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November 9, 1998

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
1919 M Street, NW, Room 222
Washington, D.C. 20554

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Re: Notice of Ex Parte Meeting
In the Matter of the Application for Consent to the Transfer of Control of Licenses and Section 214 authorizations from Ameritech Corporation to SBC Communications, Inc., CC Docket No. 98-141

Dear Ms. Roman Salas:

On Friday November 6, 1998, Dr. Mahal Mohan, Betsy Brady, and I met with several members of the Cable Services Bureau, including Thomas Horan, Donald Fowler, Jr., Sunil Daluvoy, Royce Dickens, Ed Gallick, John Adams, Marcia Glauberman, Meryl Icove, John Norton and John Wong. The purpose of the meeting was to discuss the various broadband technologies currently available or under development. Attached is a set of the viewgraphs that were used during the presentation.

Two copies of this Notice are being submitted to the secretary of the FCC in accordance with Section 1.1206(a)(1) of the Commission's rules.

Sincerely,

Robert W. Quinn

Attachment
cc: T. Horan, S. Daluvoy, E. Gallick, M. Glauberman, D. Fowler, Jr., R. Dickens, J. Adams, J. Norton, J. Wong, M. Icove

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Recycled Paper

Broadband Access Technologies

Dr. Mahal Mohan
November 6, 1998

Table of Contents

- Description of Technologies
- Comparative Network Architectures
- Traffic Characteristics -- DSL vs Cable
- Comparison of Investments

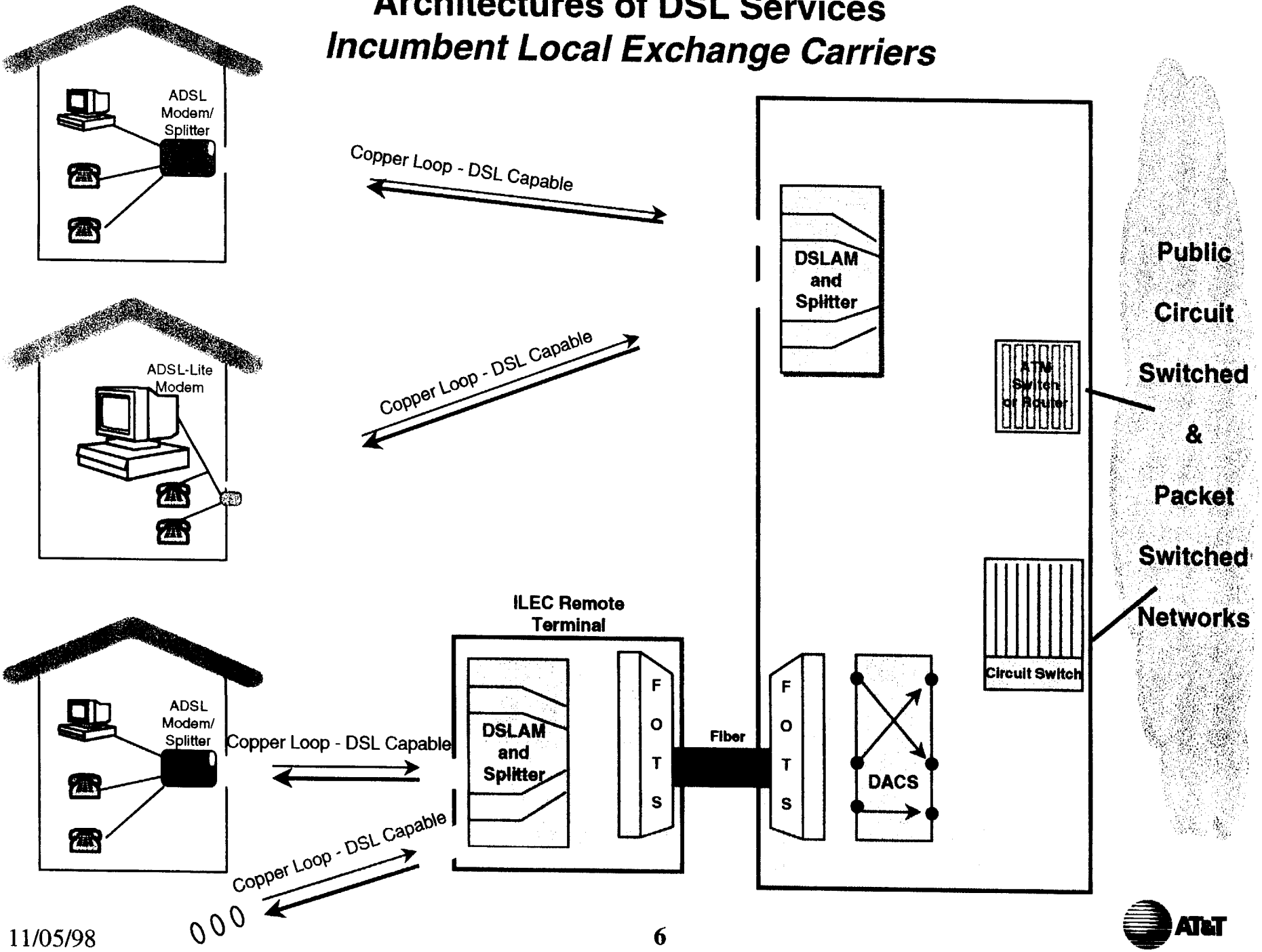
Description of Technologies

Residential Access Technology Comparison

Medium		Characteristics & Functions	Availability
HFC Cable Modem		Up to 27 Mbps down, 0.5 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
ADSL		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
ADSL-Lite (G. Lite)		1.5 Mbps down, 512 Kbps up DSL capable copper loops up to 18,000 ft.	Intel and GTE Field trials in Oregon
Fixed Wireless MMDS		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
Satellite-Present		400 Kbps down, Telco POTS return path	Small number of Hughes DirectPC users
Satellite-Future		Up to 64 Mbps down, Up to 2 Mbps up (both shared) (500 Mbps max per 100 km)	Teledesic example 2003 or later
POTS		Up to 56 Kbps, Bi-directional	Ubiquitous Over 100M

