Metrobility R821
10/100Mbps Services Line Cards

Multi-service Optical Ethernet Demarcation Point

The R821-11 and R821-1S Services Line Cards are supported in the Metrobility R5000, R1000, R400 or R200 (shown) platforms.

Product Highlights

- Advanced VLAN Aware Bridging
- Q-in-Q VLAN Tagging
- Traffic Prioritization
- Bandwidth Provisioning and Rate Limiting
- Patent-pending Logical Services Loopback
- Copper Line Quality
- SFP Optics Support CWDM and BWDM options
- MEF 9 Certified
- NEBS Level 3 Certified

The Metrobility® R821 Services Line Card by Telco Systems provides an intelligent optical Ethernet demarcation point for service providers who are deploying Ethernet in the First Mile. As a carrier-class device, the Services Line Card enables multi-service delivery across a provisioning framework. Applications are prioritized over different traffic-engineered paths; multi-level operations, administration and maintenance (OAM) is used to measure and ensure provisioned SLAs; and embedded security controls ensure protection against denial-of-service attacks.

The 10/100Mbps Services Line Card offers multiple management schemes to provide service providers with a choice of direct internet-standard management using SNMP, remote CLI, IEEE 802.3ah, or a more robust, secure, scalable and flexible proxy-based management through the NetBeacon® ESP Element Manager.

Transport OAM via IEEE 802.3ah
The IEEE 802.3ah OAM protocol is used to provide proactive health and status information on individual links. Transport OAM management features provide keep-alives for transparent service monitoring, MIB statistics, errored frame events, and "Dying Gasp" capabilities.

Vendor extensions to the IEEE standard provide monitoring of optical amplitude, line card voltage and power, equipment temperature, rate limiting and RMON statistics. The Services Line Card will respond to these vendor-specific requests from another 802.3ah device that would proxy to an EMS System. Since the device has no IP address, the device is less vulnerable to denial of service attacks than traditional IP-based management such as PING and SNMP and prevents against the propagation of management IP addresses.

Interconnectivity OAM via SNMP and PING
Standards-based frameworks and protocols provision and manage the services line card. This provisioning enables service providers to use any off-the-shelf management system to manage the device as an independent network element with its own IP address by using SNMP, Telnet/CLI, and IP PING.

The Services Line Card may be assigned an IP address, or it may be obtained dynamically through DHCP or using 'zeroconf.' A set of MIB-II and vendor-specific managed objects are accessible by and available to any SNMP-based management stations over UDP/IP.

Services OAM
Advanced Layer 2 networking allows service providers total flexibility in the deployment, provisioning and delivery of Ethernet services. With configurable traffic transparency, including single and double VLAN-tagged Ethernet frames, four service classes, four EVCs, and dynamic bandwidth allocation, the R821 supports both traffic control and security at the customer edge. ■

Metrobility R821 10/100Mbps Services Line Cards

Configurations
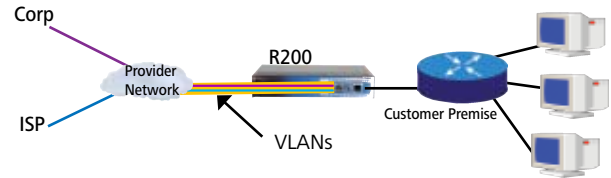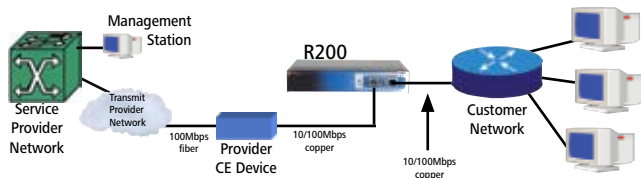
Out-of-Franchise Service Demarcation

The Metrobility R821-11 SLC is a customer-located, copper-to-copper 10/100Mbps Ethernet demarcation device that allows service providers to monitor services being delivered to their customers when the first mile is leased from another carrier. The R821-11 enables the out-of-franchise provider to determine the quality of service being delivered to his customer in order to verify service level agreements. Using Metrobility's Logical Services Loopback, traffic can be monitored and measured to determine connectivity and link integrity. With the R821-11, the provider can now determine if the problem lies at the customer's network or the carrier's network.

Standards-based Multi-service Delivery

The R821 Services Line Card supports delivery of Metro Ethernet Forum (MEF)-defined point-to-point E-Line and multi-point E-LAN services. Traffic belonging to each service is classified by VLANs for segregation and transport across carrier networks. Controlled at the 10/100Mbps Services Line Card, VLANs create an EVC, and determine corresponding prioritization and traffic management parameters for the associated traffic. Service provider management traffic is given higher priority than user data traffic.

Ordering Information

Platform and Power Supplies

Part Number	Description
R821-1S	10/100BASE-T RJ-45 to 1000BASE-X LC SFP (requires 1 pluggable optic*)
R851-11	10/100BASE-T RJ-45 to 10/100BASE-T RJ-45

Accessories

R8000-CA	Console Cable

Platform Options

R5000-17HS	17-slot platform with two bays for optional AC/DC power supplies
R1000-AF, -AR	2-slot platform with one AC front or rear-facing power supplies
R1000-DF, -DR	2-slot platform with one DC front or rear-facing power supplies
R1000-AAF, -AAR	2-slot platform with two AC front or rear-facing power supplies
R1000-DDF, -DDR	2-slot platform with two DC front or rear-facing power supplies
R400-2HS-1A	2-slot platform with single external AC power supply
R200-AC	1-slot platform with single internal AC power supply
R200-DC	1-slot platform with single internal DC power supply

Management

NBESP-99, -249, -UNLIMITED	NetBeacon ESP Element Management Software

*See user manual for list of recommended pluggable optics

Specifications

Environmental

Oper. Temp.	0°C to 50°C
Oper. Humidity	5% to 95% non-condensing
Storage Temp	-25°C to 70°C

Regulatory (Safety/EMC)

NEBS Level 3
UL, CSA, CE, CB
EN60950 (safety)
FCC Part 15 Class B
ICES-003 Class B (emissions)
EN55022 Class B (emissions)
EN55024:1998 (immunity)
IEC 825-1 Classification (eye safety)
Class 1 Laser Product (eye safety)

Features and Benefits

- Flexible, user-selectable, multi-level management options
- Intelligent management access controls
- Loopback testing for service verification:
  - Hard loopback
  - IEEE 802.3ah OAM loopback
  - Patent-pending Logical Services Loopback (LSL)
  - Port Loopback (Source/Destination MAC address swap)
  - VLAN Loopback (Source/Destination MAC address swap)
- Extensions to 802.3ah OAM
  - Real-time statistics to enable Quality of Line monitoring
  - Remote real-time monitoring of optical power budgets
- Copper Line Quality verifies customer-facing link
- Supported distances up to 100km
- Line rate forwarding
- Copper port supports 10/100Mbps auto-negotiation
- Secure Console port provides local access for configuration and upgrades

SPECIFICATIONS

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