

XYZ Networking Services LTD

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Equipment Engineering Data Sheet
Product: Ciena 3940
Written by: Daniel Jones

Ciena Corporation
1201 Winterson Road
Linthicum, MD 21090
1-800-207-3714
1-800-243-6224 (Support)
www.ciena.com

This document is for a brief overview of the Ciena 3940 device, its technical capabilities, rack installation points, and power consumption and connections.

The Ciena 3940 are deployed at the network edge (site level) and provide access for microwave, telco, and WiMax RAN networks. The Ciena 3940 is a 24 port 100/1000 chassis that has both RJ45 and SFP ports available. 20 of the ports are UNI use and 4 of the ports are 100/1000 NNI/UNI. The switch uses PBB-TE (IEEE 802.1Qay) to encapsulate and forward data on the Layer 2 network.

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Refer to the ECN for specific SFP and port assignment details when possible.



Technical Information

Interfaces

4 x 100/1000M SFP/RJ-45 NNI/UNI ports 20 x 100/1000M SFP/RJ-45 UNI ports

1 x 10/100/1000M RJ-45 Management port

1 x Console Port (EIA-232, DB9)

Ethernet

IEEE 802.3 Ethernet

IEEE 802.3u Fast Ethernet

IEEE 802.3z Gigabit Ethernet

IEEE 802.1D MAC Bridges

IEEE 802.1Q VLANs - Including .1p Priority

IEEE 802.1ad Provider Bridging (Q-in-Q) VLANs with full S-VLAN range

VLAN tunneling (Q-in-Q) for Transparent LAN

Services (TLS)

Single and double VLAN tag translations on ingress and egress

Per VLAN MAC Learning Control Per-Port MAC Learning Control

IEEE 802.3ad Link Aggregation Control

Protocol (LACP)

Jumbo Frames to 9216 bytes

Layer 2 Control Frame Tunneling

ITU-T G.8032 Ethernet "Ring" Protection Switching

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 Ethernet OAM - Performance Monitoring

RFC 5618 TWAMP Responder and Receiver TWAMP Sender

TWAMP +/- 1ms timestamp accuracy Dying Gasp with Syslog and SNMP Traps

PBB-TE (Provider Backbone Bridging-Traffic Engineering)

IEEE 802.1Qay PBB-TE IEEE 802.1ah PBB frame format PBB-TE Multi-homed Protection Failover IEEE 802.1ag CFM for PBB-TE Tunnels IEEE 802.1ag CFM for PBB-TE Service

Quality of Service

8 Hardware Queues per Port Committed and Excess Information Rate (CIR and EIR)

Per-port per-VLAN QoS with CIR and EIR traffic on Egress Queues

Classification based on IEEE 802.1D priority Classification based on VLAN, source port, destination port, TCP/UDP port

Classification based on IP Precedence and IP DiffServ Code Point (DSCP)

Ingress metering per-port Ingress metering per-port per-CoS Ingress metering per-port per-VLAN Up to 64 Ingress Meters per port Up to 512 Ingress Meters per system Configurable metering burst size Configurable L2 frame bandwidth calculation

Per-Port RED Egress Queuing Egress Shaping and Scheduling

Traffic Profile on Port/C-VLAN ID/C-VLAN Priority Marking

L2 Priority mapping from IP DSCP/TOS IP DSCP/TOS priority mapping from L2 Priority C-VLAN Priority to S-VLAN Priority Mapping S-VLAN Priority based on C-VLAN ID Per-VLAN Classification, Metering, and Statistics

Multicast Management

RFC 2236 IGMPv2 Snooping

IGMP Domains

IGMP Message Filtering

IGMP Inquisitive Leave

Broadcast/Multicast Storm Control

Unknown Multicast Filtering

Well-known Protocol Forwarding

Network Management

Enhanced CLI

CLI-based configuration files

SNMP v1/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 - inc. persistent configuration

