

### Overview

#### HPE M-series SN3700M Switch

With an increasing need to access data faster and accommodate growing workloads, rising levels of east-west traffic, and new storage arrays based on flash storage technologies, a high bandwidth, low-latency, zero packet loss network becomes paramount. The HPE SN3700M and SN3700cM Switches offer 200GbE and 100GbE based network platforms capable of delivering unbelievable networking speed and agility to keep pace with the most intense workloads small to large scale enterprises can produce. With port speeds spanning 1Gb/s to 200 Gb/s and a switching capacity of 12.8Tb/s from 32 ports at 200GbE or 6.4Tb/s from 32 ports at 100GbE, these switches provide non-blocking throughput at wire-speed transfers-across all packet sizes. The SN3700M delivers a landmark 8.48Bpps processing capacity and an uncompromising ultra-low true cut-through latency in a compact 1RU form factor. HPE M-Series SN3000M Ethernet switches are capable of addressing today's data center's complex networking requirements, growth, and expansion and are perfect for Top-Of-Rack (TOR) deployments and optimized for virtualized environments, hyperconverged infrastructure, and storage deployments. HPE M-Series SN3000M Ethernet switches give you the right network bandwidth with consistent performance for high-performance and storage workloads.

Delivering the highest feature set at the right price allows you to get the most out of your Ethernet infrastructure to best support a variety of use cases, including media and entertainment; streaming video, financial services industry, virtualized data centers, and next generation storage, including software-defined storage and NVMe® flash. HPE SN3000M switches are available with factory integrated ONYX™ for immediate deployment or as an Open Ethernet (ONIE) platform providing the flexibility to use a choice of operating systems. With HPE M-Series switches, you can:

- **Optimize Storage**— modernize your network to eliminate limitations and bottlenecks that can be caused by the addition of flash storage.
- **Enjoy efficient network performance**— avoid packet loss, provide predictable performance with line-rate packet delivery across all ports and all packet sizes
- **Realize breakthrough economics**— make better use of your data center resources with the highest port density per rack unit and the industry's lowest power consumption.
- **Accelerate business innovation**— utilize 1/10/40Gbps Ethernet connectivity for existing workloads and enhance connectivity utilizing built-in 25/50/100/200Gbps capabilities to respond quickly to business needs and to stay on the leading edge of Ethernet switching technology.

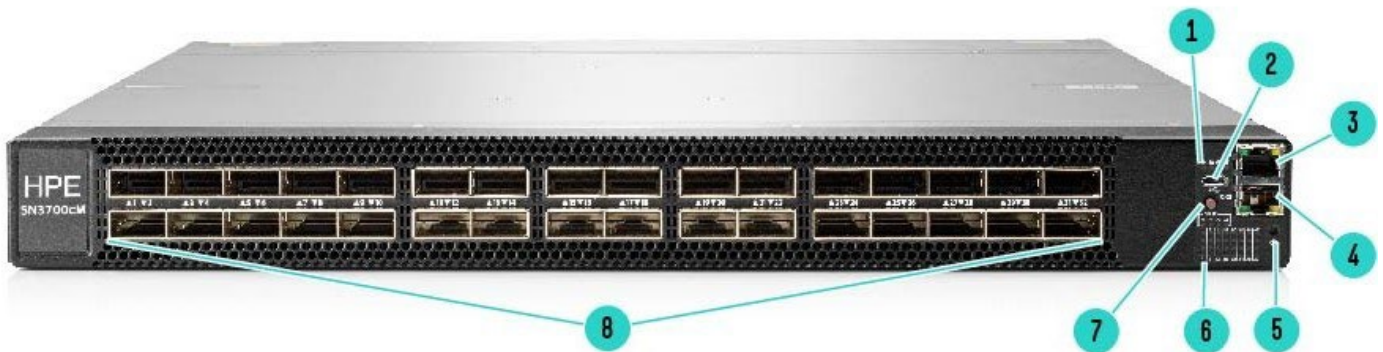
HPE SN3000M Ethernet switches are based on the high-performance 50GbE PAM4 and 25GbE NRZ encoding capable Spectrum®-2 ASIC and are ideally suited for both top-of-rack leaf and fixed configuration spines .with capabilities:

- Ethernet port speeds from 1Gbps to 200Gbps
- All 32 ports support split 4 mode (32x4=128 ports)
- 42MB of fully-shared packet buffering
- 512K on-chip, dynamically shared forwarding table
- Deep visibility with 512k general purpose counters
- In-band network telemetry
- feature-rich layer 2 and layer 3 forwarding
- SN3700cM is GR-1089 and GR-63 (NEBS) core and ETSI certified by Intertek for the US and European telecom markets
- SN3700cM is listed on The University of New Hampshire's InterOperability Laboratory (IOL) NVMe-oF™ (NVM Express® over Fabrics) Ethernet Integrator's List

#### SN3700M is available in following models

- HPE SN3700M 200GbE 32QSFP56
  - Power-to-Connector and Connector-to-Power Airflow
  - Separate Onyx™ and ONIE SKU options
- HPE SN3700cM 100GbE 32QSFP28
  - Power-to-Connector and Connector-to-Power Airflow
  - Separate Onyx™ and ONIE SKU options
  - AC and DC power

Overview



**HPE M-Series SN3700cM - Front (Connector) View**

- |   |  |   |   |
|---|--|---|---|
| 1 | Status LEDs                                  | 5 | Password Reset Button pressed for more than 15 Seconds. |
| 2 | USB 2.0                                      | 6 | Port LEDs   |
| 3 | MGMT0 100Mb/s to 1Gb/s Port                  | 7 | LED Breakout Control                                    |
| 4 | IOIOI RS232 Serial Console Port: 115200 BAUD | 8 | 1-32 1GbE to 100GbE QSFP+/QSFP28 ports                  |

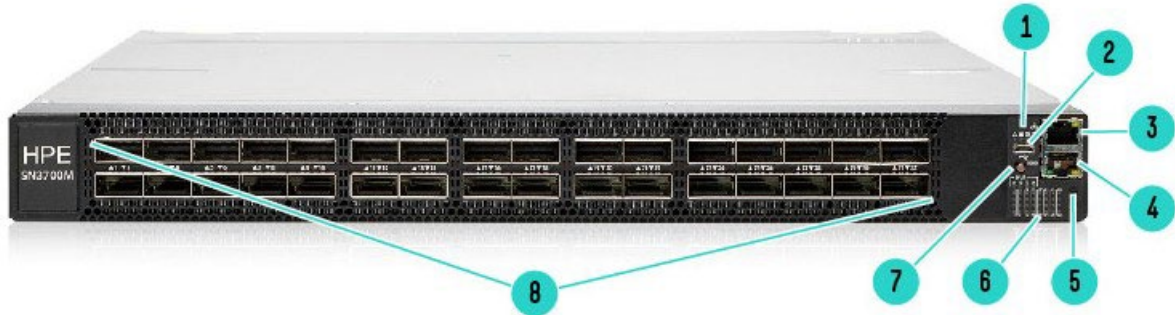


**HPE M-Series SN3700cM – Rear (Power) View**

- |   |                              |   |                              |
|---|------------------------------|---|------------------------------|
| 1 | Inventory Pull-Out Tab       | 3 | Hot Swappable FANs (1 to 4)  |
| 2 | Hot Swappable Power Supply 1 | 4 | Hot Swappable Power Supply 2 |

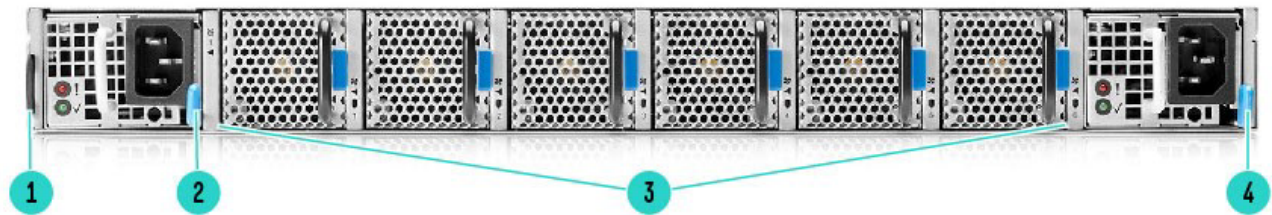


Overview



**HPE M-Series SN3700M - Front (Connector) View**

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| 1 | Status LEDs                                 | 5 | Password Reset Button pressed for more than 15 Seconds. |
| 2 | USB 2.0                                     | 6 | Port LEDs   |
| 3 | MGMT0 100Mb/s to 1Gb/s Port                 | 7 | LED Breakout Control                                    |
| 4 | IOIO RS232 Serial Console Port: 115200 BAUD | 8 | 1-32 1GbE to 200GbE QSFP+/QSFP28/QSFP56 ports           |



