

Agilent M9502A and M9505A AXIe Chassis Firmware Revision



Firmware Update Guide



Agilent Technologies

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Manual Part Number

M9502-90011

Edition

Fourth Edition. April 2014

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Introduction

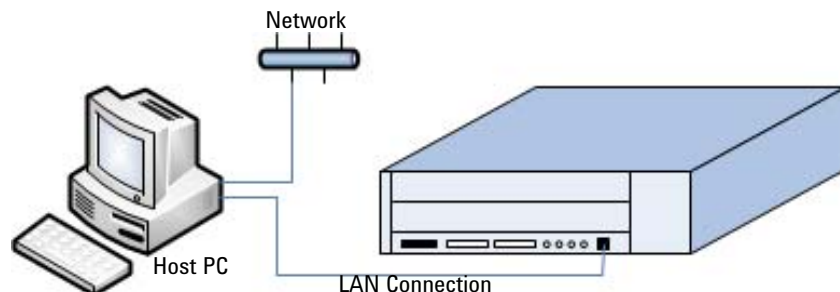
This document describes the procedure to update the chassis firmware on M9502A 2-Slot and M9505A 5-Slot AXIe chassis, which includes the Embedded Systems Module (ESM) and chassis backplane.

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.



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.

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 connections. 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 fire wall 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 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 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.

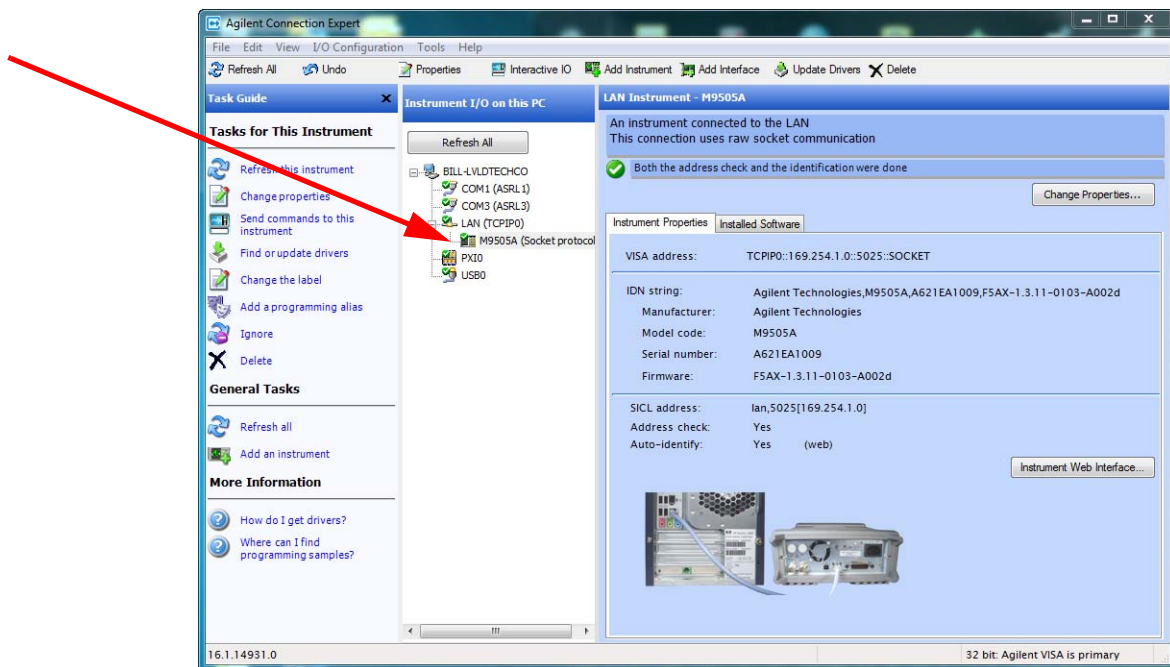


Figure 1 Identify the AXIe Chassis in Agilent Connection Expert

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.

NOTE

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

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.

