

Firmware
Revision Guide

Keysight AXIe M9502A 2-Slot and M9505A 5-Slot Chassis



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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 include 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. Some components are located on the Embedded System Module (ESM) and other 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 a remote 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 host PC for the purpose of updating the firmware, a LAN connection between the host PC and the chassis is perhaps the easiest to configure. You can also use an embedded controller which is functionally similar to a PCIe link. See the graphic below.

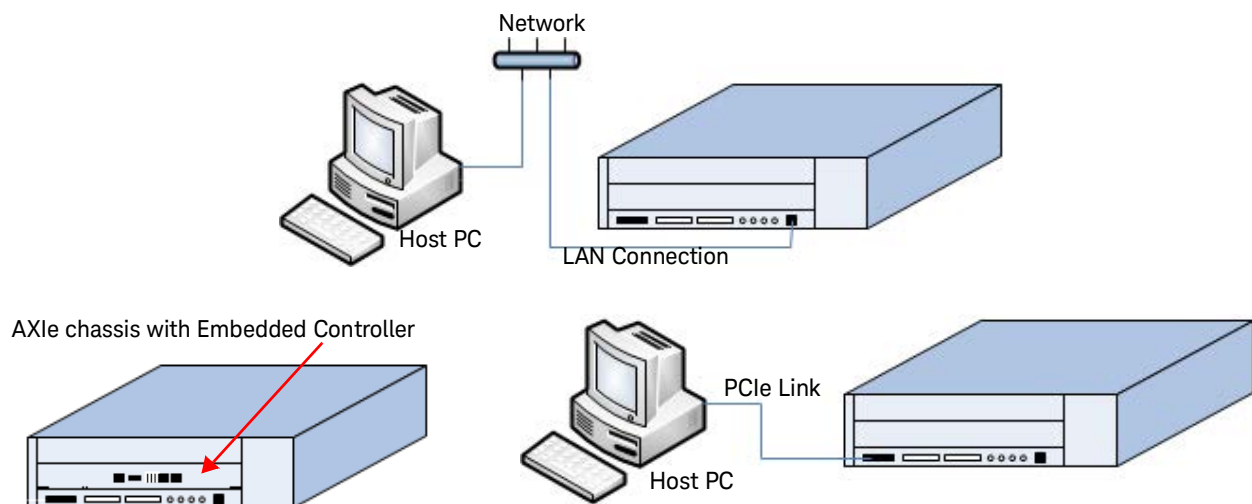


Figure 1 Connection between Host PC and Chassis – either LAN, direct PCIe, or AXIe Controller

NOTE

An update may take several 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.

NOTE

The M9537A AXIe Chassis Embedded Controller requires firmware version 1.3.42 or later.

FTP Server

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.

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 fan 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 Keysight 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 Keysight 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 Keysight's Connection Expert. This program is part of the Keysight IO Libraries Suite.

NOTE

Download the latest version of Keysight IO Libraries Suite at: www.keysight.com/find/iosuite

LAN Connection: Use the **Instruments** tab in Connection Expert to see all accessible AXIe chassis. Click on the chassis you want to update.

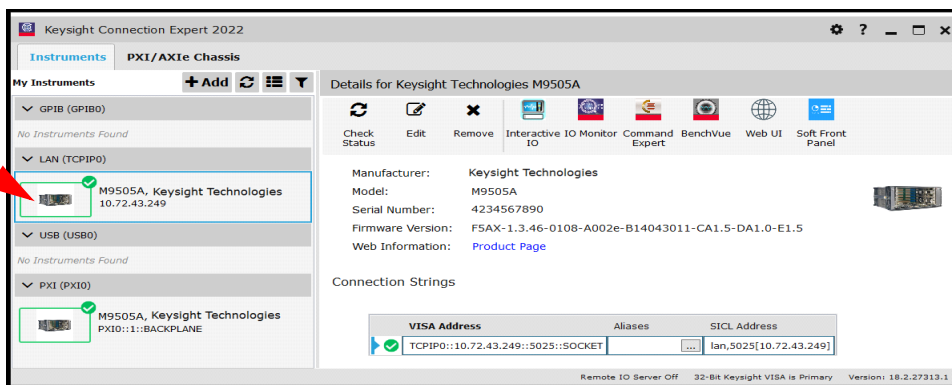


Figure 2 In Keysight Connection Expert, Select the AXIe chassis

Direct PCIe Connection or Embedded Controller: Locate the chassis then select **Chassis Content** in the **PXI/AXIe Chassis** tab. Select the chassis you want to update.

