Multirate Ethernet Card with Layer 2 Functionality for the SN 9000

Maximum Flexibility for Carrier-Class EPL and EVPL Services

Empowering Ethernet Versatility

While simplicity and cost savings drive continued interest in network-wide Ethernet, the challenge for network operators is how to achieve these benefits without disrupting existing revenue streams or introducing further complexity into the network. Sycamore responded, as our customers have come to expect, with a practical solution: packet-optimized technology that empowers cost-effective network evolution while simplifying multiservice provisioning and ensuring carrier-class availability.

The Multirate Ethernet Card with Layer 2 (MRE L2) functionality for the SN 9000 expands the rich diversity of circuit/packet services supported by Sycamore's next-generation multiservice switching platform to include Ethernet line rates from 10/100/1000 Mbps to 10 Gigabit Ethernet. On a single card, this solution provides Ethernet transport for optical and electrical services at multiple line rates and enables carrier-class Ethernet Private Line (EPL) and Ethernet Virtual Private Line (EVPL) services with SONET/SDH reliability. Support for Generic Framing Procedure (GFP), Link Capacity Adjustment Scheme (LCAS), high and low-order Virtual Concatenation (VCAT), Configurable flow rate descriptors (CIR, CBS, EIR and EBS) and Virtual LAN (VLAN) tags reflects our commitment to standards-based interoperability and further enhances the SN 9000's circuit/packet versatility and scalability. Sycamore's high-density next-generation switching platform efficiently aggregates and grooms multirate Ethernet, packet, and circuit traffic, with hierarchical protection and mesh restoration options. By creating a converged multiservice architecture without forklift upgrades or multiple overlay networks, the SN 9000 substantially reduces network ownership costs – and brings new, revenue-generating voice, data, and video services to life.

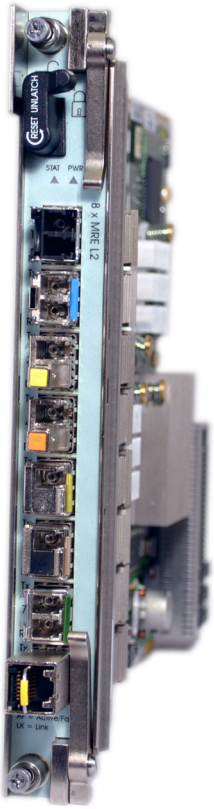
Increasing Operational Simplicity

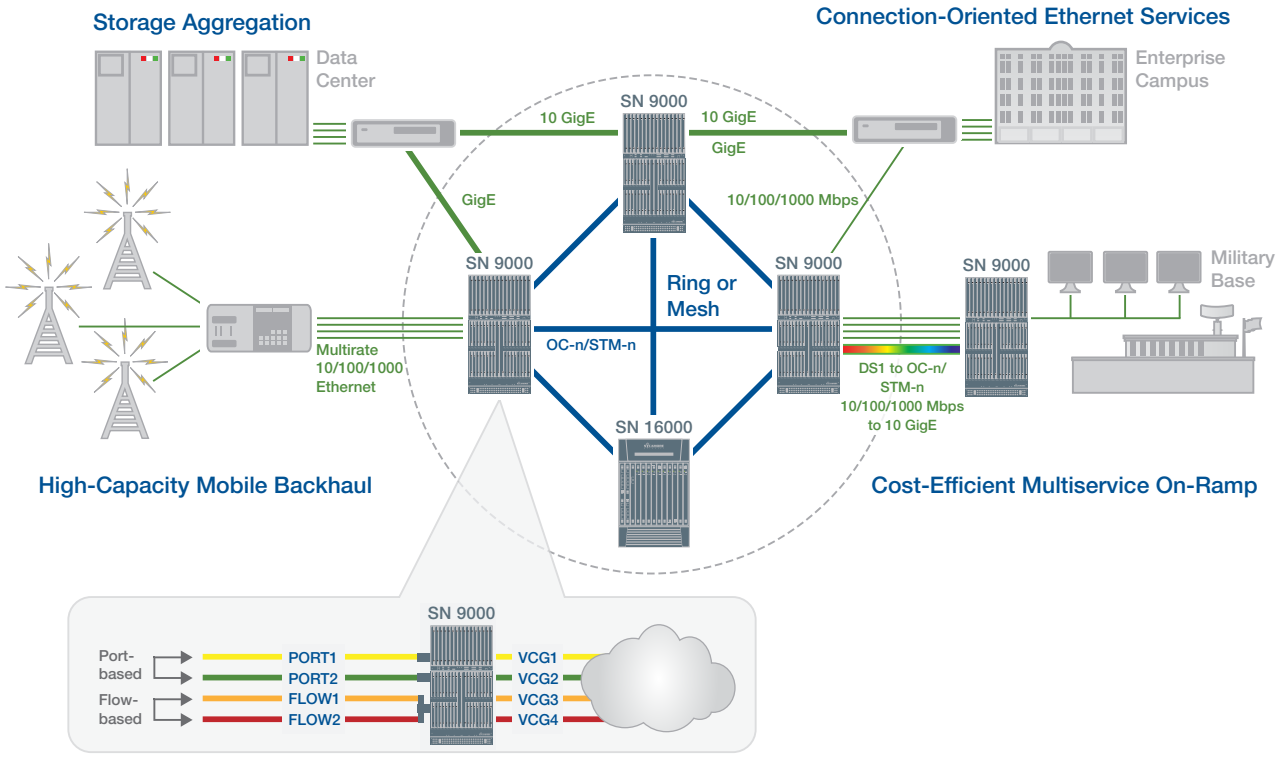
The 8-port MRE L2 service interface module (SIM) occupies a single slot and can be placed in any of the SN 9000's 32 universal card slots. The card uses small form-factor pluggables (SFPs) to support 10/100/1000 Mbps electrical and 100 Mbps or 1 GbE optical Ethernet interfaces. Each port can be provisioned for a different type of Ethernet service, depending on the attributes of the chosen SFP. Network operators select interfaces from a variety of pluggable modules to meet the specific requirements of each site, and can choose Ethernet pluggable optical modules (POMs) for use on the SN 9000 from among SFPs already available for Sycamore's SN 16000 Intelligent Optical Switch.

