

Configuring Volatile RAM Disk

For Safemode Download in AOS



Quick Configuration Guide

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Some of the NetVanta series products have a limited amount of system flash memory for file storage due to size constraints. Because of this limitation, a general-purpose volatile random access memory (RAM) disk was introduced in a limited number of products with ADTRAN Operating System (AOS) version 17.7. This feature is configured using the command line interface (CLI) or the web-based graphical user interface (GUI). This feature is available on AOS products as outlined in the ADTRAN knowledge base article number 2272, *Product Feature Matrix*. This matrix is available online at <http://kb.adtran.com>.

The volatile RAM disk must be configured on the NetVanta product before the unit will be able to store files in this location. This guide explains how to create and configure the volatile RAM disk and also how to use it for safemode download when upgrading the system configuration code.

NOTE

*For more information about firmware upgrades on AOS products, refer to the **Upgrading AOS Firmware** configuration guide (article number 1630) available at <http://kb.adtran.com> or on the **AOS Documentation** CD that shipped with your unit.*

Configuring RAM Disk Using the CLI

The RAM disk must first be created by allocating a specific amount of memory for storage before it can be used to store files. The newly created RAM disk file system has similar capabilities as other mounted file systems in AOS, such as flash. Keep in mind this is volatile memory and any files stored in this location are temporary and will be deleted if the unit is reset/rebooted, loses power, or the RAM disk is deleted.

To create the RAM disk using the CLI, follow these steps:

1. Boot up the unit.
2. Telnet to the unit (**telnet** <ip address>).

For example, **telnet 208.61.209.1**.

NOTE

If during the unit's setup process you have changed the default IP address (10.10.10.1), use the configured IP address.

3. Enter your user name and password at the prompt.



The AOS default user name is **admin** and the default password is **password**. If your product no longer has the default user name and password, contact your system administrator for the appropriate user name and password.

4. Enter the Enable mode by entering **enable** at the prompt as follows:

```
>enable
```

5. Enter your Enable mode password at the prompt.
6. From the unit's Enable mode, enter the **ramdisk <size>** command to create the RAM disk. When specifying the **<size>** parameter, the value can be entered in bytes (e.g., **128000**), or using the characters **M**, **m**, **K**, or **k**, which are used as multipliers (e.g., **128k** translates to 128 x 1024 = 131072 bytes).



The help text indicates the current allowable RAM disk size range in bytes. Access the help text by entering **ramdisk ?** at the Enable mode prompt.

The following example creates a volatile RAM disk file system and allocates **128000** bytes of memory:

```
#ramdisk 128000
```

The RAM disk can also be removed and its allocated RAM freed for system use. The following example deletes a volatile RAM disk:

```
#no ramdisk
```

Configuring RAM Disk Using the GUI

The GUI is an online configuration tool that allows you to easily configure and view system settings, as well as the status of your AOS product. The RAM disk can also be created using the GUI by following these three steps:

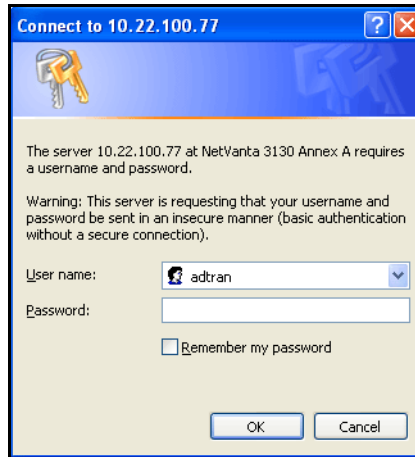
1. Open a new page in your Web browser.
2. Type your unit's IP address in the browser's address field in the following form:

```
http://<ip address>
```