**HPE M-Series SN3700M – Rear (Power) View**

- |   |                              |   |                              |
|---|------------------------------|---|------------------------------|
| 1 | Inventory Pull-Out Tab       | 3 | Hot Swappable FANS (1 to 6)  |
| 2 | Hot Swappable Power Supply 1 | 4 | Hot Swappable Power Supply 2 |

**Notes:** the SN3700M and SN3700cM chassis, power supplies and fans are included as a field replaceable switch.



## Overview

### Models

#### HPE M-Series SN3700cM and SN3700M Ethernet Switch Models

Description	SKU
HPE SN3700M 200GbE 32QSFP56 Power to Connector Airflow Switch <ul style="list-style-type: none"> <li>• ONYX™, P2C airflow, AC power</li> </ul>	R5Z74A
HPE SN3700M 200GbE 32QSFP56 ONIE Power to Connector Airflow Switch <ul style="list-style-type: none"> <li>• ONIE, P2C airflow, AC power</li> </ul>	R5Z75A
HPE SN3700cM 100GbE 32QSFP28 Power to Connector Airflow Switch <ul style="list-style-type: none"> <li>• ONYX™, P2C airflow, AC power</li> </ul>	R3B14A
HPE SN3700cM 100GbE 32QSFP28 ONIE Power to Connector Airflow Switch <ul style="list-style-type: none"> <li>• ONIE, P2C airflow, AC power</li> </ul>	R3A97A
HPE SN3700cM 100GbE 32QSFP28 ONIE Connector to Power Airflow Switch <ul style="list-style-type: none"> <li>• ONIE, C2P airflow, AC power</li> </ul>	R3A98A
HPE SN3700cM 100GbE 32QSFP28 ONIE Power to Connector Airflow DC Switch <ul style="list-style-type: none"> <li>• ONIE, P2C airflow, DC power</li> </ul>	R3B00A
HPE SN3700cM 100GbE 32QSFP28 ONIE Connector to Power Airflow DC Switch <ul style="list-style-type: none"> <li>• ONIE, C2P airflow, DC power</li> </ul>	R3B01A

**Notes:** HPE ONIE switch SKUs are intended for customer installation of *NVIDIA® Cumulus®* or another NOS and cannot be converted to ONYX switch SKUs under any circumstances. HPE switch SKUs with factory installed ONYX cannot be converted to HPE ONIE switch SKUs and do not support *NVIDIA® Cumulus®* or any other NOS.



## Standard Features

### Key Features and Benefits

- SN3700cM and SN3700M switches are ideal for modern server and storage networks, supporting DAC, AOC, and optical breakout cables. The 32 ports deliver predictable performance and zero packet loss at line-rate across each port and packet size.
- The 200GbE PAM4 encoded ports in the SN3700M switches can be split to two (split-2) 100GbE ports, or to four (split-4) (or less) 50GbE PAM4 encoded ports or 1/10/25GbE NRZ encoded ports, using a splitter cable.
- The 100GbE NRZ encoded ports in the SN3700cM switches can be split to two (split-2) 50GbE ports, or to four (or less) 1/10/25GbE NRZ encoded ports, using a splitter cable.



- SN3700cM and SN3700M can be deployed to support 1GbE and 10GbE ports, including 10Gbase-T RJ45 transceivers utilizing the QSA adapter, and is designed to be able to evolve over time to support 25, 40, 50, 100, and 200GbE speeds. This helps future-proof your network architecture and allows for implementing significant speed upgrades to the architecture over time.
- SN3700cM and SN3700M provide ultra-low cut-through latency port-to-port. This is advantageous for flash storage which moved the latency bottleneck from storage media to the network, as well as for the bursty nature of today's software-defined and cloud-driven data center traffic flows.
- M-series SN3700cM and SN3700M provide high port density in a single rack unit, allowing for higher capacity and efficiency, simplifying scale-out environments and saving on total cost of ownership. Unique breakout cables fan out individual switch ports to multiple device ports.
- Provides wire-rate performance with zero packet loss across all frame sizes, avoiding any negative impact on applications that could occur with frame loss as unexpected packet loss is unacceptable in modern data centers, especially within a storage network.
- Capable of forwarding 100% capacity wire rate performance with zero packet loss across all ports concurrently at 100GbE or 200GbE speeds while transferring data across both Layer 2 and Layer 3 networks.
- Designed to use less electric power than competing switches, providing one of the industry's lowest power draws, producing less heat than competing products, providing reduced OPEX cost.
- Provides enough switching bandwidth to transport all ports at 100GbE or 200GbE bandwidth concurrently. This allows the switches to avoid head-of-line blocking which can reduce a switches overall performance and throughput.

### HPE M-Series SN3700M Ethernet Switch Models

- 32 200/40GbE and 64x100GbE QSFP56 ports, all ports break-out by 2 for up to 64x100GbE or by 4 for up to 128 1/10/25/50GbE connections with breakout cables.
- Extremely Flexible with support for 1, 10, 25, 40, 50, 100, and 200GbE speeds in a 1U enclosure.
- Ultra-low latency with true cut through performance, Zero packet loss performance with DCBX, PFC, ECN support
- Optional per port or global store-and-forward switching for noisy fabric error containment

### HPE M-Series SN3700cM Ethernet Switch Models

- 32 100/40G QSFP28 ports, all ports break-out by 4 for up to 128 1/10/25GbE connections with breakout cables.  
**Notes: By 2 breakout (2x25GbE NRZ) is not support with HPE cables.**
- Extremely Flexible with support for 1, 10, 25, 40, and 100GbE speeds in a 1U enclosure.
- Ultra-low latency with true cut through performance, Zero packet loss performance with DCBX, PFC, ECN support
- Optional per port or global store-and-forward switching for noisy fabric error containment

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## Standard Features

### User Interfaces: Command Line & Web Interface

- Industry-standard command line interface (CLI). The CLI is accessed through SSH or Telnet sessions, or directly via the console serial port on the power side panel.
  - The CLI can be in one of several modes, and each mode makes available a certain group (or level) of commands for execution.
  - Web interface - WebUI that accepts inputs and provides outputs by generating webpages which can be viewed by the user using a web browser for configuration, monitoring, and troubleshooting.
  - The inventory in the switch system can be accessed through a SNMP MIB browser. These devices are indexed (entPhysicalIndex) using three levels: Module layer, Device layer & Sensor layer.
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### System Management

#### Management Interface

Management interfaces are used in order to provide access to switch management user interfaces (e.g. CLI, WebUI). HPE Switch Management supports out-of-band (OOB) dedicated interfaces (e.g. mgmt0, mgmt1) and in-band dedicated interfaces. In addition, HPE M-Series Switches feature a standard 115200 baud rate RJ45 serial port that provides access to the CLI.

#### NTP, Clock & Time Zones

Network Time Protocol (NTP) is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks. NTP is intended to synchronize all participating computers to within a few milliseconds of Coordinated Universal Time (UTC) and is designed to mitigate the effects of variable network latency.

#### PTP

IEEE Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems (standard number 1588) defines the means to achieve time synchronization in the orders of sub microseconds.

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### Software Management

#### Configuration Management

Onyx™'s built-in automation infrastructure reduces operational expenses and time to service by minimizing manual operations and eliminating configuration and provisioning errors. Automation tools such as Ansible, SaltStack, ZTP and Puppet enable you to automate fabric configuration and large scale deployments.

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### Saving, Loading & restore to factory defaults of the Configuration Files

#### HPE Network Orchestrator

The HPE Network Orchestrator validates the integrity, interoperability and compliance of HPE storage, servers and network fabric infrastructures before or during deployment, eliminating human errors during any configurations update or adding new devices. The pre-upgrade check option verifies and reports what components in your SAN need an update to meet the specified version requirement, further assisting in keeping the SAN and fabric infrastructure in ideal health by making informed decisions with better supportability and predictability. The Single Point of Connectivity Knowledge (SPOCK) checks are done against the HPE SPOCK database. Checks are easy, with simple mouse-hover colored indicators for the components. **Notes:** HPE Network Orchestrator for M-series requires NEO®, both optional applications are customer installable.

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#### Logging

Logging of system events in several severity level over a configurable period of time in size and time based files.

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## Standard Features

### End-to-end Fabric management with NEO®

NEO™ management platform extends management throughout the entire fabric, with end-to-end capabilities for both switches and NICs. Use NEO to enable even greater visibility into the complete data transport path, from the server, through the network fabric and to the server/client.

