



IXCs: Competing Effectively in a Rapidly Changing Market

Solutions Overview



Introduction

IXCs (inter-exchange carriers) face competitive and revenue pressures on a number of fronts. Voice revenues are declining as a result of pricing pressures on long distance voice services and continued customer migration to wireless providers. Data service growth has also slowed.

With revenues and service growth stalled, the IXCs must prepare to battle the RBOCs for the \$15 billion long distance (LD) data services market as RBOCs meet the requirements of Section 271 (c)(2)(B) of the Telecommunications Act of 1996. To complicate matters further, IXC capital expenditures have been slashed dramatically at the very time they are entering a major data communications upgrade cycle. With RBOCs building out new, more efficient infrastructures as they prepare to enter the LD data services market, the IXCs are under immense pressure to offer enhanced data services or risk losing market share.

IXCs are saddled by disparate legacy networks with high ongoing capital outlay and significant operational costs. These multiple networks also make service bundling and new service offerings a difficult proposition. For IXCs, the key to weathering the RBOC storm and other competitive threats is through data service network architectural efficiencies. The only way to achieve this in a constrained capital environment is by evolving to a more optimal data service network infrastructure.

IXC Data Service Networks: The Road to Complexity

Today's dedicated IXC data service networks result from equipment capabilities available at the time of service deployment. When the data service architecture used to carry today's highly successful ATM and Frame Relay services was defined in the 80s, the Internet's profound impact on commercial networks and business applications was unforeseen. The data service architecture deployed was optimized for circuit-oriented services similar to voice and private line that carried the bulk of communications traffic.

This well-designed architecture supports successful ATM and Frame Relay services that continue to generate billions of dollars in revenues. While these connection-oriented ATM and Frame Relay networks provide sophisticated quality of service and service management, their lack of dynamic connectionless routing make them ill-equipped to support IP-based services.



In the mid-90s, the Internet began its dramatic growth and IXCs rapidly built out new IP networks to meet demand. Unlike the connection-oriented nature of data switches, the Internet uses connectionless routing technology. The routers used to build the Internet were designed to create a dynamic best effort infrastructure without the need for sophisticated quality of service or service management. While this makes Internet routers ideal for supporting dynamically routed services at high speeds, they are ill-equipped to carry ATM and Frame Relay services or guaranteed enterprise IP services alongside Internet traffic.

All IXCs are now faced with dedicated data service networks and a challenging dilemma as they look to the future of their data service network architectures. Highly successful ATM and Frame Relay services generate billions of dollars of revenue. Yet, most applications running over those data service networks contain IP traffic.

IXCs who can migrate over time from multiple, dedicated data service networks to a multi-service edge that ultimately connects into a single IP/MPLS backbone can bring dramatic cost reductions while enabling packet and cell switched services alongside IP routed services. The challenge is to achieve the right balance of strategic investment in IP-based technology while tactically utilizing existing switching equipment.

Typical IXP POP

With each data service depending on discreet network elements, a typical IXC data service network architecture grew into the complex form in place today – with separate networks for each service and layers of devices to groom traffic onto and between service switches and routers. Service-specific cards support a single channel capacity requiring a DACS to groom each circuit to the appropriate card. This results in added cost, unused capacity, and makes service changes difficult to implement. For example, migrating a T1 Frame Relay customer to a DS-3 ATM service requires physically reconfiguring ports on the DACS. At the same time, the separation of switching and routing functions across network elements makes it nearly impossible to introduce new data services with combined switching and routing features. To date, each new service has meant the purchase of a new edge platform with each service usually requiring its own backbone network. IXCs simply cannot afford to continue operating this way.

Migrating to a Multi-service Edge

IXCs can evolve to a more efficient, less complex infrastructure with minimal capital investment by migrating from multiple, dedicated edge devices to multi-service edge router combining the functions of several different types of edge equipment (ATM and Frame Relay switches as well as dedicated Internet and VPN routers) in a single device. A multi-service edge router enables delivery of all data services over any type of access network – from low to high speeds.



Over time, IXCs then have the option of migrating to a single, high-capacity IP/MPLS backbone for optimal network efficiency, leveraging a single core to offer any type of switched or routed service via the multi-service edge router.

The ST™200 Multiservice Edge Router

The ECI Telecom ST200 Service Edge Router is the first device designed from the ground up as a multi-service edge router. The ST200 enables IXCs to immediately transition to a multi-service edge while collapsing their core infrastructure over time by offering compatibility with existing core networks and full interworking of all services across a common IP/MPLS switched core.

Bringing together complete data switching and Internet routing in a single device at the port level, the ST200 bridges the gap between the Internet and switched data networks, while removing device-driven restrictions on carrier service delivery. The ST200 includes a number of innovations designed to give IXCs a competitive edge via more efficient and flexible data service delivery.

