Products & Services
Understanding Direct Inward Dial (DID) Voice Interface Cards
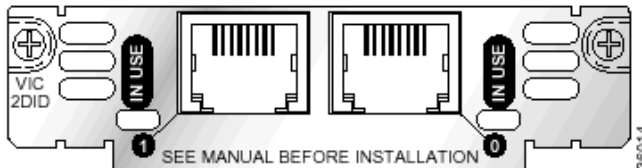
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Introduction

Direct Inward Dialing (DID) is a service offered by telephone companies that enables callers to dial directly an extension on a PBX or packet voice system (for example, Cisco CallManager and Cisco IOS® routers and gateways) without the assistance of an operator or automated call attendant. This service makes use of DID trunks, which forward only the last three to five digits of a phone number to the PBX, router, or gateway. For example, a company has phone extensions 555-1000 to 555-1999. A caller dials 555-1234 and the local central office (CO) forwards 234 to the PBX or packet voice system. The PBX or packet voice system then rings extension 234. This entire process is transparent to the caller.

Analog DID Voice Interface Cards (VICs) service analog public switched telephone network (PSTN) DID trunks with the use of analog voice or fax. They have dual working modes, DID and FXS. These two modes are mutually exclusive.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

This document is not restricted to specific software and hardware versions.

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Product Numbers

Product Number	Description

VIC-2DID	Two-port FXS/DID Dual Functional VIC Default mode: DID
VIC-4FXS/DID	Four-port FXS/DID Dual Functional VIC Default mode: FXS

Features

Feature	Description
Voice ports	Two or four DID ports. Use in order to provide off-premise DID connection to the CO. Serves only incoming calls from the PSTN.
Connections	Connects to a Telco line. Uses registered jack (RJ)-11 connectors. **Note:** The end-to-end connection between the CO RJ-11 jack and the router voice port must be a straight-through connection. This means that TIP to TIP and RING to RING. Normally the CO provides an interface for which a standard rolled RJ-11 cable can be used since the connection that results is straight. However, sometimes the CO does not reverse the pinouts. Therefore, a straight-through RJ-11-to-RJ-11 cable is needed. Also, the DID services are polarity-sensitive. Undesirable behavior, such as failed calls, occur if rolled RJ-11 cabling is used. Definitions: ● Pinouts for rolled RJ-11 Cable => TIP to RING, RING to TIP ● Pinouts for Straight RJ-11 Cable=> TIP to TIP , RING to RING ⚠ **Caution:** The VIC-2DID can be damaged if connected to a standard PSTN line while it operates in DID mode. Ensure that lines to the PSTN are provisioned for DID.
Cisco IOS feature set	Requires a "Plus" feature set.
Caller ID	Supported in FXS mode only.
Address Signaling Formats	In-band dual tone multifrequency (DTMF) Out-of-band pulse (10/20 pps)
Signaling Formats	DID mode: Immediate, delay dial, wink start FXS mode: Groundstart and loopstart

Configuration

For configuration of voice features in Cisco IOS Software, refer to Voice over IP for the Cisco 3600 Series.

Note: In Cisco IOS Software, issue the **voice-port** *<slot>*/*<VIC slot>*/*<unit>* global configuration command in order to configure the voice port parameters.

In order to configure and troubleshoot the VIC-2DID, refer to Configuring and Troubleshooting the VIC-2DID.

Platform Support

This table shows what routers support the VIC-2DID and includes Cisco IOS Software support selection.

Cisco IOS Software Support [1]	1751-V [2]	1760-V[2]	ICS 7700/7750	IAD2431, IAD2432	VG200	2600, 3620	3640, 3660	2600XM, 2691, 3725, 3745			
Carrier Module	Not Required	Not Required	Not Required	Not Required	NM-1V, NM-2V	NM-1V, NM-2V	NM-1V, NM-2V	NM-HD-1V, NM-HD-2V, NM-HD-2VE	NM-1V, NM-2V	NM-HD-1V, NM-HD-2V, NM-HD-2VE	NM-HD2V
VIC-2DID[3]	12.2(2) XJ, 12.2 (2)XK, 12.2(4) XL, 12.2 (4)XM, 12.2(4) XW, 12.2 (4)YA, 12.2(4) YB, 12.2 (4)YH, 12.2(8)T, 12.2(8) YJ, 12.2 (8)YL, 12.2(8) YM, 12.2 (8)YN, 12.2(11) YU, 12.2 (11)YV, 12.2(13) T, 12.2 (13)ZH, 12.2(15) T, 12.2 (15)ZJ, 12.2(15) ZL, 12.3 (1), 12.3 (2)T, 12.3 (2)XA, 12.3(2) XC, 12.3 (2)XE, 12.3(3), 12.3(4)T, 12.3(5)	All Cisco IOS Software Versions	12.2(4)YH, 12.2(8)YL, 12.2(8)YM, 12.2(8)YN, 12.2(11) YU, 12.2 (11)YV, 12.2(13) ZH, 12.2 (15)ZL, 12.3(2)XA	Not Supported	12.1(5) XM1, 12.2 (2)T, 12.2 (2)XT, 12.3(1)	12.1(5) XM1, 12.2 (2)T, 12.2 (2)XT, 12.2(11) YT, 12.3 (1)	12.2(8)T1, 12.2(11)T, 12.2(11) YT, 12.3 (1), 12.3 (2)T	12.2 (15) ZJ, 12.3 (4)T	All Cisco IOS Software Releases	12.2 (15) ZJ, 12.3 (4)T	12.3 (7)T
	12.2(8) YN, 12.2 (11)YU, 12.2(11	12.2(8) YN, 12.2 (11)YU, 12.2(11	12.2(4) XL3, 12.2								

| VIC-4FXS/DID[4] | YV, 12.2(13)ZH, 12.2(15)ZL, 12.3(2)T, 12.3(2)XA, 12.3(2)XC, 12.3(2)XE, 12.3(4)T, 12.3(5) | YV, 12.2(13)ZH, 12.2(15)ZL, 12.3(2)T, 12.3(2)XA, 12.3(2)XC, 12.3(2)XE, 12.3(4)T, 12.3(5) | (8)YN, 12.2(11)YU, 12.2(11)YV, 12.2(13)ZH, 12.2(15)ZL, 12.3(2)XA | 12.3(4)XD, 12.3(7)T | Not Supported | Not Supported | Not Supported | 12.2(15)ZJ, 12.3(4)T | Not supported | 12.2(15)ZJ, 12.3(4)T | 12.3(7)T |