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### Debugging

Support save sysdmp file collects configuration, status, counters, log files, What-Just-Happened logs, and WireShark traces for Ethernet modules to enable timely review of problems and facilitate service support. There are 31 per port packet counters and an additional 22 discard packet classification counters to help you identify why there are packet processing problems, should they occur.

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### What Just Happened (WJH)

As an innovative network telemetry technology, 'What Just Happened' (WJH) monitors and alerts on data plane anomalies to reduce system downtime. With built-in capabilities to inspect packets across all ports at line-rate, multi-terabit speeds, WJH avoids time-consuming data collection and manual searches for network problems. In addition, a streaming WJH telemetry application, supported by NEO™ and other management applications, can be installed as a Docker container.

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### Link Diagnostic Per Port

Enables an insight into the physical layer components - see information such as a cable status (plugged/unplugged), speed mismatch, auto-negotiation failures, signal quality failures, link training failures, forward error code mismatch, etc.

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### Signal Degradation Monitoring

A system can monitor the bit error rate (BER) in order to ensure a quality of the link and take an automatic action to disable offending ports.

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### Telemetry

Sampling (histograms) – a network administrator can enable a sampling of the port buffer occupancy, record occupancy changes over time, and provide information for different levels of buffer occupancy, and amount of time the buffer has been occupied during the observation period.

Thresholds – thresholds may be enabled per port to record the network time when port buffer occupancy crosses the defined threshold and when buffer occupancy drops below it.

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### User Management and Security

- Different user account types with different privileges
  - RADIUS, TACACS+ & LDAP support
  - System Secure Mode - configures the switch system to run secure algorithms in compliance with FIPS 140-2 requirements
  - USA Department of Defense certification – UC APL
  - Storm Control
  - Access Control Lists (ACLs L2-L4 & user defined)
  - 802.1X - Port Based Network Access Control
  - SSH server strict mode – NIST 800-181A
  - CoPP (IP filter)
  - Port isolation
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## Standard Features

### Cryptographic (X.509, IPSec) and Encryption

Configuring, generating and modifying x.509 certificates used in the system.

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### 802.1x Protocol

Authenticate hosts (or supplicants) and to allow connection only to a list of allowed hosts pre-configured on an authentication server

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### Network Management Interfaces SNMP, JSON & XML

- M-series switches are supported by HPE Insight Remote Support utilizing SNMP v3 and M-series private MIBs
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### Puppet Agent

Built-in agent for the open-source “Puppet” configuration change management system

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### Additional Management & Automation Features

- Zero Touch Provisioning
  - Ansible, SALT Stack
  - FTP \ TFTP \ SCP
  - AAA , RADIUS \ TACACS+ \ LDAP
  - JSON & CLI , Enhanced Web UI
  - SNMP v1,2,3
  - In-band Management
  - DHCP, SSHv2, Telnet
  - SYSLOG
  - Dual ONYX™ Software images
  - Events history
- 

### Linux Docker Containers

Run your applications as a Linux Docker image embedded in the switch flash:

- Full SDK access through the container
  - Persistent container & shared storage.
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## Software Components, Standard, Base Models

### Ethernet Switching

#### Interface Isolation

Group interfaces in sets where traffic from each port is isolated from other interfaces in the group

#### Link Aggregation Group (LAG)

Several same speed links are combined into a single logical entity with the accumulated bandwidth of the originating ports

#### MLAG

Extending the implementation of the LAG to more than a single chassis provides another level of redundancy that extends from the link level to the node level. Up to two switches are supported in an MLAG configuration

#### VLANs

L2 segment of the network which defines a broadcast domain and is identified by a tag added to all Ethernet frames running within the domain





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## Standard Features

### Voice VLAN

Provide QoS to voice and data traffic in a scenario where a terminal is connected to an IP phone which is in turn connected to the port on the switch

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### QinQ

Segregate the traffic of different customers in their infrastructure, while still giving the customer a full range of VLANs for their internal use by adding a second 802.1Q VLAN tag to an already tagged frame

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### Spanning Tree

Rapid Spanning Tree Protocol (RSTP) provides for rapid recovery of connectivity following the failure of a bridge/bridge port or a LAN. The following are supported: BPDU Filter, BPDU Guard, Loop Guard, Root Guard, MSTP and RPVST

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### Virtual routing and forwarding functions (VRFs)

Virtual routing and forwarding (VRF) is a technology included in IP (Internet Protocol) network routers that allows multiple instances of a routing table to exist in a router and work simultaneously. This increases functionality by allowing network paths to be segmented without using multiple devices. Because traffic is automatically segregated, VRF also increases network security. Currently, Onyx™ supports 64 VRF instances.

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### OpenFlow - Support for OpenFlow 1.3

OpenFlow is a network protocol that facilitates direct communication between network systems via Ethernet. Software Defined Networks (SDN) allows a centralist management of network equipment. OpenFlow allows the SDN controller to manage SDN equipment. The OpenFlow protocol allows communication between the OpenFlow controller and OpenFlow agent.

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### VXLAN

VXLAN (Virtual extensible Local Area Network) addresses the requirements of the L2 and L3 data center network infrastructure in the presence of virtual networks in a multi-tenant environment. It runs over the existing networking infrastructure and provides a means to “stretch” a L2 broadcast domain over a layer 3 network. Advanced Network Virtualization with high-performance single-pass VXLAN routing and IPv6 segment routing.

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### IGMP Snooping

Snooping and updating tables based on the IGMP protocol used by hosts and adjacent routers on IP networks to establish multicast group memberships

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### Link Layer Discovery Protocol (LLDP)

A vendor-neutral Link Layer protocol in the Internet Protocol Suite used by network devices for advertising their identity, capabilities, and neighbors on a IEEE 802 LAN

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### Quality of Service (QoS)

QoS Classification, QoS ReWrite, Queuing and Scheduling, RED & ECN are supported

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## Standard Features

### Access Control List

An Access Control List (ACL) is a list of permissions attached to an object, to filter or match switches packets. When the pattern is matched at the hardware lookup engine, a specified action (e.g. permit/deny) is applied

### Other QOS features

- 802.3X Flow Control
  - WRED, Fast ECN & PFC
  - 802.1Qbb Priority Flow Control
  - 802.1Qaz Enhanced Transmission Selection
  - DCBX and Application TLV support
  - Advanced QoS- qualification, Rewrite, Policers
  - 802.1AB Station and Media Access Control Connectivity Discovery
  - Advanced and user-mode Shared buffer management
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### Port Mirroring

Port mirroring enables data plane monitoring functionality which allows the user to send an entire traffic stream for testing.

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### sFlow

sFlow (ver. 5) is a procedure used for statistical monitoring of traffic in networks. MLNX-OS supports a sFlow sampling mechanism (agent), which includes collecting traffic samples and data from counters. The sFlow datagrams are then sent to a central collector.

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### RDMA over Converged Ethernet (RoCEv2) and NVMe-oF™ (NVM Express® over Fabrics)

Remote Direct Memory Access (RDMA) is the remote memory management capability that allows server to server data movement directly between application memory spaces without CPU involvement. Simplified RoCEv2 switch configuration automation is supported with just one command: `roce {lossy | semi-lossless | lossless}`. This built-in automation feature enables ease of validated configuration deployments for NVMe-oF™ based applications. The SN3700cM has been conformance and interoperability validated by The University of New Hampshire's InterOperability Laboratory (IOL) and is listed on the NVMe-oF™ Ethernet Integrator's List v12.0 and v14.0.

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### Priority Flow Control

Provides an enhancement to the existing pause mechanism in Ethernet. The global Ethernet pause option stops all traffic on a link. PFC creates eight separate virtual links on the physical link and allows any of these links to be paused and restarted independently, enabling the network to create a no-drop class of service for virtual links.

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### Shared Buffers

All successfully received packets by a switch are stored on internal memory from the time they are received until the time they are transmitted. The SN3000M family's 48MB packet buffer is dynamically allocated and fully shared between all physical ports. This dynamic shared buffer configuration is applied to provide lossless services, superior micro-burst absorption, and to ensure adaptive flow fairness between ports and priorities.

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### Storm Control

Storm Control is a feature which can be enabled on L2 Ethernet ports and port-channels to monitor inbound traffic to prevent disruptions caused by a broadcast, multicast, or unicast traffic storm on the physical interfaces

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## Standard Features

### Store-and-Forward

Store-and-Forward is used to describe a functionality where a switch receives a complete packet, verifies packet integrity, stores it, and only then forwards it to the destination.

Since the switch makes forwarding decisions based on the destination address which is at the header of the packet, the switch can make the forwarding decision before receiving the complete packet. This process is called cut-through, as the switch forwards part of the packet before receiving the complete packet. Cut-through and store-and-forward modes are configurable as a switch global or per port option.

