

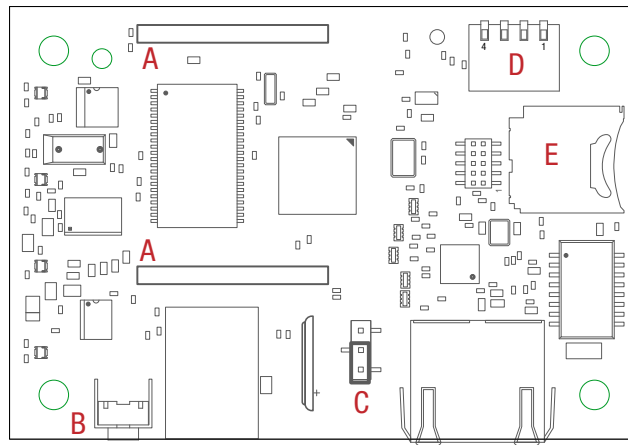
## Updating the DXM Processor Firmware

There are two different update procedures, depending on the DXM firmware version of your device.

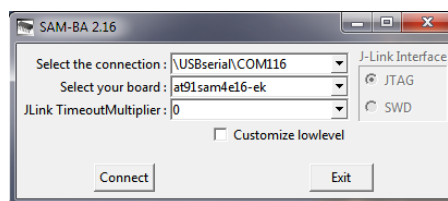
### Update Your DXM Processor Firmware (Prior to Version 2.0)

To update DXM Processor firmware prior to version 2.0, use the SAM-BA program from MicroChip/Atmel. Following these instructions to update the DXM100 or DXM150 processor firmware.

1. Download the SAM-BA software from <http://www.microchip.com/developmenttools/productdetails.aspx?partno=atmel+sam-ba+in-system+programmer>.
2. Install the SAM-BA program.
3. Set the SAM4 processor board jumper (jumper C, shown below in the "boot load off" position).

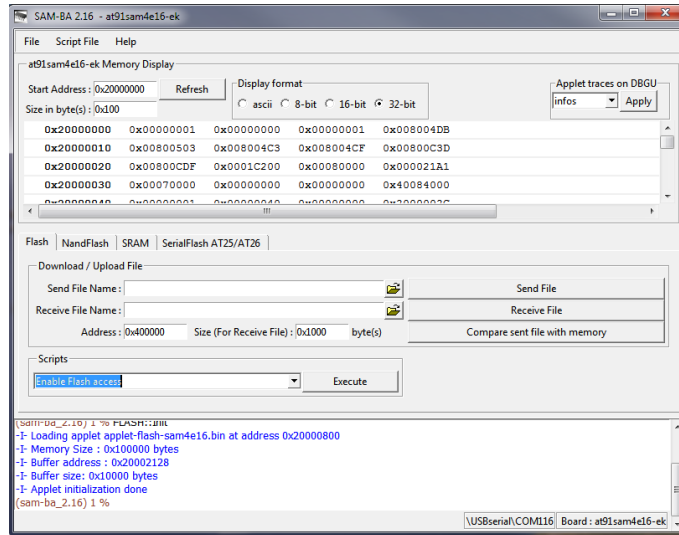


- a) Disconnect the DXM Controller from its power supply.
  - b) Open the hardware cover.
  - c) Using your fingers or tweezers, move the jumper to the "boot load on" position (jumper on the top two pins).
  - d) Connect the DXM back to its power supply.
  - e) After about 20 seconds, move the jumper back to its original position.
  - f) Replace the hardware cover.
4. Launch the SAM-BA program. Select the COM port and correct board. Click **CONNECT**.

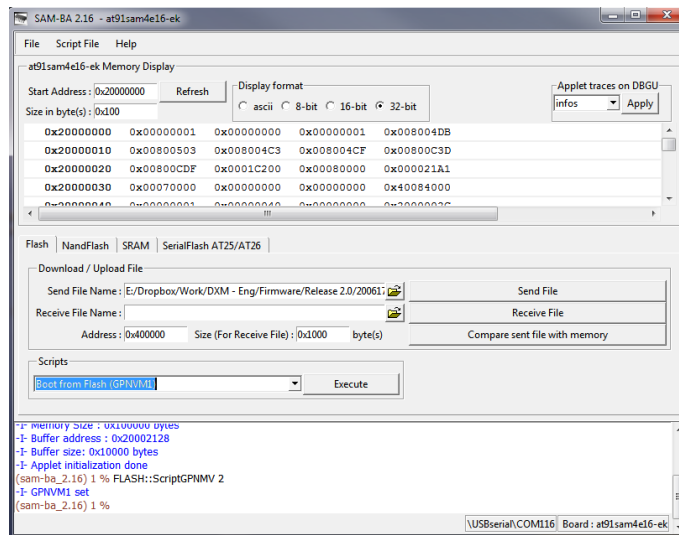


The SAM-BA program attempts to automatically detect the COM port and the correct device.