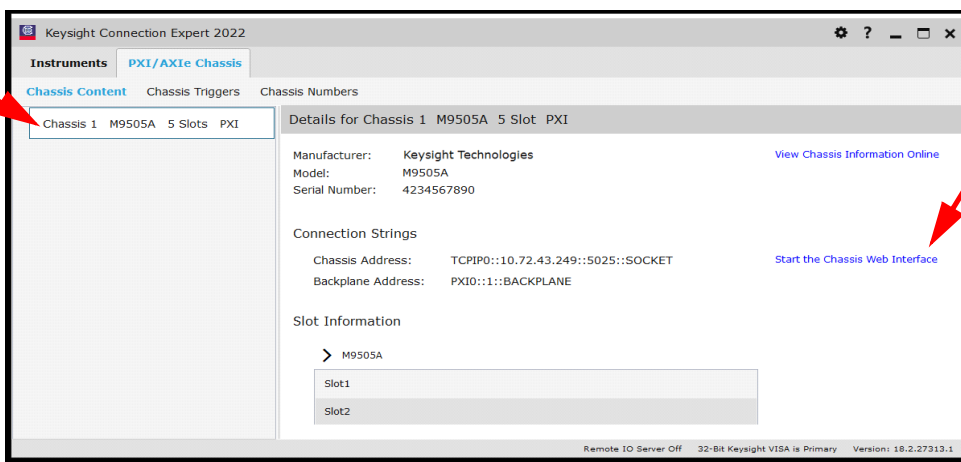


Figure 3 Identify the AXIe Chassis in Keysight Connection Expert

Step 1. Connect to the AXIe Chassis Web Interface Page

Identify 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.

Start the Chassis Web Interface

Once you have selected your chassis, click **Start Chassis Web Interface** (see [Figure 2](#) and [Figure 3](#)) The chassis firmware number is displayed on the chassis' web page (see [Figure 4](#) below)

KEYSIGHT TECHNOLOGIES M9502A AXIe 2 Slot Chassis
Serial number: ZZ12340001

Home Module Configuration Fan Control E-keying Configure LAN Health Trigger Firmware Update ?

Connected to AXIe M9502A chassis
at IP address 169.254.1.0

Turn On Front Panel Identification Indicator

Description	
Model number	M9502A
Manufacturer	Keysight Technologies
Serial number	ZZ12340001
Firmware revision	F2AX-1.3.45-0108-A002e-B14043011-CA1.1-DA1.0-E1.5
Description	M9502A AXIe 2 Slot Chassis
Host ID	PCSERNO_LK42477582
License Option	Full Range

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Figure 4 AXIe Chassis Web Interface Page

Step 2. Locate and Download the Latest Firmware Update Package

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

www.keysight.com/find/M9502A

or

www.keysight.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.

Step 3. Disable the Windows Firewall

Disable the Windows Firewall, so that when the FTP server runs it can be accessed over the LAN. Once you are done with the upgrade, set the Windows Firewall back to how you had it. Open the Windows Control Panel and then click on Windows Firewall. The Firewall control in Windows Embedded Standard 7 is shown in the graphics below. If you have a different OS, it may look different.