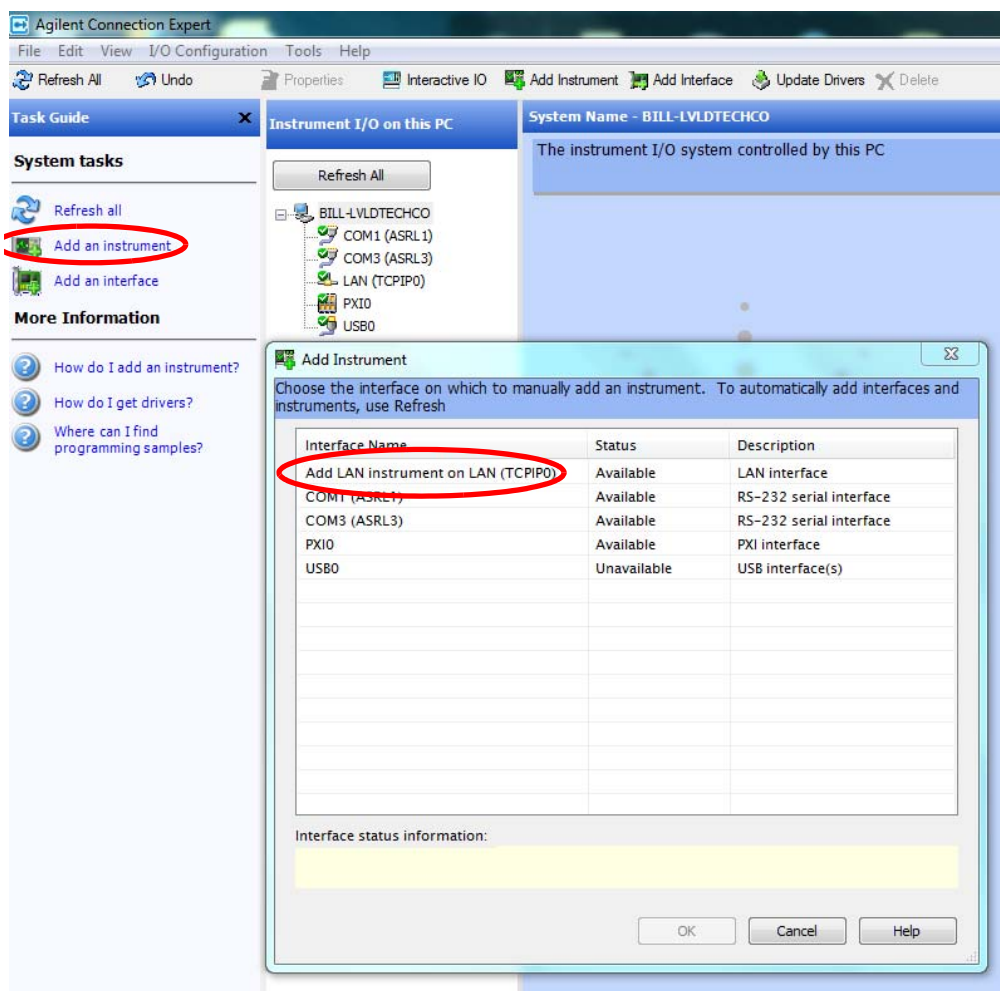


Figure 2 Agilent Connection Expert Add LAN Instrument

Step 1. Connect to the AXle chassis' web interface page

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.

