Release Notes

Microsemi Adaptec Host Bus Adapter 1000 Series

Released

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Revision History

Issue	Issue Date	Details of Change
6	April 2016	Updated for maintenance release.
5	December 2015	Updated for production release.
4	November 2015	Update for pre-production release.
3	September 2015	Update for pre-production release.
2	August 2015	Update for pre-production release.
1	August 2015	Document created.

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1 About This Release

This document describes the production release package of supported firmware, OS drivers, and host management software files for Microsemi® Adaptec® HBA 1000 Series products: 1000-16i, 1000-16e, 1000-8i8e, 1000-8i, 1000-8e.

Note:
All Microsemi Adaptec products are UL listed and for use only with UL listed ITE.

1.1 Release Identification

The firmware, software and driver versions for this maintenance release are shown in Table 1 • Release Summary.

Table 1 • Release Summary

Package Release Date	April 6, 2016
Firmware Version	1.54 build 0[1]
Microsemi Adaptec Controller Configuration Utilities (ARCCONF Command Line Interface, maxView Storage Manager, maxView vSphere Plugin, Boot USB)	2.01.22270
Drivers Package Version	B50666 [Windows] B50663 [Linux, VMware, and XenServer]

1.2 Release Components

Download the following firmware, drivers, host management software, and supporting documentation for your HBA 1000 Series product from from the Microsemi Adaptec Web site at start.adaptec.com.

1.2.1 Firmware and UEFI/HII and Legacy (CTRL-A) BIOS

This release supports version 1.54 build 0 of the HBA 1000 firmware, version 1.2.2.1107 of the Microsemi Adaptec UEFI/HII, and version 1.2.2.1104 of the Legacy (CTRL-A) BIOS utilities.

1.2.2 Drivers

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

- Microsoft® Windows® Server 2012 R2, 2008 R2 SP1, SBS 2011 SP2 (32-bit and 64-bit)
- Microsoft® Windows® 10, 8.1, 8, 7 (32-bit and 64-bit)

Linux:

- Red Hat® Enterprise Linux/CentOS 7.2, 7.1 (32-bit and 64-bit)
- Red Hat® Enterprise Linux/CentOS 6.7, 6.6 (32-bit and 64-bit)
- Red Hat® Enterprise Linux/CentOS 5.11, 5.10 (32-bit and 64-bit)
- SuSE Linux Enterprise Server 12 SP1 (64-bit)
- SuSE Linux Enterprise Server 12 (32-bit and 64-bit)
- SuSE Linux Enterprise Server 11 SP4, SP3 (32-bit and 64-bit)
- Ubuntu Linux 14.04.3, 14.04.2 (32-bit and 64-bit)
- Ubuntu Linux 12.04.5, 12.04.4 (32-bit and 64-bit)
- Oracle Enterprise Linux 6.5

Citrix

- Citrix XenServer 6.5.1 (64-bit)

Virtual OS Environments

- VMware ESXi 6.0 U1, 6.0 (64-bit)
- VMware ESXi 5.5 U3, 5.5 U2, 5.1 U1, 5.1 (64-bit)

Note:
32-bit drivers are provided as-is.

1.2.3 Host Management Software

This release of the HBA 1000 Series provides Microsemi Adaptec Controller Configuration Utilities for host management, which include the following:

- Microsemi Adaptec ARCCONF Command Line Utility
  - Windows (64-bit)
  - Linux (64-bit)
  - VMware EXSi 5.5 and 6.0 (64-bit)
  - XenServer 6.5.1 (64-bit)
- Microsemi Adaptec maxView Storage Manager
  - Windows (32-bit and 64-bit)

- Linux (32-bit and 64-bit)
- VMware EXSi 5.5 and 6.0 (64-bit)
- XenServer 6.5.1 (64-bit)

- Microsemi Adaptec maxView vSphere Plugin
  - vCenter 5.5 and 6.0

- Boot USB (offline or pre-boot) for the ARCCONF command line utility and maxView Storage Manager
  - Linux (32-bit and 64-bit)

Refer to the *README: maxView Storage Manager & ARCCONF Command Line Utility* for specific OS support details, installation notes, and known issues.

