Agilent M9502A and M9505A
AXIe Chassis
Firmware Revision

Firmware Update Guide
Safety Information

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings or operating instructions in the product manuals violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies assumes no liability for the customer’s failure to comply with these requirements.

General

Do not use this product in any manner not specified by the manufacturer. The protective features of this product must not be impaired if it is used in a manner specified in the operation instructions.

Before Applying Power

Verify that all safety precautions are taken. Make all connections to the module before applying power. Note the instrument’s external markings described under “Safety Symbols”.

Ground the Chassis

Agilent chassis are provided with a grounding-type power plug. The instrument chassis and cover must be connected to an electrical ground to minimize shock hazard. The ground pin must be firmly connected to an electrical ground (safety ground) terminal at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal will cause a potential shock hazard that could result in personal injury.

Do Not Operate in an Explosive Atmosphere

Do not operate the Agilent module/chassis in the presence of flammable gases or fumes.

Do Not Operate Near Flammable Liquids

Do not operate the Agilent module/chassis in the presence of flammable liquids or near containers of such liquids.

Cleaning

Clean the outside of the Agilent module, chassis, or accessory with a soft, lint-free, slightly dampened cloth. Do not use detergent or chemical solvents.

Keep away from live circuits

Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers and shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.

DO NOT operate damaged equipment

Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to an Agilent Technologies Sales and Service Office for service and repair to ensure the safety features are maintained.

Do Not Modify the Instrument

Do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Agilent Sales and Service Office to ensure that safety features are maintained.

In Case of Damage

Instruments that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

CAUTION

A CAUTION notice denotes a hazard. It calls attention to an operating procedure or practice that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure or practice, that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.
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Introduction

This document describes the procedure to update the chassis firmware on M9502A 2-Slot and M9505A 5-Slot AXIe chassis, which includes the Embedded Systems Module (ESM) and chassis backplane.

This document does not describe methods or procedures to update AXIe instrument modules. Refer to the instrument module documentation for details.

The firmware on the AXIe chassis is made up of several subsystem components. There are components located on the Embedded System Module (ESM) and components on the chassis backplane. During the update process, each of the target components in the chassis is checked against the candidate component in the package. When a component does not match, the target component is updated with the candidate revision.

The chassis shelf manager module handles this update process and is physically located on the ESM. The shelf manager is a LAN device, so LAN connectivity is required to perform the update. LAN connectivity to the shelf is available through the PCIe fabric connection using a network adapter (NIC) located on the ESM. Additionally, LAN connectivity may be made directly to the chassis LAN fabric with the RJ-45 connector on the ESM front panel.

The interface connection between the host PC and the chassis may be either by PCIe x8 cable or by LAN cable. If the chassis you are updating is already installed in a system and operating correctly, you do not need to change the interface connection. If you will connect the chassis to a different PC for the purpose of updating the firmware, a LAN connection between the host PC and the chassis is perhaps the easiest to configure. See the figure below.
Overview of the steps involved

Updating the chassis firmware requires anonymous access to an FTP server from the chassis and a complete update package. The update process runs a temporary FTP server on your host PC but completely removes it when the update is finished. During the update, instrument modules may be deactivated (put in Standby mode). When the update completes, the chassis must be power cycled. These following steps are fully described in this guide:

**Step 1** Connect to the AXIe chassis’ web interface page.

Access the AXIe chassis web pages to confirm connectivity and determine the chassis firmware version. If your host PC already has an established connection (either LAN or PCIe) then you can use that connection. Otherwise, if you will connect the chassis to a different host PC for the purpose of updating the firmware, then a LAN connection between the host PC and the chassis is perhaps the easiest to configure. Agilent’s Connection Expert (part of IO Libraries Suite) may be needed to find the page.

**NOTE** You may need to disable the Windows firewall on your host PC.

**Step 2** Locate and install the latest firmware update package.

Download the AXIeChassisUpdate.zip file to your host PC. As a general rule, c:tmp is a good location for the .zip file. Unzip the package to your PC. This must be the same PC that has Agilent Connection Expert installed and communicates with the chassis.

**Step 3** From Microsoft Windows Explorer, run the **chassisUpdater.exe** application. This runs a temporary FTP server on the host PC. This server is removed when the firmware update is complete.

Follow the instructions from the chassisUpdate.exe application. When the application finishes, then the chassis is finished updating. Close the chassisUpdate.exe window.