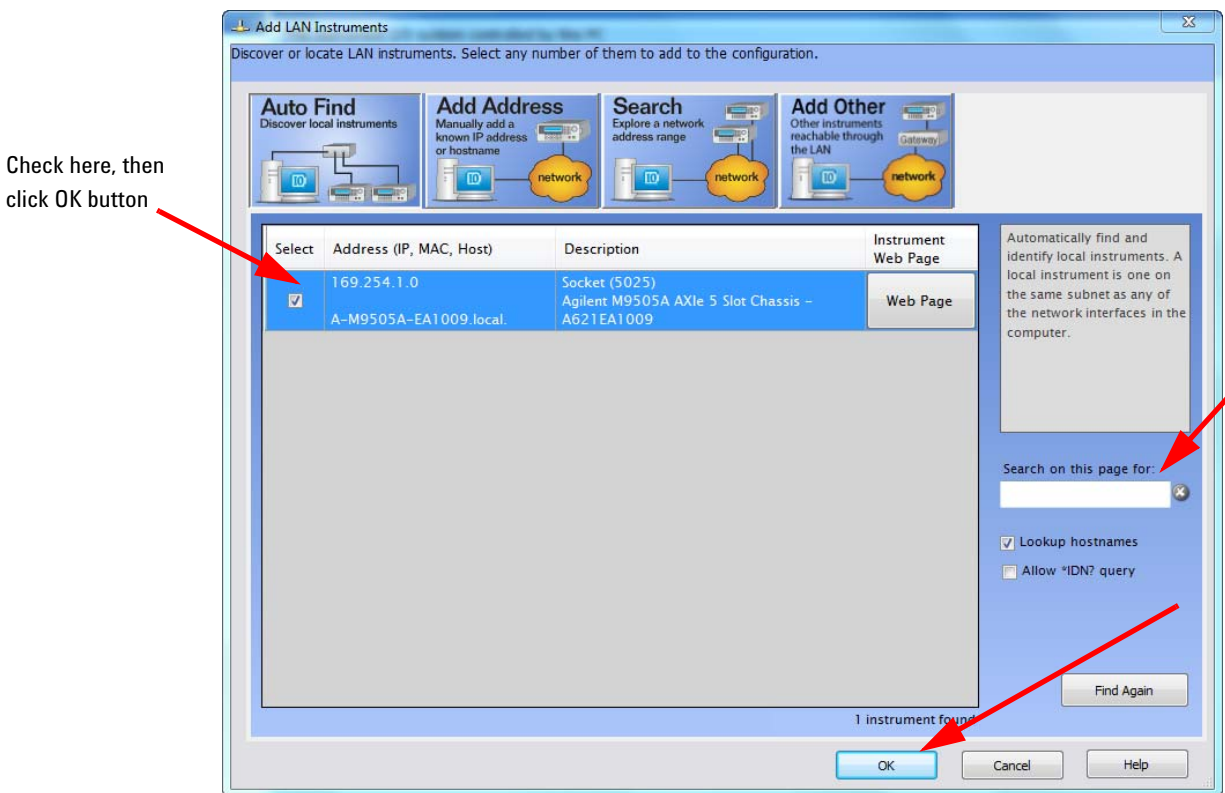


Figure 3 Agilent Connection Expert Auto Find

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.