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### IP Routing

#### IP Interfaces

The following 3 types of IP interfaces are supported:

- VLAN interface
- Loopback interface
- Router port interface

#### IPv6

IP version 6 (IPv6) is a routing protocol which succeeds IPv4. With the expansion of the Internet and data bases IPv6 addresses consist of 128 bits whose purpose is to allow networks to include a significantly higher number of nodes by increasing the pool of available unique IP addresses. IPv6 packets alleviate overhead and allow for future customizability.

#### OSPF

Open Shortest Path First (OSPF) is a link-state routing protocol for IP networks. It uses a link state routing algorithm and falls into the group of interior routing protocols, operating within a single autonomous system (AS).

#### BGP unnumbered

This BGP feature enables a user to establish a BGP session through a P2P Layer-3 link (port or port-channel) without specifying what the IP address of the remote neighbor is, nor what the neighbor's ASN number is. This feature is useful when provisioning a big data center fabric. It does not require allocation of an IP subnet on each pair of connected switches and simplifies the massive configuration and enables automation.

#### BGP

Border Gateway Protocol (BGP) is an exterior gateway protocol which is designed to transfer routing information between routers. It maintains and propagates a table of routes which designates network reachability among autonomous systems (ASs).

#### BFD Infrastructure

Many protocols use slow Hello mechanisms and failure detection is usually within seconds after the problem occurs. The BFD goal is to provide low overhead short duration detection of failures between adjacent nodes and single mechanism that can be used for liveness detection over any media. BFD session is established by the application that uses it. There is no discovery mechanism. e.g. in OSPF BFD session is established to neighbors that were discovered by OSPF hello protocol.

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### Policy Rules

#### Route Map

Route maps define conditions for redistributing routes between routing protocols. A route map clause is identified by a name, filter type (permit or deny) and a sequence number. Clauses with the same name are components of a single route map; the sequence number determines the order in which the clauses are compared to a route.



## Standard Features

### IP Prefix-List

Prefix-list is a list of entries, each of which can match one or more IP prefixes. A prefix-list is usually used to match a specific IP prefix, mostly in relation to IP route destinations.

### Multicast (IGMP and PIM)

Protocol independent multicast (PIM) is a collection of protocols that deal with efficient delivery of IP multicast (MC) data. Those protocols are published in the series of RFCs and define different ways and aspects of multicast data distribution. PIM protocol family includes PIM dense mode (PIM-DM), PIM sparse mode (PIM-SM, which is not supported on Mellanox platforms), Bidirectional PIM (PIM-BIDIR) and Bootstrap router (BSR) protocol.

PIM builds and maintains multicast routing tables based on the unicast routing information provided by unicast routing tables that can be maintained statically or dynamically by IP routing protocols like OSPF and BGP.

### VRRP

The Virtual Router Redundancy Protocol (VRRP) is a computer networking protocol that provides for automatic assignment of available IP routers to participating hosts. This increases the availability and reliability of routing paths via automatic default gateway selections on an IP subnetwork.

### MAGP

Multi-active gateway protocol (MAGP) is aimed to solve the default gateway problem when a host is connected to a set of switch routers (SRs) via MLAG.

The network functionality in that case requires that each SR is an active default gateway router to the host, thus reducing hops between the SRs and directly forwarding IP traffic to the L3 cloud regardless which SR traffic comes through.

### DHCP Relay

Since Dynamic Host Configuration Protocol must work correctly even before DHCP clients have been configured, the DHCP server and DHCP client need to be connected to the same network.

In larger networks, this is not always practical because each network link contains one or more DHCP relay agents. These DHCP-R agents receive messages from DHCP clients and forward them to DHCP servers thus extending the reach of the DHCP beyond the local network.

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## Standard Features

### Feature Summary

#### Layer 3 Feature Set

- 64 VRFs supported
- IPv4 & IPv6 Routing and Route maps:
- BGP4, MP-BGP, OSPFv2, route maps
- PIM-SM and PIM-SSM (PIM-SM over MLAG)
- User and management VRFs
- BFD (BGP, OSPF, static routes)
- VRRP, Multi Active Gateway Protocol (MAGP)
- DHCPv4/v6 Relay
- Router Port, int Vlan, NULL Interface for Routing
- ECMP, 64-way
- IGMPv2/v3 Snooping Querier
- Consistent/Resilient Hashing

#### Network Virtualization

- VXLAN EVPN —L2 stretch use case
- VXLAN Hardware VTEP – L2 Gateway
- L2 stretch use case
- Integration with VMware NSX & OpenStack, etc
- Onyx™ certified NSX scale of 1000 VNIs

#### Quality of Service (QoS)

- 802.3X Flow Control
- WRED with Fast ECN
- 802.1Qbb Priority Flow Control
- 802.1Qaz ETS
- DCBX – Application TLV support
- Advanced QoS – Qualification, Rewrite, Policers – 802.1AB
- Simplified (one command) RoCEv2 configuration automation

#### Security

- USA Department of Defense certification—UC APL
- System secure mode—FIPS 140-2 compliance
- Storm control
- Access Control Lists (ACLs L2-L4 & user defined)
- 802.1X - Port Based Network Access Control
- Strict Security mode for DoD Apps & NIST 800 181A compliance
- CoPP (IP filter)
- Port Isolation

#### Synchronization

- NTP
- PTP IEEE-1588 (SMPTE profile)

#### Docker Container

- Full SDK access through the container
- Persistent container & shared storage
- Container-secured mode of work:
- Limited CPU/memory/SSD usage

#### Software Defined Network (SDN)

- OpenFlow 1.3
- Supported controllers: ODL, ONOS, FloodLight, RYU, etc.



## Standard Features

- NAT
- True hybrid mode with programmable pipeline

### Layer 2 Feature Set

- Multi Chassis LAG (MLAG), MLAG with STP support
- Jumbo Frames (9216 Bytes)
- IGMP V2/V3, Snooping, Querier
- VLAN 802.1Q (4K)
- 512K forwarding entries that can be flexibly shared across ACL, LPM routes, Host routes, MAC, ECMP and Tunnel applications
- Q-In-Q
- 802.1W Rapid Spanning Tree
- BPDU Filter, Root Guard
- Loop Guard, BPDU Guard
- 802.1s Multiple STP (MSTP)
- Rapid Per VLAN STP+ and PVRST+
- 802.3ad Link Aggregation (LAG) & LACP
- 32 Ports/Channel - 64 Groups Per System
- Port Isolation
- 802.1AB Link Layer Discovery Protocol (LLDP)
- Store & Forward / Cut-through switching modes
- Head of Queue Life Time Limit (HLL)
- 1/10/25/40/50/100/200GbE

### Monitoring & Telemetry

- High Resolution Streaming Telemetry
- What Just Happened (WHJ) Root Cause Analysis
- sFLOW
- Real Time queue depth histograms & thresholds
- Port mirroring (SPAN & ERSPAN)
- Enhanced Link & phy monitoring
- BER degradation monitoring
- User mode - simplified and advanced shared buffer configuration

### Management and Automation

- ZTP
- Ansible, Puppet, SaltStack
- FTP/TFTP/SCP
- AAA, RADIUS / TACACS+ / LDAP
- JASON & CLI, enhanced WEB UI
- SNMP v1/v2/v3
- InBand and OOB management
- DHCP, SSHv2, Telnet
- SYSLOG
- USB
- 10/100/1000 Mb/s Ethernet RJ45 mgmt port
- RJ45 Serial console mgmt port (115200 BAUD)
- Dual software images, each in separate flash partitions
- Events history
- Open Network Install Environment (ONIE switch models)



## Service and Support

### Warranty

(3-3-3) Hardware Warranty; 3-year parts; 3-year on-site (standard business hours, next business day response) and 3-year labor.

**Notes:** The hardware warranty covers firmware. For extended hardware support and installation information, please see the “Services and Support” Section.

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### HPE Pointnext - Service and Support

**Get the most from your HPE Products.** Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services** focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Advisory and Professional Services** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

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### Consume IT on your terms

**HPE GreenLake** brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake accelerates digital transformation in a distributed, edge-to-cloud world.

- Get Faster time to market.
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

### Managed services to run your IT operations

**HPE GreenLake Management Services** provides services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

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### Free up resources with Operational Services from HPE Pointnext

HPE delivers services for IT by using proven best practices as well as automation and methodologies that have been tested and refined by HPE experts and artificial intelligence through thousands of deployments globally. Choose from the recommended services for customers purchasing from Hewlett Packard Enterprise or an authorized reseller. Services are quoted using Hewlett Packard Enterprise order configuration tools.