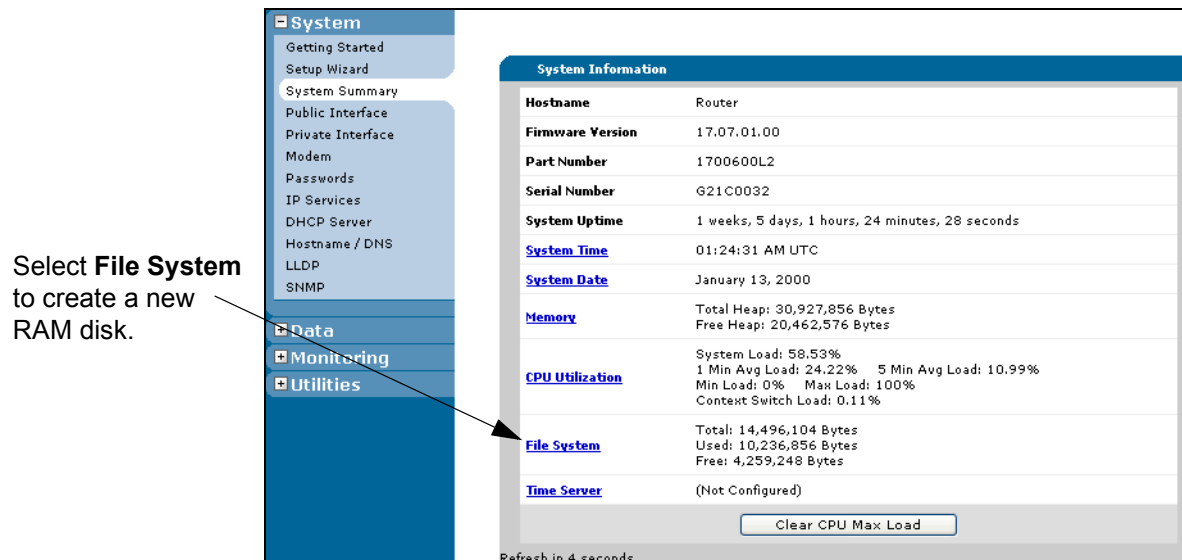


The IP address may also be entered in **https://** if your unit has **ip http secure-server** enabled.

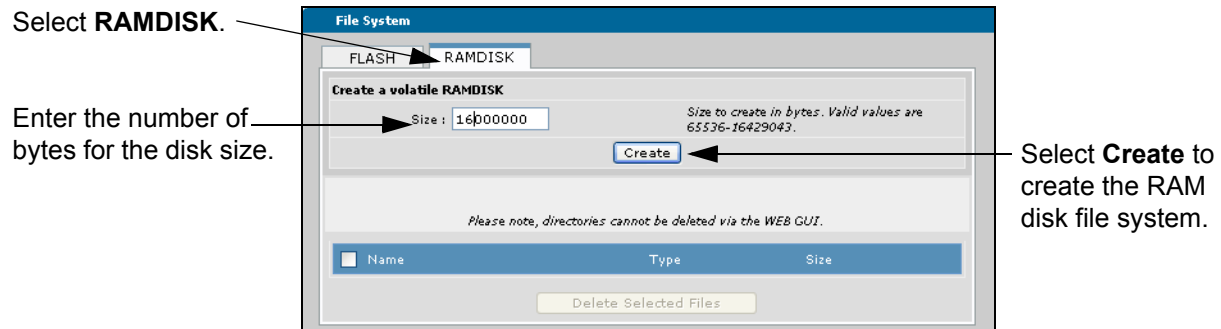
3. At the prompt, enter your user name and password and select **OK**.



4. At the **System Summary** menu (which appears upon logging into the device), select **File System** to create the RAM disk file system.

