

Cisco CallManager: Understanding Direct-Inward-Dial (DID)

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Introduction

Direct-Inward-Dial (DID) is a service offered by telephone companies that enables callers to dial directly into an extension on a PBX and not use an auto-attendant. This document addresses the various DID options supported when you implement a Cisco CallManager solution. This document also offers possible workarounds that employ auto-attendant solutions for customers with Cisco voice cards that do not natively support DID.

Prerequisites

Requirements

Readers of this document should have knowledge of these topics:

- Understanding Direct Inward Dial (DID) Voice Interface Cards
- Analog DID for Cisco 2600 and 3600 Series Routers
- Understanding Direct-Inward-Dial (DID) on IOS Voice Digital (T1/E1) Interfaces

Components Used

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

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Conventions

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

Implement DID in a Cisco CallManager Environment

DID Supported Solutions

Cisco CallManager supports DID on three types of circuits:

- **Analog VIC–DID** (two– or four–port hardware configuration) For the configuration and dial restrictions of this card, refer to Understanding Direct Inward Dial (DID) Voice Interface Cards. Remember that all past and current versions of Cisco CallManager only support these cards when the gateway uses H.323 signaling.
- **T1/E1 Channel Access Signaling (CAS)** For DID configuration information, refer to Understanding Direct–Inward–Dial (DID) on IOS Voice Digital (T1/E1) Interfaces.
- **T1/E1 PRI** For DID configuration information, refer to Voice – Understanding Direct–Inward–Dial (DID) on Cisco IOS Digital (T1/E1) Interfaces.

Remember that the very design of the VIC–Foreign eXchange Office (FXO) ports do not allow them the ability to interpret inbound signaling; the ports simply go off–hook and either present a dial–tone derived from the gateway, or a private line auto ringdown (PLAR) connection that has been configured to automatically route the call to an extension, operator, or auto–attendant.

DID Alternatives in an FXO Environment: Auto Attendant Options

If only FXO ports are available, "true" DID services from a telephone company can never be utilized. This means that each user that wants a personal DID number requires a dedicated analog phone line, which could be cost–prohibitive.

There are three alternative solutions that allow for internal users to have limited DID functionality, where inbound Public Switched Telephone Network (PSTN) calls are handled by an automated attendant (within Cisco Unity, Cisco CallManager, or certain IOS gateways). Callers are given the option to enter an extension that routes the call directly to the internal user s phone, or to be routed to a default location, such as an operator.

These three documents provide specific configuration notes to offer this alternative to "true" DID:

- How to Route Calls to Cisco Unity AutoAttendant from an IOS Gateway
- Configuring the Cisco Four Port IP Auto–Attendant Application on a CallManager Server
- Using Interactive Voice Response (IVR) to Give Basic DID Capability for AVVID

Using Translation Patterns

Cisco CallManager translation patterns can be used to map DID numbers to internal extensions.

In this sample configuration, a translation pattern is created to map 10–digit DID numbers to 4–digit internal DNs. The DID numbers range from 408–555–1000 to 408–555–1999, and the corresponding internal extensions range from 1000 to 1999.

DID Numbers		Internal Extensions
408-555-1000	----->	1000
408-555-1001	----->	1001
.		.
.		.
408-555-1999	----->	1999

In order to map DID numbers to internal extensions, complete these steps:

1. Go to the Cisco CallManager Administration page. From the menu, choose **Route Plan** and then **Translation Pattern**.



2. Click on **Add a New Translation Pattern**.



3. Enter the incoming DID number pattern in the **Translation Pattern**.

For example, enter *4085551xxx*. Then, choose the appropriate values for **Partition** and **Calling Search Space**.

In order to learn more about partitions and Calling Search Spaces (CSSes), refer to *Understanding and Using Partitions and Calling Search Spaces with Cisco CallManager*.

Cisco CallManager Administration
For Cisco IP Telephony Solutions

Translation Pattern Configuration

[Add a](#)
[Back to Find/](#)

Translation Pattern: New
Status: Ready

Pattern Definition

Translation Pattern	4085551XXX
Partition	< None >
Description	
Numbering Plan*	North American Numbering Plan
Route Filter	< None >
Calling Search Space	< None >

4. Uncheck the **Provide Outside Dial Tone** checkbox.

Route Option

Route this pattern

Block this pattern — Not Selected —

Provide Outside Dial Tone Urgent Priority

5. Under the **Called Party Transformations** section, enter the internal extensions pattern for the **Called Party Transform Mask**. In this example, it is *Ixxx*.

Called Party Transformations

Discard Digits	< None >
Called Party Transform Mask	Ixxx
Prefix Digits (Outgoing Calls)	

* indicates required item.


6. Click on the **Insert** button.

Now, the calls to DID numbers 408-555-1000 to 408-555-1999 are mapped to the internal DNs (which range from 1000 to 1999).

Note: When you need to add new DID numbers to the existing system, you need to create a new translation pattern in the Cisco CallManager server.

Note: You can also assign complete DID numbers as an extension on IP phones provided that CallManager receives all the digits of the DID. If you strip the digits at the H.323gateway and send only the last 4 digits, the above method does not work.

Related Information

- [Understanding Direct Inward Dial \(DID\) Voice Interface Cards](#)
 - [Analog DID for Cisco 2600 and 3600 Series Routers](#)
 - [Understanding Direct-Inward-Dial \(DID\) on IOS Voice Digital \(T1/E1\) Interfaces](#)
 - [How to Route Calls to Cisco Unity AutoAttendant from an IOS Gateway](#)
 - [Configuring the Cisco Four Port IP Auto-Attendant Application on a CallManager Server](#)
 - [Using IVR to Give Basic DID Capability for AVVID](#)
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