	02-45 or higher	02-45 or higher
opr	HvmPasswdRecover y	Ver. 9.2or higher(*3)	No	No	No	No	02-45 or higher	02-45 or higher
opr	RadiusConfig	Ver. 9.2or higher(*3)	No	No	No	No	02-45 or higher	02-45 or higher
opr	RadiusConnectivityV erify	Ver. 9.2or higher(*3)	No	No	No	No	02-45 or higher	02-45 or higher
opr	RoleConfig	Ver. 9.2or higher(*3)	No	No	No	No	02-45 or higher	02-45 or higher
opr	HvmUserConfig	Ver. 9.2or higher(*3)	No	No	No	No	02-45 or higher	02-45 or higher
opr	ManagementModule UserRole	Ver. 9.2or higher(*3)	No	No	No	No	02-45 or higher	02-45 or higher
get	LPARPCI (Syntax2)	Ver. 9.2or higher(*3)	54-01 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
set	LPARPCI (Syntax2)	Ver. 9.2or higher(*3)	54-01 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
get	SystemPci (Syntax2)	Ver. 9.2or higher(*3)	54-01 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
set	SystemPci (Syntax2)	Ver. 9.2or higher(*3)	54-01 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher
Other than the above		Ver. 1.0 or higher	54-01 or higher	57-00 or higher	78-10 or higher	17-20 or higher	01-00 or higher	02-00 or higher

**Note:**

1. The other options are supported in Ver.1.0 or higher.
2. The function which collects the data on both sides of the dump by one command "opr HvmDumpToSystem" is not embedded in CB500 01-1x or lower. Therefore, when using syntax 2, an error may occur even after command "opr HvmDumpToSystem".

HVM interface supported by HvmSh Ver. 7.1 or higher uses the TCP protocol or the TLS protocol, even without either using the HvmSh command "-prot=" option or using the default file "-prot=" option, or using UDP.

Attempting to use these commands to the HVM that does not support TCP (CB1000: (all versions) / CB2000MP: 58-xx or lower / CB2000DP: 78-xx or lower / CB320: 17-85 or lower) causes a timeout (exit code: 0x10020001).



# Considerations Required in Using HvmSh

This appendix describes considerations required for using HvmSh.

- [Appendix B-1: Considerations required for updating HvmSh version](#)
- [Appendix B-2: Considerations required for HVM network](#)

## Appendix B-1: Considerations required for updating HvmSh version

When HvmSh command is upgraded from version 3.x or lower to 4.x or higher, the first line of HvmSh command execution result will show the HvmSh command version number as shown below. If you are using any upper-level program (e.g., a shell program) relying on output characters, check if such version number output causes no adverse effect. If you find modification to such upper-level program is necessary, ensure that your modification applies to both versions of HvmSh command before and after the upgrade or at least applies to the version after the upgrade.

Output samples of HvmSh command version 3.x or lower

HvmShCompleted.Δ2007/05/01Δ12:12:12ΔReturn:Δ0x00000000
HvmShFailed.Δ2007/05/01Δ12:12:12ΔReturn:Δ0x02020001ΔMsg:ResponseΔTimeout.
HvmShAccepted.Δ2007/05/01Δ12:12:12ΔReturn:Δ0x00000019

Output samples of HvmSh command version 4.x or higher

HvmSh(VersionΔ4.0)Completed.Δ2007/05/01Δ12:12:12ΔReturn:Δ0x00000000
HvmSh(VersionΔ4.0)Failed.Δ2007/05/01Δ12:12:12ΔReturn:Δ0x02020001ΔMsg:ResponseΔTimeout.
HvmSh(VersionΔ4.0)Accepted.Δ2007/05/01Δ12:12:12ΔReturn:Δ0x00000019

When updating the HVM version, refer to the following table and updating the HvmSh version if necessary.

**Table B-1 HVM versions supported by HvmSh-for-Linux**

HvmSh version		7.0 or higher	8.0 or higher	8.3 or higher	8.6 or higher
HVM version					
BladeSymphony 1000	All versions	-	-	-	-
Compute Blade 2000 DP	58-XX or lower	-	-	-	-
	59-00 or higher	√	√	√	√
	59-60 or higher	√ <sup>4</sup>	√	√	√
Compute Blade 2000 MP	78-XX or lower	-	-	-	-
	79-00 or higher	√	√	√	√
	79-60 or higher	√ <sup>4</sup>	√	√	√
Compute Blade 320	17-85 or lower	-	-	-	-
	17-86 or higher	√	√ <sup>5</sup>	√ <sup>5</sup>	√ <sup>5</sup>
Compute Blade 500	01-00 or higher	√	√	√	√
	01-80 or higher	√ <sup>4</sup>	√	√	√
	02-25 or higher	√ <sup>4</sup>	√	√	√ <sup>6</sup>
Compute Blade 2500	02-00 or higher	-	-	√	√
	02-25 or higher	-	-	√	√ <sup>6</sup>
Note	Attempting to execute HvmSh-for-Linux commands to an HVM of any unsupported version results in a response timeout error (exit code: 0x10020001). For the notes 4, 5, and 6, see <a href="#">Table B-2 HVM versions supported by HvmSh-for-Windows</a> .				

