March 1, 2001

Electronic Filing

Magalie Roman Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W.- Suite TW-A325
Washington D.C. 20554

Re: *Oral Ex Parte*
CC Docket Nos. 98-147, 96-98

Dear Ms. Salas:

On February 27, 2001, Christine Mailloux and John Reister of Copper Mountain Networks, Inc. met with William Kehoe, Brent Olson, and Kim Cook of the Policy and Program Planning Division and Paul Marrangoni and Jerry Stanshine of the Office of Engineering and Technology to discuss issues pending before the Commission in the above-referenced proceedings. Copper Mountain focused its discussion on issues related to the Commission's consideration of collocation rules in the Second Further Notice of Proposed Rulemaking in CC Docket No. 98-147.

Copper Mountain discussed the impact of the FCC's collocation rules on Copper Mountain's ability to offer state of the art telecommunications equipment to telecommunications carriers. Referring to the enclosed document, Copper Mountain described the types of equipment that it currently has collocated in incumbent carrier central offices through Copper Mountain customers. It then discussed the industry move away from GR303 voice technology to SoftSwitch voice and lastly discussed long-term trends, such as voice recognition and video on demand technologies that will require collocated equipment "necessary" for interconnection.

Copper Mountain described SoftSwitch voice technology as an example of a cutting edge technology that the FCC's collocation rules must be flexible enough to encompass so as to not stifle innovation. Copper Mountain described traditional GR303 voice call paths and explained that the technology is expensive and inefficient, especially for local calls, due to costs and bandwidth requirements.

SoftSwitch technology, however, breaks the traditional Class 5 switching functions into three separate pieces of equipment: the line-side functions are performed in the Integrated Access Device located in the end users premises, the signaling and switching functions are performed by the SoftSwitch usually located in a carrier's regional center and the trunk-side functions are performed by a trunk gateway. By breaking out these functions into modular pieces of equipment, carriers can more efficiently plan their networks. However, this move of

Copper Mountain Networks, Inc.
1850 Embarcadero Way
Palo Alto, CA 94303
Main: 1.650.687.3300 Fax: 1.650.687.3372
Web Site: www.coppermountain.com

call routing and switching intelligence "to the edge" of the network for efficiency turns the current "no switching in incumbent central offices" rule on its head.

Therefore, while the SoftSwitch itself does not necessarily need to be collocated, Copper Mountain discussed the benefits of collocating the trunk gateway for processing of local calls. By collocating the "local" trunk gateway, calls destined for end users served by the same central office as the calling party can be processed within that central office, thereby avoiding the use of valuable bandwidth on the incumbent's or competitive carriers' backbone and transport network. These efficiencies take on special significance due to the fact local calls make up over 55% of the telecommunications traffic carried in the United States and, even more importantly, over 25% of telecommunications traffic are calls originated and terminated from the same central office.

The local trunk gateway is "necessary" for interconnection. The local trunk gateway interconnects directly with the incumbent's Class 5 switch. By maintaining the local trunk gateway in the central office, local calls can remain within the same central office and will not have to be carried all the way back to the carrier's regional center before being terminated on the incumbent's Class 5 switch. Copper Mountain explained that the local trunk gateway is a "media conversion" device with no switching or routing intelligence. The "switching" and signaling functions are performed by the SoftSwitch, which communicates with the local trunk gateway using minimal bandwidth.

Finally, in discussing the need for flexible collocation rules that take into account the fast-paced and ever-changing needs of telecommunications carriers, Copper Mountain discussed voice recognition and video-on-demand applications. Copper Mountain pointed out that video servers are rapidly shrinking in size but growing in bandwidth capacity so that a video server the size of a standard personal computer can hold 200-400 movies. However, because movies require a lot of bandwidth, the cost of transmitting a movie "on-demand" or in "real time" is prohibitive. By allowing these relatively small video servers into an incumbent central office, near a competitor's DSLAM and close to the end user premises, it eliminates the need for costly backbone.