**Step 4** From the AXIe chassis web page run **Chassis Firmware Update**. This step actually installs the update. Follow the instructions on the screen.
Revision string numbering format

The chassis firmware revision string is organized in the following format:

\(<Chassis Class>\.<Firmware Version>-<Chassis Component>-<Acomponent>[.-<Bcomponent>]...\)

Where:

\(<Chassis Class>\) is either

- **F2AX**: Identifies an M9502A 2 slot AXIe chassis
- **F5AX**: Identifies an M9505A 5 slot AXIe chassis
- **F2A**: Identifies an older AMP 2 slot style chassis (which is not supported by this update procedure.)

\(<Firmware Version>\) is structured as: \(<major>\.<minor>\.<build>\)

- **<major>**: Identifies the major release number.
- **<minor>**: Identifies the minor release number.
- **<build>**: Identifies a build number.

\(<Chassis Component>\) is a four digit number, \(<xxxx>\)

Where \(<xxxx>\) is a hexadecimal value identifying the backplane firmware revision.

\(<Acomponent>, <Bcomponent>\) is A<xxxx>, B<xxxx>, ...

Where <xxxx> is a hexadecimal value for the specific firmware component. The actual content of these components is for Agilent internal use only.

A firmware revision example:

**F2AX-1.3.37-0107-A002e-B12062214-CA1.0-DA1.0-E1.3**

This example identifies an M9502A AXIe 2 slot chassis using chassis firmware revision 1.3.37. The backplane revision number is 0107. Component A is at revision 002e, component CA is at revision 1.0, component DA is at 1.0, and component E is at 1.3. The actual content of these components is for Agilent internal use only.

**NOTE**

The chassis firmware consists of two components, one on the ESM and the other on the chassis backplane. While it is possible to move an ESM from one chassis to another, the revision of the target chassis backplane may not be at the same revision level installed on the ESM. When replacing an ESM, always update the chassis firmware. View the chassis firmware revision string after relocation to verify that the complete version string is current. If it is not up-to-date, run through the firmware update process.
Step 1. Connect to the AXIe chassis’ web interface page

Run Agilent’s Connection Expert. This program is part of the Agilent IO Libraries Suite. Connecting to the chassis’ web interface is the best way to identify the firmware revision currently installed in your AXIe chassis. If your AXIe chassis is already visible in the center pane of Connection Expert, then proceed to Step 2. Otherwise use one of the following two methods to connect to the chassis and it’s web page.

![Identify the AXIe Chassis in Agilent Connection Expert](image)

**Figure 1** Identify the AXIe Chassis in Agilent Connection Expert

The following pages present two methods to find the chassis firmware revision currently used in your AXIe chassis. Compare that revision with the latest revision available on the web to determine whether the chassis needs an update. In general, you should always use the latest firmware revision.

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**NOTE**

If you do not already have Agilent IO Libraries Suite, you can download the latest version at:

[www.agilent.com/find/iosuite](http://www.agilent.com/find/iosuite)
Step 1. Connect to the AXIe chassis’ web interface page

Method 1. How to find the firmware revision with Agilent Connection Expert

This is the preferred method if your AXIe chassis connects to the host PC via a LAN connection. The AXIe chassis must be powered on. Open Agilent Connection Expert from either the system icon tray or from the programs menu. Select the Add Instrument button and then choose Add LAN instrument on LAN and select OK as shown below.

![Agilent Connection Expert Add LAN Instrument](image)

Figure 2  Agilent Connection Expert Add LAN Instrument
Select the chassis and click the **OK** button (shown in **Figure 3**). Notice the web page button to directly open the chassis home page. There are other search options besides Auto Find which may be used as an alternative.

**NOTE**

If multiple LAN instruments appear in the instrument list, then you can shorten the list by using the “**Search this page for**” field. Enter either M9502A or M9505A and click the search button.

**Figure 3**  Agilent Connection Expert Auto Find
Step 1. Connect to the AXIe chassis’ web interface page

The chassis is added to the Instrument I/O tree. The chassis firmware version string is highlighted in Figure 4. Additionally there is a button that accesses the chassis web home page.

![AXIe Chassis Web Page](image)

**Figure 4** AXIe Chassis Web Page

**NOTE** In Figure 4 above, the IDN string and firmware revision numbers are not displayed when the chassis connects to the host PC via the PCIe link.
Method 2. How to find the firmware revision on the chassis web page

On the host PC, open a Windows Internet Explorer window and enter the IP address of the chassis. If the chassis configures with zero-config addressing and there is only one chassis connected to the PC, use 169.254.1.0.