### Recommended Services

#### HPE Pointnext Tech Care

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Pointnext Tech Care has been reimaged from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care is available in three response levels. Basic, which provides 9x5 business hour availability and a 2 hour response time. Essential which provides a 15 minute response time 24x7 for most enterprise level customers, and Critical which includes a 6 hour repair commitment where available and outage management response for severity 1 incidents.

<https://www.hpe.com/services/techcare>

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## Service and Support

### HPE Pointnext Complete Care

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI driven customer experience

<https://www.hpe.com/services/complecare>

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### Related services from HPE Pointnext Services

#### HPE Installation and Start-up Service

Provides for the hardware installation and startup of HPE branded M-Series switches with ONYX™, according to the product specifications. The HPE service delivery technician will assist you in bringing your new hardware into operation in a timely and professional manner.

<https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=a00025816enw>

#### HPE Hardware Installation

Provides for the basic hardware installation of HPE branded M-Series ONIE switches to assist you in bringing your new hardware into operation in a timely and professional manner.

<https://www.hpe.com/h20195/v2/Getdocument.aspx?docname=5981-9356enw>

#### HPE Service Credits

Offers flexible services and technical skills to meet your IT demands as your business evolves. With a menu of services, you can access additional resources and specialist skills to help you maintain peak performance of your IT. HPE Service Credits help you proactively respond to your dynamic IT and business needs.

#### HPE Education Services

Provides comprehensive training designed to expand the skills of your IT staff and keep them up to speed with the latest technologies.

#### HPE Integration and Performance Services

Predefine and custom services delivering technology outcomes and helping you get the most from your IT at every stage of its lifecycle.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and support options.

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### Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

### Defective Media Retention

An option available with HPE Pointnext Complete Care and HPE Pointnext Tech Care and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

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## Service and Support

### AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a brand-new digital and data driven customer experience.

Sign into the customer engagement platform, featuring modern self-serve case creation and management capabilities with inline knowledge recommendations. You will find powerful troubleshooting support through a new intelligent virtual agent with seamless transition when needed to a live support agent. <https://support.hpe.com/hpesc/public/home/signin>

### HPE Support Center - AI Powered and Digitally Enabled Support

Achieve faster time to resolution with access to product-specific resources and expertise through a brand-new digital and data driven customer experience. Sign-in to the all-new customer engagement platform, featuring reimagined digital case management— simplified for easy case creation and management with inline knowledge recommendations. A personalized task panel shows cases awaiting action, expiring support and more. New virtual agent — powerful AI-driven troubleshooting with seamless transition to live agent with conversation history included and the ability to verify contract, warranty, and case status. And Enhanced, intelligent search – Machine Learning tailors content easily and instantly as it's used.

Learn more: <https://support.hpe.com/hpesc/public/home/signin>

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### For more information

- <http://www.hpe.com/services>
- <https://www.hpe.com/us/en/services/operational.html>

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "[Contact HPE](https://www.hpe.com/us/en/contact-hpe.html)" <https://www.hpe.com/us/en/contact-hpe.html>

HPE Support Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
  - Customers purchasing from a commercial reseller can find HPE Support Services at <https://ssc.hpe.com/portal/site/ssc/>
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## Configuration Information

### Model Description

HPE M-series SN3700M (P2C) 200GbE 32QSFP28 Switch	HPE M-series SN3700cM (P2C) 100GbE 32QSFP28 Switch
<ul style="list-style-type: none"> <li>• 2 x 1100w Power Supply with Intake Fan</li> <li>• 6 x Intake Fan Tray</li> <li>• 1 x Fixed Rack Mount Kit</li> <li>• 2 x Power cord, 1.83m, C13-C14</li> <li>• 1 x Serial cable (DB9 to RJ45)</li> <li>• 2 x PSU CABEL RETAINER KIT</li> <li>• 1 x HPE Warranty and Installation instructions</li> <li>• 1x HPE Quick Start Guide</li> </ul>	<ul style="list-style-type: none"> <li>• 2 x 1100w Power Supply with Intake Fan</li> <li>• 4 x Intake Fan Tray</li> <li>• 1 x Fixed Rack Mount Kit</li> <li>• 2 x Power cord, 1.83m, C13-C14</li> <li>• 1 x Serial cable (DB9 to RJ45)</li> <li>• 2 x PSU CABEL RETAINER KIT</li> <li>• 1 x HPE Warranty and Installation instructions</li> <li>• 1x HPE Quick Start Guide</li> </ul>

#### Notes:

- [ONYX SKUs Require transceivers listed below.](#)
- [For M-Series SN3700M and SN3700cM ONIE SKUs \(R3A97A, R3A98A, R5Z75A\) refer to Transceivers & Cables supported by the NOS used.](#)

### Step 1 - Base Configuration. Select one Model:

Description	SKU
HPE SN3700M 200GbE 32QSFP56 Power to Connector Airflow Switch	R5Z74A
<ul style="list-style-type: none"> <li>• ONYX™, P2C airflow, AC power</li> </ul>	
HPE SN3700M 200GbE 32QSFP56 ONIE Power to Connector Airflow Switch	R5Z75A
<ul style="list-style-type: none"> <li>• ONIE, P2C airflow, AC power</li> </ul>	
HPE SN3700cM 100GbE 32QSFP28 Power to Connector Airflow Switch	R3B14A
<ul style="list-style-type: none"> <li>• ONYX™, P2C airflow, AC power</li> </ul>	
HPE SN3700cM 100GbE 32QSFP28 ONIE Power to Connector Airflow Switch	R3A97A
<ul style="list-style-type: none"> <li>• ONIE, P2C airflow, AC power</li> </ul>	
HPE SN3700cM 100GbE 32QSFP28 ONIE Connector to Power Airflow Switch	R3A98A
<ul style="list-style-type: none"> <li>• ONIE, C2P airflow, AC power</li> </ul>	
HPE SN3700cM 100GbE 32QSFP28 ONIE Power to Connector Airflow DC Switch	R3B00A
<ul style="list-style-type: none"> <li>• ONIE, P2C airflow, DC power</li> </ul>	
HPE SN3700cM 100GbE 32QSFP28 ONIE Connector to Power Airflow DC Switch	R3B01A
<ul style="list-style-type: none"> <li>• ONIE, C2P airflow, DC power</li> </ul>	

### Step 2 – Options

Refer to HPE M-Series Switches [SPOCK](#) Connectivity Stream for latest M-series ONYX™ interconnect support matrix

#### Transceivers – for M-series SN3700cM ONYX™ switches

Note #	Descriptions	SKU
	HPE M-series 100GbE QSFP28 SR4 100m Transceiver	Q2F19A
	HPE M-series 100GbE QSFP28 1310nm PSM4 500m Transceiver	Q8J73A
	HPE M-series 40GbE QSFP28 SR4 100m Transceiver	Q7F11A
2	HPE M-series 25Gb SFP28 to SFP28 0.5m Direct Attach Copper Cable	R4G18A
2	HPE M-series 25Gb SFP28 to SFP28 1m Direct Attach Copper Cable	R4G19A

