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## Introduction

This document describes the various features on Cisco Unified Border Element (CUBE) such as Multiple Destination pattern Support on Voice Dial-peer, Multiple E.164 Match Pattern for incoming calling and called number, Destination Dial-peer Group, Destination Server group, Session Initiation Protocol (SIP) Out-of-Dialog (OOD) Options Ping Keepalive group", Outbound Dial-peer Provisioning.

## Prerequisites

### Requirements

There are no specific requirements for this document.

### Components Used

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

## Multiple Destination Patterns Support on Voice Dial-peer (From 15.2(4)S onwards)

## Background Information

## Longest Prefix Match

On CUBE and SIP gateway when one voice dial peer has only one destination pattern, this introduces dial peer configuration in large amounts when multiple destination patterns are used. With the introduction of support for multiple destination patterns on a dial-peer, configuration is largely simplified and reduced.

Dial-peer selection continues to be based on the longest prefix match algorithm. When a dial-peer has multiple destination patterns, the pattern with the longest match is counted as the matched pattern for the dial-peer.

For example, if dial-peer A has two patterns matched, and one is matched with 3 digits, and the other is matched with 4 digits, this dial-peer is counted as matched with 4 digits.

## E164 Pattern Map

An E164 pattern map contains multiple E164 destination patterns. An E164 map can be a separate text file stored in an internal (flash) or external location (TFTP / HTTP server).

**CLI** - Add E164 pattern entries to the E164 pattern map and store all the information on the voice gateway.

**Text file** - Create the E164 pattern entries in a text file and store the file on the supported internal or external file system.

**Text File Loading** - The text file can be easily updated and then reloaded, using the voice class E164-pattern-map load command.

## E164 Pattern Map Validation

E164 pattern map is configured independently from a dial peer, and this map can be invalid if loading the external text file failed or the pattern is with incorrect format for E.164 number. When a map failure occurs, there should be a console or syslog message to indicate the failure.

## Configure

There are two ways to create E164 maps. Both the methods start with the voice class E164-pattern-map command to create and name an E164 pattern map, then use one of the following options:

### Method 1. CLI

**CLI** - Add E164 pattern entries to the E164 pattern map and store all the information on the voice gateway.

A text file - Create the E164 pattern entries in a text file and store the file on the supported internal or external file system. The text file can be easily updated and then reloaded by using the voice class E64-pattern-map load command.

### CLI configuration

```
CUBE(config)#voice class e164-pattern-map <tag 1-1000>
```

```

CUBE(config-class)# ?
VOICECLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map
  exit        Exit from voice class configuration mode
  help        Description of the interactive help system
  no         Negate a command or set its defaults
  url         Set the URL of the file for the map
CUBE(config-class)#e164 <destination pattern 1>
CUBE(config-class)#e164 <destination pattern 2>
...
CUBE(config-class)#exit
Following the creation of the E164 Map, we can link it with the dial-peer as follows :
CUBE(config) #dial-peer voice XXX voip
CUBE(config-dial-peer)#destination e164-pattern-map <e164-pattern-map tag>

```

## Configuration Example

```

CUBE(config)#voice class e164-pattern-map <tag 1-1000>
CUBE(config-class)# ?
VOICECLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map
  exit        Exit from voice class configuration mode
  help        Description of the interactive help system
  no         Negate a command or set its defaults
  url         Set the URL of the file for the map
CUBE(config-class)#e164 <destination pattern 1>
CUBE(config-class)#e164 <destination pattern 2>
...
CUBE(config-class)#exit
Following the creation of the E164 Map, we can link it with the dial-peer as follows :
CUBE(config) #dial-peer voice XXX voip
CUBE(config-dial-peer)#destination e164-pattern-map <e164-pattern-map tag>

```

### Method 2. Text File

Create a text file with the list of E164 patterns required and save it as a .cfg file as illustrated in the example.

```

CUBE(config)#voice class e164-pattern-map <tag 1-1000>
CUBE(config-class)# ?
VOICECLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map
  exit        Exit from voice class configuration mode
  help        Description of the interactive help system
  no         Negate a command or set its defaults
  url         Set the URL of the file for the map
CUBE(config-class)#e164 <destination pattern 1>
CUBE(config-class)#e164 <destination pattern 2>
...
CUBE(config-class)#exit
Following the creation of the E164 Map, we can link it with the dial-peer as follows :
CUBE(config) #dial-peer voice XXX voip
CUBE(config-dial-peer)#destination e164-pattern-map <e164-pattern-map tag>CUBE(config)#voice
class e164-pattern-map <tag 1-1000>
CUBE(config-class)# ?
VOICECLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map