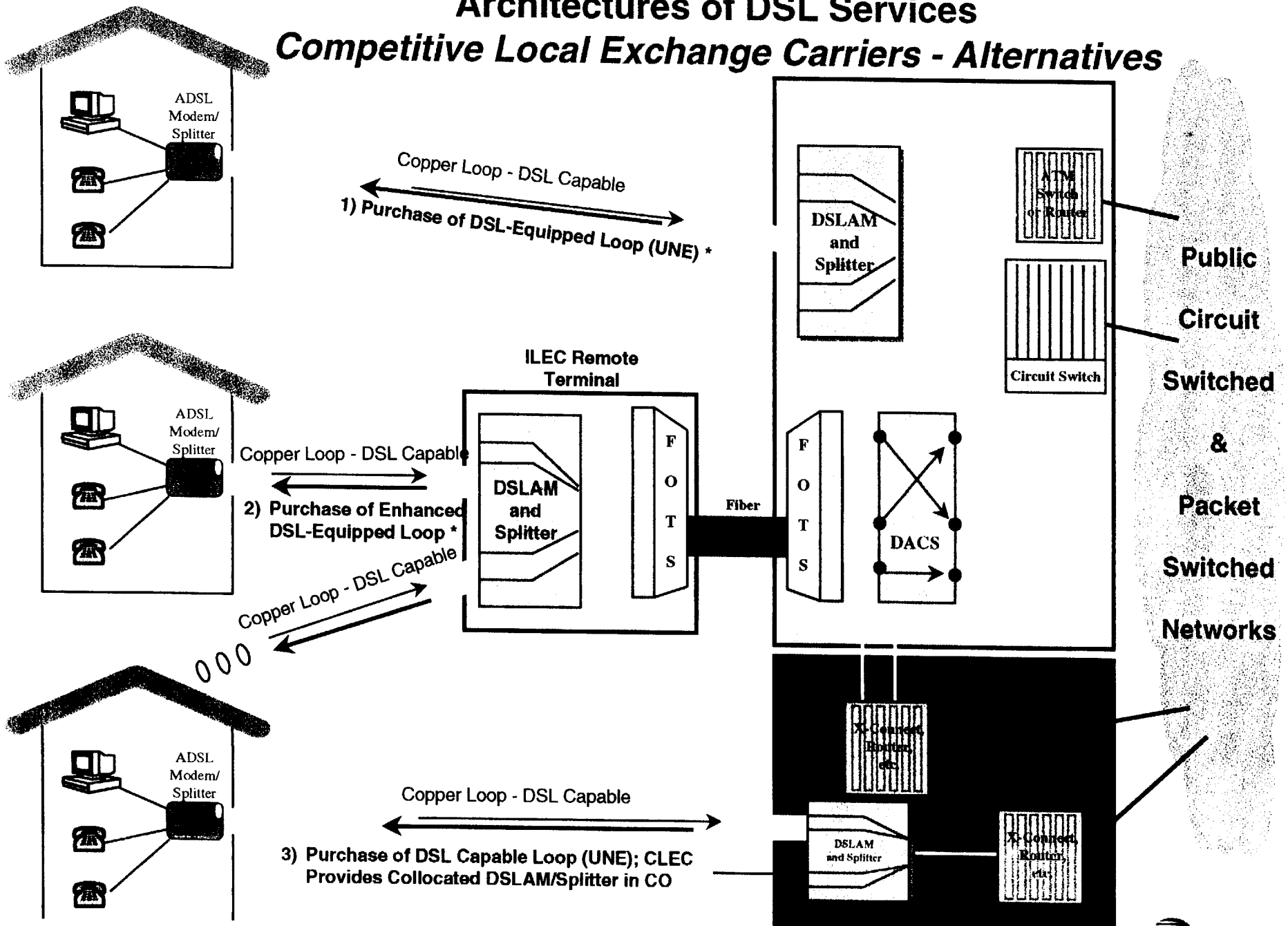
Comparative Network Architectures

Architectures of DSL Services
Incumbent Local Exchange Carriers



Architectures of DSL Services

Competitive Local Exchange Carriers - Alternatives



* - includes DSL Capable loop, DSLAM, splitter, FOTS terminal equipment and any of the ILEC electronic.

