

PRODUCT BULLETIN

August 8, 2014

Effective Immediately: (For internal and external distribution) Vanguard 3000™ Firmware Upgrade Instructions

Summary

Firmware for the Vanguard 3000 cellular broadband router was recently updated to v5.1.3A. This product bulletin provides instructions for upgrading firmware in Vanguard 3000 routers currently running earlier versions of firmware v5.0.0 and up.

Release Date

August 5, 2014.

Product Information

Firmware version 5.1.3A has been released for the Vanguard 3000 router. This recent release provides enhancements to RSSI reporting via SNMP, SIM handling, and compatibility with CalAmp® DeviceOutlook™.

Vanguard firmware upgrades are delta updates, meaning each firmware upgrade file contains only differences to code that has been changed or added to the previous firmware version. This is so that the entire firmware is not required to be downloaded each time, which can save significant time and bandwidth. Consequently, each upgrade is incremental and sequential, meaning each upgrade is dependent on the firmware upgrade for the version before it having been installed, and each upgrade must be performed in the proper order. Each firmware upgrade depends on the firmware having brought up to date with the firmware version number preceding it.

Following is a list of the six available firmware upgrade packages available to upgrade the Vanguard 3000 router firmware from version 5.0.0 to version 5.1.3A, including all steps in between. The first group of three, from version 5.0.0 to version 5.1.0, must be performed manually. The second group of four, from version 5.1.0 to version 5.1.3A, may be performed using DeviceOutlook (although this may require some manual adjustments in the configuration settings to synchronize the unit with current world time and to point to the DeviceOutlook server address where the Vanguard will look for firmware upgrades).

Our knowledgeable and courteous technical support staff can provide guidance on the correct process to update the Vanguard to the current release and answer any questions in regards to performing firmware upgrades for the Vanguard 3000 router.

There are two ways to contact customer and technical support:

Phone: Call (507) 833-8819, select (2) for 24/7 support

Online: wngsupport@calamp.com

Firmware Upgrade Packages

Must be applied manually:

upgrade3000_v5.0.0_to_v5.0.1.tar.gz
 upgrade3000_v5.0.1_to_v5.0.2.tar.gz
 upgrade3000_v5.0.2_to_v5.1.0.tar.gz

The following upgrade packages may be applied manually or via DeviceOutlook*:

upgrade3000_v5.1.0_to_v5.1.0B1.tar.gz
 upgrade3000_v5.1.0B_to_v5.1.1.tar.gz
 upgrade3000_5.1.1_to_5.1.2B.tar.gz
 upgrade3000_5.1.2B_to_5.1.3A.tar.gz

(The 5.1.0_to_5.1.0B upgrade was replaced with 5.1.0_to_5.1.0B1 to supply a file needed by Production. For customers upgrading in the field, 5.1.0B and 5.1.0B1 are effectively identical. If performing incremental updates is onerous for a customer with a large fleet, they may request and it is possible to produce custom combined upgrades from a specific previous version number directly to the current version.)

*Upgrading firmware using DeviceOutlook for firmware before v5.1.2 requires adjusting settings in the Basic Settings tab of the Unit Status page to enable network time and in the DeviceOutlook tab (formerly, and visible in earlier firmware versions as the CES Config tab) of the Diagnostics page in the Vanguard Web Interface. When using DeviceOutlook to schedule multiple upgrade jobs to multiple mobile Vanguards, it must be done such that no unit serial number appears in more than one job because upgrades cannot be skipped and must be performed in the correct sequence. See the following table for notes specific to each upgrade.