1.2.4 Supporting Documents

Refer to the Microsemi Adaptec Web site at start.adaptec.com for the latest product documentation for your HBA 1000 Series product.

PDF

- *Host Bus Adapter 1000 Series Installation and User's Guide*, PMC-2152188.
- *Host Bus Adapter 1000 Series Command Line Utility User's Guide*, PMC-2152156.
- *maxView Storage Manager User's Guide for Microsemi Adaptec Smart-Family Controllers*, PMC-2153109.
- *README: maxView Storage Manager & ARCCONF Command Line Utility*, PMC-2153191.
- *Host Bus Adapter 1000 Series Release Notes* (This Document), PMC-2152169.

HTML

- *maxView Storage Manager Online Help*

2 What is New?

2.1 Features

Table 2 • Feature Summary lists features supported for this release. Features new to this release are designated as "New".

Table 2 • Feature Summary

Feature		Supported in this Release	Future Release
Software Features			
Support for up to 256[1] SAS/SATA target devices		X	
Multi-LUN support		X	
SATA NCQ HDD		X	
Storage space support	Expander attach	X	
Persistent binding	SCSI ID of a device/LUN remains the same after reboot - No addition or removal of devices	X	
Hot Plug drive support		X	
Backplane port/box/bay support with no backplane management		X	
SATA drive/SSD support		X	
HDD/SSD Work Load logging			X
SSD Wear Gauge			X
>2TB physical drives		X	
S.M.A.R.T.		X	
SAS Drive/SSD support		X	
SAS expander support	Expose enclosure to host	X	
	SMP pass through to expander	X	
External storage 6G/12G		X	
External Array Connect		X	
Managed Cables		X	
Clustering/HA support for SAS devices (Windows and Linux)		X	
Tape Support			
Internal Tape 3GB SAS LTO3/4 I		X	
Internal Tape 6GB SAS LTO5/6		X	

Feature		Supported in this Release	Future Release
External Tape 3GB Multi-LUN, Tape Library		X	
External Tape 6GB Multi-LUN, Tape Library		X	
Flashing			
Recovery NOR Flash ROM image		X	
Offline controller firmware flash		X	
Online controller firmware flash with reboot		X	
Offline drive firmware flash		X	
Online drive firmware flash with reboot		X	
Tape drive flashing		X	
Logging			
Device and array error logs		X	
Detailed controller log through serial port		X	
Detailed controller log through log files		X	
BMC Support			
BMC DST mechanism consistent with Series 8		X	
Enclosure Management			
SES-2		X	
SES-3		X	
SGPIO (SFF-8485)		X	
IBPI (SFF-8489)		X	
Management Utilities			
Microsemi Adaptec uEFI/ HII BIOS Configuration Utility	> 2.2TB boot	X	
	uEFI boot from legacy device	X	
	uEFI boot from raw device (HBA device)	X	
	HII GUI (config support)	X	
	Secure boot	X	
Microsemi Adaptec Legacy BIOS Configuration Utility[2]	Legacy BIOS boot from legacy device	X	
	Legacy BIOS boot from raw device (HBA device)	X	
	Legacy configuration at boot (Ctrl-A)	X	

Feature		Supported in this Release	Future Release
Microsemi Adaptec Controller Configuration Utilities	ARCCONF Command Line Interface (Windows, Linux, VMware)	X	
	maxView Storage Manager	X	
	Boot USB	X	

Note:

1. 238 SSD/HDDs maximum support and remainder are reserved for expanders and enclosure management.
2. Only UEFI systems can boot from a 4K sector drive. The legacy Ctrl-A controller BIOS displays all 4K and 512 byte drives connected to the controller during POST and there is Ctrl-A support (like Format and Verify) for both 4K & 512 byte drives, but INT 13 support for booting is available for 512 byte drives only.