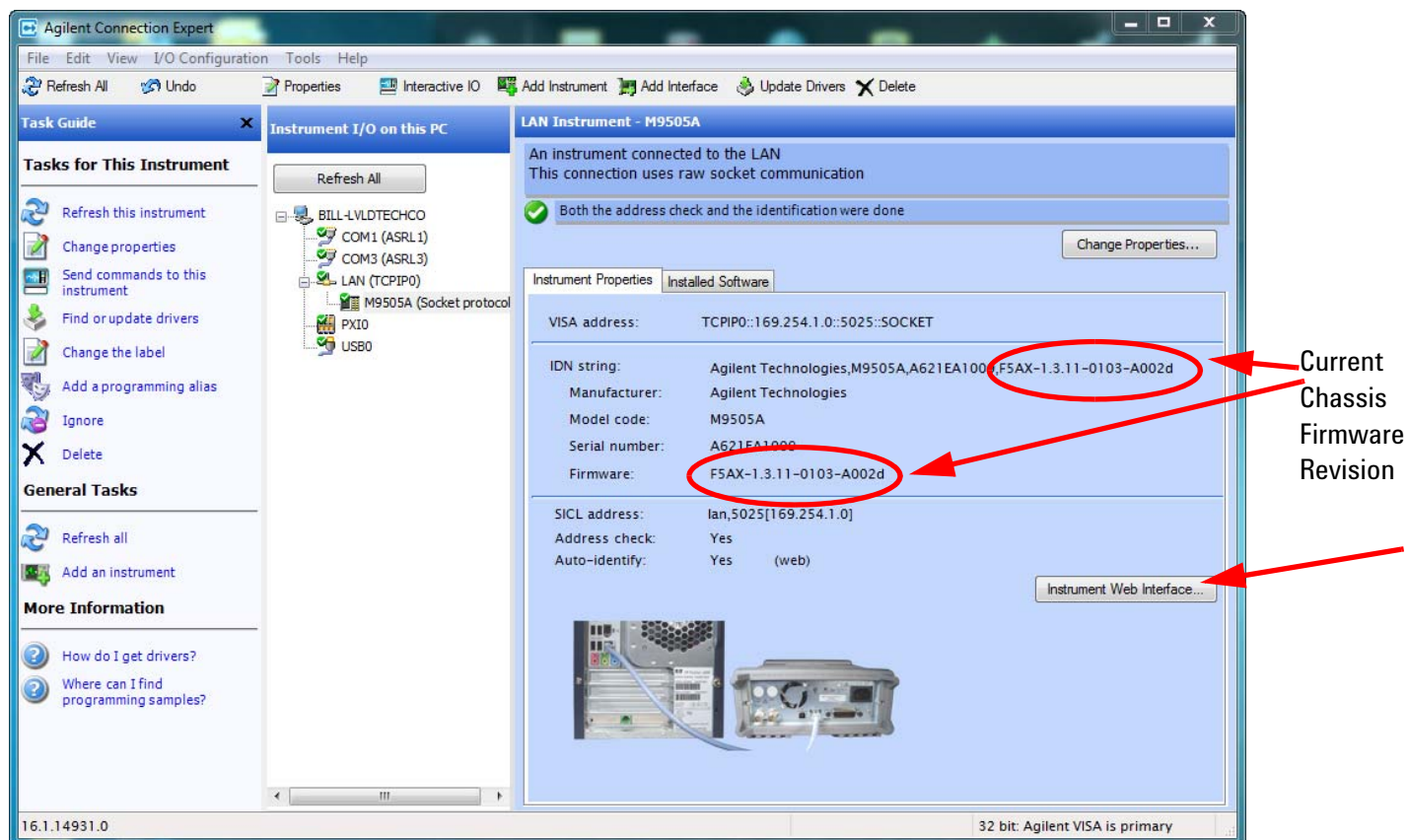


Figure 4 AXIe Chassis Web Page

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.

