

Hitachi Dynamic Link Manager (for AIX) 9.0.1-00 Release Notes

About this document

This document (RN-00HS271-75, January 2025) provides late-breaking information about Hitachi Dynamic Link Manager (for AIX) 9.0.1-00. It includes information that was not available at the time the technical documentation for this product was published, as well as a list of known problems and solutions.

Intended audience

This document is intended for customers and Hitachi Vantara partners who license and use Hitachi Dynamic Link Manager (for AIX).

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About this release

This release adds new features and resolves known problems.

Product package contents

Medium	CD-ROM	Revision	Release Type
Software	Hitachi Dynamic Link Manager (for AIX)	9.0.1-00	Full Package

New features and important enhancements

9.0.1-00 Additional Functions and Modifications

File Access Library and File Conversion Utility (FAL/FCU) 01-07-68/01 or later is now supported in AIX 7.3 environments.

9.0.0-02 Additional Functions and Modifications

PowerHA 7.2.8 is now supported for AIX 7.2.

9.0.0-00 Additional Functions and Modifications

- The product is no longer linked with Global Link Manager. In addition, Common Agent Component, which is required for linking with Global Link Manager, is no longer bundled with the product.
- PowerVM Virtual I/O Server 4.1.0.xx is now supported.
- PowerHA 7.2.8 is now supported in AIX 7.3.
- VSP One B24, B26, and B28 are now supported.

System requirements

For details on system requirements, see Chapter 3. Creating an HDLM environment in the *Hitachi Dynamic Link Manager (for AIX) User Guide*.

Host

For details on supported hosts, see Chapter 3. Creating an HDLM environment in the *Hitachi Dynamic Link Manager (for AIX) User Guide*.

Host Bus Adapter (HBA)

For information on supported HBAs and drivers, see Appendix A - Host Bus Adapter (HBA) Support Matrix.

Storage

For details on supported storage systems, see the *Hitachi Dynamic Link Manager (for AIX) User Guide*, Chapter 3. Creating an HDLM environment > HDLM system requirements > Storage systems supported by HDLM.

Virtualization

For details on supported virtualization environments, see the *Hitachi Dynamic Link Manager (for AIX) User Guide*, Chapter 3. Creating an HDLM environment > HDLM system requirements > Host and OS support for HDLM.

Operating systems requirements

For details on supported operating system, see the *Hitachi Dynamic Link Manager (for AIX) User Guide*, Chapter 3. Creating an HDLM environment > HDLM system requirements > Host and OS support for HDLM.

OS patches can be downloaded from the IBM official website or FTP site (<ftp://ftp.software.ibm.com/aix/efixes/>).

Prerequisite programs

For details on prerequisite programs, see the *Hitachi Dynamic Link Manager (for AIX) User Guide*, Chapter 3. Creating an HDLM environment > HDLM system requirements > Host and OS support for HDLM.

Related programs

For details on related programs, see the following in Chapter 3. Creating an HDLM environment of the *Hitachi Dynamic Link Manager (for AIX) User Guide*:

- HDLM system requirements > Storage systems supported by HDLM - When handling intermediate volumes managed by Hitachi RapidXchange.
- HDLM system requirements > Cluster software supported by HDLM.

Memory and disk space requirements

For details on memory and disk capacity requirement, see the *Hitachi Dynamic Link Manager (for AIX) User Guide*, Chapter 3. Creating an HDLM environment > HDLM system requirements > Memory and disk capacity requirements.

HDLM supported configurations

For details on HDLM space requirements, see the *Hitachi Dynamic Link Manager (for AIX) User Guide*, Chapter 3. Creating an HDLM environment > HDLM system requirements > Number of LUs and paths that are supported in HDLM.

Resolved problems

9.0.1-00 Modifications

The following problem has been resolved.

	Corrected Problems	Applicable products	Applicable OS
1	The behavior of the dlmpostrestore utility was corrected so that the host is restarted in the local boot disk environment as well as in the boot disk environment.	HDLM for AIX 9.0.1-00	AIX 7.2 AIX 7.3 VIOS

9.0.0-02 Modifications

None.

9.0.0-00 Modifications

None.

Known problems

- Precautions when deleting all HDLM devices on a server:

When deleting all devices managed by HDLM in a local boot disk environment, note the following:

- If Auto Failback is set to ON, set it to OFF before starting the deletion process. After the deletion process finishes, reset it back to ON. Without this, a server may crash because of an OS issue.
- Do not start any the following procedures while deleting the devices managed by HDLM because it might cause a server to crash because of an OS issue:
 - Online operations
 - lspath/chpath/rmpath of the OS command

Both of these occur during the following procedures:

- Upgrade installation, re-installation or removal.

