

IBM Storage Host Attachment Kit for Windows  
Version 2.8.2

*Release Notes*



**First Edition (August 2017)**

This document edition applies to version 2.8.2 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](http://www.ibm.com/support/fixcentral)).

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## What's new in version 2.8.2

Version 2.8.2 is a Windows-only release. It removes KB4015217, as a required hotfix for Microsoft Windows Server 2016 hosts.

**General availability date:** 21 August 2017

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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.

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**Note:** This section applies to version 2.8.2. 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](http://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.

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## Supported Windows Server versions

Version 2.8.2 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          |

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**Important:**

- It is strongly recommended to use the latest Windows Server release with all relevant updates, service packs and patches installed. See “Required software on the host” on page 3 for information about required OS updates.
  - See “Known interoperability issues” on page 9 for information about HyperSwap issues and limitations in the Windows Server 2008, 2008 R2, 2012 and 2012 R2.
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## Supported storage systems

Version 2.8.2 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 <sup>®</sup> Storage System  | 10.2.4.x                                       |
|                                      | 11.1.x, 11.2.x, 11.3.x, 11.4.x, 11.5.x, 11.6.x |
| IBM Spectrum Accelerate <sup>™</sup> | 11.5.x   |
| IBM FlashSystem <sup>®</sup> A9000   | 12.0.x, 12.1.x                                 |
| IBM FlashSystem A9000R               | 12.0.x, 12.1.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/STJTAG/hsg/hak\\_lifecycle.dita](http://ibm.com/support/knowledgecenter/STJTAG/hsg/hak_lifecycle.dita)) details the HAK lifecycle with compatible storage system microcode versions and supported operating system releases.

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## 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<sup>®</sup> Interoperation Center website ([www.ibm.com/systems/support/storage/config/ssic](http://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.

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

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## 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.

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

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## Required software on the host

During host attachment procedure, Host Attachment Kit automatically checks if all required hotfixes for Microsoft Windows Server are installed on the host.

These updates are required for error-free functionality and must be installed manually. The following table lists the required hotfixes for each service pack.

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**Important:**

- The following table contains information that is known at the time of the General Availability (GA) date. Newer or additional hotfixes may be required in distinct cases or in particular production environments. Contact IBM Support if you encounter errors or difficulties.
  - You can find any relevant hotfix and download it from the Microsoft Support website ([support.microsoft.com](http://support.microsoft.com)).
  - Always refer to the Microsoft documentation (KB article) of any hotfix or set of hotfixes that your system requires.
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| Operating system    | Service pack   | Required components  |
|---------------------|----------------|--|
| Windows Server 2008 | Service Pack 2 | <ul style="list-style-type: none"><li>• Microsoft Multipath I/O Framework (enable from the Server Manager applet).</li><li>• Microsoft Hotfix set* KB957311 (<a href="http://support.microsoft.com/kb/957311">support.microsoft.com/kb/957311</a>) if Windows Clustering is used.</li><li>• Microsoft Hotfix KB979743 (<a href="http://support.microsoft.com/kb/979743">support.microsoft.com/kb/979743</a>)</li><li>• Microsoft Hotfix KB981379 (<a href="http://support.microsoft.com/kb/981379">support.microsoft.com/kb/981379</a>)</li><li>• Microsoft Hotfix KB983554 (<a href="http://support.microsoft.com/kb/983554">support.microsoft.com/kb/983554</a>)</li><li>• Microsoft Hotfix KB2522766 (<a href="http://support.microsoft.com/kb/2522766">support.microsoft.com/kb/2522766</a>)</li><li>• Microsoft Hotfix KB4019206 (<a href="http://support.microsoft.com/kb/4019206">support.microsoft.com/kb/4019206</a>)</li></ul> |

