

Recovering from a Bad Upgrade of FVX538 and FVS338 Routers

Summary

In the event that an upgrade fails, you can recover an FVX538 or an FVS338 router using a serial cable connection. In addition, if a browser-based upgrade method is unreliable, you can use TFTP to load the new firmware image. This document explains both of these procedures.

Using a Serial Cable to Recover from Upgrade Problems

The following procedure explains how to use a serial cable to recover from upgrade problems.

Identifying the Router's Serial Port

The FVX538 and the FVS338 router each have a serial connector for an RS-232 connection.

- For the FVX538, this connection is the Console connector on the front panel.
- For the FVS338, the Serial Modem connector on the rear panel can be used as a console connection.

Identifying the PC's Serial Connector

To connect to the router's serial console connector, your computer must have a serial COM port. On a typical ATX desktop computer, this port is a 9-pin "D" type connector with male pins. Some newer computers, especially laptops, may have USB connectors. If this is the case, you will need an RS-232 serial-to-USB adapter. You can find these at:

<http://www.usbgear.com/USBG-232MINI.html>

http://www.ramelectronics.net/html/usb_serial.htm

Choosing the Serial Cable

There are several variations of PC serial cables. If your PC has the 9-pin "D" type connector described above, you will need a cable with 9-pin female connectors on both ends, wired as a null modem, not straight through. This is a common cable, available in most computer stores.

Starting the Terminal Program

Communications to the serial port require the use of a terminal emulation program. Most versions of Windows include a program named HyperTerminal, which can be found in the Programs > Accessories > Communications program group. Alternatively, you can use one of the many commercial or shareware terminal emulation programs.

Configuring the Port Settings

The router's console port uses the following settings, which must be configured in your terminal emulation program:

- Baud rate: 115200
- Data: 8 bits
- Parity: none
- Stop bits: 1
- Flow control: none

Opening Communication

When the physical connection is in place and the terminal emulation program is configured and running, turn on the router and immediately type CTRL-C. If everything is working correctly, you should see the Redboot prompt:

```
RedBoot>
```

- For the FVX538: If you do not type CTRL-C, you will see the router's bootup messages, followed by a login prompt for the router's command line interface (CLI).
- For the FVS338: If you do not type CTRL-C, you will not see any messages; the port will be configured as a modem port.

Note: Redboot is a bootloader application that starts up the FVX538 and FVS338 and launches the router application. You can use it to manage and load different firmware image files. Redboot is a product maintained by RedHat Linux.

About Firmware Partitions

The FVX538 and FVS338 can store two complete firmware images in program memory (flash). The image partitions are named appimg1 and appimg2. If only one image is present, that image will be the running image. If two images are present, the image with the higher priority number will be the running image. Each time you load a new image, it overwrites the image with the lower priority, and it receives a priority number incremented from the previous high priority.

Viewing the Installed Firmware Images

To view the installed firmware images:

- At the Redboot prompt, type `DispImageStatus` to display the image status. You should see a message similar to the following:

```
RedBoot> DispImageStatus

Partition Priority Firm/Cfg-Ver BuildTime FileName
appimg1(V) 5 1.4.6/1.0 Wed Nov 24 22:13:00 2004 fvx538_v1.4.6.img
appimg2(V) 4 1.4.3/2.0 Mon Nov 22 16:38:47 2004 fvx538_v1.4.3.img
```

Erasing a Firmware Image

If you have unsuccessfully loaded an image or if the image is malfunctioning or is otherwise not wanted, you can erase it using Redboot. After that, the router will boot the other remaining image.

To erase an image:

1. At the Redboot prompt, type `Erase <partition name>` to erase a bad partition. You will see a message similar to the following:

```
RedBoot> erase appimg1

Erasing flash partition appimg1 of size 7864320 at flash address 0x50040000

... Erase from 0x50040000-0x507c0000: .....

.....

Erase success

RedBoot>
```

2. When the erase is complete, cycle the power switch.
3. Access RedBoot again and type `DispImageStatus` to view the contents of the partitions. Verify that the bad image is gone and its partition is now empty.

You can now load a new image using the router's browser interface. If that method is not reliable, you can use RedBoot to upgrade the router from a local TFTP server as described in the next section.

Using TFTP to Upgrade Firmware

The following procedure describes how to use TFTP to upgrade firmware when a Web upgrade is not reliable.

To use the TFTP upgrade method, you must install a TFTP server program on a PC on your LAN. This PC must have the firmware image file in its TFTP file directory. Using RedBoot commands, you can then direct your router to connect to that PC and download the firmware image file. This procedure will work for either the old version 1.x.x image files or the new version 2.x image files.

Obtaining a TFTP Server Program

There are many commercial or shareware TFTP server programs available. An example is tftpd32, which you can find at:

<http://perso.wanadoo.fr/philippe.jounin/tftpd32.html>

Running the TFTP Server Program

To run the TFTP server program:

1. Launch the TFTP server and note its IP address, which will be the address of the PC on which it is running. If the PC is attached to a non-responding router, its IP address will most likely be in the 169.254.x.x range. In this example, the TFTP server will be at 169.254.16.239.
2. Set the base directory of the TFTP server to the directory where you have stored the firmware image to be transferred to the router.

Invoking the Router's TFTP client

To invoke the router's TFTP client:

1. At the Redboot prompt, assign the router an IP address in the same subnet as your TFTP server by typing the command:

```
ip_address -l <ip_address>
```

You will see a message similar to the following:

```
RedBoot> ip_address -l 169.254.16.240  
IP: 169.254.16.240/255.255.255.0, Gateway: 0.0.0.0  
Default server: 192.168.16.1, DNS server IP: 0.0.0.0
```

2. Direct the router to get the image file by typing the command:

```
fuseimage -h <server_ip> <filename>
```

You will see a message similar to the following:

```
RedBoot> fuseimage -h 169.254.16.239 fvx538_v2.0.rc22.img  
Downloading image file fvx538_v2.0.rc22.img from TFTP server 169.254.16.239 to R  
AM address 0x1600000
```

|

```
Raw file loaded 0x01600000-0x01d3efff, assumed entry at 0x01600000
Image fvx538_v2.0.rc22.img successfully downloaded
Erasing flash partition appimg1 of size 7864320 at flash address 0x50040000
... Erase from 0x50040000-0x507c0000: .....
.....
Writing image of size 7598080 to flash
... Program from 0x01600000-0x01d3f000 at 0x50040000: .....
.....
Image downloaded and fused successfully
```

3. When the transfer has finished, reset the router by typing the `reset` command. You will see the following message:

```
RedBoot> reset
... Resetting.
```

Conclusion

The standard procedure for upgrading the firmware for FVX 538 and FVS 338 routers is using a Web browser. If the network is unreliable or the firmware is faulty, you can use other methods to accomplish the upgrade. This document describes the procedures for these methods

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