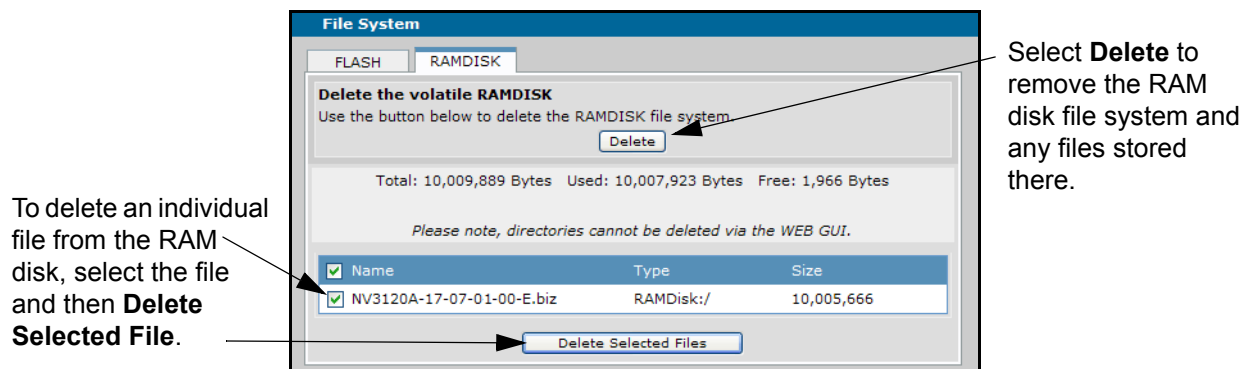


5. Once the **File System** menu appears, select the **RAMDISK** tab.



6. Enter the number of bytes to allocate to the RAM disk and select **Create**. The help text indicates the current allowable RAM disk size range in bytes.

The RAM disk can also be removed and its allocated RAM freed for system use. The following example deletes a volatile RAM disk.



Using Safemode to Upgrade a Unit's Firmware

When upgrading the system firmware on an AOS unit, the new firmware must be uploaded to the unit before rebooting. Due to the large size of the firmware image, a few products are unable to store more than one firmware image at a time. This situation requires deleting the current firmware image before saving the new firmware in the unit's system flash. Creating a volatile RAM disk file system provides a location to store the new firmware and verify that it is a valid image for the unit, before deleting the current firmware image and moving the image to flash memory. This process is referred to as safemode download.

The process to upgrade an AOS unit using safemode download is explained in the following sections for the CLI and also for the GUI. As a prerequisite, an updated version of the AOS firmware for your particular product should be obtained. The latest versions are available from the support section of the ADTRAN website at www.adtran.com. Once the new firmware is obtained, continue with either the [CLI Instructions for Safemode Download on page 5](#), or the [GUI Instructions for Safemode Download on page 8](#).

CLI Instructions for Safemode Download

As a prerequisite, the file system should already exist. If it does not, refer to [Configuring RAM Disk Using the CLI on page 1](#).

1. Copy the new firmware to the volatile RAM disk file system.

The new firmware can be copied from a Hypertext Transfer Protocol (HTTP) server, secure socket HyperText Transfer Protocol Secure (HTTPS) server, network Trivial File Transfer Protocol (TFTP) server, or from a terminal connected to the console port using the XMODEM protocol. The location of the file depends on your particular situation. To copy the new firmware to the volatile RAM disk, use the appropriate **copy** command as listed below, based on the new firmware location.

For firmware located on an HTTP server, use the following commands:

```
copy http <url> ramdisk <destination file>  
copy http <url> ramdisk <destination file> force-overwrite  
copy http <url> ramdisk <destination file> force-overwrite port <port>  
copy http <url> ramdisk <destination file> port <port>
```

The <url> parameter specifies the uniform resource locator (URL) of the HTTP server and is case-sensitive. The <destination file> parameter names the file to be copied and saved to the new location. If a file with the same name as <destination file> already exists, using **force-overwrite** erases the file and replaces it with the new one. The **port** <port> parameter specifies the port to use for the transfer by entering **0** to **65335**.

For firmware located on an HTTPS server, use the following commands:

```
copy https <url> ramdisk <destination file>  
copy https <url> ramdisk <destination file> force-overwrite  
copy https <url> ramdisk <destination file> force-overwrite port <port>  
copy https <url> ramdisk <destination file> port <port>
```

For firmware located on a network TFTP server, use the following command:

```
copy tftp ramdisk
```

After entering the command, AOS prompts for the following information:

<i>Address of remote host:</i>	Specify the IP address of the TFTP server.
<i>Source filename:</i>	Specify the name of the file to copy from the TFTP server. This entry is case-sensitive.
<i>Destination filename:</i>	Specify the file name to use when storing the copied file to the RAM disk file system.

