Server Groups in Outbound Dial Peers

This feature configures a server group (group of server addresses) that can be referenced from an outbound dial peer.

Feature Information for Configuring Server Groups in Outbound Dial Peers

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to https://cfnng.cisco.com/. An account on Cisco.com is not required.

Table 1: Feature Information for Configuring Server Groups in Outbound Dial Peers

Feature Name	Releases	Feature Information
Server Groups in Outbound Dial Peers	Cisco IOS XE Release 3.11S 15.4(1)T	This feature configures server groups (groups of IPv4 and IPv6 addresses) which can be referenced from an outbound SIP dial peer. The following command is introduced under: **voice class server-group**, **description**, **ipv4 port preference**, **ipv6 port preference**, **hunt-scheme**, **show voice class server-group**, **shutdown (Server Group)**.

Feature Name	Releases	Feature Information
Hunt Stop for Server Groups	Cisco IOS XE Bengaluru 17.4.1a	This feature allows you to configure hunt-stop based on (configurable) response codes in the Server Group. The following command is introduced under voice class server-group. **huntstop** *rule-tag* **resp-code** *from_resp_code* to *to_resp_code*

Information About Server Groups in Outbound Dial Peers

Server groups allow you to create simpler configurations by specifying a list of destination SIP servers for a single dial peer. When a call matches a dial peer that is configured with a server group, the destination is selected from the list of candidates based on a configured policy. If it is not possible to complete that call, the next candidate is selected. Alternatively, you can also choose to stop hunting through the group if a specified response code is received. If the call cannot be placed to any of the servers in the group, or hunting is stopped, call processing continues to the next preferred dial-peer.

You can configure server groups for SIP dial peers to include up to five IPv4 and IPv6 target server addresses listed in strict order of preference, or with equal weight for round robin or random selection.

Note Whenever destination server group is used, and multiple interfaces are involved, ensure that the server group must have the session targets, belonging to the same network as that of sip bind on the dial-peer, where the server-group is configured.

If there are session targets of different network, then different dial-peers must be created with appropriate grouping of the targets with respective binding of the interfaces.

If a server-group is in the shutdown mode, all dial-peers using this destination are out of service.

Note
- You can use Server Groups only with SIP dial-peers.

- If a destination IP on the server group responds with codes 404, 500, or 503, the server group hunts for the next destination. But if the server group receives codes 480, 486, or 600, hunting is not supported and hence the server group does not hunt to the next destination.

⚠

Caution   Huntstop cannot be used with the following cause codes 401, 407, 415, 417, 422, 480, 485, 486, and 488.

1. If you attempt to configure one of the listed cause codes specifically, the following CLI error message appears.

   Example, huntstop 1 resp-code 401

   ```
   Error: The specified response code cannot be used with Huntstop.
   ```

2. If you attempt to configure range of codes that includes one of those codes that are listed, the command is accepted with the following warning message.

   Example, huntstop 1 resp-code 420–430

   ```
   Warning: Range includes code(s) that will not stop hunting.
   ```

How to Configure Server Groups in Outbound Dial Peers

Configuring Server Groups in Outbound Dial Peers

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice class server-group** *server-group-id*
4. {**ipv4** | **ipv6**} *address* [**port** *port*] [**preference** *preference-order*]
5. (Optional) **hunt-scheme round-robin**
6. (Optional) **description** *string*
7. (Optional) **huntstop** *rule-tag* **resp-code** *from_resp_code* to *to_resp_code*
8. **dial-peer voice** *dial-peer-id* **voip**
9. **session protocol sipv2**
10. **destination-pattern** [**+**] *string* [**T**]
11. **session server-group** *server-group-id*
12. **end**
13. **show voice class server-group** *server-group-id*

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Device> `**`enable`**	Enters privileged EXEC mode. • Enter your password if prompted.

