IBM Storage Host Attachment Kit for Windows
Version 2.9.0

Release Notes

Second Edition (March 2020)

This document edition applies to version 2.9.0 of the IBM® Storage Host Attachment Kit for Windows software package. Newer document editions may be issued for the same version in order to add missing information, update information, or amend typographical errors. The edition is reset to "First Edition" for every newly released version.

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Overview

The IBM Storage Host Attachment Kit (HAK) for Windows is a software pack that simplifies the task of connecting a Microsoft Windows Server host to the IBM storage systems.

The HAK provides a set of command-line interface (CLI) tools that help host administrators perform different host-side tasks, such as: detect any physically connected storage system (single system or multiple systems), detect storage volumes, define the host on the storage system, run diagnostics, and apply best practice native multipath connectivity configuration on the host.

You can download the IBM Storage Host Attachment Kit software package at any time from the IBM Fix Central website (www.ibm.com/support/fixcentral).

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What's new in version 2.9.0

Version 2.9.0 is minor release, resolving miscellaneous issues.

General availability date: 14 March 2018

For more information about the fixes in version 2.9.0, see “Change log” on page 7.

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Compatibility and requirements

The IBM Storage Host Attachment Kit for Windows is compatible with different versions of the Windows Server operating system and the storage system, as well as with different HBAs and multipath solutions.

Certain software packages, patches, or drivers must be installed on the host, as detailed in the following subsections.

Note: This section applies to version 2.9.0. For information about the compatibility and requirements of a previous Host Attachment Kit version, refer to its relevant release notes. In addition, the HAK lifecycle and support matrix (www.ibm.com/support/knowledgecenter/SSEPRF/landing/css_lifecycle_support_matrix_hak.html) details the HAK lifecycle with compatible storage system microcode versions and supported operating system releases.

Supported Windows Server versions

Version 2.9.0 of the IBM Storage Host Attachment Kit for Windows supports different Windows Server versions, service packs, or editions, as listed in the following table.

Operating system	Service Pack	Architecture
Microsoft Windows Server 2008	SP1, SP2	x86, x64
Microsoft Windows Server 2008 R2	None, SP1	x64
Microsoft Windows Server 2012	None	x64
Microsoft Windows Server 2012 R2	None	x64
Microsoft Windows Server 2016	None	x64
Microsoft Windows Server 2019	None	x64

Important:

- It is strongly recommended to use the latest Windows Server release with all relevant updates, service packs and patches installed. See “Hotfixes (KBs) required on the host” on page 6 for information about required OS updates.
- See “Known interoperability issues” on page 15 for information about HyperSwap issues and limitations in the Windows Server 2008, 2008 R2, 2012 and 2012 R2.

Supported storage systems

Version 2.9.0 of the IBM Storage Host Attachment Kit for Windows supports different microcode versions of the IBM storage systems, as listed in the following table.

Storage system	Microcode version
IBM XIV® Storage System	11.1.x, 11.2.x, 11.3.x, 11.4.x, 11.5.x, 11.6.x
IBM Spectrum Accelerate	11.5.x
IBM FlashSystem® A9000	12.0.x, 12.1.x, 12.2.x, 12.3.x
IBM FlashSystem A9000R	12.0.x, 12.1.x, 12.2.x, 12.3.x

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Note: Newer microcode versions may also be compatible. When a newer microcode version becomes available, refer to the latest storage system release notes to check whether the new microcode version is also supported. In addition, the HAK lifecycle and support matrix (ibm.com/support/knowledgecenter/SSEPRF/landing/css_lifecycle_support_matrix_hak.html) details the HAK lifecycle with compatible storage system microcode versions and supported operating system releases.

Supported HBAs

The IBM Storage Host Attachment Kit for Windows supports different host bus adapter (HBA) brands and types.

For the latest support information and compatibility matrix, see the IBM System Storage® Interoperation Center website (www.ibm.com/systems/support/storage/config/ssic).

For best performance, install the latest firmware and drivers for the HBAs that are in use. The HBA vendor should provide the latest firmware and drivers.

Important: For iSCSI connectivity, only iSCSI software initiators are supported. Hardware iSCSI HBAs are not supported.

Supported multipath I/O solutions

The IBM Storage Host Attachment Kit for Windows supports the following multipath solutions:

- Native multipath I/O (MPIO) and Microsoft DSM (MSDSM); installed from the Server Manager.
- Veritas Dynamic Multipathing (DMP). For the details of the supported DMP versions, refer to the IBM System Storage Interoperation Center.

