



Maintaining the Content Routing Software

This chapter describes the tasks required for maintaining the Content Routing software:

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Upgrading the Software

Presently, two types of Content Routing software files are available on Cisco.com to download, files with the .pax suffix and files with the .bin suffix. The .pax file contains the full-image software and is the file routinely installed. The .bin file software is for recovery situations that require booting from the network, or restoring Flash memory. See the [“Recovering the Software” section on page 3-4](#) for instructions on loading your system image with the .bin file.

The following procedure describes how to upgrade the Content Router system software and optionally change the boot parameters.

-
- Step 1** Download the .pax file to your Windows NT or UNIX machine.
- Step 2** From the Windows NT or UNIX machine, use File Transfer Protocol (FTP) to put the new image file (for example, cr4430.pax) in the Content Router */local* directory.

If you are using a command-line FTP client, perform the following substeps to put the .pax file on the Content Router. In the example, the Content Router IP address is 192.168.88.89:

- a. At the command line of your Windows NT or UNIX host, enter:

```
ftp 192.168.88.89
```
- b. Enter the Content Router user login and password when prompted.

- c. The default FTP directory of the Content Router should be */local*. Use the **cd** command as follows to make sure that you are in the */local* directory of the Content Router:

```
cd /local
```

- d. Set the FTP client to binary transfer mode:

```
bin
```

- e. Put the .pax file on the Content Router. For example, if the upgrade software filename is *cr4430.pax*, enter:

```
put cr4430.pax
```

When the transfer is complete, quit the FTP session.

- Step 3** Log on to the Content Router through the console port.



Note Upgrading software can be done through Telnet, but the connection is broken when the Content Router reboots.

- Step 4** At the Content Router command prompt, enter **install** to install the image files. For example, if the filename is *cr4430.pax*, enter:

```
console# install cr4430.pax
Extracting .
Extracting ./imgname.txt
Extracting ./etc
Extracting ./etc/boot
... (etc)
Extracting ./[image_name].bin.dbg.cus1
File extraction done.
cr4430.pax: installation is complete.
Copy new image '[image_name].bin' to flash memory?[no]: y
Erasing
Programming
erasing program image sector.

100% complete...
You may type [reload] to reboot your box now
```



Note Be sure to copy the new image to Flash memory. The Content Router will not run the updated software version until the image is stored in memory and you reboot the system. If you choose not to copy the image to Flash memory when prompted, you can do so later by entering **copy disk flash filename**, where *filename* is the name of the image file (the .bin file extracted from the .pax file).

- Step 5** From the Content Router console, enter **reload** to reboot the Content Router:

```
console# reload
Proceed with reload? [confirm] y
303949 bytes
copying bootagent
boot start: 0x7fee000
starting new system - entry 0x8010
0x7dc8800 (tCallback0):
NCR810_
Press any key to stop auto-boot...
```



Note If you have not saved your most recent configuration to Flash memory (NVRAM), you will be asked to do so before rebooting the Content Router.

If you want to stop the auto-boot process to change default boot parameters, perform the following steps (console connection only):



Note In the example, the Content Router boot device parameter is changed from **net** to **flash**.

- a. Press any key during the auto-boot sequence.
- b. Enter **c** at the prompt to change the auto-boot settings.
- c. At the boot device prompt, enter **flash**.

This ensures that the Content Router boots from Flash memory rather than from a system image resident on another network host.

- d. At the filename prompt, press **Ctrl-D** to quit the change-default-boot-parameter sequence.
- e. At the console prompt, enter **@**.

For example:

```
Press any key to stop auto-boot...
[CE500 Series]: c
'.' = clear field; '-' = go to previous field; ^D = quit
boot device (flash,net) [ net]: flash
filename [ ]: ^D
.. [CE500 Series]: @
```

Step 6 When the boot process is complete, verify the software version with the **show version** command:

```
console# show version
Cisco Content Router
Copyright (c) 1986-2001 by Cisco Systems, Inc.
Software Release: CR ver 1.1 (Build: #1 03/30/01)
Compiled: 13:47:15 Mar 26 2001 by morlee
Image text-base 0x108000, data_base 0x392244

System restarted by Reload
The system has been up for 0 weeks, 0 day, 0 hours, 1 minutes, 10 seconds.
System booted from "flash"
```

Recovering the Software

The Content Router can be booted from a system image resident on another network host (booted from the network) if the native onboard image is corrupted. A corrupted system image can result from a power failure that occurs while the installation procedure is updating the Flash memory. When the Content Router is booted from the network, a new Flash memory image can be installed.