2.2 Fixes

2.2.1 Firmware Fixes

2.2.1.1 Fixes for Firmware Release 1.54 Build 0

This release provides the following fixes and enhancements:

- Fixed a controller lockup when a wrong SCSI error response data length of zero is returned to a BMC if a pass-through SCSI request resulted in error.
- Fixed an issue related to HDD's reporting "maximum" and "threshold" temperature values when those values are not supported by the drive.
- Fixed a controller lockup that could occur as a result of hot-adding an expander or drives to an internal connector.
- Fixed an issue where the connector name information in a dual domain configuration was not correct for the API returning enclosure status.
- Fixed an issue where the amber LED would fail to be lit if a drive was failed during discovery.

2.2.2 UEFI/BIOS Fixes

2.2.2.1 Fixes and Enhancements for UEFI/Legacy BIOS Build 1.2.2.1107/1.2.2.1104

For the Legacy BIOS, this release:

- Added support for selecting secondary OS Boot HBA Drive in "Select Boot Device" page of CTRL+A. Use <Ctrl+P> for selecting primary boot drive and <Ctrl+S> for selecting secondary boot drive.
- Fixed an issue where drives were not being correctly reported when configured as secondary boot drive.

For the UEFI/HII, this release:

- Fixed a failure seen with a SAS Drive firmware update from HII.
- Included the Microsoft signed UEFI driver.

2.2.3 Driver Fixes

2.2.3.1 Windows Driver Fixes

2.2.3.1.1 Fixes and Enhancements for Windows Driver Build 50666

This release provides the following fixes and enhancements:

- Fixed and issue where the system hung during Windows boot. Restricted the CPU node support to 8 nodes to ensure the data structure does not overflow if the system has a larger configuration.

2.2.3.1.2 Fixes and Enhancements for Windows Driver Build 50663

This release provides the following Windows driver fixes and enhancements:

- Fixed an issue to report the correct number of scatter gather lists to the OS from the firmware.
- Added Windows system event logging for failures during the Windows driver initialization besides firmware panic conditions.
- Fixed an issue where references to the controller name displayed inconsistently across all the tools.
- Fixed an issue where lower IOPS performance was seen in HBA 1000 products compared with Series 8 products. This was partially caused by the driver hard coding the QD to 32 for the SAS targets. With this change, the driver sets the QD per target based on the controller firmware's settings.
- Added SAS Dual Port Device support. Fixed an issue with SAS device exposure issue.
- Added support for issuing soft resets.

2.2.3.2 Linux/VMware/XenServer Driver Fixes

2.2.3.2.1 Fixes and Enhancements for Linux, VMware, and XenServer Driver Build 50663

This release provides the following Linux, VMware, and XenServer driver fixes and enhancements:

- Fixed the issue related to the co-existence of Series7/8 and Smart-family controllers.
- Added macros to log driver and function names to default print functions.
- Added Linux system (dmesg) logging for driver initialization failures.
- Fixed an issue in the driver logic to ensure expander device that were hot-added or removed are reported to the OS.
- Added support for Citrix XenServer 6.5.
- Fixed an issue when a PCI error was detected, an IOCTL command was sent to the firmware from the management software, causing undefined behavior on the management software side.
- Set queue depth value to the firmware reported drive queue depth value.
- Fixed an issue where SuSE 11 SP3 failed to detect the correct boot partition.
- Added support for RHEL 7.2, SLES 12 SP1.
- Fixed an issue where the RHEL 6.6 installer could only see part of the logical drive when the LD size was bigger than 2TB.
- Fixed an issue with Ubuntu 14.04.3 reporting the wrong LD size on a device greater than 2TB.
- Added support to send the correct maximum MSI-X count during EEH recovery.
- Added a check before freeing the PCI-consistent memory.

2.2.4 Management Software Fixes

2.2.4.1 Fixes and Enhancements for maxView Storage Manager/ARCCONF Version 2.01.00 Build 22270

This release provides the following fixes and enhancements:

- Added a new command to identify a device by blinking its LEDs.
- Added the ability to show SGPIO virtual SEP information to show enclosure devices for SGPIO backplanes.
- Added the ability to display physical drive mount point information.