![AXIe Chassis Web Interface Page](image)

**Figure 5** AXIe Chassis Web Interface Page

Older chassis firmware versions had the chassis firmware version number under the Advanced Information drop down.

**NOTE**

Annunciate the chassis

If you are unsure of the chassis you are connected to, the chassis web interface home page provides a link that flashes the green **STATUS** indicator on the ESM front panel. Click “**Turn on Front Panel Identification Indicator**” link to blink the status light. Click the link again to stop the flashing.
Step 2. Locate and install the latest firmware update package

To get the latest AXIe chassis firmware update, go to:

www.agilent.com/find/M9502A

or

www.agilent.com/find/M9505A

In the right side of the page, click on Technical Support (under Support Center) followed by the Drivers, Firmware & Software tab. Click on the Current AXIe Chassis Firmware link. This page provides a summary of the steps (described in this guide) used to update the AXIe chassis firmware.

Scroll down to the bottom of this page. Under the Current Version tab:

Click on the AXIe Chassis Firmware Revision History. This page provides a complete firmware revision history for the AXIe Chassis.

or

Click on the Download button. Download this file to your PC; the c:\tmp folder is suitable. Unzip the package. The file is a self extracting .zip file.

NOTE

The PC that you install the AXIe Chassis Firmware x_x_x.zip file on must also have Agilent IO Libraries Suite (with Connection Expert) and be able to communicate with the AXIe chassis.
Step 3. From Microsoft Windows Explorer, run chassisUpdater.exe

Locate and run the `chassisUpdater.exe` file.

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**NOTE**

A Windows Security Alert screen similar to the following may appear:

If you see this screen:
- Check the **Private networks** check box
- Uncheck the **Public networks** check box
- Click the **Allow Access** button

The `chassisUpdater.exe` opens a command window as shown in Figure 6.
Step 3. From Microsoft Windows Explorer, run `chassisUpdater.exe` 

Once the `chassisUpdater.exe` utility connects to the AXIe chassis (step c, page 15), it will continue to update. However, you may close this window at any time.

![Figure 6  chassisUpdater.exe command window](image)

NOTE

Only one instance of this application should be run at any one time.
Step 4. From Chassis Web Page Run the Chassis Firmware Update

If the AXIe chassis web page is not already open, then open the chassis web Home page. For instructions on how to open the page and confirm communication with the AXIe chassis, refer to “Method 1. How to find the firmware revision with Agilent Connection Expert” on page 5.

Figure 7 shows the AXIe Chassis Web Home page. From the Home page, select the Chassis Health page (red heart on the left menu).
Step 4. From Chassis Web Page Run the Chassis Firmware Update

Figure 8 shows the AXIe chassis Health page. At the bottom of the Health page, select “Open the chassis firmware update page”.

Figure 8  AXIe Chassis Health Page
Step 4. From Chassis Web Page Run the Chassis Firmware Update

b. This opens the Update Chassis Firmware page as shown in Figure 9. Click on the “Locate Package” button. The chassis will attempt to locate the firmware update package.

The phrase, “Locating Package...” appears in the Messages box.

CAUTION
The chassisUpdater.exe file creates a temporary FTP server. Do not change any of the values in the FTP Site or Source Directory fields. The default values establish a location whose root is the directory where the installer is located.

NOTE
If the message “WARNING: Cannot ping server xxx.xxx.xxx.xxx” appears, do the following:

- Wait at least 1 minute while the upgrade utility attempts to connect.
- Verify from the chassisUpdater.exe that the IP address listed there and on the form above (click Advanced button) match.
- Disable firewall on the host.
Step 4. From Chassis Web Page Run the Chassis Firmware Update

c. After a few moments, when the utility locates the firmware update package, the page automatically refreshes and provides a choice of installation options (see Figure 10). Note that you may need to scroll to the bottom of the page.

Figure 10 Update Chassis Firmware page (with installation options)

There are three installation options with radio buttons on the right side of the page; “Typical Install” is checked.

- In a **Typical Install**, the program checks each firmware component against the update package, and updates only those components which are earlier versions.
- If you check **Inspect and Review**, the program advises you of firmware components which can be updated, but will not perform updates.
- If you check **Force Complete Update**, the program replaces all firmware components with the update package versions.

d. Click the **Install Package** button. The installer begins updating the chassis firmware.
Step 4. From Chassis Web Page Run the Chassis Firmware Update

e. The installer opens a Status Update window (Figure 11) allowing you to monitor progress. This screen updates periodically indicating progress.

