

# Hitachi Dynamic Link Manager (for VMware®) 8.8.7-00 Release Notes

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## About this document

This document (RN-91HC190-47, February 2023) provides late-breaking information about Hitachi Dynamic Link Manager (for VMware) 8.8.7-00. 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 VMware).

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Log in and select Product Downloads to access the most current downloads, including important updates that may have been made after the release of the product.

## About this release

This is a minor release that adds new features and resolves multiple known problems.

## Product package contents

Medium	CD-ROM	Revision	Release Type	Prerequisite version of Service Pack
Software	Hitachi Dynamic Link Manager (for VMware)	8.8.7-00	Full Package	-

## New features and important enhancements

### 8.8.7-00 Additional Functions and Modifications

- VMware vSphere ESXi 8.0 is now supported.
- Windows 11 and Windows Server 2022 are now supported as OSs for remote management clients.
- Windows 8 is no longer supported as an OS for remote management clients.
- VMware vSphere ESXi 6.x is no longer supported.
- VMware vSphere CLI is no longer supported.

# System requirements

For system requirements, see Chapter 3. Creating an HDLM Environment in the Hitachi Dynamic Link Manager (for VMware®) User Guide.

## Host

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

Creating an HDLM Environment - HDLM System Requirements - Hosts and OSs Supported by HDLM

## Host Bus Adapter (HBA)

Applicable HBAs and HBA drivers:

- Inbox driver for ESXi 7.0/8.0 or HBA drivers that support ESXi 7.0/8.0 as listed in VMware Compatibility Guide.
- HBAs and HBA drivers for BladeSymphony that support ESXi 7.0/8.0 as listed in VMware Compatibility Guide.

## Storage

For supported storage systems, see Chapter 3. Creating an HDLM environment in the Hitachi Dynamic Link Manager (for VMware®) User Guide.

Creating an HDLM Environment - HDLM System Requirements - Storage Systems Supported by HDLM

## Operating Systems Requirements

The following operating systems are supported.

- VMware vSphere ESXi 7.0 Standard Edition/ Enterprise Edition/ Enterprise Plus Edition
- VMware vSphere ESXi 7.0 Update 1 Standard Edition/ Enterprise Edition/ Enterprise Plus Edition
- VMware vSphere ESXi 7.0 Update 2 Standard Edition/ Enterprise Edition/ Enterprise Plus Edition
- VMware vSphere ESXi 7.0 Update 3 Standard Edition/ Enterprise Edition/ Enterprise Plus Edition

However, ESXi 7.0U3, ESXi 7.0U3a, and ESXi 7.0U3b are not supported.

- VMware vSphere ESXi 8.0 Standard Edition/ Enterprise Edition/ Enterprise Plus Edition

For details on the versions of ESXi, see VMware's Knowledge Base such as KB2143832.

## Prerequisite Programs

### Host

None.

### Remote management host

- NET Framework 4.7 or a later version
- VMware PowerCLI 12.0/12.3/12.7

## Resolved problems

### 8.8.7-00 Modifications

The following problems have been corrected:

- The following vulnerabilities related to the Java that comes with HDLM.  
CVE-2022-21299, CVE-2022-21540, CVE-2022-21541, CVE-2022-34169,  
CVE-2022-21628, CVE-2022-21626, CVE-2022-39399, CVE-2022-21624,  
CVE-2022-21619

## Known problems

- When you remove HDLM by using `removehdlm` (utility for Removing HDLM) in "HDLM-installation-folder\bin", perform the following operations.
  - "HDLM-installation-folder\bin" is not deleted. Delete "HDLM-installation-folder".
  - The dialog box "removehdlm is in use" is displayed during a remove. Select "Continue" to continue the remove.

The above phenomena can be avoided by performing either of the following procedures.