```

```
exit          Exit from voice class configuration mode
help         Description of the interactive help system
no          Negate a command or set its defaults
url         Set the URL of the file for the map
```

```
CUBE(config-class)#e164 <destination pattern 1>
```

```
CUBE(config-class)#e164 <destination pattern 2>
```

```
...
```

```
CUBE(config-class)#exit
```

Following the creation of the E164 Map, we can link it with the dial-peer as follows :

```
CUBE(config) #dial-peer voice XXX voip
```

```
CUBE(config-dial-peer)#destination e164-pattern-map <e164-pattern-map tag>
```

In order to link the file to the pattern-map, refer to this configuration.

```
CUBE(config)#voice class e164-pattern-map <tag>
```

```
CUBE(config-class)#?
```

VOICE-CLASS configuration commands:

```
description  e164 pattern map specific description
e164        Set E164 pattern for the map
exit        Exit from voice class configuration mode
help        Description of the interactive help system
no          Negate a command or set its defaults
url         Set the URL of the file for the map
```

```
CUBE(config-class)#url ?
```

WORD URL of the file for the map

```
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
```

```
CUBE#voice class e164-pattern-map load <tag>
```

## Configuration Example

```
CUBE(config)#voice class e164-pattern-map <tag>
```

```
CUBE(config-class)#?
```

VOICE-CLASS configuration commands:

```
description  e164 pattern map specific description
e164        Set E164 pattern for the map
exit        Exit from voice class configuration mode
help        Description of the interactive help system
no          Negate a command or set its defaults
url         Set the URL of the file for the map
```

```
CUBE(config-class)#url ?
```

WORD URL of the file for the map

```
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
```

```
CUBE#voice class e164-pattern-map load <tag>
```

## Verify

### Show commands

Verify the configuration using the commands as shown.

```
CUBE(config)#voice class e164-pattern-map <tag>
```

```
CUBE(config-class)#?
```

VOICE-CLASS configuration commands:

```
description  e164 pattern map specific description
e164        Set E164 pattern for the map
exit        Exit from voice class configuration mode
help        Description of the interactive help system
no          Negate a command or set its defaults
url         Set the URL of the file for the map
```

```
CUBE(config-class)#url ?
```

WORD URL of the file for the map

```
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
```

```
CUBE#voice class e164-pattern-map load <tag>
```

## Troubleshoot

The following debugs on the CLI can be used for troubleshooting.

```
CUBE(config)#voice class e164-pattern-map <tag>
CUBE(config-class)#?
VOICE-CLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map
  exit         Exit from voice class configuration mode
  help         Description of the interactive help system
  no           Negate a command or set its defaults
  url          Set the URL of the file for the map
CUBE(config-class)#url ?
WORD  URL of the file for the map
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
CUBE#voice class e164-pattern-map load <tag>
```

Place a call to the outbound dial-peer with destination number 101234 on dial-peer 1000 linked with E164 map 100 as shown.

```
CUBE(config)#voice class e164-pattern-map <tag>
CUBE(config-class)#?
VOICE-CLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map
  exit         Exit from voice class configuration mode
  help         Description of the interactive help system
  no           Negate a command or set its defaults
  url          Set the URL of the file for the map
CUBE(config-class)#url ?
WORD  URL of the file for the map
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
CUBE#voice class e164-pattern-map load <tag>
```

## Multiple E.164 Match Pattern for incoming calling and called number (From 15.4(1)T onwards)

### Background Information

The E164-pattern-map feature can also be used for calling and called number matching on incoming dial-peers.

Introduced in CUBE 10.0

### Dial-Peer Provisioning Sequences

- Called number matches incoming called-number or incoming called E164-pattern-map.
- Calling number matches either answer-address or incoming calling E164-pattern-map.
- Calling number matches with a destination-pattern.

