



PTT Data Service Challenges and Opportunities

Solutions Overview



Introduction

In today's challenging telecom environment, it makes sound business sense for PTTs to focus investment in areas with high growth potential and solid margins. In the data service market, there is high demand for IP-oriented services such as IP VPNs as well as bundled services such as IP-enabled ATM and Frame Relay.

Most PTTs have multiple networks based upon a variety of packet-switching technologies. Disparate networks for ATM, Frame Relay, Internet and VPN services require high ongoing capital outlay and significant operational costs. These multiple networks also make service bundling and new service offerings a difficult proposition. Each network also has its own network management platform (either vendor-provided or home-grown), resulting in further complexity.

All PTTs face the dual challenge of tactically expanding their services portfolio and footprint, while strategically investing in a more efficient long-term multi-service packet-based infrastructure. The key to addressing this challenge lies in a multi-service edge with the ST™200 Service Edge Router.

Multiservice Edge Drivers

Since any capital investment must align with market opportunity, a brief look at the drivers of a multi-service edge is required. With a multi-service edge, PTTs gain a dramatically more scalable and flexible infrastructure from which to offer data services.

Extend Existing Services While Adding New Services: A single multi-service edge enables PTTs to profitably expand existing services while adding new services. New services should not be enabled using a "build it and they will come" model, but as a logical expansion of what is already proven to work. Using a single multi-service edge platform, services can be expanded and turned up with small incremental capex, while opex can actually be reduced due to efficiencies gained in service management and through the need for fewer devices.

Increase Services Footprint: The ST™200 Service Edge Router enables PTTs to offer a complete service portfolio by deploying a single physical device in any remote geographic location. Again, this enables service expansion with incremental capital outlay. The flexible ST200 supports any type of switched or routed data service in a single platform, evolving to support future services without additional capital investment.



Realize Operational Efficiencies via a Multi-service Edge: Traditional devices provide either a single data service function (ATM, Frame Relay or LAN switching, IP routing or VPN services) or are built to support a particular range of speeds. The ST200 supports all data services and a range of speeds in one platform. This can dramatically reduce the lifecycle costs associated with network assets.

Integrated Service Management: Services require more than a smart network element, with intelligent ties to back office provisioning and management systems also imperative. 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.

With the high-level benefits opportunities defined, let's delve into specific service examples and opportunities available to PTTs with the ST200 Service Edge Router.

Scale IP VPN Services

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 support small numbers 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.

- **Dramatic Increase in Scalability:** The ST200 supports up to 4 million VRF routes and up to 64,000 VRF tables per router, making it the most scalable IP VPN platform on the market today.
- **PE to CE Dynamic Protocol Support:** Current platforms either limit the link to statically configured address ranges or can only provide dynamic protocol support (OSPF, IS-IS) to a few connections per edge router. The ST200 can support over 2,500 instances of the dynamic protocols, allowing the service to offer this beneficial option to customers. When customers do use dynamic protocols to populate their VRF, PTTs can dramatically reduce the operational cost of manual configurations.
- **Wide Range of Speeds:** The ST200 can scale VPN service from all of the existing lower speed options (64K) up to and including STM-16 (2.5G) in one platform. This scale extends the addressable market to include a "carrier-carrier" service. It also makes it easier to upgrade customers to higher-speed connectivity without having to re-terminate their service on multiple edge platforms.



- **Enable Sophisticated Billing Models:** The ST200 supports per-customer logical interface QoS features in hardware, together with the ability to apply the same sort of destination-sensitive billing mechanisms available for IP transit to IP VPN services. In addition, extensive hardware counters and embedded service management enable customizable IP VPN services.
- **Extensive QoS Support:** MPLS IP VPNs provisioned using the ST200 include the same level of QoS as ATM and Frame Relay services, with wire-speed performance. Software-configurable per-customer queues meet SLAs while providing multiple distinct service classes for each customer. Per-customer traffic shaping delivers precisely the purchased bandwidth. Packet classification and filtering provide differentiated services based on packet markings, IP source/destination or application. Traffic policing and marking allow carriers to create burstable services with guaranteed bandwidth. Weighted random early detection (WRED) congestion management maximizes link utilization and ensures traffic delivery under congestion.