- Obtain the HDLM installation DVD, and then remove HDLM by using removehdlm utility stored in "drive-containing-installation-DVD-ROM:\HDLM\_VMware\DLMTools".
- Copy removehdlm utility in "HDLM-installation-folder\bin" to any location, and then remove HDLM by using the copied removehdlm utility.
- When you change the setting of user account or Credential Store file by dlrmcenv (utility for Configuring HDLM Remote Management Client Environments), restart the following two services by using the Windows service console to enable the change.
  - DLManagerVM
  - HBsA Service
- A dialog box is displayed to prompt a system reboot even when a new installation or upgrade installation is aborted. Select "No" since the reboot associated with the installation abort is not required.
- When you create a cluster configuration in a virtual machine environment by using cluster software (such as MSCS or HA Monitors) that uses SCSI reservations, you cannot apply the following HDLM load balancing algorithms:
  - Extended Round Robin: HTI\_PSP\_HDLM\_EXRR
  - Extended Least I/Os: HTI\_PSP\_HDLM\_EXLIO
  - Extended Least Blocks: HTI\_PSP\_HDLM\_EXLBK

When you create a cluster configuration in a virtual machine environment by using cluster software that uses SCSI reservations, specify one of the following load balancing algorithms for the LUs assigned to the virtual machine:

- Most Recently Used (VMware): VMW\_PSP\_MRU
- Round Robin (VMware): VMW\_PSP\_RR

Note that you can specify settings for each LU by using VMware (by means such as the esxcli commands or vSphere Web Client) or by using Global Link Manager.

- When you use VMware PowerCLI, use the command prompt of Windows PowerShell to execute the utility for collecting HDLM error information (DLMgetras).
- When VMware PowerCLI is used on Windows Server 2012 R2 in an environment where Windows PowerShell 4.0 is installed, if an HDLM command is terminated by performing one of the following operations, subsequent HDLM commands might fail and the KAPL01148-E message might be output. In addition, if the HDLM command

is run in another Windows PowerShell command prompt window, the command will not end.

- Pressing Ctrl+C
- Selecting End task in Task Manager
- Closing the Windows PowerShell command prompt window

Example of an error message that is output:

```
# dlnkmgr -s host-name -u user-name -p password view -sys  
KAPL01148-E An attempt to connect to the specified server has  
failed. Operation name = view
```

If this problem occurs, close all Windows PowerShell command prompt windows. Then, open a new Windows PowerShell command prompt window and run the HDLM command.

As a solution to this problem, consider upgrading Windows PowerShell from 4.0 to 5.1.

- When you install VMware PowerCLI, note the following restrictions:

- Do not install the product into the following folder:

```
$PSHome\Modules  
(%Windir%\System32\WindowsPowerShell\v1.0\Modules)
```

This folder is reserved for modules provided by Windows.

- When linking with Global Link Manager, install the product into the following folder, which is accessible to all users:

```
$Env:ProgramFiles\WindowsPowerShell\Modules  
(%ProgramFiles%\WindowsPowerShell\Modules)
```

If you use the Install-Module command of Windows PowerShell to install the product, specify All Users for the -Scope parameter.

#### Notes:

When linking with Global Link Manager, VMware PowerCLI is used not only by current users but also by the SYSTEM built-in account.

Verify that the Windows system environment variable PSMODULEPATH contains the folder where VMware PowerCLI is installed.

If the variable does not contain it, add the folder path.

- When not linking with Global Link Manager, install the product into the following folder, which is only accessible to current users:

```
$Home\Documents\WindowsPowerShell\Modules  
(%UserProfile%\Documents\WindowsPowerShell\Modules)
```

If you use the Install-Module command of Windows PowerShell to install the product, specify Current User for the -Scope parameter.

In addition, you can install the product into the following folder, which is accessible to all users:

```
$Env:ProgramFiles\WindowsPowerShell\Modules  
(%ProgramFiles%\WindowsPowerShell\Modules)
```

- When you install VMware vSphere CLI and VMware PowerCLI on the same remote management client, do not perform an operation with the Credential Store file for vSphere CLI by using PowerCLI cmdlets, or do not perform an operation with the Credential Store file for PowerCLI by using credstore\_admin.pl of vSphere CLI.

The password encryption and decryption algorithms are not same between vSphere CLI and PowerCLI, so if you perform these operations, the Credential Store file might become unusable.

If you want to perform such operations, you will need to delete the Credential Store file and then create it again.

In addition, in an environment where the Credential Store file created by using credstore\_admin.pl of vSphere CLI, if you use the dlnkmg command by switching CLI to PowerCLI, the following error message might be output when you do not specify a user name or password.

```
KAPL01183-E The HDLM command cannot be executed because the VMware  
PowerCLI settings are not configured properly.
```

If the above message is output, specify a user name or password.

