



# Managing Cisco AS5300 Voice Feature Cards

This chapter explains how to manage voice feature cards (VFCs) for the Cisco AS5300 and contains the following sections:

- VFC Management Overview
- VFC Management Task List

For a complete description of the commands used in this chapter, refer to the *Cisco IOS Multiservice Applications Command Reference* publication. To locate documentation of other commands that appear in this chapter, use the command reference master index or search online.

## VFC Management Overview

Voice feature cards (VFCs) for the Cisco AS5300 come with a single bundled image of VCWare stored in VFC Flash memory. Table 19 shows the extension types defined for these embedded firmware files.

**Table 19 VFC Firmware Extensions**

Firmware	Filenames	Description
VCWare	vcw-vfc-*	Latest version of VCWare stores in Flash memory, including: <ul style="list-style-type: none"><li>• Datapath engine</li><li>• Message dispatcher</li><li>• DSP manager</li><li>• VC manager</li><li>• Process scheduler</li></ul>
DSPWare	btl-vfc-*	DSP bootloader
	cor-vfc-*	Core operating system and initialization
	bas-vfc-*	Base voice
	cdc-*-*	Voice codec files
	fax-vfc-*	Fax relay files

DSPWare is stored as a compressed file within VCWare; you must unbundle VCWare to install DSPWare into Flash memory. During the unbundling process, two default lists (the default file list and the capability list) are automatically created, populated with default files from that version of VCWare, and

stored in VFC Flash memory. The default file list contains the filenames indicating which files are initially loaded into DSP upon bootup. The capability list defines the set of codecs that can be negotiated for a voice call.

## VFC Management Task List

VFC management enables you to add versions of VCWare to Flash memory (download and unbundle files), erase files contained in Flash memory, add files to the default file list and capability list, and delete files from the default file lists and capability lists. These tasks are described in the following sections:

- Downloading VCWare
- Copying Flash Files to the VFC
- Unbundling VCWare
- Adding Files to the Default File List
- Adding Codecs to the Capability List
- Deleting Files from VFC Flash Memory
- Erasing the VFC Flash Memory

## Downloading VCWare

To download software to your VFC, perform the following tasks:

- Determine that the version of VFC ROM Monitor software is compatible with your installed Cisco IOS image. VFC ROM version 1.2 requires Cisco IOS image 0.14.1 (1.6 NA1) or later. VFC ROM Monitor version 1.2 can be made to work with Cisco IOS image 0.13 (or later) by appending the suffix “.VCW” to the VCWare image stored in VFC Flash memory.
- Determine whether the VFC is in VCWare mode or ROM Monitor mode. The mode, whether VCWare or ROM Monitor, determines how you download software to the VFC.
- Download the software using the appropriate procedure.

## Determining the Number of VFCs

To determine the number of installed VFCs and their location, use the following command in privileged EXEC mode:

Command	Purpose
Router# <code>show vfc slot directory</code>	Determines the number of installed VFCs and their location.

For each VFC identified and located, perform the tasks described in the following sections to upgrade system software on that VFC.

## Identifying the VFC Mode

To identify the mode (whether VCWare or ROM Monitor), use the following command in privileged EXEC mode:

Command	Purpose
Router# <code>show vfc slot board</code>	Determines whether your VFC is operating in VCWare mode or ROM Monitor mode.

If the mode is VCWare, the VFC status will be “VCWARE running.” If the mode is ROM Monitor, the VFC status will be “ROMMON.”