Upgrades	Firmware Upgrade Notes	Configuration Upgrade Notes	Notes
v5.1.0 to v5.1.0B1	Web pages must be updated to point to correct server, and NTP must be enabled. This firmware upgrade can be performed successfully if it is scheduled immediately and is not interrupted.	In this firmware version, there was no configuration upgrade support for the Vanguard 3000 client.	In these firmware versions, the Vanguard did not acquire the time from the GPS module. To be set to the correct time, the unit must be set up to connect to and acquire current time from an NTP server.
v5.1.0B to v5.1.1	The file is downloaded, but the upgrade script stops before installation begins. When the unit reboots, DeviceOutlook thinks the upgrade completed successfully, but likely has not.	This can be performed successfully if it is scheduled immediately and the configuration file is hand-crafted to anticipate differences in the layout. Table entries can corrupt the parameter file. SNMP and GPS IP addresses are handled incorrectly.	In these and the following firmware version, the default DeviceOutlook (then, COLT) servers were set as: coltota.calamp.com:20500 coltota.calamp.com:20511. Both servers should now be specified as: ota.calamp-ts.com: 20511, but upgrading does not automatically update the existing settings.

Upgrades	Firmware Upgrade Notes	Configuration Upgrade Notes	Notes
v5.1.1 to v5.1.2	This firmware upgrade can be performed successfully if it is scheduled immediately and is not interrupted.	Same as above.	See above.
v5.1.2 and up	Upgrades can now be scheduled as future upgrades become available, and the Vanguard will reschedule if reset. Take precautions to plan for updates and ensure the Vanguard power is not interrupted during updates.	Configuration upgrades can be scheduled successfully in the future. DeviceOutlook 1.6.1 only exposes “safe” parameters that can be easily corrected. SNMP and GPS IP addresses are handled correctly.	DeviceOutlook replaces the former device and network management components, CalAmp Enterprise Services (CES), of the CalAmp On-Line Telemetry (COLT) system platform.

Requirements

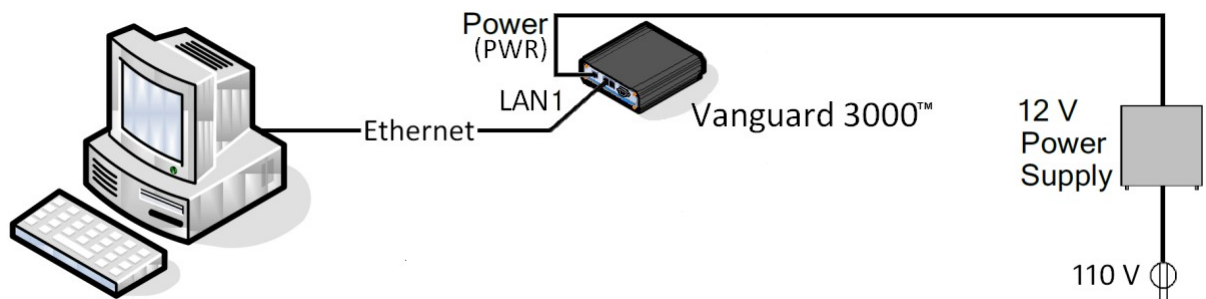
The upgrade procedure requires the following:

- PC or notebook computer with a browser and available Ethernet LAN port.
- Power supply in the range of 9-28 V DC, 15-45 W (the standard power cable for mobile model Vanguard routers is equipped with a fuse holder and 2A fast-acting fuse, EF2AL250VP, recommended).
- Ethernet cable.
- Vanguard 3000 firmware upgrade package (appropriate file from the above list).
- Vanguard 3000 router currently running firmware that is at the release version immediately before the version that the upgrade is for.

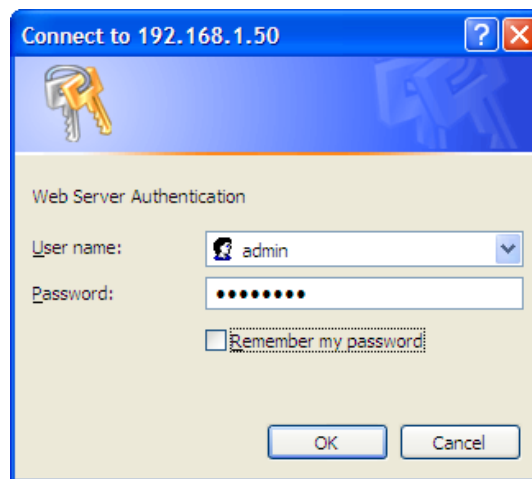
Caution: It is important to have a stable power source and ensure that power to the Vanguard 3000 is not interrupted during a firmware upgrade. Later-model Vanguard 3000 routers have a “failsafe” feature to help recover from an interrupted or failed upgrade, but earlier models do not have this feature.

