Ciena

Experience. Outcomes.

3903
Service Delivery Switch

Ciena's 3903 Service Delivery Switch (SDS) is an advanced Ethernet business demarcation platform in a compact form factor.

The 3903 is designed for small and medium business applications requiring reliable GbE services that comply with the latest MEF CE2.0 certifications to ensure Service Level Agreements (SLAs) that meet the industry's latest service standards. Based on the widely deployed Service-Aware Operating System (SAOS) used across Ciena's service delivery and aggregation switches, the 3903 provides operational efficiency and consistent system and service attributes that minimize the effort of deployment and operation.

Dual GbE NNI ports allow dual homing or ring-based deployments that minimize downtime in business-critical installations, and remain cost-effective as bandwidth requirements grow. The small size and quiet operation permit deployment in even the closest of quarters. The deployment flexibility afforded by zero-touch provisioning translates into quick activation and enhanced customer satisfaction.

The 3903 includes Ciena's performance test hardware engine to provide RFC2544 and Y.1564 benchmark performance test capabilities, enabling full line-rate, customer traffic measurements end to end across the Ethernet Virtual Circuit (EVC). This dramatically lowers OPEX by eliminating the need for on-site personnel and adjunct test equipment. Performance testing also improves end-customer satisfaction by enabling the Network Operations Center (NOC) to be very responsive to SLA impacts and increasing the performance metrics available for end-customer SLA reporting. Coupled with Ciena's zero-touch provisioning, the 3903 optimizes first-in cost as well as TCO.

Customer Benefits

Ciena's 3903 provides a single-box solution for access, service delivery, and in-depth management. Positioned at the customer demarcation point, it allows service providers to efficiently create, deploy, manage, and maintain the services their customers

Features and Benefits

- Provides advanced Carrier Ethernet services for small and medium business applications, powered by Ciena's SAOS

- Supports two 100/1000 Base-X SFP ports and a combo port supporting 100/1000 Base-X SFP and RJ-45 10/100/1000 Base-T

- Enables dual-homed or ring-based topologies for highly reliable MEF CE2.0 services

- Delivers lowest Total Cost of Ownership (TCO) with zero-touch provisioning features

- Incorporates on-board RFC 2544 performance benchmark testing capabilities, enabling end-to-end SLA verification without a truck roll

- Includes sophisticated OAM capabilities:
  - RFC 2544 Generator and Reflector for Performance Measurement
  - IEEE 802.3ah Link Layer OAM
  - IEEE 802.1ag Connectivity Fault Management
  - ITU-T Y.1731 Performance Monitoring: Delay, Jitter, Loss
  - IETF RFC 5618 TWAMP Sender and Responder for L3 SLA Monitoring

- Offers dual built-in AC or DC power supplies in a space-efficient 1RU package and is desk-, wall-, or rack-mountable

increasingly demand, all while reducing capital expenditures. It enables quick deployment, high reliability, and the ultimate in Carrier Ethernet service quality.

The small, slim design enables the 3903 to be deployed in a variety of indoor environments as determined by end-user circumstances, while delivering the small footprint and low noise characteristics appreciated in today's busy office environments, including single-tenant or MTU/MDU scenarios.

The comprehensive OAM and Ciena SAOS on the 3903 enable network operators to create and manage scalable service offerings that leverage the cost-effectiveness of Ethernet technology to generate maximum revenue, at any or all endpoints in the network.
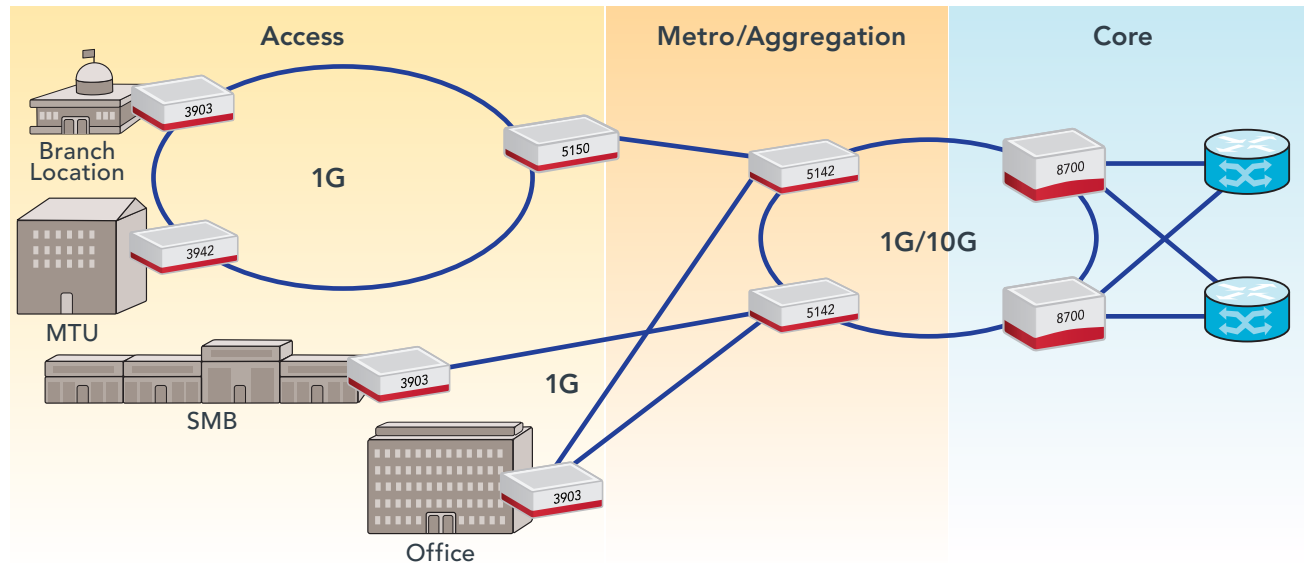