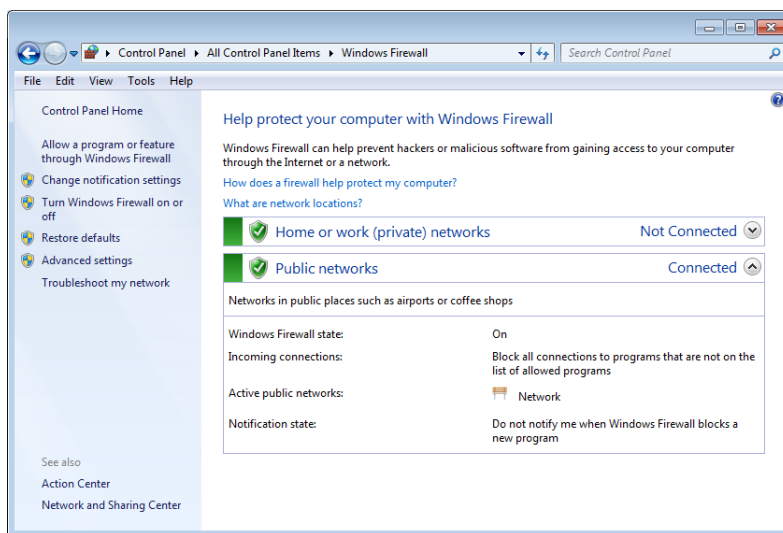


Figure 5 Windows Embedded Standard 7 Firewall Dialog Box for

Click on “Turn Windows Firewall On or Off”; the new window will look like **Figure 6** below. Now select the Off setting and click OK.

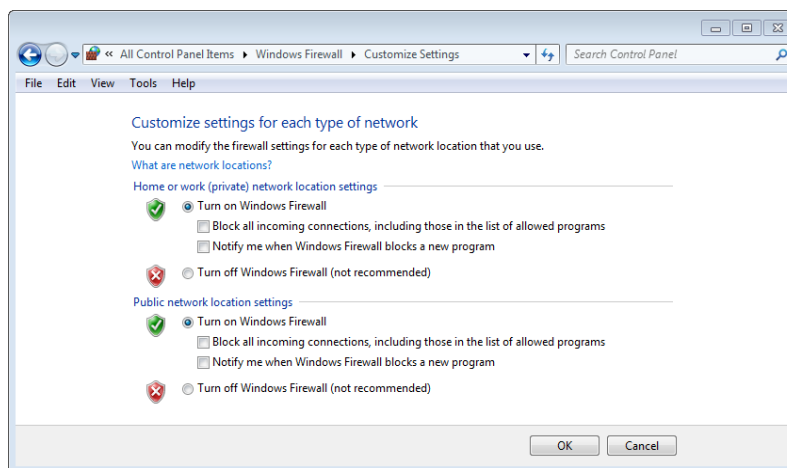


Figure 6 Turn Windows Firewall Off

Step 4. From Microsoft Windows Explorer, Run chassisUpdater.exe

Locate the **chassisUpdater.exe** file in Windows Explorer. This file should be in the **c:\tmp** folder that you unzipped in “**Step 2. Locate and Download the Latest Firmware Update Package**” on page 6. Run the **chassisUpdater.exe** file by double clicking it. The **chassisUpdater.exe** opens a command window as shown in Figure 7.

```
C:\Temp\AXIeChassisUpdate1_3_32\chassisUpdater.exe
chassisUpdater, 1.0.5, 2011-06-21
Using 'C:\Temp\AXIeChassisUpdate1_3_32' as ftp root directory
chassisUpdater accepting connections on ip addresses:
148.5.250.161
169.254.178.90

(NOTE) Only one instance of this tool may be run to update one chassis.
at a time.

Chassis Update Instructions:
1. Open the chassis home page using either of the following methods:
  a. Open using Agilent Connection Expert, select the chassis
     model under the LAN instrument I/O tree, and click
     `Instrument Web Interface`.
  b. Or, open an Internet Explorer window and enter the chassis
     ip address or hostname directly, such as http://169.254.1.0
2. From the chassis home page, navigate to the health page (heart symbol) and
   click on the `Open the Chassis Firmware Update page` link.
3. On the update page, click `Locate Package`. (Note: the IP address on the
   form should be same as one of the listed addresses above.)
4. Select `Install`. This action launches a chassis update status page, which
   provides progress information.
5. When the update status page instructs to power cycle the chassis, please
   close the chassisUpdater tool (this window).

More information may be found in the chassis users's guide.

Waiting for the chassis to connect...
```

Figure 7 chassisUpdater.exe command window

Leave this window open.