The exceptional interoperability and configuration flexibility built into the SN 9000, enhanced by the MRE L2 card, lowers initial capital outlay and reduces recurring expenses by minimizing sparing and simplifying maintenance and training. A modular, pay-as-you-grow architecture supports a flexible mix of services – including 10/100/1000 Mbps and 10 Gigabit Ethernet rates, high and low order SONET/SDH, and high order gateway functionality.

Features and Benefits

- Enables Pay-as-You-Grow Configuration Flexibility
- Reduces Operational Costs and Complexity
- Enhances Scalability of Multiservice Networks
- Simplifies Network Design, Upgrades, and Sparing
- Expands Range of SN 9000 Ethernet Support





The SN 9000 Multirate Ethernet Layer 2 (MRE L2) Card Expands Multiservice Flexibility
The Multirate Ethernet Layer 2 Card supports 10/100/1000 Mbps electrical and 100 Mbps or 1 GbE Optical Ethernet on a single card, enables carrier-class Ethernet Private Line and Ethernet Virtual Private Line services, and adds another dimension to the exceptional configuration flexibility of the SN 9000 Intelligent Multiservice Switch.

Expanding Ethernet Service Options

The MRE L2 Card for the SN 9000 enables carrier-class Ethernet Private Line (EPL) port-based and Ethernet Virtual Private Line (EVPL) VLAN flow-based services, as defined by the Metro Ethernet Forum (MEF), by providing a point-to-point Ethernet connection between a pair of User Network Interfaces (UNIs) or point-to-multipoint Ethernet transport with a high degree of transparency. Sycamore EPL and EVPL implementations incorporate GFP, high and low-order VCAT, LCAS standards, and VLAN tags to optimize capacity utilization, allow dynamic bandwidth adjustments, and improve multi-vendor interoperability. Comprehensive Ethernet and SONET/SDH performance monitoring statistics help ensure compliance with service level agreements (SLAs). The SN 9000's Ethernet services map Ethernet traffic from the source endpoint onto SONET/SDH signals for transport over the network to the destination endpoint, which can be either SONET/SDH or Ethernet. Path termination and flow control are supported in either topology.

Exploiting the Intelligent Advantage

The SN 9000 brings all the advantages of Sycamore network intelligence to Ethernet transport. Simplified end-to-end provisioning, flow control, mesh survivability, and enhanced performance management features of SILVX® NMS and BroadLeaf® control plane software – shared across Sycamore switching platforms – add up to easier customization and assured service delivery. For example, SILVX, in combination with VCAT and LCAS, allows hitless on-demand bandwidth adjustments for time-of-day and scheduled bandwidth services. SILVX also simplifies Virtual Concatenation Group and constituent circuit management with user-friendly displays of Ethernet performance statistics.