| Operating system   | Service pack   | Required components   |
|--|----------------|---|
| Windows Server 2008 R2   | None           | <ul style="list-style-type: none"> <li>• Microsoft Multipath I/O Framework (enable from the Server Manager applet).</li> <li>• Microsoft Hotfix set* KB980054 (support.microsoft.com/kb/980054) if Windows Clustering is used.</li> <li>• Microsoft Hotfix KB979711 (support.microsoft.com/kb/979711)</li> <li>• Microsoft Hotfix KB981208 (support.microsoft.com/kb/981208)</li> <li>• Microsoft Hotfix KB2460971 (support.microsoft.com/kb/2460971)</li> <li>• Microsoft Hotfix KB2522766 (support.microsoft.com/kb/2522766)</li> </ul> |
|  | Service Pack 1 | <ul style="list-style-type: none"> <li>• Microsoft Hotfix set* KB2468345 (support.microsoft.com/kb/2468345)</li> <li>• Microsoft Hotfix set* KB2545685 (support.microsoft.com/kb/2545685) if Windows Clustering is used.</li> <li>• Microsoft Hotfix KB2460971 (support.microsoft.com/kb/2460971)</li> <li>• Microsoft Hotfix KB2522766 (support.microsoft.com/kb/2522766)</li> <li>• Microsoft Hotfix set* KB4019264 (support.microsoft.com/kb/4019264)</li> </ul>   |
| Windows Server 2012  | None           | <ul style="list-style-type: none"> <li>• Microsoft Hotfix KB2898774 (support.microsoft.com/kb/2898774) if Windows Clustering is used.</li> <li>• Microsoft Hotfix KB3036614 (support.microsoft.com/kb/3036614)</li> <li>• Microsoft Hotfix set* KB4019216 (support.microsoft.com/kb/4019216)</li> </ul>   |
| Windows Server 2012 R2   | None           | <ul style="list-style-type: none"> <li>• Microsoft Hotfix set* KB4019217 (support.microsoft.com/kb/4019217)</li> </ul>  |
| * Includes more than one hotfix. Refer to the Microsoft KB article on the provided link. |                |   |

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**Note:**

- Refer to “Known issues” on page 7 for information about any additional Microsoft hotfix that you may need to install in order to solve any specific issue that you might encounter.
  - Refer to this technote for details about hotfixes required for IBM HyperSwap support.
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## Change log

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

### Version 2.8.2 (August 2017)

Version 2.8.2 replaces version 2.8.1. It removes 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* | <b>Enhancement:</b> The <code>xiv_devlist</code> command output indicates the HyperSwap mode of the volume (stretched or regular).  |
| HA-261987* | <b>Enhancement:</b> The <code>xiv_devlist</code> command output displays the name of the remote storage system in the IBM HyperSwap solution.   |
| HA-261975* | <b>Change:</b> The required hotfixes for Microsoft Windows Server are no longer bundled with the HAK installation package. These components must be installed manually.   |
| HA-261922* | <b>Fixed:</b> Windows Server 2016 appears as unsupported, when running the <code>xiv_host_profiler</code> command.  |
| HA-261965* | <b>Fixed:</b> The <code>xiv_host_profiler</code> command with the <code>--set-password</code> and <code>--storage</code> arguments fails due to discrepancy between the <code>--storage</code> value and the system serial number of the storage system itself. <b>This update requires resetting the current password.</b> |

\* 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*  | <b>Fixed:</b> The <code>xiv_devlist</code> command output displays the current HAK version with uppercase -V.  |
| HA-261877* | <b>Fixed:</b> Error messages generated, when invalid LDAP credentials are supplied, may be overly general without specifying the exact reason for host attachment failure. |
| HA-261954* | <b>Fixed:</b> 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* | <b>Change:</b> The <b>xiv_syslist</b> command output displays all supported storage system types.   |
| HA-261811* | <b>Change:</b> The <b>xiv_devlist</b> command output displays all supported storage system types.   |
| HA-261816* | <b>Fixed:</b> When running the <b>xiv_attach</b> command, scanning for FC-connected storage systems is performed, even if the user chooses not to complete it.    |
| HA-261859* | <b>Fixed:</b> A general exception may occur during the <b>xiv_iscsi_admin</b> , <b>xiv_fc_admin</b> or <b>xiv_attach</b> command execution.                       |
| HA-261869* | <b>Fixed:</b> 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  |
|------------|--|
| HA-261629* | <b>Change:</b> The <b>-L</b> option of the <b>xiv_iscsi_admin</b> and <b>xiv_fc_admin</b> commands is deprecated. Only the <b>xiv_syslist -L</b> command can be used for listing the attached storage systems, as detailed in HA-204578. |

For more information, refer to the user guide.

\* 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 | <b>Enhancement:</b> 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*                                    | <p><b>Enhancement:</b> 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-261361*                                    | <p><b>Enhancement:</b> 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.</p> <p>For more information, refer to the user guide.</p> |
| HA-248145                                     | <p><b>Fixed:</b> On Windows Server 2012, <code>Pythonwin.exe</code> (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.</p>  |
| HA-253089                                     | <p><b>Fixed:</b> After upgrading from HAK version 1.5.x to version 1.10.0 or later, the newer <code>xiv_attach</code> utility might fail in the 'Verifying XIV MPI0 Load Balancing' configuration task.</p>   |
| HA-261223                                     | <p><b>Fixed:</b> 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. |   |

## Limitations

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

Currently there are no known limitations for IBM Storage Host Attachment Kit for Windows.