	Command or Action	**Purpose**
Step 2	**configure terminal** **Example:** Device# **configure terminal**	Enters global configuration mode.
Step 3	**voice class server-group** *server-group-id* **Example:** Device(config)# **voice class server-group 171**	Configures a voice class server group and enters voice class configuration mode. • You can use the **shutdown** command to make the server group inactive.
Step 4	{**ipv4** | **ipv6**} *address* [**port** *port*] [**preference** *preference-order*] **Example:** Device(config-class)# **ipv4 10.1.1.1 preference 3**	Configures a server IP address as a part of this server group along with an optional port number and preference order. • Repeat this step to add up to five servers to the server group. • The servers are not selected by the preference value if round robin is configured in the next step. • Default and highest value of preference is zero.
Step 5	(Optional) **hunt-scheme round-robin** **Example:** Device(config-class)# **hunt-scheme round-robin**	Defines a hunt method for the order of selection of target server IP addresses (from the IP addresses configured for this server group) for the setting up of outgoing calls. • If a hunt scheme is not defined, an available IP address of highest preference value is selected. If neither a round-robin hunt scheme nor a preference value is configured, the selection of servers is random.
Step 6	(Optional) **description** *string* **Example:** Device(config-class)# **description It has 3 entries**	Provides a description for the server group.
Step 7	(Optional) **huntstop** *rule-tag* **resp-code** *from_resp_code* to *to_resp_code* **Example:** You can configure hunting in 2 ways, providing the following cause codes - **a. Range** Device(config-class)# **huntstop 1 resp-code 400 to 410** **b. Standalone**	Stops hunting for servers in the Server Group based on configurable response codes. • Huntstop rule identifier tags range: 1-1000. • Configurable SIP error response codes range: 400 to 599. The range must be in between 400 and 599 and must be entered in minimum to maximum order (Example: 450 to 460). You can enter multiple ranges using additional instances of this command. Response codes do not need to be ordered between instances (Example: huntstop 1 500 to 510 and huntstop 2 400 to 450).

	Command or Action	**Purpose**
	`Device(config-class)# ` **`huntstop 2 resp-code 414`**	The following error message appears if there is an invalid input for SIP Response codes.
		`Error: Invalid SIP response code range` `configured for hunt-stop.`
		• Overlapping of SIP error response codes configuration is not permitted. For example, huntstop 1 resp-code 400 to 510.
		The following error message appears if you try to configure the overlapping SIP error response codes.
		`Error: Overlap of response codes.`
		When one of the cause codes is in the configured range, the following warning message appears.
		Example, huntstop 1 resp-code 400 to 405
		`Warning: Range includes codes that will not` `stop hunting.`
Step 8	**dial-peer voice** *dial-peer-id* **voip** **Example:** `Device(config)# ` **`dial-peer voice 123 voip`**	Defines a VoIP dial peer and enters dial peer configuration mode.
Step 9	**session protocol sipv2** **Example:** `Device(config-dial-peer)# ` **`session protocol sipv2`**	Specifies SIP version 2 as the session protocol for calls between local and remote routers using the packet network.
Step 10	**destination-pattern** **[+]** *string* **[T]** **Example:** `Device(config-dial-peer)# ` **`destination-pattern`** **`+5550179`**	Specifies either the prefix or the full E.164 telephone number to be used for a dial peer.
Step 11	**session server-group** *server-group-id* **Example:** `Device(config-dial-peer)# ` **`session server-group`** **`171`**	Configures the specified server group as the destination of the dial peer. • This command is available for SIP dial peers only. • If the specified server group is in shutdown mode, the dial peer is not selected to route outgoing calls.
Step 12	**end** **Example:** `Device(config-dial-peer)# ` **`end`**	Exits dial peer configuration mode and enters privileged EXEC mode.
Step 13	**show voice class server-group** *server-group-id* **Example:**	Displays information about the voice class server group.

Command or Action	Purpose
Device# **show voice class server-group 171**	

Verifying Server Groups in Outbound Dial Peers

SUMMARY STEPS

1. **show voice class server-group** [*server-group-id*]
2. **show running-config |section server-group**

DETAILED STEPS

Step 1   **show voice class server-group** [*server-group-id*]

The following example displays the configurations for all configured server groups or a specified server group.

Example:
```
Device# show voice class server-group 1

Voice class server-group: 1
 AdminStatus: Up              OperStatus: Up
 Hunt-Scheme: preference      Last returned server:
 Description: It has 3 entries
 Total server entries: 3

 Pref    Type    IP Address                          IP Port
 ----    ----    ---------                           -------
 1       ipv4    10.1.1.1
 2       ipv4    10.1.1.2
 3       ipv4    10.1.1.3
-------------------------------------

 Total Huntstop tags: 2
 Tag ID From Response code       To Response code
 ------ ------------------       ------------------
  1     404                      404
  2     410                      599
-------------------------------------
```

The following example displays the configurations for dial peers that are associated with server groups.

Example:
```
Device# show voice class server-group dialpeer 1

Voice class server-group: 1    AdminStatus: Up
 Hunt-Scheme: preference
 Total Remote Targets: 3

 Pref    Type    IP Address                          IP Port
 ----    ----    ---------                           -------
 1       ipv4    10.1.1.1
 2       ipv4    10.1.1.2
 3       ipv4    10.1.1.3
```

Step 2   **show running-config |section server-group**

The following example displays the running configuration for server groups.

