
README.TXT

Adaptec ASA-7085H/ASA-7805H/ASA-70165H/ASA-70165He/ASA-71605H/ASA-71605He SAS Host Bus Adapters
Adaptec ASR-6405H/ASR-6805H SAS Host Bus Adapters

NOTE: All Adaptec by PMC products are UL listed and for use only with UL listed ITE.

as of November 15, 2013

Please review this file for important information about issues and errata that were discovered after completion of the standard product documentation. In the case of conflict between various parts of the documentation set, this file contains the most current information.

The following information is available in this file:

1. New Features in this Release
2. Software and Documentation
 - 2.1 Firmware & Driver Software
 - 2.2 Documentation
3. Installation and Setup
 - 3.1 Installation Instructions
 - 3.2 uEFI-Mode Setup
 - 3.3 Windows Installation and Setup
 - 3.3.1 Windows uEFI-Mode Setup
 - 3.3.2 Windows 7 Setup Issues
 - 3.3.3 Windows SBS 2011 Setup Issues
 - 3.4 Red Hat Linux Installation and Setup
 - 3.5 SuSE Linux Installation and Setup
 - 3.6 Boot Drive Selection
 - 3.7 Building the Open Source Drivers
4. Command Line Tool
5. Known Limitations
 - 5.1 Maximum Number of Adapters, Expanders, and Bootable Drives
 - 5.2 Mixing Series 7 and Series 6 Adapter Models
 - 5.3 BIOS Not Accessible with two 7805 Adapters in Supermicro X8DTU-F
 - 5.4 Formatting Limitations for Multiple Drives
 - 5.5 uEFI BIOS Not Available while Formatting a Drive
 - 5.6 HDDs Listed in Reverse Order on NewIsys Expanders
 - 5.7 Expander Slot Mapping Issues
 - 5.8 Dell System Compatibility Issues
 - 5.9 Quantum Tape Drive Compatibility Issues
 - 5.10 SATA Drive Detection on Chenbro Ci Backplanes
 - 5.11 Blink LED Not Supported for Expanders
 - 5.12 No Activity LED for SATA Drives
 - 5.13 Suspend/Resume Not Supported on Linux OSs
 - 5.14 Drives Offline with Default Windows SAN Policy
 - 5.15 Drive Write Cache Settings
 - 5.16 RHEL 6.3 Hotplug Expander Detection

1. New Features in this Release

- o Downloadable drivers for all supported operating systems at start.adaptec.com (replaces physical media/DVD for creation of driver disks)
- o Support for SuSE Linux and Ubuntu Linux
- o New BIOS option: Disable Ctrl-A Runtime BIOS
 - Bypasses the Ctrl-A BIOS on POST
- o Native support for 4K sector drives

For hard disk drives working in 4K native mode, the disk media exposes its 4KB physical sector size to the controller firmware and operating system. Support for 4KB logical sectors within operating systems varies by vendor and OS version (for more

information, see the Adaptec Knowledge Base at <http://ask.adaptec.com>).

NOTE: Only uEFI systems can boot from a 4K sector drive. 4KB sector drives are not supported as a boot device with Legacy BIOS.

- o Support for Tape Drive Autoloaders

Allows the HBA driver to discover tape drives in an autoloader and issue I/Os to the tape drives. Supported on Windows and Linux only.

- o Bugfixes

2. Software and Documentation

2.1 Firmware and Driver Software

NOTE: You can download the latest versions of firmware, BIOS, driver software and utilities from the Adaptec Web Site at start.adaptec.com.

- o Adaptec Firmware/BIOS/Drivers Version 1.00.00

Drivers for this release have been tested and certified on the following operating systems. You can load the drivers on out-of-box operating system versions, the latest service pack, or software update. Compatibility issues may be seen with untested OS versions.