If you have any questions, please do not hesitate to call me at the number below.

Sincerely,

Christine Mailloux
Regulatory Strategist
(650) 798-6121
cmailloux@coppermountain.com

Enclosure

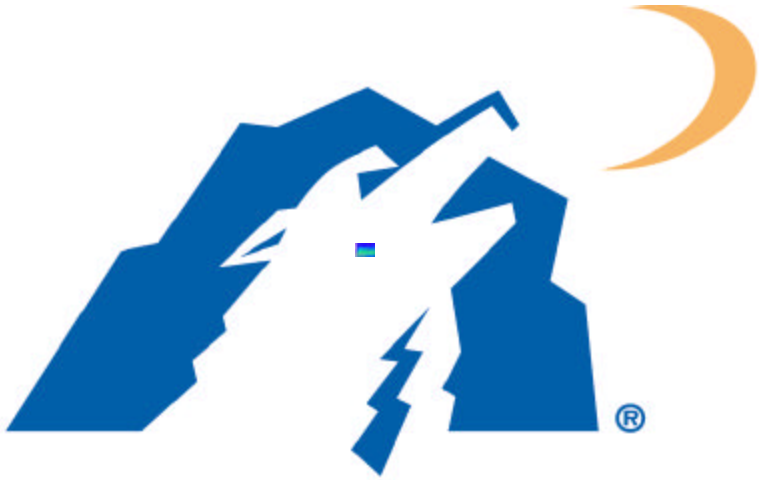
Cc: William Kehoe
Brent Olson
Kim Cook
Jerry Stanshine
Paul Marrangoni

Copper Mountain Networks, Inc.
1850 Embarcadero Way
Palo Alto, CA 94303
Main: 1.650.687.3300 Fax: 1.650.687.3372
Web Site: www.coppermountain.com

Copper Mountain Networks, Inc.
1850 Embarcadero Way
Palo Alto, CA 94303
Main: 1.650.687.3300 Fax: 1.650.687.3372
Web Site: www.coppermountain.com

Collocation

Copper Mountain Networks
February 2001



COPPER MOUNTAIN

High Performance DSL Networking

Topics

Goal:

- Collocation rules that will enable CMTN to offer state of the art telecommunications equipment that allow our customers to efficiently and effectively compete in the local telecommunications service market