- Deletion of all HDLM devices by using the `dlmrmdev` or `rmdev` command for deleting an LU.

If using HDLM in a standard boot disk environment, these precautions do not apply.

- Notes for using the DLMgetras utility:

If you specify a directory under an NFS mount point as an output destination and then run the DLMgetras utility, an empty directory named "DLMgetras_tmpdir.xxxx/the_specified_directory_name" may be created for the output destination directory ("xxx" is an optional numeric value). When the empty directory exists after running the DLMgetras utility, delete the directory.

- Notes for running Live Update:

If you want to run Live Update while a Hitachi storage system is connected, you must apply APAR IJ08437 in advance.

To prevent this problem, before running Live Update, specify "no_reserve" for the `reserve_policy` attribute for the `hdisk` that is currently used as the `rootvg`.

- Notes on using Virtual I/O Server:

In a virtual I/O server environment where HDLM is installed, using the `viosupgrade` command to migrate the virtual I/O server is not supported.

- Storage systems that have the following functions are no longer supported:

- Dynamic load balance control
- High Availability Manager
- Virtual ID function for storage migration

However, the parameters for these functions are displayed in the format of the `set` or `view` operation of the HDLM command when you run `help`, and the following item is displayed when you run the `view -sys` command:

Dynamic I/O Path Control

Installation precautions

For details on HDLM installation, see the *Hitachi Dynamic Link Manager (for AIX) User Guide*.

Upgrade precautions

For details on upgrading HDLM, see the *Hitachi Dynamic Link Manager (for AIX) User Guide*, Chapter 3. Notes on creating an HDLM environment > Notes on an upgrade installation or re-installation of HDLM.

Removal precautions

For details on removing HDLM, see the removal section in Chapter 3. Creating an HDLM environment in the *Hitachi Dynamic Link Manager (for AIX) User Guide*.

General precautions

For details on general precautions, see Chapter 3. Creating an HDLM environment in the *Hitachi Dynamic Link Manager (for AIX) User Guide*.

Usage precautions

For details on usage precautions when using HDLM, see the following in the *Hitachi Dynamic Link Manager (for AIX) User Guide*:

- Chapter 4. HDLM operations > Notes on using HDLM.
- Chapter 4. HDLM operation > HDLM operations using commands.
- Appendix A. Functional differences between versions of HDLM
- Appendix B. Differences between HDLM version 5.9 or later and version 5.8.1 or earlier

Additional usage precautions

- The version numbers that display after this version of HDLM is installed are as follows:

Function	Item	Version number
HDLM command (dlnkmgr)	HDLM version	9.0.1-00
	HDLM manager	9.0.1-00

	HDLM Alert Driver	9.0.1-00
	HDLM Driver	9.0.1-00
Islpp	Level	9.0.1.0

- The following example shows the text displayed when `dlnkmgr view -sys` is run:

```
# /usr/DynamicLinkManager/bin/dlnkmgr view -sys
HDLM Version                : 9.0.1-00
Service Pack Version        :
Load Balance                 : on(extended lio)
Support Cluster              :
Elog Level                   : 3
Elog File Size (KB)         : 9900
Number Of Elog Files         : 2
Trace Level                  : 0
Trace File Size (KB)        : 1000
Number Of Trace Files       : 4
Path Health Checking         : on(30)
Auto Failback                : on(60)
Intermittent Error Monitor   : off
Dynamic I/O path Control     : off(10)
HDLM Manager Ver            WakeupTime
Alive                        9.0.1-00 2024/12/12 14:51:00
HDLM Alert Driver Ver        WakeupTime      ElogMem Size
Alive                        9.0.1-00 2024/12/12 14:50:48 4000
HDLM Driver Ver              WakeupTime
Alive                        9.0.1-00 2024/12/12 14:50:56
License Type Expiration
Permanent                    -
KAPL01001-I The HDLM command completed normally. Operation name =
view, completion time = 2024/12/12 15:19:56
```

Documentation

Available documentation

Document name	Document number	Issue date
Hitachi Dynamic Link Manager (for AIX) User Guide	MK-92DLM111-55	January 2025

Appendix A: Host Bus Adapter (HBA) Support Matrix

Use the SCSI I/F adapter or Fibre Channel I/F adapters listed in this section. When using two or more adapters, use the same type of adapter. If you combine different types of HBA, HDLM may not be able to switch a path when an error occurs.