## Downloading Software (VCWare Mode)

To download VFC software to the VFC while the VFC is in VCWare mode, use the following commands beginning in privileged EXEC mode:

	Command	Purpose
Step 1	Router# <code>erase vfc slot</code>	Erases the Flash memory.
Step 2	Router# <code>show vfc slot directory</code>	Verifies that the VFC Flash memory is indeed empty.
Step 3	Router# <code>copy tftp vfc</code> or Router# <code>copy flash vfc</code>	Downloads the VCWare from a TFTPBoot server into VFC Flash memory. or Downloads the VCWare from the VFC motherboard into VFC Flash memory.
Step 4	Router# <code>clear vfc slot</code>	Reboots the VFC.
Step 5	Router# <code>show vfc slot board</code>	Displays whether the VFC is back up in VCWare mode.
Step 6	Router# <code>show vfc slot directory</code>	Verifies that VCWare is in the VFC Flash.
Step 7	Router# <code>unbundle vfc slot</code>	Unbundles the DSPWare from the VCWare and configures the default file list and the capability list.
Step 8	Router# <code>show vfc slot directory</code>	Verifies that the DSPWare has been unbundled.
Step 9	Router# <code>show vfc slot default-list</code>	Verifies that the default file list has been populated.
Step 10	Router# <code>show vfc slot cap-list</code>	Verifies that the capability list has been populated.

After you have completed the preceding tasks, reboot the Cisco AS5300 for these changes to take effect.



### Note

If the VFC ROM is version 1.1, the image name must end in “.VCW.” If the VFC ROM is version 1.2, the image name must start with “vcv-.”

## Downloading Software (ROM Monitor Mode)

To download VFC software to the VFC while the VFC is in ROM Monitor mode, use the following commands beginning in privileged EXEC mode:

	Command	Purpose
Step 1	Router# <code>clear vfc slot purge</code>	Erases the VFC Flash memory.
Step 2	Router# <code>copy tftp vfc</code> or Router# <code>copy flash vfc</code>	Downloads the VCWare from a TFTP server into VFC Flash memory. or Downloads the VCWare from the VFC motherboard into VFC Flash memory.
Step 3	Router# <code>clear vfc slot</code>	Reboots the VFC.
Step 4	Router# <code>show vfc slot board</code>	Displays whether the VFC is back up in VCWare mode.
Step 5	Router# <code>show vfc slot directory</code>	Verifies that VCWare is in the VFC Flash.
Step 6	Router# <code>unbundle vfc slot</code>	Unbundles the DSPWare from the VCWare and configures the default file list and the capability list.
Step 7	Router# <code>show vfc slot directory</code>	Verifies that the DSPWare has been unbundled.
Step 8	Router# <code>show vfc slot default-list</code>	Verifies that the default file list has been populated.
Step 9	Router# <code>show vfc slot cap-list</code>	Verifies that the capability list has been populated.

After you have completed the preceding tasks, reboot the Cisco AS5300 for these changes to take effect.



Note

The image name must start with "vcw-."

## Copying Flash Files to the VFC

As mentioned, each VFC comes with a single bundled image of VCWare stored in Flash memory. VoIP for the Cisco AS5300 offers two different ways to copy new versions of VCWare to the VFC Flash memory: either by downloading the image from the AS5300 motherboard or by downloading the VCWare from a TFTP server.

### Downloading VCWare to the VFC from the AS5300 Motherboard

To download the VCWare file from the AS5300 motherboard to VFC Flash memory, use the following command in privileged EXEC mode:

Command	Purpose
Router# <code>copy flash vfc</code>	Downloads (copies) the Flash file from the AS5300 motherboard to the Flash memory on the VFC.

## Downloading VCWare to the VFC from a TFTP Server

To download the latest version of VCWare from a TFTP server, make sure that the file is stored on the TFTP server. If you have a copy of the current version of VCWare on disk, you must store that image on a TFTP server before you can download the file to VFC memory.

To copy the Flash file from a TFTP server, use the following command in privileged EXEC mode:

Command	Purpose
Router# <code>copy tftp vfc</code>	Downloads (copies) the Flash file from a TFTP server to the Flash memory on the VFC.

## Unbundling VCWare

VCWare needs to be unbundled for DSPWare to be loaded in Flash memory and the two necessary default lists (default file list and capability list) created and populated with the appropriate default files for that version of DSPWare. Table 20 shows the files associated with each firmware file.