- On the **SCRIPTS** pull-down menu select **ENABLE FLASH ACCESS**. Click **EXECUTE**.



- In the **SCRIPTS** pull-down menu, select **BOOT FROM FLASH (GPNVM1)**. Click **EXECUTE**. Click **EXECUTE** again if the message indicates it failed.
- In the **Flash** tab, click on the folder icon for the **Send File Name** field. Select the boot load file (must be a \*.bin file) and click **SEND FILE**.



The load process takes a few seconds.

- After the load is complete, the program asks if you want to lock the flash region. Click **NO**.
- Close the SAM-BA bootloader program.
- Cycle the power to the DXM Controller.  
The new code should now be running and the LEDs should be on.

## Updating Your DXM Processor Firmware (Version 2 or Later)

DXMs with processor firmware version 2.0 or later have a built-in boot loader program to update the firmware. Use the DXM Configuration Tool version 3 or later, the Banner Connected Data Solutions webserver, or manually write the files on the SD card to update the firmware.

The new firmware file loads into the **BOOT** directory of the SD card on the DXM. The DXM Configuration Tool or Banner Connected Data Solutions website handles the reprogramming process automatically. During the programming process, the internal LEDs on the processor board indicate the status of the programming.

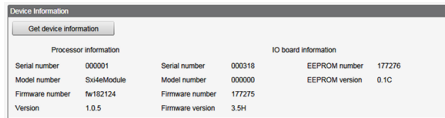
Update Process Overview		
Reprogramming Step	Approximate time required	Description
Loading new firmware file (*.HEX)	DXM Configuration Tool: 2 minutes over Ethernet or 15 minutes over USB  Banner Connected Data Solutions: 2 minutes over Ethernet or 5 minutes over Cellular	Send the new firmware image to the DXM. After the new image is on the device, the controller resets.  LED3 is red during the loading process.
Verify the contents of the new firmware file	1 minute	When the DXM finds a file that should be installed, LED4 (amber) flashes at about a 1 second rate while the contents of the file are validated.
New firmware file is valid		After validation successfully completes, LED4 is on (amber).
New firmware file is being loaded	2 minutes; do not remove power to the DXM during the programming process.	LED3 (red) blinks approximately once per second. LED3 continues to blink during the application programming process.
Finished		After programming has completed, the DXM resets and begins running the new firmware

The firmware file names follow an 8.3 filename convention. The first 5 characters are the firmware part number in hexadecimal; the last 3 characters of the part number are the major/minor version number. For example, if 30FA9052.hex is the firmware programming file, 200617 decimal (30FA9 hex) is the firmware part number and 0.5.2 (0502) is the decoded version number.

### Update Your DXM Processor Firmware Using the DXM Configuration Tool

To update your processor firmware (version 2.0 or later) using the DXM Configuration Tool, follow these instructions.

- Using the DXM Configuration Tool version 3 or later, connect to the DXM via USB<sup>¶</sup> or Ethernet. File loads to the DXM will take about 15 minutes using USB or approximately 2 minutes using Ethernet.
- On the DXM Configuration Tool, go to **Settings > General > Device Information** to verify the current firmware version. You must load a different version with the same firmware number for the boot loader to operate. Download firmware files from the Banner website.



- Under **Settings > Reprogram**, click **Select upgrade file** to select the firmware file to program.

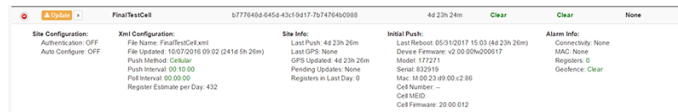
After the file load is completed, the DXM restarts and loads the new firmware file. It takes about 2 minutes to complete the programming process. The device reboots when finished. Verify the firmware has been updated, under **Settings > General > Device Information**.