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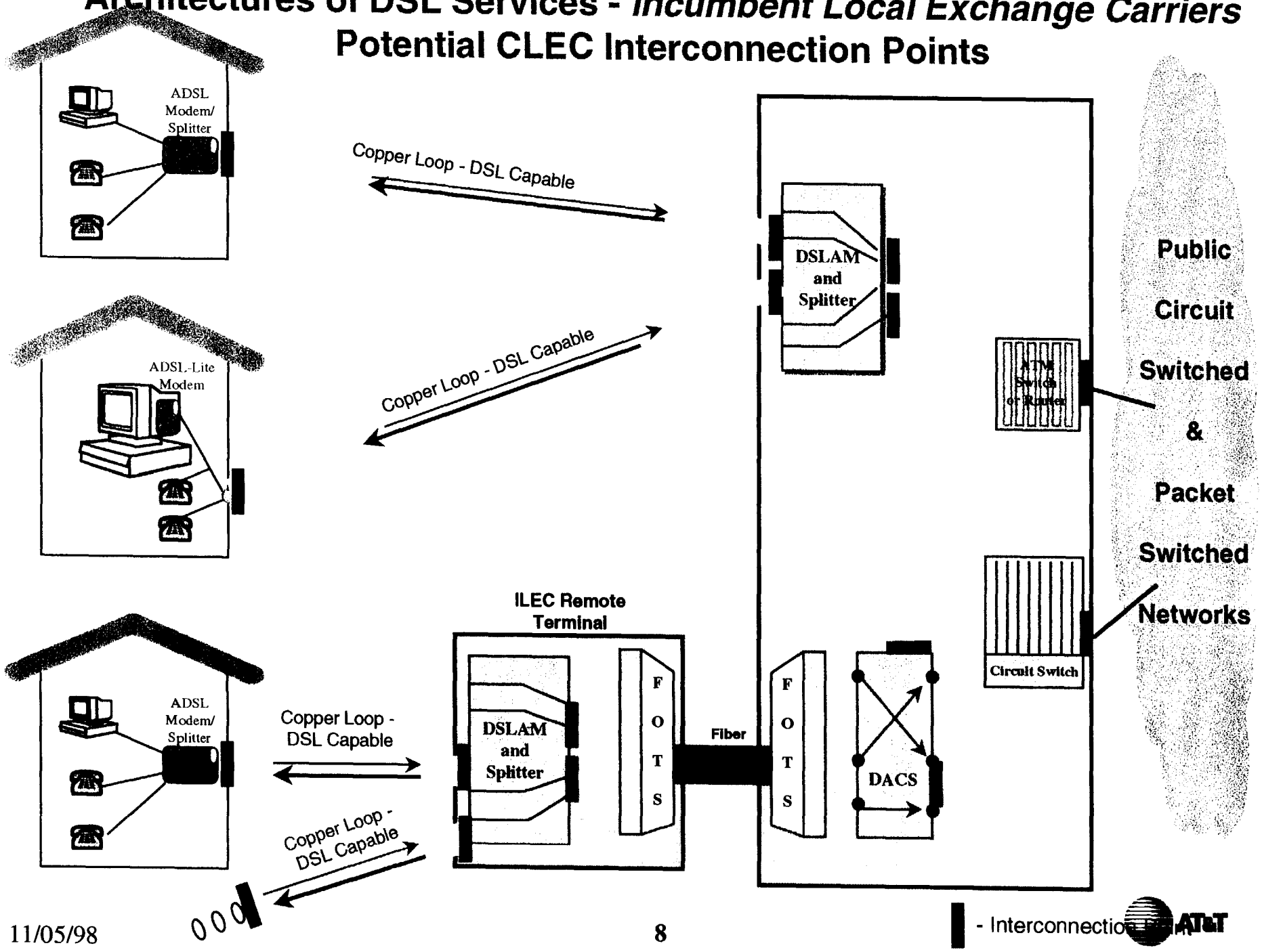
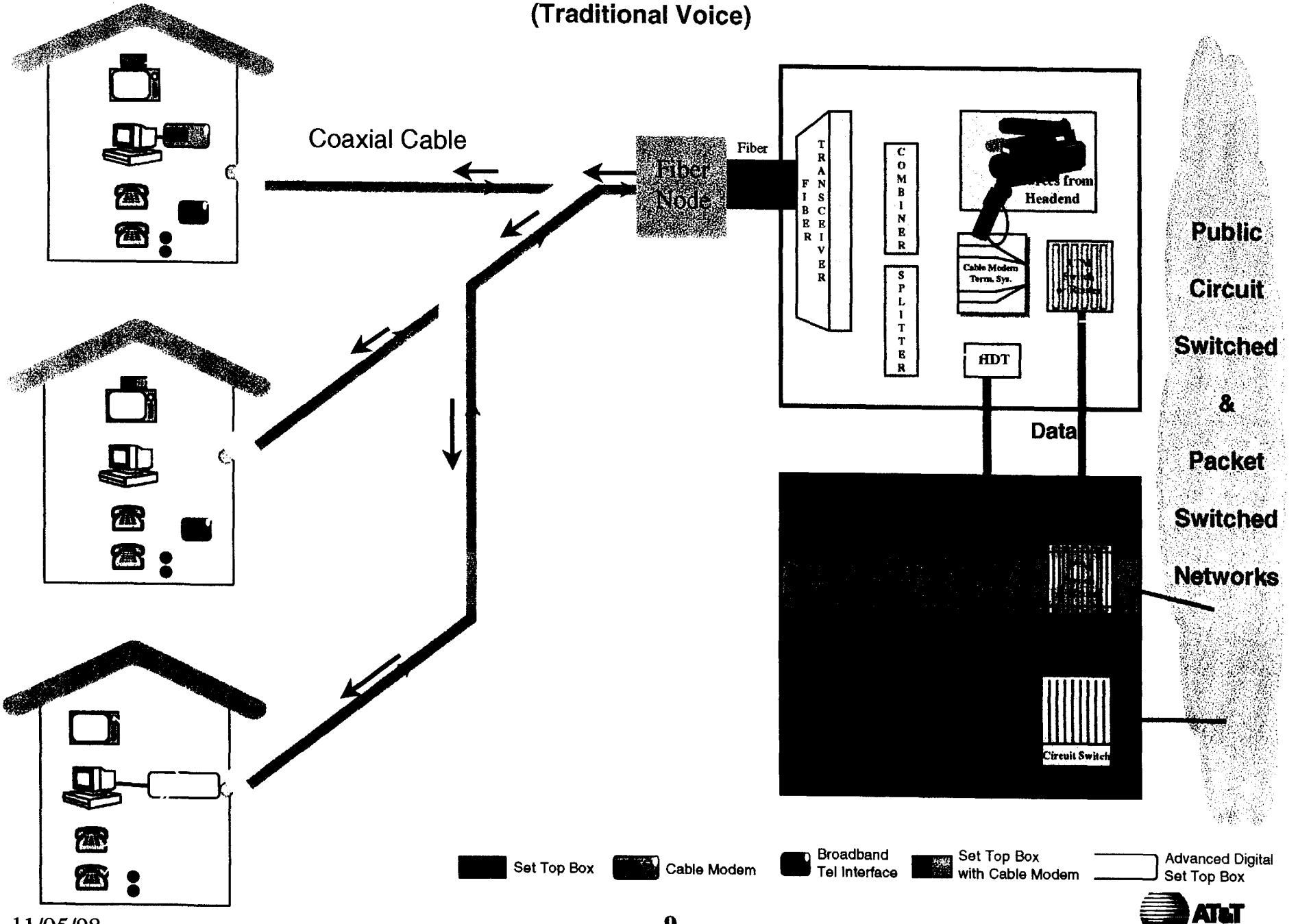
