



## Dial-Peer Matching

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CUBE allows VoIP-to-VoIP connection by routing calls from one VoIP dial peer to another. As VoIP dial peers can be handled by either SIP or H.323, CUBE can be used to interconnect VoIP networks of different signaling protocols. VoIP interworking is achieved by connecting an inbound dial peer with an outbound dial peer.



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**Note** All CUBE Enterprise deployments must have signaling and media bind statements specified at the dial-peer or voice class tenant level. For voice call tenants, you must apply tenants to dial-peers used for CUBE call flows if these dial-peers do not have bind statements specified.

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## Dial Peers in CUBE

A dial peer is a static routing table, mapping phone numbers to interfaces or IP addresses.

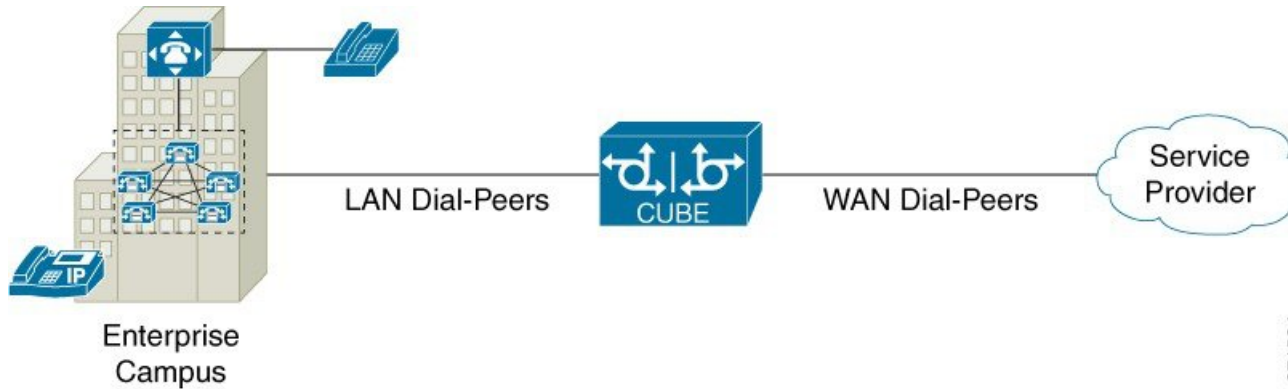
A call leg is a logical connection between two routers or between a router and a VoIP endpoint. A dial peer is associated or matched to each call leg according to attributes that define a packet-switched network, such as the destination address.

Voice-network dial peers are matched to call legs based on configured parameters, after which an outbound dial peer is provisioned to an external component using the component's IP address. For more information, refer to the [Dial Peer Configuration Guide](#).

Dial-peer matching can also be done based on the VRF ID associated with a particular interface. For more information, see [Inbound Dial-Peer Matching Based on Multi-VRF](#).

In CUBE, dial peers can also be classified as LAN dial peers and WAN dial peers based on the connecting entity from which CUBE sends or receives calls.

Figure 1: LAN and WAN Dial Peers



A LAN dial peer is used to send or receive calls between CUBE and the Private Branch Exchange (PBX)—a system of telephone extensions within an enterprise. Given below are examples of inbound and outbound LAN dial peers.

Figure 2: LAN Dial Peers

**Inbound Dial-Peer for calls from CUCM to CUBE**

```
dial-peer voice 100 voip
description *** Inbound LAN side dial-peer ***
incoming called-number 9T
session protocol sipv2
codec g711ulaw
dtmf-relay rtp-nte
```

CUCM sending 9 + All digits dialed (Outgoing calls)

Incoming call number used to match the inbound LAN dial peer

**Outbound Dial-Peer for calls from CUBE to CUCM**

```
dial-peer voice 200 voip
description *** Outbound LAN side dial-peer ***
destination-pattern [2-9].....
session protocol sipv2
session target ipv4:<CUCM_Address>
codec g711ulaw
dtmf-relay rtp-nte
```

SP will be sending 10 digits inbound (Incoming Calls)

Destination pattern used to match the outbound LAN dial peer

A WAN dial peer is used to send or receive calls between CUBE and the SIP trunk provider. Given below are examples of inbound and outbound WAN dial peers.