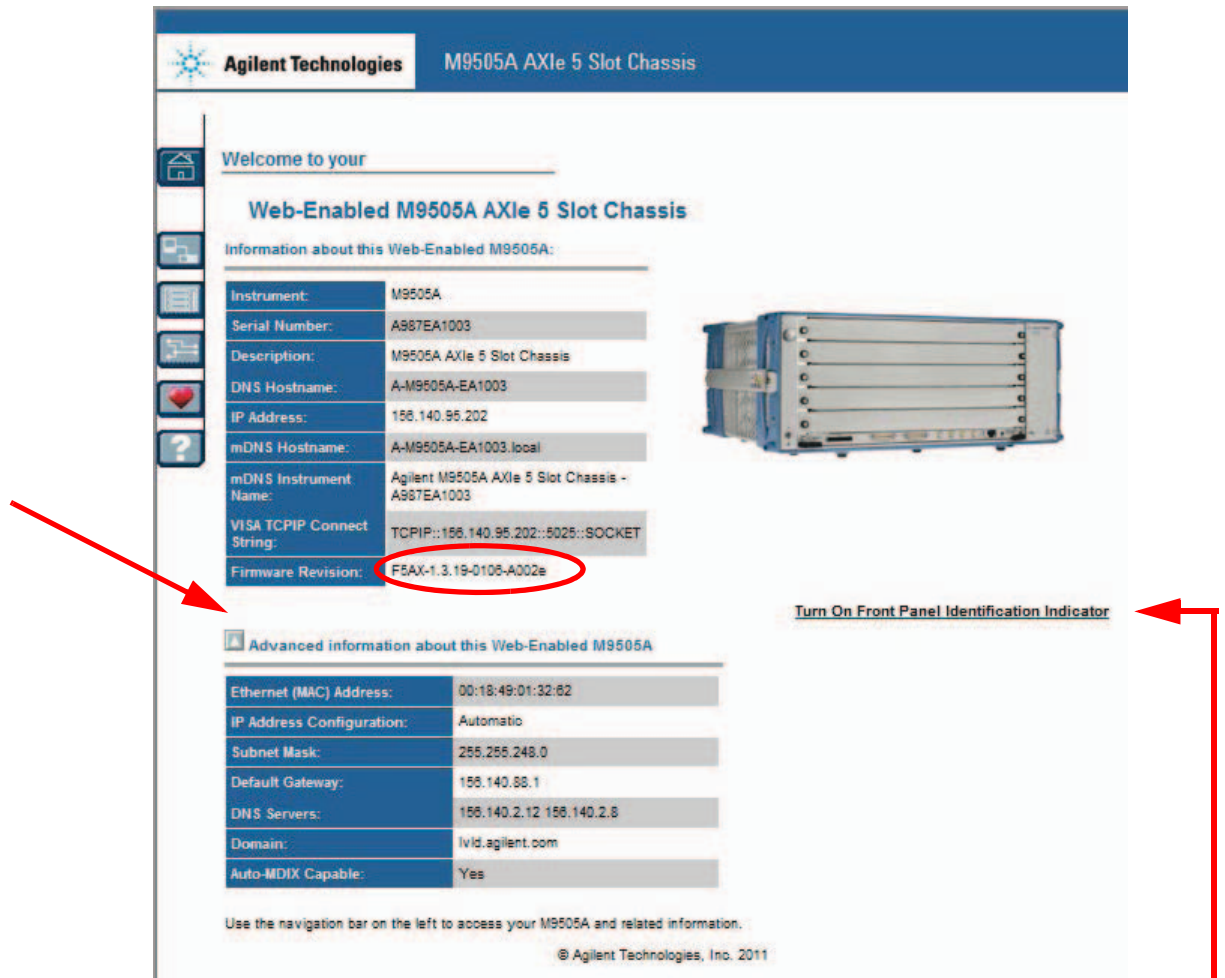


Figure 5 AXIe Chassis Web Interface Page

NOTE

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

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

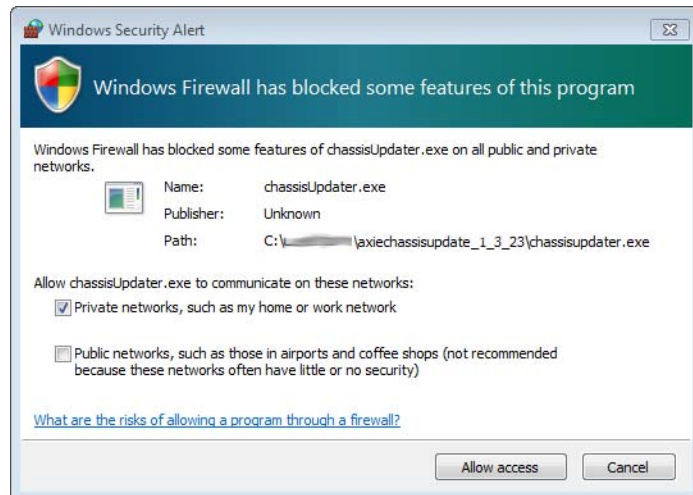
The PC that you install the **AXIe Chassis Firmware x_x_x.zip** file on must also have Agilent IO Libraries Suite (with Connection Expert) and be able to communicate with the AXIe chassis.

Step 3. From Microsoft Windows Explorer, run chassisUpdater.exe

Locate and run the **chassisUpdater.exe** file.