Manual Firmware Upgrade Procedure

1. Cable the system. Connect the PC to the Vanguard 3000 router via Ethernet and then power the Vanguard router.
 - a. Connect the Ethernet cable into the LAN 1 port of the Vanguard and plug the other end into the network port of the PC.
 - b. Connect the DC power cable (or optional AC power adapter) to an applicable power source and plug the connector into the Vanguard power (PWR) connector.



2. On the PC, open a web browser and enter the IP address of the Vanguard router in the address bar.
 - When the PC is connected to the Ethernet jack, the default IP address is 192.168.1.50.
3. A Web Server Authentication window appears. (This may take a up to 60 seconds after power is applied to the Vanguard 3000.)



- Enter the required User Name and Password (the default User Name is **admin** and the default Password is **password**) and click OK to log on.
4. Select **Firmware Update** from the main navigation menu to navigate to the Firmware Update page.

Firmware Update		HELP
Current Firmware Information		
Version:	The firmware version currently running	
Current Kernel Date:	The kernel date of the running firmware	
Upload New Firmware		
File	<input type="text"/>	<input type="button" value="Browse..."/>
Progress		
<i>Note: The upgrade procedure can take up to 15 minutes.</i>		
		<input type="button" value="Upload"/>
Configuration File		
File	<input type="text"/>	<input type="button" value="Browse..."/>
		<input type="button" value="Upload"/>
		<input type="button" value="Save"/>

- Click **Browse** (or Choose File in some browsers — the button near the top of the page) in the Upload New Firmware section (*not* in the Configuration File section near the bottom) and navigate to the firmware upgrade package. Click **Open** to select the file and click **Upload** in the Upload New Firmware section to apply the upgrade package to the Vanguard router.
- The Vanguard router displays the message “Uploading new firmware. Please wait...” as it uploads the firmware upgrade which may take up to 15 minutes to complete. When it has finished uploading the upgrade, the Vanguard displays a message that it has successfully installed the new firmware. It will display this message for approximately one minute and then reboot automatically.
- Wait for the Vanguard 3000 to reboot, then wait a full minute after it has rebooted, and then access the Vanguard Web Interface again as in steps 2 and 3 of these instructions.
- Select Firmware Update from the main navigation menu to navigate to the Firmware Update page.

Firmware Update		HELP
Current Firmware Information		
Version:	The version number of the updated firmware	
Current Kernel Date:	The kernel date of the updated firmware	
Upload New Firmware		
File	<input type="text"/>	<input type="button" value="Browse..."/>
Progress		
<i>Note: The upgrade procedure can take up to 15 minutes.</i>		
		<input type="button" value="Upload"/>
Configuration File		
File	<input type="text"/>	<input type="button" value="Browse..."/>
		<input type="button" value="Upload"/>
		<input type="button" value="Save"/>

9. The version number and kernel date of the updated firmware appear in the Current Firmware Information section of the page.

Repeat the above procedure as necessary to upgrade the Vanguard 3000 to the latest version.

When the Vanguard 3000 is at the latest version, go through the pages of the Vanguard Web Interface to verify settings. In the DeviceOutlook™ tab of the Diagnostics page, make sure the DeviceOutlook Client shows the current DeviceOutlook Client version and that the Port is set to 20510. Make sure the Domain Name for the DeviceOutlook Server is ota.calamp-ts.com and Port selected is 20511, and likewise for the DeviceOutlook Maintenance Server, make sure the domain name is ota.calamp-ts.com and Port selected is 20511. See the following figure.

