

Table of Contents

<u>Configuring Class of Restrictions (COR)</u>	1
<u>Document ID: 42720</u>	1
<u>Introduction</u>	1
<u>Prerequisites</u>	1
<u>Requirements</u>	1
<u>Components Used</u>	2
<u>Conventions</u>	2
<u>Configure COR Example</u>	2
<u>Verify</u>	5
<u>Troubleshoot</u>	7
<u>Related Information</u>	7

Configuring Class of Restrictions (COR)

Document ID: 42720

Introduction

Prerequisites

Requirements

Components Used

Conventions

Configure COR Example

Verify

Troubleshoot

Related Information

Introduction

The Class of Restrictions (COR) feature provides the ability to deny certain call attempts based on the incoming and outgoing CORs provisioned on the dial-peers.

COR is used to specify which incoming dial-peer can use which outgoing dial-peer to make a call. Each dial-peer can be provisioned with an incoming and an outgoing COR list. The **corlist** command sets the dial-peer COR parameter for dial-peers and the directory numbers that are created for Cisco IP phones associated with the Cisco CallManager Express router. COR functionality provides the ability to deny certain call attempts on the basis of the incoming and outgoing class of restrictions that are provisioned on the dial-peers. This functionality provides flexibility in network design, allows users to block calls (for example, calls to 900 numbers), and applies different restrictions to call attempts from different originators.

If the COR applied on an *incoming* dial-peer (for incoming calls) is a super set or equal to the COR applied to the *outgoing* dial-peer (for outgoing calls), the call goes through. *Incoming* and *outgoing* are terms used with respect to the "voice ports".

For example, if you hook up a phone to one of the Foreign Exchange Station (FXS) ports of the router and try to make a call from that phone, it is an incoming call for the router/voice-port. Similarly, if you make a call to that FXS phone, then it is an outgoing call.

By default, an incoming call leg has the highest COR priority and the outgoing COR list has the lowest COR priority. This means that if there is no COR configuration for incoming calls on a dial-peer, then you can make a call from this dial-peer (a phone attached to this dial-peer) going out of any other dial-peer, irrespective of the COR configuration on that dial-peer.

This document provides examples of how to configure COR.

Prerequisites

Requirements

Before you attempt this configuration, ensure that you are familiar with how to configure a Cisco IOS Telephony Service on a router. Cisco IOS Telephony Service version 3.0 is referred to as **CallManager Express 3.0**.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco IOS® Software Release 12.2(8)T or later with a minimum of IP Plus (IP/VOX Plus on the Cisco 1700 series) feature set. This document assumes Cisco IOS Telephone Services (ITS) 2.0 support in Cisco IOS Software Release 12.2(8)T or later. For more information on ITS and Cisco IOS versions, refer to ITS and Cisco IOS version.
- Cisco 3725 Gateway with Cisco IOS Software Release 12.3(4)T with the IP Plus feature set is used in the configuration example, although most IAD 2400s, 1700, 2600, 3600, 3700 series routers are currently applicable. Cisco CallManager Express 3.0 is supported Cisco IOS Software Release 12.3(4)T. Check the Cisco IOS release notes for current version and software support information.

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live network, ensure that you understand the potential impact of any command before using it.

Conventions

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

Configure COR Example

Use this procedure as an example for how to configure COR:

1. First configure **dial-peer cor custom** and assign a meaningful name that specifies the way CORs apply to dial-peers. For example:

```
Dial-peer cor custom

name 911

name 1800

name 1900

name local_call
```

2. Create the actual lists of the restrictions that apply to the dial-peer.

```
Dial-peer cor list call911

Member 911

Dial-peer cor list call1800

Member 1800

Dial-peer cor list call1900

Member 1900

Dial-peer cor list calllocal

Member local_call

Dial-peer cor list Engineering
```

```

Member 911

Member local_call

Dial-peer cor list Manager

Member 911

Member 1800

Member 1900

Member local_call

Dial-peer cor list HR

Member 911

Member 1800

Member local_call

```

3. Create dial-peers and specify the COR list to be used.

In this example, five dial-peers are created for the following destination numbers: 408&., 1800&, 1900&, 911, and 316&. The appropriate cor-list is applied to each of the dial-peers.

```

Dial-peer voice 1 voip
Destination-pattern 408&.
Session target ipv4:1.1.1.1

Corlist outgoing calllocal

Dial-peer voice 2 voip
Destination-pattern 1800&
Session target ipv4:1.1.1.1

Corlist outgoing call1800

Dial-peer voice 3 pots
Destination-pattern 1900&
Port 1/0/0

Corlist outgoing call1900

Dial-peer voice 4 pots
Destination-pattern 911
Port 1/0/1

Corlist outgoing call911

Dial-peer voice 5 pots
Destination-pattern 316&.

```

Note: On the dial-peer 5 POTS there is no COR applied.

To enter telephony-service configuration mode to configure a Cisco CallManager Express system, use the **telephony-service** command in global configuration mode. By default, no Cisco CallManager Express or ITS configuration is present.

4. Apply the COR list to the individual phones/Ephone-dns. For more information on configuring ephones, refer to Setting Up Individual Directory Numbers and Phones.

```
Ephone-dn 1
Number 1001

Cor incoming Engineering

Ephone-dn 2
Number 1002

Cor incoming HR

Ephone-dn 3
Number 1003

Cor incoming Manager

Ephone-dn 4
Number 1004
```

Note: On the Ephone-dn 4 there is no COR applied.

