Direct inward dialing (DID) is a service offered by telephone companies that enables callers to dial directly to an extension on a PBX 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. The DID state machine is identical to the E&M state machine.

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DID Topology

Figure: DID Support for Cisco 2600 and Cisco 3600 Series Routers shows a hypothetical topology in which a user connected to the PSTN (User A) dials various numbers and is connected to the appropriate extensions on a PBX.

Figure: DID Support for Cisco 2600 and Cisco 3600 Series Routers
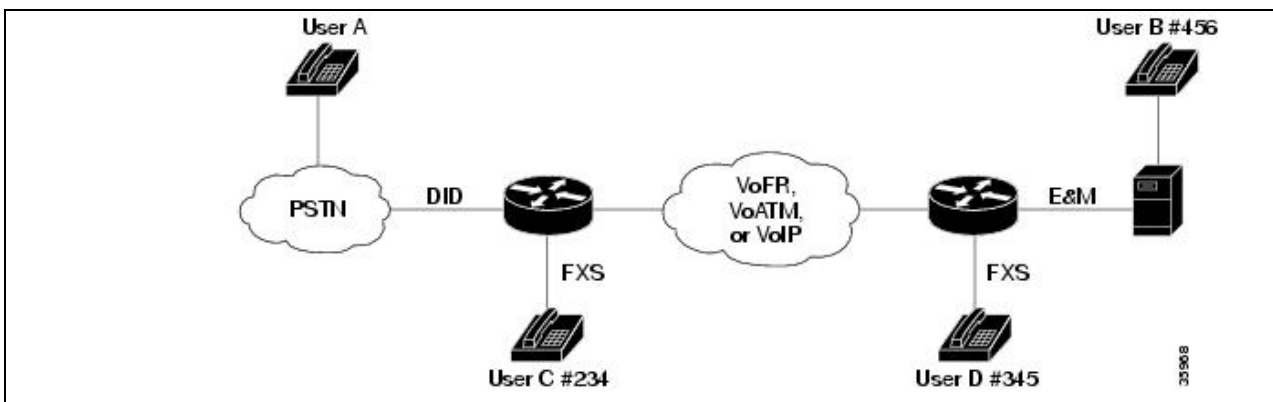
Number Dialed by User A	Number Received by Router	Extension Receiving Call
555-1234	234	User C
555-1345	345	User D
555-1456	456	User B
555-1678	678	No dial-peer match found; fast busy tone is played

DID Hardware Troubleshooting

A DID voice interface connects directly to a standard telephone, fax machine, or similar device and supplies ring, voltage, and dial tone.

Troubleshoot DID hardware by checking the following sections:

- Software Compatibility
- Cabling
- Shutdown Port

Software Compatibility

Cisco interface cards are often supported on multiple Cisco IOS releases. Cisco IOS release information is documented in the product data sheet and in Feature Navigator II.

To determine which Cisco IOS releases support your particular router and combination of cards and modules, go to the Software Advisor at http://tools.cisco.com/Support/Fusion/.

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.

Cabling

The two-port and four-port DID interface cards support the RJ-11 connector. Illustrations of the connector ports are shown in Figure: Two-Port Analog DID Voice Interface Card and Figure: Four-Port Analog FXS/DID Voice Interface Card. Information about LEDs can be found in the Voice Interface Cards document.