Figure 3: WAN Dial Peers

**Inbound Dial-Peer for calls from SP to CUBE**

```
dial-peer voice 100 voip
  description *** Inbound WAN side dial-peer ***
  incoming called-number [2-9].....
  session protocol sipv2
  codec g711ulaw
  dtmf-relay rtp-nte
```

Catch-all for all inbound PSTN calls. (Incoming Calls)

Incoming call number used to match the inbound WAN dial peer

**Outbound Dial-Peer for calls from CUBE to SP**

```
dial-peer voice 200 voip
  description *** Outbound WAN side dial-peer ***
  destination-pattern 9[2-9].....
  session protocol sipv2
  session target ipv4:<SIP_Trunk_IP_Address>
  codec g711ulaw
  dtmf-relay rtp-nte
```

Dial-peer for making long distance calls to SP (Outgoing Calls)

Destination pattern used to match the outbound WAN dial peer

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## Configuring Inbound and Outbound Dial-Peer Matching for CUBE

The following commands can be used for inbound and outbound dial peer matching in the CUBE:

Table 1: Incoming Dial-Peer Matching

Command in Dial-Peer Configuration	Description	Call Setup Element
<b>incoming called-number</b> <i>DNIS-string</i>	This command uses the destination number that was called to match the incoming call leg to an inbound dial peer. This number is called the dialed number identification service (DNIS) number.	DNIS number
<b>answer-address</b> <i>ANI-string</i>	This command uses the calling number to match the incoming call leg to an inbound dial peer. This number is called the originating calling number or automatic number identification (ANI) string.	ANI string
<b>destination-pattern</b> <i>ANI-string</i>	This command uses the inbound call leg to the inbound dial peer.	ANI string for inbound

Command in Dial-Peer Configuration	Description	Call Setup Element
<b>{incoming called   incoming calling} e164-pattern-map</b> <i>pattern-map-group-id</i>	This command uses a group of incoming called (DNIS) or incoming calling (ANI) number patterns to match the inbound call leg to an inbound dial peer.  The command calls a globally defined voice class identifier where the E.164 pattern groups are configured.	E.164 Patterns
<b>voice class uri</b> <i>URI-class-identifier</i> with <b>incoming uri {from   request   to   via} URI-class-identifier</b>	This command uses the directory URI (Uniform Resource Identifier) number of an incoming INVITE from a SIP entity to match an inbound dial peer. This directory URI is part of the SIP address of a device.  The command calls a globally defined voice class identifier where the directory URI is configured. It requires the configuration of <b>session protocol sipv2</b>	Directory URI
<b>incoming uri {called   calling} URI-class-identifier</b>	This command uses the directory URI (Uniform Resource Identifier) number to match the outgoing H.323 call leg to an outgoing dial peer.  The command calls a globally defined voice class identifier where the directory URI is configured.	Directory URI

Table 2: Outgoing Dial-Peer Matching

Dial-Peer Command	Description	Call Setup Element
<b>destination-pattern</b> <i>DNIS-string</i>	This command uses DNIS string to match the outbound call leg to the outbound dial peer.	DNIS string for outbound  ANI string for inbound
<b>destination</b> <i>URI-class-identifier</i>	This command uses the directory URI (Uniform Resource Identifier) number to match the outgoing call leg to an outgoing dial peer. This directory URI is part of the SIP address of a device.  The command actually refers to a globally defined voice class identifier where the directory URI is configured.	Directory URI
<b>destination e164-pattern-map</b> <i>pattern-map-group-id</i>	This command uses a group of destination number patterns to match the outbound call leg to an outbound dial peer.  The command calls a globally defined voice class identifier where the E.164 pattern groups are configured.	E.164 patterns

## Preference for Dial-Peer Matching

The following is the order in which inbound dial-peer is matched for SIP call-legs:

- **voice class uri** *URI-class-identifier* with **incoming uri** {**via**} *URI-class-identifier*
- **voice class uri** *URI-class-identifier* with **incoming uri** {**request**} *URI-class-identifier*
- **voice class uri** *URI-class-identifier* with **incoming uri** {**to**} *URI-class-identifier*
- **voice class uri** *URI-class-identifier* with **incoming uri** {**from**} *URI-class-identifier*
- **incoming called-number** *DNIS-string*
- **answer-address** *ANI-string*

The following is the order in which inbound dial-peer is matched for H.323 call-legs:

- **incoming uri** {**called**} *URI-class-identifier*
- **incoming uri** {**calling**} *URI-class-identifier*
- **incoming called-number** *DNIS-string*
- **answer-address** *ANI-string*

The following is the order in which outbound dial-peer is matched for SIP call-legs:

- **destination route-string**
- **destination** *URI-class-identifier* with **target carrier-id** *string*
- **destination-pattern** with **target carrier-id** *string*
- **destination** *URI-class-identifier*
- **destination-pattern**
- **target carrier-id** *string*



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**Note** If CUBE with Cisco Unified Communications Manager Express (CUCME) is configured with the same DNs, then the ANI is given the preference. The system dial-peer for the DN is selected over the other dial-peers created.

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