With the above configuration:

- Ephone-dn 1 (1001) can call 408&., 911, and 316&. numbers.
- Ephone-dn 2 (1002) can call 408&., 1800... , 911, and 316&. numbers.
- Ephone-dn 3 (1003) can call all the numbers possible from that router.
- Ephone-dn 4 (1004) can call all the numbers possible from that router.

Note: All Ephone-dns can call 316&. numbers.

Various combinations of COR lists and the results are shown in this table:

COR List on Incoming dial-peer	COR List on	Result	Reason
No COR.	Outgoing No COR	Call succeeds.	COR is not in the picture.
No COR.	COR list applied for outgoing calls.	Call succeeds.	The incoming dial-peer, by default, has the highest COR priority when no COR

			is applied. Therefore, if you apply no COR for an incoming call leg to a dial-peer, then this dial-peer can make calls out of any other dial-peer, irrespective of the COR configuration on the outgoing dial-peer.
The COR list applied for incoming calls.	No COR.	Call succeeds.	The outgoing dial-peer, by default, has the lowest priority. Since there are some COR configurations for incoming calls on the incoming/originating dial-peer, it is a super set of the outgoing call COR configurations on outgoing/terminating dial-peer.
The COR list applied for incoming calls (super set of COR lists applied for outgoing calls on the outgoing dial-peer).	The COR list applied for outgoing calls (subset of COR lists	Call	The COR list for incoming calls on the incoming dial-peer is a
The COR list applied for incoming calls (subset of COR lists applied for outgoing calls on the outgoing dial-peer).	applied for incoming calls on the incoming dial-peer.) The COR list applied for outgoing calls (super set of COR lists applied	succeeds. Call <i>cannot</i> be completed	super set of COR lists for outgoing calls on the outgoing dial-peer COR lists for incoming calls on the incoming dial-peer are <i>not</i> a

Verify

After you enter the configurations shown above into your router, it is important that you verify the network is operating correctly. These commands and respective output show you a successful implementation of the

above configurations.

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

- **show ephone-dn summary** displays brief information about Cisco IP phone extensions (ephone-dns),
- **show telephony-service ephone-dn** displays information about extensions (ephone-dns) in a Cisco CallManager Express system.
- **show telephony-service dial-peer** displays dial-peer information for extensions in a Cisco CallManager Express system
- **show telephony-service all** displays detailed configuration for phones, voice ports, and dial-peers in a Cisco CallManager Express system.
- **show dial-peer cor** displays the list of corlist and the members in each list.

These are sample output of some of the commands with respect to the above configuration:

```
Router3725#show ephone-dn summary
PORT      DN STATE      MWI_STATE      CODEC      VAD VTSP STATE      VPM STATE
=====
50/0/1    CH1 IDLE      NONE           -          - - -          EFXS_ONHOOK
50/0/2    CH1 IDLE      NONE           -          - - -          EFXS_ONHOOK
50/0/3    CH1 IDLE      NONE           -          - - -          EFXS_ONHOOK
50/0/4    CH1 IDLE      NONE           -          - - -          EFXS_ONHOOK
```

```
Router3725#show telephony-service dial-peer
```

```
dial-peer voice 20001 pots
destination-pattern 1001
calling-number local
huntstop
corlist incoming Engineering
progress_ind setup enable 3
port 50/0/1
```

```
dial-peer voice 20002 pots
destination-pattern 1002
calling-number local
huntstop
corlist incoming HR
progress_ind setup enable 3
port 50/0/2
```

```
dial-peer voice 20003 pots
destination-pattern 1003
calling-number local
huntstop
corlist incoming Manager
progress_ind setup enable 3
port 50/0/3
```

```
dial-peer voice 20004 pots
destination-pattern 1004
calling-number local
huntstop
progress_ind setup enable 3
port 50/0/4
```

```
Router3725#show dial-peer cor
```

```
Class of Restriction
  name: 911
  name: 1800
  name: 1900
  name: local_call

COR list <call911>
  member: 911

COR list <call1800>
  member: 1800

COR list <call1900>
  member: 1900

COR list <calllocal>
  member: local_call

COR list <Engineering>
  member: 911
  member: local_call

COR list <Manager>
  member: 911
  member: 1800
  member: 1900
  member: local_call

COR list <HR>
  member: 911
  member: 1800
```

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

For additional information on troubleshooting, refer to the instructions in Cisco IOS Telephony Service (ITS) Configuration and Troubleshooting.

- **debug voip ccapi inout** Used to debug end-to-end VoIP calls.
- **debug ephone detail** Used to set detail debugging for the Cisco IP phone

Note: Before issuing **debug** commands, refer to Important Information on Debug Commands.

Related Information

- **Cisco CallManager Express 3.0 Chapter 11: Configuring Call Blocking**
 - **The "Class Restrictions" section of Configuring Dial Plans, Dial Peers, and Digit Manipulation**
 - **Troubleshooting and Debugging VoIP Call Basics**
 - **Voice Technology Support**
 - **Voice and IP Communications Product Support**
 - **Voice, Telephony and Messaging TAC eLearning Solutions**
 - **Recommended Reading: Troubleshooting Cisco IP Telephony**
 - **Technical Support – Cisco Systems**
-