Microsoft Windows Drivers:

- o Windows Server 2012 R2
- o Windows Server 2012 64-bit
- o Windows Server 2008 R2, 64-bit
- o Windows SBS 2011 (all versions)
- o Windows 7, Windows 8, Windows 8.1, 32-bit and 64-bit

Linux Drivers:

- o Red Hat Enterprise Linux 6.4, 6.3, 32-bit and 64-bit
- o SuSE Linux Enterprise Server 11 SP3, 32-bit and 64-bit
- o Ubuntu Linux 12.04, 32-bit and 64-bit

VMware Drivers:

- o VMware ESXi 5.0

2.2 Documentation

NOTE: You can download the latest documentation from the Adaptec Web Site at start.adaptec.com.

PDF Format (English/Japanese):

- o Adaptec Serial Attached SCSI Host Bus Adapters Installation and User's Guide

Text Format:

- o Adaptec SAS Host Bus Adapters README.TXT file
- o Task-specific readmes (see sections 3.3 and 3.7)

3. Installation and Setup

3.1 Installation Instructions

The Adaptec Serial Attached SCSI Host Bus Adapters Installation and User's Guide contains complete installation information for the adapters and drivers. It also contains usage information for the configuration utility.

3.2 uEFI-Mode Setup

On servers that support the Unified Extensible Firmware Interface, or uEFI (version 2.10 or higher), you can install the OS and setup your HBA from the uEFI BIOS.

To install the OS, boot the server to uEFI (typically by pressing DEL), then insert the OS installation DVD. Assuming the DVD is device fs0, type:

```
Shell>fs0:  
fs0:> \efi\boot\bootx64.efi
```

When the installation screen is displayed, follow the on-screen instructions to complete the installation.

3.3 Windows Installation and Setup

Use the following drivers to install the HBA on Windows:

- o DRV-HIA-SBS-WIN7-2008-ADAP for Small Business Server 2011 + Win 7 + Win 2008 R2
- o DRV-HIA-WIN8-WIN2012-ADAP for Win 8 + Win 2012

For more information, see 'readme_win_spc_stor.txt' (available at start.adaptec.com).

3.3.1 uEFI-Mode Setup

When installing Windows in uEFI mode, clearing the metadata on the HDDs is required if the HDDs are moved from an Adaptec RAID controller to the HBA. Clearing the metadata is not required in Legacy mode (non-uEFI).

3.3.2 Windows 7 Setup Issues

When installing Windows 7 (32-bit, 64-bit) on an HBA with multiple drives attached, installation continuation, after initial reboot, may take 30-70 minutes to complete. Following installation, install the hotfix at the link below:

<http://support.microsoft.com/kb/2468345>

3.3.3 Windows SBS 2011 Setup Issues

- o When installing the driver on Windows SBS 2011, it may take 1.5-3 hours to complete the OS installation.
- o To avoid a uEFI mode installation problem on Windows SBS 2011 Essential, MBR (Master Boot Record) partitioning of the drive is required.
 1. To convert the drive to MBR format, install SBS 2011 Essential in Legacy mode, and abort installation once the drive is partitioned.
 2. Switch to uEFI mode, then and install SBS 2011 Essential on the same drive; installation will complete successfully.
- o When installing the driver on Windows SBS 2011 Essential, the installer times out before listing all discovered drives. The number of listed drives varies, depending on the drive type (eg, SAS vs SATA). This is a limitation in the Windows SBS installer; the Adaptec device driver detects all attached drives.
- o Installing Windows SBS 2011 in an expander configuration is not supported in uEFI mode.

3.4 Red Hat Linux Installation and Setup

- o When installing the Red Hat driver using the instructions in the user's guide, you may see a message stating that

'no drivers were found or the disk has already been loaded'. To complete the installation, click 'Continue', then finish the installation normally.

- o When installing the Red Hat driver, the first 16 drives in the expander (if present) are listed in alphabetical order. To determine the first 8 bootable devices, select "Create Custom Layout" in the installation screen. This will display the drives in the order in which they were discovered. You can install the OS on any of the first 8 drives.

3.5 SuSE Linux Installation and Setup

- o SLES 11 x64 detects direct attached drives on the HBA but times out before discovering drives in the expander (due to an OS mapping issue) and fails to boot to the OS.

WORKAROUND: Remove all drives other than the OS drive and boot up once. Shut down the system, then put back all drives; the OS should boot normally.

