



ST™-series Broadband Edge Routers

Combine Performance, Availability and
Routing to Support All Business and
Consumer Broadband Services

Feature Brief



Broadband is experiencing explosive worldwide subscriber growth with users across the globe seeking more Internet bandwidth. Broadband is also evolving from single-service Internet connectivity to an underlying architecture supporting sophisticated consumer and business services. For network operators to compete, they must deploy solutions that can cost-effectively increase bandwidth-per-subscriber while enabling new services to increase profits.

ECI's ST™-series service edge routers are the first broadband platforms architected specifically to deliver high performance across multiple services with many subscribers. The ST-series delivers the most bandwidth-per-subscriber at the lowest cost while enabling dynamic policy-based services without sacrificing performance. And, unlike solutions that require service-specific line cards, ST-series broadband functionality is enabled via its ShadeTree™ System Software, providing wire-speed broadband support on any card installed on the ST platform with no additional hardware required.



Advanced Broadband Applications

Unlike earlier B-RAS (Broadband Remote Access Server) platforms designed to support Internet connectivity only, ECI's ST-Series system architecture was designed with performance, high availability and the comprehensive routing support required to deliver any type of business or consumer service over DSL networks. Only the ST-series enables service providers to offer any type of revenue-generating broadband value-added service to large numbers of bandwidth-hungry users while reducing cost-per-subscriber. Advanced broadband applications enabled by the ST-series include:

Triple Play Services: Excellent performance, per-subscriber QoS and integrated policy management enables the ST-series to deliver video on demand (VoD) or video conferencing services. The ST-series supports IP multicast routing and forwarding to enable wire-speed broadcast video or audio distribution. The ST can also be used to overcome the lack of multicast support in DSLAMs by replicating multicast streams of up to 64,000 subscribers.

Business VPN Services: The ST-series B-RAS allows service providers to offer scalable business services including: Internet, dynamically routed IP VPNs and virtual private LAN service (VPLS) -- all with the bandwidth guarantees, reliability and QoS required to meet stringent business SLAs. With support for 8,000 virtual routers, each with full dynamic routing, the ST-series enables IP VPN service without limitations.

Internet Access, Transit and Peering: The ST-series platform incorporates a complete and robust implementation of Internet routing protocols. With full routing, the ST-series can simultaneously manage sessions; perform backbone routing and dynamic business or wholesale VPN routing. For ISPs, this means the B-RAS platform can make intelligent routing decisions to direct traffic to low-cost BGP peering links instead of costly transit links.

Collapsed Backbone Switching: In addition to performing session management, the ST-series is capable of natively switching ATM circuits or Ethernet VLANs. Integrated switching enables a number of cost-saving applications including: native ATM or Ethernet aggregation and services, ATM or Ethernet switch interconnect, transparent LAN interconnect for VoIP gateways and controllers or voice trunk switching using Circuit Emulation Services (CES).



Broadband-Enabling ST-series System Architecture

Performance without Compromise: The ST-series B-RAS delivers leading performance across multiple dimensions: number of subscribers, bandwidth and breadth of services. With support for an industry-leading active 100,000 subscriber sessions with full QoS per subscriber, the ST-series delivers the bandwidth-per-session required to maximize revenue and deliver advanced services. Using dual 10 Gbps uplinks, the ST-series can deliver a sustained 150 Kbps per subscriber across all sessions -- critical for bandwidth-hungry services like video on demand, content delivery, business VPNs and gaming.

Distributed Redundant Hardware: The NEBS Level 3-compliant distributed ST-series hardware architecture ensures that functionality is allocated to multiple components, eliminating any single point of failure and enhancing broadband performance. All common equipment is redundant and hot-swappable for maximum uptime and reliability, including: Route Control Processors (RCPs), System I/Os (SIOs), Packet Switching Fabrics (PXF), power supplies and fan trays. This level of device redundancy eliminates the need for dual router configurations, simplifying network infrastructures and significantly reducing capital and operational expenditures.

ShadeTree High Availability Software: ECI's ShadeTree System Software delivers unmatched reliability, scalability and service flexibility. Advanced recovery capabilities -- including ECI's Instant Versioning hitless software patches, non-stop forwarding, fast re-route and graceful restart -- ensure the system is always available, even under extreme conditions.

Dynamic Policy Management: The ShadeTree Management Suite, an element management system that offers service provisioning and policy management, enables advanced IP-based services over DSL, while allowing dynamic self-provisioning of services via web portals or other applications.

Hierarchical Scheduling: The ST-series provides hierarchical scheduling, per the DSL Forum TR-59 architecture, to rate-match downstream ports on aggregation switches and DSLAMs. This ensures that multiple services can be delivered on each customer session without encountering downstream congestion in the access network.

Unmatched Interface Flexibility: Unlike platforms that require specific line cards for specific services, the ST-series features *AnyService on AnyPort @ AnySpeed* capabilities, with software-configurable SONET/SDH and any rate Gigabit Ethernet interfaces that support a wide range of speeds and service types in a single channel. This unparalleled level of flexibility reduces sparing costs, eliminates stranded ports and enables interface reuse as access network technologies change and bandwidth demands increase.

ST-series Broadband Highlights

Industry-leading Performance

- 100,000 active PPP or DHCP sessions
- 8,000 virtual routers (VRFs) with dynamic routing (OSPF, BGP or RIP)
- 80 Gbps full-duplex throughput (not limited by special-purpose service modules or centralized routing engines)

Policy Management

- Dynamic per-session QoS
- Hierarchical scheduling

Full AAA Support

- PAP/CHAP
- RADIUS or local accounting
- DHCP Option 82

IP Multicast for Audio or Video Broadcast

- Up to 64, 000 members per IP multicast group
- PIM sparse mode
- MBGP
- IGMPv2/3

Highly Reliable

- Distributed redundant hardware
- Hitless software upgrades
- Non-stop forwarding
- Modular ShadeTree System Software

Comprehensive Routing

- BGP-4
- IS-IS-TE, OSPFv2, RIPv1, RIPv2
- LDP, RSVP-TE
- MPLS IP VPNs

Automated Provisioning

- Dynamic sensing of active network interfaces (Ethernet VLANs, Q-in-Q, or ATM VPS/VCS)
- Captive portal support enables subscriber self-service
- Policy management enables dynamic changes to user service attributes



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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