- When you remove HDLM plugins from the ESXi host and install an older version of the HDLM plugins, delete the module option information of the HDLM first, and then install the older version of HDLM.

If you do not delete the information, HDLM SATP might not be loaded. If HDLM SATP is not loaded, an error message is output to vmkwarning.log. In addition, the dlnkmgr view -sys command terminates with an error.

<vmkwarning.log>

```
WARNING: NMP: nmpSatpCheckLoadedModule:794: SATP instance,  
name=HTI_SATP_HDLM:  
Load Failed! [Bad parameter]
```

<Command error message>

```
# dlnkmgr connection-options view -sys  
KAPL01181-E The HDLM driver is not installed correctly.
```

To delete the module option information, execute the following command on the ESXi host:

```
# esxcfg-module --set-options "" hti_satp_hdlm
```

Delete the module option information after one of the following two operations:

- 1) Removing the HDLM plugins:  
Delete the module option information after performing step 4 "Remove HDLM" in the section "When using VMware vSphere CLI" or "When using VMware Power CLI" in "Chapter 3. Creating an HDLM Environment - Removing HDLM" of the Hitachi Dynamic Link Manager User Guide for VMware®.
- 2) Removing HDLM plugins and then re-installing an older version of the HDLM plugins:  
Delete the module option information, and then restart the ESXi host.

When you delete the module option information, the option settings of HDLM are also deleted. Therefore, check the option settings of HDLM before the deletion, and then reconfigure them by using the `dlmkmgr set` command.

- When you install HDLM by using vSphere Lifecycle Manager, for ESXi 7.0 Update 1 or later, use the Depot file instead of the addon file.
- When you incorrectly specify host name, user name, or password of the host connection options in the command prompt of Windows PowerShell in an environment where VMWare PowerCLI is installed to execute `DLMGetras`, the `KAPL10957-W` message is output instead of the `KAPL10956-W` message.

```
# DLMgetras -s XXX.XXX.XXX.XXX -u XXXX -p XXXXXXXX
'"esxcli.exe"' is not recognized as an internal or external command,
operable program or batch file.
KAPL10957-W The utility for collecting HDLM error information cannot
be executed because the VMware vSphere CLI or VMware PowerCLI is not
installed.
```

This is a problem due to an error of the output message, and there is no problem in this environment.

Check the host connection options, and then re-execute the command.

- In an environment where VMWare vSphere CLI or VMWare PowerCLI is already installed, when you execute `DLMGetras` in the command prompt of Windows PowerShell, an error of thumbprint might be output.

```
# dlmgetras -s XXX.XXX.XXX.XXX -u XXXX -p XXXXXXXX
Certificate error. Server SHA-1 thumbprint:
AA:BB:CC:DD:EE:FF:GG:HH:II:JJ:KK:LL:MM:NN:OO:PP:QQ:RR:SS:TT (not
trusted)
C:\hdlmtemp\hdlmgetras_XX
KAPL10043-I Error information is being collected. (XX%)
```

This message is output if one of the following conditions such as 1 and 2 is met:

1) Removing the HDLM plugins:

- The `dlmrmcenv` utility has not been executed in the vSphere CLI prompt.
- When `DLMGetras` is executed, the host connection options are incorrect, or the specified host is not responded.

2) If you have set vSphere CLI as communication interface of HDLM:

- The dlmmcenv utility has been executed in the vSphere CLI prompt.
- PowerCLI is specified as CLI to acquire host information.
- The specified host information when DLMGetras is executed is not stored in the Credential Store file.

This problem is due to an output of the error message, and DLMGetras is executed without any problem if the KAPL10043-I message is output.

If the KAPL10043-I is not output, check the host connection options, and then re-execute the command.