## Configure

```
CUBE(config)#voice class e164-pattern-map <tag>
CUBE(config-class)#?
VOICE-CLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map
  exit         Exit from voice class configuration mode
  help         Description of the interactive help system
  no           Negate a command or set its defaults
  url          Set the URL of the file for the map
CUBE(config-class)#url ?
WORD  URL of the file for the map
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
CUBE#voice class e164-pattern-map load <tag>
```

## Verify

### Show and Debug Commands

#### Show commands

Verify the configuration using the commands as shown.

```
CUBE(config)#voice class e164-pattern-map <tag>
CUBE(config-class)#?
VOICE-CLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map
  exit         Exit from voice class configuration mode
  help         Description of the interactive help system
  no           Negate a command or set its defaults
  url          Set the URL of the file for the map
CUBE(config-class)#url ?
WORD  URL of the file for the map
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
CUBE#voice class e164-pattern-map load <tag>
```

#### Debug Commands

Verify the configuration using the commands as shown.

```
CUBE(config)#voice class e164-pattern-map <tag>
CUBE(config-class)#?
VOICE-CLASS configuration commands:
  description  e164 pattern map specific description
  e164         Set E164 pattern for the map
  exit         Exit from voice class configuration mode
  help         Description of the interactive help system
  no           Negate a command or set its defaults
  url          Set the URL of the file for the map
CUBE(config-class)#url ?
WORD  URL of the file for the map
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
CUBE#voice class e164-pattern-map load <tag>
```

## Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

# Destination Dial-peer Group (From

## Background Information

In a Dial-peer grouping feature, a group of dial-peers can be made a part of a dial-peer group under a **voice class dpg <tag>**

destination dpg <tag> will be used to reference a dial-peer group from an incoming dial-peer.

Once an incoming dial-peer is matched, the dial-peers, which are a part of the dpg and are defined under it, are used for outbound dial-peer matches on the particular call.

1. Global **dial-peer hunt** command line support to sort target dpg dial-peers in order. Hence, longest match matched digits are no longer significant for dpg dial-peers, because the call number is not used to select outbound dial-peers. The same value of number of matched digits (0) is applied for any dpg dial-peers during the dial-peer hunt sorting.
2. Dial-peer **hunt-stop** command line is supported for dial-peer of **voice class dpg <tag>** that no further hunts on outgoing call setup once **huntstop** is found from the last failed outgoing call setup.
3. Class of Restriction (COR) and Logical Partition Class of Restriction (LPCOR) validations supports dial-peers of dpg
4. The **show dialplan dialpeer <in-peer-tag> number <called-number>** command supports a list of target dial-peer of a dpg from an inbound dial-peer.
5. Once a voip dial-peer is referenced by different dial-peer groups, the same dial-peer is still available for dial-peer provisioning.
6. The **shutdown** command line can put the dpg to inactive state. Once an incoming call is associated with an inactive dpg, the legacy outbound dial-peer provisioning will be resumed for new incoming calls.
7. An incoming call is blocked, if it is associated with an active dpg with null target dial-peers or all targets dial-peers are in the state **Operation state is Down**.

## Configure

```
CUBE(config)#voice class e164-pattern-map <tag>
CUBE(config-class)#?
VOICE-CLASS configuration commands:
description e164 pattern map specific description
e164        Set E164 pattern for the map
exit        Exit from voice class configuration mode
help        Description of the interactive help system
no          Negate a command or set its defaults
url         Set the URL of the file for the map
CUBE(config-class)#url ?
WORD        URL of the file for the map
CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg
CUBE#voice class e164-pattern-map load <tag>
```

## Restriction

```
CUBE(config)#voice class e164-pattern-map <tag>
CUBE(config-class)#?
```

VOICE-CLASS configuration commands:

```
description e164 pattern map specific description
e164        Set E164 pattern for the map
exit        Exit from voice class configuration mode
help        Description of the interactive help system
no          Negate a command or set its defaults
url         Set the URL of the file for the map
```

CUBE(config-class)#url ?

WORD URL of the file for the map

CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg

CUBE#voice class e164-pattern-map load <tag>

## Under dial-peer config

CUBE(config)#voice class e164-pattern-map <tag>

CUBE(config-class)#?

VOICE-CLASS configuration commands:

```
description e164 pattern map specific description
e164        Set E164 pattern for the map
exit        Exit from voice class configuration mode
help        Description of the interactive help system
no          Negate a command or set its defaults
url         Set the URL of the file for the map
```

CUBE(config-class)#url ?