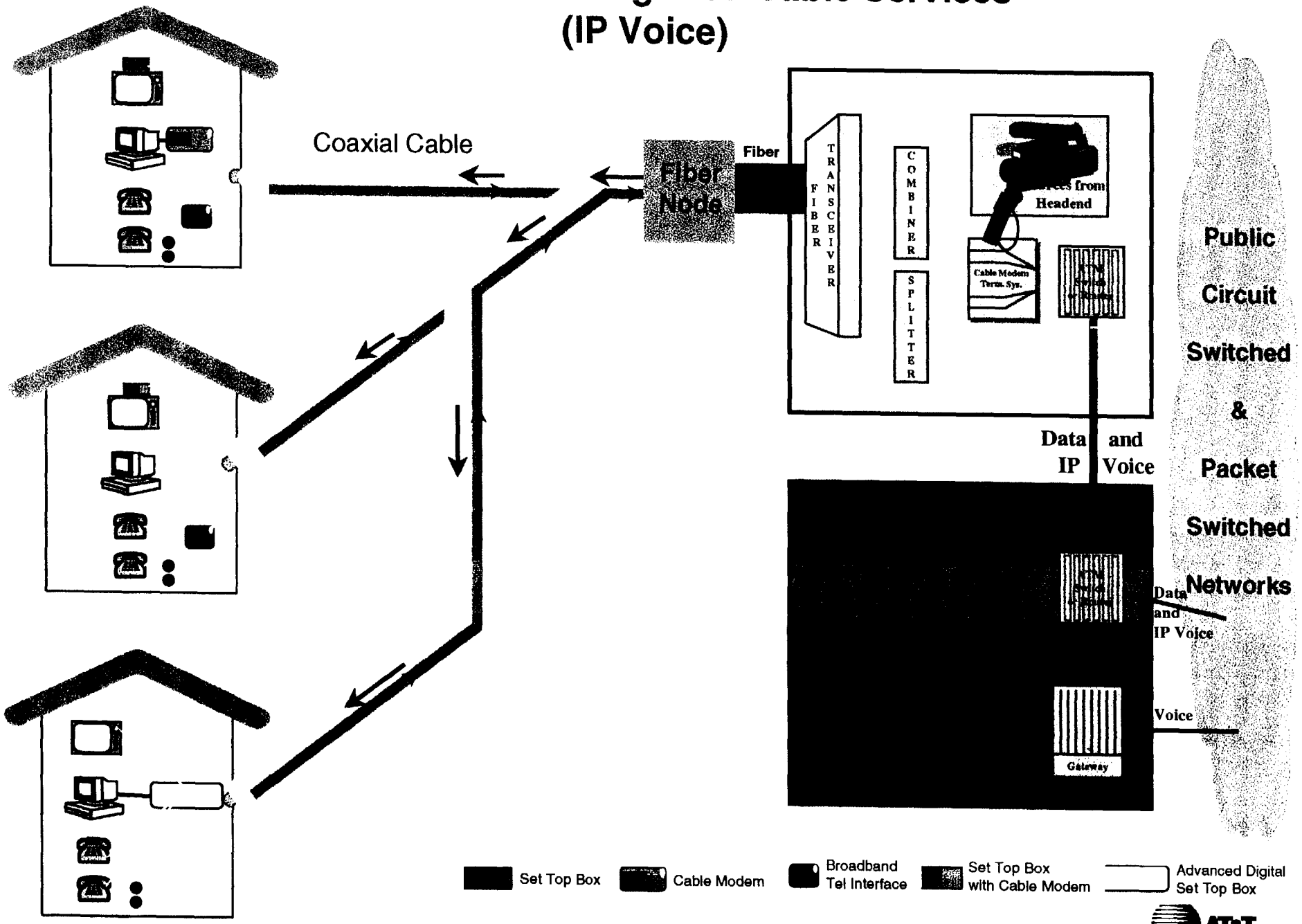
Architectures of DSL Services - *Incumbent Local Exchange Carriers*
Potential CLEC Interconnection Points