**Table 20 VFC Firmware Filenames**

Firmware	Filenames
VCWare	vcw-vfc-mz.0.15.bin
DSPWare Initialization and Static Files	btl-vfc-1.0.14.0.bin cor-vfc-1.0.14.0.bin jbc-vfc-1.0.14.0.bin
DSPWare Overlay Files	bas-vfc-1.0.14.0.bin cdc-g711-1.0.14.0.bin cdc-g729-1.0.14.0.bin fax-vfc-1.0.14.0.bin

To unbundle the current running image of VCWare, use the following command in privileged EXEC mode:

Command	Purpose
Router# <code>unbundle vfc slot</code>	Unbundles the current image of VCWare.

## Adding Files to the Default File List

When you unbundle VCWare, the default file list is automatically created and populated with the default files for that version of VCWare. The default file list indicates which files are initially loaded into DSP upon bootup. The following example shows the output from the **show vfc def** command, which displays the contents of the default file list:

```
router# show vfc 1 def

Default List for VFC in slot 1:
1. btl-vfc-1.0.13.0.bin
2. cor-vfc-1.0.1.bin
3. bas-vfc-1.0.1.bin
4. cdc-g729-1.0.1.bin
5. fax-vfc-1.0.1.bin
6. jbc-vfc-1.0.13.0.bin
```

Under most circumstances, these default files should be sufficient. If you need to, you can add a file (from those stored in VFC Flash memory) to the default file list or replace an existing file from the default file list. When you add a specific file to the default file list, it replaces the existing default for that extension type.

To select a file to be added to the default file list, use the following command in global configuration mode:

Command	Purpose
Router(config)# <b>default-file vfc</b>	Selects a file stored in the Flash memory to be added to the default file list.

## Adding Codecs to the Capability List

The capability list defines the set of codecs that can be negotiated for a voice call. Like the default file list, the capability list is created and populated when VCWare is unbundled and DSPWare added to VFC Flash memory. The following example shows the output from the **show vfc cap** command, which displays the contents of the capability list:

```
router# show vfc 1 cap

Capability List for VFC in slot 1:
1. fax-vfc-1.0.1.bin
2. bas-vfc-1.0.1.bin
3. cdc-g729-1.0.1.bin
4. cdc-g711-1.0.1.bin
5. cdc-g726-1.0.1.bin
6. cdc-g728-1.0.1.bin
7. cdc-gsmfr-1.0.1.bin
```

VFC management lets you add codec files to the capability list to meet the needs of your specific telephony network.



### Note

The capability list does not indicate codec preference; it simply reports the codecs that are available. The session application decides which codec to use.

To add a codec overlay file to the capability list, use the following command in global configuration mode:

Command	Purpose
Router(config)# <b>cap-list</b> <i>file-name</i> <b>vfc</b> <i>slot-number</i>	Selects a codec overlay file to be added to the capability list.

## Deleting Files from VFC Flash Memory

In some instances, you might need to delete a file from the default file list or the capability list or you might need to revert to a previous version of VCWare stored in Flash memory. To delete a file, you must identify and delete the file from VFC Flash memory. Deleting a file from Flash memory removes the file from the default file list and capability list (if the deleted file is included on those lists).

To delete a file from VFC Flash memory, use the following command in privileged EXEC mode

:

Command	Purpose
Router# <b>delete</b> <i>file-name</i> <b>vfc</b> <i>slot</i>	Deletes the specified file from VFC Flash memory.

## Erasing the VFC Flash Memory

When you upgrade to a later version of VCWare, the new files are stored in VFC Flash, along with those already stored in VFC Flash memory—the new files do not overwrite existing files. Consequently, you will eventually need to erase the contents of VFC Flash memory to free VFC Flash memory space.

Erasing VFC Flash memory removes the entire contents stored in Flash memory, including the default file list and the capability list.

To erase the Flash memory of a specific VFC, use the following command in privileged EXEC mode:

Command	Purpose
Router# <b>erase</b> <b>vfc</b> <i>slot</i>	Erases the Flash memory on the VFC.

For more information about VFC management commands, refer to the *Cisco IOS Multiservice Applications Command Reference* publication.

