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November 17, 1998

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas  
Secretary  
Federal Communications Commission  
445 Twelfth Street, SW, Room 204  
Washington, D.C. 20554

Re: Ex Parte  
In the Matter of Applications for Transfer of Control to AT&T Corp. ("AT&T") of  
Licenses and Authorizations Held by Tele-Communications, Inc. ("TCI")  
CS Docket No. 98-178

Dear Ms. Roman Salas:

On Monday, November 16, 1998, Mark Dzuban and Ralph Andreotta of AT&T, and Milo Medin of @Home, presented the attached material to following people: John Adesalu, Claire Blue, Rick Chessen, Sunil Daluvoy, Royce Dickens, Rebecca Dorch, Margaret Egler, Barbara Esbin, Donnie Fowler, Ed Gallick, Dale Hatfield, Thomas Horan, Richard Kalb, Michael Kende, Deborah Klein, Thomas Krattenmaker, Mike Lance, Deborah Lathen, Anne Levine, John Norton, Marilyn Simon, Quyen Truong, David Ward, and Peyton Wynns, of the FCC staff.

Two copies of this Notice are being submitted to the Secretary of the FCC in accordance with Section 1.1206(a)(2) of the Commission's rules.

Sincerely,

Attachments

cc: John Adesalu	Donnie Fowler	Mike Lance
Claire Blue	Ed Gallick	Deborah Lathen
Rick Chessen	Dale Hatfield	Anne Levine
Sunil Daluvoy	Thomas Horan	John Norton
Royce Dickens	Richard Kalb	Marilyn Simon
Rebecca Dorch	Michael Kende	Quyen Truong
Margaret Egler	Deborah Klein	David Ward
Barbara Esbin	Thomas Krattenmaker	Peyton Wynns

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# Broadband Access and AT&T/TCI Rollout

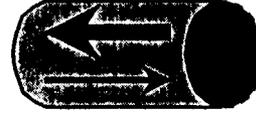
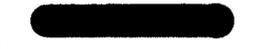
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# Residential Access Technology Comparison



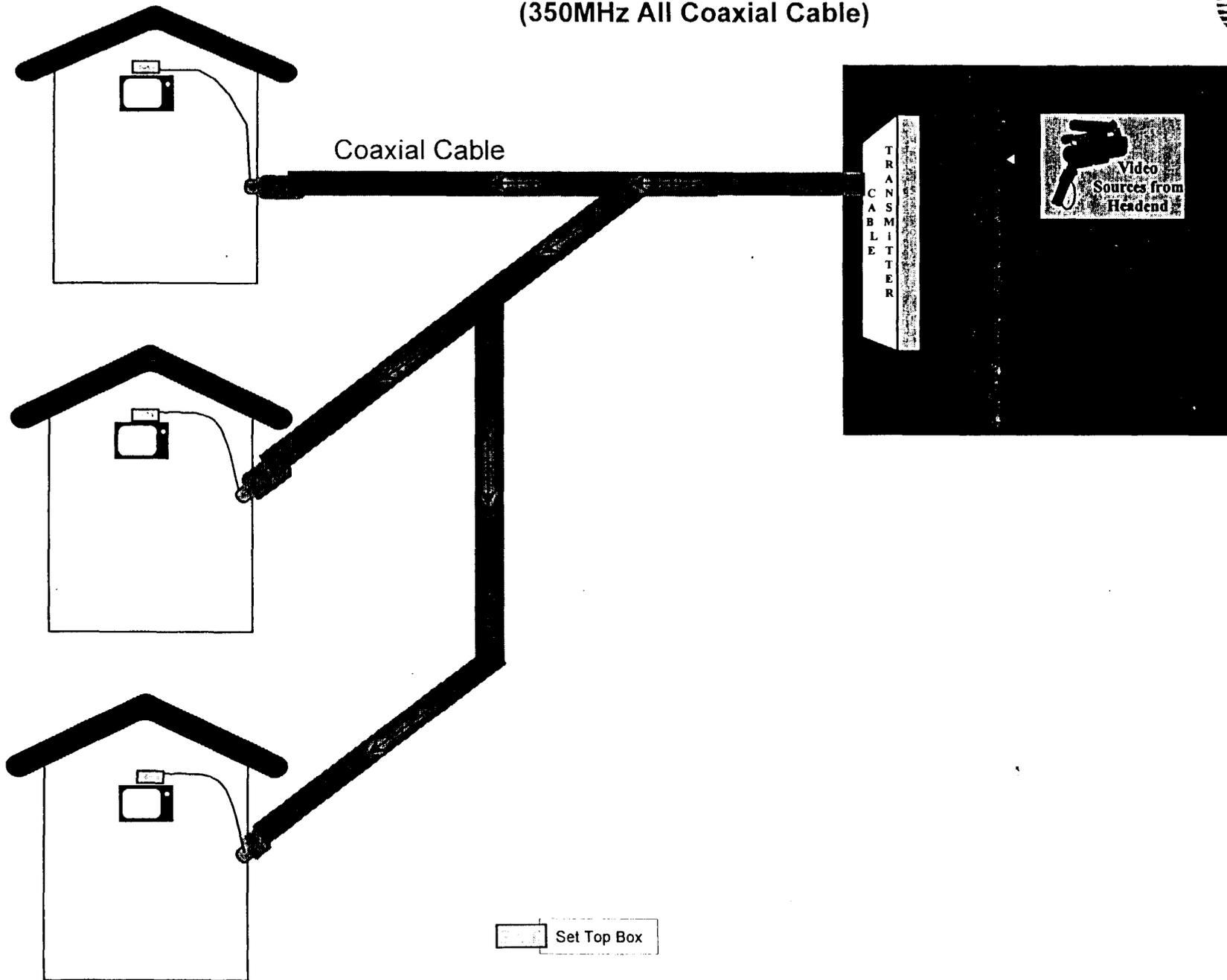
Medium		Characteristics & Functions	Availability
<b>HFC Cable Modem</b>		Up to 27 Mbps down, Up to 2 Mbps up (both shared) Cable plant needs fiber build-out, digitization and 2-way upgrade	300 K data users now (@Home 200K, RoadRunner 100K), 500 K data users by EOY1998
<b>ADSL</b>		1.5 to 9 Mbps down, 16 Kbps to 640 Kbps up DSL capable copper loops up to 18,000 ft.	150K users by EOY1998 Many ILECS and CLECS, including Bell Atlantic, BellSouth, US West, SBC, GTE, Covad, Northpoint
<b>ADSL-Lite (G. Lite)</b>		1.5 Mbps down, 512 Kbps up DSL capable copper loops up to 18,000 ft.	Intel and GTE Field trials in Oregon
<b>Fixed Wireless MMDS</b>		Same up/down rates as HFC cable modem 30 Miles radius downlink only to be upgraded to 2-5 miles radius 2-way cellular-like infrastructure	2-way trials ongoing e.g. CAI Wireless 2-way authority granted Sep 1998
<b>Satellite-Present</b>		400 Kbps down, Telco POTS return path	Small number of Hughes DirectPC users
<b>Satellite-Future</b>		Up to 64 Mbps down, Up to 2 Mbps up (both shared)	Teledesic example 2003 or later
<b>POTS</b>		Up to 56 Kbps, Bi-directional	Ubiquitous Over 170m lines