Architectures of Integrated Cable Services
(Traditional Voice)

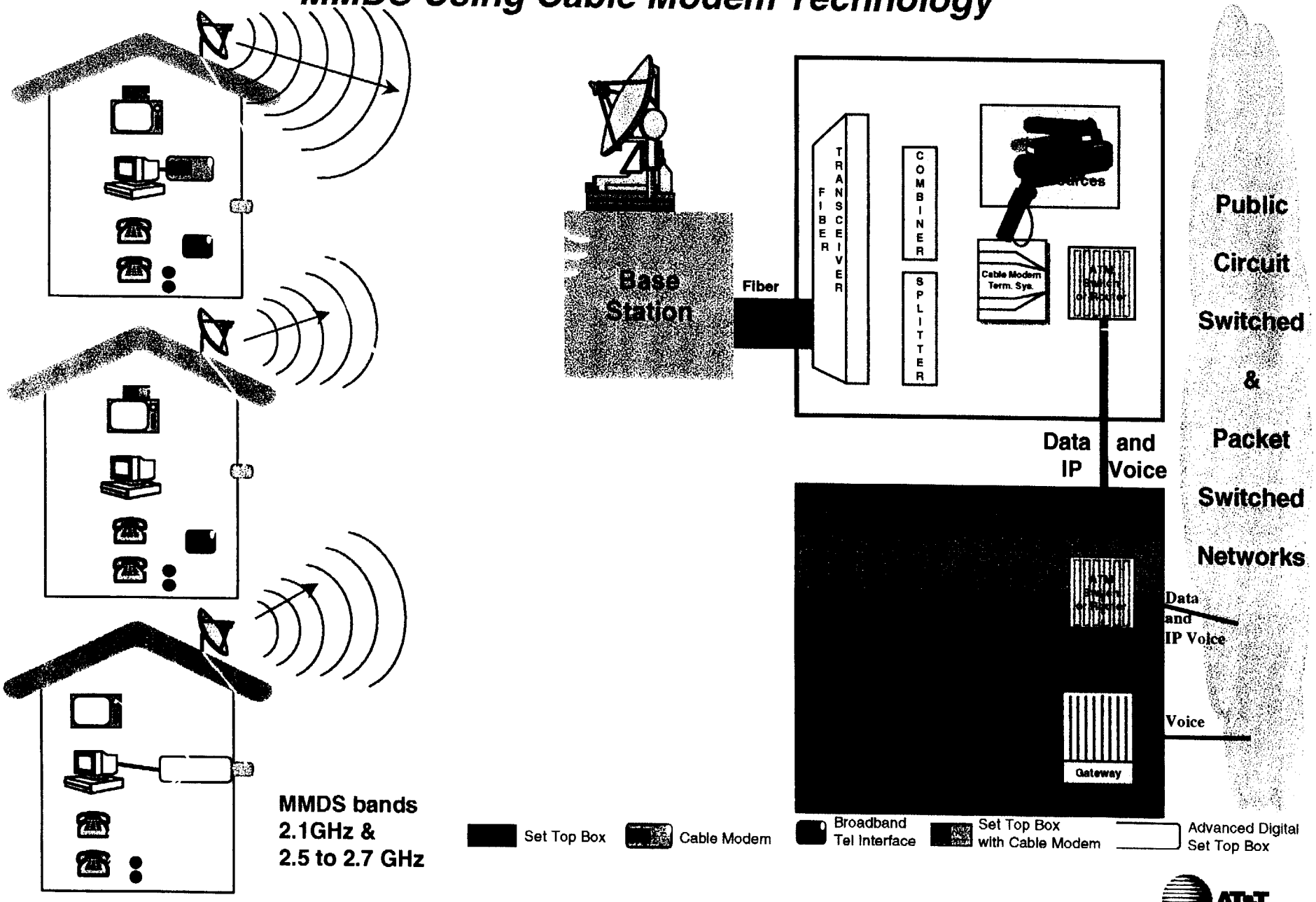


Architectures of Integrated Cable Services (IP Voice)



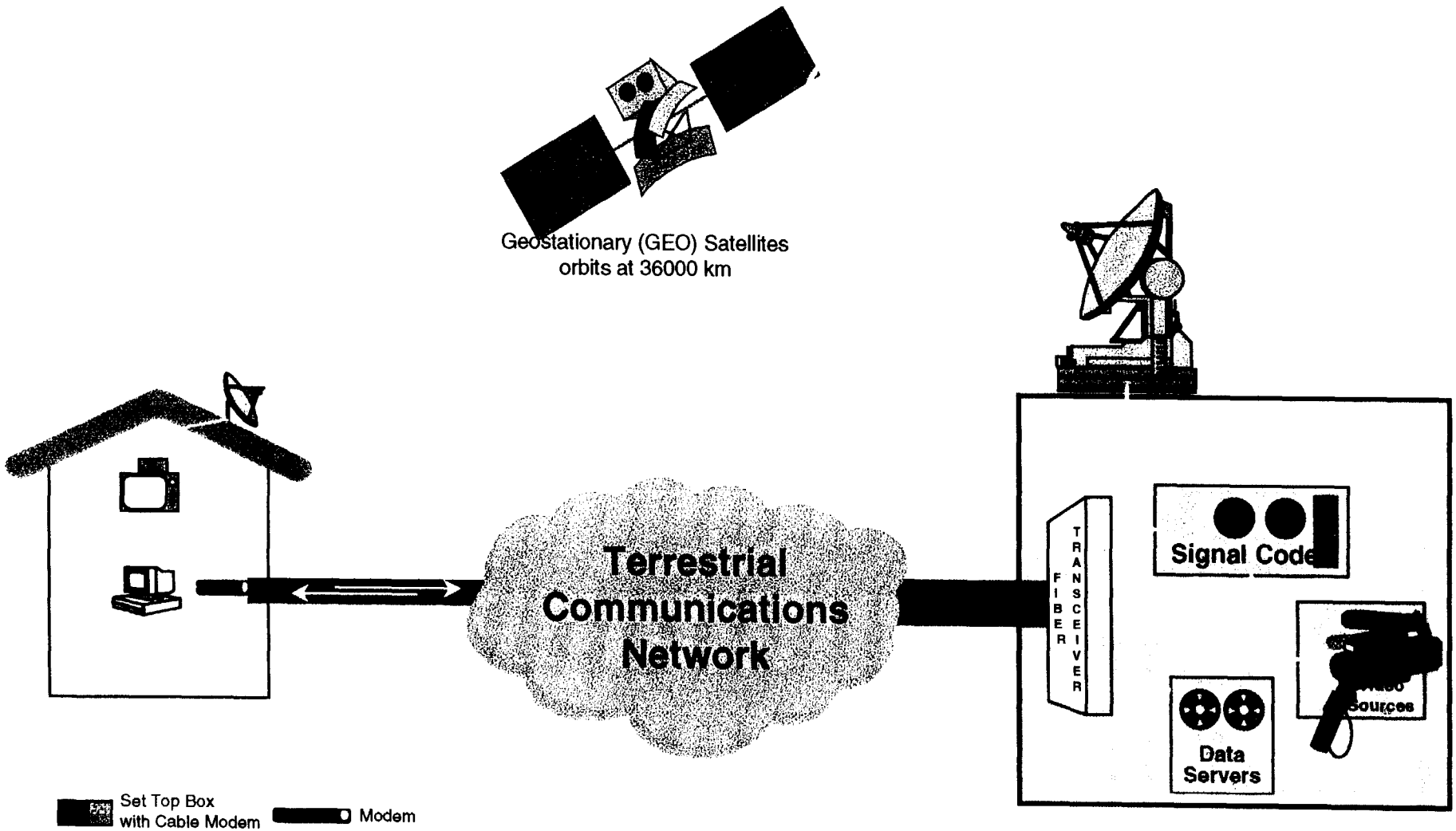
Architectures of Fixed Wireless Services

