



Managing Cisco AS5300 Voice Feature Cards

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

- [VFC Management Overview, page 1](#)
- [VFC Management Task List, page 2](#)

For a complete description of the commands used in this document, refer to the *Cisco IOS Voice Command Reference*, Release 12.3. To locate documentation of other commands that appear in this document, use the command reference master index or search online.

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

VFC Management Overview

Voice feature cards (VFCs) for the Cisco AS5300 come with a single bundled image of VCWare stored in VFC Flash memory.

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.

[Table 1](#) shows the extension types defined for these embedded firmware files.



Table 1 VFC Firmware Extensions

Firmware	Filenames	Description
VCWare	vcw-vfc-*	Latest version of VCWare stores in Flash memory, including: <ul style="list-style-type: none"> • Datapath engine • Message dispatcher • DSP manager • VC manager • Process scheduler
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

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, page 2](#)
- [Copying Flash Files to the VFC, page 7](#)
- [Unbundling VCWare, page 8](#)
- [Adding Files to the Default File List, page 9](#)
- [Adding Codecs to the Capability List, page 10](#)
- [Deleting Files from VFC Flash Memory, page 11](#)
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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 which procedure you will use to download software to the VFC.
- Download the software using the appropriate procedure.

**Note**

For each installed VFC, 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 commands.

SUMMARY STEPS

1. **enable**
2. **show vfc slot board**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	show vfc slot board Example: Router# show vfc slot board	Determines whether your VFC is operating in VCWare mode or ROM Monitor mode. <ul style="list-style-type: none"> • 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.

SUMMARY STEPS

1. **enable**
2. **erase vfc slot**
3. **show vfc slot directory**
4. **copy flash: vfc:**
Or
copy tftp: vfc:
5. **clear vfc slot**
6. **show vfc slot board**
7. **show vfc slot directory**
8. **unbundle vfc slot**
9. **show vfc slot directory**

10. **show vfc slot default-file**

11. **show vfc slot cap-list**

DETAILED STEPS

	Command	Purpose
Step 1	<p>enable</p> <p>Example: Router> enable</p>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> Enter your password if prompted.
Step 2	<p>erase vfc slot</p> <p>Example: Router# erase vfc slot</p>	Erases the Flash memory.
Step 3	<p>show vfc slot directory</p> <p>Example: Router# show vfc slot directory</p>	Verifies that the VFC Flash memory is indeed empty.
Step 4	<p>copy flash: vfc:</p> <p>Example: Router# copy flash: vfc:</p> <p>or</p> <p>copy tftp: vfc:</p> <p>Example: Router# copy tftp: vfc:</p>	<p>Downloads the VCWare file from the router motherboard into the Flash memory on the VFC.</p> <p>Downloads the VCWare file from a TFTP server into the Flash memory on the VFC.</p> <p>Note The colons in this command are required.</p>
Step 5	<p>clear vfc slot</p> <p>Example: Router# clear vfc slot</p>	Reboots the VFC.
Step 6	<p>show vfc slot board</p> <p>Example: Router# show vfc slot board</p>	Displays whether the VFC is back up in VCWare mode.
Step 7	<p>show vfc slot directory</p> <p>Example: Router# show vfc slot directory</p>	Verifies that VCWare is in the VFC flash.
Step 8	<p>unbundle vfc slot</p> <p>Example: Router# unbundle vfc slot</p>	Unbundles the DSPWare from the VCWare and configures the default file list and the capability list.

	Command	Purpose
Step 9	<code>show vfc slot directory</code> Example: Router# <code>show vfc slot directory</code>	Verifies that the DSPWare has been unbundled.
Step 10	<code>show vfc slot default-file</code> Example: Router# <code>show vfc slot default-file</code>	Verifies that the default file list has been populated.
Step 11	<code>show vfc slot cap-list</code> Example: Router# <code>show vfc slot cap-list</code>	Verifies that the capability list has been populated.

Reboot the router in order 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.

SUMMARY STEPS

1. **enable**
2. **clear vfc slot purge**
3. **copy flash: vfc:**
Or
copy tftp: vfc:
4. **clear vfc slot**
5. **show vfc slot board**
6. **show vfc slot directory**
7. **unbundle vfc slot**
8. **show vfc slot directory**
9. **show vfc slot default-file**
10. **show vfc slot cap-list**

DETAILED STEPS

	Command	Purpose
Step 1	<code>enable</code> Example: Router> <code>enable</code>	Enables privileged EXEC mode. • Enter your password if prompted.
Step 1	<code>clear vfc slot purge</code> Example: Router# <code>clear vfc slot purge</code>	Erases the VFC Flash memory.
Step 2	<code>copy flash: vfc:</code> Example: Router# <code>copy flash: vfc:</code> or <code>copy tftp: vfc:</code> Example: Router# <code>copy tftp: vfc:</code>	Downloads the VCWare file from the router motherboard into the Flash memory on the VFC. Downloads the VCWare file from a TFTP server into the Flash memory on the VFC. Note The colons in this command are required.
Step 3	<code>clear vfc slot</code> Example: Router# <code>clear vfc slot</code>	Reboots the VFC.
Step 4	<code>show vfc slot board</code> Example: Router# <code>show vfc slot board</code>	Displays whether the VFC is back up in VCWare mode.
Step 5	<code>show vfc slot directory</code> Example: Router# <code>show vfc slot directory</code>	Verifies that VCWare is in the VFC flash.
Step 6	<code>unbundle vfc slot</code> Example: Router# <code>unbundle vfc slot</code>	Unbundles the DSPWare from the VCWare and configures the default file list and the capability list.
Step 7	<code>show vfc slot directory</code> Example: Router# <code>show vfc slot directory</code>	Verifies that the DSPWare has been unbundled.