Long Haul Data Service

With the ST200, PTTs can provide a country or European-wide long haul data service that offers customers Ethernet access interfaces (10/100/1000 with or without VLANs) for a point-to-point service with service level guarantees. Another way of looking at it is as an extension service for islands of SHDS customers (an SHDS long haul gateway).

- **High Capacity Service:** Customers can now purchase flexible and high-capacity services with an interface protocol that is familiar to their own operational environment.
- **Protocol Transparency:** The service is truly protocol transparent. Any service that the customer has deployed over their existing LAN infrastructure can now be deployed across the wide area with no application changes or protocol translation.
- **Redundancy:** The ST200 has optional 1+1 redundancy of all components allowing more sophisticated SLAs to be supported than are available on existing platforms.
- **Service Resilience:** By using IP control plane technology, the service can be provided with circuit restoration times of sub 50ms without requiring backup bandwidth to be dedicated to the customer service (1+N sparing of bandwidth).
- **Reduced Service Cost:** To the customer this looks like a leased line service that happens to use their favorite LAN technology. The reality is that it is a packet-based service with all of the bandwidth re-use, operational and service resilience savings that this brings.



High Speed ATM and Frame Relay Service

The ST200 enables PTTs to provide higher-speed options to existing ATM and Frame Relay services. Currently, services are tied to interface speeds. This creates a barrier to consumption because it forces a customer who wants more bandwidth to move to a different service (something that is not typically done willingly). The net result to the service provider is lost revenue. The ST200 breaks the bond between service and interface speed by allowing all services at all speeds. This expands customer choices, enabling them to remain with their chosen technology as their bandwidth requirements increase.

Service Bundling: With the ST200, PTTs can offer bundled services, including IP-enabled ATM and Frame Relay. This allows customers to reap the benefits of IP without moving to a new service. For PTTs, IP-enabled ATM and Frame Relay services are an area of growing demand.

Next-generation Internet Transit Platform

The ST200 enables PTTs to provide profitable Internet transit services by adding value at the service edge.

- **Tiered Services:** The ST200 can support eight queues per port, allowing PTTs to offer tiered services. ST200 modes include: Control, Real Time, Premium Tag, Premium, Best Effort Tag and Best Effort.
- **Burstable Services:** The ST200 can provide dual bucket policing on ingress and dual bucket shaping on egress for every one of the 256,000 virtual ports that a full system can support. PTTs can use this technology to provide a vast range of burstable Internet services.
- **Usage-based billing:** The ST200's always-accurate hardware counters can provide usage-based billing information for more profitable billing models.
- **Destination-Sensitive Billing:** The ST200 supports the counting of packets to community tags or AS number, allowing regional pricing to be applied. For example, traffic destined for the US can be charged at a premium to traffic terminating in the same POP or region from which it originated.

Beyond the benefits described above, the ST200 includes a number of groundbreaking features common to all PTT applications to enable them to offer any type of data service with unmatched flexibility. To leverage significant existing investment, the ST200 integrates with their existing infrastructure to minimize costs and expand service options to increase profitability.



Conclusion

Most operators agree that for data services IP is a key technology and an area for future data services growth. The problem for many network operators is that the technologies historically used to construct the Internet have not been designed to meet the needs of commercial service providers due to a lack of QoS or network management tools. In addition, there is significant investment in connection-oriented architecture supporting 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.

The ST200 combines robust, Internet-scale IP/MPLS routing with guaranteed bandwidth delivery via sophisticated traffic management and QoS (Quality of Service) in a carrier-class, redundant platform. The flexible ST200 supports a range of data and IP-based services by leveraging existing equipment and networks, a requirement in today's capital-constrained environment. This evolutionary approach enables established carriers to cease investment in multiple networks while expanding service offerings to increase profitability.

The ST200 represents a real opportunity for operators to achieve their goals of reducing capex and opex, while at the same time introducing new services and enhancing their existing services portfolio.



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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