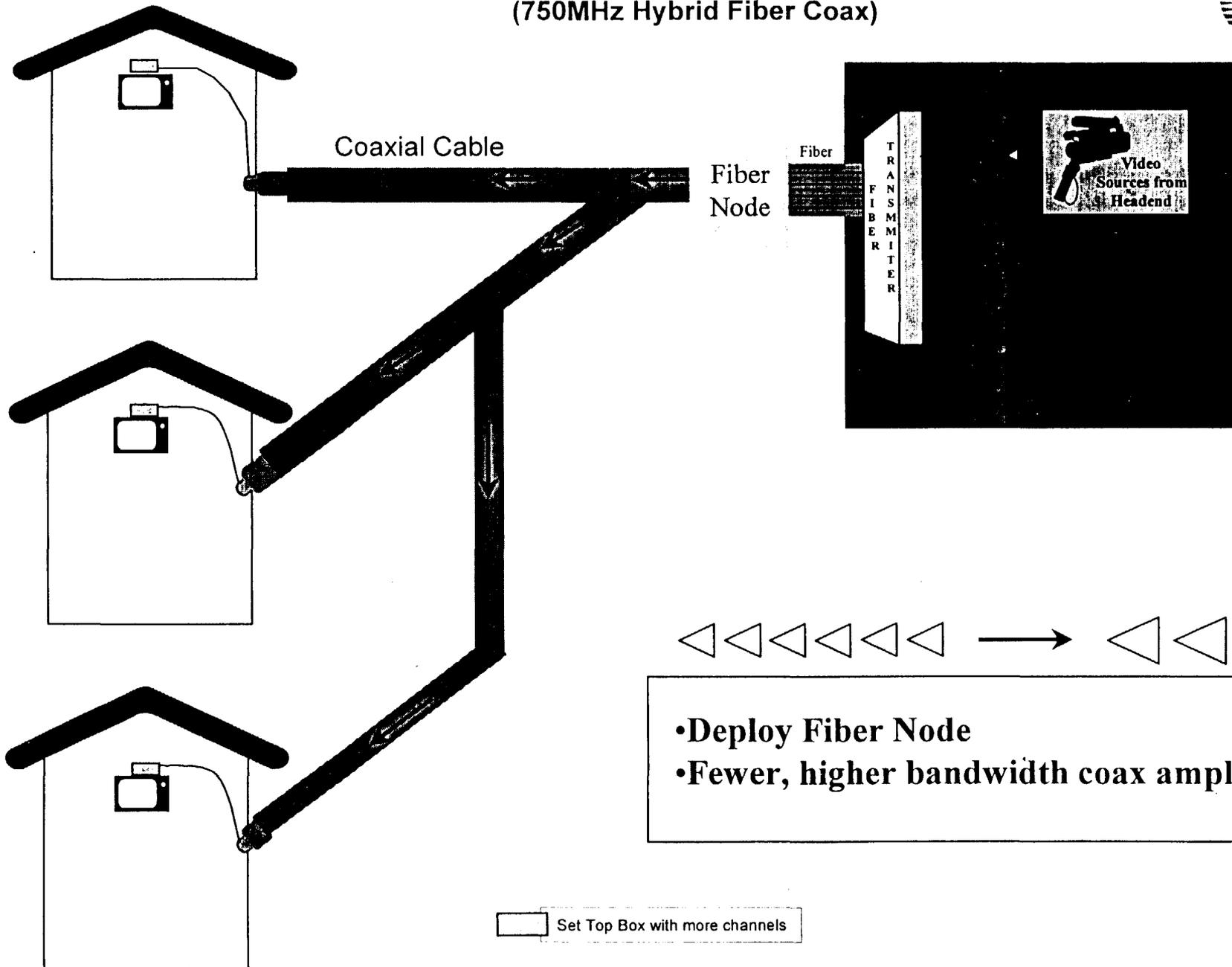
# AT&T's Value Proposition

AT&T, with TCI, will create an exciting new alternative that integrates voice, high speed data and video services using the broadband medium of cable, offering millions of customers