Figure 11  AXIe Chassis Firmware Update Progress Monitor (final screen shown, yours may be different)

NOTE An update may take up to 60 minutes depending on the type of components requiring an update. During this time, instrument modules installed in the chassis are deactivated to the ATCA service state to reduce power consumption and are unavailable for applications. The chassis fan speed may change during the update as well. Following the update, cycle chassis power to complete the installation.
f. Follow the instructions in the Status Update window. When the program is complete and you are directed to do so, cycle power to the chassis. Re-establish communication through the web interface, and verify the new firmware version on the chassis’ web interface.

<table>
<thead>
<tr>
<th>NOTE</th>
<th>External host PC with PCIe connection to chassis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you are using an external host PC with a PCIe connection to the AXIe chassis, at the end of the firmware update process when you are instructed to cycle power on the AXIe chassis, you <strong>must</strong> shut down the host PC before powering off the chassis.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTE</th>
<th>External host PC with LAN connection to chassis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you are using an external host PC with a LAN connection to the AXIe chassis, at the end of the firmware update process when you are instructed to cycle power on the AXIe chassis, only the chassis needs to be shut down. You do not need to shut down the host PC but you may need to restart Agilent Connection Expert.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NOTE</th>
<th>M9536A Embedded Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If you are using an installed M9536A Embedded AXIe Controller, at the end of the firmware update process when you are instructed to cycle power on the AXIe chassis, you must shut down the controller (shut down Microsoft Windows) before powering off the chassis.</td>
</tr>
</tbody>
</table>

g. After the update is complete, remove temporary files and applications used during this installation. Close unneeded Internet Explorer windows.
Appendix A

Example windows device manager PCIe enumeration of an AXIe chassis

Figure 12 shows a sample enumeration of an M9502A AXIe 2-slot chassis ESM attached to an HP Z400 workstation. There are seven PCI bridge connections identified on the ESM although only two are physically connected onto the chassis backplane. In the figure no module cards are plugged into the chassis. The network adapter on the ESM is identified at device entry #3.

![Figure 12](image)

ESM JTag switch settings

The JTag switch settings allow programming of the EEPROMs on the ESM by either the shelf manager or through an external cable. These settings are properly set at the factory. In the event of a device programming error, the firmware status window may direct you to verify these switch settings. Refer to the ESM module model number (right side of the ESM front panel). The M9505-00130 ESM uses the two device switch setting. The M9505-00230 ESM uses the four device switch setting. Refer to Table 1 for the correct switch settings.
### Table 1  DIP Switch Setting Table

<table>
<thead>
<tr>
<th></th>
<th>External JTAG port</th>
<th>Shelf manager JTAG port (default)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2-device chain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW1.1 ON</td>
<td>SW1.1 OFF</td>
<td></td>
</tr>
<tr>
<td>SW1.2 ON</td>
<td>SW1.2 OFF</td>
<td></td>
</tr>
<tr>
<td>SW1.3 OFF</td>
<td>SW1.3 ON</td>
<td></td>
</tr>
<tr>
<td>SW1.4 OFF</td>
<td>SW1.4 ON</td>
<td></td>
</tr>
<tr>
<td>SW2.1 ON</td>
<td>SW2.1 ON</td>
<td></td>
</tr>
<tr>
<td>SW2.1 OFF</td>
<td>SW2.1 ON</td>
<td></td>
</tr>
<tr>
<td>SW 2.3 OFF</td>
<td>SW2.3 OFF</td>
<td></td>
</tr>
<tr>
<td><strong>4-device chain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW1.1 ON</td>
<td>SW1.1 OFF</td>
<td></td>
</tr>
<tr>
<td>SW1.2 ON</td>
<td>SW1.2 OFF</td>
<td></td>
</tr>
<tr>
<td>SW1.3 OFF</td>
<td>SW1.3 ON</td>
<td></td>
</tr>
<tr>
<td>SW1.4 OFF</td>
<td>SW1.4 ON</td>
<td></td>
</tr>
<tr>
<td>SW2.1 OFF</td>
<td>SW2.1 OFF</td>
<td></td>
</tr>
<tr>
<td>SW2.1 ON</td>
<td>SW2.1 OFF</td>
<td></td>
</tr>
<tr>
<td>SW 2.3 ON</td>
<td>SW2.3 ON</td>
<td></td>
</tr>
</tbody>
</table>

The location of the switches on the ESM is shown in **Figure 13**

![ESM Switch Locations](image.png)

**Figure 13**  ESM Switch Locations