To copy firmware located on a console-connected terminal (using the XMODEM protocol), enter the following command:

copy xmodem ramdisk

After entering the command, AOS prompts for the following information:

Source filename: Specify the name of the file to copy to the RAM disk.

2. Replace the primary boot image with the new firmware located in the RAM disk file system.



During this process, the system automatically erases the current boot image from flash memory before copying the new firmware from the RAM disk. The primary boot image must be replaced before rebooting the unit. If the system does not have an image from which to boot, the unit could become inoperable if a reset/reboot occurs.

Copy the new firmware from the RAM disk to system flash memory and set the new firmware image as the primary boot image. This is required before rebooting the unit. Using the **overwrite primary** keyword replaces the primary boot image with the file from the RAM disk. For example:

copy ramdisk <source file> overwrite primary

The parameter *<source file>* is the name of the file to copy.

3. Reboot the NetVanta unit.

The last step in this process is to reboot the unit, allowing the new primary boot code to be applied. To reboot the unit, issue the following command:

reload

CLI Examples for Safemode Download

The following two examples illustrate the steps described above for safemode download using RAM disk. To update the firmware on an AOS unit, either method is appropriate. The first example is the shortest and quickest method, combining three steps into one command using the **overwrite primary** keyword. The second example breaks the process down into multiple steps. Use the method that best fits your situation.

Example 1: Safemode Download - Quick Method

This example assumes the RAM disk file system is already created. The new firmware (NV3120A-17-04-01-01-E.biz) is copied from the tftp server to the RAM disk. The firmware is then verified and copied to the system flash memory. The new firmware is set as the primary boot system image. During this process, the system does not have an image to boot from if a reset/reboot occurs on the unit. To complete the process, reboot the unit to use the new firmware.

```
>enable
#copy tftp ramdisk
Address of remote host? 172.22.76.43
Source filename? NV3120A-17-04-01-01-E.biz
Destination filename? NV3120A-17-04-01-01-E.biz
Initiating TFTP transfer...
Received 10319163 bytes.
Transfer complete.
```

```
#copy ramdisk NV3120A-17-04-01-01-E.biz overwrite primary
Primary image: NONVOL:/ NV3120A-17-04-01-01-E.biz
```

```
#reload
```



If the firmware did not pass the verification process, the original primary boot system image remains unchanged and the process is aborted.

Example 2: Safemode Download - Alternate Method

This example assumes the RAM disk file system is already created. The new firmware (NV3120A-17-04-01-01-E.biz) is copied from the tftp server to the RAM disk. The firmware is then verified as a valid file signature for the unit. The primary boot image is erased to create free space on the system flash for the new firmware. At this point, the unit does not have an image from which to boot if a reset/reboot occurs on the unit. The new firmware is copied from the RAM disk to system flash memory. The new firmware must be set as the primary image. The final step is to reboot the unit to use the new firmware.

```
>enable
#copy ramdisk tftp
Address of remote host? 172.22.76.43
Source filename? NV3120A-17-04-01-01-E.biz
Destination filename? NV3120A-17-04-01-01-E.biz
Initiating TFTP transfer...
Sent 10319163 bytes.
Transfer complete.
```

```
#verify-file ramdisk NV3120A-17-04-01-01-E.biz
#erase NV3120A-17-02-01-01-E.biz
#copy ramdisk NV3120A-17-04-01-01-E.biz
#boot system flash NV3120A-17-04-01-01-E.biz
#reload
```


GUI Instructions for Safemode Download

The new firmware can be uploaded from the local PC to the RAM disk file system using the GUI. The RAM disk file system should already exist, if not, refer to [Configuring RAM Disk Using the GUI on page 2](#). The location of the file depends on your particular situation.

