

2009 TSTCI Finance / Marketing / Commercial Conference

Ethernet / Internet Transport / DSL / Broadband Assets and Depreciation

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Agenda

- Broadband
 - Definition
- DSL
 - Definition
 - Types
 - Components of DSL Service
 - Accounting for DSL Operations
 - Regulated ILEC
 - Non-Regulated Subsidiary
 - Regulated vs. Non-Regulated DSL

Agenda

- Ethernet Transport Services (ETS)
 - Definition
 - ETS vs. ATM
 - Service Scenario “Before” & “After”
 - Accounting for ETS Operations

Broadband Defined

- The term broadband can have different meanings in different contexts.
- High data rate Internet access is often shortened to just broadband.
- The various forms of DSL service are broadband in that digital information is sent over a high-bandwidth channel above the baseband voice channel on a single pair of wires.
- Ethernet has a high base rate, so it is sometimes referred to as broadband.

DSL Defined

- DSL is a technology which allows simultaneous transmission of voice and high speed data over the same copper loop.
- Data transmission is at far greater speeds than what the end user can achieve using the traditional dial-up access with a 56 kbps modem

Types of DSL

- Asymmetric DSL (ADSL)
 - Most popular form of DSL technology, attractive to residential and small business users, provides high-speed access to the Internet without need for additional lines
 - Faster speeds downstream than upstream

Types of DSL

- Symmetric DSL (SDSL)
 - Permits equal data traffic speeds to enable running Web and e-mail servers
 - Characterized by equal upstream and downstream data transmission speeds

Types of DSL

- Variations of ADSL and SDSL
 - ISDN based DSL (IDSL)
 - High Bit Rate DSL (HDSL)
 - Rate Adaptive DSL (RADSL)
 - Very High Bit Rate DSL (VDSL)

NECA's DSL Tariff Offerings

- ADSL and SDSL – Retail
 - Voice-Data option, must be provided in conjunction with local exchange service
 - Data only option, no requirement to purchase local exchange service line
- DSL Discount Pricing Arrangement (DPA) – Wholesale
 - Monthly and Term Plan

Components of DSL Service

- Digital Subscriber Line Access Multiplexer (DSLAM)
 - Used to multiplex DSL subscribers' lines
 - Separates voice and data
 - Normally located in central office, field cabinet or remote
- Local Loop

Components of DSL Service

- POTS Splitter
 - Filters telephone service signal from DSL signal
- Modem
 - Establishes translation
- Telephone Filter
 - Provides filtering of voice service

Regulated ILEC is Providing Retail DSL to End User

- DSLAM – Recorded in account 2232 “Circuit Equipment DSL”
- Software Upgrades – Separate 2232 account or 2690 Intangibles (3 year amortization)

Regulated ILEC is Providing Retail DSL to End User

- Local Loop
 - ADSL and SDSL Voice-Data use the existing copper loop, therefore no additional costs are recorded
 - Data-Only requires separate copper facilities and should be recorded in account 2421 “Aerial Cable” or account 2423 “Buried Cable”

Regulated ILEC is Providing Retail DSL to End User

- CPE (modems, splitters and filters)
 - Companies may elect to lease DSL modems, etc. to customers or to sell/give away
 - If leased, accounted for the same as other customer premises equipment, account 2311
 - If sold or given to end user, expense as cost of sales, account 6311

Regulated ILEC is Providing Retail DSL to End User

- Revenues
 - All recurring and non-recurring charges billed using the NECA tariff for the provision of interstate DSL are recorded as Special Access (5083) and reported to NECA; suggest sub accounts. Revenues greater than NECA tariff are nonregulated.