MMDS Using Cable Modem Technology



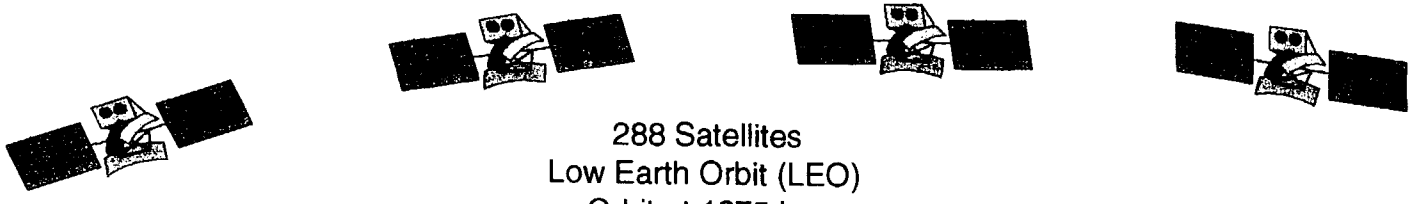
Architecture of Satellite Data Services
Present - 1998

DirectPC Example - Landline Return Path

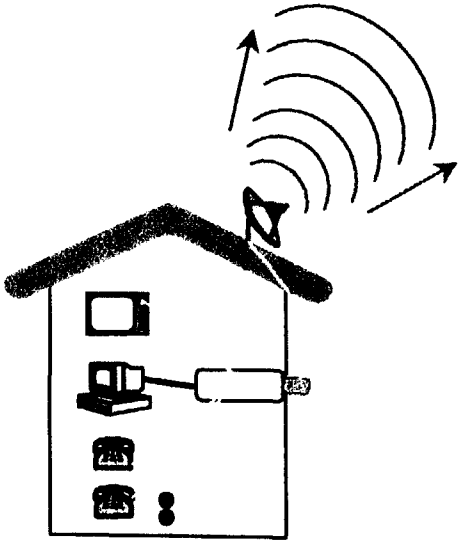


Architecture of Satellite Services
Future - 2003 or Later

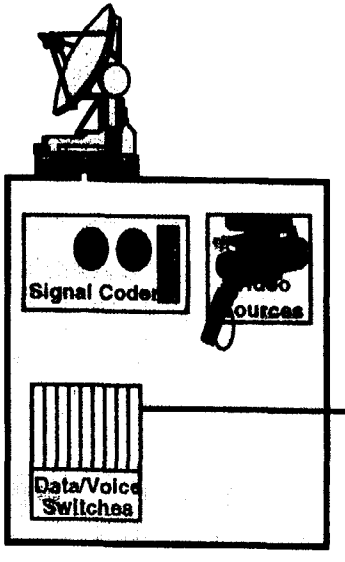
Teledesic Example - Two-Way Broadband



288 Satellites
