

Cisco Conferencing and Transcoding for Voice Gateway Routers

The Cisco Conferencing and Transcoding for Voice Gateway Routers feature provides conference and transcode capability in Cisco IOS® gateways using the Digital T1/E1 Packet Voice Trunk Network Module and HDV Transcoding/ Conferencing DSP Farm. This feature is delivered in Cisco IOS Software and operates in conjunction with Cisco CallManager.

The Cisco Conferencing and Transcoding for Voice Gateway Routers feature provides enhanced multiservice support for Cisco routers in a Cisco CallManager network. This is accomplished by enabling audioconference and transcode functions in access routers. This single-package solution simplifies deployments and eases administration. Tangible cost savings are realized with the location of conference resources in the branch to reduce WAN utilization. Costs are further reduced with the use of transcode services to reduce bandwidth needs.

The Cisco telephony solution is part of Cisco AVVID (Architecture for Voice, Video and Integrated Data) and provides a full-featured telephony system running on an IP network. Available on either the Digital T1/E1 Packet Voice Trunk Network Module or HDV Transcoding/ Conferencing DSP Farm and operating on the Cisco 2600, 3600, 3700, and Cisco VG200 Gateway product lines, the Cisco Conferencing and Transcoding for Voice Gateway Routers feature preserves all the WAN, public switched telephone network (PSTN), and private-branch-exchange

(PBX) access capabilities provided on these platforms while adding conference and transcode functions. As an integrated solution with Cisco CallManager, features such as Cisco CallManager failover, reporting, and management are all provided.

Audioconference Services

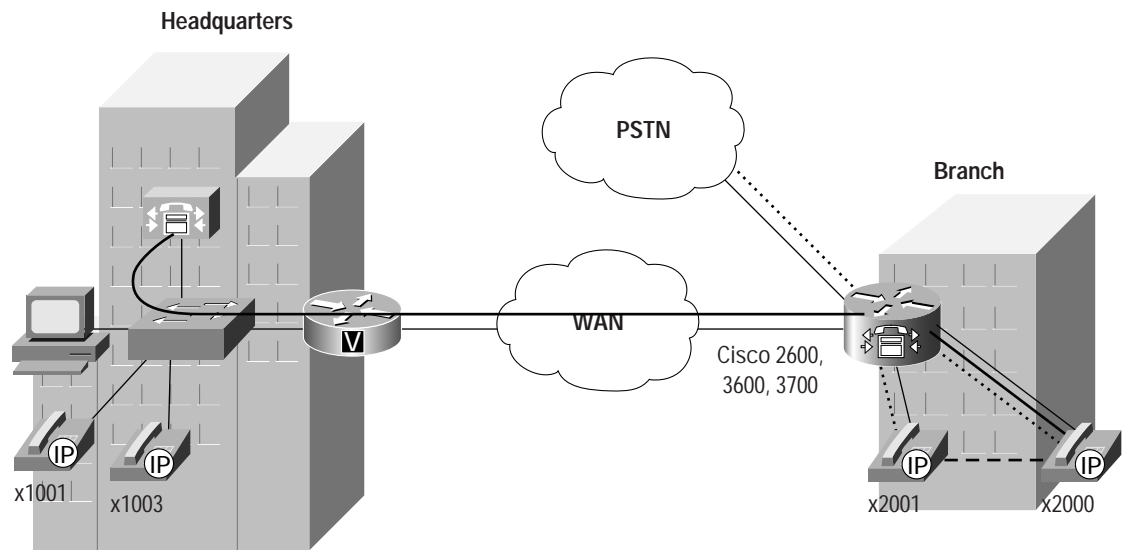
In a traditional circuit-switched voice network, all voice traffic goes through a central device (for example, PBX). Audioconference services are provided within this centralized device. Because IP phones send their voice directly between phones, a network-based conference bridge is required to facilitate multiparty conferences. In an IP telephony network using Cisco CallManager, the Cisco Conferencing and Transcoding for Voice Gateway Routers feature provides the conference bridging service. The following conferencing features are supported:

- Cisco CallManager meet-me and ad-hoc conferences with up to six participants
- Up to 15 six-party conferences on a single Digital T1/E1 Packet Voice Trunk Network Module or HDV Transcoding/ Conferencing DSP Farm



- G.711 and G.729, G.729a, G.729b, G.729ab participants joined in a single conference; no additional transcode resource is needed to include the disparate coder-decoder (codec) types in the conference
- Easy deployment of conference resources in routers across the network, providing for local conference resource and thereby reducing WAN utilization and improving voice network performance