Figure 1. Example of a resilient Ethernet Business Services architecture

Technical Information

Interfaces

Interfaces
2 x 100/1000M SFP NNI/UNI ports
1 x 10/100/1000M RJ-45; 100/1000M SFP UNI
  combo port
1 x Console Port (RJ-45, EIA-561)

Ethernet

IEEE 802.3 Ethernet
IEEE 802.3z Gigabit Ethernet
IEEE 802.3ab 1000Base-T
IEEE 802.3u 100Base-TX
IEEE 802.1D MAC Bridges
IEEE 802.1Q VLANs - Including .1p Priority
IEEE 802.1ad Provider Bridging (Q-in-Q) VLAN full
  S-VLAN range
VLAN tunneling (Q-in-Q) for Transparent LAN
  Services (TLS)
Per-Port MAC Learning Control
Rapid / Multiple Spanning Tree (RSTP/MSTP)
IEEE 802.3ad Link Aggregation Control Protocol
  (LACP)
ITU-T G.8032 Ethernet Rings Protection
  Switching

Jumbo Frames to 9216 bytes
Layer 2 Control Frame Tunneling
Private Forwarding Groups
MEF CE 2.0 Compliant
E-LINE: EPL, EVPL
E-LAN: EP-LAN, EVP-LAN
E-Access: Access EPL, Access EVPL
E-Tree: EP-Tree, EVP-Tree

Carrier Ethernet OAM

IEEE 802.1ag Connectivity Fault Management
  (CFM)
IEEE 802.3ah Ethernet in the First Mile (EFM)
IEEE 802.1AB Link Layer Discovery Protocol
  (LLDP)
ITU-T Y.1731 Performance Monitoring
RFC 2544 Performance Benchmarking Test
  Generation and Reflection up to 1GE
ITU-T Y.1564 Ethernet Service Activation Test
  Methodology
RFC 5618 TWAMP Responder and Receiver
TWAMP Sender
TWAMP +/- 1ms timestamp accuracy
Dying Gasp with Syslog and SNMP Traps

Quality of Service

8 Hardware Queues per Port
Committed, Excess Information Rate (CIR, EIR)
Classification based on
IEEE 802.1D priority
VLAN, source port, destination port
IP Precedence and IPDSCP
Layer 2, 3, 4 Quality of Service
Ingress metering per-port
Ingress metering per-port per-CoS
Ingress metering per-port per-VLAN
Up to 1,000 Ingress Meters per-port
Up to 1,000 Ingress Meters per-system
C-VLAN Priority to S-VLAN Priority Mapping
S-VLAN Priority based on C-VLAN ID
Per-VLAN Classification, Metering, and Statistics
Per-port, per-VLAN QoS with CIR and EIR traffic
  on Egress Queues

Multicast Management

RFC 2236 IGMPv2 Snooping
IGMPv3 PDU support
IGMP Domains
IGMP Message Filtering
IGMP Inquisitive Leave
Broadcast/Multicast Storm Control