Regulated ILEC is Providing Retail DSL to End User

- Revenues (continued)
 - ILEC is ISP and therefore should charge the non-regulated side for interconnection
 - Requires entry charging nonreg expense and crediting Special Access (5083)

Regulated ILEC is Providing Retail DSL to End User

- Expenses associated with DSLAM
 - Central office type maintenance, etc.
 - Charged to account 6232 “Repair of Circuit Equipment DSL”
 - Charges incurred with initial setup of DSLAM should be capitalized with DSLAM

Regulated ILEC is Providing Retail DSL to End User

- Costs associated with installation and sale of modem and splitter
 - Cost of Goods Sold
 - Installation at the customer's premises
 - Charged to 6311 “Cost of Non-regulated Equipment Sold and Installation of CPE”

Regulated ILEC is Providing Retail DSL to End User

- Costs associated with modifying loop for DSL
 - Removal of load coils
 - If unit of property, record retirement and associated costs of removal
 - If load coils are not unit of property, record to account 6423 “Repair of Buried Cable - DSL”

Regulated ILEC is Providing Retail DSL to End User

- Costs associated with modifying loop for DSL
 - Removal of bridge taps
 - If unit of property, record retirement and associated costs of removal
 - If not unit of property, record to account 6423 “Repair of Buried Cable - DSL”

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA (Discount Pricing Arrangement)

- Regulated Equipment and upgrades recorded on the regulated ILEC's books essentially the same as "Retail" scenario.

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA

- CPE (modems, splitters and filters)
 - Non-regulated subsidiary provides to end user and records appropriately on subsidiary books.

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA

- Regulated ILEC bills subsidiary using NECA tariff (per line charge and installation charge)

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA

- NECA tariff provides two discount plans
 - Monthly plan, month-to month basis with discount on per line charge
 - Term Plan, one or three year commitment with larger discount on per line charge. Flat monthly per wire center charge. Installation charge waived.

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA

- Revenues
 - Regulated ILEC reports revenue billed under the NECA tariff to NECA. Revenues should be recorded in 5083.

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA

- Revenues (continued)
 - Subsidiary is ISP and therefore ILEC should charge the subsidiary for interconnection. These revenues are reported by ILEC to NECA and recorded in 5083.

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA

- Revenues (continued)
 - Subsidiary is free to charge end user whatever rates they feel are appropriate. Subsidiary assumes responsibility for DSL service.

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA

- Expenses
 - ILEC charges expenses much the same as “retail” scenario. Segregate as much as possible to maximize revenue requirement. DSL is 100% interstate unless the company has frozen COE categories.

Regulated ILEC is Providing Wholesale DSL to Subsidiary via DPA

- Expenses (continued)
 - Subsidiary classifies amounts paid to ILEC as access or expense classification management feels is most useful. Sub accounts are recommended.

Non-Regulated Subsidiary is Providing DSL to End User

- Subsidiary owns equipment and assumes responsibility for DSL service
 - Free to charge rates management determines are appropriate

Non-Regulated Subsidiary is Providing DSL to End User

- ILEC might need to charge subsidiary for interconnection and/or transport if subsidiary does not have facilities
- ILEC charges subsidiary cost based loop rental

Regulated vs. Non-Regulated DSL

- When DSL is non-regulated, ILEC must apportion costs between regulated and non-regulated depending on how the non-regulated services are provided.
- Services provided to an affiliate under tariff are recorded as revenues at the tariff rate.

Regulated vs. Non-Regulated DSL

- Non-tariffed services provided an affiliate are recorded at the higher of fair market value or fully distributed costs.

Regulated vs. Non-Regulated DSL

- When the regulated ILEC provides non-regulated DSL directly to its end users, the ILEC must:
 - Allocate costs according to Part 64
 - Dedicated costs should be directly assigned
 - Joint or common costs should be allocated

Ethernet Transport Service Overview

- Ethernet Transport Service (ETS) is a packet switched based service used to transport information (data, voice, video) at high speeds from one destination to another
- Speeds of 5 Mbps to 1 Gbps
- Supports both copper and fiber mediums

Ethernet Transport Service Overview

- Can be end-to-end Service or
- Can be interconnected with LEC's DSL network

Ethernet Transport Service Overview

- Uses Point to Point Protocol (PPP) which is a data link protocol used to establish a direct connection between terminal equipment. Most Internet service providers use PPP for customer dial-up access to the Internet. Two encapsulated forms of PPP, Point-to-Point protocol over Ethernet (PPPoE) and Point-to-Point Protocol over ATM (PPPoA), are used by Internet Service Providers to connect broadband Internet service.

Ethernet Transport vs. ATM Transport

- Both use packet switching
- ATM is a packet switching protocol that encodes data into small fixed-sized cells.
- With ATM, everything is transported in a fixed length (even if you don't use all of it), so there is wasted space.