Example:

```
Device#show running-config | section server-group
voice class server-group 1
ipv4 10.1.1.1 preference 1
ipv4 10.1.1.2 preference 2
ipv4 10.1.1.3 preference 3
description It has 3 entries
huntstop 1 resp-code 404 to 404
huntstop 2 resp-code 410 to 599
voice class server-group 2
ipv4 10.1.1.1
ipv4 10.1.1.2
ipv4 10.1.1.3
description It has 3 entries
hunt-scheme round-robin
huntstop 1 resp-code 401 to 599
```

Configuration Examples for Server Groups in Outbound Dial Peers

Server Groups in Outbound Dial Peers (Preference-Based Selection)

```
! Configuring the Server Group
Device(config)# voice class server-group 1
Device(config-class)# ipv4 10.1.1.1 preference 1
Device(config-class)# ipv4 10.1.1.2 preference 2
Device(config-class)# ipv4 10.1.1.3 preference 3
Device(config-class)# description It has 3 entries
Device (config-class)# huntstop 1 resp-code 404
Device(config-class)# huntstop 2 resp-code 410 to 599
Device(config-class)# exit


! Configuring an outbound SIP dial peer.
Device(config)# dial-peer voice 1 voip
!Associate a destination pattern
Device(config-dial-peer)# destination-pattern 3001
Device(config-dial-peer)# session protocol sipv2
!Associate a server group with the dial peer
Device(config-dial-peer)# session server-group 1
Device(config-dial-peer)# end

! Displays the configurations made for the outbound dial peer 181 associated with a server
 group
Device# show voice class server-group dialpeer 1

Voice class server-group: 1    AdminStatus: Up
 Hunt-Scheme: preference
 Total Remote Targets: 3
```

```
Pref    Type    IP Address                                IP Port
----    ----    ---------                                 -------
1       ipv4    10.1.1.1
2       ipv4    10.1.1.2
3       ipv4    10.1.1.3

! Displays the configurations made for the server group.

Device# show voice class server-group 1

Voice class server-group: 1
 AdminStatus: Up                      OperStatus: Up
 Hunt-Scheme: preference        Last returned server:
 Description: It has 3 entries
 Total server entries: 3

 Pref    Type    IP Address                          IP Port
 ----    ----    ---------                           -------
 1       ipv4    10.1.1.1
 2       ipv4    10.1.1.2
 3       ipv4    10.1.1.3


 ------------------------------------

 Total Huntstop tags: 2
 Tag ID From Response code        To Response code
 ------ ------------------        ------------------
  1     404                       404
  2     410                       599
 ------------------------------------
```

Server Groups in Outbound Dial Peers (Round-Robin-Based Selection)

```
! Configuring the Server Group
Device(config)# voice class server-group 2
Device(config-class)# ipv4 10.1.1.1
Device(config-class)# ipv4 10.1.1.2
Device(config-class)# ipv4 10.1.1.3
Device(config-class)# hunt-scheme round-robin
Device(config-class)# huntstop 1 resp-code 401 to 599
Device(config-class)# description It has 3 entries
Device(config-class)# exit

! Configuring an outbound SIP dial peer.
Device(config)# dial-peer voice 2 voip
! Associate a destination pattern
Device(config-dial-peer)# destination-pattern 3001
Device(config-dial-peer)# session protocol sipv2
! Associate a server group with the dial peer
Device(config-dial-peer)# session server-group 2
Device(config-dial-peer)# end

! Displays the configurations made for the outbound dial peer 181 associated with a server
  group
Device# show voice class server-group dialpeer 2

Voice class server-group: 2    AdminStatus: Up
 Hunt-Scheme: round-robin
 Total Remote Targets: 3
```

```
Pref    Type    IP Address                              IP Port
----    ----    ----------                              -------
0       ipv4    10.1.1.3
0       ipv4    10.1.1.1
0       ipv4    10.1.1.2

! Displays the configurations made for the server group.
Device# show voice class server-group 2

Voice class server-group: 2
 AdminStatus: Up                    OperStatus: Up
 Hunt-Scheme: round-robin       Last returned server: 10.1.1.2
 Description: It has 3 entries
 Total server entries: 3

 Pref    Type    IP Address                              IP Port
 ----    ----    ----------                              -------
 0       ipv4    10.1.1.1
 0       ipv4    10.1.1.2
 0       ipv4    10.1.1.3


--------------------------------------

 Total Huntstop tags: 1
 Tag ID From Response code       To Response code
 ------ -------------------      ------------------
  1     401                      599
--------------------------------------
```