Figure 1
Conferencing



Transcode Services

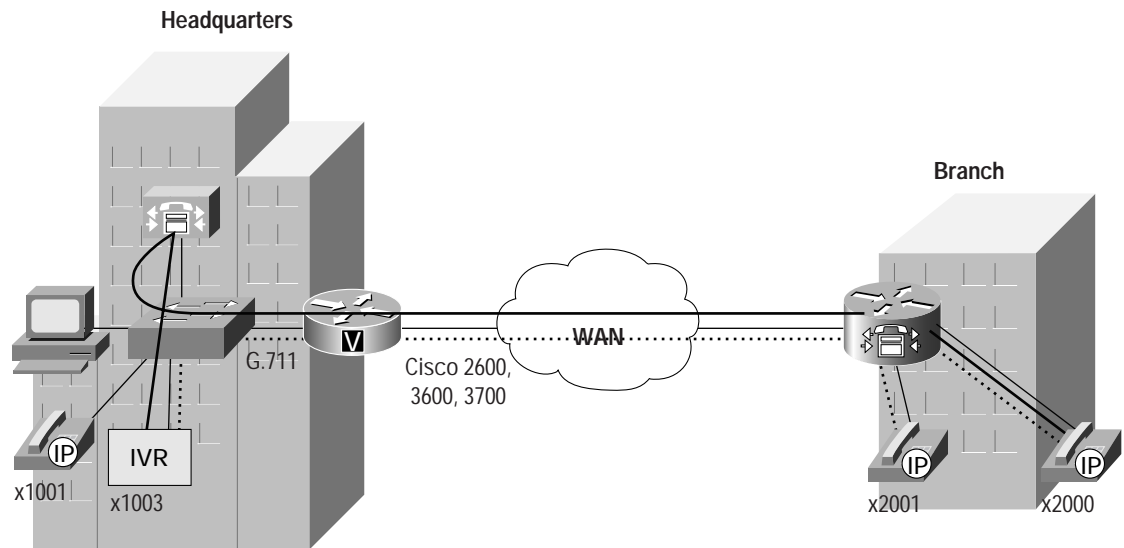
Transcoding enables two important functions in an IP telephony network. The first is to save on WAN utilization and attendant costs. This is accomplished by compressing voice traffic across the WAN. The second is to enable communication between different devices that support different codecs. The following transcoding algorithms are supported with the Cisco Conferencing and Transcoding for Voice Gateway Routers feature:

From codec	To codec
G.729, G.729a, G.729b, G.729ab	G.711 mu-law
G.729, G.729a, G.729b, G.729ab	G.711 a-law
G.711 mu-law	G.729, G.729a, G.729b, G.729ab
G.711 a-law	G.729, G.729a, G.729b, G.729ab

- Up to 60 transcoding sessions are supported on a single Digital T1/E1 Packet Voice Trunk Network Module or HDV Transcoding/Conferencing DSP Farm



Figure 2
Transcoding



Platform Support and Software Requirements

- Cisco 2610XM, 2611XM, 2620XM, 2621XM, 2650, 2651, 2650XM, 2651XM, 2691, 3640, 3640A, 3660, 3725, 3745 and VG200
- Uses Digital T1/E1 Packet Voice Trunk Network Module or HDV Transcoding/Conferencing DSP Farm, expandable with up to five packet voice DSP modules (PVDMs)
- Cisco IOS 12.2(13)T, plus feature set for voice
- Cisco CallManager 3.2(2c)

Capacity Planning

Each PVDM contains three individually configurable digital signal processors (DSPs) supporting transcoding, conferencing, or standard voice termination. Each DSP can support either four transcode sessions, one conference session, or voice termination of four medium-complexity or two high-complexity calls. The required number of PVDMs is then calculated.

Packetizations of 10-, 20-, and 30-msec are supported for G.711. Packetizations of 10-, 20-, 30-, 40-, 50-, and 60-msec are supported for G.729, G.729a, G.729b, and G.729ab.

Use the rows and columns in Tables 1 and 2 to determine the hardware for the desired configuration of transcoding sessions and conference calls. For example, 5 conferences and 16 transcoding sessions (30-msec packetization) would require three PVDMs. If voice termination is also required, the additional required PVDMs must be calculated.



Table 1 PVDM Requirements Using 20-, 30-, 40-, 50-, or 60-msec Packetizations or 10-msec Packetization with Voice Activity Detection (VAD) Enabled

	Conference calls															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Transcoding 0	–	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5
sessions 1 to 4	1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	N/P
5 to 8	1	1	2	2	2	3	3	3	4	4	4	5	5	5	N/P	N/P
9 to 12	1	2	2	2	3	3	3	4	4	4	5	5	5	N/P	N/P	N/P
13 to 16	2	2	2	3	3	3	4	4	4	5	5	5	N/P	N/P	N/P	N/P
17 to 20	2	2	3	3	3	4	4	4	5	5	5	N/P	N/P	N/P	N/P	N/P
21 to 24	2	3	3	3	4	4	4	5	5	5	N/P	N/P	N/P	N/P	N/P	N/P
25 to 28	3	3	3	4	4	4	5	5	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P
29 to 32	3	3	4	4	4	5	5	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
33 to 36	3	4	4	4	5	5	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
37 to 40	4	4	4	5	5	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
41 to 44	4	4	5	5	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
45 to 48	4	5	5	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
49 to 52	5	5	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
53 to 56	5	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P
57 to 60	5	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P

Legend:

Number of PVDMs required to support desired configuration

N/P = Not possible using a single Digital T1/E1 Packet Voice Trunk Network Module or HDV Transcoding/Conferencing DSP Farm; use multiple Digital T1/E1 Packet Voice Trunk Network Module or NM-HDN-FARMS to achieve desired configuration

Table 2 PVDM Requirements Using 10-msec Packetization and with VAD Turned Off

	Conference calls											
	0	1	2	3	4	5	6	7	8	9	10	
Transcoding 0	–	1	1	1	2	2	2	3	3	3	4	
sessions 1 to 4	1	1	1	2	2	2	3	3	3	N/P	N/P	
5 to 8	1	1	2	2	2	3	3	3	N/P	N/P	N/P	
9 to 12	1	2	2	2	3	3	3	N/P	N/P	N/P	N/P	
13 to 16	2	2	2	3	3	N/P	N/P	N/P	N/P	N/P	N/P	
17 to 20	2	2	3	3	N/P	N/P	N/P	N/P	N/P	N/P	N/P	
21 to 24	2	3	3	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	
25 to 28	3	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	
29 to 30	3	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	N/P	

Legend:

Number of PVDMs required to support desired configuration

N/P = Not possible using a single Digital T1/E1 Packet Voice Trunk Network Module or HDV Transcoding/Conferencing DSP Farm; use multiple Digital T1/E1 Packet Voice Trunk Network Module or NM-HDN-FARMS to achieve desired configuration



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