a choice in telecommunications for the first time.

# Architectures of Traditional Cable Services (350MHz All Coaxial Cable)



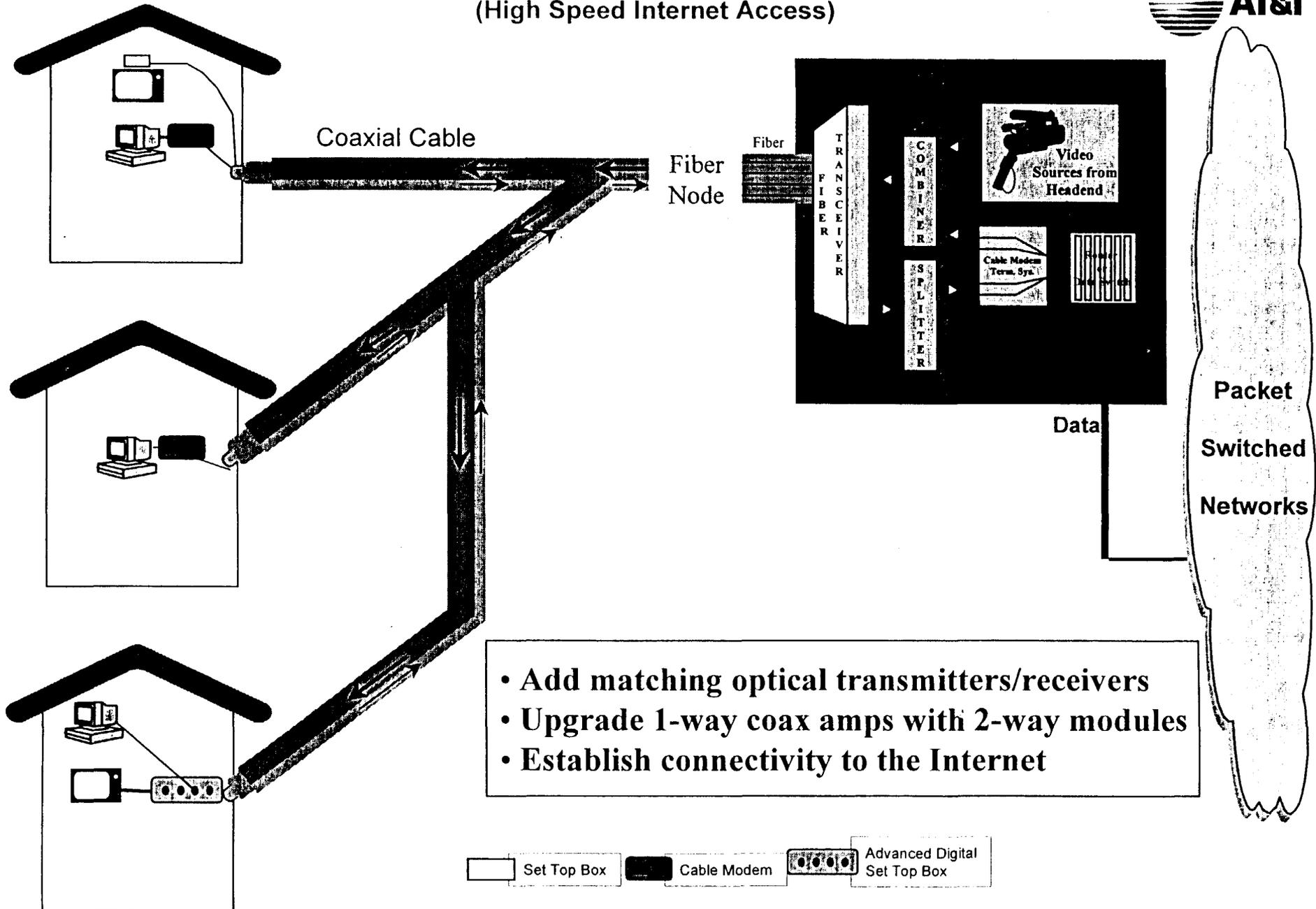
# Architectures of Bandwidth Upgraded Cable Services (750MHz Hybrid Fiber Coax)