**Table B-2 HVM versions supported by HvmSh-for-Windows**

HVM version \ HvmSh version		1.0	3.X	4.0	4.1 or higher	5.0	5.1 or higher	6.0 or higher	7.0 or higher	8.0 or higher	8.3 or higher	8.6 or higher
		BS1000	56-3X or lower	√	√	√	√	√	√	√	√	√
CB2000 DP	57-2X or lower	-	√	√	√	√	√	√	√	√	√	√
	58-2X or lower	-	√	√	√	√	√	√	√	√	√	√
	58-4X or lower	-	-	-	- <sup>1</sup>	√	√	√	√	√	√	√
	58-5X or higher	-	-	-	-	√ <sup>2</sup>	√	√	√	√	√	√
	59-21 or higher	-	-	-	-	√ <sup>2, 3</sup>	√ <sup>3</sup>	√ <sup>3</sup>	√	√	√	√
	59-60 or higher	-	-	-	-	-	-	-	√ <sup>4</sup>	√	√	√
CB2000 MP	78-2X or lower	-	√	√	√	√	√	√	√	√	√	√
	78-4X or lower	-	-	-	- <sup>1</sup>	√	√	√	√	√	√	√
	78-5X or higher	-	-	-	-	√ <sup>2</sup>	√	√	√	√	√	√
	79-21 or higher	-	-	-	-	√ <sup>2</sup>	√	√	√	√	√	√
	79-60 or higher	-	-	-	-	√ <sup>2, 3</sup>	√ <sup>3</sup>	√ <sup>3</sup>	√ <sup>4</sup>	√	√	√
CB320	17-2X or lower	-	√	√	√	√	√	√	√	√ <sup>5</sup>	√ <sup>5</sup>	√ <sup>5</sup>
	17-4X or lower	-	-	-	√	√	√	√	√	√ <sup>5</sup>	√ <sup>5</sup>	√ <sup>5</sup>
	17-6X or higher	-	-	-	-	√ <sup>2</sup>	√	√	√	√ <sup>5</sup>	√ <sup>5</sup>	√ <sup>5</sup>
CB500	01-00 or higher	-	-	-	-	-	-	√	√ <sup>4</sup>	√	√	√
	01-80 or higher	-	-	-	-	-	-	√ <sup>4</sup>	√ <sup>4</sup>	√	√	√ <sup>6</sup>
	02-25 or higher	-	-	-	-	-	-	√ <sup>4</sup>	√ <sup>4</sup>	√	√	√ <sup>6</sup>
CB2500	02-00 or higher	-	-	-	-	-	-	-	-	-	√	√ <sup>6</sup>
	02-25 or higher	-	-	-	-	-	-	-	-	-	√	√ <sup>6</sup>
Notes	<ol style="list-style-type: none"> <li>HVM interface: Two commands "get HvmPerfMon" and "get ConfigAll" may fail to operate.</li> <li>HVM interface: Two commands "get LparLproc" and "set LparLproc" may fail to operate.</li> <li>To use 129 or greater extended VNIC system number, use the HvmSh command version 7.0 or higher. If you use HvmSh version 6.x or lower on an HVM that uses 129 or greater VNIC system number, any of the commands "SystemConfig" and "get ConfigAll" returns 255 as the system number.</li> <li>HVM firmware of 59-60/79-60/01-80 or higher version supports TLS; however, the firmware requires using them in combination with HvmSh of version 8.0 or higher if you need TLS.</li> <li>Encrypted communication between an HVM and HvmSh by the TLS protocol is not supported for Compute Blade 320.</li> <li>Using CB500 CB520X B2 server blades in 4-blade SMP on HVM or CB2500 high-performance server blades in 4-blade SMP on HVM requires HvmSh V8.6 or higher.</li> </ol>											

## Appendix B-2: Considerations required for HVM network

When communication between HVM and management module is interrupted, avoid using any of the HVM interfaces listed in Table B-3. For details, see "Management path" in the Compute Blade Logical partitioning manager user guide.