Figure: Two-Port Analog DID Voice Interface Card
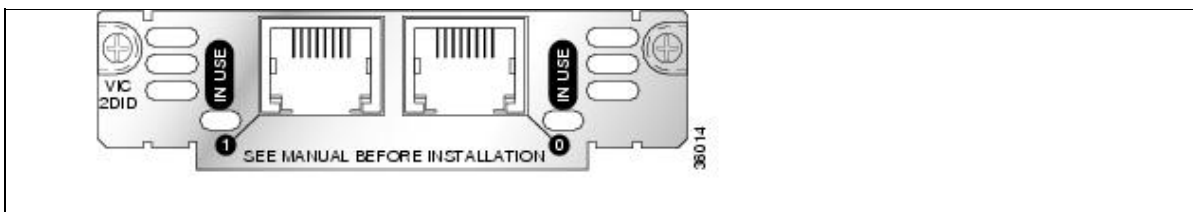
Figure: Four-Port Analog FXS/DID Voice Interface Card
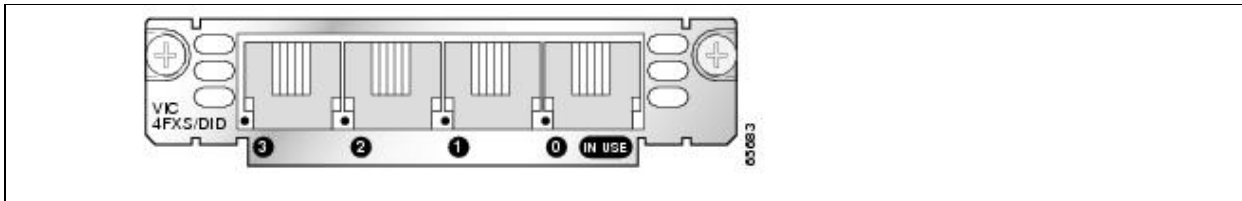
For more information about the VIC-2DID interface card, refer to Understanding 2 Port Direct Inward Dial (2 DID) Voice Interface Cards, document ID 15268.

Shutdown Port

Check to make sure that the port is not shut down. Enter the **show voice port** command with the voice port number that you are troubleshooting, which will tell you:

- If the voice port is up. If it is not, use the **no shutdown** command to make it active.
- What parameter values have been set for the voice port, including default values (these do not appear in the output from **the '***show running-config'* **command**). If these values do not match those of the telephony connection you are making, reconfigure the voice port.

Verifying Direct Inward Dialing Voice-Port Configuration

To verify voice-port configuration, enter the **show voice port** command. You can specify a voice port or view the status of all configured voice ports. In the following example, the specified port is configured for DID.

```
Router# show voice port 1/1/0
Foreign Exchange Station with Direct Inward Dialing (FXS-DID) 1/1/0 Slot is 1, Sub-unit is 1,
Port is 0
  Type of VoicePort is DID-IN
  Operation State is DORMANT
  Administrative State is UP
  No Interface Down Failure
  Description is not set
  Noise Regeneration is enabled
  Non Linear Processing is enabled
  Music On Hold Threshold is Set to -38 dBm
  In Gain is Set to 0 dB
  Out Attenuation is Set to 0 dB
  Echo Cancellation is enabled
  Echo Cancel Coverage is set to 8 ms
  Playout-delay Mode is set to default
  Playout-delay Nominal is set to 60 ms
  Playout-delay Maximum is set to 200 ms
  Playout-delay Minimum mode is set to default, value 4 ms
  Playout-delay Fax is set to 300 ms
  Connection Mode is normal
  Connection Number is not set
  Initial Time Out is set to 10 s
  Interdigit Time Out is set to 10 s
  Call Disconnect Time Out is set to 3 s
  Ringing Time Out is set to 180 s
  Wait Release Time Out is set to 3 s
  Companding Type is u-law
  Region Tone is set for US
  Analog Info Follows:
  Currently processing none
  Maintenance Mode Set to None (not in mtc mode)
```

Figure: Four-Port Analog FXS/DID Voice Interface Card   3

```
Number of signaling protocol errors are 0
Impedance is set to 600r Ohm
Station name Chalil Mohanan, Station number 1234567
Voice card specific Info Follows:
Signal Type is wink-start
Dial Type is dtmf
In Seizure is inactive
Out Seizure is inactive
Digit Duration Timing is set to 100 ms
InterDigit Duration Timing is set to 100 ms
Pulse Rate Timing is set to 10 pulses/second
InterDigit Pulse Duration Timing is set to 750 ms
Clear Wait Duration Timing is set to 400 ms
Wink Wait Duration Timing is set to 200 ms
Wait Wink Duration Timing is set to 550 ms
Wink Duration Timing is set to 200 ms
Delay Start Timing is set to 300 ms
Delay Duration Timing is set to 2000 ms
Dial Pulse Min. Delay is set to 140 ms
Percent Break of Pulse is 60 percent
Auto Cut-through is disabled
Dialout Delay for immediate start is 300 ms
```