

How to Deploy and Configure with the Trunk Utilization Feature with Customer Voice Portal (CVP)

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Introduction

This document describes how to deploy and configure the trunk utilization feature with CVP.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- CVP
- Voice gateway

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, ensure that you understand the potential impact of any command.

Trunk Utilization Feature Overview

Through the Trunk Utilization feature, a gateway is used for real-time Unified CVP routing and Unified Intelligent Contact Management (ICM) reporting and scripting. A gateway pushes the status of memory, Digital Signal 0 (DS0), Digital Signal Processor (DSP), and Central Processing Unit (CPU) to Unified CVP. Because this feature uses a push method to send resource data to Unified CVP, resources are monitored more closely and failover can occur faster when a device goes down or is out of resources.

This feature has the following characteristics:

- Each gateway can publish an Session Initiation Protocol (SIP) OPTIONS message with CPU, Memory, DS0, and DSP information to Unified CVP every three minutes when operation conditions are normal on the gateway
- The push interval is configurable through the Cisco IOS Command Line Interface (CLI) on the gateway

- If a high watermark level is reached, the gateway sends the SIP OPTIONS message immediately with an **Out-Of-Service = true** indication, and does not send another OPTIONS message until the low watermark level is reached with an **Out-Of-Service = false** indication

- You can set up to five Resource Availability Indication (RAI) targets on the gateway. You can also use Trunk Utilization Routing to update trunk group status in the Unified Contact Center Enterprise (CCE) router. A Public Switched Telephone Network (PSTN) call (through the ICM script) can query the router with a prerule from a Network Interface Controller (NIC) to use the available ingress gateway for the post route to Unified CVP

DS0 Trunk Information

Through Unified CVP, Unified ICM passes the gateway trunk and DS0 information from the arriving SIP call. PSTN gateway trunk and DS0 information received at ICM has the following purposes:

- Reporting
- Routing in the Unified CCE Script Editor where TrunkGroupID and TrunkGroupChannelNum information is available for routing decisions

This message is used in the examples:

The PSTN trunk group data comes from the PSTN Gateway in the SIP INVITE:

```
Via: SIP/2.0/UDP
192.168.1.79:5060;x-route-tag="tgrp:2811-b-000";x-ds0num="ISDN 0/0/0:15
0/0/0:DS1 1:DS0";branch
```

This logic is used in Unified CVP to parse and pass the PSTN trunk group information to Unified ICM:

- For TrunkGroupID, look for tgrp: in the **x-route-tag** field

```
# If tgrp: found TrunkGroupID=value after tgrp:> + <data between ISDN and :DS1 tags> Using the above example: TrunkGroupID = 2811-b-000<space>0/0/0:15 0/0/0.
```

```
# TrunkGroupID = <IP addr of originating device in Via header> + <data between ISDN and:DS1tags>
Using the above example: TrunkGroupID=192.168.1.79<space>0/0/0:15 0/0/0.
```

- For TrunkGroupChannelNum, look for DS0 in **x-ds0num** field
- # If found, TrunkGroupChannelNum = <value before the :DS0> Using the above example: TrunkGroupChannelNum = 1

```
# TrunkGroupChannelNum = <max int value> to indicate we did not find the DS0 value.
```

```
# Using the above example: TrunkGroupChannelNum = Integer.MAX_VALUE (2^31 - 1)
```

Use of Trunk Utilization

IOS 15.1(2) and later introduces toll fraud prevention. This feature is recommended that for the RAI resource settings on the gateway, use the 60% low watermark and the 80% high watermark.

IOS Gateway configuration example:

```
voice class resource-group 1
  resource cpu 1-min-avg threshold high 80 low 60
  resource ds0
  resource dsp
  resource mem total-mem
  periodic-report interval 30

sip-ua
  rai target ipv4:<ip address of CVP server> resource-group 1

#configure this for each CVP server.
```

Ensure that the pots dial peers have the trunk serial interface configured or else DS0 information is not be sent.

```
voice class resource-group 1
  resource cpu 1-min-avg threshold high 80 low 60
  resource ds0
  resource dsp
  resource mem total-mem
  periodic-report interval 30
```

```
sip-ua
  rai target ipv4:<ip address of CVP server> resource-group 1
```

#configure this for each CVP server.

Example of OPTIONS message with RAI headers:

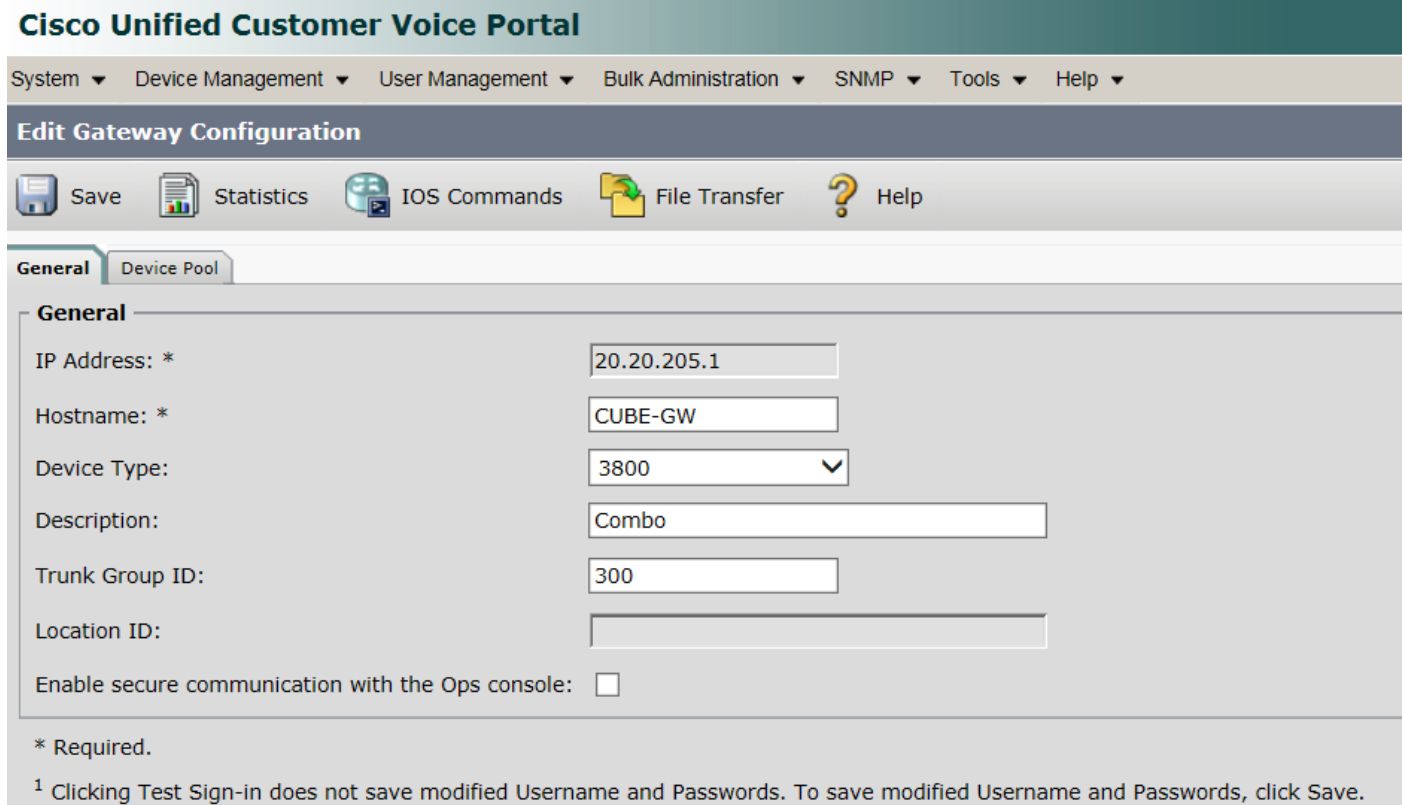
```
voice class resource-group 1
  resource cpu 1-min-avg threshold high 80 low 60
  resource ds0
  resource dsp
  resource mem total-mem
  periodic-report interval 30
```

```
sip-ua
  rai target ipv4:<ip address of CVP server> resource-group 1
```

#configure this for each CVP server.

CVP & ICM Setup

Step 1. Create the Gateways for reporting in the Operate Administer Maintain Provision (OAMP) console.



Cisco Unified Customer Voice Portal

System ▾ Device Management ▾ User Management ▾ Bulk Administration ▾ SNMP ▾ Tools ▾ Help ▾

Edit Gateway Configuration

Save Statistics IOS Commands File Transfer Help

General Device Pool

General

IP Address: * 20.20.205.1

Hostname: * CUBE-GW

Device Type: 3800 ▾

Description: Combo

Trunk Group ID: 300

Location ID:

Enable secure communication with the Ops console:

* Required.

¹ Clicking Test Sign-in does not save modified Username and Passwords. To save modified Username and Passwords, click Save.

Step 2. On the **ICM Subsystem** tab for the Call Server, select all the gateways for reporting trunk data.

Trunk Utilization

Enable Gateway Trunk Reporting: ¹

Maximum Gateway Ports: ¹

Associate Gateway(s)

Available	Selected ¹
<input type="text"/>	<input type="text" value="20.20.205.1"/>

Step 3. The SIP subsystem tab has 2 checkboxes, leave the defaults for both of them checked off.

Generic Type Descriptor (GTD) Parameter Forwarding:

Prepend digits:

UDP Retransmission Count:

Use Error Refer:

IOS Gateway Options Dynamic Routing:

IOS Gateway Options Reporting:

Step 4. Create the **Network Trunk Groups** on the ICM Configuration Manager.

The screenshot shows the 'Network Trunk Group Explorer' interface. On the left, a tree view shows a hierarchy: (1) Network trunk group, (2) Trunk group, and (3) Trunk. Below this, a list shows 'UNASSIGNED', 'NTG_205.1', and 'CVP_PIM1.205.1_GW'. The right pane shows configuration details for 'Network trunk group' (Name: NTG_205.1, Description: 20.20.205.1) and 'Trunk group' (Peripheral: CVP_PIM1, Peripheral number: 300, Peripheral name: 205.1_GW, Name: CVP_PIM1.205.1_GW, Extension: |, Trunk count: 0).

Note: Use the same **Peripheral Number** as the **Trunk Group ID** on the CVP OAMP side.