

IBM XIV Host Attachment Kit for Linux
Version 2.4.0

Release Notes



First Edition (March 2015)

This document edition applies to version 2.4.0 of the IBM XIV Host Attachment Kit for Linux software package. Newer document editions may be issued for the same version in order to add missing information or amend typographical errors. The edition is reset to "First Edition" for every newly released version.

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Overview

The IBM® XIV® Host Attachment Kit (HAK) for Linux is a software pack that simplifies the task of connecting a Linux host to the IBM XIV Storage System.

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 XIV storage system (single system or multiple systems), detect XIV volumes, define the host on the XIV storage system, run diagnostics, and apply best practice native multipath connectivity configuration on the host.

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

Compatibility and requirements

The IBM XIV Host Attachment Kit for Linux is compatible with different versions of the Linux operating system and the XIV 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 2.4.0. For information about the compatibility and requirements of a previous Host Attachment Kit version, refer to its relevant release notes.

Supported Linux versions

The IBM XIV Host Attachment Kit for Linux supports different Linux versions and editions, as listed in the following table.

Operating system	Architecture
Red Hat Enterprise Linux (RHEL) 5.1 – 5.10	x86, x64
Red Hat Enterprise Linux (RHEL) 6.0 – 6.5	x86, x64
Red Hat Enterprise Linux (RHEL) 7.0	x64
SUSE Linux Enterprise Server (SLES) 11	x86, x64
SUSE Linux Enterprise Server (SLES) 11 SP1	x86, x64
SUSE Linux Enterprise Server (SLES) 11 SP2	x86, x64
SUSE Linux Enterprise Server (SLES) 11 SP3	x86, x64

Supported storage systems

The IBM XIV Host Attachment Kit for Linux supports different microcode versions of the IBM XIV Storage System, as listed in the following table.

Storage system	Microcode version
IBM XIV Storage System	10.2.4.x
	11.0.x, 11.1.x, 11.2.x, 11.3.x, 11.4.x, 11.5.0, 11.5.1

Storage system	Microcode version
IBM Spectrum Accelerate	11.5.0.b

Note: Newer microcode versions may also be compatible. When a newer XIV microcode version becomes available, refer to the latest XIV storage system release notes. You can obtain the latest XIV storage system release notes on the IBM XIV Storage System Information Center (publib.boulder.ibm.com/infocenter/ibmxiv/r2).

Supported HBAs

The IBM XIV Host Attachment Kit for Linux 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).

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

Note: 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.

Supported multipath I/O solutions

The IBM XIV Host Attachment Kit for Linux supports the following multipath solutions:

- Native multipath I/O (MPIO)
- Veritas Dynamic Multipathing (DMP) 5.0, 5.1, or 6.x

Important:

- For proper Active/Active multipathing using Veritas Dynamic Multipathing 5.0, install the Symantec Array Support Library for IBM XIV, which can be downloaded from the Symantec Enterprise Technical Support website (www.symantec.com/business/support/index?page=home).
 - Using more than one multipath I/O framework on the same host is not supported.
-

Required software on the host

Prior to installing the IBM XIV Host Attachment Kit for Linux, depending on the installed Linux version (RHEL or SLES) and storage connectivity type (FC or iSCSI) – specific software packages must be installed on the host, as detailed in the following table.

Operating system	Connectivity type	Required software package
Red Hat Enterprise Linux (RHEL)	Fibre Channel (FC)	<ul style="list-style-type: none"> • device-mapper-multipath • sg3_utils
	iSCSI	<ul style="list-style-type: none"> • device-mapper-multipath • sg3_utils • iscsi-initiator-utils
SUSE Linux Enterprise Server (SLES)	Fibre Channel (FC)	<ul style="list-style-type: none"> • multipath-tools • sg3_utils
	iSCSI	<ul style="list-style-type: none"> • multipath-tools • sg3_utils • open-iscsi

Change log

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

Version 2.4.0 (March 2015)

Version 2.4.0 adds support for XIV microcode version 11.5.1 and IBM Spectrum Accelerate 11.5.0.b.

