Ascend

COMPETITIVE BULLETIN

The Nortel "Internet Thruway" vs. Ascend MAX/MultiDSL Solution

Nortel is attempting to position its "Internet Thruway" as a solution that allows carriers to address the traffic, congestion, and cost problems associated with the explosion in data services to the home.

However, Ascend's MAX™ platform with MultiDSL™ provides a low-cost, high-density solution that enables carriers to deploy IDSL immediately, addressing their traffic problems and ensuring a seamless upgrade path as additional DSL services are required.

Background

The current carrier network treats voice and data calls the same, routing them to their destination via the Central Office Switch and the Circuit-Switched telephone (PSTN) network. At the destination, the egress switch is the focal point of many data calls to specific data networks, such as an Internet Service Provider, or a Corporate LAN, as shown in Figure 1, below:

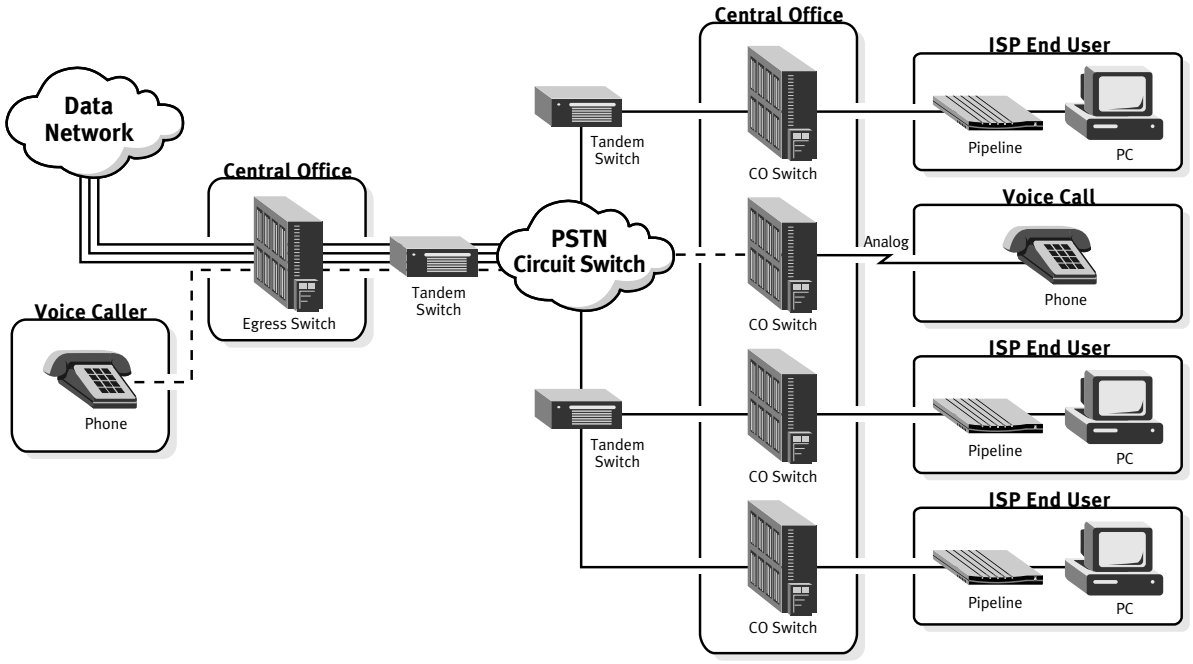

Figure 1

The carrier's problem is the skyrocketing cost at the Central Office (CO) switch associated with Internet and telecommuter LAN access handled by the public voice (circuit-switched) network.

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The situation

1. Central Office switches (Nortel DMS-100, AT&T 5ESS, etc.) are engineered to be cost effective for voice calls that are, on average, 3-5 minutes long
2. Internet calls are, by some estimates, 20 minutes long: 4 to 7 times longer than voice calls
3. Often, Internet users leave their line open for hours (because they have unlimited access service from their ISP)

The result

An increasing number of callers are not getting a dialtone, or getting a "quick busy signal" when they try to place a call - a potential violation of regulatory mandates.