As another powerful tool in Sycamore's edge-to-core portfolio of intelligent Ethernet transport solutions, the MRE L2 Card expands the SN 9000's support for both port-based and flow-based Ethernet transport via high and low-order services, enabling seamless circuit/packet convergence in evolving multiservice networks. Leveraging existing infrastructure to create dynamic, scalable networks protects the integrity of revenue-generating TDM and circuit traffic and ensures carrier-class availability. At the same time, the SN 9000 forms a foundation for greater Ethernet/IP service flexibility and competitive differentiation, empowering fixed line and mobile operators to quickly upgrade network infrastructure and improve the bottom line.

For more information about our intelligent networking products and solutions, please contact your Sycamore Sales Representative.

SPECIFICATIONS HIGHLIGHTS

8x Multirate Ethernet Layer 2 Card

- 8 ports per card
- Port speed 10/100/1000 Mbps electrical and 100 Mbps or 1 GbE Optical
- Traffic policing on Layer 2 flows - Port-based and flow-based
- VLAN Tags with up to 64 flows per port
- VCAT granularities of STS-1/AU-3, STS-3c/AU-4, VT1.5/VC11, VT2/VC12 and TU3 with up to 48 VCAT groups per card
- Configurable flow rate descriptors (CIR, CBS, EIR and EBS) for traffic management
- Pause Frame Support
- EoS encapsulation: Generic Framing Procedure - Framed (GFP-F)
- Link Capacity Adjustment Scheme (LCAS)
- Configurable Frame sizes from 64 to 9600 bytes
- Performance Monitoring (Current, 15 Min, 96 most recent 15 Min, 24 Hr Current and Previous Statistics)
- Equipment and facility port loopbacks
- Single-width card
- Usable in any of 32 multiservice slots
- Up to 28 cards or 224 ports per system
- Power: 42 watts maximum per card

Small Form-Factor Pluggables (SFPs)

• 100BASE-FX SFP	1 x 100BASE-FX SFP, 2 KM, MMF, 1310nm POM
• 100BASE-LX10 SFP	1 x 100BASE-LX SFP: Long wavelength, 10 KM, SMF, 1310nm POM
• 100BASE-BX10-D SFP	1 x 100BASE-BX10-D SFP: 10 KM, Bi-directional, long wavelength downstream, 1550nm POM
• 100BASE-BX10-U SFP	1 x 100BASE-BX10-U SFP: 10 KM, Bi-directional, long wavelength upstream, 1310nm POM
• 10/100/1000BaseT	1 x 10/100/1000BaseT Ethernet PIM
• 1000 Base-SX SFP	1 x GigE SFP POM (1000BASE-SX)
• 1000 Base-LX SFP	1 x GigE SFP POM (1000BASE-LX)
• 1000 Base-ZX SFP	1 x GigE SFP POM (1000BASE-ZX)

Optical Protection Switching Types

- Linear, Ring, Mesh, Hybrid
- 1+1 Linear APS/MSP
- UPSR/SNCP
- 1+1 Path Protected
- Dynamic Source Reroute
- Unprotected (0 +1)
- Per port, software configurable

Management Software

- Node Management – SilvxSource®
- Network Management – SilvxManager®

Regulatory and Standards Compliance

- IEEE 802.3 Ethernet
- IEEE 802.3z Gigabit Ethernet
- IEEE 802.1q VLAN Tag
- IEEE 802.3ad Link Aggregation
- ITU-T G.7041 Generic Framing Procedure
- ITU-T G.707 Virtual Concatenation
- ITU-T G.7042 Link Capacity Adjustment Scheme
- Telcordia GR-253-CORE (SONET)
- ITU-T G.957 Optical Interfaces (SDH)

For a complete list of SN 9000 product specifications, please see the SN 9000 Datasheet or Product Brief, or contact your Sycamore Sales Representative.

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Sycamore Networks, Inc. (NASDAQ: SCMR) is a leading provider of intelligent bandwidth management solutions for fixed line and mobile network operators worldwide. From multiservice access networks to the optical core, Sycamore products enable network operators to lower overall network costs, increase operational efficiencies, and rapidly deploy new revenue-generating services.

Certified System ISO 9001:2008