1. To move the new firmware to the volatile RAM disk, navigate to **Utilities > Firmware**, and scroll down to the **Upload Firmware** menu as shown below.

The screenshot displays the NetVanta GUI interface. On the left is a navigation menu with categories: System, Data, Monitoring, and Utilities. Under Utilities, the 'Firmware' option is selected. The main content area is divided into two sections:

- Set Primary / Backup Firmware:** This section contains two dropdown menus. The 'Primary Firmware' dropdown is set to 'NV3120A-17-07-01-00-E.biz'. The 'Backup Firmware' dropdown is set to 'none'. Below these are 'Flash' statistics: 'Drive Space Used: 10,236,856 / 14,496,104 Bytes used' and 'Drive Space Free: 4,259,248 Bytes free'. There are 'Cancel' and 'Apply' buttons at the bottom.
- Upload Firmware:** This section includes a 'Select firmware file' field with a 'Browse...' button. Below this are three radio button options: 'Flash' (selected), 'RAMDisk', and 'Replace: Primary' (with a dropdown menu). An 'ALERT' message is displayed in red text: 'ALERT: If the file you are uploading is larger than the free drive space, you will need to delete an older firmware version before continuing. You may delete the primary firmware to free space, but DO NOT reboot the unit without a primary firmware.' There are 'Cancel' and 'Upload' buttons at the bottom.

2. Locate the firmware to upload from your local PC by selecting **Browse**.
3. Choose **RAMDisk** as the location in which to save the firmware.
4. Once **RAMDisk** is selected, **Replace** is automatically selected with **Primary** chosen as the firmware image to be replaced by the new file. **Primary** is the only option available on units that support RAM disk. During this operation, the new firmware file is uploaded to RAM disk, the file is verified as valid for the unit, the current primary firmware is erased, the file is copied to flash, and set as the system primary firmware from which to boot. The RAM disk file system is removed after rebooting the unit.

5. Select **Upload** to complete the task. Once the upload begins, it may take several minutes to complete, depending on your network speed.

Select **RAMDisk** as the location to store the firmware.

Primary is automatically selected as the firmware to be replaced.

Browse to find the new firmware image stored on your local PC.

Select **Upload** to complete the task.

NOTE *If a RAM disk does not exist at the time this step is executed, AOS will attempt to create a file system sized for the file being uploaded. If the unit does not have enough memory to accommodate the firmware size, the upload will fail.*

6. The unit will need to be rebooted to use the new firmware. Navigate to **Utilities > Reboot Unit**. Choose either **Save and Reboot** or **Reboot (Do Not Save)** from the **Reboot Unit** menu. If you reboot without saving the current configuration, any changes you have made will be lost after the reboot. The RAM disk is created and stored in volatile memory and any files stored in this location will also be lost after a reboot. It is important save any changes to the configuration before rebooting.

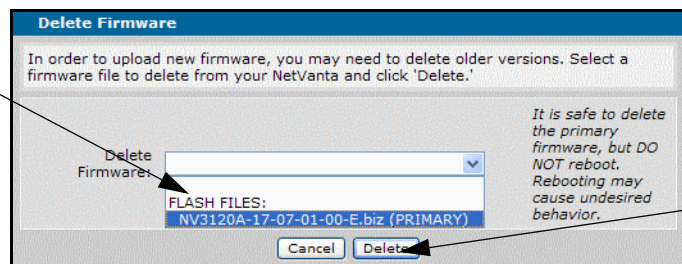
Additional Functions Available Through the GUI

Additional functions related to uploading firmware are available through the GUI. Use the following functions when necessary for your specific situation.

Erase the current firmware image from system flash memory.

1. Navigate to **Utilities > Firmware**, and scroll down to the **Delete Firmware** menu.
2. Select the firmware from the drop-down menu.
3. Select **Delete** to remove the firmware from the unit.

Select the firmware to delete from the drop-down menu.



Select **Delete** to remove the firmware from the unit.