Check for newer release note publications to learn about limitations that could be discovered and advertised in the future.

## Known issues

This section details the known issues in version 2.8.2 of the IBM Storage Host Attachment Kit for Windows, along with possible solutions or workarounds (if available).

| Ticket ID | Description  |
|-----------|--|
| HA-6459   | <p>When using the VMware Raw Device Mapping (RDM), <code>xiv_devlist</code> and the multipath management agent erroneously report that Windows has only one path to the disk.</p> <p>Currently there is no workaround or solution for this limitation.</p> |

| Ticket ID | Description   |
|-----------|---|
| HA-100800 | <p data-bbox="683 226 1187 256">Mapping the LUN0 volume causes errors.</p> <p data-bbox="683 285 1386 378">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 data-bbox="683 407 1386 432">Accordingly, mapping the LUN0 volume is not supported.</p>  |
| HA-100946 | <p data-bbox="683 453 1425 575">When running <b>xiv_attach</b>, <b>xiv_fc_admin</b>, or <b>xiv_iscsi_admin</b> for the first and second time (during the initial host configuration) on x64-based Windows Server 2008, two reboots are required.</p> <p data-bbox="683 604 1425 663">This occurs due to the automatic installation of two Microsoft hotfixes.</p> <p data-bbox="683 693 1325 751">Currently there is no workaround or solution for this limitation.</p>               |
| HA-163121 | <p data-bbox="683 772 1412 865">An error occurs when using the <b>\h</b> (help) argument with the HAK installation command in the Windows command prompt.</p> <p data-bbox="683 894 1325 953">Currently there is no workaround or solution for this limitation.</p>   |
| HA-213964 | <p data-bbox="683 974 1399 1066">When using the HAK from Windows PowerShell, the <b>-o</b> command argument (used with <b>xiv_devlist</b> and <b>xiv_syslist</b>) does not work with more than one parameter.</p> <p data-bbox="683 1096 1341 1180">To avoid this issue, use single quotes to enclose all the parameter names. For example: <code>xiv_devlist -o 'device,size'</code></p>   |
| HA-235121 | <p data-bbox="683 1201 1432 1323">When <b>xiv_devlist</b> is run immediately after <b>xiv_fc_admin -R</b> or <b>xiv_iscsi_admin -R</b>, the devices list might report "N/A" as the size of some devices. This occurs due to a delay limitation in Windows Server.</p> <p data-bbox="683 1352 1357 1415">To resolve this issue, wait a few seconds before running <b>xiv_devlist</b>.</p>  |
| HA-254647 | <p data-bbox="683 1436 1409 1558">If version 1.0.2.1 of the IBM Storage Enabler for Windows Failover Clustering is installed on the host, the Host Profiler utility (<b>xiv_host_profiler</b>) returns a value of 0.0.0 as the version number.</p> <p data-bbox="683 1566 1409 1692"><b>Note:</b> 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.</p> |
| HA-261228 | <p data-bbox="683 1713 1425 1772"><b>xiv_devlist</b> does not show a volume that is mapped to LUN 255.</p> <p data-bbox="683 1801 1370 1827">To avoid this issue, do not map any volume to LUN 255.</p>   |

| Ticket ID | Description  |
|-----------|--|
| HA-261447 | <p>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.</p> <p>After upgrading from version 2.1.0.1 and determining that the new version is functioning correctly, uninstall version 2.1.0.1.</p>  |
| HA-261626 | <p>LUNs with IDs higher than 255 mapped to a host over iSCSI may result in an incorrect listing of the storage volumes, using the <b>xiv_devlist</b> command.</p> <p>To avoid this issue, do not use LUN IDs higher than 255.</p>  |
| HA-261854 | <p>In Windows Server 2008 SP2, the installation wizard may not display the image of IBM storage system.</p>  |
| HA-261875 | <p>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.</p>  |
| HA-261930 | <p>When running the <b>xiv_devlist</b> 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.</p> <p>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.</p> |
| HA-262027 | <p>In rare cases, installation wizard may become unresponsive during HAK upgrade on Windows Server 2016.</p> <p>Cancel the installation process to complete the upgrade successfully. Then, use the <b>xiv_fc_admin -b</b> or <b>xiv_iscsi_admin -b</b> command to display the current HAK build version.</p>  |

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

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## Getting information, help, and service

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- IBM website ([ibm.com](http://ibm.com)<sup>®</sup>)
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- IBM Directory of Worldwide Contacts website ([ibm.com/planetwide](http://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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