Low Earth Orbit (LEO)
Orbit at 1375 km



ka - bands
29 GHz Uplink
19 GHz downlink

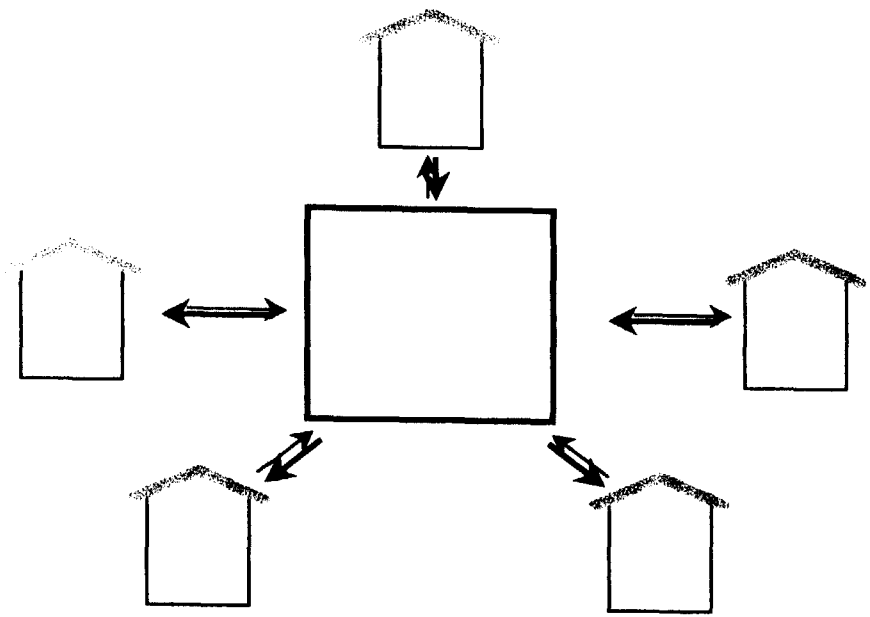


Public
Circuit
Switched
&
Packet
Switched
Networks

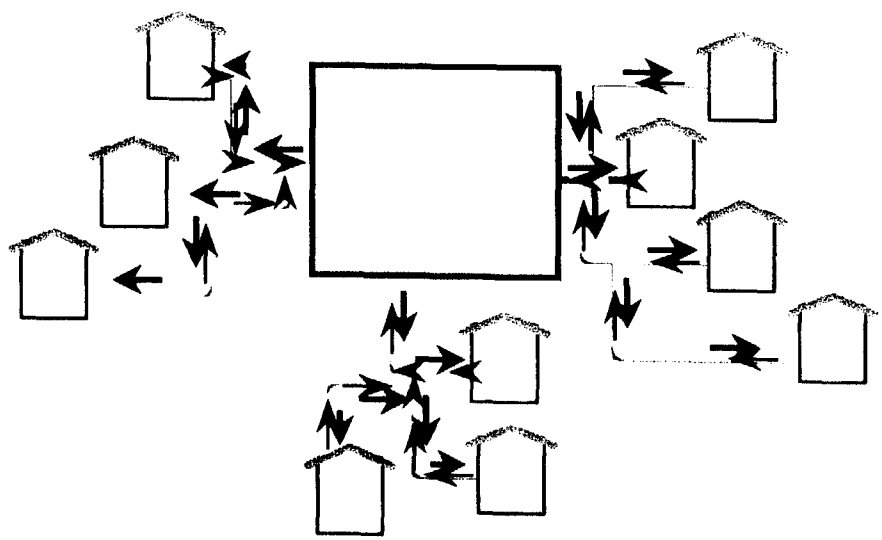
Traffic Characteristics
DSL vs Cable

Comparison of Architectures

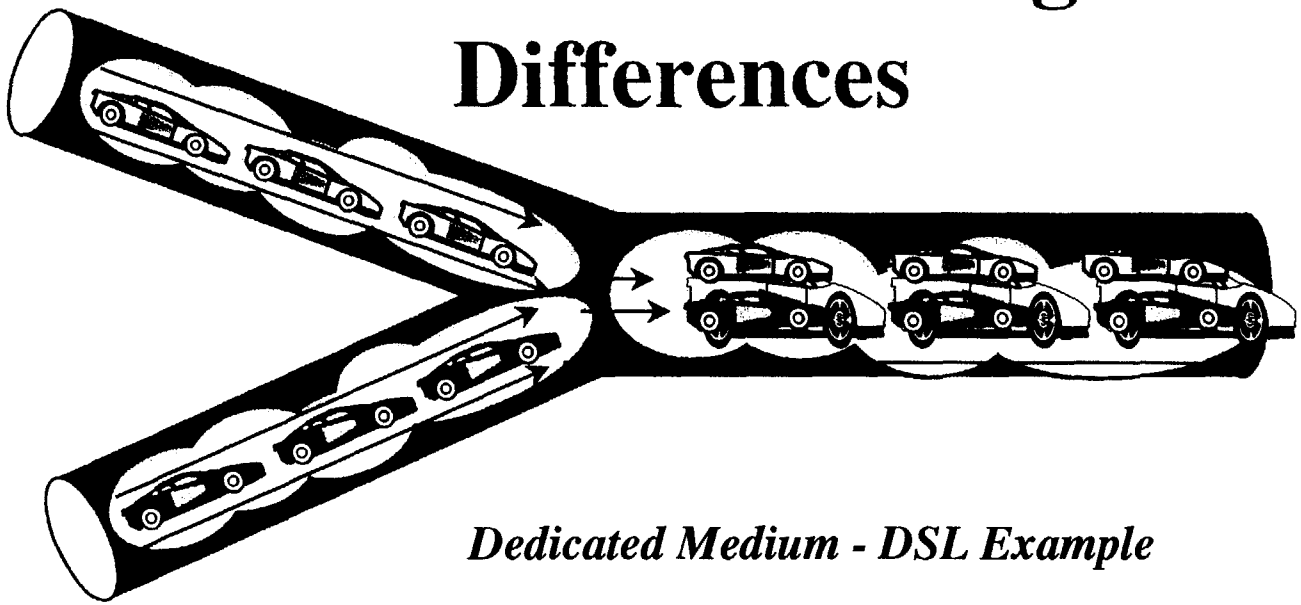
Architecture of DSL Services



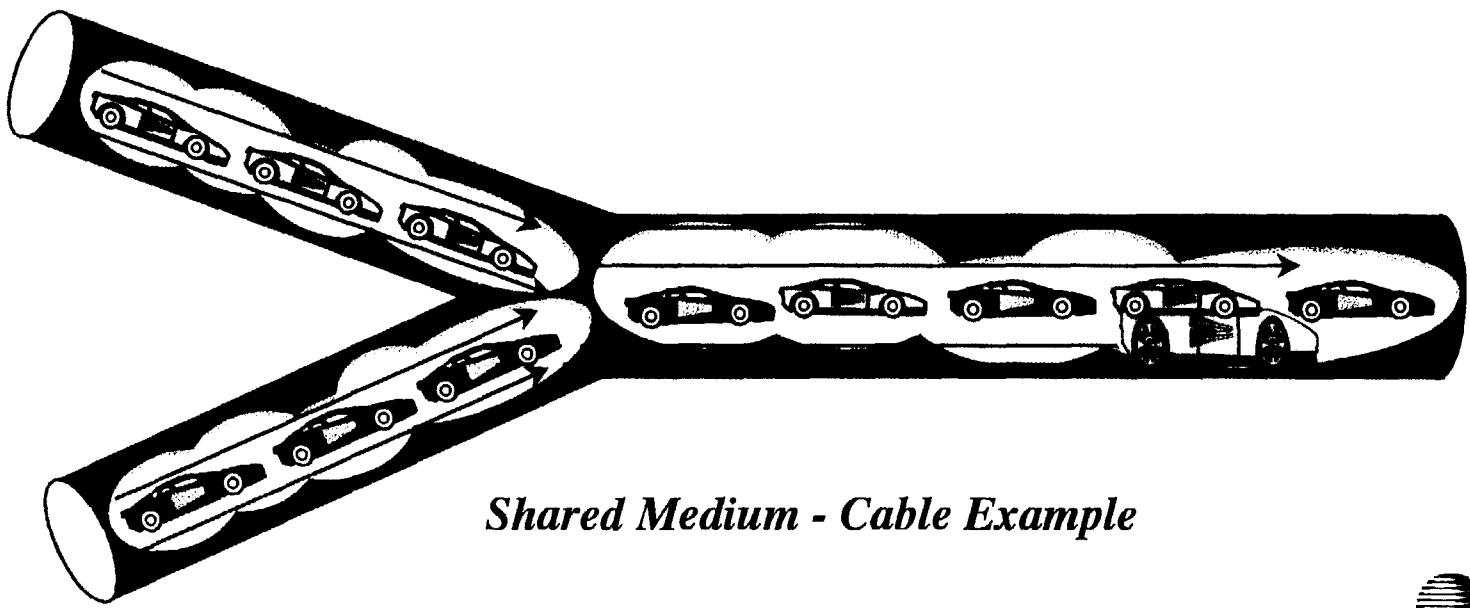