## Configuration Information

Note #	Descriptions	SKU
5, 6	HPE 100Gb QSFP28 LC SWDM4 Multi-mode 100m Transceiver	R0R40A
2	HPE M-series 10GbE SFP+ SR MM 300m Transceiver	Q6M30A
2, 7, 8	HPE 10GBASE-T SFP+ RJ45 300m 1-pack Transceiver.	R0R41B
2	HPE 25Gb SFP28 SR 30m Transceiver	R0R42A
2	HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver	455883-B21
2	HPE X110 100M SFP LC LX Transceiver	JD120B
2	HPE X120 1G SFP LC SX Transceiver	JD118B
2	HPE X120 1G SFP LC LX Transceiver	JD119B
2	HPE X120 1G SFP RJ45 T Transceiver	JD089B
2	HPE BladeSystem CClass Virtual Connect 1G SFP RJ45 Transceiver	453154-B21
4	HPE 7.6m/25ft CAT5 RJ45 M/M Ethernet C/O Cable	C7539A
2	HPE 10Gb SFP+ Short Wave 1-pack Pull Tab Optical Transceiver	Q2P65A
2	HPE X130 10G SFP+ LC SR Transceiver	JD092B
2	HPE X130 10G SFP+ LC LR Transceiver	JD094B
2	HPE X130 10G SFP+ LC ER 40km Transceiver	JG234A
2	Aruba SFP-10GE-ZR 10GBASE-ZR SFP+ 1310nm LC Connector Pluggable 10GbE XCVR	JW148A
1, 2	HPE X130 10G SFP+ LC LH 80km Transceiver	JG915A
	HPE X140 40G QSFP+ MPO MM 850nm CSR4 300m Transceiver	JG709A
	HPE X140 40G QSFP+ LC LR4L 2km SM Transceiver	JL286A
	HPE X140 40G QSFP+ LC LR4 SM 10km 1310nm Transceiver	JG661A
	HPE BladeSystem c-Class 40Gb QSFP+ MPO SR4 100m Transceiver	720187-B21
	HPE X140 40G QSFP+ LC BiDi 100m MM Transceiver	JL251A
	HPE 40Gb QSFP+ Bidirectional Transceiver	841716-B21
2	HPE X190 25G SFP28 LC SR 100m MM Transceiver	JL293A
2	HPE 25Gb SFP28 Short Wave Extended Temperature 1-pack Pull Tab Optical Transceiver	Q2P64B
	HPE X140 40G QSFP+ MPO SR4 Transceiver	JG325B
2	HPE 25Gb SFP28 SR 100m Transceiver	845398-B21
2	Aruba 25G SFP28 LC LR 10km SMF Transceiver	JL486A
2	HPE QSFP28 to SFP28 Adapter	845970-B21
	HPE X150 100G QSFP28 LC LR4 10km SM Transceiver	JL275A
	HPE X150 100G QSFP28 CWDM4 2km SM Transceiver	JH673A
5, 6	HPE X150 100G QSFP28 LC SWDM4 100m MM Transceiver	JH419A
5	HPE 100Gb QSFP28 Bidirectional Transceiver	845972-B21
12	HPE 100GbE QSFP28 LC DR1 500m 1-pack Transceiver	R8M61A
2	HPE 25/50GbE SFP56 SR 100m 1-pack Transceiver	R8M65A
	HPE Alletra 6000 2x100Gb QSFP28 MPO SR4 100m FIO Transceiver	R7D08A
	HPE Alletra 6000 2x100Gb QSFP28 MPO SR4 100m Transceiver	R7D12A
2	HPE Alletra 6000 2x10Gb SFP+ SR FIO Transceiver	R7D05A
2	HPE Alletra 6000 2x10Gb SFP+ SR Transceiver	R7D09A
2	HPE Alletra 6000 2x25Gb SFP28 SR 100m FIO Transceiver	R7D07A
2	HPE Alletra 6000 2x25Gb SFP28 SR 100m Transceiver	R7D11A

## Configuration Information

### Direct Attach Copper Cables (DAC)

Note #	Descriptions	SKU
	HPE FlexNetwork X240 40G QSFP+ QSFP+ 1m Direct Attach Copper Cable	JG326A
	HPE FlexNetwork X240 40G QSFP+ QSFP+ 3m Direct Attach Copper Cable	JG327A
	HPE FlexNetwork X240 40G QSFP+ QSFP+ 5m Direct Attach Copper Cable	JG328A
3	HPE 100GbE QSFP28 to 4x25GbE SFP28 1m Direct Attach Copper Cable	Q9S72A
3	HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 1m Direct Attach Copper Splitter Cable	JG329A
3	HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 3m Direct Attach Copper Splitter Cable	JG330A
3	HPE FlexNetwork X240 40G QSFP+ to 4x10G SFP+ 5m Direct Attach Copper Splitter Cable	JG331A
	HPE BladeSystem c-Class 40G QSFP+ to QSFP+ 3m Direct Attach Copper Cable	720199-B21
	HPE BladeSystem c-Class 40G QSFP+ to QSFP+ 5m Direct Attach Copper Cable	720202-B21
	HPE X242 40G QSFP+ to QSFP+ 1m Direct Attach Copper Cable	JH234A
	HPE X242 40G QSFP+ to QSFP+ 3m Direct Attach Copper Cable	JH235A
	HPE X242 40G QSFP+ to QSFP+ 5m Direct Attach Copper Cable	JH236A
3	HPE X240 QSFP28 4xSFP28 1m Direct Attach Copper Cable	JL282A
3	HPE X240 QSFP28 4xSFP28 3m Direct Attach Copper Cable	JL283A
3	HPE X240 QSFP28 4xSFP28 5m Direct Attach Copper Cable	JL284A
2	Aruba 25G SFP28 to SFP28 0.65m Direct Attach Cable	JL487A
2	Aruba 25G SFP28 to SFP28 3m Direct Attach Copper Cable	JL488A
2	Aruba 25G SFP28 to SFP28 5m Direct Attach Copper Cable	JL489A
2	HPE 25Gb SFP28 to SFP28 3m Direct Attach Copper Cable	844477-B21
	Aruba 100G QSFP28 to QSFP28 3m Direct Attach Copper Cable	JL307A
	HPE 100Gb QSFP28 to 4x25Gb SFP28 3m Direct Attach Copper Cable	845416-B21
	HPE 100Gb QSFP28 to QSFP28 5m Direct Attach Copper Cable	845408-B21
	Aruba 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable	ROZ25A
	Aruba 100G QSFP28 to QSFP28 5m Direct Attach Copper Cable	ROZ26A
	HPE X240 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable	JL271A
	HPE X240 100G QSFP28 to QSFP28 3m Direct Attach Copper Cable	JL272A
	HPE X240 100G QSFP28 to QSFP28 5m Direct Attach Copper Cable	JL273A
	HPE 100Gb QSFP28 to QSFP28 3m Direct Attach Copper Cable	845406-B21
	HPE 100Gb QSFP28 to QSFP28 0.5m Direct Attach Copper Cable	R8M59A
2	HPE Alletra 6000 2x10Gb SFP+ to SFP+ 3m Direct Attach Copper Cable	R7D16A
2	HPE Alletra 6000 2x25Gb SFP28 to SFP28 3m Direct Attach Copper Cable	R7D17A
	HPE Alletra 6000 2x100Gb QSFP28 to QSFP28 3m Direct Attach Copper Cable	R7D18A

## Configuration Information

### Active Optical Cable (AOC)

Note #	Descriptions	SKU
3	HPE 40GbE QSFP+ to 4x10GbE SFP+ 5m Active Optical Cable	Q9S66A
2	HPE 25GbE SFP28 to SFP28 3m Smart Active Optical Cable	Q9S67A
2	HPE 25GbE SFP28 to SFP28 5m Smart Active Optical Cable	Q9S68A
2	HPE 25GbE SFP28 to SFP28 10m Smart Active Optical Cable	Q9S69A
2	HPE 25GbE SFP28 to SFP28 15m Smart Active Optical Cable	Q9S70A
	HPE 100GbE QSFP28 to QSFP28 5m Active Optical Cable	Q9S71A
	HPE BladeSystem c-Class 40G QSFP+ to QSFP+ 15m Active Optical Cable	720211-B21
	HPE BladeSystem c-Class QSFP+ to 4x10G SFP+ 15m Active Optical Cable	721076-B21
	HPE 100Gb QSFP28 to QSFP28 7m Active Optical Cable	845410-B21
	HPE 100Gb QSFP28 to QSFP28 15m Active Optical Cable	845414-B21
	HPE QSFP28 to 4x25Gb SFP28 7m Active Optical Cable	845420-B21
	HPE QSFP28 to 4x25Gb SFP28 15m Active Optical Cable	845424-B21

### M-series 200GbE pluggables – DAC/AOC/Optical transceivers

9	HPE 200Gb QSFP56 to QSFP56 0.5m Direct Attach Copper Cable	R5Z76A
9	HPE 200Gb QSFP56 to QSFP56 1m Direct Attach Copper Cable	R5Z77A
9	HPE 200Gb QSFP56 to QSFP56 2m Direct Attach Copper Cable	R5Z78A
9	HPE 200Gb QSFP56 to QSFP56 2.5m Direct Attach Copper Cable	R5Z79A
9	HPE 200Gb QSFP56 to QSFP56 5m Active Optical Cable	R5Z80A
9	HPE 200Gb QSFP56 to QSFP56 10m Active Optical Cable	R5Z81A
9	HPE 200Gb QSFP56 to QSFP56 15m Active Optical Cable	R5Z82A
9,10	HPE 200Gb QSFP56 MPO SR4 100m Transceiver	R5Z83A
9,11	HPE 200Gb QSFP56 LC CWDM4 FR4 Transceiver	R5Z84A
9	HPE 200Gb QSFP56 to 2x100Gb QSFP56 3m Active Optical Cable	R6F24A
9	HPE 200Gb QSFP56 to 2x100Gb QSFP56 5m Active Optical Cable	R6F25A
9	HPE 200Gb QSFP56 to 2x100Gb QSFP56 15m Active Optical Cable	R6F26A
9,13	HPE 200Gb QSFP56 to 4x50/25Gb SFP56 2.5m Direct Attach Copper Cable	R6F27A
9	HPE 200GbE QSFP56 to 2xQSFP56 2m Direct Attach Copper Cable	R8M57A
9	HPE 200GbE QSFP56 to 2xQSFP56 2.5m Direct Attach Copper Cable	R8M58A