Diagnostics	SNMP	SMS	DeviceOutlook™	Logging	HELP
DeviceOutlook Client					
DeviceOutlook <input checked="" type="radio"/> Enable <input type="radio"/> Disable					
Version 1.0.46					
Port 20510 (default: 20510)					
DeviceOutlook Server					
IP Address 0 . 0 . 0 . 0					
Domain Name ota.calamp-ts.com					
Port 20511 (default: 20511)					
ID Report <input checked="" type="radio"/> Enable <input type="radio"/> Disable					
ID Report Frequency 24 (Hours)					
Send ID Report after boot <input checked="" type="radio"/> Enable <input type="radio"/> Disable					
DeviceOutlook Maintenance Server					
IP Address 0 . 0 . 0 . 0					
Domain Name ota.calamp-ts.com					
Port 20511 (default: 20511)					
<input type="button" value="Save"/>					

To Perform a Full Firmware Install

If a Vanguard will not complete boot up initialization.

If a Vanguard 3000 is reset in the middle of an upgrade, it may fail to come up completely (the LEDs display as all amber or all green and the unit does not proceed to normal functioning). In this case, a full firmware install using the serial port is required.

Requirements

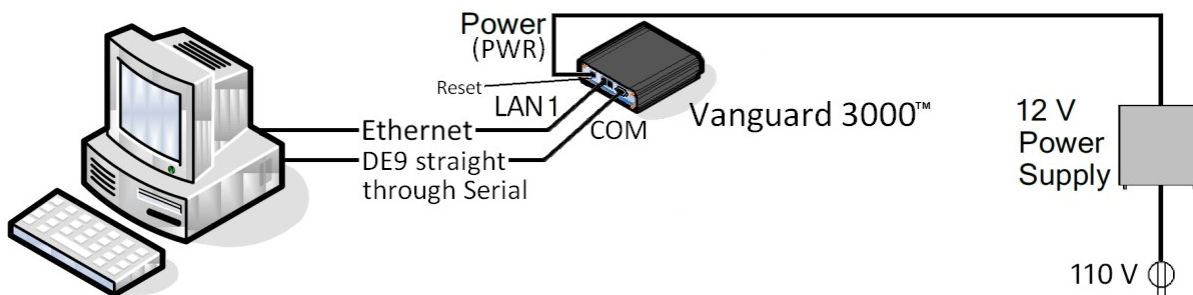
The full firmware install procedure requires the following:

- PC or notebook computer with a serial communications program, an available Ethernet LAN port, and an available serial port.
- Power supply in the range of 9-28 V DC, 15-45 W (the standard power cable for mobile model Vanguard routers is equipped with a fuse holder and 2A fast-acting fuse, EF2AL250VP, recommended).
- Ethernet cable.
- DE9 straight-through serial cable (not null-modem cable).
- Vanguard 3000 firmware release package (file name in the form Vanguard_3000_Vx.x.x.zip).
- Vanguard 3000 router currently not booting up completely (boot halts with all LEDs green or amber).
- A paper clip.

Caution: It is important to have a stable power source and ensure that power to the Vanguard 3000 is not interrupted during a full firmware install. If power is interrupted at any point during the install, you must return to the beginning and start the procedure over.

Full Firmware Install Procedure

1. Create an empty directory on the PC and download the firmware release package file to this directory.
2. Cable the system. Connect the PC to the Vanguard 3000 router via Ethernet and DE9 straight-through serial cable.
 - a. Connect the Ethernet cable to the LAN 1 port of the Vanguard and plug the other end into the network port of the PC.
 - b. Connect the DE9 straight-through serial cable to the COM port of the Vanguard and connect the other end to the serial COM port of the PC.



3. Configure the Ethernet port with the **static IP** address of **192.168.1.100**.
4. Unzip the downloaded release package in the directory where it was downloaded. Run (double-click) the TFTP SRV program in the same directory.