Ethernet Transport vs. ATM Transport

- Ethernet protocol uses variable-length packets called frames to carry data.
- Because the frames are variable-length, there is no wasted space.
- ETS allows faster data speeds (greater bandwidth) to customers at a lower overall cost.
- ETS allows more bandwidth to more customers and more bandwidth to individual customers.

Ethernet Transport vs. ATM Transport

- ATM is more structured than ETS because of the fixed sized cells.
- ATM paths to the Internet “cloud” are predefined.
- ETS is less structured and takes whatever path is available.
- With ETS you are not paying for features that provide the structure that ATM has.

Ethernet Transport vs. ATM Transport

- Traditional DSL using PPPoA – Highest speed - 1.5 MG (downstream)
- Traditional DSL using PPPoE – Highest speed (over copper) – 6 MG
- 6 MG is the highest ADSL speed under the NECA tariff.

Ethernet Transport

- Ethernet transport in the NECA tariff is referring to transmission service to get from one point to another.
- It is not the Ethernet technology.
- Ethernet transport in the NECA Tariff is not a substitute for DLS.

Ethernet Transport

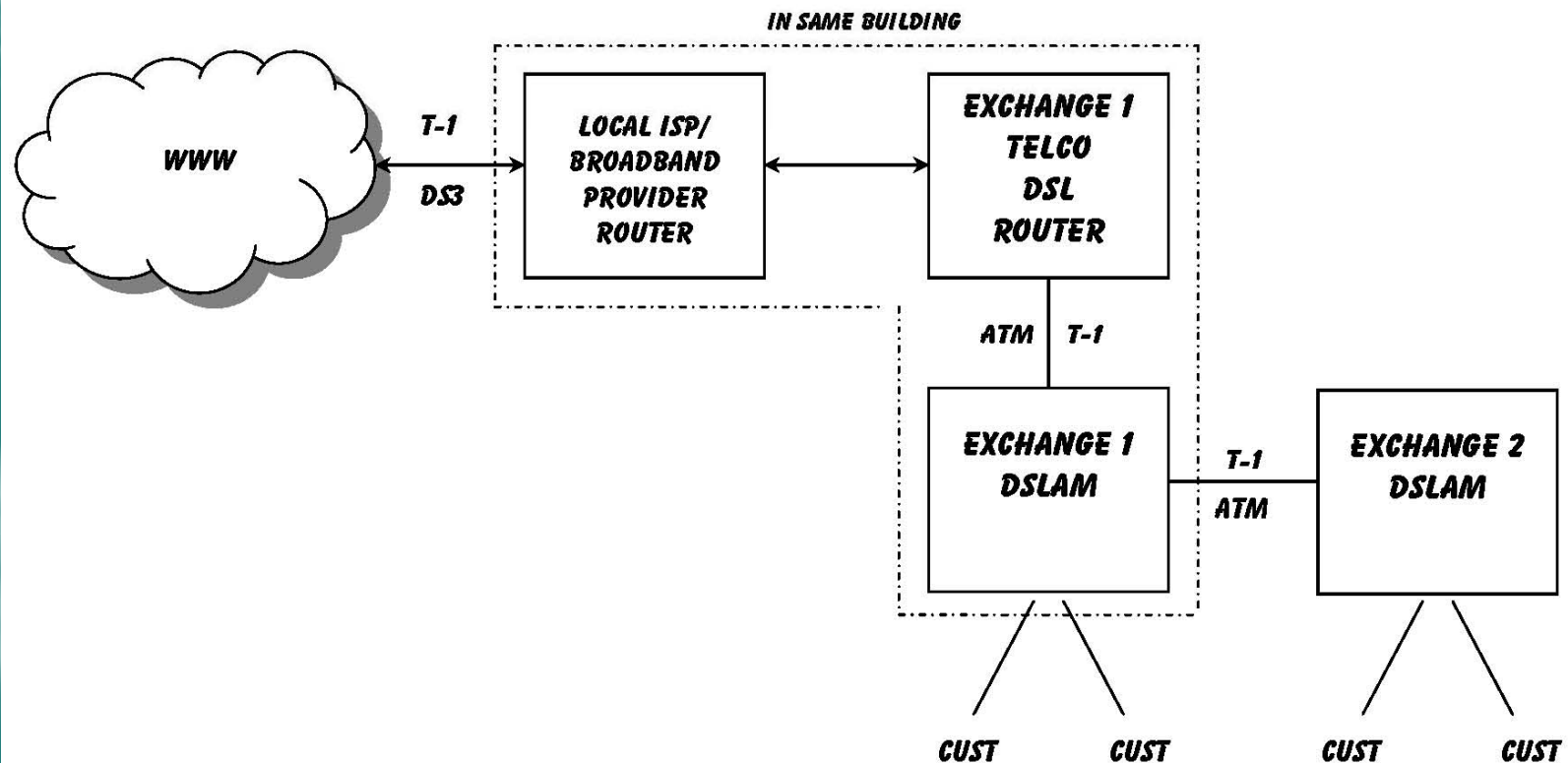
- To provide Ethernet transport service under the NECA tariff you must have an Ethernet Transport Capable Wire Center.
- Must have a network capable of moving information at the ETS tariffed speeds.
- The electronics (routers) on the end of the fiber (or copper) are what allows this.