Local carriers are concerned that geometric increases in Internet users, and the exploding bandwidth demands of new technologies, will overload CO voice circuits in the near term.

Carriers need to cost effectively divert this data traffic to their packet/cell switched network — ASAP. Since little growth is forecasted for the voice market, carriers will not sink additional capital in circuit-switched capacity between CO's. Switch manufacturers are well aware that their traditional business — voice networking — is disappearing, and they are scrambling to preserve their footprint.

Description: Nortel's "Internet Thruway"

The Nortel "Internet Thruway" proposes to divert data traffic away from the Central Office switch directly to the carrier's Data Network by adding an Access Node and an Access Concentrator at the Central Office, as shown in Figure 2.

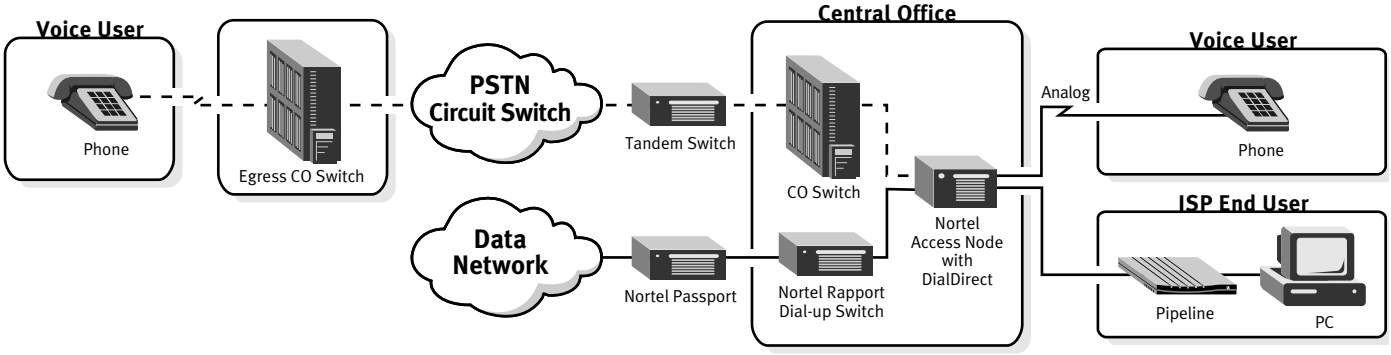

Figure 2

Key Components of the "Internet Thruway"	Approximate Cost to Carriers
1. Nortel Access Node with "DataDirect" feature: route data calls away from the CO switch using number dialed recognition- interfaced to the Dial-up switch with tandem DS1s	• High captial cost (estimated $400 per subscriber line) to purchase AccessNode equipment for CO's throughout the operating area • Variable cost to re-terminating all voice and data lines at each CO that installs the AccessNode
2. Nortel Rapport Access Switch: an Internet Dial-up switch for analog or digital service	• The Rapport is the Shiva LanRover Access Switch, which has a high cost per port ($400/digial port, $1,208/analog port)
3. Nortel Magellan Passport (Frame Relay or ATM): to upgrade the carrier high-speed data network backbone	• RBOCs in particular have not made the leap to ATM as quickly as forecasted since ATM's capital cost is compounded by the training and management cost

It should be noted that Nortel's "Internet Thruway" solution is intended to maintain Nortel's traditional "footprint" in the Central Office and to promote Nortel in the access market. In addition, Nortel wants to sell consultative and systems integration services (that ultimately promote Nortel equipment) to the carrier.

Brief Analysis

The Nortel solution is simply a strategy to protect Nortel's business, as the carrier's data networks receive the bulk of capital dollars. The "Thruway" proposal is designed to:

1. Sell the AccessNode product
2. Position Nortel as a data network infrastructure vendor - paving the way for Magellan Passport Frame Relay and ATM switch sales

Selling Against Nortel's "Internet Thruway"

The "Internet Thruway" is not

- field tested
- cost effective
- optimal for high speed networking

Ascend can help carriers solve the current problem at the Egress Switch serving the ISP or large enterprise network NOW with a market proven product. These immediate benefits will be augmented as Ascend's MultiDSL solves the growing issues at the Ingress Switch.