Important: Using more than one multipath I/O framework on the same host is not supported.

Hotfixes (KBs) required on the host

Microsoft Windows Server hosts require manual installation of hotfixes to ensure error-free system functionality, as detailed in Hotfixes (KBs) for Microsoft Windows Server hosts (ibm.com/support/knowledgecenter/SSEPRF/landing/css_kb_list_win_hak.html).

Important:

- You can find any relevant hotfix and download it from the Microsoft Support website (support.microsoft.com).
- Always refer to the Microsoft documentation (KB article) of any hotfix or set of hotfixes that your system requires.

Change log

This section summarizes the changes made in different version releases of the IBM Storage Host Attachment Kit for Windows.

Version 2.9.0 (March 2018)

Version 2.9.0 resolves the following issues.

Ticket ID	Description
HA-262045*	**Fixed**: When a volume is moved to another storage system, using IBM Hyper-Scale Mobility technology, the **`dev_list`** command output fails to display the correct serial number of the target storage system.
HA-262054*	**Fixed**: When a highly-available volume, residing on a primary storage system in HyperSwap, is unmapped from the host, the **`xiv_devlist`** command output displays secondary storage, as the current storage system.
* Applies to all supported operating systems.	

Version 2.8.2 (August 2017)

Version 2.8.2 replaced ersion 2.8.1. It removed KB4015217, as a required hotfix for Microsoft Windows Server 2016 hosts.

Version 2.8.1 (July 2017)

Version 2.8.1 added KB3036614, as a required hotfix for Microsoft Windows Server 2012 hosts.

Version 2.8.0 (June 2017)

Version 2.8.0 added integration with IBM HyperSwap solution, as introduced by the FlashSystem A9000 and A9000R storage systems (version 12.1). Additional changes in version 2.8.0:

Ticket ID	Description
HA-261979*	**Enhancement**: The **`xiv_devlist`** command output indicates the HyperSwap mode of the volume (stretched or regular).
HA-261987*	**Enhancement**: The **`xiv_devlist`** command output displays the name of the remote storage system in the IBM HyperSwap solution.
HA-261975*	**Change**: The required hotfixes for Microsoft Windows Server are no longer bundled with the HAK installation package. These components must be installed manually.
HA-261922*	**Fixed**: Windows Server 2016 appears as unsupported, when running the **`xiv_host_profiler`** command.
HA-261965*	**Fixed**: The **`xiv_host_profiler`** command with the `--set-password` and`--storage` arguments fails due to discrepancy between the `--storage` value and the system serial number of the storage system itself. **This update requires resetting the current password.**

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Ticket ID	Description
* Applies to all supported operating systems.	

Version 2.7.0 (December 2016)

Version 2.7.0 improved security by adding ability to set passwords for hosts, accessing storage systems. Also, it introduced support for Windows Server 2016. Additional changes in version 2.7.0:

Ticket ID	Description
HA-62994*	**Fixed**: The **`xiv_devlist`** command output displays the current HAK version with uppercase `-V`.
HA-261877*	**Fixed**: Error messages generated, when invalid LDAP credentials are supplied, may be overly general without specifying the exact reason for host attachment failure.
HA-261954*	**Fixed**: XIV, Spectrum Accelerate and FlashSystem A9000/A9000R storage systems appear as unknown devices.
* Applies to all supported operating systems.	

Version 2.6.0 (April 2016)

Version 2.6.0 added support for IBM FlashSystem A9000 and IBM FlashSystem A9000R storage systems with microcode 12.0. Additional changes in version 2.6.0:

Ticket ID	Description
HA-261809*	**Change**: The **`xiv_syslist`** command output displays all supported storage system types.
HA-261811*	**Change**: The **`xiv_devlist`** command output displays all supported storage system types.
HA-261816*	**Fixed**: When running the **`xiv_attach`** command, scanning for FC-connected storage systems is performed, even if the user chooses not to complete it.
HA-261859*	**Fixed**: A general exception may occur during the **`xiv_iscsi_admin`**, **`xiv_fc_admin`** or **`xiv_attach`** command execution.
HA-261869*	**Fixed**: If during new iSCSI target discovery an IP address is unreachable on a single storage systems, the error message appears for all connected devices.
* Applies to all supported operating systems.	