5. Run the communications program and configure the serial port for 115200 baud, 8 data bits, no parity, 1 stop bit (optionally, no flow control).
6. Remove power from the Vanguard. Use the end of a paper clip to press and hold the Reset button (near the PWR connector). Apply power. Within 5 seconds, the boot message will appear:

```
Boot 1.0-CAv3
Uncompressing image...
```

7. Release the paper clip. Booting continues with the following messages. Press the spacebar to stop at the CA-Boot prompt.

```
CA-Boot 1.1.1-CAv13
...
Hit SPACEBAR to stop autoboot in 3
seconds ... CA-Boot>
```

IMPORTANT: If the CA Boot version is CAV13 or earlier and Vanguard firmware 5.1.1 or later is being installed, then the bootloader must be upgraded with the following steps. Otherwise, skip to *Upgrading the Vanguard Application*, below.

8. Type the command `caf` and Enter. The Vanguard will transfer two files from the PC and write them to flash.

```
CA-Boot> caf
EMAC: KS28873 PHY3 detected
EMAC: PHY Speed: 100BT HD
I FTP from server 192.168.1.100; our IP address is
192.168.1.50 Filename 'boot-32M bin'
Load address: 0x20000000
Loading: ###
done
...
```

After writing the files, the Vanguard will reboot. Have the paper clip ready and when the “**Rebooting the board...**” message appears, press and hold the reset button until the boot message appears. As before, release the paper clip and press the spacebar to stop at the CA-Boot prompt. (Note that the CA-Boot version has changed.)

```
...
Copy to Flash... done
Protected 1 sectors

Done....

Rebooting the board...
CA-Boot>

Boot 1.0-CAv3
Uncompressing image...

CA-Boot 1.1.1-CAv14
...
Hit SPACEBAR to stop autoboot in 3
seconds ... CA-Boot>
```


Upgrading the Vanguard Application

Type the command **cal l** and Enter. The Vanguard transfers files to memory and to flash. The process takes approximately 8 minutes, after which the Vanguard reboots.

```
CA-Boot> cal l
EMAC: KS28873 PHY3 detected
EMAC: PHY Speed: 100BT HD
TFPT from server 192.168.1.100; our IP address is 192.168.1.50
...
Fetching and Writing ODP image...
Rebooting...
```

The first time a Vanguard boots after a full firmware upgrade, it has to perform some one-time housekeeping tasks. These tasks can take between 2 and 4 minutes to accomplish. When complete, the serial port will display the banner indicating the new firmware version.

```
CalAmp Vanguard 3000 (Revision
x.x.x) OK
```

To Upgrade Using a Two-Part Upgrade File

In case a custom or future upgrade is provided in two parts.

Occasionally, a Vanguard 3000 upgrade is too large to be processed in a single operation. In these cases, CalAmp supplies the upgrade in two parts with the identifiers “1of2” and “2of2” in the upgrade file names. The first file typically contains the new kernel and kernel-related components, while the second file contains all other components.

To upgrade, browse to the Firmware Update page. Note the version number and date of the firmware you are upgrading from.

Firmware Update	HELP
Current Firmware Information	
Version:	(original Version)
Current Kernel Date:	(original Date)

Click Browse, select the first file (with “1of2” in the file name), click Upload, and accept subsequent dialogs.

After part 1 of 2 of the upgrade has successfully completed and the Vanguard has rebooted, return to the Firmware Update web page. The page will show a change in the kernel date.

Firmware Update	HELP
Current Firmware Information	
Version:	(original Version)
Current Kernel Date:	(new Date)

Click Browse, select the second file (with “2of2” in the file name), click Upload, and accept subsequent dialogs.

After the upgrade has successfully completed and the Vanguard has rebooted, return to the Firmware Update web page. The page will now also show a change in the firmware version number.

Firmware Update		HELP
Current Firmware Information		
Version:	(new Version)	
Current Kernel Date:	(new Date)	

The upgrade is now complete.