- Deploy Fiber Node
- Fewer, higher bandwidth coax amplifiers

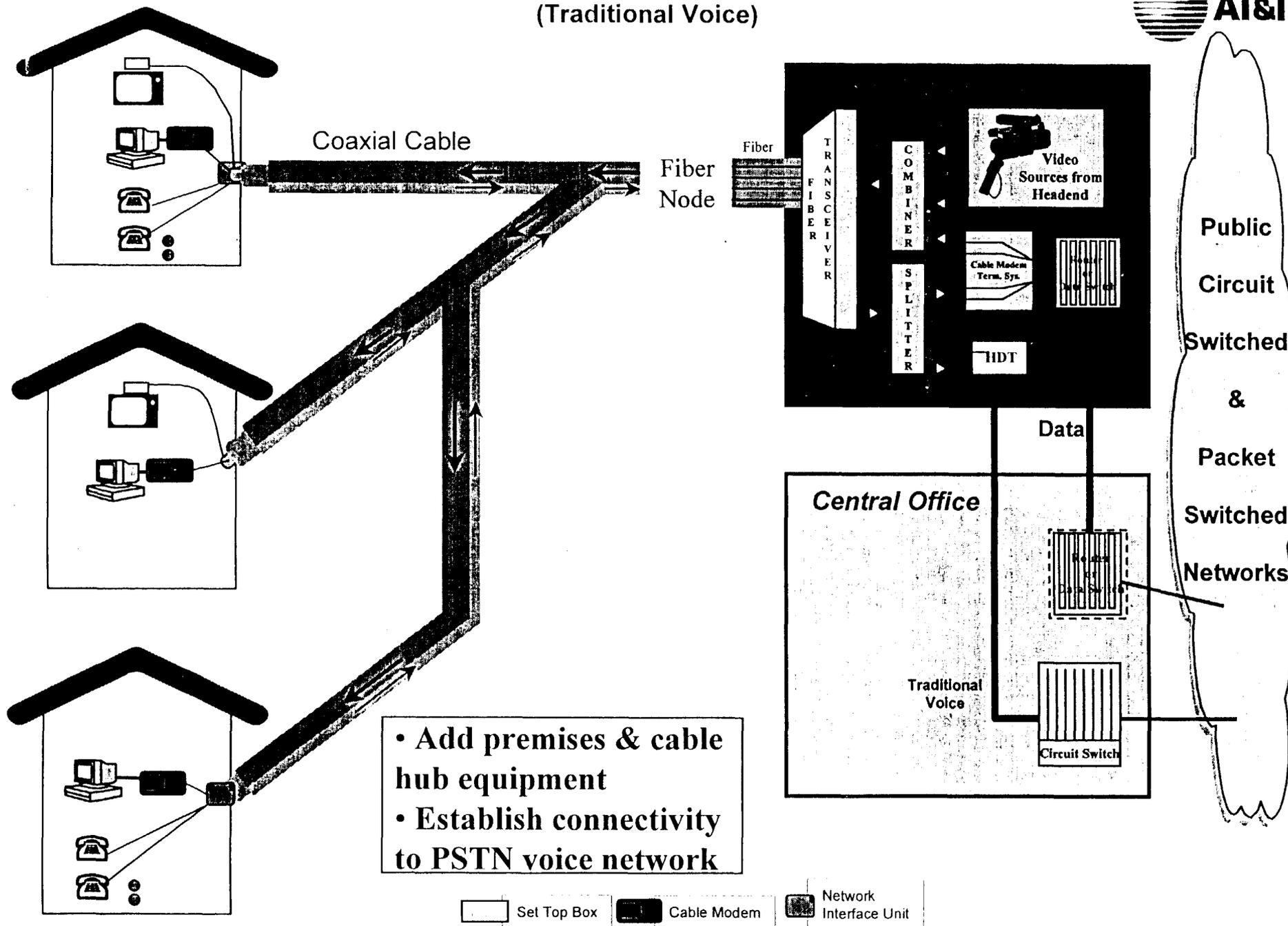
Set Top Box with more channels

# Architectures of 2-Way Upgraded Cable Services (High Speed Internet Access)



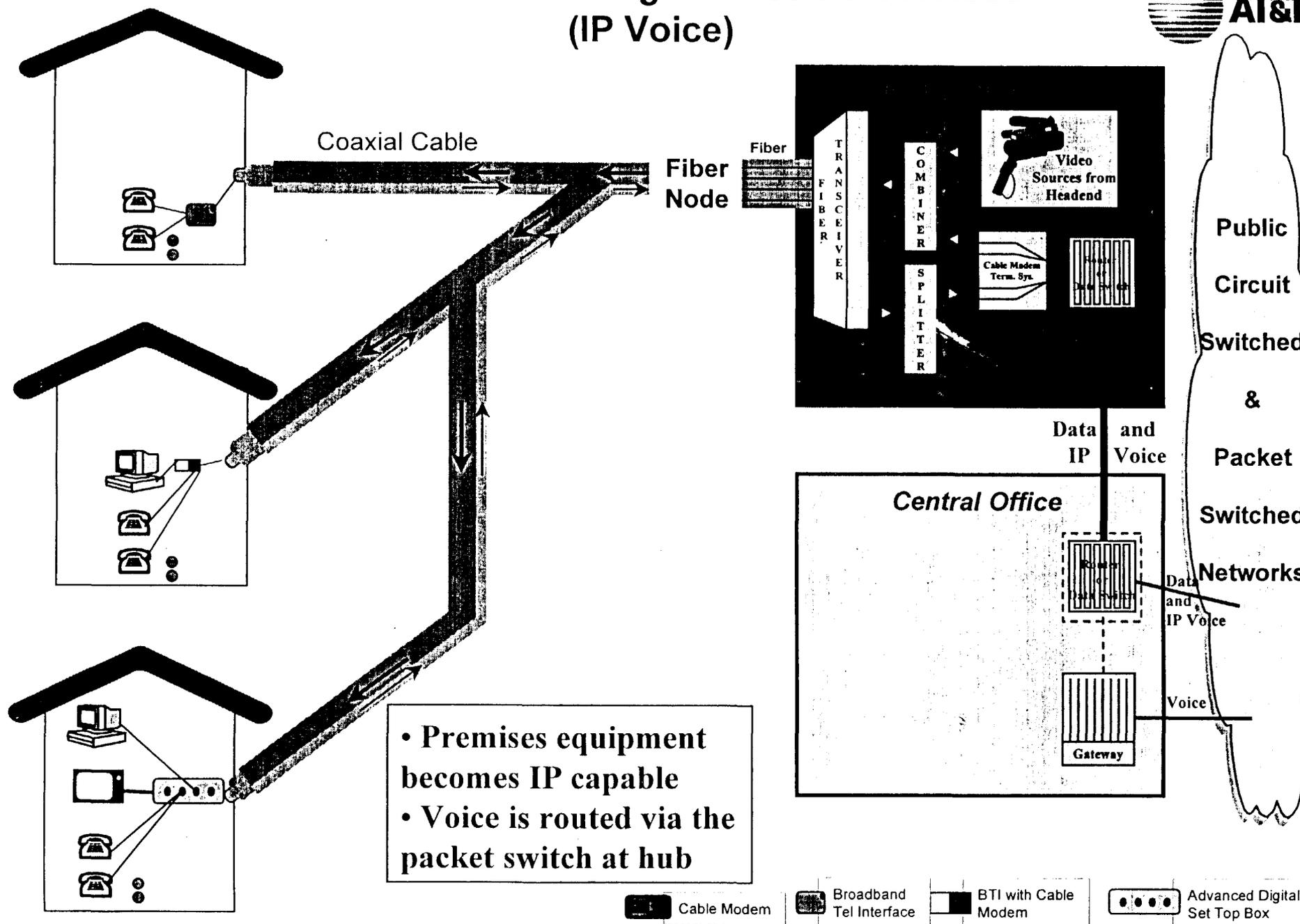
- Add matching optical transmitters/receivers
- Upgrade 1-way coax amps with 2-way modules
- Establish connectivity to the Internet

# Architectures of 2-Way Upgraded Cable Services (Traditional Voice)



- Add premises & cable hub equipment
- Establish connectivity to PSTN voice network