WORD URL of the file for the map

CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg

CUBE#voice class e164-pattern-map load <tag>

## Configuration Example

CUBE(config)#voice class e164-pattern-map <tag>

CUBE(config-class)#?

VOICE-CLASS configuration commands:

```
description e164 pattern map specific description
e164        Set E164 pattern for the map
exit        Exit from voice class configuration mode
help        Description of the interactive help system
no          Negate a command or set its defaults
url         Set the URL of the file for the map
```

CUBE(config-class)#url ?

WORD URL of the file for the map

CUBE(config-class)#url {tftp:// |http:// |flash: |ftp:// |bootflash: }path/<filename>.cfg

CUBE#voice class e164-pattern-map load <tag>

## Verify

### Show Commands

Show voice class dpg <tag>

Ex. CUBE#show voice class dpg 21

Voice class dpg: 21 AdminStatus: Up

Description:

Total dial-peer entries: 4

Peer	Tag	Pref
------	-----	------

-----

1		0
---	--	---

2		0
---	--	---

104		0
-----	--	---

1000	0	
------	---	--

-----

# Troubleshoot

Debug voip dialpeer can be used to debug in order to identify the DPG selected and the list of dial-peers under the DPG that match the destination pattern.

**Show voice class dpg <tag>**

Ex. CUBE#show voice class dpg 21

```
Voice class dpg: 21      AdminStatus: Up
```

```
Description:
```

```
Total dial-peer entries: 4
```

```
Peer Tag          Pref
```

```
-----  ----
```

```
1             0
```

```
2             0
```

```
104          0
```

```
1000        0
```

## Destination Server Group (From

## Background Information

Multiple outbound dial-peers are defined when an incoming call is required to hunt through different destinations. Each destination requires a separate outbound dial-peer setup even if the same call capability setup is used.

**Destination server group** supports multiple destinations that can be defined in a new **voice class server-group <tag>** setup.

A SIP dial-peer can refer to the server-group by a new **session server-group <tag>** command line.

The destinations of a server-group are then used for outgoing call setup when a SIP dial-peer with server-group is selected as an outbound dial-peer.

New OOD Options Ping Keepalive Group supports a SIP dial-peer with a server group as a session target. Separate Options Ping Keepalive connections are established on each remote target of a server group. A dial-peer is put to **BUSYOUT** state if all Option Ping keepalive connections of a server group are timeout.

Server group is not supported by OOD Options Keepalive (with separate OOD Options Keepalive connection on per dial-peer) method.

ipv4/ipv6 ip addresses of a server group can become ip trusted addresses once the server group is referenced as a target of an outbound dial-peer. Customer can use the **show ip address trust list** command to check a list of ip trusted addresses.

Domain Name Server (DNS) session target is not supported as a target of a server group.

## Configuration

**Show voice class dpg <tag>**

```

Ex. CUBE#show voice class dpg 21
Voice class dpg: 21      AdminStatus: Up
Description:
Total dial-peer entries: 4
Peer Tag                Pref
-----  ----
1                    0
2                    0
104                  0
1000                0

```

-----Note: Up to 10000 "voice class server-group <tag>" can be defined per system.

## Configuration Example

Note: Up to 10000 "voice class server-group <tag>" can be defined per system.

- Up to 5 session target ip addresses can be saved to a voice class server-group. It can be either IPv4 or IPv6 or a combination of both.
- In case both IPv4 and IPv6 addresses are added, ensure that protocol mode is set to **dual-stack**
- The **hunt-scheme round-robin** command can be defined to sort a list of session target entries in round-robin order that overrides the preference setting. By default, the **hunt-scheme preference** command is used to sort based on its preference setup.
- The **preference <0-5>** command line can be defined for each session target address.
- Session target entries with same preference will be sorted in random order when the default **hunt-scheme preference** command is defined.
- The **shutdown** command line can put the server group to inactive state. Any SIP dial-peer with a server group in inactive state is not selected as outbound dial-peer.
- When a server-group is deleted using **no voice class server-group <tag>** command, any VoIP dial-peers associated with this group by **session server-group <tag>** command line is removed.

## Verify

### Show and Debug Commands

1. `show voice class server-group 1`

## Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

## SIP OOD Options Ping Keepalive Group (From

## Background Information

Existing SIP Out-of-dialog (OOD) Options Ping feature provides a keepalive mechanism at the SIP level and its SIP dial-peer destinations. Separate SIP OOD Options Ping connection is established for each active SIP dial-peer even if same targets are saved in different SIP dial-peers.

