

Busyout Monitor on Cisco 2600 and 3600 Series Routers

This document describes how to configure the Busyout Monitor feature on Cisco 2600 and 3600 series routers and includes the following sections:

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Feature Overview

The Busyout Monitor feature is one aspect of Call Admission Control (CAC) that allows network administrators to use both a data network and the public switched telephone network (PSTN) to provide the best possible quality for Voice over IP (VoIP) calls. Although voice calls are routed across the data network whenever possible to take advantage of the cost savings provided by integrated applications, the Busyout Monitor allows network administrators to provide voice services through the PSTN in the event of a network interface failure.

If a locally connected LAN or WAN interface on a VoIP gateway fails, it busies out voice ports. This means that a connected private-branch exchange (PBX) or key system reroutes the call through the local PSTN.

Benefits

The Busyout Monitor CAC feature provides the following benefits:

- Before the Busyout Monitor feature, there was no logical connection between the LAN/WAN interfaces of a Cisco 2600 or 3600 series VoIP gateway and the directly connected voice ports, although most PBXs and key systems can reroute a call when the primary path is busy or out of service. If one or more interfaces failed, the PBX or key system continued to accept calls that could not be completed and people placing these calls did not know that the call path failed. The Busyout Monitor feature takes advantage of private communications systems' rerouting capabilities.
- Because a network administrator can define Busyout Monitor port by port, the feature allows freedom in choosing the level of monitoring for VoIP calls.
- Tracks any directly connected main interface, subinterface, or virtual interface (for example, dialer, virtual template, and so on).
- Monitors multiple locally connected LAN/WAN interfaces for each port, so that a network administrator can take advantage of multiple IP paths before rerouting calls to the PSTN.

Restrictions

Busyout Monitor monitors only locally connected LAN/WAN interfaces and does not monitor the status of remote devices. The feature cannot determine the status of the end-to-end path.

Note In some cases, for example, in a VoIP over Frame Relay environment, you can use the Frame Relay PVC end-to-end keepalive feature to track the end-to-end path and thereby busy out a port when its corresponding PVC is down. For more information about Frame Relay keepalive, see *Wide-Area Networking Command Reference* and *Wide-Area Networking Configuration Guide* for Cisco IOS Release 12.0.

Supported Platforms

This feature is supported on the following platforms:

- Cisco 2610
- Cisco 2611
- Cisco 2612
- Cisco 2613
- Cisco 2620
- Cisco 2621
- Cisco 3620
- Cisco 3640
- Cisco 3661
- Cisco 3662

Supported Standards, MIBs, and RFCs

The Busyout Monitor feature does not support any standards, MIBs, or RFCs.

Prerequisites

The Busyout Monitor feature requires the following software, hardware, and configuration:

- Cisco IOS Software Release 12.0(5)XK, 12.0(7)T or a later release
- A working IP network with interface connectivity to an IP LAN or WAN.

For more information about configuring IP, see “IP Overview,” “Configuring IP Addressing,” and “Configuring IP Services” chapters in the Cisco IOS Release 12.0 *Network Protocols Configuration Guide, Part 1*.

- A company dial plan
- A working telephony network based on your company's dial plan, and including a PBX or key system and a voice network module

Voice, Video, and Home Applications Configuration Guide and *Voice, Video, and Home Applications Command Reference* for Cisco IOS Release 12.0 provide information about setting up voice networks.

Configuration Task

The Busyout Monitor feature is configured on a voice port used for VoIP applications.

Configuring Voice Ports

Follow these steps to set up voice ports to support local and remote stations. Not all possible commands are shown here. See *Voice, Video, and Home Applications Configuration Guide* and *Voice, Video, and Home Applications Command Reference* for Cisco IOS Release 12.0.

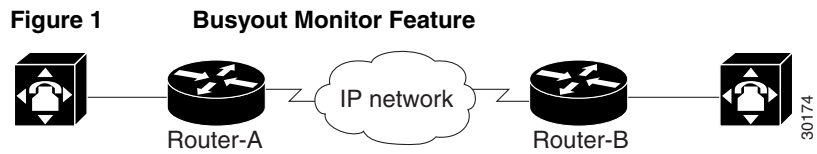
Step	Command	Purpose
1	Router# configure terminal	Enter global configuration mode.

Configuring Voice Ports

Step	Command	Purpose
2	Router(config)# voice-port <i>slot/port:ds0-group-no</i>	<p>Note This voice-port command syntax does not apply to analog voice network modules and voice interface cards. The latter are specified by using <i>slot/subunit/port</i>, designating the router slot for the voice network module, the location of the voice interface card in the network module, and the port on the voice interface card.</p> <p>Enter voice-port configuration mode.</p> <p><i>slot</i> is the router location where the voice module is installed. Valid entries are from 0 to 5. <i>port</i> indicates the voice interface card location. Valid entries are 0 or 1.</p> <p>When you are configuring a digital voice card, each defined DS0 group number is represented on a separate voice port, so that you can define individual DS0s on the card.</p> <p>For more information about DS0 groups, see <i>Configuring Digital T1 Packet Voice Trunk Network Modules on Cisco 2600 and 3600 Series Routers</i>.</p>
3	Router(config-voice-port)# busyout monitor interface <i>interface number</i>	<p>(Optional) This command allows you to specify a LAN or WAN interface that will be monitored, and, when it is down, trigger a busyout (offhook) state on the voice port. This allows rerouting of calls. For example, if you specify <i>Serial 1/0</i> as the interface and number, the voice port sends a busyout signal when that interface is down. You can issue the command repeatedly to specify as many interfaces, virtual interfaces, and subinterfaces as are required for a voice port.</p> <p>For example, if you issue the command three times so that three interfaces are monitored, the voice port only goes into busyout state when all three interfaces are down. When any one of the interfaces is operational, the busyout state is removed.</p>
4	Router(config-voice-port)# comfort-noise	<p>(Optional) This parameter is enabled by default. It creates subtle background noise to fill silent gaps during calls when VAD is enabled on voice dial peers. If comfort noise is not generated, the silence can be unsettling to callers.</p>
5	Router(config-voice-port)# echo-cancel enable	<p>(Optional) This setting is enabled by default. Echo cancellation adds to the quality of voice transmissions by adjusting the echo that occurs on the interface due to impedance mismatches. Some echo is reassuring; echo over 25 milliseconds can cause problems.</p>
6	Router(config-voice-port)# echo-cancel coverage {16 24 32 8}	<p>(Optional) This command adjusts the echo canceller by the specified number of milliseconds; the default is 16.</p>