Recovery software is available from Cisco.com. Make sure to download the correct .bin file for your model of Content Router.

To reboot the Content Router with recovery software, perform the following steps:

Step 1 Make sure you have a console connection established. Reboot your Content Router manually by toggling the power on/off switch.

Step 2 Stop the auto-boot process by pressing any key.

- a. Enter **c** to change the auto-boot settings.
- b. Enter **net** for the boot device type.
- c. Enter the appropriate CCO filename, host IP address, IP network mask, server IP address, gateway IP address, protocol (FTP or Trivial File Transfer Protocol [TFTP]), username, and password. For example:

```
Press any key to stop auto-boot...
6
[CE500 Series]: c

'.' = clear field; '-' = go to previous field; ^D = quit

boot device (flash,net) [                flash]: net
filename [                        ]: /Path/filename.bin
cache IP address [                ]: 10.3.1.3
IP network mask [                ]: 255.255.255.0
server IP address [                ]: 171.69.63.242
gateway IP address [                ]: 10.3.1.2
protocol (rcp,ftp,tftp) [                ]: ftp
username [                        ]: name
password [                        ]: password
flags [                            0]:
```

Step 3 Enter **@** to start the boot sequence.

```
[CE500 Series]: [CE500 Series]: @

boot device (flash,net) [                net]:
filename [/CCO Path/filename.bin]:
cache IP address [                10.3.1.3]:
IP network mask [                255.255.255.0]:
server IP address [                172.16.63.242]:
gateway IP address [                10.3.1.2]:
protocol (rcp,ftp,tftp) [                ftp]:
username [ name]:
password [                password]:
flags [                            0]:
```

```
Loading from the network
Attaching network interface fei0... done.
Attaching network interface lo0... done.
Loading... Starting at 0x108000...

.....
```

```
Console IO Initialized
Attaching network interface lo0... done.
```

```
Restricted Rights Legend
```

```
Use, duplication, or disclosure by the Government is
subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.
```

```
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, California 95134-1706
```

```
Cisco Content Router
Copyright (c) 1986-2001 by Cisco Systems, Inc.
Software Release: CR ver 1.1 (Build: #01 08/30/2001)
Compiled: 18:09:47 Mar 26 2001 by morlee
Image text-base 0x108000, data_base 0x42bea4
```

```
System restarted by Power Up
The system has been up for 0 seconds.
```

```
System booted from fei
SVCINIT - phase complete
Initializing SCSI interface...
Initializing SCSI controller...
Configuring SCSI peripherals...
```

ID	LUN	VendorID	ProductID	Rev.	Type	Blocks	BlkSize	pScsiPhysDev
0	0	QUANTUM	VIKING II 9.1SCA	4110	0	17836668	512	0x00fc9458

```
DEVINIT - phase complete
FSINIT - phase complete
Configuring from NVRAM...
```

```
%% Non-volatile configuration memory has not been set up
CONF - phase complete
NTP: Waiting (2 minutes) for network initialization
START - phase complete
```

Step 4 Reconfigure the Content Router with the basic network settings. You can modify the system configuration later using the command-line interface (CLI).

```
---- System Configuration Dialog ----
You may use Ctrl-D to abort Configuration Dialog at any prompt.
Would you like to enter the initial configuration? [yes]: y
host name: myContent
domain name: myfirm.com
admin password: iforget
cache IP address: 1.1.1.1
IP network mask: 255.255.230.2
gateway IP address:10.10.10.10
DNS server:yo
```

If the basic configuration is acceptable, enter **yes**. The Content Router indicates whether the configuration is accepted. At this point, the basic configuration is finished.

```
Use this configuration? [yes]: yes
Building configuration...
. . START - phase complete
```

- Step 5** Log on to the Content Router with your new admin password. Verify that you are running the correct version by entering the **show version** command.

```

Username: admin
Password: test
cache#
cache# show version
Cisco Content Router 4430
Copyright (c) 1986-2001 by Cisco Systems, Inc.
Software Release:
Compiled: 17:08:40 Mar 24 2001 by morlee
Image text-base 0x108000, data_base 0x419d2c

```

You can now use the CLI to finish your configuration.



Note In case you need to boot from Flash memory again, use the **copy** command to put the image in Flash memory.

Maintaining the Content Router Disk Storage

The Content Routers are equipped with one or more disks that are properly partitioned at the factory before shipment.

The principal disk partition is the DOS file system (dosfs). The dosfs partition contains the image file and memory for system output from features such as syslog.