# Architectures of Integrated Cable Services (IP Voice)

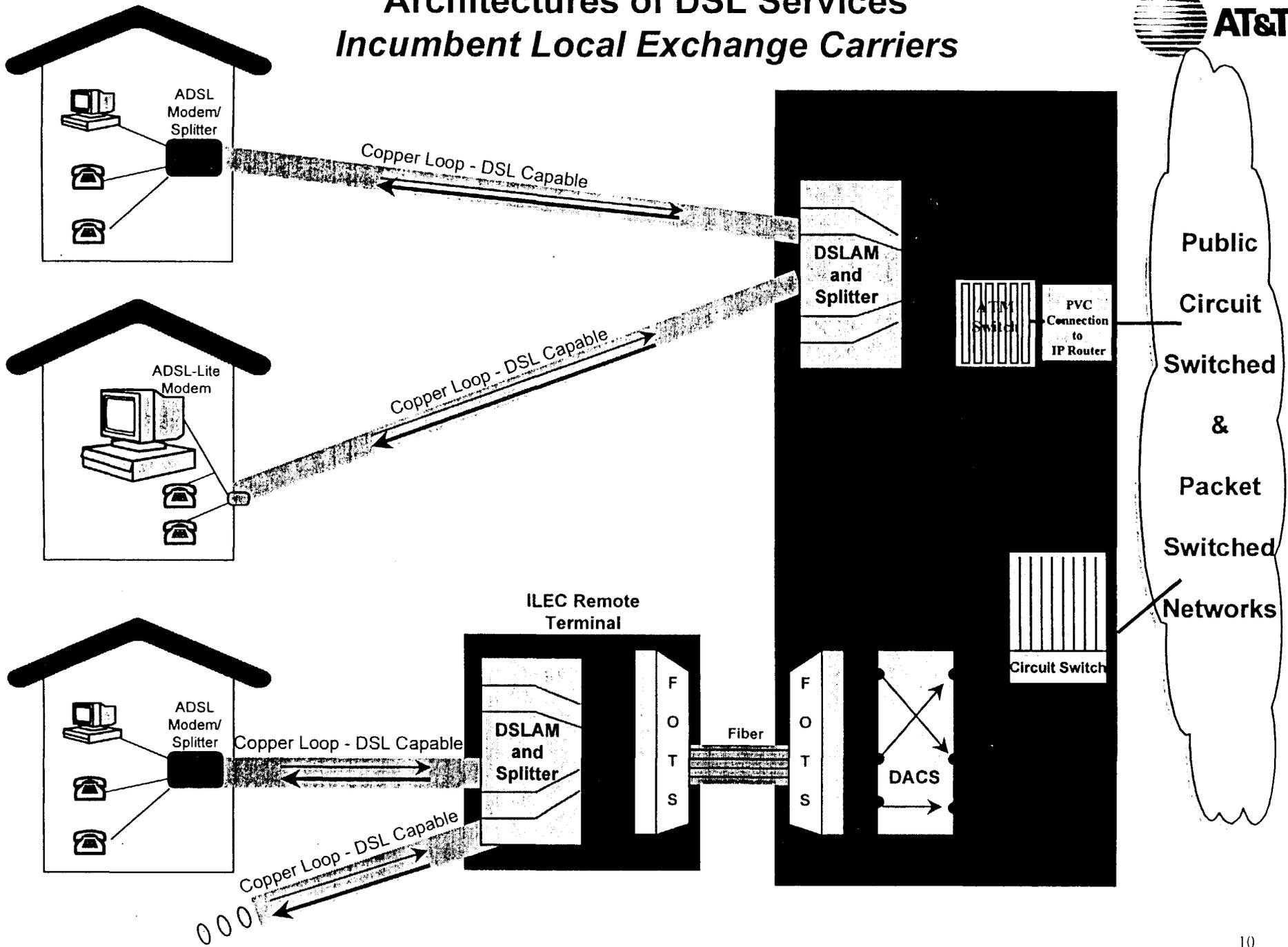


- Premises equipment becomes IP capable
- Voice is routed via the packet switch at hub



# ADSL Technologies

# Architectures of DSL Services Incumbent Local Exchange Carriers



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@Home Architecture

Milo Medin  
SVP, Engineering & CTO

@Home Network

November 16-17th, 1998

# Our Vision

- Leverage the existing cable infrastructure to provide high-speed, fully integrated, multi-platform interactive services which will revolutionize the way people interact with information and each other at home and at work.