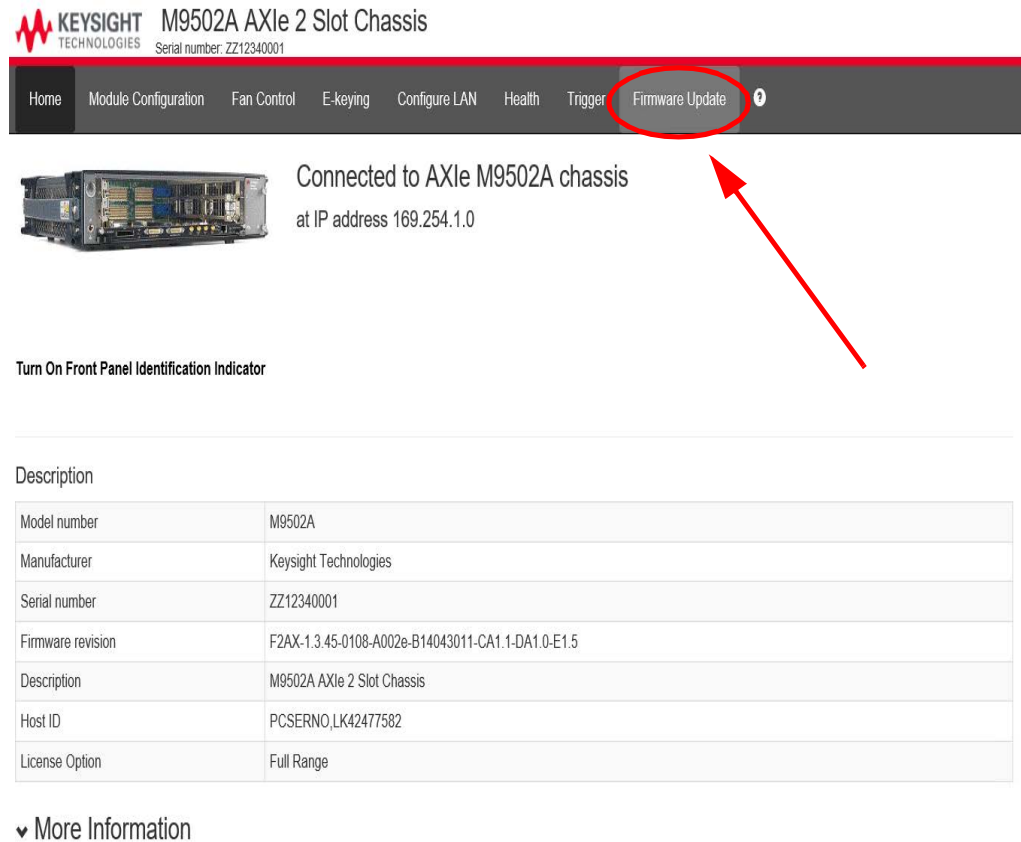
NOTE

Only one instance of this application should be run at any one time.

Step 5. From Chassis Web Page, Run the Chassis Firmware Update

Step 5. From Chassis Web Page, Run the Chassis Firmware Update

Figure 8 shows the AXIe Chassis Web Home page. From the Home page, select the “Firmware Update” tab.



KEYSIGHT TECHNOLOGIES M9502A AXIe 2 Slot Chassis
Serial number: ZZ12340001

Home Module Configuration Fan Control E-keying Configure LAN Health Trigger **Firmware Update** ⓘ

Connected to AXIe M9502A chassis
at IP address 169.254.1.0

Turn On Front Panel Identification Indicator

Description

Model number	M9502A
Manufacturer	Keysight Technologies
Serial number	ZZ12340001
Firmware revision	F2AX-1.3.45-0108-A002e-B14043011-CA1.1-DA1.0-E1.5
Description	M9502A AXIe 2 Slot Chassis
Host ID	PCSERNO,LK42477582
License Option	Full Range