	Command	Purpose
Step 8	<code>show vfc slot default-file</code>	Verifies that the default file list has been populated.
	Example: Router# <code>show vfc slot default-file</code>	
Step 9	<code>show vfc slot cap-list</code>	Verifies that the capability list has been populated.
	Example: Router# <code>show vfc slot cap-list</code>	

Reboot the router in order 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 VCWare image from the router motherboard or by downloading the VCWare image from a TFTP server.

Downloading VCWare to the VFC from the Router Motherboard

To download the VCWare file from the router motherboard to VFC Flash memory, use the following commands.

SUMMARY STEPS

1. **enable**
2. **copy flash: vfc:**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
	Example: Router> <code>enable</code>	
Step 2	<code>copy flash: vfc:</code>	Downloads (copies) the VCWare file from the router motherboard into the Flash memory on the VFC.
	Example: Router# <code>copy flash: vfc:</code>	Note The colons in this command are required.

Downloading VCWare to the VFC from a TFTP Server

To download the latest version of VCWare from a TFTP server, first ensure 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 the VFC Flash memory.

To copy the flash file from a TFTP server, use the following commands.

SUMMARY STEPS

1. **enable**
2. **copy tftp: vfc:**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	<code>copy tftp: vfc:</code> Example: Router# copy tftp: vfc:	Downloads (copies) the VCWare file from a TFTP server into the Flash memory on the VFC. Note The colons in this command are required.

Unbundling VCWare

In order for the DSPWare to be loaded into the Flash memory on a VFC, the VCWare needs to be unbundled, and the two necessary default lists (default file list and capability list) need to be created and populated with the appropriate default files for that version of DSPWare. [Table 2](#) shows the files associated with each firmware file.

Table 2 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 commands.

SUMMARY STEPS

1. **enable**
2. **unbundle vfc slot**

DETAILED STEPS

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> • Enter your password if prompted.
Step 2	unbundle vfc slot Example: Router# unbundle vfc slot	Unbundles the current image of VCWare. This action unbundles the DSPWare from the VCWare and configures the default file list and the capability list.

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 will be initially loaded into DSP when the router boots up. The following example shows the output from the **show vfc default-file** command, which displays the contents of the default file list:

```
router# show vfc 1 default-file

Default List for VFC in slot 1:
1. btl-vfc-1.0.13.0.bin
2. cor-vfc-1.0.1.1.bin
3. bas-vfc-1.0.1.1.bin
4. cdc-g729-1.0.1.1.bin
5. fax-vfc-1.0.1.1.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 commands.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **default-file vfc**

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: Router> <code>enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	<code>configure terminal</code> Example: Router# <code>configure terminal</code>	Enters global configuration mode.
Step 3	<code>default-file vfc</code> Example: Router(config)# <code>default-file vfc</code>	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-list** command, which displays the contents of the capability list:

```
router# show vfc 1 cap-list

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 commands.

SUMMARY STEPS

1. `enable`
2. `configure terminal`
3. `cap-list file-name vfc slot-number`
4. `exit`

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: Router> <code>enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none">• Enter your password if prompted.
Step 2	<code>configure terminal</code> Example: Router# <code>configure terminal</code>	Enters global configuration mode.
Step 3	<code>cap-list file-name vfc slot-number</code> Example: Router(config)# <code>cap-list file-name vfc slot-number</code>	Selects a codec overlay file to be added to the capability list.
Step 4	<code>exit</code> Example: Router(config)# <code>exit</code>	Exits global configuration mode and returns to privileged EXEC configuration mode.

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 from the capability list (if the deleted file is included on those lists).

To delete a file from VFC Flash memory, use the following commands.

SUMMARY STEPS

1. `enable`
2. `delete file-name vfc slot`

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: <code>Router> enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none"> Enter your password if prompted.
Step 2	<code>delete file-name vfc slot</code> Example: <code>Router# delete file-name vfc slot</code>	Deletes the specified file from the Flash memory on the VFC.

Erasing the VFC Flash Memory

When you upgrade to a later version of VCWare, the new files are stored in VFC Flash memory, along with the existing files 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 on a specific VFC, use the following commands.

SUMMARY STEPS

- `enable`
- `erase vfc slot`

**Caution**

This command removes *all* files stored in the Flash memory of the VFC in the specified slot.

DETAILED STEPS

	Command or Action	Purpose
Step 1	<code>enable</code> Example: <code>Router> enable</code>	Enables privileged EXEC mode. <ul style="list-style-type: none"> Enter your password if prompted.
Step 2	<code>erase vfc slot</code> Example: <code>Router# erase vfc slot</code>	Erases the Flash memory on the VFC.

**Note**

For more information about VFC management commands, refer to the [Cisco IOS Voice Command Reference, Release 12.3](#).