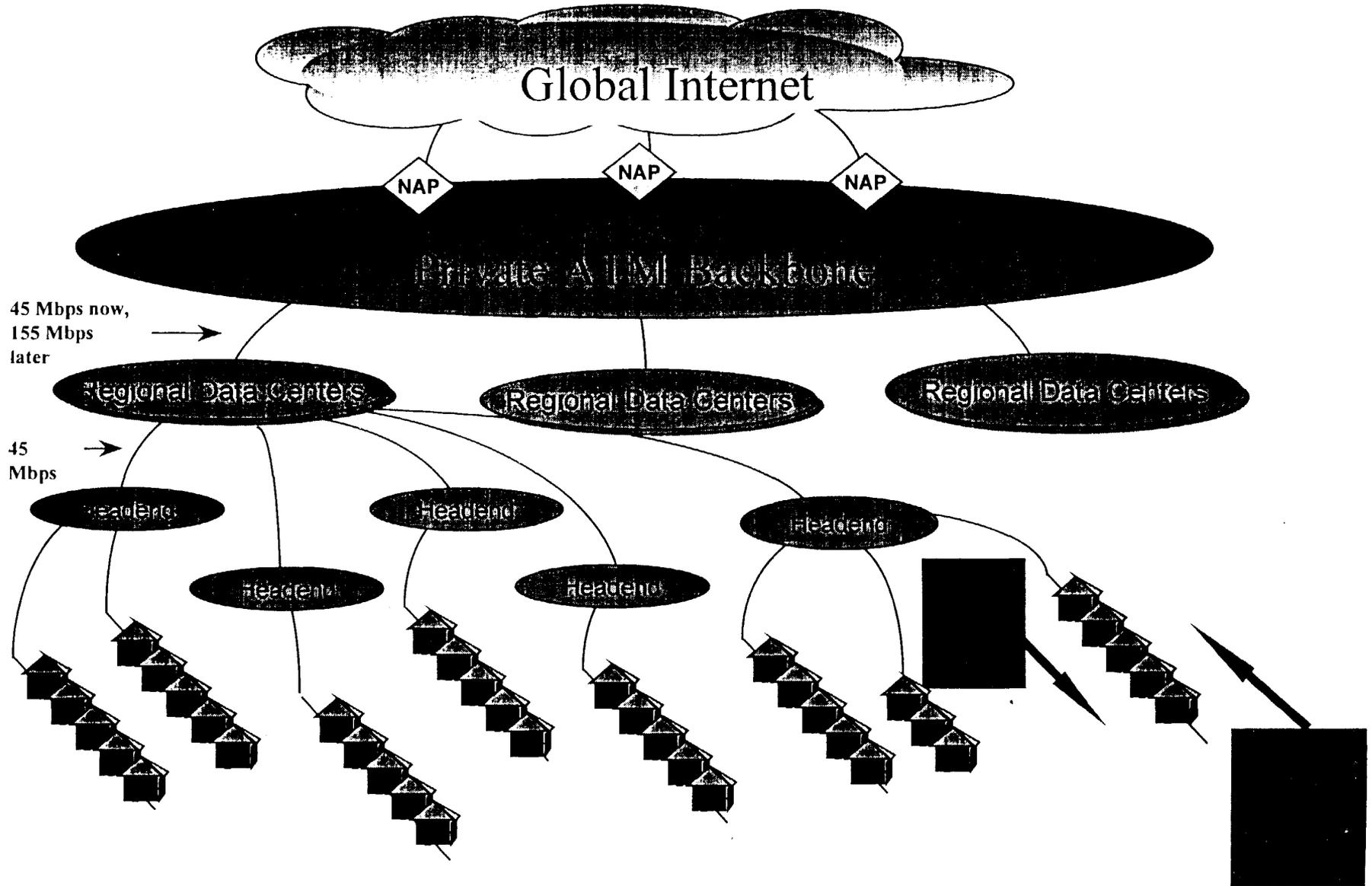
# The Challenges

- How to provide high-performance Internet service without destroying the Internet?
- How to scale and evolve the system to millions of homes at an affordable price?
- How to proactively manage reliable network communications to the user?
- How to assure quality of service to the customers, even when the Internet is highly variable?

# Key Design Principles

- Must design specifically for consumer price point - not retrofit business service model
- Cannot scale the system just by adding communications capacity - must work smarter
- Network must cache and replicate content to provide support “fanout” - trade off CPU power and storage for network transport
- Network must integrate content distribution with transport for maximum broadband performance
- Service aware QoS is required for service differentiation and scalability

# The @Home network is managed from end to end



# Backbone

- Need for production multicast and QoS capabilities forces construction of dedicated IP router backbone
- Initially ATM carrier service based - outsource core switching to IXC
  - More cost effective than point to point DS-3's
  - Allowed us to add regions quickly without constantly redesigning trunk topology
  - Can scale capacity in response to demand
- @Home managed routers peer with other ISP's with both public and private peering

# Caching Servers

- Typically located in “primary” headends
- A minimum of 2 deployed for robustness
- Provides superior service to users since data is coming from a “local” server
- Greatly reduces network load “up” from the head end system (e.g. the broader Internet)
- Provides modem booting and diagnostic functionality
- Operated in “lights-out” mode, managed centrally from @Home NOC in California

# Regional Data Centers

- Located in the core of large metropolitan networks
- Mirrors data from @Home and content providers in multiple regions transparently to subs
- Provides Email, News, Directory, Provisioning, NMS, etc... service on high availability platform
- Operated in “lights-out” mode, managed centrally from @Home NOC in California