RFC 2021 RMON II and RMON Statistics

Per-VLAN Statistics

RADIUS Client and RADIUS Authentication

TACACS+ AAA

RFC 2131 DHCP Client

RFC 1305 NTP Client

RFC 1035 DNS Client

Telnet Server

Secure File Transfer Protocol (SFTP)

RFC 1350 Trivial File Transfer Protocol (TFTP)

Secure Shell (SSHv2)

Syslog with Syslog Accounting

Port State Mirroring

Local Console Port

Comprehensive Management via Ethernet Services Manager

Remote Autoconfiguration via FTP, TFTP, SFTP Software download/upgrade via FTP, TFTP, SFTP

Service Security

802.1x Port-based Network Access Control **Egress Port Restriction** Layer 2, 3, 4 Protocol Filtering

Broadcast Containment

User Access Rights

Per-port or per-VLAN Service Access Control Hardware-based DOS Attack Prevention Hardware-based Access Control Lists (ACLs)

MAC Address Table Capacity

16,000 MAC addresses

Power Requirements

Redundant hot-swappable AC or DC

power supplies

AC Input: 100V to 240V AC (nominal)

AC Frequency: 50/60 Hz

Maximum Power Input: 110 W

DC Input: -48V, -60V DC (nominal)

Agency Approvals

Safety Certifications:

NRTL (TUV Rheinland)

European Union, CE mark (Declaration of Conformity)

UL 60950-1 (US)

IEC 60950-1 (International)

EN 60950-1 (EU)

AS/NZS 60950-1:2003 (Australia and New Zealand)

CAN/CSA 22.2 No. 60950-1-03 (Canada)

Emissions:

FCC 47CFR Part 15 Class B

FCC Part 15:1998 Class B

EN55022 (1994) Class B (with amendments A1 and A2)

EN 55022 (1998) + A1 + A2 Class B (EU)

EN 55022 (1998) + A1 + A2 Class AB (EU

EN55022 (2006) Class B; VCCI Class B; AS/NZ

CISPR22- 2004 EN61000-3-2 (1995) Harmonic current emissions

EN61000-3-3 (1995) Voltage fluctuations and flicker

ETSI/EN 300 386:V1.3.2 (2003-05) (EU Telecommunication Emissions and Immunity)

Immunity:

ETSI/EN 300 386:V1.3.2 (2003-05) (EU

Telecommunication Emissions and Immunity)

EN 55024 1998 + A1:2001 + A2:2003

CISPR 24 (International)

NEBS Level 3

Environmental:

RoHS 2002/95/EC

WEEE 2002/96/EC

Laser Safety:

FCC 21 CFR subpart (J) (Safety of Laser Products)

Europe: EN60825-1:1994

+A11:1996+A2:2001 (European Safety of Lasers)

Environmental Characteristics

Operating Temperature:

+32°F to +122°F (0°C to +50°C)

Storage Temperature:

-40°F to +158°F (-40°C to +70°C) Relative Humidity: 5% to 90%

Non-Condensing

Physical Characteristics

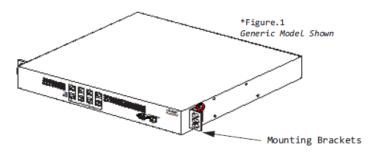
Dimensions:1.75 in (H) x 17.5 in (W) x 14.6 in (D); 44.5 mm (H) x 444.5 mm (W) x 371 mm (D) Weight: 15 lbs; 6.9 kg (maximum)

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Ciena 3940 Quick Facts

Management – **RJ45**Console – **EIA-232 / DB-9**Ports 1-24 – **Either RJ-45 or SFP**Ports 20-24 are NNI RJ-45 & NNI-SFP
Equipped with redundant power supplies

Cabinet Install



STEP 1: Align the side holes of the mounting brackets with the desired holes on the right and left side of the chassis (*figure.1*), then thread and tighten the mounting screws.

STEP 2: Lift the chassis into the desired position in the rack, align the front bracket holes with the holes in the mounting rack, then thread and tighten all mounting screws.