### Update Your Processor Firmware Using the Banner Connected Data Solutions Website

To update your processor firmware (version 2.0 or later) using the DXM website, follow these instructions.

To use the website to update the firmware file, first configure the DXM to push data to the website.

- Go to **Dashboard > Sites** and click **+** to verify the current firmware part number and version on the DXM.



Data collected from the DXM is displayed.

- From the main **Dashboard > Sites** screen, click on **Update**. A popup box appears.
- Set the **Communications Type** to **Push Reply**, and set the **Update Type** to **Firmware file**.
- Choose the appropriate **Upload File (\*.HEX)** and click **Queue**. Click **Close**.  
At the next scheduled push interval, the DXM retrieves the new firmware file. The new firmware file must be the same part number of firmware that is currently in the DXM.

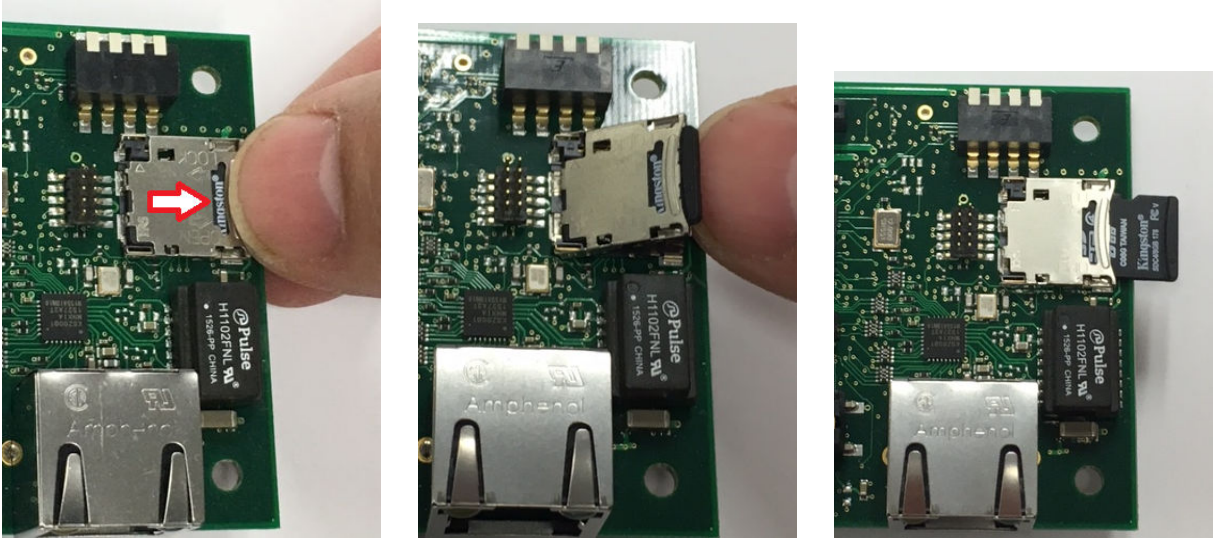
<sup>¶</sup> While the file download is in process over a USB connection, do not use other applications on the PC. After the DXM reboots for a firmware update, the USB port may be unresponsive. Clear the connection by disconnecting the USB cable and restarting the DXM Configuration Tool software.

## Update Your Processor Firmware Manually

To manually update your processor firmware (version 2.0 or later) using SD card, follow these instructions.

The firmware file can manually be put on the SD card in the BOOT directory (must have version 2.0 or later on the DXM).

1. Disconnect the DXM from its power supply.
2. Remove the micro SD card from the DXM.



- a) Open the cover housing to the DXM.
- b) Use your fingernail to slide the top metal portion of SD card holder.
- c) The metal cover hinges upward, allowing access to the remove the SD card.
- d) Press down on the SD cover and slide back into position to close the SD card holder.
3. Insert the micro SD card into an SD card reader to access the data from a PC.
4. Load the new firmware file (\*.hex) into the BOOT directory of the micro SD card.
5. Re-insert the micro SD card into the DXM by sliding the card into the holder.
6. Reconnect the DXM to its power supply.  
The automatic boot process should begin. If the boot process does not begin, verify the firmware file is correct and it is a different version than what is currently installed on the device.