[1] Voice requires a Cisco IOS Software "Voice" feature set on Cisco 1700 series, and a Cisco IOS Software "Plus" feature set on Cisco 2600/3600/3700 series. Voice is not supported on the Cisco 3631 router. The VIC-2DID card is not supported on Cisco 1750 routers and Catalyst 4000/6000 series family switches.

[2] On the 1700 voice platforms, one or more PVDMs are needed in order to support VICs, or you can have missing voice ports in the running configuration. The PVDMs hold DSPs that make the VICs fully functional, and are installed on the motherboard of the 1700 series. For more information, refer to Troubleshooting Unrecognized Voice Interface Cards on Cisco 1750, 1751, and 1760 Routers. On the Cisco VG200, 2600, 2600XM, 2691, 3600, and 3700 series routers, the carrier network modules (NM-1V, NM-2V, NM-HD-1V, NM-HD-2V, NM-HD-2VE, NM-HDV2) come with the DSPs installed on the module.

[3] The VIC-2DID card can operate in both DID (default setting) and FXS modes on the Cisco 1751/1760 and when installed in the NM-1V and NM-2V on other voice platforms. However, when installed in a NM-HD-1V, NM-HD-2V, NM-HD-2VE, and NM-HDV2, the VIC-2DID card currently only operates in DID mode. An enhancement request is currently under submission in order to permit both modes of operation for the VIC-2DID card when the card is installed in these Voice Network Modules.

[4] The VIC-4FXS/DID card can operate in both FXS (default setting) and DID modes on the Cisco 1751 and 1760. On other voice platforms the VIC-4FXS/DID card currently only operates in FXS mode when the card is installed in a NM-HD-1V, NM-HD-2V, NM-HD-2VE, and NM-HDV2. In Cisco IOS Software Release 12.3(14)T and later, both modes of operation are available for the VIC-4FXS/DID card when installed on these Voice Network Modules.

Cisco IOS Software Support [1]	2801 [2]	2811, 2821, 2851 [2]			3825, 3845 [2]		
Carrier Module	Not required	NM-1V, NM-2V	NM-HD-1V, NM-HD-2V, NM-HD-2VE	NM-HD2V	NM-1V, NM-2V	NM-HD-1V, NM-HD-2V, NM-HD-2VE	NM-HD2V
VIC-2FXS	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported	Not supported
VIC2-2FXS	12.3(8)T4	Not supported	12.3(8)T4	12.3(8)T4	Not supported	12.3(11)T	12.3(11)T
VIC-2DID [3]	12.3(8)T4	Not supported	12.3(8)T4	12.3(8)T4	Not supported	12.3(11)T	12.3(11)T
VIC-4FXS/DID [4]	12.3(8)T4	Not supported	12.3(8)T4	12.3(8)T4	Not supported	12.3(11)T	12.3(11)T

[1] Voice requires a minimum of a Cisco IOS Software IPVOICE feature set on the Cisco Integrated Services Router (ISR) platforms.

[2] On the Cisco 2801, 2811, 2821, 2851, 3825, and 3845 voice platforms, you need one or more PVDM2 DSP cards in order to support VIC and VWICs if they are installed on the

chasis WIC slots, or you can have missing voice ports in the running configuration. The PVDM2 DSP cards hold DSPs that make the VICs fully functional, and are installed on the motherboard of these ISR platforms. If VICs and VWICs are installed in a Network Module, the Module itself must have some DSPs.

[3] The VIC-2DID card can operate in both DID (default setting) and FXS modes on the Cisco 2801. On other ISR platforms the VIC-2DID card currently only operates in DID mode. An enhancement request is currently under submission in order to permit both modes of operation for the VIC-2DID card on the Cisco 2811, 2821, 2851, 3825, and 3845 ISR platforms.

[4] The VIC-4FXS/DID card can operate in both FXS (default setting) and DID modes on the Cisco 2801. On other ISR platforms the VIC-4FXS/DID card currently only operates in FXS mode. In Cisco IOS Software Release 12.3(14)T and later, both modes of operation are available for the VIC-4FXS/DID card on the Cisco 2811, 2821, 2851, 3825, and 3845 ISR platforms.

Note: The Cisco IOS Software versions provided are typically the minimum version required in order to support the platform, module, or feature in question. In order to find a complete list of features, modules, interface cards, or chassis that a specific Cisco IOS Software release supports, use the Software Advisor (registered customers only) tool.

Known Issues

When the VIC-2DID is used in the DID mode, it supplies -48 V. This voltage cannot be changed. When the VIC-2DID is used in non-DID mode (such as in FXS mode), it is possible to set the idle voltage to be either -24 or -48 V.

This output is an example of how to select the idle voltage:

```
configure terminal
voice-port <slot>/<vic slot>/<unit>
no signal did

!--- Turn off DID mode.

idle voltage

!--- This command not available in DID mode.
```

Issue the **shutdown** and **no shutdown** commands for the port.

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