Ethernet Transport

- The equipment used for ETS is similar to ATM transport, but have to account for it differently.
- Important for accounting department to work with other departments in understanding the design of their company's ETS facilities.

Service Scenario “Before ETS”

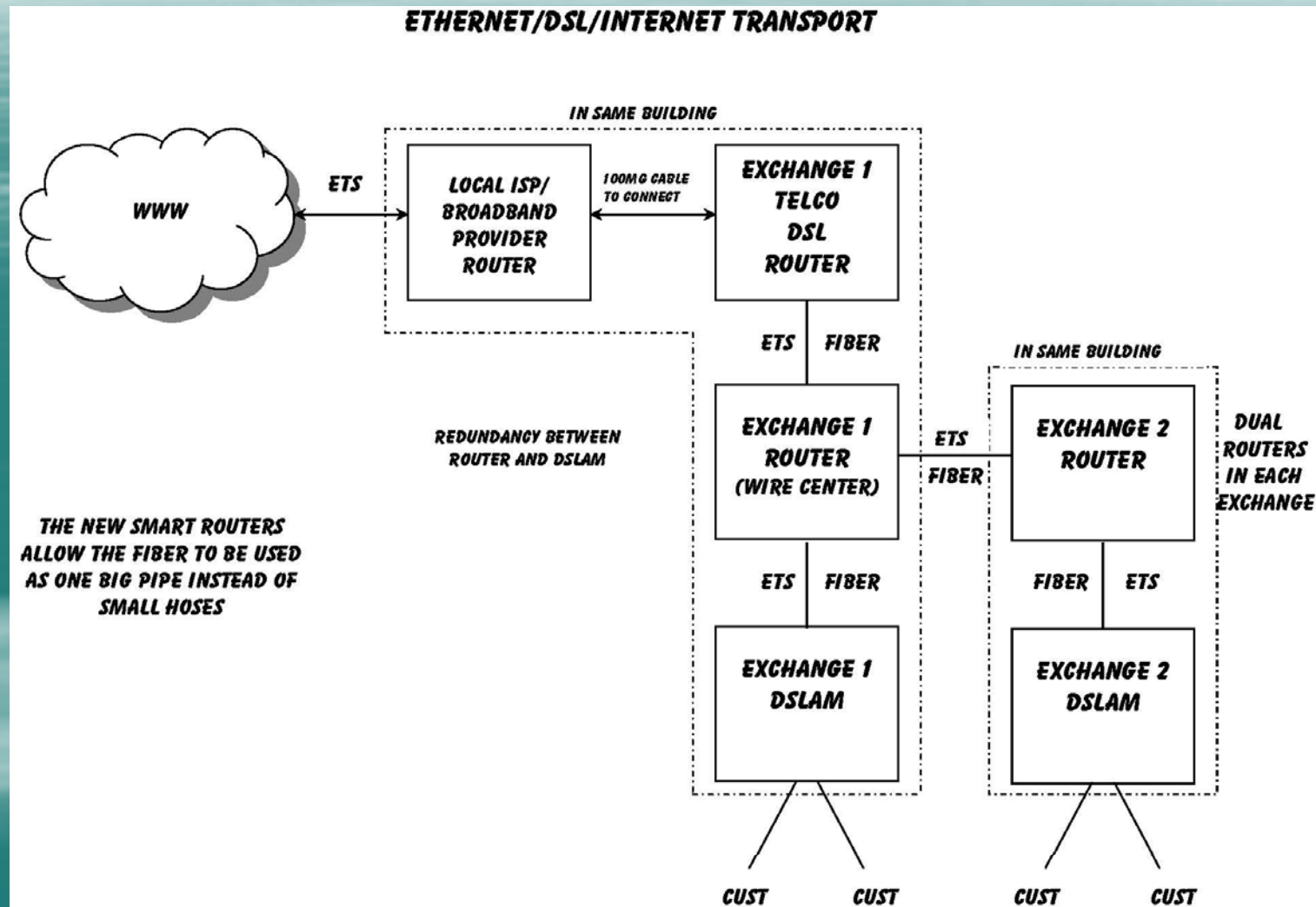
DSL/INTERNET TRANSPORT



Service Scenario “Before ETS”

- Original DSL network with a single router.
- Using “daisy chain” from DSLAM to DSLAM (a circuit system).
- Fit the ATM protocol.
- Highest DSL speed was 1.5 MG (downstream).

Service Scenario "After ETS"



Service Scenario “After ETS”

- Installed new routers that support Ethernet transport protocol.
- Dual routers in each exchange.
- Redundancy between router and DSLAM.

Accounting for ETS Operations

- The new router in wire center (CO) recorded in separate 2232 account – “Circuit Equipment - Packet”
- New soft switches recorded in separate 2212 account – “Digital Electronic Switching – Packet”

Accounting for ETS Operations

- Software Upgrades – Separate 2232 account or 2690 Intangibles (3 year amortization)

Accounting for ETS Operations

- Revenues (similar to DSL)
 - Regulated ILEC bills subsidiary using NECA tariff
 - Subsidiary is ISP and therefore ILEC should charge the subsidiary for interconnection. These revenues are reported by ILEC to NECA and recorded in 5083.
 - Subsidiary is free to charge end user whatever rates they feel are appropriate.

Accounting for ETS Operations

- Expenses (similar to DSL)
 - Expenses associated with the ETS routers
 - Central office type maintenance, etc. charged to separate 6232 account “Circuit Equipment – Packet – Expense”.
 - Expenses associated with ETS Soft Switches
 - Maintenance, etc. charged to separate 6212 account “Digital Electronic Switching – Packet – Expense”.