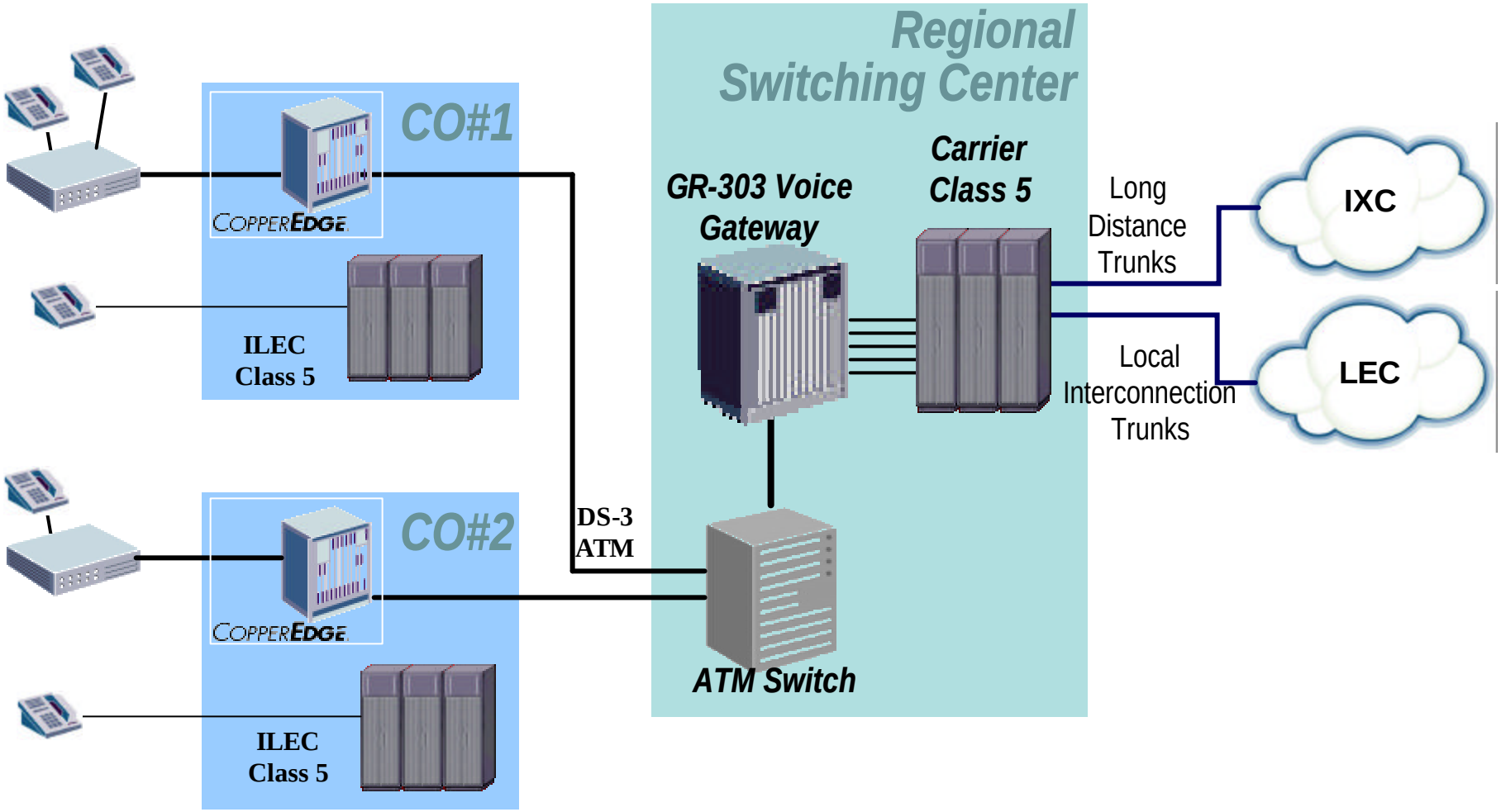
Topics

- Discussion of “required”
- The technologies for delivering voice service are changing. The new equipment functionality does not fall on clear boundaries.
- Carriers may be fundamentally disadvantaged if they cannot place certain equipment in a collocation space in an ILEC’s central office
- Discuss packet voice equipment
- Discuss video delivery

Current Deployments

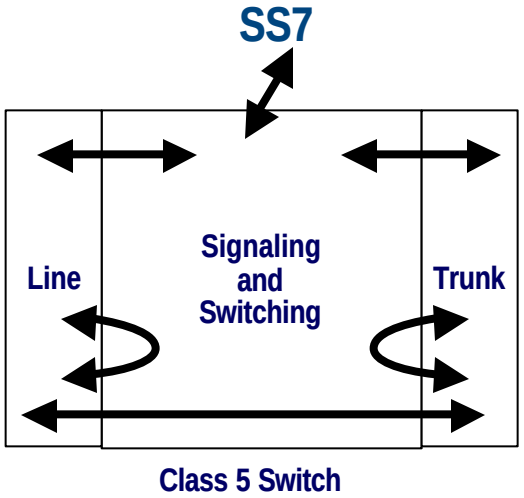
- Current carrier deployments of approximately 12,000 CopperEdge concentrators in collocation arrangements
- Three CopperEdge 200 DSL Concentrators fit in a 7' rack, providing 576 DSL ports. Copper Mountain also offers a T1 module.
- The CopperEdge 200 RT concentrator is deployed in a few remote terminal enclosures
- In addition to CopperEdge equipment, our customers deploy
  - a test head for metallic loop testing
  - a terminal server for out-of-band, backup network management access
  - an ATM concentrator for combining traffic from multiple CopperEdges into a single WAN
- Some customers have negotiated arrangements to place ATM switches in selected collocation sites