▼ More Information

Figure 8 AXIe Chassis Web Home Page

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

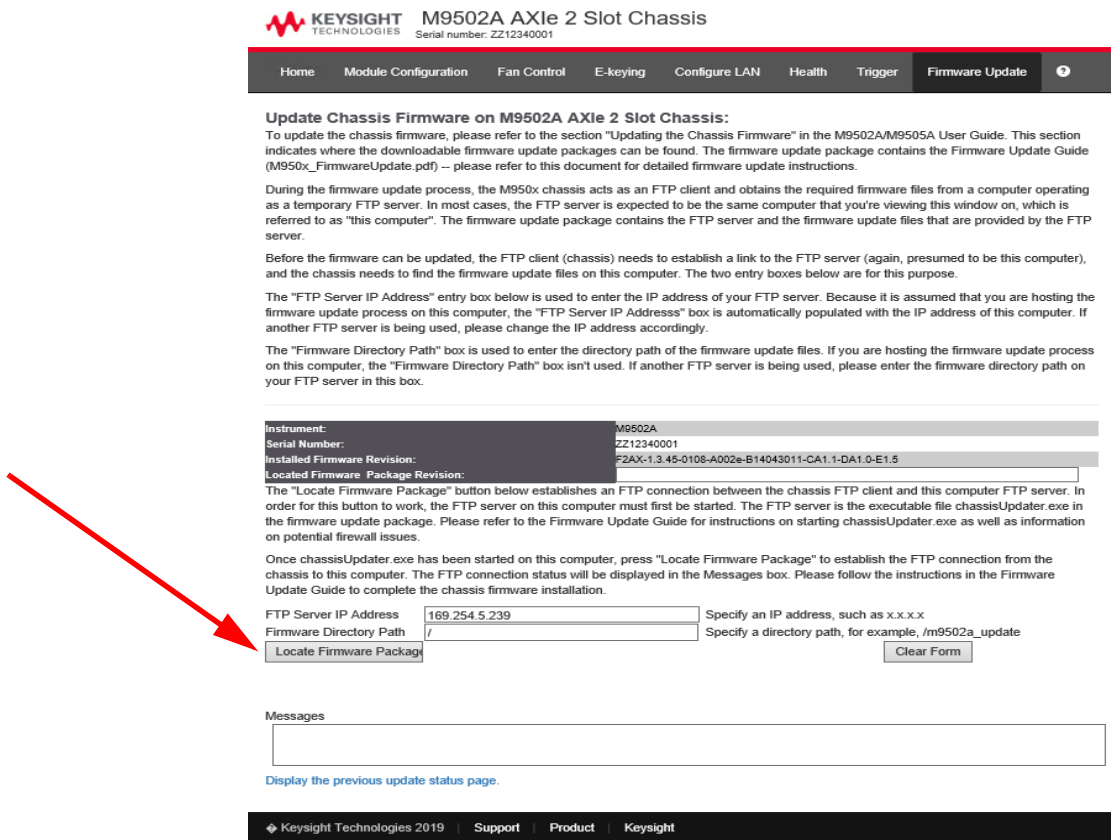


Figure 9 Update Chassis firmware Page

The phrase, “**Locating Package...**” appears in a messages box.

CAUTION The **chassisUpdater.exe** file creates a temporary FTP server. Do not change any of the values on this web page. The default values are correct.

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.
- Ensure the host firewall is disabled.

Step 5. From Chassis Web Page, Run the Chassis Firmware Update

- b 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.

Update Chassis Firmware on M9502A AXIe 2 Slot Chassis:

To update the chassis firmware, please refer to the section "Updating the Chassis Firmware" in the M9502A/M9505A User Guide. This section indicates where the downloadable firmware update packages can be found. The firmware update package contains the Firmware Update Guide (M950x_FirmwareUpdate.pdf) – please refer to this document for detailed firmware update instructions.

During the firmware update process, the M950x chassis acts as an FTP client and obtains the required firmware files from a computer operating as a temporary FTP server. In most cases, the FTP server is expected to be the same computer that you're viewing this window on, which is referred to as "this computer". The firmware update package contains the FTP server and the firmware update files that are provided by the FTP server.

Before the firmware can be updated, the FTP client (chassis) needs to establish a link to the FTP server (again, presumed to be this computer), and the chassis needs to find the firmware update files on this computer. The two entry boxes below are for this purpose.

The "FTP Server IP Address" entry box below is used to enter the IP address of your FTP server. Because it is assumed that you are hosting the firmware update process on this computer, the "FTP Server IP Address" box is automatically populated with the IP address of this computer. If another FTP server is being used, please change the IP address accordingly.

The "Firmware Directory Path" box is used to enter the directory path of the firmware update files. If you are hosting the firmware update process on this computer, the "Firmware Directory Path" box isn't used. If another FTP server is being used, please enter the firmware directory path on your FTP server in this box.