NOTE

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

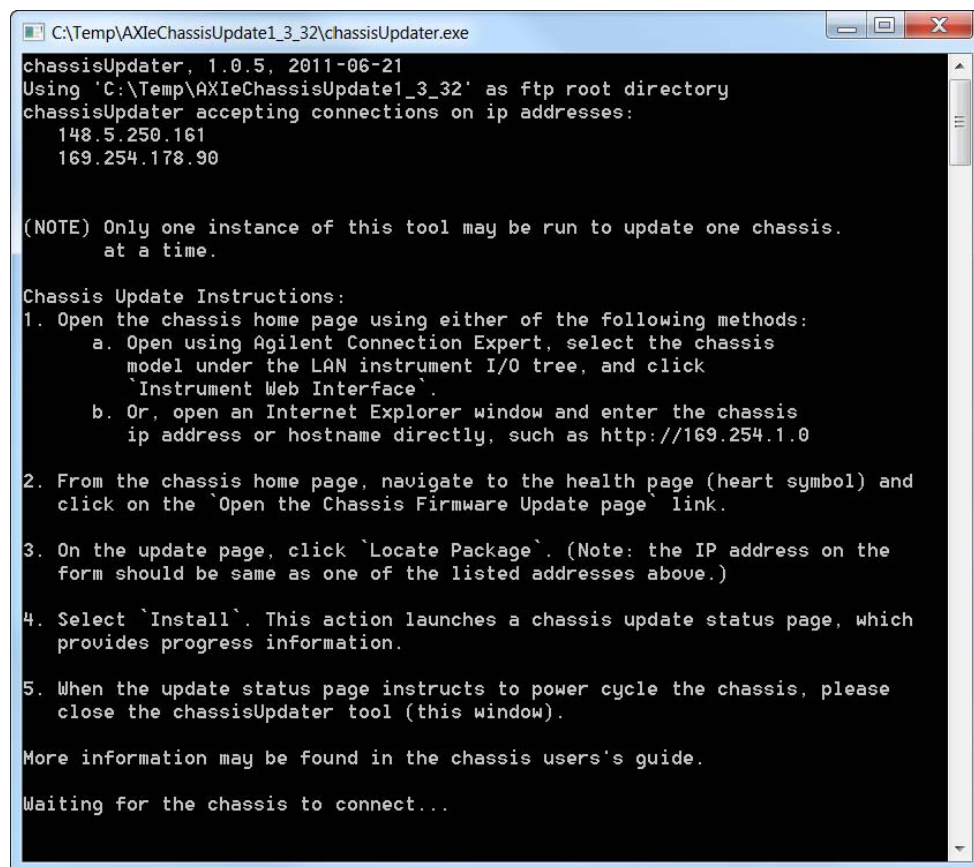


If you see this screen:

- 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



```
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 6 chassisUpdater.exe command window

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.

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

- a 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).

Agilent Technologies M9502A AXIe 2 Slot Chassis

Welcome to your

Web-Enabled M9502A AXIe 2 Slot Chassis

Information about this Web-Enabled M9502A:

Instrument:	M9502A
Serial Number:	TW51330309
Description:	M9502A AXIe 2 Slot Chassis
DNS Hostname:	A-M9502A-330309
IP Address:	169.254.1.0
mDNS Hostname:	A-M9502A-330309.local
mDNS Instrument Name:	Agilent M9502A AXIe 2 Slot Chassis - TW51330309
VISA TCPIP Connect String:	TCPIP::169.254.1.0::5025::SOCKET
Firmware Revision:	F2AX-1.3.23-0107-A002e-CA1.0-DA1.0-E1.3

[Turn On Front Panel Identification Indicator](#)

Advanced information about this Web-Enabled M9502A

Use the navigation bar on the left to access your M9502A and related information.

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AXIe AdvancedTCA eXTensions for Instrumentation

Figure 7 AXIe Chassis Web Home Page

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**”.

The screenshot displays the Agilent Technologies M9502A AXIe 2 Slot Chassis Health page. The page is divided into several sections:

- Chassis Health Sensors:** A table showing sensor readings for Module Slot 2, Module Slot 1, and the Chassis. The Chassis section includes readings for External Temp1, External Temp2, PSU Temp, PSU Voltage, and Fan speeds (Front, Middle, Rear).
- Configure Fan Control:** A form with fields for Fan Status, Cooling Status, Current Speed Level, Dynamic Minimum Fan Level, and an option to adjust the Current Speed Level and Dynamic Minimum Fan Level to a percentage of maximum RPM.
- Chassis Firmware Update:** A section with a link to open the chassis firmware update page, highlighted by a red arrow.

The following link opens a form to update the firmware components of this chassis. The components checked during an update are the Embedded Systems Module (ESM) and chassis backplane modules. Instrument modules are not included in this update. For updating an instrument module, please follow the directions provided by the module vendor.

[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.

Update Chassis Firmware on M9502A AX1e 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:	TW52080305
Installer Firmware Revision:	F2AX-1.3.38-0108-A002e-CA1.1-0A1.0-E1.4
Located Firmware Package Revision:	

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

Messages

Figure 9 Update Chassis firmware Page

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.

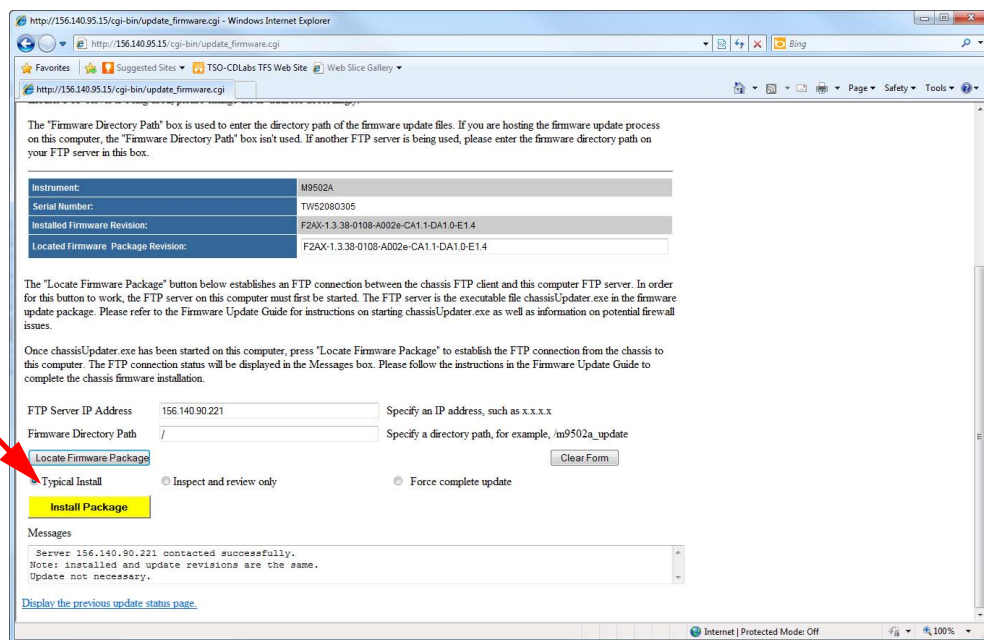


Figure 10 Update Chassis Firmware page (with installation options)

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.

```
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 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.

Step 4. From Chassis Web Page Run the Chassis Firmware Update

- 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.

NOTE

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

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 Agilent Connection Expert.

NOTE

M9536A Embedded Controller

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.

- 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.