Network for Packet Voice Delivery
Packet GR303 Solution

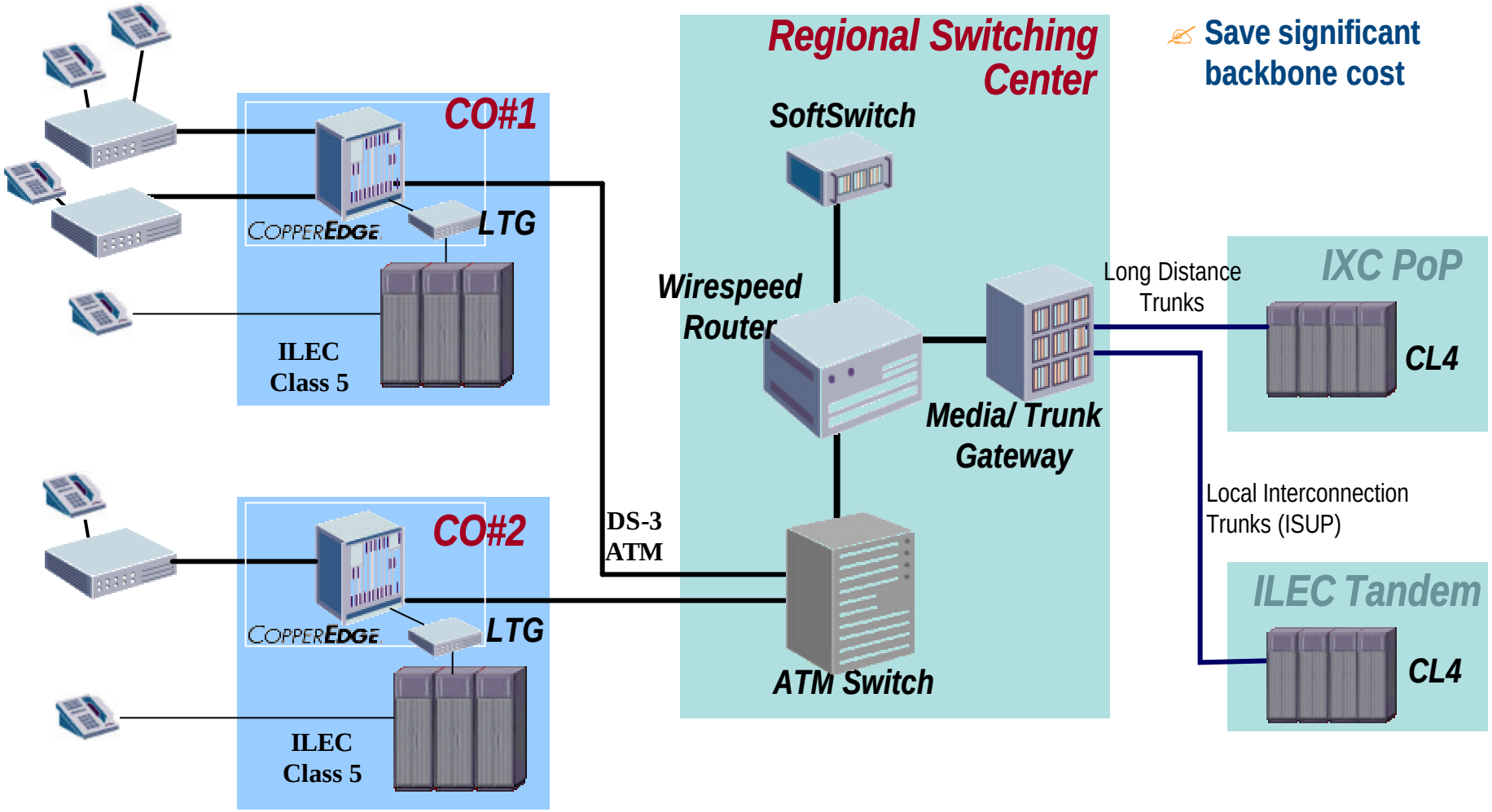


A new way: SoftSwitched Voice
Background: Class 4/5 Switch functions

- **Lines**
  - Connect subscribers to network resources
  - Performed by the IAD
- **Trunks**
  - Interconnect network resources
  - Performed by Trunk Gateway
- **Signaling and Switching**
  - Provide line side signaling and features
  - Network signaling for toll call routing and PSTN database access
  - SS7 mediation using ISUP and TCAP protocols
  - Performed by SoftSwitch, aka “MGCP Call Agent”, aka “MGCP Call Controller”, aka “Feature Server”