- o With 4 or more SATA drives in an expander, the HBA hangs when loading the driver.

WORKAROUND: Connect less than 4 SATA drives and any number of SAS drives in the expander, then load the driver. After the driver is loaded, connect the remaining SATA drives.

3.6 Boot Drive Selection

NOTE: Use the following procedure for Legacy mode (non-uEFI) boot drive selection. For uEFI-mode boot drive selection, after OS installation, use the system BIOS Boot menu to move the OS image to priority.

Selecting Boot Drive when BBS=Device (default):

If BBS is set to "Device" in the Ctrl+A Configuration utility, you can select any of the first 8 drives as the bootable drive.

1. Power on the system, go to the Ctrl+A utility, select Controller Configuration, then set BBS Support=Device.
2. Go to system BIOS setup menu, set CD/DVD ROM as the first bootable device, then select the HDD on which the OS will be installed as the 2nd bootable device in boot priority. You can choose any of the 8 devices listed.
3. Boot from the OS DVD and load the HBA driver. The installer displays the drives in order. Select the drive for the installation.

NOTE: The boot device in the system BIOS and the OS installation device must match. The installer will create the system partition on the first bootable device set in the system BIOS.

Selecting Boot Drive when BBS=Controller:

If BBS is set to "Controller" in the Ctrl+A Configuration utility, only the first drive can be set as the bootable drive.

1. Power on the system, go to the Ctrl+A utility, select Controller Configuration, then set BBS Support=Controller.
2. Go to system BIOS setup menu, set CD/DVD ROM as the first bootable device and Controller as the 2nd bootable device in boot priority.
3. Boot from the OS DVD and load the HBA driver. The installer displays the drives in order. Select the 1st drive for OS installation. (You cannot select any other drive.)

3.7 Building the Open Source Drivers

For complete instructions for building and installing the Linux open source drivers, see 'pm80xx_build_procedure.txt' (available at start.adaptec.com).

4. Command Line Tool

A command line tool for Windows, Linux, and VMware allows you to obtain information about the HBA and flash the HBA firmware image. The command line tool is available for download at start.adaptec.com.

NOTES:

- o The command line tool is not backward compatible with older Adaptec HBA driver releases. Adp80xxapp requires the latest drivers and firmware to operate correctly.
- o The device driver must be installed prior to flashing an HBA with the command line tool.
- o On Windows systems, Adp80xxapp requires Admin privileges.

These forms of the command line tool are available:

1. To check card info:

```
./Adp80xxapp info
```

Provides information about an adapter (FW revision no., bus no., slot no., device id, vendor id). Identifier varies from 0 to N-1, where N is the total number of adapters in the system.

2. To flash firmware image:

```
./Adp80xxapp fwflash <id> <firmware-image-name>
```

Ex: `./Adp80xxapp fwflash 0 SPCV6G_2085501.bin`

For Windows systems, place images in the directory where the executable is located. For Linux systems, place images in the /lib/firmware directory. Use 'Adp80xxapp info' to confirm that the image flashed correctly.

3. To get help:

```
./Adp80xxapp help
```

5. Known Limitations

5.1 Maximum Number of Adapters, Expanders, and Bootable Drives

You can install a maximum of TWO same-series Adaptec HBAs on one system (two Series 7 HBAs, two Series 6 HBAs). See Section 5.2 for more information.

Adaptec Series 7H/7He HBAs support a maximum of:

- o 8 bootable drives and 2 expanders during boot time (GSM discovery)
- o 128 drives with 5 expanders during PMM under OS control (using drivers)

Adaptec Series 6H HBAs support a maximum of:

- o 4 bootable drives and 1 expander during boot time (GSM discovery)
- o 128 drives with 5 expanders during PMM under OS control (using drivers)

5.2 Mixing Series 7 and Series 6 Adapter Models

In this release, mixing Adaptec Series 7H/7He and Adaptec Series 6H HBAs in the same system is not supported. Doing so may cause

the BIOS to hang on POST.

5.3 BIOS Not Accessible with two 7805 Adapters in Supermicro X8DTU-F

With two Adaptec 7805 adapters in a Supermicro X8DTU-F system, you cannot start the system BIOS by pressing the "DEL" key.