Accounting for ETS Operations

- Expenses (similar to DSL)
 - Subsidiary classifies amounts paid to ILEC as access or expense classification management feels is most useful. Sub accounts are recommended.

NECA's ETS Tariff Offerings

- Filing with FCC Tariff #4 tells the whole world that you are an Ethernet transport wire center.
- See DSL Reference Guide – for the NECA DSL, ATM-CRS and ETS Tariffs on the NECA website.

NECA's ETS Tariff Offerings

- There are numerous scenarios with different ETS tariffs.
- Some that apply to the ETS scenario above:
 - ETS Channel Termination Fee
 - ETS Port Charge
 - ETS Interswitch EVC Fee

NECA's ETS Tariff Offerings

- ETS Channel Termination Fee
 - This fee recovers the cost of the transport facility (wire) to make the connection between the ISP's router and the telco's DSL router (monthly and non-recurring charges, one distance sensitive, <> 300 ft., and one based on speed of connection).

NECA's ETS Tariff Offerings

- ETS Port Charges
 - Basic Port Charge is for interfacing the information from the ISP to the Telco's network using ETS Channel Termination (monthly and non-recurring charges based on speed of connection).
 - DSL ASCP Charge is for allowing the ISP's network to "talk" to the Telco's network (non-recurring charge based on speed of connection).

NECA's ETS Tariff Offerings

- ETS Interswitch EVC Fee
 - Interswitch EVC (Ethernet Virtual Connection) fee is for providing a connection between two ETS Ports in different wire centers within the telco's serving territory (monthly and non-recurring charges based on speed of connection).

Where to Get More Information

- NECA.org
- Bob Tegels, NECA Southwest Region
- 800-351-9033
- btegels@ntca.org



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