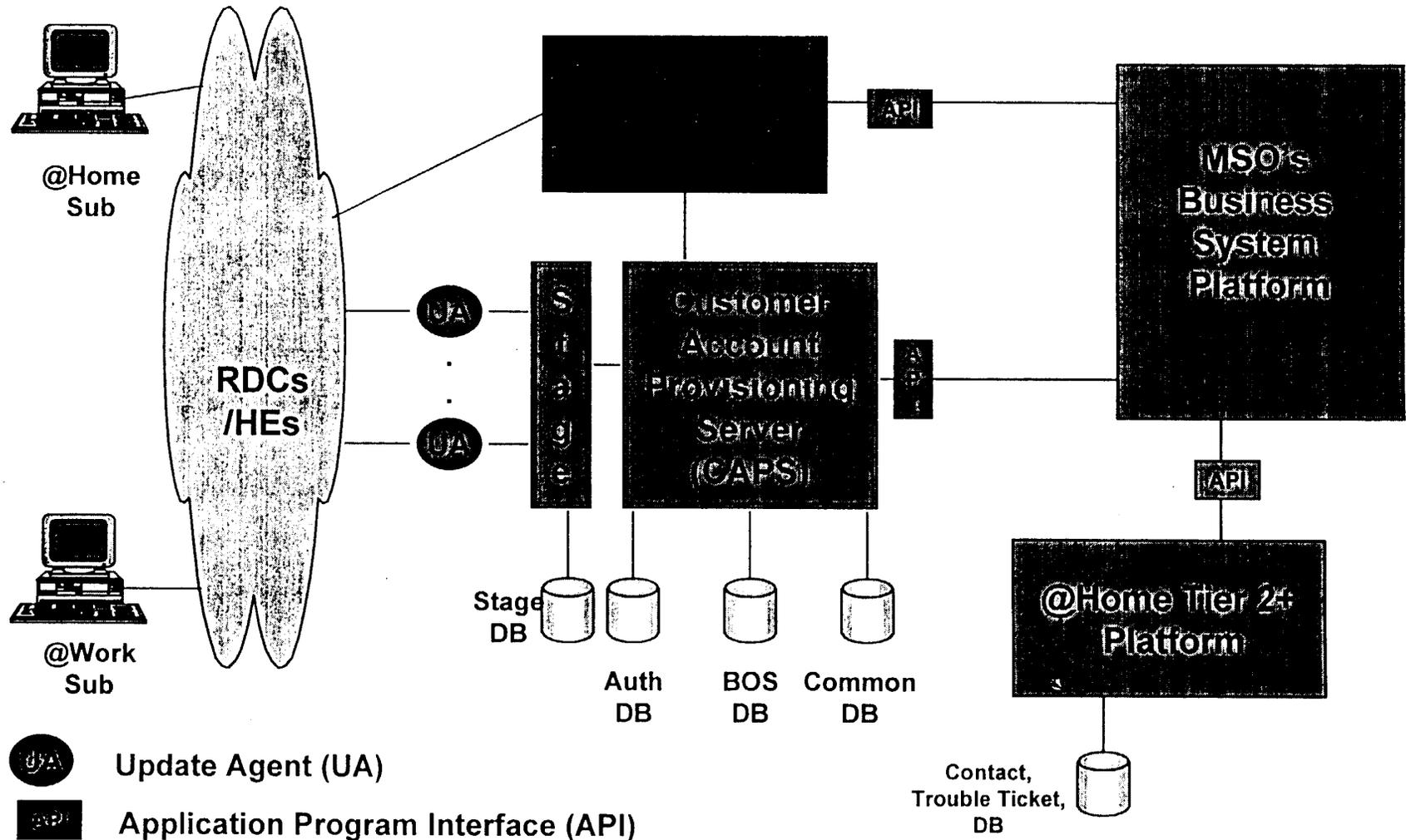
# Technology Partners

- Cisco - switching and routing equipment
- Sun - High availability RDC Servers
- SGI - High performance caching servers
- Netscape - Server and client software
- Microsoft - Client Software
- Oracle - Core of advanced provisioning system
- Inktomi - advanced caching server software
- Software.com - scalable messaging server software

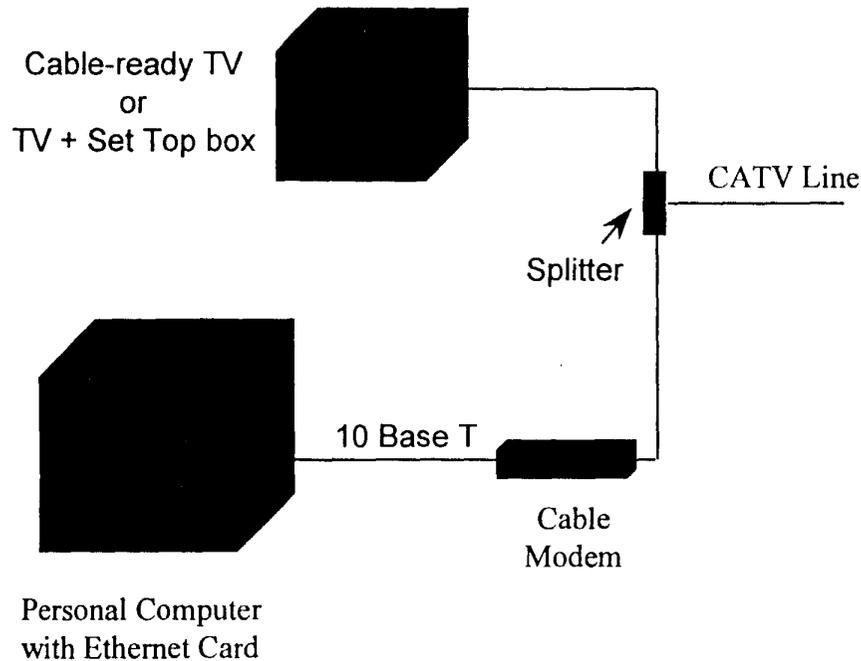
# Provisioning Systems

- Provides network and application service activation, deactivation and management
- Complete “flow-through provisioning” - no local technician support needed
- Standard interfaces to MSO IT systems, with distributed elements throughout the @Home network (RDC’s, Headends, CMTS’s, and subscriber software)
- Supports user provision of additional services
- Tied into NMS and customer care systems for diagnostics and support

# @Home Service Provisioning



# Subscriber Installation



- Simultaneous data and video use
- Full IP dial-tone
- Modem always on
- Multiple hosts supported
- Proactively managed