#### Notes:

- 1: JG915A - Storage connectivity support for this transceiver is limited to 40Km
- 2: HPE QSA28 (QSFP28 to SFP28) adapter (845970-B21) is compatible with all M-Series switches and is required with this transceiver to convert a QSFP+/QSFP28 slot to a single SFP+/SFP28 slot for 25G or 10G operation with this switch model.
- 3: The SN2010M 25G DAC connectivity to another M-Series switch or 3rd party switch is limited to a 0.5m DAC cable. End device connectivity may use 1m or a 3m (26 gauge) DAC.
- 4: This RJ45 crossover cable is compatible and supported for use when directly connecting the two M-Series switch MGMT ports. When configuring MLAG and also utilizing in-band management, the MGMT0 ports of the two switches shall be connected (with MLAG the MGMT0 ports shall be reachable from each switch).
- 5: The interoperable 845972-B21 and 855817-B21 HPE 100Gb QSFP28 Bidirectional XCVRs do not interoperate with the JH419A and ROR40A HPE 100Gb QSFP28 LC SWDM4 MM 100m transceivers.
- 6: 100GbE SWDM4 LC transceivers JH419A and ROR40A are interoperable.
- 7: 10Gbase-T SFP+ RJ45 transceiver supports maximum length 30M CAT6a cable due to power density.

## Configuration Information

- 8: ONYX-3.8.2204 and later revisions are required for support of ROR41B in a QSA28 in SN3700CM and SN3700M switches.
- 9: ONYX-3.9.2110 and later revisions are required for support of QSFP56 pluggables, ROR41B, and QSA28 with the SN3700M and Sn3700cM switches.
- 10: R5Z83A operates at 200Gb, 100Gb, and 4x50Gb breakout. Operation at 4x25/10G breakout is not supported. Use a 100Gb transceiver for this breakout application.
- 11. R5Z84A requires a single mode duplex LC cable
- 12: The R8M61A class 6 power requirements limit use in the SN3700cM to ports 1, 2, 31, 32; SN3700M has no power transceiver class 6 port use limit.
- 13: All 4 R6F27A cable ports must be set as NRZ or PAM4. A mix between the two technologies is not supported.

## Supported Optical Cables for all M-Series switch models

Description	SKU
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 10m Cable	QK729A
HPE Premier Flex MPO/MPO Multi-mode OM4 8 Fiber 50m Cable	QK731A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 1m Cable	QK732A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 2m Cable	QK733A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 5m Cable	QK734A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 15m Cable	QK735A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 30m Cable	QK736A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 50m Cable	QK737A
HPE LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
HPE LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
HPE LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
HPE LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
HPE LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
HPE LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
HPE LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A
HPE Premier Flex MPO/MPO OM4 100m Cable	H6Z30A
HPE Multi Fiber Push On to 4 x Lucent Connector 5m Cable	K2Q46A
HPE Multi Fiber Push On to 4 x Lucent Connector 15m Cable	K2Q47A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 1m Cable	Q1H63A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 2m Cable	Q1H64A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 5m Cable	Q1H65A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 15m Cable	Q1H66A
HPE Premier Flex MPO/MPO Multi-mode OM4 12 Fiber 30m Cable	Q1H67A
HPE Premier Flex MPO to 4xLC 30m Cbl	Q1H68A
HPE Premier Flex MPO to 4 x Lucent Connector 50m Cable	Q1H69A
HPE 5m Single-Mode LC/LC Fibre Channel Cable	AK346A
HPE Premier Flex MPO12 to MPO12 APC Single-mode 50m 1-pack Cable	R6F28A
HPE Premier Flex MPO12 to MPO12 APC Single-mode 100m 1-pack Cable	R6F29A
HPE Premier Flex MPO12 to MPO12 APC Single-mode 300m 1-pack Cable	R6F30A
HPE Premier Flex MPO12 to MPO12 APC Single-mode 500m 1-pack Cable	R6F31A

## Technical Specifications

### Family Information (M-series SN2000M series)

	HPE SN2010M	HPE SN2100M	HPE SN2410bM	HPE SN2410M	HPE SN2700M
<b>Description</b>	Ideal ½ width ToR 1/10/25/40/50/100 GbE	Ideal ½ width ToR 1/10/25/40/50/100 GbE	1/10GbE ToR 40/50/100GbE	1/10/25GbE ToR 40/50/100GbE	40/50/100GbE ToR spine/aggregation
<b>Ports Speeds</b>	18 x 1/10/25GbE + 4x40/100GbE	16x40/100GbE 32x50GbE 64x10/25GbE	48x10GbE + 8x40/100GbE	48x10/25GbE + 8x40/100GbE	32x40/100GbE 32x50GbE 64x10/25GbE
<b>Minimum Configuration</b>	18 + 4 Ports	8 Ports - pay as you grow with 8 additional port option	24x10 GbE + 4x100 GbE Ports – pay as you grow 24/4 additional port option	24x10/25 GbE + 4x100 GbE Ports - pay as you grow 24/4 additional port option	16 Ports - pay as you grow with 16 additional port option
<b>Size</b>	1U ( ½ 19" wide)	1U ( ½ 19" wide)	1U	1U	1U
<b>Switching Capacity</b>	1.7Tb/s	3.2Tb/s	2.56Tb/s	4Tb/s	6.4Tb/s
<b>Processing Capacity</b>	1.26Bpps	2.38Bpps	1.93Bpps	2.97Bpps	4.76Bpps
<b>Forwarding Technology</b>	Cut Through and Store-and-forward	Cut Through and Store-and-forward	Cut Through and Store- and-forward	Cut Through and Store-and-forward	Cut Through and Store-and-forward
<b>Latency</b>	300ns	300ns	300ns	300ns	300ns
<b>Typical Power Consumption</b>	57W	94W	165W	165W	150W
<b>Energy Efficiency</b>	full load: 91.3% @ 115Vac/60Hz , 92.6% @ 230Vac/50Hz	full load: 91.3% @ 115Vac/60Hz , 92.6% @ 230Vac/50Hz	80 Plus Gold	80 Plus Gold	80 Plus Gold
<b>Supported NOS**</b>	ONYX™	ONYX™ & ONIE	ONYX™	ONYX™ & ONIE	ONYX™ & ONIE
<b>System Memory</b>	8GB	8GB	8GB	8GB	8GB
<b>SSD Memory</b>	16GB	16GB	32GB	32GB	32GB
<b>Packet Buffer</b>	16MB	16MB	16MB	16MB	16MB
<b>1GbE Mgmt Ports</b>	1 RJ45	1 RJ45	2 RJ45	2 RJ45	2 RJ45
<b>Serial Ports</b>	1 RJ45	1 RJ45	1 RJ45	1 RJ45	1 RJ45
<b>USB Ports</b>	1 Mini USB	1 Mini USB	1	1	1
<b>Airflow</b>	Power-to-Connector and Connector-to- Power airflow	Power-to-Connector and Connector-to- Power airflow	Power-to-Connector and Connector-to- Power airflow; hot swappable	Power-to-Connector and Connector-to- Power airflow; hot swappable	Power-to-Connector and Connector-to- Power airflow; hot swappable
<b>Power Supplies</b>	2 (1+1 redundant) not replaceable	2 (1+1 redundant) not replaceable	2 (1+1 redundant) hot-swappable	2 (1+1 redundant) hot-swappable	2 (1+1 redundant) hot-swappable
<b>Fans</b>	2 fans not replaceable	2 fans not replaceable	4 (N+1 redundant) hot-swappable	4 (N+1 redundant) hot-swappable	4 (N+1 redundant) hot-swappable

## Technical Specifications

	HPE SN2010M	HPE SN2100M	HPE SN2410bM	HPE SN2410M	HPE SN2700M
<b>Power Supplies</b>	Frequency: 50-60Hz Input range: 100-264 AC Input current 4.5-2.9A	Frequency: 50-60Hz Input range: 100-264 AC Input current 4.5-2.9A	Frequency: 50-60Hz Input range: 100-264 AC Input current 4.5-2.9A	Frequency: 50-60Hz Input range: 100-264 AC Input current 4.5-2.9A	Frequency: 50-60Hz Input range: 100-264 AC Input current 4.5-2.9A
<b>Size</b>	1.72" x 7.87" x 20"(43.9mm x 200mm x 508mm)	1.72" x 7.87" x 20"(43.9mm x 200mm x 508mm)	1.72" x 17.24" x 17"(43.9mm x 438mm x 436mm)	1.72" x 17.24" x 17"(43.9mm x 438mm x 436mm)	1.72" x 16.84" x 27"(43.9mm x 427.8mm x 686mm)
<b>Weight</b>	4.53kg (10lbs)	4.53kg (10lbs)	8.52kg (18.8lbs)	8.52kg (18.8lbs)	11.1kg (24.5lbs)