This feature consolidates SIP OOD Options Ping connections by grouping SIP dial-peers with same OOD Options Ping setup.

A new **voice class sip-keepalive-profile <tag> command** is used to define OOD Options Ping setup.

The new **voice-class sip options-keepalive profile <tag>** command line from SIP dial-peer is added to reference the new profile.

A consolidated SIP OOD Options Ping connection is then established with a target for multiple SIP dial-peers with the same target and OOD Options Ping profile setup.

Associated dial-peers are toggled to ACTIVE and BUSYOUT state based on state of an Options Ping keepalive connection state.

- Up to 10000 **voice class sip-options-keepalive <tag>** can be defined per system.
- Sub-commands as shown are defined from each SIP Options Keepalive profile: description, transport {tcp [tls], udp}, voice-class sip-profile <tag>, shutdown, retry <count>, up-interval <seconds>, down-interval <seconds>
- The **shutdown** command can put a SIP Options Keepalive profile to inactive state. Any related OOD options ping keepalive connections are then suspended. Related SIP dial-peers are updated to ACTIVE state.
- When an options keepalive profile is deleted using the **no voice class sip-options-keepalive <tag>** command, any VoIP dial-peers associated with this profile by **voice-class sip options-keepalive profile <tag>** command line are removed.
- New **show voice class sip-options-keepalive {<tag>}** supports the SIP Options Keepalive profile setup and the real-time dial-peer OOD Options Ping connection status information.
- When the Option ping connections for all targets in a server-group times out, all SIP dial-peers associated with this server-group are placed in BUSYOUT state.
- New SIP dial-peer **voice-class sip options-keepalive profile <tag>** command line is mutual exclusive with existing **voice-class sip option-keepalive [down-interval <value> | up-interval <value> | retry <value>]**.
- With OOD Options Ping Keepalive group, an options ping keepalive connection is established on per remote target base. However, an options ping keepalive connection on legacy options ping is established on per dial-peer base.
- OOD Options Ping Keepalive Group should be used instead when same targets are defined in multiple dial-peers.

## Configure

```
show voice class server-group 1
```

### Configuration Example

```
show voice class server-group 1show voice class server-group 1
```

This example shows SIP Options Keepalive profile setup is blocked when legacy sip options-keepalive is already defined.

```
CUBE(config)#dial-peer voice 4002 voip
CUBE(config-dial-peer)#session protocol sipv2
CUBE(config-dial-peer)#voice-class sip options-keepalive ?
```

```
down-interval  OPTIONS keepalive timer interval for DOWN endpoint
profile         Consolidate Options Keepalive profile setup
retry          Retry count for OPTIONS keepalive retransmission
up-interval    OPTIONS keepalive timer interval for UP endpoint
<cr>
```

```
CUBE(config-dial-peer)#voice-class sip options-keepalive
CUBE(config-dial-peer)#voice-class sip options-keepalive profile 1
```

**%ERROR: "voice-class sip-options-keepalive" is already defined**

## Verify

### Show and Debug Commands

1. **sh voice class sip-options-keepalive 1**
2. **sh dial-peer voice summary**

## Troubleshoot – with Server-Group configured

### Server-group configuration

```
ASR_DP_N2#sh run | sec voice class
voice class server-group 1
  ipv4 10.104.45.253
  ipv4 9.44.44.9
  ipv4 10.104.45.31
```

```
Voice class sip-options-keepalive configuration
voice class sip-options-keepalive 1
  transport udp
```