Architecture of Integrated Cable Services



Traffic Contention and Engineering Differences



Dedicated Medium - DSL Example

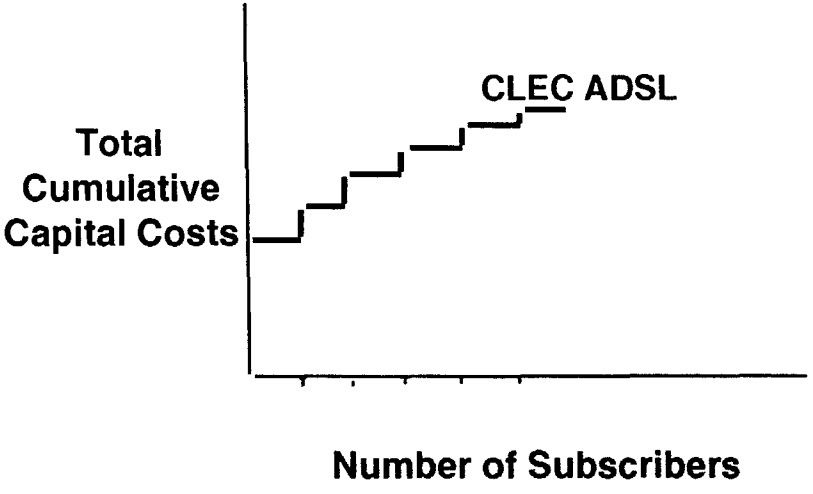


Shared Medium - Cable Example

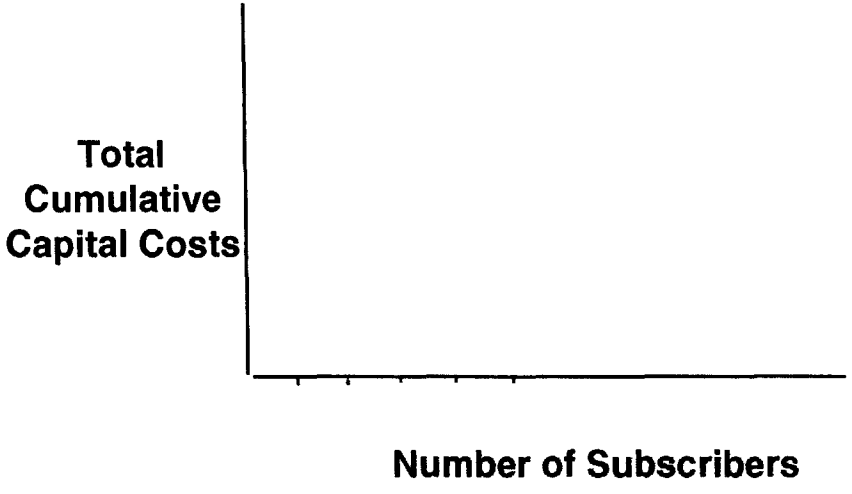
Comparison of Investments

Comparison of Needed Investment

ILEC ADSL vs. CLEC ADSL



ILEC ADSL vs. Cable



Note: Not to scale