Step	Command	Purpose
7	Router(config-voice-port)# timeouts interdigit <i>seconds</i>	<p>(Optional) This command sets the number of seconds the system waits—after the caller has input the initial digit—for a subsequent digit of the dialed string. If the timeout ends before the destination is identified, a tone sounds and the call ends. The default value is 10 seconds, and the timeout can be set from 0 to 120 seconds.</p> <p>Note Changes to the default for this command normally are not required. Other timing settings may also be needed. For more information, see the Cisco IOS Release 12.0 <i>Voice, Video, and Home Applications Configuration Guide</i>.</p>
8	Router(config-voice-port)# exit	<p>Exit voice-port configuration mode.</p> <p>Repeat Steps 2 through 8 for each DS0 group you create.</p>

Configuration Example



This example shows the Busyout Monitor feature used on a digital voice interface. The feature instructs the voice gateway to busy out the voice port (all channels defined in the corresponding DS0 Group) if serial 2/1 fails. When the specified LAN/WAN interface becomes available again, the voice port is put back into service for handling VoIP calls.

```

hostname RTR-A
!
voice-card 1
!
controller T1 1/0
framing esf
linecoding b8zs
clock source line
ds0-group 1 timeslots 1-24 type e&m-wink
!
voice-port 1/0:1
busyout monitor interface serial 2/1
!
interface serial 2/1
encapsulation ppp
bandwidth 1544
ip address 10.168.100.1 255.255.255.0
!
interface ethernet 0/0
ip address 10.168.102.1 255.255.255.0
!
dial-peer voice 1 voip
destination-pattern 5....
codec g711u
dtmf-relay h245-alphanumeric
session target ipv4:10.168.100.2
!
dial-peer voice 2 pots
destination-pattern 4....
prefix 4
port 1/0:1
    
```

```

hostname RTR-B
!
voice-card 1
!
controller T1 1/0
framing esf
linecoding b8zs
clock source line
ds0-group 1 timeslots 1-24 type e&m-wink
!
voice-port 1/0:1
busyout monitor interface serial 2/0
!
interface serial 2/0
encapsulation ppp
bandwidth 1544
ip address 10.168.100.2 255.255.255.0
!
interface ethernet 0/0
ip address 10.168.101.1 255.255.255.0
!
dial-peer voice 1 voip
destination-pattern 4....
codec g711u
dtmf-relay h245-alphanumeric
session target ipv4:10.168.100.1
!
dial-peer voice 2 pots
destination-pattern 5....
prefix 5
port 1/0:1
    
```

Command Reference

This section documents a new command. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command references.

- **busyout monitor interface**

busyout monitor interface

To place a voice port into a busyout monitor state, use the **busyout-monitor interface** voice-port configuration command. To remove the busyout monitor state on the voice port, use the **no** form of this command.

busyout-monitor interface *interface number*
no busyout-monitor interface *interface number*

Syntax Description

<i>interface</i>	The name of the associated interface or subinterface that will be monitored to trigger a voice-port busyout, for example serial , atm , or ethernet .
<i>number</i>	The slot and port position of the interface or subinterface, for example, <i>0/1</i> , <i>1/1.0</i> , and so on.

Default

The voice port is not in busyout monitor state.

Command Mode

Voice-port configuration

Command History

Release	Modification
12.0(3)T	This command was introduced for the Cisco MC3810.
12.0(5)XK and 12.0(7)T	The command was modified for the Cisco 2600 and 3600 series.

Usage Guidelines

When you place a voice port in a busyout monitor state, the voice port monitors the specified interface and enters the busyout state when the interface is down. This forces rerouting of calls when an interface is down.

If you specify more than one monitored interface for a voice port, all the monitored interfaces must be down in order to trigger a busyout on the voice port.

The command monitors only the up or down status of an interface—not end-to-end TCP/IP connectivity.

When an interface is operational, a busied-out voice port returns to its normal state.

This feature can monitor LAN, WAN, virtual interfaces, and subinterfaces.

Example

The following example configures the voice port to monitor two serial interfaces and an Ethernet interface. When all these interfaces are down, the voice port is busied out. When at least one interface is operating, the voice port is put back into a normal state.

```
voice-port 3/0:0
  busyout monitor interface Ethernet0/0
  busyout monitor interface Serial1/0
  busyout monitor interface Serial2/0
```

Glossary

CAC—call admission control. The ability to provide packet voice services based on the status of the data network.

PBX—private branch exchange. Digital or analog telephone switchboard located on the subscriber premises and used to connect private and public telephone networks.

PSTN—Public Switched Telephone Network. General term referring to the variety of telephone networks and services in place worldwide.