### Associating dial-peer with Server-group and voice-class sip-options-keepalive

```
ASR_DP_N2#sh run | sec dial-peer
dial-peer voice 1 voip
  destination-pattern 6666
  session protocol sipv2
  session transport udp
  session server-group 1
  voice-class sip options-keepalive profile 1ASR_DP_N2#sh voice class sip-options-keepalive
Voice class sip-options-keepalive: 1 AdminStat: Up
Transport: udp Sip Profiles: 0
Interval(seconds) Up: 60 Down: 30
Retry: 5
Peer Tag      Server Group  OOD SessID  OOD Stat    IfIndex
-----
1             1             Active      10
Server Group: 1 OOD Stat: Active
  OOD SessID  OOD Stat
  -----
  14          Active
  15          Busy
  16          Busy
OOD SessID: 14 OOD Stat: Active
Target: ipv4:10.104.45.253
Transport: udp Sip Profiles: 0

OOD SessID: 15 OOD Stat: Busy
Target: ipv4:9.44.44.9
Transport: udp Sip Profiles: 0
```

```

OOD SessID: 16                OOD Stat: Busy
Target: ipv4:10.104.45.31
Transport: udp                Sip Profiles: 0ASR_DP_N2#sh dial-peer voice summary
dial-peer hunt 0
                                AD                                PRE PASS                                OUT
TAG    TYPE  MIN  OPER PREFIX  DEST-PATTERN  FER THRU SESS-TARGET  STAT PORT
KEEPALIVE
1      voip  up   up          6666          0   syst                                active

```

## Outbound Dial Peer Provisioning (From

## Background Information

Current outbound dial-peer provisioning is restricted to following dial-peer match pattern setup which is static and cannot be modified based on the dial plan requirements:

- destination called number
- destination uri (host / pattern / user-id / phone)
- carrier-id target

Existing outbound dial-peer provisioning match order:

- Destination URI and Target Carrier ID
- Called Number and Target Carrier ID
- Destination URI
- Called Number
- Target Carrier ID

One static dial-peer provisioning policy cannot satisfy for all customers dial plan requirements.

New outbound dial-peer match attributes supports:

- VIA
- FROM
- TO
- DIVERSION
- REFERRED BY
- Calling Number
- New user-defined outbound dial-peer provision policy on per incoming call base
- A provision policy contains two rules to save the match attributes and its precedence
- Up to two match attributes can be defined from each rule of a provision policy
- A provision policy setup will be used to match outbound dial-peers once it is associated to an incoming voip call.
- Following is a list of outbound dial-peer match attributes supported in the provision policy

```

ASR_DP_N2#sh dial-peer voice summary
dial-peer hunt 0
                                AD                                PRE PASS                                OUT
TAG    TYPE  MIN  OPER PREFIX  DEST-PATTERN  FER THRU SESS-TARGET  STAT PORT
KEEPALIVE

```

## New CLIs

### 1. `voice class dial-peer provision-policy <tag>`

A new global **voice class dial-peer provision-policy <tag>** profile will be added to save a set of dial-peer match attributes and it's order to be used during the outbound dial-peer provisioning.

Following command lines will be embedded in this new voice class:

#### 1. **Description**

2. **Preference <1 – 2> <match-attribute> [<match-attribute>]** Up to two rules can be defined from a policy. Each rule has maximum two match attributes. List of match-attributes keywords: **called, calling, carrier-id, diversion, from, referred-by, to, uri, via**

3. **Shutdown** When the provision policy is shutdown, the legacy outbound dial-peer provisioning will be restored for an incoming call

### 1. `destination provision-policy <tag>`

A new command line from voip dial-peer to define the provision policy of an incoming call.

## Configure

### Defining Voice Class Provision Policy

```
CUBE(config)#voice class dial-peer provision-policy ?
<1-10000> Voice class dialpeer provision policy tag
CUBE(config)#voice class dial-peer provision-policy 1
CUBE(config-class)#?
VOICECLASS configuration commands:
description Description of a dialpeer provision-policy
exit Exit from voice class configuration mode
help Description of the interactive help system
no Negate a command or set its defaults
preference Add a dial-peer provision policy preference rule
shutdown Put a dial-peer provision policy to inactive state
CUBE(config-class)#preference ?
<1-2> Preference order
CUBE(config-class)#preference 1 ?
called Match called number calling Match calling number carrier-id Match carrier id
diversion Match diversion uri from Match from uri referred-by Match referred-by uri
to Match to uri uri Match destination uri via Match via ur
```

## A

```
CUBE(config)#voice class dial-peer provision-policy ?
<1-10000> Voice class dialpeer provision policy tag
CUBE(config)#voice class dial-peer provision-policy 1
CUBE(config-class)#?
VOICECLASS configuration commands:
description Description of a dialpeer provision-policy
exit Exit from voice class configuration mode
help Description of the interactive help system
no Negate a command or set its defaults
preference Add a dial-peer provision policy preference rule
shutdown Put a dial-peer provision policy to inactive state
CUBE(config-class)#preference ?
<1-2> Preference order
CUBE(config-class)#preference 1 ?
```

```
called Match called number calling Match calling number carrier-id Match carrier id
diversion Match diversion uri from Match from uri referred-by Match referred-by uri
to Match to uri uri Match destination uri via Match via ur
```

