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

About this document

This document (RN-91HC190-52, January 2025) provides late-breaking information about Hitachi Dynamic Link Manager (for VMware) 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 VMware).

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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	Prerequisite version of Service Pack
Software	Hitachi Dynamic Link Manager (for VMware)	9.0.1-00	Full Package	-

New features and important enhancements

9.0.1-00 Additional Functions and Modifications

- VMware vSphere ESXi 8.0 Update 3 is now supported.
- VMware PowerCLI 13.3.0 is now supported.
- Windows Server 2025 is now supported as an OS for remote management clients.
- The action_OnRetryErrors parameter is now supported.

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- The path failure message suppression function by using the dlnkmgr command (which was supported in 8.8.3-03) is now supported.
- The following messages have been improved to show the actions to take when an error occurs in the dlmperfinfo command:
    - KAPL01183-E
    - KAPL13043-E

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 linkage with Global Link Manager, is no longer bundled with the product.
- VSP One B24, VSP One B26, and VSP One B28 are now supported.
- The product has been improved so that you can use HDLM commands and utilities to operate an ESXi host with a password that contains special characters by enclosing the password character string in single quotation marks.
- The product has been improved so that you can specify an IPv6 address instead of a host name for the host connection option specified in the parameters for HDLM commands and utilities.

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 the *Hitachi Dynamic Link Manager (for VMware®) User Guide*, Chapter 3. Creating an HDLM Environment > 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.

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Storage

For supported storage systems, see the *Hitachi Dynamic Link Manager (for VMware®) User Guide*, Chapter 3. Creating an HDLM environment > 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
    - Update 1
    - Update 2
    - Update 3

  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
    - Update 1
    - Update 2

  For details on the versions of ESXi, see Broadcom Knowledge Articles Article ID: 316595.
  https://knowledge.broadcom.com/external/article?articleNumber=316595

Prerequisite Programs

Host

None.

Remote management host

- NET Framework 4.7 or a later version
- VMware PowerCLI 12.0/12.3/12.7/13.0/13.1

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Resolved problems

9.0.1-00 Modifications

If HDLM for VMware is installed in an environment where the HDLM for Windows has already been installed, the message “ KAPL09608-W The HDLM for Windows has already been installed in this system” should appear and the installation should terminate, but the installation continues. This caused an error in the HDLM GUI startup processing from the Windows start menu with KAPL02084-E, and the HDLM GUI startup failed. Alternatively, when the dlnkmgr command was run, the command failed with error KAPL01004-W.

9.0.0-00 Modifications

None

Known problems

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

    This issue can be avoided by performing either of the following procedures:

    - Obtain the HDLM installation DVD, and then remove HDLM by using the removehdlm utility stored in "drive-containing-installation-DVD-ROM:\HDLM_VMware\DLMTools".
    - Copy the removehdlm utility in "HDLM-installation-folder\bin" to any location, and then remove HDLM by using the copied removehdlm utility.
- A dialog box is displayed to prompt a system restart even when a new installation or upgrade installation is aborted. Select "No" because the reboot associated with the installation abort is not required.

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- 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

    Instead, 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 run the utility for collecting HDLM error information (DLMgetras).

- 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 you upgrade HDLM in an environment linked with Global Link Manager, PowerCLI is installed in the following folder:

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

  When an upgrade of PowerCLI is required, complete the following steps:

  1. If any PowerShell prompts are open, close all of them.
  2. Stop HDLM manager as follows:
     a. From Control Panel, select Administrative Tools > Services to open the Services window.
     b. From the list of services, select DLMManagerVM. Then, from the Action menu, select Stop to stop the service.
  3. Delete the PowerCLI cmdlets (VMware.xxx) placed in

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

4. Download the PowerCLI ZIP file from the PowerCLI website and transfer the ZIP file to your local machine.
5. Extract the contents of the ZIP file to
$Env:ProgramFiles\WindowsPowerShell\Modules
(%ProgramFiles%\WindowsPowerShell\Modules)

6. Unblock the blocked files of the extracted PowerCLI modules by using the following PowerShell command:

   Get-ChildItem * -Recurse | Unblock-File

7. Verify that the PowerCLI modules are available by using the following PowerShell command:

   Get-Module -Name VMware.PowerCLI* -ListAvailable

8. Start HDLM Manager as follows:
   a. From Control Panel, select Administrative Tools > Services to open the Services window.
   b. From the list of services, select DLMManagerVM. Then, from the Action menu, select Start to start the service.

- When you upgrade HDLM in an environment not linked with Global Link Manager, PowerCLI is installed in one of the following folders:

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

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

  When an upgrade of PowerCLI is required, upgrade PowerCLI as follows:

  1. If any PowerShell prompts are open, close all of them.
  2. Stop the HDLM manager as follows:
     a. From Control Panel, select Administrative Tools and then Services to open the Services window.
     b. From the list of services, select DLMManagerVM. Then, from the Action menu, select Stop to stop the service.
  3. Delete the PowerCLI cmdlets (VMware.xxx) placed in
  $Home\Documents\WindowsPowerShell\Modules
  (%UserProfile%\Documents\WindowsPowerShell\Modules) or

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

4. Download the PowerCLI ZIP file from the PowerCLI website and transfer the ZIP file to your local machine.
5. Extract the contents of the ZIP file to
$Home\Documents\WindowsPowerShell\Modules
(%UserProfile%\Documents\WindowsPowerShell\Modules) or

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

6. Unblock the blocked files of the extracted PowerCLI modules by using the following PowerShell command:

   Get-ChildItem * -Recurse | Unblock-File

7. Verify that the PowerCLI modules are available by using the following PowerShell command:

   Get-Module -Name VMware.PowerCLI* -ListAvailable

8. Start the HDLM Manager as follows:
   a. From Control Panel, select Administrative Tools > Services to open the Services window.
   b. From the list of services, select DLMManagerVM. Then, from the Action menu, select Start to start the service.