Technical Information continued

Unknown Multicast Filtering
Well-known Protocol Forwarding

Network Management

Enhanced CLI
CLI-based configuration files
SNMPv1/v2c/v3
SNMPv3 Authentication and Message
    Encryption
RFC 1213 SNMP MIB II
RFC 1493 Bridge MIB
RFC 1643 Ethernet-like Interface MIB
RFC 1573 MIB II interfaces
RFC 1757 RMON MIB - including persistent
    configuration
RFC 2021 RMON II and RMON Statistics
Per-VLAN Statistics
RADIUS Client and RADIUS Authentication
RFC 2866 RADIUS Accounting
TACACS+ AAA
RFC 2131 DHCP Client
RFC 3315 DHCP for IPv6 (DHCPv6)
RFC 6221 Lightweight DHCPv6 Relay Agent
    (LDRA)
RFC 1305 NTP Client
RFC 1035 DNS Client
Telnet Server
RFC 1350 Trivial File Transfer Protocol (TFTP)
RFC 959 File Transfer Protocol (FTP)
Secure File Transfer Protocol (SFTP)
Secure Shell (SSHv2)
Syslog with Syslog Accounting
Port State Mirroring
Virtual Link Loss Indication/Remote Link Loss
    Forwarding (VLLI/RLLF)
Dual-Stack IPv4/IPv6 management plane
Local Console Port
Comprehensive Management via Ethernet
    Services Manager
Remote Auto configuration via TFTP, SFTP
Software download/upgrade via TFTP, SFTP

Service Security

Common Criteria EAL2 compliant and certified
Egress Port Restriction
IEEE 802.1X Port-Based Network Access
    Control (RADIUS/MD5)
Layer 2, 3, 4 Protocol Filtering
Broadcast Containment
User Access Rights
Per-port or per-VLAN Service Access Control
Hardware-based DOS Attack Prevention

MAC Address Table Capacity

16,000 MAC addresses

Power Requirements

Two built-in redundant power supplies
DC Input: -48, -/+ 36, -/+24 VDC (nominal)
AC Input: 100V, 240V AC (nominal)
AC Frequency: 50/60 Hz
Maximum Power Input: 52W

Agency Approvals

Agency Marks:
    NRTL (Canadian Standards Association)
    CE mark (European Union)
        EMC Directive (2004/108/EC)
        LVD Directive (2006/95/EC)
    RoHS2 Directive (2011/65/EU)
    Australia RCM (Australia/New Zealand)
    VCCI (Japan)
Emissions: FCC Part 15 Class B
    Industry Canada ICES-003 Class B
    VCCI Class B
    CISPR 22 Class B
    EN 55022
    GR-1089 Issue 6
Immunity (EMC):
    CISPR 24

EN 55024
EN 300 386
Power: ETSI EN 300 132
Safety: EN 60950-1
    CAN/CSA C22.2 No. 60950-1-07
    UL 60950-1 2nd Ed
    IEC 60950-1
Environmental:
    RoHS2 Directive (2011/65/EU)
    WEEE 2002/96/EC

Environmental Characteristics

GR-63-CORE, Issue 4 – NEBS Level 3
ETSI 300 019 Class 1.2, 2.2, 3.1
Operating Temperature:
23°F to +113°F (-5°C to +45°C)
Storage Temperature:
-40°F to +158°F (-40°C to +70°C)
Relative Humidity:
5% to 90% (non-condensing)

Physical Characteristics

Mounting: Wall, desktop, rack
Dimensions:
8.5" (W) x 8.0" (D) x 1.5" (H)
216mm (W) x 204mm (D) x 38mm (H)
Weight: 3.0lbs; 1.4kg

Ordering Information

Part Number	Product Description
170-3903-900	3903, (2) 100M/1G SFP, (1)100M/1G SFP/RJ45, Dual AC Power, Req. Power Cable
170-3903-901	3903, (2) 100M/1G SFP, (1)100M/1G SFP/RJ45, Dual DC Power
Software	
Required OS Base System Perpetual Software Licenses	
S70-0020-900	SAOS Advanced Ethernet Perpetual Software License for 3903 System
S70-0020-901	SAOS Advanced OAM Perpetual Software License for 3903 System
Optional OS Applications	
170-0204-900	SAOS Advanced Security Perpetual Software License for use with SAOS 6.X
ESM Related	
S70-0021-900	ESM Carrier ED Right to Manage Perpetual Software License for 3903
Cables	
170-0062-900	EIA-RJ45M Standard to Cisco RJ45F Serial Port Adapter, 6 in
170-0063-900	DB9F to EIA-RJ45M Standard, 6 ft Serial Console Cable
170-0064-900	DB9M to EIA-RJ45M Serial Port Adapter, 6 in
Mounting and Brackets	
170-0109-900	19 Inches Rack Mount Ears, For Use w/3903
170-0105-900	23 Inches Rack Mount Ears, For Use w/3903

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