## Defining Outbound Dial-Peer with Match Patterns

```
CUBE(config)#voice class dial-peer provision-policy ?
<1-10000> Voice class dialpeer provision policy tag
CUBE(config)#voice class dial-peer provision-policy 1
CUBE(config-class)#?
VOICECLASS configuration commands:
description Description of a dialpeer provision-policy
exit Exit from voice class configuration mode
help Description of the interactive help system
no Negate a command or set its defaults
preference Add a dial-peer provision policy preference rule
shutdown Put a dial-peer provision policy to inactive state
CUBE(config-class)#preference ?
<1-2> Preference order
CUBE(config-class)#preference 1 ?
called Match called number calling Match calling number carrier-id Match carrier id
diversion Match diversion uri from Match from uri referred-by Match referred-by uri
to Match to uri uri Match destination uri via Match via ur
```

## Defining Provision Policy

```
CUBE(config)#voice class dial-peer provision-policy ?
<1-10000> Voice class dialpeer provision policy tag
CUBE(config)#voice class dial-peer provision-policy 1
CUBE(config-class)#?
VOICECLASS configuration commands:
description Description of a dialpeer provision-policy
exit Exit from voice class configuration mode
help Description of the interactive help system
no Negate a command or set its defaults
preference Add a dial-peer provision policy preference rule
shutdown Put a dial-peer provision policy to inactive state
CUBE(config-class)#preference ?
<1-2> Preference order
CUBE(config-class)#preference 1 ?
called Match called number calling Match calling number carrier-id Match carrier id
diversion Match diversion uri from Match from uri referred-by Match referred-by uri
to Match to uri uri Match destination uri via Match via ur
```

## Associating Provision policy to incoming Dial-Peer

```
CUBE(config)#voice class dial-peer provision-policy ?
<1-10000> Voice class dialpeer provision policy tag
CUBE(config)#voice class dial-peer provision-policy 1
CUBE(config-class)#?
VOICECLASS configuration commands:
description Description of a dialpeer provision-policy
exit Exit from voice class configuration mode
help Description of the interactive help system
no Negate a command or set its defaults
preference Add a dial-peer provision policy preference rule
shutdown Put a dial-peer provision policy to inactive state
CUBE(config-class)#preference ?
<1-2> Preference order
CUBE(config-class)#preference 1 ?
called Match called number calling Match calling number carrier-id Match carrier id
diversion Match diversion uri from Match from uri referred-by Match referred-by uri
to Match to uri uri Match destination uri via Match via ur
```

## Defining Provision Policy

```
CUBE(config)#voice class dial-peer provision-policy ?
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VOICECLASS configuration commands:
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preference Add a dial-peer provision policy preference rule
shutdown Put a dial-peer provision policy to inactive state
CUBE(config-class)#preference ?
<1-2> Preference order
CUBE(config-class)#preference 1 ?
called Match called number calling Match calling number carrier-id Match carrier id
diversion Match diversion uri from Match from uri referred-by Match referred-by uri
to Match to uri uri Match destination uri via Match via ur
```

## Associating Provision policy to incoming Dial-Peer

```
CUBE(config)#voice class dial-peer provision-policy ?
<1-10000> Voice class dialpeer provision policy tag
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preference Add a dial-peer provision policy preference rule
shutdown Put a dial-peer provision policy to inactive state
CUBE(config-class)#preference ?
<1-2> Preference order
CUBE(config-class)#preference 1 ?
called Match called number calling Match calling number carrier-id Match carrier id
diversion Match diversion uri from Match from uri referred-by Match referred-by uri
to Match to uri uri Match destination uri via Match via ur
```