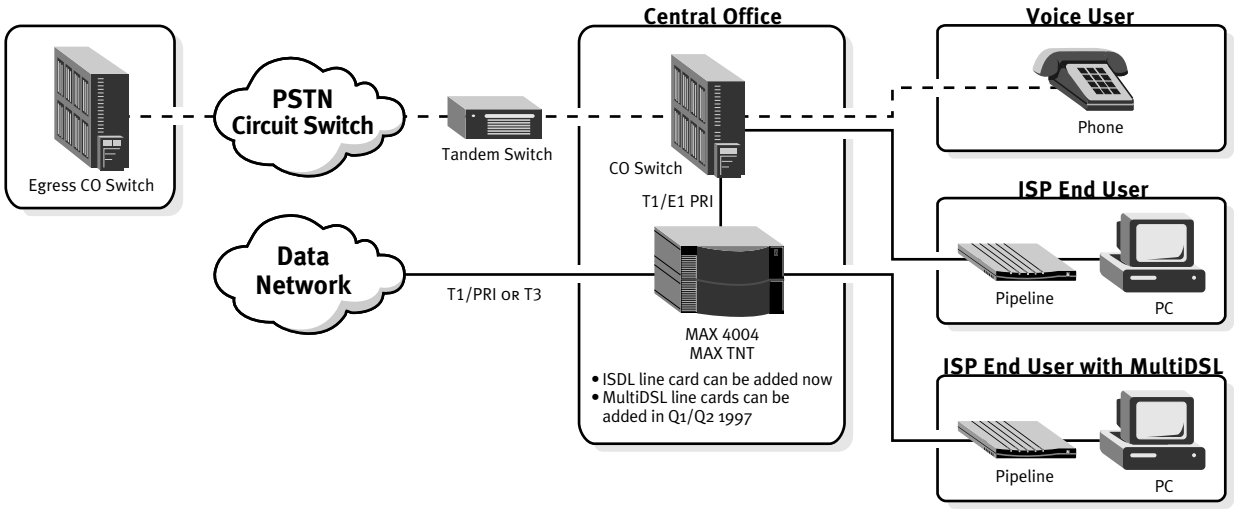

Figure 3

The Ascend Solution

Key Components	Ascend's Competitive Advantage
1. Locate a MAX, or MAX TNT, at the Central Office • use the CO switch to route digital and PCM calls to the MAX via a T1/E1 PRI • **with the depolyment of Ascend MultiDSL,** the client DSL will bypass the CO switch, and connect directly to the MAX	**Cost-effective, immediate response that will migrate with new technology** • No unnecessary capital expense and installation costs associated with the Nortel AccessNode • Alternative access technologies like MultiDSL can make extra equipment like the AccessNode obsolete
2. Use the MAX to concentrate the calls to the ISP via the existing data network	**The MAX: a field tested, low cost solution available NOW** • The MAX is a higher capacity concentrator, with **lower cost per port** than the Rapport/Shiva LanRover Access switch

Key Cost Comparison between the Ascend Solution and Nortel's "Internet Thruway"

Cost Elements (high level comparisons)	Ascend	Nortel
AccessNode Switch with DirectDial	N/A	Approximately $400 per subscriber line
Hold times at ingress switch associated with data call transfer to T1/PRI	unknown, but irrelevant with deployment of MultiDSL	N/A
WAN Access Switch (Concentrator)	MAX 40XX	Rapport/Shiva LRAS
Base Unit	$15,500	$28,800
Capacity (ports)	up to 96	78
Cost per Port		
• analog	$542-$750	$896
• IDSL	$375	N/A
Firewall Software	$4,000	$6,500

Additional Information

MultiDSL: Please refer to MultiDSL Product Launch Documents

Key Access Concentrator Feature Comparison: refer to Ascend Competitive Bulletin, July 1997: Ascend MAX Line Vs. Shiva LanRover Access Switch.

Any feedback or suggestions are welcome. Please send any pertinent competitive information to the attention of the Competitive Marketing group in Alameda (x72081).

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