Version 2.5.0 (September 2015)

Version 2.5.0 added support for XIV microcode version 11.6.x and IBM Spectrum Accelerate 11.5.1.x. Additional change in version 2.5.0:

Ticket ID	Description
* Applies to all supported operating systems.	

Version 2.4.0 (March 2015)

Version 2.4.0 added support for XIV microcode version 11.5.1 and IBM Spectrum Accelerate 11.5.0.b. Additional enhancement in version 2.4.0:

Ticket ID	Description
HA-261509	**Enhancement:** This new feature allows the host administrator to automatically discover and connect to new, already-attached iSCSI ports. For more information, refer to the user guide.

Version 2.3.0 (August 2014)

Version 2.3.0 added support for XIV microcode version 11.5 and includes the following enhancements and fixes.

Ticket ID	Description
HA-250756*	**Enhancement**: The **`--list`** (**`-L`**) command option can be used with **`xiv_diag`** to display information that is to be gathered by the utility. For more information, refer to the user guide.
HA-261361*	**Enhancement**: Added support for the XIV multi-tenancy feature, allowing host attachment to different and separate storage domains that are defined on the same XIV storage system. This enhancement applies only to XIV microcode version 11.5 or later. For more information, refer to the user guide.
HA-248145	**Fixed**: On Windows Server 2012, `Pythonwin.exe` (bundled in the HAK package for Windows) may record Side-by-Side events in the event log. These events have no effect on system functionality.
HA-253089	**Fixed**: After upgrading from HAK version 1.5.x to version 1.10.0 or later, the newer **`xiv_attach`** utility might fail in the '`Verifying XIV MPIO Load Balancing`' configuration task.
HA-261223	**Fixed**: A general error message appears when running **`xiv_attach`**, **`xiv_fc_admin`**, or **`xiv_iscsi_admin`** if non-English characters are used in the XIV credentials.

* Applies to all supported operating systems.

Limitations

As opposed to known issues, limitations are functionality restrictions that are part of the predefined system design and capabilities in a particular version.

Microsoft Windows Server 2019 limitation

When using Microsoft Windows Server 2019 with HAK 2.9.0, the `xiv_host_profiler` command does not produce the correct operating system value in the output.

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Known issues

This section details the known issues in version 2.9.0 of the IBM Storage Host Attachment Kit for Windows, along with possible solutions or workarounds (if available).

Ticket ID	Description
HA-6459	When using the VMware Raw Device Mapping (RDM), **xiv_devlist** and the multipath management agent erroneously report that Windows has only one path to the disk. Currently there is no workaround or solution for this limitation.
HA-100800	Mapping the LUN0 volume causes errors. Due to the distinctive properties of the XIV LUN0 volume (on any storage pool), mapping it to the host causes numerous errors or performance problems. Accordingly, mapping the LUN0 volume is not supported.
HA-100946	When running **xiv_attach**, **xiv_fc_admin**, or **xiv_iscsi_admin** for the first and second time (during the initial host configuration) on x64-based Windows Server 2008, two reboots are required. This occurs due to the automatic installation of two Microsoft hotfixes. Currently there is no workaround or solution for this limitation.
HA-163121	An error occurs when using the **\h** (help) argument with the HAK installation command in the Windows command prompt. Currently there is no workaround or solution for this limitation.
HA-213964	When using the HAK from Windows PowerShell, the **-o** command argument (used with **xiv_devlist** and **xiv_syslist**) does not work with more than one parameter. To avoid this issue, use single quotes to enclose all the parameter names. For example: `xiv_devlist -o 'device,size'`
HA-235121	When **xiv_devlist** is run immediately after **xiv_fc_admin -R** or **xiv_iscsi_admin -R**, the devices list might report "N/A" as the size of some devices. This occurs due to a delay limitation in Windows Server. To resolve this issue, wait a few seconds before running **xiv_devlist**.
HA-254647	If version 1.0.2.1 of the IBM Storage Enabler for Windows Failover Clustering is installed on the host, the Host Profiler utility (**xiv_host_profiler**) returns a value of 0.0.0 as the version number. **Note:** This does not affect the functionality of the IBM Storage Enabler for Windows Failover Clustering, and no other erroneous information is returned by the Host Profiler utility.
HA-261228	**xiv_devlist** does not show a volume that is mapped to LUN 255. To avoid this issue, do not map any volume to LUN 255.