## Outbound Dial-Peer definition

```
CUBE(config)#voice class dial-peer provision-policy ?
<1-10000> Voice class dialpeer provision policy tag
CUBE(config)#voice class dial-peer provision-policy 1
CUBE(config-class)#?
VOICECLASS configuration commands:
description Description of a dialpeer provision-policy
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no Negate a command or set its defaults
preference Add a dial-peer provision policy preference rule
shutdown Put a dial-peer provision policy to inactive state
CUBE(config-class)#preference ?
<1-2> Preference order
CUBE(config-class)#preference 1 ?
called Match called number calling Match calling number carrier-id Match carrier id
diversion Match diversion uri from Match from uri referred-by Match referred-by uri
to Match to uri uri Match destination uri via Match via ur
```

## Configuration Example

```
voice class dial-peer provision-policy 100
```

```

description match only called
  preference 1 called
voice class dial-peer provision-policy 101
  description match both calling and called
  preference 2 calling called
voice class dial-peer provision-policy 102
  description match calling first; if no match then match called
  preference 1 calling
  preference 2 called
voice class dial-peer provision-policy 200
  description match both referred-by and via header; if no match then match dest-uri
  preference 1 referred-by via
  preference 2 dest-uri

```

## Verify

### New show commands added

1. `show voice class dial-peer provision-policy`

A new **show voice class routing policy [<tag>]** is added to display the routing policy profile setup and its current status

The display example is shown.

```
show voice class dial-peer provision-policy
```

## Troubleshoot

Logs to be enabled that help in debugging.

- `show voice class dial-peer provision-policy`

Show commands that are helpful to debug.

- `show voice class dial-peer provision-policy`

Debug logs for Dial Peer match based on calling number

```

Nov 5 12:39:41.836 IST: //-1/136B8196800E/DPM/dpMatchPeersCore: Calling Number=1111000010,
Called Number=2084, Peer Info Type=DIALPEER_INFO_SPEECH
Nov 5 12:39:41.836 IST: //-1/136B8196800E/DPM/dpMatchDestDPPProvPolicy: Calling
Number=1111000010, Called Number=2084, DPPProvPolicy=1 ---> Voice Class Provision Policy used for
Outbound Dial Peer Selection

```

```

Nov 5 12:39:41.836 IST: //-1/136B8196800E/DPM/dpMatchDestDPPProvPolicy: Result=Success(0)
after DP_MATCH_DEST_CALLING ---> Match Attribute used for Dial Peer Selection
Nov 5 12:39:41.836 IST: //-1/136B8196800E/DPM/dpMatchPeersCore: Result=SUCCESS(0) after
DestDPPProvPolicy
Nov 5 12:39:41.836 IST: //-1/136B8196800E/DPM/dpMatchSafModulePlugin: dialstring=2084,
saf_enabled=0, saf_dndb_lookup=1, dp_result=0
Nov 5 12:39:41.836 IST: //-1/136B8196800E/DPM/dpMatchPeersMoreArg: Result=SUCCESS(0) List of
Matched Outgoing Dial-peer(s): 1: Dial-peer Tag=302 ---> Outbound Dial-peer used for call
routing

```

**Debug logs for Dial Peer match based on VIA URI**

```

Nov 5 12:46:42.069 IST: //-1/0DE5FAC48062/DPM/dpMatchPeersCore: Calling Number=, Called
Number=2084, Peer Info Type=DIALPEER_INFO_SPEECH
Nov 5 12:46:42.069 IST: //-1/0DE5FAC48062/DPM/dpMatchDestDPPProvPolicy: Calling Number=,
Called Number=2084, DPPProvPolicy=1 ---> Voice Class Provision Policy used for Outbound Dial Peer
Selection
Nov 5 12:46:42.069 IST: //-1/0DE5FAC48062/DPM/dpMatchDestDPPProvPolicy: Result=Success(0)

```

after **DP\_MATCH\_DEST\_VIA\_URI** ---> **Match Attribute used for Dial Peer Selection**

Nov 5 12:46:42.069 IST: //-1/0DE5FAC48062/DPM/dpMatchPeersCore: Result=SUCCESS(0) after  
DestDPProvPolicy

Nov 5 12:46:42.069 IST: //-1/0DE5FAC48062/DPM/dpMatchSafModulePlugin: dialstring=2084,  
saf\_enabled=0, saf\_dndb\_lookup=1, dp\_result=0

Nov 5 12:46:42.069 IST: //-1/0DE5FAC48062/DPM/dpMatchPeersMoreArg:  
Result=SUCCESS(0) List of Matched Outgoing Dial-peer(s):

1: **Dial-peer Tag=302** ---> **Outbound Dial-peer used for call routing**