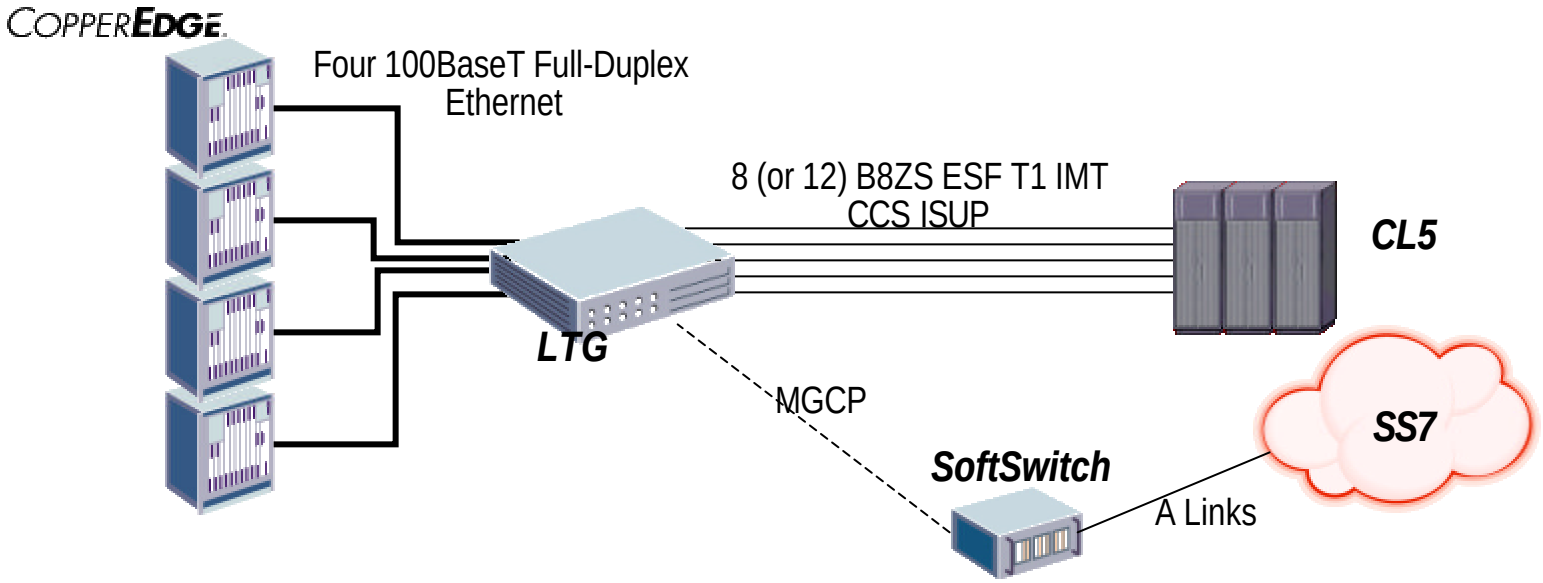


SoftVoice Distributed Architecture



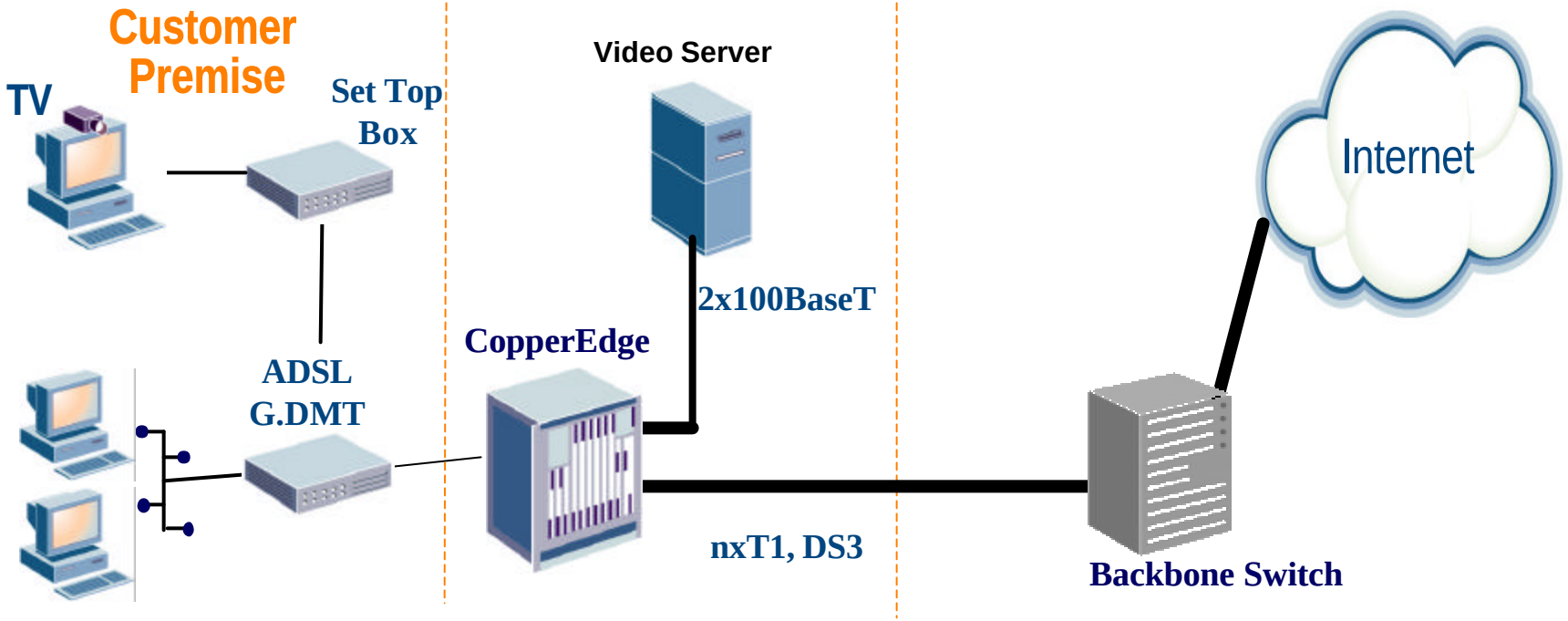
- Save significant backbone cost

Local Trunk Gateway



- The LTG is a NEBS-compliant "pizza box" that can complete several hundred local calls
  - Results in a transport cost savings of $5 to $20 per month per subscriber
- Softswitch exchanges MGCP messages with LTG. If all trunks are filled or if LTG is unreachable, then SoftSwitch directs call to secondary media gateway. Secondary media gateway is located near ILEC tandem.
- 100BaseT interfaces are full duplex (no collisions) and used for voice only.

Video On Demand



- Video Server is the size of a PC, can store 200-400 movies, and costs less than $10k.
- Can serve up 60+ high-quality movies at 3Mbps each
- The backbone only needs to be enough for Internet traffic -- not VoD traffic
- If VoD traffic must be carried on backbone, you need 2xOC3 for 200 subscribers. Backbone monthly cost would be $10k for 200 subscribers or $50 per month.
- By having the video server near the DSLAM, the monthly cost of the service is a minimal increment over basic Internet access