2.3 Limitations

2.3.1 Firmware Limitations

2.3.1.1 Limitations for Firmware Release 1.54 Build 0

This release includes the following limitations:

- When setting SAN policy to OnlineAll, the new setting will NOT bring the drives already discovered online; it will only change the policy. Even a reboot will not change the offline state for drives that are already discovered. Instead, this will have to be done manually per drive using the disk manager. Newly discovered drives from the point of configuration forward will automatically be shown as online by default.

  Note:
  Most data centers deploy images with the SAN policy=OnlineALL as part of their images before they install new systems (if they do not plan to hook them up in a shared SAS topology).
- A drive failed during discovery is not visible to host configuration tools..
- LED update behavior inconsistent on products based on LSI SAS-2 expanders. Root cause to the expander ignoring valid LED update requests.

2.3.1.2 Limitations for Firmware Release 1.02 Build 0

This release includes the following limitations:

- Chenbro RM43260-6G JBOD and AIC expanders (e.g. AIC XJ3000-4693s) are not supported in this release.
- LED update behavior inconsistent on products based on LSI SAS-2 expanders. Root cause to the expander ignoring valid LED update requests.

2.3.2 BIOS/UEFI Limitations

2.3.2.1 Limitations for UEFI/Legacy BIOS Build 1.2.2.1107/1.2.2.1104

There are no known limitations for this release.

2.3.2.2 Limitations for UEFI/Legacy BIOS Build 1.2.0.1003

This release includes the following limitations.

- For CTRL-A and UEFI/HII:
  - Bay number-based sorting is not implemented. Drives will be sorted in phy order.
  - Drive identification operations are not supported in HBA mode.

2.3.3 Driver Limitations

2.3.3.1 Windows Driver Limitations

2.3.3.1.1 Limitations for Windows Driver Build 50666

This release includes the following limitation:

- When an OS is installed on drives that cause IO timeouts, the controller may not boot to the OS properly because it is unable to read data from the drives. This can lead to continuous IO retries from the OS that result in a system hang.
  WORKAROUND: Replace the drives with known operational drives.

2.3.3.1.2 Limitations for Windows Driver Build 50637

This release includes the following limitations:

- When an OS is installed on drives that cause IO timeouts, the controller may not boot to the OS properly because it is unable to read data from the drives. This can lead to continuous IO retries from the OS that result in a system hang.
  WORKAROUND: Replace the drives with known operational drives.

2.3.3.2 Linux Driver Limitations

2.3.3.2.1 Limitations for Linux Driver Build 50663

This release includes the following Linux limitations:

- Linux drivers hang on hot-plug of drives during I/O load.
- In SuSE 11, SP3 (and RHEL/CentOS 6.4) (32-bit and 64-bit), the inbox driver takes precedence over third-party drivers. As a result, the OS loads the inbox driver rather than installing from the out-of-box driver. (Note that RHEL/CentOS 6.4 is included in the release package as-is, without support.)
  WORKAROUND: The aacraid module must be added to the blacklist during installation for both 32- and 64-bit out-of-box drivers as follows:
  - For SuSE 11, SP3:
    1. Boot from the SuSE installation DVD.
    2. Add 'brokenmodules=aacraid dud=1' to the boot menu.
    3. Press the F6 key to update the driver during installation.

4. Insert the USB driver disk.
5. On the 'Welcome screen', press CTRL+ALT+F2 to switch to the console and then type the following commands:

```
# insmod ./update/000/modules/aacraid.ko
# rm -rf /etc/modprobe.d/blacklist /etc/modprobe.d/noload
```

6. Press CTRL+ALT+F7 to return to the installation screen and continue the installation.
7. When the installation is 60-90% complete, press CTRL+ALT+F2 to switch back to the console.
8. Type the command:

```
# cp -a /update/install /mnt/tmp
```

9. Press CTRL+ALT+F7 to return to the installation screen and complete the installation.

- For RHEL/CentOS 6.4:

1. Add "blacklist=aacraid linux dd" to the Boot menu.
2. When prompted to "Please choose the Driver Update medium", highlight the USB partition or CD Drive medium and then click OK.
3. On the Welcome screen, press CTRL+ALT+F2 to switch to the console.
4. Type this command:

```
Remove the entry "blacklist aacraid" from /etc/modprobe.d/anaconda.conf
modprobe aacraid
```

5. Press CTRL+ALT+F7 to return to the Welcome screen.
6. Complete the installation following the on-screen instructions

- SLES 10 SP4 installation hangs with the inbox driver. A fix will be available for a future release.