Ticket ID	Description
HA-261509	<p>Enhancement: This new feature allows the host administrator to automatically discover and connect to new, already-attached iSCSI ports.</p> <p>For more information, refer to the user guide.</p>
HA-261551	<p>Fixed: Syntax <code>-m --no-native-mp</code> has changed to <code>-m IGNORE</code>.</p>

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*	<p>Enhancement: The <code>--list (-L)</code> command option can be used with <code>xiv_diag</code> to display information that is to be gathered by the utility.</p> <p>For more information, refer to the user guide.</p>
HA-261277	<p>Enhancement: The <code>--clean</code> command option can be used with <code>xiv_fc_admin --rescan</code> or <code>xiv_iscsi_admin --rescan</code> to remove unreachable devices from the host.</p> <p>For more information, refer to the user guide.</p>

Ticket ID	Description
HA-261361*	<p>Enhancement: Added support for the XIV multi-tenancy feature, allowing work with 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.</p> <p>For more information, refer to the user guide.</p>
HA-261367	<p>Enhancement: The <code>--no-native-mp (-M)</code> command option can be used with <code>xiv_fc_admin</code> and <code>xiv_iscsi_admin</code> to ignore the native multipath framework of the operating system when either the <code>-V</code>, <code>-C</code>, or <code>-R</code> option is used.</p> <p>For more information, refer to the user guide.</p>
HA-22503	<p>Fixed: On RHEL 6 and SLES 11, unmapped (or dead) LUNs are not removed from the <code>xiv_devlist</code> output after performing rescan.</p>
HA-91689	<p>Fixed: A host cannot be attached over iSCSI if it is already attached over FC.</p>
HA-261223*	<p>Fixed: A general error message appears when running <code>xiv_attach</code>, <code>xiv_fc_admin</code>, or <code>xiv_iscsi_admin</code> if non-English characters are used in the XIV credentials.</p>
* Applies to all supported operating systems.	

Version 2.2.0 (November 2013)

Version 2.2.0 added support for version 11.4.0 of the XIV microcode and for Linux Enterprise Server (SLES) 11 SP3.

Additional changes in version 2.2.0:

Ticket ID	Description
HA-261142*	<p>Enhancement: The Host Profiler utility (<code>xiv_host_profiler</code>) can now detect the microcode versions of the XIV systems to which the host is connected. In addition, users can use the <code>--xiv-microcode</code> option with the <code>--analyze</code> command argument in order to run the host profile analysis against a specific microcode version.</p>
HA-255825	<p>Fixed: Uploading the host profile to the XIV storage system over an iSCSI connection fails silently when the host HBA FC ports are zoned but not registered with the FC targets of that XIV system.</p>
* Applies to all supported operating systems.	

Version 2.1.0.1 (August 2013)

Version 2.1.0.1 includes the following hotfix and change.

Ticket ID	Description
HA-261196	Fixed: In some cases, a general error (type 'exceptions.AttributeError') might occur if xiv_devlist , xiv_attach , xiv_fc_admin , or xiv_iscsi_admin is used when the online volume migration (IBM Hyper-Scale Mobility feature) is in Proxy state.
HA-261181*	Change: In the xiv_devlist output, "OLVM State" was renamed to "Hyper-Scale Mobility".

* Applies to all supported operating systems.

Version 2.1.0 (June 2013)

Version 2.1.0 added support for version 11.3.0 of XIV microcode and for the IBM Hyper-Scale Mobility (online volume migration) feature. It also adds support for RHEL 6.4 and 5.9.

Additional changes in version 2.1.0:

Ticket ID	Description
HA-231357*	Enhancement: The --no-headers argument can be used with the xiv_devlist -t csv and xiv_syslist -t csv commands to generate CSV output without column headers.
HA-253044*	Enhancement: An additional step in the xiv_attach procedure allows scheduling a task for running the Host Profiler utility on the host. For more information, refer to the user guide.
HA-256729*	Fixed: In some cases, the xiv_host_profiler --analyze command might generate notices that are unrelated to the host processor architecture.
HA-257071	Fixed: The xiv_devlist output is limited to 80 characters per line, ignoring any console-defined screen width.
HA-260447	Fixed: On RHEL 6.3, devices other than the 'Boot from SAN' volume might not be encapsulated by the multipath framework, and might appear as several single path devices.
HA-261114	Fixed: Instead of running once as scheduled, Host Profiler scheduled tasks run every minute within the specified hour. Note: Scheduled tasks that were created with version 2.0.0 should be removed and redefined with version 2.1.0.
HA-261126*	Fixed: xiv_devlist might exit with error messages when running on a host connected to a storage device other than the XIV storage system.
HA-8442*	Fixed: xiv_host_profiler and xiv_syslist might exit with error messages when running on a host connected to a storage device other than the XIV storage system.

* Applies to all supported operating systems.

Version 2.0.0 (March 2013)

Version 2.0.0 included the following enhancements.