The combination of HBA which can exist together is as follows.

- FC5716, FC1977 and FC1957
- FC5758 and FC1905
- FC5759 and FC1910

Appendix B: Retry functionality when an I/O timeout occurs

If a Read/Write I/O timeout occurs, HDLM normally places the paths where the timeout occurred offline, and then switches the I/O to online paths by performing a failover. However, HDLM also provides functionality that leaves the paths where the timeout occurs in the online status, and retries I/O on the same paths for a specified number of times.

In addition, if the I/O for checking paths during the following operations times out, HDLM normally places the paths offline. However, if this functionality is used, the paths where the timeout occurred remain in the online status.

- Path health checking functionality for paths in the online status
- Automatic failback functionality for paths in the offline status
- Online operation by using the HDLM command for paths in the offline status

The functionality prevents excessive degeneration in the redundancy of paths due to the occurrences of a temporary I/O timeout. Therefore, this functionality can be useful in a system that has a lower redundancy, such as when there are 2 to 4 paths for each LU. Also, the number of times to retry the same path should be set to 1, because of situations in which the cause of the I/O timeout is not a temporary factor.

The following describes the HDLM behavior when the functionality is used or not used.

- When the functionality is not used:

If a Read/Write I/O timeout occurs, HDLM places the paths where the I/O timeout occurred offline, and then performs a failover so that the I/O is performed on the online paths.

<Maximum time to complete the I/O>
number-of-paths-for-each-LU x I/O-timer-value (*)

If the I/O for checking paths during the following operations times out, HDLM places the paths offline:

- Path health checking functionality for paths in the online status
- Automatic failback functionality for paths in the offline status
- Online operation by using the HDLM command for paths in the offline status

- When the functionality is used:

If a Read/Write I/O timeout occurs, the paths where the I/O timeout occurs remain in the online status, and HDLM retries I/O on the same paths.

If I/O timeouts occur in succession, the functionality retries the I/O for the specified number of times. If the number of I/O timeouts exceed the specified number of times, the paths are placed offline, and HDLM performs a failover so that the I/O is performed on the online paths.

<Maximum time to complete the I/O>
number-of-paths-for-each-LU x (number-of-times-to-retry-at-an-I/O-timeout +1) x I/O-timer-value (*)

If the I/O for checking paths during the following operations times out, HDLM places the paths online:

- Path health checking functionality for paths in the online status
- Automatic failback functionality for paths in the offline status
- Online operation by using the HDLM command for paths in the offline status

(*): Use the following command for each hdisk and check the underlined part for the I/O timer value in the system being used:

The following is an example of running the command:

```
# lsattr -El hdisk-name -a rw_timeout  
rw_timeout 60 READ/WRITE time out TRUE
```

Notes:

- If an I/O retry is performed, notifications of I/O completions or I/O failures to the I/O issuers (such as business applications) might be significantly slower than usual in cases where successive I/O timeouts occur on each path. Because of this, if you use the retry functionality, recheck the settings for the business applications as well.

- When enabling the functionality, verify that the "HDLM path health" status is "Off".

To check whether a timeout has occurred in the system, check the output of either of the following log entries in the HDLM manager log:

HDLM manager log: `/var/DynamicLinkManager/log/dlmmgr[1-16].log`

Item to check:

Whether the messages includes the string "Adapter Status = 0x3" exists in the KAPL05509-I message

Example of output:

```
KAPL05509-I 1628148155 305e9198 800051fd 004 000a0010 Data for
maintenance(Adapter): Error Code = 6, Buffer Flag = 0xC900D, Adapter
Status = 0x3, Add Adapter Status = 0x0
```

Whether the KAPL05508-I message includes the string "Status Code = 0x3"

Example of output:

```
KAPL05508-I 1628148155 000a0000 800051fd 004 000a0010 Data for
maintenance(PathCheck): Error Code = 5, Status Validity = 2, Status
Code = 0x3, Sense Code = 0x0
```

If this functionality is used, change the following hdisk attribute:

Attribute name: `timeout_retry`

Attribute value: Set the number of times that a retry is to be performed.

Range of valid values: From 0 to 3

0: Initial value (This functionality is not used.)

1: Recommended value

The following is an example of changing the attribute value to 1:

```
# chdev -l hdisk-name -a timeout_retry=1
```

The following is an execution example of checking the attribute value:

```
# odmget -q "name=hdisk-name AND attribute=timeout_retry" CuAt |
grep value
value = "1"
```

Note: If the `timeout_retry` attribute value is not changed, the result is not displayed even if the above command is executed.

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