- When you use ESXi 7.0 Update 2 or later, HDLM cannot be linked with Global Link Manager. In addition, when you use VMware PowerCLI, use VMware PowerCLI version 12.3.0.
- When HDLM is linked with Global Link Manager, VMware PowerCLI 12.1.0 or later is not supported. Use PowerCLI 12.0.0.
- Storage systems which have following functions are no longer supported.
  - Dynamic load balance control function
  - High Availability Manager function
  - Virtual ID function for storage migration

But the parameters for these functions are displayed in the format of set or view operation of the HDLM command when help operation is executed. And the following item is displayed when view -sys operation is executed:

Dynamic I/O Path Control

- If the property "QuickEdit Mode" is enabled in the command prompt or in the Windows PowerShell prompt, the command processing stops when you select text in a window where the DLMgetras command is running. While text is selected, the window displays "Select", and the command processing will not restart until you press the Enter key.
- When you execute the dlmpinfo utility or the DLMgetras utility from the PowerShell command prompt while you do not have system administrator permissions, the User Account Control (UAC) dialog box does not appear.

The following warning messages are output, and the utility cannot be executed:

- For the dlmpinfo utility: "KAPL13038-W A parameter is invalid."
- For the DLMgetras utility: "KAPL10005-W The number of parameters is insufficient."
- vCLI is displayed for the -credstore parameter and the -cli parameter of Usage for the dlrmcenv utility. However, as described in the section "The dlrmcenv utility for configuring HDLM remote management client environments" of the Hitachi Dynamic Link Manager (VMware®) User Guide, vCLI is not supported.

## Closing known problems

None.

## Installation precautions

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

Chapter 3. Creating an HDLM Environment - Installing HDLM

### Additional Precautions

- ESXi and VIB package that is a module package of VMware respectively have four acceptance levels: VMwareCertified, VMwareAccepted, PartnerSupported and CommunitySupported, from higher levels. If the acceptance level of an ESXi is higher than that of a VIB package, the VIB package cannot be installed on the ESXi. In this case, an operation of lowering the acceptance level of the ESXi to an appropriate level is required. For the operation procedures, see the Hitachi Dynamic Link Manager (for VMware®) User Guide.

Chapter 3. Creating an HDLM Environment - Installing HDLM

- Names of offline bundle files and plugin modules provided in this version are listed below.
  - Install file name and information of plugins

Install file name	Displaying the HDLM version of the host	Plugin name	Version *1	Acceptance level
hdlm-0883000301-0700-depot.zip*2	8.8.3-03	satp-hdlm	08.8.3-03.0700	VMwareAccepted
		psp-hdlm-exlio	08.8.0-00.0700	VMwareAccepted
		psp-hdlm-exlbk	08.8.0-00.0700	VMwareAccepted
		psp-hdlm-exrr	08.8.0-00.0700	VMwareAccepted
		hex-hdlm-dlnkmgr	08.8.3-03.0700	PartnerSupported
hdlm-0887000001-0800-depot.zip*3	8.8.7-00	satp-hdlm	08.8.3-03.0700	VMwareAccepted
		psp-hdlm-exlio	08.8.0-00.0700	VMwareAccepted
		psp-hdlm-exlbk	08.8.0-00.0700	VMwareAccepted
		psp-hdlm-exrr	08.8.0-00.0700	VMwareAccepted
		hex-hdlm-dlnkmgr	08.8.7-00.0800	PartnerSupported

\*1: You can check the version information of each plugin on an ESXi host by executing the following command.

```
# esxcli software vib list | grep hdlm
```

\*2: This is the depot file for ESXi7.x

\*3: This is the depot file for ESXi8.x

- If HDLM is managed with HGLM, confirm the following before the operation of "Hitachi Dynamic Link Manager User Guide for VMware® - Settings When Managing HDLM by Using Global Link Manager".
  - On Remote Management Client, a host name of an ESXi host can be resolved into an IP address.
  - A Credential Store file is created by using the resolved IP address.