Service Agility: The ST200 supports all data services, including MPLS IP VPNs, Internet access, ATM, Frame Relay and Ethernet Layer 2 services. Each customer's traffic is managed independently with dedicated software-configurable traffic policers, queues and schedulers. The ST200 can precisely match the service guarantees (CBR, rt-VBR, nrt-VBR, UBR, CIR) of existing ATM, Frame Relay or Ethernet services to allow IXCs to take advantage of the capacity of their IP/MPLS core to offer bundled services, such as IP-enabled ATM and Frame Relay. The ST200's advanced destination and policy-aware classification and accounting also support evolving Internet services including dedicated Internet access, transit and peering, destination-sensitive accounting and QoS traffic classification via BGP policy. The ST200's highly scalable, Internet-class routing engine ensures seamless interoperation with current IP backbones, for reliable end-to-end service delivery that scales to meet demand without sacrificing features or reliability.

AnyService on AnyPort at AnySpeed: Unlike traditional systems that require specific line cards for specific services, the nimble ST200 features *AnyService on AnyPort at AnySpeed* capabilities, with software-configurable SONET/SDH and AnyRate Gigabit Ethernet interfaces supporting a wide range of speeds and service types in a single channel. This significantly reduces initial and ongoing deployment and sparing costs by decreasing the number of physical interconnects to access networks, enabling the same card to be used for access or trunks, and reducing provisioning time. Flexible OC-3/STM-1, OC-12/STM-4 and OC-48/STM-16 interfaces support any mix of DS-3, OC-3c, OC-12c or OC-48c channels simultaneously, with each channel software-configurable for ATM, Frame Relay, POS/PPP, X.86 Ethernet or TDM transport. This unparalleled level of flexibility eliminates stranded ports and enables interface reuse as access network technologies change and bandwidth demands increase. On-demand service provisioning eliminates the expense of ordering equipment and running new cabling or fibers to turn up customers.



Highly Scalable MPLS IP VPN Support: The ST200 sets a new standard in profitable IP VPN service delivery. This is critical as IP VPNs are a key growth area, yet existing solutions only support small number of customers per device, severely impacting service scalability and profitability. With the ST200, thousands of customer-specific dynamic routing tables can be meshed together using secure connections across a carrier switched backbone to create secure, reliable and scalable IP VPN services.

Integrated Service Management: ECI recognizes that services require more than a smart network element, with intelligent ties to back office provisioning and management systems also required. Unlike traditional carrier switching and routing systems with network management included as an afterthought, ECI built service management into the ST200 from the beginning. Seamless connectivity to back-office and higher-level OSS systems is achieved via advanced APIs with the ShadeTree™ Management Suite, a powerful, integrated service provisioning and management system. The result is dramatically reduced provisioning time and cost as well as improved service and network management through enhanced efficiency, security and reliability.

Conclusion

Though IXCs face unprecedented competitive pressures, they have the opportunity to aggressively counter challengers by moving to a more efficient data service delivery infrastructure. By integrating ST200 service edge routers in strategic POPs, IXCs can realize a range of advantages with minimal capital investment. Legacy equipment is leveraged, while new services are enabled. The penalties for imperfect capacity planning and service transitions go away. Bundled services such as IP-enabled Frame Relay and profitable and scalable IP VPNs are now possible. In summary, no longer are IXCs limited by the capabilities of existing data service delivery equipment. Any type of data service can be offered at any speed over any type of customer access network, giving IXCs the flexibility to offer services in the most efficient way possible.



For more information on ST-series products and ShadeTree Management Suite, go to <http://www.ecitele.com/dnd> or contact one of ECI's local offices listed here:

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About ECI Telecom

ECI Telecom offers future-ready telecommunications solutions that leading carriers and service providers rely on for delivering revenue-generating services to their business and residential customers. With its current products, ECI can deliver a full complement of access-to-edge IP transport solutions today. Known for its ability to translate customer needs into scalable, flexible, cost-effective solutions, ECI helps companies increase the value of their network infrastructure and reduce operating expenses. The company's single-shelf networking systems simplify network deployment and enable Build-as-You-Grow™ next generation telecommunication networks.

The Data Networking Division

The Data Networking Division (DND) adds next-generation IP/MPLS edge routing technology to ECI Telecom's product and services portfolio. DND's edge routers offer full-featured, multi-service support and complete Internet routing in a carrier-class, IP-based platform. ECI's ST-series routers provide the automated subscriber management, reliability, and performance that service providers need to implement advanced, revenue-generating broadband applications, like video on demand or voice over IP.

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