Overview

The Cisco Systems Integrated Prompt/Record Card (IPRC) for the VCO/4K is a hardware option that provides an easy-to-implement, high-quality, digital voice prompting system.

The IPRC receives commands from a host application via the VCO/4K system software and communicates these commands to its digital voice circuitry to produce voice messages. These messages are then routed by the VCO/4K system software to the designated outgoing VCO/4K port.

The IPRC is available with the following port configurations:

- 8 Playback/4 record ports (IPRC8)
- 64 playback/32 record ports (IPRC64)
- 128 playback/32record ports (IPRC128)

All channels can operate simultaneously. In addition, the IPRC supports up to 16 libraries of up to 256 prompts (audio files) per library provided that the total time of the prompts does not exceed a duration of 35 minutes. Customers may order the following IPRC standard prompt sets at no charge:

- IPRC Prompt Library Domestic/u-law
- IPRC Prompt Library International/A-law

IPRC prompts are composed in a proprietary format. Users may modify these prompts or create their own with a special software package, VFedit, that has been modified to accommodate the proprietary IPRC format. This software package is available only through Cisco Systems. For more information, contact your Cisco Systems sales representative.

Summary of Features

- VCO/4K administration support to create and maintain multiple voice prompt libraries.
- VCO/4K inpulse rule processing and VCO/4K host commands to support recording and playback functionality.
- VCO/4K administration support for user-definable configuration parameters for the IPRC.
- VCO/4K commands and administration processing that supports dynamic prompt updating for IPRC prompt libraries.
- User-configurable and firmware defined IPRC port densities from 8 to 128 ports.
- Run-time diagnostic functionality to verify the integrity of voice prompt data on the IPRC.
- A user-configurable PCM limit to prevent voice prompt playback operations from exceeding acceptable levels within the network.

System Requirements

The components in Table 1-1 are required to implement the voice prompting features of the IPRC.

Table 1-1   IPRC System Requirements

Components Supplied by Cisco	Components Supplied by Customer
VCO/4K	IBM PC/AT-compatible computer with the following characteristics:
IPRC8, IPRC64, or IPRC128	
IPRC SCSI Adapter Cable	386SX (or higher performance)
VFedit Conversion Utility, Audio ToolBox (optional, for creating or editing custom prompts and converting to the IPRC proprietary format)	At least 1 MB RAM
	MS-DOS 3.3 or above
	Microsoft Windows 3.0 or higher
	Optional voice digitizing board for recording and playing back prompts

Prompt Download Overview

The IPRC prompt download process uses the system SCSI bus to download voice prompt files from the VCO/4K hard drive to an IPRC. The NBC comm bus is used to control the download process, but no voice prompt files are downloaded via the NBC comm bus.

Each side of a redundant system downloads voice prompts from that side's hard drive to the IPRC connected to that particular side. Prompts are also downloaded whenever the IPRC is reset.

Playback Overview

The IPRC's playback capabilities allow the VCO/4K application to play prompts from multiple prompts libraries and to loop the playback of individual prompts or a list or prompts. These capabilities are accessed through iinpulse rule processing and Voice Port Control ($6C) command processing. The IPRC also supports the DTMF "barge-in" capability, where a DTMF digit collection can be used to stop a voice announcement.

Record Overview

The IPRC provides the ability to record PCM data from any DS0 time slot in the VCO/4K. The VCO/4K uses the IPRC record function to update the prompt library information by recording new prompts from a DS0 port. The IPRC record implementation also allows the VCO/4K application to record temporary prompt information on a per call basis. The recording process is accessed through inpulse rule processing and Voice Port Control ($6C) command processing.

Note   If C-bus is enabled, the IPRC record feature is not supported.

Handling of Temporary Prompt Information

A temporary prompt can be recorded for use on a per call basis. This feature allows a unique prompt message to be recorded for each playback port on an IPRC. The temporary prompt is associated with an IPRC playback port and is maintained by the IPRC as long as the associated playback port is involved in a call. The temporary prompt is erased on the IPRC when the playback port is released from the call. An application of this feature is one in which a voice sample is recorded and played back immediately, as in an automated collect call service.

The IPRC can record up to 255 temporary prompts per playback channel. The temporary prompts are accessed for recording and subsequent playback through inpulse rule processing and Voice Port Control ($6C) command processing.