Ticket ID	Description
HA-26055*	Enhancement: A new host diagnostics utility, Host Profiler (xiv_host_profiler), is now available. The utility collects comprehensive host configuration information, creates a profile based on this information, and allows detailed analysis of the collected information. For more information, refer to the Diagnostics chapter in the IBM XIV Host Attachment Guide. Note: The Host Profiler utility is compatible only with XIV microcode version 11.2 or later.
HA-251470	Enhancement: Reduced HAK package size, requiring less disk space.

* Applies to all supported operating systems.

Version 1.10.0 (September 2012)

Version 1.10.0 included the following changes and fixes.

Ticket ID	Description
HA-236975	Change: On RHEL 6.3 or later, the xiv_attach and xiv_*_admin commands no longer configure the <code>multipath.conf</code> file. The known devices list in <code>device-mapper-multipath</code> already includes the optimal configuration for the XIV storage system.
HA-101061	Fixed: On RHEL 6, errors are encountered when extracting an xiv_diag generated file that includes linked files.
HA-236858*	Fixed: xiv_devlist does not display the correct size of volumes that are larger than 2.2 TB.
HA-242439	Fixed: xiv_diag reads files from the <code>/sys</code> directory to collect and pack information in the xiv_diag output package, causing errors.

* Applies to all supported operating systems.

Version 1.9.0 (June 2012)

Version 1.9.0 added support for RHEL 6.3, and included the following enhancements and fixes.

Ticket ID	Description
HA-10663	<p>Enhancement: Detailed on-screen help prompt is now available for the different HAK utilities using the man command option in the following format:</p> <pre>man xiv_attach man xiv_fc_admin man xiv_iscsi_admin man xiv_syslist man xiv_devlist man xiv_diag</pre>
HA-73943*	<p>Enhancement: The --path optional argument is now available for the xiv_diag command, allowing one-step definition of the directory into which the report file should be generated. For more information, refer to the user guide.</p>
HA-233433*	<p>Fixed: In some cases, xiv_syslist may fail with a general error prompt (ValueError exception).</p>
* Applies to all supported operating systems.	

Version 1.8.0 (March 2012)

Version 1.8.0 included the following enhancements and fixes.

Ticket ID	Description
HA-179589*	<p>Enhancement: A new utility, xiv_syslist, has been added to the IBM XIV Host Attachment Kit in order to provide broader and more customized information than the output of the xiv_fc_admin -L and xiv_iscsi_admin -L commands.</p> <p>Using the xiv_syslist command and its optional arguments, users can view different details of all XIV storage systems that are connected to the host. For more information, refer to the IBM XIV Host Attachment Guide.</p>
HA-172254	<p>Fixed: In some cases, xiv_devlist -o returns an exception error on SLES 11.</p>
HA-169596	<p>Fixed: On SLES 11 Service Pack 1, xiv_attach reports the multipath service as 'NOT OK' if there are no volumes that are mapped to the host.</p>
* Applies to all supported operating systems.	

Known issues

This section details the known issues in version 2.4.0 of the IBM XIV Host Attachment Kit for Linux, along with possible solutions or workarounds (if available).

Ticket ID	Description
HA-100800	<p>Mapping the LUN0 volume causes errors.</p> <p>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.</p> <p>Accordingly, mapping the LUN0 volume is not recommended.</p>
HA-11718	<p>Unmapped LUNs are not always removed after the rescan.</p> <p>In some of the early RHEL 5.x releases, multipathd (responsible for removing stale multipath maps) stops reacting to udev events.</p> <p>Red Hat provides a fix for multipath-tools and kpartx at the Red Hat Customer Portal website (rhn.redhat.com/errata/RHEA-2009-1377.html).</p>
HA-37888	<p>xiv_devlist does not identify LUN0.</p> <p>Currently there is no workaround or solution for this limitation (HA-37888).</p>
HA-65405	<p>xiv_attach shows 'Unknown type' for the Hitachi HBA driver.</p> <p>Currently there is no workaround or solution for this limitation (HA-65405).</p>
HA-101053	<p>When using xiv_attach over iSCSI on x86-based RHEL 6 or RHEL 5, a failure may occur on the last step in which the host is defined the XIV storage system. This applies to XIV microcode versions 10.2.4.x and 11.0.x.</p> <p>To resolve this issue, manually configure the host on the XIV system as follows:</p> <ol style="list-style-type: none">1. Use xiv_iscsi_admin -P to detect all iSCSI addresses of the host.2. Define a new host on the XIV system by using the XIV GUI or XCLI, and add this host the iSCSI posts that you found in the previous step.
HA-159609	<p>On RHEL 6.1 or earlier, when no volumes are mapped to the host, the iSCSI daemon does not start, and the configuration task of the iSCSI service fails.</p> <p>To resolve this issue, use RHEL 6.2 or later.</p>