To verify that a disk is partitioned correctly, execute the **show disk-partitions** command. To display the volume names, execute the **show disks** command.



Note The UVFAT partition refers to the dosfs.

```

Console# show disk-partitions /c0t0d0
Disk size : 17836667 sectors
Partition 1: CISCO_UVFAT_1, offset      63 sectors, size  3906250 sectors
Partition 4: UNUSED,                   offset      0 sectors, size   0 sectors

Console# show disk-partitions /c0t1d0
Disk size : 17836667 sectors
Partition 1: UNUSED,                   offset      0 sectors, size   0 sectors
Partition 4: UNUSED,                   offset      0 sectors, size   0 sectors

Console# show disks
      /c0t0d0 (scsi bus 0, unit 0, lun 0)
      /c0t1d0 (scsi bus 0, unit 1, lun 0)

```



Note The name of disk 0 is /c0t0d0; the name of disk 1 is /c0t1d0. The **c** indicates the SCSI controller number, **t** is the target number, and **d** is the logical unit number (LUN).

At any time, you can use the **show dosfs volumes** command to verify volume status.

```
Console# show dosfs volumes
/c0t0d0s1: mounted
/c0t1d0s1: mounted
/local: mounted
```



Note

You can substitute the alias */local* for the dosfs volume name */c0t0d0*.

The dosfs partition may be unmounted if the **dosfs unmount** command was executed. If the dosfs partition is unmounted, mount the dosfs partition using the **dosfs mount** command.

If the **dosfs mount** command does not work properly, execute the **show disk-partitions** command. Check for the UVFAT partition. The size of the dosfs partition should be approximately 2 gigabytes. A sector is equal to 512 bytes. If there is no disk partition for the dosfs, see the next section “[Repartitioning the Content Router Disks](#).”

If the dosfs volume does not mount, perform the procedure in the “[Checking and Repairing DOS File System Volumes](#)” section on page 3-8. If the dosfs volume still does not mount after you perform this procedure, repartition and reformat the disks as described in the next section, “[Repartitioning the Content Router Disks](#).”



Caution

Anytime a volume is partitioned or formatted, all the data on the disk is lost.

Repartitioning the Content Router Disks



Caution

Whenever a disk is partitioned, all the data on the disk is lost.

To repartition disk 0, which is the location of the dosfs partition, enter the **disk partition** command.



Note

The name of disk 0 is */c0t0d0*.

```
Console# disk partition /c0t0d0 dosfs
this will create a dos partition
total size of disk = 17836667
CISCO_UVFAT_1 vol /c0t0d0s1 part_off 63 part_siz 3906250
```

Following a repartition, you must format and mount the dosfs using the following commands:

- **dosfs format**
- **dosfs mount**

If the first disk is reformatted, all the cache data is lost as well as all data in the dosfs partition. It will be necessary to reinstall the software image. See the “[Recovering the Software](#)” section on page 3-4.



Note

If the dosfs partition is not mounted correctly, an error message may be generated from the CLI. An example of this error message follows.

```
Console# cli command
Could not get stat information about /local <====
```

Checking and Repairing DOS File System Volumes

The dosfs partition may be corrupted if a power outage occurs while the Content Router is writing to the disk, or if the disk is removed while the Content Router is writing to the dosfs partitions.

If there is a problem caused by the corrupted dosfs FAT table, perform the following steps:

-
- Step 1 Enter the **dosfs check /local** command.
 - Step 2 If an error message occurs, enter the **dosfs unmount /local** command.
 - Step 3 Enter the **dosfs repair auto /local** command.
 - Step 4 Enter the **dosfs mount /local {rdonly | rdwr}** command.
 - Step 5 If the dosfs mount fails after you enter the **dosfs repair** command, enter the **dosfs format** command followed by the **dosfs mount** command.

If you are working in the current working directory of */local*, you may see the following error message:

```
Could not get stat information about /local.
```

You can enter the **cd /** command to avoid this error message.



Note

Entering the **dosfs check** command effectively prevents system features (such as syslog or transaction logging) from writing to the disk. Disregard error messages generated by these features after entering the **dosfs check** command, as shown in the following example:

```
Console# dosfs check /local
tSyslog: Cannot write log to Disk File (/local/var/log/syslog.txt), OK
```

Recovering a Lost Password

If a user password is forgotten, lost, or misconfigured, perform the following steps to reset the password.



Note

There is no way to restore a lost password. You must reset the password to a new one, as described in this procedure.