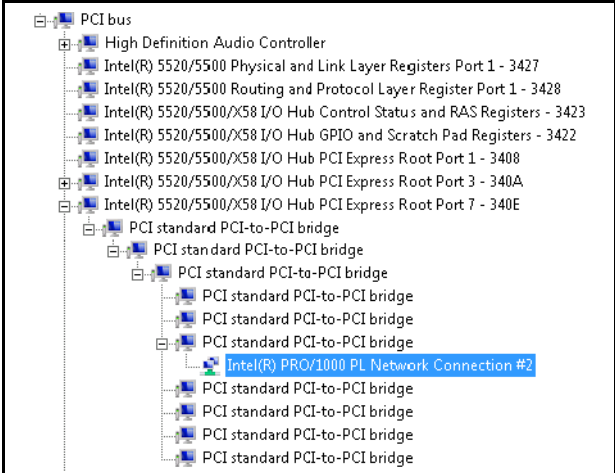


Figure 12 ESM Network Adapter

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

	External JTAG port	Shelf manager JTAG port (default)
2-device chain	SW1.1 ON	SW1.1 OFF
	SW1.2 ON	SW1.2 OFF
	SW1.3 OFF	SW1.3 ON
	SW1.4 OFF	SW1.4 ON
	SW2.1 ON	SW2.1 ON
	SW2.1 OFF	SW2.2 OFF
	SW 2.3 OFF	SW2.3 OFF
4-device chain	SW1.1 ON	SW1.1 OFF
	SW1.2 ON	SW1.2 OFF
	SW1.3 OFF	SW1.3 ON
	SW1.4 OFF	SW1.4 ON
	SW2.1 OFF	SW2.1 OFF
	SW2.1 ON	SW2.2 ON
	SW 2.3 ON	SW2.3 ON

The location of the switches on the ESM is shown in [Figure 13](#)

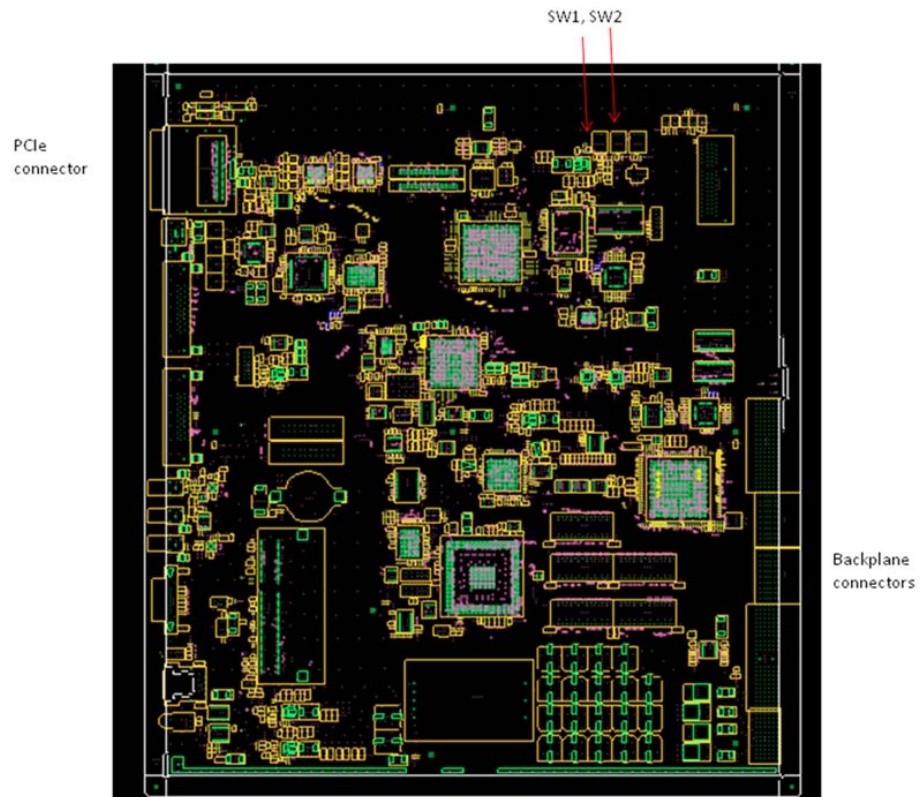


Figure 13 ESM Switch Locations

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Printed in Malaysia
Edition 4 April 2014



M9502-90011