- The command prompt which is displayed during an installation, upgrade, or uninstallation of remote management client is automatically closed after the operation is completed. Make sure not to close it during the operation. If Command Prompt is closed during the operation, the operation of an installation, upgrade, or uninstallation ends before completion. In this case, perform an upgrade installation.
- The maximum number of LUs including all SCSI devices such as built-in disks and CD-ROM drives is 1024 for ESXi 7.0 or later. Therefore, the maximum number of LUs for a storage system manageable by HDLM will be smaller than the maximum for ESXi, depending on the status of other connected devices. Before applying HDLM to an ESXi host, confirm that the ESXi host correctly recognizes the LUs to be managed by HDLM.
- Even in an environment where no HDLM-managed storage is allocated to an ESXi host, you can install HDLM. If you allocate HDLM-managed storage after installing HDLM, restart the host to recognize the storage.
- To install HDLM in a Windows Server 2012 R2 environment, KB2919442 and KB2919355 must already be installed. In environments where these KBs are not installed, installation of the Microsoft Visual C++ 2015-2019 Redistributable Package fails and HDLM cannot be installed. In such a case, install KB2919442 and KB2919355, and then re-install HDLM.
- Upgrading the Windows OS while HDLM is installed is not supported. Remove HDLM, upgrade the Windows OS, and then re-install HDLM.

## Remove Precautions

For details on removing HDLM uninstallation, see the Hitachi Dynamic Link Manager (for VMware®) User Guide.

Chapter 3. Creating an HDLM Environment - Removing HDLM

## Usage precautions

### Notes on General procedures

- HDLM provides NMP sub-plugins(SATP/PSP) to enable multipath management for Hitachi storages. For the information of NMP/SATP/PSP, refer to the following documentation(\*).

<https://docs.vmware.com/en/VMware-vSphere/7.0/vsphere-esxi-vcenter-server-703-storage-guide.pdf>

<https://docs.vmware.com/en/VMware-vSphere/8.0/vsphere-esxi-vcenter-80-storage-guide.pdf>

(\*): It is the information as of January 2023.

- Any restrictions and precautions for NMP which VMware announces are applied to your environment using HDLM. Check the restrictions and precautions before you build an environment.
- Any restrictions and precautions for PSP VMW\_PSP\_RR (Round Robin) that is provided by VMware are applied to the following HDLM load balances.
  - HTI\_PSP\_HDLM\_EXLIO
  - HTI\_PSP\_HDLM\_EXLBK
  - HTI\_PSP\_HDLM\_EXRR
- In HDLM 8.6.0 and later, the specifications were changed to match those of VMW\_PSP\_RR (a PSP of VMware NMP) so that "Active(I/O)" is displayed as the status for all active paths in vSphere Client and in vSphere Web Client.

If you want to revert to the previous specification, in which "Active(I/O)" is displayed only for the last-used path, execute the following commands, and then restart the host:

- `esxcli host-connection-option system module parameters set -m=hti_psp_hdlm_exlio -p reportWorkingPaths=1`
- `esxcli host-connection-option system module parameters set -m=hti_psp_hdlm_exlbk -p reportWorkingPaths=1`
- `esxcli host connection option system module parameters set -m=hti_psp_hdlm_exrr -p reportWorkingPaths=1`

This setting is enabled as long as a new installation of ESXi is not performed.

Note that if you specify 2 for `reportWorkingPaths` in the preceding commands, "Active(I/O)" is displayed as the path status for all active paths. You can check the setting values for `reportWorkingPaths` by using the following commands:

- `esxcli host-connection-option system module parameters list -m=hti_psp_hdlm_exlio`
- `esxcli host-connection-option system module parameters list -m=hti_psp_hdlm_exlbk`

- esxcli host-connection-option system module parameters list - m=hti\_psp\_hdlm\_exrr

Values that can be specified for reportWorkingPaths:

- Null character or 2: Display "Active(I/O)" for all active paths.
- 1: Display "Active(I/O)" for the last-used path.

(Note that if you change this setting, the new setting value becomes valid after the host is restarted.)

- When you remove a remote client, a dialog box displaying "Location is not available." might be output. However, the processing to remove it performs properly. Select the OK button to close the dialog box.
- When path failures occur frequently due to hardware failures, such as HBA, or the SCSI reserve for a shared disk, many HDLM path failure messages are output to the system log, which might impact system log performance. To avoid performance degradation of the system log, we recommend that you enable the path failure message suppression function. For details, see Path failure message suppression function in the Hitachi Dynamic Link Manager (for VMware®) User Guide.
- After the host is restarted, LUs that apply the DirectPath I/O function are not managed by HDLM.

## Documentation

### Available documents

Document name	Document number	Issue date
Hitachi Dynamic Link Manager (for VMware®) User Guide	MK-92DLM130-31	February 2023

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