- When you perform a new installation of HDLM, install PowerCLI in the following folder that only the current user can access:

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

- When you install PowerCLI by using the Install-Module command of Windows PowerShell, specify CurrentUser for the -Scope parameter.

  In addition, you can also install PowerCLI in the following folder that all users can access:

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

  For details on how to install PowerCLI, follow the VMware documentation.

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- When you install VMware vSphere CLI and VMware PowerCLI on the same remote management client, do not perform any actions that involve the Credential Store file for vSphere CLI by using PowerCLI cmdlets or by using credstore_admin.pl.

  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 actions, you must 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 dlnkmgr 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, run 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:

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- 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®.

- 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 HDLM option settings are also deleted. Therefore, check the option settings of HDLM before the deletion, and then reconfigure them by using the dlnkmgr 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.
- Storge systems with 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 action of the HDLM command when using the help option and the following item is displayed when view -sys operation is run:

  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 run the dlmperfinfo utility or the DLMgetras utility from the PowerShell command prompt when 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 run:

  - For the dlmperfinfo utility: "KAPL13038-W A parameter is invalid."
  - For the DLMgetras utility: "KAPL10005-W The number of parameters is insufficient."

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- If the path failure message suppression function is enabled, the maximum number of paths supported by HDLM is limited to 3200.

- When you run the dlmgetras command, if the specified parameters are such that the length of "host name x 2 + username + password" is 65 characters or longer, the program ends without displaying any message in the command prompt. Then, the following message is displayed in the event viewer. Retry the command with parameters specified to ensure that the character limit is not exceeded (for example, by changing the host name to an IP address).

  "Application for which an error occurred: dlmgetras.exe ... Module for which an error occurred: ntdll.dll ... Exception code: 0xc0000374 ..."

- When you run the dlnkmgr command, if the length of the specified password is 40 characters (the maximum allowable length according to specifications) or longer, the program might end without displaying any message in the command prompt. Then, the following message is displayed in the event viewer. Check the specified password, and then retry the command, making sure not to exceed the character limit.

  "Application for which an error occurred: dlnkmgr.exe ... Module for which an error occurred: libdlm.dll ... Exception code: 0xc0000409 ..."

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 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 in the following tables.

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Install file name and information of plugins

Install file name	Displaying the HDLM version of the host	Plugin name	Version *1	Acceptance level
hdlm-0900000001-0700-depot.zip*2	9.0.0-00	satp-hdlm	09.0.0-00.0700	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-0900000001-0800-depot.zip*3	9.0.0-00	satp-hdlm	09.0.0-00.0700	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 running 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

- The command prompt that 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

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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.
- Upgrading the Windows OS while HDLM is installed is not supported. Remove HDLM, upgrade the Windows OS, and then re-install HDLM.

Removal 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 information on 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-803-storage-guide.pdf

  (*): As of October 2024.

- Any restrictions and precautions for NMP which Broadcom 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

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- 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, run 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

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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.

- When running the dlnkmgr command is slow, it might be due to a delay in the Connect-VIServer cmdlet of VMware PowerCLI. Regarding delays in Connect-VIServer, Broadcom Inc. posts the following workaround (clearing two options related to checking certificates in internet properties) on its forum, so review your settings as follows:

  1. In the Control Panel or Internet Explorer, open **Internet Options**.
  2. Click the **Advanced** tab.
  3. Scroll down to **Security.**
  4. Clear the checkbox for the following options:
     - **Check for publisher's certificate revocation.**
     - **Check for server certificate revocation.**
  5. Click **OK**.

- Before HDLM is installed, the esxcli storage nmp device list command explicitly outputs "action_OnRetryErrors=off" for devices for which the action_OnRetryErrors parameter is not defined, but after HDLM is installed, "action_OnRetryErrors=off" is not output. However, the behavior for devices for which the action_OnRetryErrors parameter is not defined is the same as if "action_OnRetryErrors=off" is defined. After HDLM is removed, "action_OnRetryErrors=off" is output for devices for which the action_OnRetryErrors parameter is not defined.

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Documentation

Available documents

Document name	Document number	Issue date
Hitachi Dynamic Link Manager (for VMware®) User Guide	MK-92DLM130-33	January 2025

Documentation errata

Location to correct	Corrections	
8 Messages KAPL20001 to KAPL21000 KAPL20037-W	add	Message ID: KAPL20037-W Message Text: The action_OnRetryErrors parameter is enabled for the device (aa...aa). Details: The action_OnRetryErrors parameter is enabled for the device. aa…aa: Device name Action: None.
8 Messages KAPL20001 to KAPL21000 KAPL20038-W	add	Message ID: KAPL20038-W Message Text: The action_OnRetryErrors parameter is disabled for the device (aa...aa). Details: The action_OnRetryErrors parameter is disabled for the device. aa...aa: Device name Action: None.

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