IPRC Record Channel Resource Management

IPRC64 and IPRC128 cards contain 32 channels for recording. The IPRC8 contains four channels for recording. These record channels are managed and allocated internally by the IPRC. The VCO/4K system software does not need to provide any additional administration or configuration functionality to use the record channels on an IPRC. Consequently, the VCO/4K system software cannot group record channels as a resource group, record channels cannot be shared across IPRCs, and record channel behavior cannot be displayed. The Port Display screen displays record state information for any IPRC port performing a record operation.

Multiple Prompt Library Support

You can create up to 16 prompt library directories on the hard drive. The Prompt Library Maintenance screen also provides a means for adding and removing voice prompt files from a library on the hard drive, in addition to other functions which are described in detail in this document.

The prompt library configuration information (library and directory) are maintained automatically on both hard drives of a redundant system. The prompt files themselves must be transferred from floppy disk to each hard drive via the system Disk Utilities.

Assigning Prompt Libraries to IPRCs

You may assign one or more prompt libraries to each IPRC in the system through the IPRC Card Configuration screen. Prompt libraries will be downloaded to the IPRC as part of the IPRC card initialization process. Refer to the for more information.

Allocating IPRCs to Calls

All IPRC ports are assigned to the same resource group. IPRC ports are allocated from this group based on the prompt libraries that the IPRC is configured in the IPRC Card Configuration screen to support. For example, if a prompt announcement from Prompt Library 2 is required, then only an IPRC that supports this library (as viewed from the IPRC Card Configuration screen) is allocated to the call.

If an IPRC port cannot be allocated for a particular library, the Resource Allocation ($D6) report returns the port address of the DS0 port affected and also specifies the library. Refer to the *Cisco VCO/4K Extended Programming Reference* or *Cisco VCO/4K Standard Programming Reference* for more information.

IPRC Prompt Information

There are two methods for updating prompt information on the VCO/4K: through the system administration with the Voice Prompt Maintenance Screen, and by using the record process and prompt maintenance host command.

Updating Prompt Libraries Through System Administration

The Voice Prompt Maintenance screen allows you to add prompts to or delete prompts from a library directory on the hard drive, edit prompt file attributes, and manually update IPRCs. This screen also allows you to define an NFS-mounted directory as the default directory for a prompt library.

Any time you add a prompt file to a prompt library directory on the hard drive, all IPRCs supporting that library (as viewed from the IPRC Card Configuration screen) are updated with the new prompt file. Likewise, if you delete a a prompt file from a library, this prompt is erased on all cards supporting the library.

Updating Prompt Libraries via PCM

You can update prompt library information with the record function of the IPRC. In this case, the IPRC is used to record a specified prompt for the card. This prompt is then accessible by any port on the card. You may then store the prompt to the VCO/4K system disk and subsequently upload it to other IPRCs that support the same prompt library by using the Voice Prompt Maintenance Control ($91) command. If the recorded prompt is not stored to the VCO/4K system disk, it may be lost when the IPRC is redownloaded with prompt information.

Handling Memory Limitations

When you update voice prompt information through system administration or PCM, a memory limitation could occur if the updated or new prompt information extends beyond the prompt capacity on the IPRC. The IPRC will detect this memory exhaust condition and report it to the system controller, which will in turn generate system log messages and a System Card Status ($D9) report. The IPRC will remain active and all prompt data up to the prompt that exceeded the capacity will be accessible.

Verifying Run-Time Integrity

An optional run-time integrity verification process is provided within the IPRC application code to detect when prompt information is corrupted. When this feature is enabled, a checksum is added to each prompt on the IPRC and a message is sent from the VCO/4K system controller to the IPRC instructing it to verify its prompt data according to the specified time interval. The IPRC recalculates the checksum

of the prompts and compares it to the checksum that it had previously calculated when the prompt was loaded or recorded. Checksum failures generate a system log message. Administrative or host action is necessary to diagnose the problem and correct the prompt file.

You configure the frequency of the checksum verification on the IPRC through the IPRC Card Configuration screen in one-hour increments up to 24 hours. You may also disable the checksum verification. The VCO/4K instructs the IPRC to perform the checksum test based on this frequency.

The Card Status ($D9) report returns any prompt verification failure. Refer to the *Cisco VCO/4K Extended Programming Reference* or *Cisco VCO/4K Standard Programming Reference* for more information.

IPRC Prompt Information