- Step 1 Attach an ASCII terminal to the Content Router console port.
- Step 2 Break to the bootstrap program prompt and press any key before the Content Router completes the auto-boot sequence.
 - a. Enter **c** to change the auto-boot settings.
 - b. Enter **flash** for the boot device type.

```
Press any key to stop auto-boot...
7
```

```
[PRESS ANY KEY NOW before the Content Router auto reboots]
```

```
[CE500 Series]:c
```



```

boot device (flash,net) [                net]: flash
filename [                filename]:
cache IP address [                10.1.138.5]:
IP network mask [                255.255.255.0]:
server IP address [                172.16.63.250]:
gateway IP address [                10.1.138.1]:
protocol (rcp,ftp,tftp) [                ]:
username [                ]:
password [                ]:
flags [                0]: 0x8000

[CE500 Series]:@

```

- Step 3** Change the configuration flags field to **0x8000** (as shown above), and then enter @ to continue with the boot sequence.



Note Setting the configuration flag field to **0x8000** lets you enter the system, bypassing all security. Setting the configuration flag field to **0x4000** lets you bypass the NVRAM configuration.

- Step 4** Once you see the CLI prompt, set the password for the user using the **user modify username name password new-password** command in global configuration mode.

- Step 5** Use the **write** command to save the configuration change.

By default, the Content Router has an admin user with no password set. When no password is set, you can enter anything as a password.

Sample Configurations

The following sample configurations are outputs of the **show running-config** command and can be used as a guide for configuring the Content Router. If a feature is not enabled, it does not appear in the running configuration display, though settings configured for that feature are displayed.

Direct Mode Sample Configuration

```

console# show running-config

Building configuration...
Current configuration:
!
!
logging event-export critical-events alert kernel
logging 10.7.8.9
!
group add admin gid 0
group add everyone gid 1000
!
user add admin uid 0 password 1 "ceSzbyeb" capability admin-access
user add des uid 5001 password 1 "bdze9eSbS" capability telnet-access
!
hostname CR4430
!

```

```

interface ethernet 0
 ip address 10.1.1.34 255.255.255.0
 ip broadcast-address 10.1.1.255
exit
!
interface ethernet 1
exit
!
ip default-gateway 10.1.1.2
ip domain-name cisco.com
cron file /local/etc/crontab
ntp server 10.6.14.7
!
boomerang dns enable direct-mode
!
boomerang dns domain www.download.cisco.com
 alias www.download.cisco.net
 key 7 01370317
 origin-server 172.29.249.205 cr.cisco.com
 client-group listA
!
boomerang client-list listA
 client 10.2.3.4
 client 10.2.4.4
 client 10.2.5.4
 client 10.2.6.4
 client 10.2.7.4
 client 10.2.8.6
!
boomerang client-list listB
 client 10.2.8.7
 client 10.2.8.8
 client 10.2.8.9
 client 10.2.8.10
!
!
!
transaction-logs export interval 3600
!
end!

```

WCCP Mode Sample Configuration

```

console# show running-config

Building configuration...
Current configuration:
!
!
logging event-export critical-events alert kernel
logging 10.7.8.9
!
group add admin gid 0
group add everyone gid 1000
!
user add admin uid 0 password 1 "ceSzbyeb" capability admin-access
user add des uid 5001 password 1 "bbdze9eSbS" capability telnet-access
!
hostname cr1
!

```

```
interface ethernet 0
  ip address 10.1.1.34 255.255.255.0
  ip broadcast-address 10.1.1.255
exit
!
interface ethernet 1
exit
!
ip default-gateway 10.1.1.2
ip domain-name cisco.com
cron file /local/etc/crontab
ntp server 10.6.14.7
!
boomerang dns enable wccp-mode
!
boomerang dns domain www.download.cisco.com
  alias www.download.cisco.net
  key 7 01370317
  origin-server 172.29.249.205 cr.cisco.com
  client-group listB
!
boomerang client-list listA
  client 10.2.3.4
  client 10.2.4.4
  client 10.2.5.4
  client 10.2.6.4
  client 10.2.7.4
  client 10.2.8.6
!
boomerang client-list listB
  client 10.2.8.7
  client 10.2.8.8
  client 10.2.8.9
  client 10.2.8.10
!
!
wccp router-list 1 172.29.249.245
wccp dns-boomerang router-list-num 1
!
transaction-logs export interval 3600
!
end
```

Disabling a Content Router in WCCP Mode

You can remove a Content Router in WCCP mode from the WCCP environment without losing any settings, and without powering off the unit. To remove a Content Router, disable the boomerang WCCP service by issuing the **no wccp dns-boomerang** command at the Content Router CLI (command-line interface).