Ticket ID	Description
HA-163935	<p>xiv_diag may hang when unreachable block devices are present.</p> <p>Regardless of this issue, the xiv_diag log file (<code>xiv_diag_results*.tar.gz</code>) is properly generated. To avoid this issue, remove all unreachable block devices before running xiv_diag. Also, due to a known issue in RHEL 6 (631009 (bugzilla.redhat.com/show_bug.cgi?id=631009)), you may need to use multipath -f <mpath device> to clean up all multipath devices.</p>
HA-165868	<p>The user_friendly_names multipath parameter is automatically assigned with 'yes'.</p> <p>Workaround: If you want to use non-friendly names, manually change the parameter value to 'no'.</p>
HA-165914	<p>udev-related problems may occur on hosts that were upgraded from HAK versions earlier than 1.7.0.</p> <p>To resolve this issue, manually delete the udev rule in <code>/dev/udev/rules.d/44-ibm-xiv.rules</code>. You might need to reload the udev rules or reboot the host.</p> <p>Note: This workaround removes the <code>/dev/xiv</code> device tree, as in a clean HAK installation.</p>
HA-171098	<p>Due to a known issue in RHEL 6 (662433 (bugzilla.redhat.com/show_bug.cgi?id=662433)), hosts that use mapped volumes over iSCSI might freeze during an OS shutdown or reboot.</p> <p>If this occurs, power off and restart the host manually.</p> <p>To avoid this issue, upgrade to RHEL 6.3.</p>
HA-173095	<p>If the host is predefined on the XIV storage system without CHAP authentication, using CHAP credentials during the attachment procedure (xiv_attach) silently succeeds, but does not apply any CHAP authentication.</p> <p>Workaround: Ensure that the host is already defined on the XIV storage system with a CHAP name and secret.</p>
HA-227476	<p>If XIV volumes mapped to a host that regularly boots from SAN, deleting a WWPN associated with these volume mappings causes the server to hang.</p> <p>Currently there is no workaround or solution for this limitation (HA-227476).</p>

Ticket ID	Description
HA-251225	<p>The xiv_host_profiler and xiv_syslist utilities might not detect all connectivity parameters if the host uses HBAs manufactured by LSI. In such a case, the utilities would not be able to determine whether the host is connected to two or more XIV modules, and the xiv_host_profiler --analyze command will report that the host is not properly configured.</p> <p>Currently there is no workaround for this limitation (HA-251225), and you need to manually check whether the host is connected to at least two XIV modules (if LSI HBAs are used).</p>
HA-254724	<p>When running the xiv_host_profiler --create-scheduled-task command and no crontab file exists for the root user, a Linux message stating 'No crontab for root' is displayed.</p> <p>This is a one-time occurrence that has no impact on the creation of the scheduled task.</p>
HA-261163	<p>On RHEL 6 or SLES 11 SP3, xiv_devlist might hang after a volume is unmapped.</p> <p>To resolve this issue, restart the host.</p>
HA-261166	<p>"No Adapter Found" message might appear in some cases when using xiv_host_profiler --create or xiv_host_profiler --analyze, even though a host bus adapter is actually found.</p> <p>This has no impact on the created host profile or host analysis, and you can ignore this message.</p>
HA-261345	<p>On SLES 11 SP2, xiv_attach, xiv_iscsi_admin, and xiv_fc_admin and may hang when using the rescan (-R) option.</p> <p>To avoid this issue, upgrade to SLES 11 SP3.</p>
HA-261402	<p>On RHEL 7.0, when using the --clean command option (with xiv_fc_admin -R or xiv_iscsi_admin -R), the operation might take several minutes to complete, depending on the amount of unreachable devices.</p> <p>Currently there is no workaround or solution for this limitation.</p>
HA-261434	<p>On RHEL 7.0, the iSCSI service fails to start and an error message is displayed if one of the XIV iSCSI ports is unreachable.</p> <p>To resolve this issue, connect the unreachable iSCSI port or remove it from the configuration.</p>

Related information and publications

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

- IBM Storage Host Software Solutions Information Center (pic.dhe.ibm.com/infocenter/strhosts/ic)
- IBM XIV Storage System Information Center (pic.dhe.ibm.com/infocenter/ibmxiv/r2)
- IBM and Linux website (www.ibm.com/linux)

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- IBM website (ibm.com[®])
- IBM Support Portal website (www.ibm.com/storage/support)
- IBM Directory of Worldwide Contacts website (www.ibm.com/planetwide)

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