2.3.3.2.2 Limitations for Linux Driver Build 50639

This release includes the following limitations:

- The Linux OS may hang during boot if the BIOS for the HBA 1000 Series adapter has been loaded before an Microsemi Adaptec RAID controller (ARC) adapter (Series 6/7/8) in the same system.
  WORKAROUND: Swap the two controllers on the chassis to load the BIOS for the ARC product before the BIOS for the HBA 1000 Series adapter.
- The Linux OS does not boot if there are two or more ARC products in the system along with the HBA 1000 Series adapter.

2.3.3.3 VMware Driver Limitations

2.3.3.3.1 Limitations for VMware Driver Build 50663

There are no known limitations for this release.

2.3.3.3.2 Limitations for VMware Driver Build B50629

This release includes the following limitation:

- ESXi 6 installation fails with a PSOD when the HBA 1000 Series adapter and an Microsemi Adaptec Series 7 controller are present in the system.
  WORKAROUND: Swap the two controllers on the chassis to load the BIOS for the ARC product before the BIOS for the HBA 1000 Series adapter.

2.3.3.4 XenServer Limitations

2.3.3.4.1 Limitations for XenServer Driver Build 50633

This release includes the following Citrix XenServer limitation:

- XenServer 6.5 fails to install when using a USB drive for driver installation.
  WORKAROUND: To install the provided controller driver with Citrix XenServer, you must burn the XenServer driver iso image to a CD or DVD. You will be prompted to insert the XenServer driver CD/DVD twice. You will need the XenServer installation CD to complete this task. You must have administrator privileges to install the driver image.

2.3.3.5 General Limitations for Driver Build 50659

This release includes the following general limitation:

- The SAS address of drives cannot be retrieved using the "lsscsi -t" command.

2.3.4 Management Software Limitations

2.3.4.1 Limitations for maxView Storage Manager/ARCCONF Version 2.01.00 (22270)

Refer to the *README: maxView Storage Manager & ARCCONF Command Line Utility* for a full list of known issues applicable to Smart-Family products using the maxView Storage Manager and ARCCONF utilities.

2.3.4.2 Limitations for maxView Storage Manager/ARCCONF Version 2.00.00 (21811)

This release includes the following limitations specific to the HBA 1000 Series adapter:

- SES passthrough commands to expanders are failing.
- The Task ID of a secure erase changes in the maxView Storage Manager or the ARCCONF CLI while the task is in progress. There is no workaround for this because Smart-firmware-based products have no concept of task scheduling or task IDs.

Refer to the *README: maxView Storage Manager & ARCCONF Command Line Utility* for a full list of known issues applicable to Smart-Family products using the maxView Storage Manager and ARCCONF utilities.

3 Implementing a Host Application for a Bus Management Controller

As part of the firmware release package, Microsemi provides PBSI reference code for implementing a host application for a Bus Management Controller (BMC) to access details about this product and devices attached to it.

The reference files include examples of the commands shown in Table 3 • PBSI Commands.

Table 3 • PBSI Commands

Command	Description
get_adapter_handles	Displays the adapter handles
get_adapter_info	Displays the adapter information
get_version_info	Displays the PBSI and DST version information
get_adap_vital_stats	Displays the vital adapter information
get_gb_info	Displays the green backup unit information
get_topology_info	Displays the adapter topology information

To compile the PBSI application:

1. Get the appropriate I2C libraries.
2. Edit the host_interfacing.c file to use the platform-specific APIs.
3. Edit the makefile to use the appropriate toolchain for compilation.