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Ticket ID	Description
HA-261447	If you upgrade the software from version 2.1.0.1 to any later version, a duplicate entry is left in the "Program and Features" list in the Windows Control Panel. This behavior does not affect the HAK functionality. After upgrading from version 2.1.0.1 and determining that the new version is functioning correctly, uninstall version 2.1.0.1.
HA-261626	LUNs with IDs higher than 255 mapped to a host over iSCSI may result in an incorrect listing of the storage volumes, using the **xiv_devlist** command. To avoid this issue, do not use LUN IDs higher than 255.
HA-261854	In Windows Server 2008 SP2, the installation wizard may not display the image of IBM storage system.
HA-261875	In Windows Server 2012 and 2012 R2, mapped volumes appear as unknown devices in Device Manager after they are mounted. This does not affect the system operation, and the multipathing works properly.
HA-261930	When running the **xiv_devlist** command on volumes during the Hyper-Scale Mobility process, the storage system serial number indicates either a source or a destination system. This may be confusing, when this command is used several times in a row, and different storage system serial numbers are displayed inconsistently. To resolve this issue, use XIV GUI or Hyper-Scale Manger to determine the Hyper-Scale Mobility state and correct serial numbers of the storage systems.
HA-262027	In rare cases, installation wizard may become unresponsive during HAK upgrade on Windows Server 2016. Cancel the installation process to complete the upgrade successfully. Then, use the **xiv_fc_admin -b** or **xiv_iscsi_admin -b** command to display the current HAK build version.
HA-262056	When a role of a highly-available volume, residing on a primary storage system in HyperSwap, is switched, the **xiv_devlist** command output displays the old primary storage system, as the current one. This occurs under Windows 2012 R2 on Fibre Channel networks. To resolve this issue, reboot the host or clean the cache of the FC/multipath service.
HA-262147	HyperSwap mode of the volumes, which are in the Proxy state during Hyper-Scale Mobility migration, appears as Yes in the **xiv_devlist** output. Currently there is no workaround or solution for this limitation.

Known interoperability issues

This section describes known issues or limitations that could arise when using IBM Storage Host Attachment Kit for Windows in conjunction with other components in the production environment, such as hardware switches, host bus adapters (HBAs), other IBM products, or different software platforms such as operating systems, clustering solutions, virtual machine servers, multipathing solutions, and other third-party components.

HyperSwap issues and limitations for Windows Server 2008 and 2008 R2
In Windows Server 2008 and 2008 R2, an attempt to failover a cluster group results in a Stop error on the new active node. This stems from the inability of the Microsoft Device-Specific Module driver to allocate sufficient memory from the Report Target Port Groups (RTPG) command.

IBM Technote S1010299, IBM FlashSystem A9000 and A9000R HyperSwap support notes for Windows Server hosts, provides important guidance for using HyperSwap with Windows Server 2008 and Windows Server 2008 R2.

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Related information and publications

You can find additional information and publications related to the IBM XIV Host Attachment Kit for Windows on the following websites.

- IBM Knowledge Center (ibm.com/support/knowledgecenter)
- IBM XIV Storage System on IBM Knowledge Center (ibm.com/support/knowledgecenter/STJTAG)
- IBM Spectrum Accelerate on IBM Knowledge Center (ibm.com/support/knowledgecenter/STZSWD)
- IBM FlashSystem A9000 on IBM Knowledge Center (ibm.com/support/knowledgecenter/STJKMM)
- IBM FlashSystem A9000R on IBM Knowledge Center (ibm.com/support/knowledgecenter/STJKN5)
- IBM Flash Storage and Solutions marketing website (ibm.com/systems/storage/flash)
- Microsoft TechNet website for Windows Server (technet.microsoft.com/en-us/windowsserver)
- Microsoft Windows Server TechCenter (technet.microsoft.com/en-us/library/bb625087.aspx)
- Microsoft TechNet overview page for Multipath I/O (MPIO) (technet.microsoft.com/en-us/library/cc725907.aspx)

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- IBM website (ibm.com®)
- IBM Support Portal website (ibm.com/support/entry/portal/support?brandind=Hardware~System_Storage)
- IBM Directory of Worldwide Contacts website (ibm.com/planetwide)

  Use the Directory of Worldwide Contacts to find the appropriate phone number for initiating voice call support. Select the Software option, when using voice response system.

  When asked, provide your Internal Customer Number (ICN) and/or the serial number of the storage system that requires support. Your call will then be routed to the relevant support team, to whom you can provide the specifics of your problem.

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