SFP Module Installation

Each unit has slots available for Gigabit Ethernet small form factor pluggable (SFP) modules. SFP modules provide the media specific portion of an interface, allowing it to support Ethernet using different media types. One SFP module can be installed into each available port and can be hot swapped. The following picture (figure.2) shows various SFP modules and their components.





Cabinet Setup

The 3940 chassis requires 1 Rack Unit (RU).

Being one of the smaller units in the cabinet, the 3940 will not determine flange rail setbacks. It will be determined by the largest unit placed in the cabinet. Reference that unit's datasheet for the rail setback measurements.

Installation Parameters

Pay careful attention to the Ciena Installations documents accompanying this Job Aid. They give clear instructions and illustrations for rack mounting, power, and module installation.

Mount the chassis with the RJ45 and fiber ports facing the front / cold aisle.

The chassis weighs 15 lbs.

Use a minimum of 4 rack mounting screws.

On the 3940, the Status LEDs for the 100/1000 Mbps ports are located in the bank under the ports. The status LEDs for the 4 NNI SFP Gigabit uplink ports (20- 24) are located under each port.

Installing SFPs

Hold the SFP module by the sides and position it so that the label is facing up and the 20-pin connector card (rear of the optic) is facing the empty optic slot.

Note: If installed upside down, the SFP module will only insert halfway into the slot. Remove the SFP module, turn it over, and reinstall. Do not forcibly insert an SFP module.



Power Specifications

Power Connections

 #14GA Red and Black Power connections are in back of the unit

Grounding Requirements

 #12GA Green wire to ground bar in cabinet

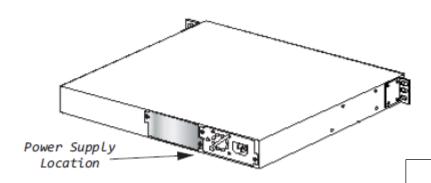
Power Loads

• A & B -48v DC 5 Amps



Note: Ciena recommends that 14-AWG copper conductors be used for the DC input wires and 10 - 12 AWG copper conductor for the ground wire.

The cable gauge identified above is for a standard installation in which the power runs extend to a PDU at the top of the same cabinet. The ECN is the final authority for all standard and non-standard installations.



Pay careful attention to the Ciena Installations documents. They give clear instructions and illustrations for power installation.

STEP 1: Remove the right rear blank panel on the back of the chassis, align the power supply module with the open bay, and slide the module into the bay until it is completely seated.

STEP 2: Tighten the module screws clockwise with a Phillipshead screwdriver. Ensure that both bays are occupied with either a module or a blank panel to maintain proper airflow and to protect the internal components.

Ciena 3940 Power Supply



The 3940 is capable of utilizing dual power supplies for the purpose of load sharing and redundancy.

• Standard DC Power Supply (Part Number: PWRMODSWX-C01) [Range = -48 to -60 VDC, 2.2A max]

• Each power supply includes a builtin fan to ensure adequate cooling of the power supply. If the fan should fail, replace the power supply immediately. Keep the fans clear of obstructions in order to maintain adequate cooling.

Connecting DC Power to the DC Power Supplies

- 1. Verify that all power is turned **OFF** at the DC input circuit at both the 3940 chassis and the PDU power outlets.
- 2. Attach appropriate lugs to the DC input wires (standard eyelet connectors are suggested).
- **3.** Attach the DC input wires to the DC terminal block being careful to observe the correct polarity.
- **4.** Ensure that all wire connections are secure.
- 5. Restore power to the input DC circuit.
- **6.** Verify that the PWR LED on the front of the device is green.



CAUTION: When installing dual power supplies for the 3940, always use the same type of power supply (PWRMODSWX-C01) for the primary and backup. Do not mix & match!

Equipmenment Engineering Data Sheet Ciena 3940

Documents & References

The Engineering Standards directory is located in the Sharepoint system.

These can be accessed by the following link: Company Portal

The Installation Standards and Job Aids for device installations can be found by following the links below:

Installation Standards
Installation Job Aids

Approvals and History

*Approvals are made by subject matter experts within the organization

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Approved By:	Name & Position	Approval/Revision Date
	<name></name>	

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