**Table B-3 Use of HVM interfaces to avoid in HVM-SVP communication error**

HVM interface
opr ForceRecovery
oprΔSystemConfig { hvmid=HVM identifier   vnicsysno=VNIC systemNo.   vcport=virtual COM console port }
set SystemPCI



## Examples of Response Timeouts (Error code: 0x10020001)

This appendix shows two examples of Response Timeout errors.

- [Examples of Response Timeouts \(error code: 0x10020001\)](#)

## Appendix C: Examples of Response Timeouts (error code: 0x10020001)

Running multiple HvmSh commands raise the workload on the network. When the load overwhelms the capacity of the network, a "Response Timeout" occurs. If, however, response timeout frequently occurs and if the workload on the network is not heavy, it should indicate some problem in the network environment settings. Here are two such examples.

### Example 1

---

If the communication mode of the LAN switch set to "Fixed" and if the communication mode of the management module is "Auto", the communication takes place in "Half-duplex". Then, the packet collisions cause frequent CRC errors, resulting in a "Response Timeout".

[Solution]

Set the communication mode on the LAN switch to "Auto".

Note, however, that you cannot change the communication mode on the management module.

### Example 2

---

Due to the inappropriate offload setting on a NIC and due to the LPAR used as the management server, a communication error occurs and causes a "Response Timeout".

[Solution]

To use an LPAR as a management server, set the offload option according to the instructions in the user guide listed in [Referenced documents](#).



# Example Workflow of Preparing Certificates for TLS Communication

This appendix shows an example workflow of preparing certificates for TLS communication.

- [Appendix D: Example workflow of preparing certificates for TLS communication](#)

## Appendix D: Example workflow of preparing certificates for TLS communication

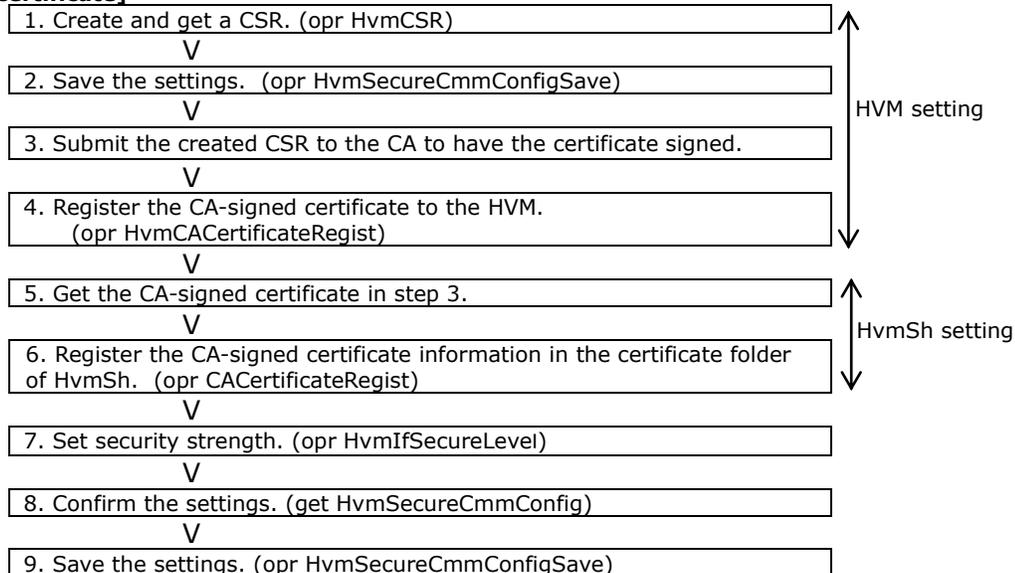
When HvmSh connects to an HVM using TLS protocol, both of them use the server certificate of the HVM. When you boot an HVM for the first time, HVM creates a default HVM server certificate for the HVM. For higher levels of security, you can create either of the two types of server certificate, as a step towards encrypted communication environment construction, according to your security needs: self-signed server certificate and CA (Certificate Authority)-signed certificate.

To create a self-signed or CA-signed server certificate, specify "-prot=tls" option and "-verify=yes" option in the HvmSh initial file and enter the HvmSh commands, or enter the HvmSh commands with the same optional parameters after configuring an HVM. The following example workflow shows this step by step.

### [Using self-signed HVM server certificate]



### [Using CA-signed certificate]



**Note:** When you reboot or shut down the HVM before Step 4, execute Step 2 (Save the Settings) before the reboot or shutdown.



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