Instrument:	M9502A
Serial Number:	ZZ12340001
Installed Firmware Revision:	F2AX-1.3.45-0108-A002e-B14043011-CA1.1-DA1.0-E1.5
Located Firmware Package Revision:	F2AX-1.3.45-0108-A002e-B14043011-CA1.1-DA1.0-E1.4

The "Locate Firmware Package" button below establishes an FTP connection between the chassis FTP client and this computer FTP server. In order for this button to work, the FTP server on this computer must first be started. The FTP server is the executable file chassisUpdater.exe in the firmware update package. Please refer to the Firmware Update Guide for instructions on starting chassisUpdater.exe as well as information on potential firewall issues.

Once chassisUpdater.exe has been started on this computer, press "Locate Firmware Package" to establish the FTP connection from the chassis to this computer. The FTP connection status will be displayed in the Messages box. Please follow the instructions in the Firmware Update Guide to complete the chassis firmware installation.

FTP Server IP Address Specify an IP address, such as x.x.x.x

Firmware Directory Path Specify a directory path, for example, /m9502a_update

Typical Install Preview Force complete update

Messages

WARNING: Cannot ping server 169.254.5.239.

[Display the previous update status page.](#)

Figure 10 Update Chassis Firmware page (with installation options)

NOTE

If this screen does not appear, you may have pop-ups blocked on your host. Also, try a different browser or different host PC.

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.
- c** Click the **Install Package** button. The installer begins updating the chassis firmware.
 - d** The installer opens a Status Update window ([Figure 11](#)) allowing you to monitor progress. This screen updates periodically indicating progress.

Step 5. From Chassis Web Page, Run the Chassis Firmware Update

```
Determining chassis class and type...
Chassis Details:
Product: M9502A
SN: TW51330309
Revision before update: F2AX-1.3.23-0107-A002e-CA1.0-DA1.0-E1.3
Normal installation. Only components that differ from package will be updated.
Installation time will take between 5 and 30 minutes depending on components affected.
Chassis: Action: check_version
Chassis: update required : (target 0107) != (package 0108)
ATB: Action: check_version
ATB: version up-to-date: 0x002e
ESM Connectivity: Action: check_version
ESM Connectivity: PXIe EEPROM Chksum: 0x00008298 != Expected Chksum: 0x0000829a
E-key Configuration: Action: check_version
Starting Shelf Manager...
Shelf Manager Started.
E-key Configuration: version up-to-date
OS: Action: check_version
OS: update required : (target 1.3.23) != (package 1.3.32)
Chassis: Action: verify_package
Chassis: package verified and ready to install.
Chassis: Action: install
Chassis: package verified and ready to install.
Chassis: : Upgrading chassis firmware
Chassis: Install step will take approximately 5 minutes...
Chassis: : Verify chassis firmware
Chassis: : Adjusting fan speed for fan: c0
Chassis: install successful to F2AX.0108
ESM Connectivity: Action: verify_package
Starting Shelf Manager...
Shelf Manager Started.
ESM Connectivity: Action: install
ESM Connectivity: :
ESM Connectivity: Install step may take up to a few minutes...
Stopping Shelf Manager...
Deactivating slot 2
Shelf Manager stopped.
ESM Connectivity: Updating IDT EEPROM...
ESM Connectivity: Updating PXIe Configuration...
ESM Connectivity upgrades succeeded.
Starting Shelf Manager...
Shelf Manager Started.
OS: Action: verify_package
OS: package verified and ready to install.
OS: Action: install
OS: package verified and ready to install.
Preparing Environment
OS: Install step will take approximately 5 minutes...
OS firmware upgrade succeeded.
Rebooting firmware...
OS: Upgrade Succeeded
Please cycle chassis power by depressing blue power button.
Revision Status: F2AX-1.3.32-0108-A002e-CA1.0-DA1.0-E1.4

Close Status Window Refresh

Note: This window will refresh in 60 seconds. During a firmware reboot this window may
disconnect with the chassis. Select the window refresh key or press function key 'F5' to refresh
this window if such an event occurs
```

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

NOTE

An update may take several 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.

- e 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.

NOTE

Applies to: External host PC with PCIe connection to chassis

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 must shut down the host PC before powering off the chassis.

NOTE

Applies to: External host PC with LAN connection to chassis

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 Keysight Connection Expert.

NOTE

Applies to: M9536A and M9537A Embedded Controller

If you are using an installed M9536A or M9537A 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.

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



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