Workaround: Remove one adapter and start the system BIOS. Navigate to Advanced -> Remote AccessConfiguration, then set "Redirection After BIOS POST [Disabled]". After changing the BIOS setting, put the adapter back.

5.4 Formatting Limitations for Multiple Drives

You can format multiple SAS drives only in the BIOS. Formatting multiple SATA drives is not supported.

5.5 uEFI BIOS Not Available while Formatting a Drive

While formatting a drive with the uEFI BIOS, you cannot perform any other operation until the formatting is complete. Once formatting is complete, the BIOS responds normally.

5.6 HDDs Listed in Reverse Order on NewIsys Expanders

With Adaptec HBAs in NewIsys expanders, PHY numbers and slot numbers are listed in reverse order during POST; eg, 12-1 vs 1-12.

5.7 Expander Slot Mapping Issues

Box/Slot information for Adaptec HBAs is reported incorrectly in some expanders. For Promise J830, DataOn DNS-1400SM, and Miramar 335SAS expanders, the Box/Slot information is shown as BoxFF/SlotFF for all slots, instead of Box00/Slot00, and so on. In other cases, the Box/Slot mapping is unpredictable.

5.8 Dell System Compatibility Issues

- o Dell PowerEdge R610 servers may hang on POST with Adaptec Series 7H/7He or Series 6H adapters.

Workaround: Upgrade the server with the latest firmware and BIOS.

- o Dell PowerEdge R520 servers are not supported in this release.

5.9 Quantum Tape Drive Compatibility Issues

After issuing commands to mount and erase a Quantum TC-L52AN (LT05) tape drive, the drive hangs and the operation eventually aborts with the message "/dev/st0: Input/Output error".

5.10 SATA Drive Detection on Chenbro Ci Backplanes

On Chenbro RM21508B Ci backplanes, the BIOS may not detect SATA devices on POST during a cold reboot (power down/power up). On warm reboot, all drives are detected.

5.11 Blink LED Not Supported for Expanders

BLINK LED is not supported for expanders. BLINK LED for drives on the expander is available.

5.12 No Activity LED for SATA Drives

With I/O running, the Activity LED blinks for SAS drives but not SATA drives.

5.13 Suspend/Resume Not Supported on Linux OSs

The driver does not support suspend/resume/hibernate for SAS devices on Linux or Linux/VMware OSs.

5.14 Drives Offline with Default Windows SAN Policy

With the default SAN Policy on Windows, a cold reboot leaves some disk drives (above drive 8) offline.

Workaround: Enter these commands at the Windows command prompt:

1. diskpart
2. san policy=onlineall
3. san

5.15 Drive Write Cache Settings

In this release, setting the drive write cache to enable/disable is limited to the OS tools for Windows and Linux. This feature is not available in the HBA BIOS.

From Windows:

1. Open the "Computer Management" console, then select "Device Manager".
2. Select "Disk Drives".
3. Double-click the drive you want to work with, then select "Policies".
4. Select/unselect "Enable write caching on the device", then click OK.
5. Reboot the system.

From Linux:

1. Login as root.
2. Type one of these commands:

```
/sbin/hdparm -W 0 /dev/hdX 0      # disable write caching
/sbin/hdparm -W 1 /dev/hdX 1      # enable write caching
```

where X is any logical drive on that system; a/b/c... etc

5.16 RHEL 6.3 Hotplug Expander Detection

When hotplugging two or more cascaded expanders, RHEL 6.3 will detect only one of the expanders. It fails to detect the others.

WORKAROUND: Upgrade to RHEL 6.4.

(c) 2013 PMC-Sierra, Inc. All Rights Reserved.

This software is protected under international copyright laws and treaties. It may only be used in accordance with the terms of its accompanying license agreement.

The information in this document is proprietary and confidential to PMC-Sierra, Inc., and for its customers' internal use. In any event, no part of this document may be reproduced or redistributed in any form without the express written consent of PMC-Sierra, Inc., 1380 Bordeaux Drive, Sunnyvale, CA 94089.

P/N DOC-01752-02-A Rev. A