**Notes:** \*\*There are separate M-Series SKUs for ONIE and ONYX™ switch models.

### Family Information - HPE M-series SN4000M, SN3000M, SN2000M Ethernet switch Specifications

Model	HPE SN4600cM 100GbE 64QSFP28 Switch	HPE SN3700cM 100GbE 32QSFP28 Switch	HPE SN2700M 100GbE	HPE SN3700M 200GbE
<b>Description</b>	40/100GbE Aggregation ToR//EoR/Super Spine	40/100GbE Aggregation /ToR	40/100GbE Aggregation/ToR	40/50/100/200GbE AggregationToR/EoR / SuperSpine
<b>Ports Speeds</b>	64 x 40/100GbE 128 x 1/10/25GbE	32x40/100GbE 128x1/10/25GbE	32x40/100GbE 64x1/10/25GbE	64x100 32x40/200GbE
<b>Minimum Configuration</b>	64 QSFP28 Ports	32 QSFP28 Ports	16 QSFP28 active Ports model with license to enable 16 additional ports	32 QSFP56 Ports
<b>Size</b>	2U	1U	1U	1U
<b>Switching</b>	12.8Tb/s	6.4Tb/s	6.4Tb/s	12.8Tb/s
<b>Processing</b>	8.4Bpps	4.76Bpps	4.76Bpps	8.4Bpps
<b>Forwarding Technology</b>	Cut Through and Store-and- forward	Cut Through and Store-and- forward	Cut Through and Store- and- forward	Cut Through and Store- and- forward
<b>Latency</b>	500ns	425ns	300ns	425ns
<b>Typical</b>	482 watts	242 watts	150 watts	250 watts
<b>Supported NOS**</b>	Onyx™	Onyx™	ONYX™	Onyx™
<b>System Memory</b>	8GB	8GB	8GB	8GB
<b>SSD Memory</b>	32GB	32GB	32GB	32GB
<b>Packet Buffer</b>	64MB	42MB	16MB	42MB
<b>1GbE Mgmt Port</b>	1 RJ45	1 RJ45	2 RJ45	1 RJ45
<b>Serial Port</b>	1 RJ45	1 RJ45	1 RJ45	1 RJ45
<b>USB 2.0 Port</b>	1 Type A	1 Micro	1 Type A	1 Micro
<b>Airflow</b>	Power-to-Connector airflow; hot swappable	Power-to-Connector and Connector-to-Power airflow; hot swappable	Power-to-Connector and Connector-to-Power airflow; hot swappable	Power-to-Connector airflow; hot swappable
<b>Power Supplies</b>	2 (1+1 redundant) hot-swappable	2 (1+1 redundant) hot-swappable	2 (1+1 redundant) hot-swappable	2 (1+1 redundant) hot-swappable
<b>Energy Efficiency</b>	80 Plus Gold	80 Plus Gold	80 Plus Gold	80 Plus Gold





## Technical Specifications

Model	HPE SN4600cM 100GbE 64QSFP28 Switch	HPE SN3700cM 100GbE 32QSFP28 Switch	HPE SN2700M 100GbE 32QSFP28 Switch	HPE SN3700M 200GbE
<b>Fans</b>	3 (N+1 redundant) hot-swappable	4 (N+1 redundant) hot-swappable	4 (N+1 redundant) hot-swappable	6 (N+1 redundant) hot-swappable
<b>Power Supplies</b>	Frequency: 50-60Hz Input range: 100-264Vac Input current 10A-6A @200Vac-240Vac	Frequency: 50-60Hz Input range: 100-264Vac Input current 3.5A-2.9A @200Vac- 240Vac 192-288VDC	Frequency: 50-60Hz Input range: 100-264 AC Input current 4.5A-2.9A @200Vac-240Vac	Frequency: 50-60Hz Input range: 100-264 AC Input current 3.5A- 2.9A @200Vac-240Vac 192-288VDC
<b>Size</b>	3.46" x 16.85" x 22.3" (88mm x 428mm x 568.5mm)	1.72" x 16.84" x 22" (44mm x 428mm x 559mm)	1.72" x 16.84" x 27" (44mm x 428mm x 686mm)	1.72" x 16.84" x 22" (44mm x 428mm x 559mm)
<b>Weight</b>	14.64kg (32.3lbs)	11.5kg (25.2lbs)	11.1kg (24.5lbs)	11.5kg (25.2lbs)

**Notes:** \*\* Separate switch models for M-series switches with factory installed Onyx™ and for ONIE boot loader switches without factory installed NOS.

### Environment

<b>Operating temperature</b>	0°C to 40°C
<b>Non-Operating temperature</b>	-40°C to 70°C
<b>NEBs and ETSI operating temperature</b>	-5°C to 55°C
<b>Operating relative humidity (operational)</b>	
<b>Noncondensing</b>	5% to 85%
<b>Operating Altitude</b>	0 - 3050m
<b>Compliant</b>	RoHS

### Electrical characteristics

Frequency	50/60 Hz
Voltage	100-264VAC
Rated DC voltage	-40VDC to -60VDC
Rated current	43A

### Safety CB, CE, cTUVus, CU

EN 60950-1:2006+A11:2009+A1:2010+A12:2011+AC:2011+A2:2013, IEC 60950-1:2005 (Second Edition) + AMD 1:2009 + AMD 2:2013 and EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + AC:2011 + A2:2013, UL 60950-1:2007 R10.14, CAN/CSA C22.2 No. 60950 -1-07+A1:2011+A2:2014, IEC 60950-1 Ed. 2.0 :2005 + Am 1:2009+ Am 2:2013, LV CU TR 004/2011 and EMC CU TR 020/2011

### EMC CE, ICES, FCC, RCM, VCCI

EN 55032:2012 + AC(13) class A, EN 55024:2010, EN 61000-3-2:2014, EN 61000-3-3: 2013, EN 61000-4-2: 2002, EN 61000-4-3: 2006+A1(08)+A2(10), EN 61000-4-4: 2004+A1(10), EN 61000-4-5: 2006, EN 61000-4-6: 2014 EN 61000-4-11:2004, CFR 47, FCC Part 15:2017, Sub-part B:2019 Class A, ICES-003, Issue 6: 2016 Class A, VCCI-CISPR 32: 2016, Class A, AZ/NZS CISPR 32:2015 Class A, KN22:2009 class A/ KN24:2009

### Acoustic

High-speed fan:

- SN3700cM – 67.6 dB(A)
- SN3700M - 73.2 dB(A)



## Technical Specifications

### Typical power with passive cables (ATIS):

- SN3700cM (100GbE)
  - 258W
- SN3700M (200GbE)
  - 266W

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### HPE Power Advisor

To address a need to accurately estimate power requirements and to ensure the appropriate levels of power and cooling and power-related operating costs, HPE created the **HPE Power Advisor utility**. The HPE Power Advisor utility provides accurate and meaningful estimates of the power needs for HPE servers, storage, and switches including M-series Ethernet switches.

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### Standards

- 802.1D Bridging and Spanning Tree
- 802.1p QOS
- 802.1Q VLAN Tagging
- 802.1w Rapid Spanning Tree
- 802.1s Multiple Spanning Tree Protocol
- 802.1AB Link Layer Discovery Protocol
- 802.1Qaz ETS
- 802.1Qbb PFC
- 802.3ad Link Aggregation with LACP
- 802.3ba
- 802.3x Flow Control
- 1000BASE-KX
- 802.3ae 10 Gigabit Ethernet

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### SNMP MIBs

- RFC 4001 INET-ADDRESS-MIB
- RFC 4292 IP-FORWARD-MIB
- IANAifType-MIB
- RFC 2790 HOST-RESOURCES-MIB
- RFC 2863 IF-MIB
- RFC 1213
- RFC 4318 RSTP-MIB
- SNMPV2-CONF
- LLDP-MIB 802.1AB-2005
- RFC 2579 SNMPV2-TC MIB
- RFC 4363 Q-BRIDGE-MIB
- RFC 3417 SNMPV2-TM MIB
- RFC 4188 BRIDGE-MIB
- RFC 3826 SNMP-USM-AES-MIB
- RFC 4133 ENTITY-MIB
- Mellanox SMI MIB
- RFC 3433 ENTITY-SENSOR-MIB
- Mellanox IF-VPI-MIB
- RFC 4268 ENTITY-STATE-MIB
- Mellanox enhanced ENTITY-MIB
- RFC 2572 SNMP-MPD-MIB
- Mellanox Power-Cycle-MIB
- RFC 4293 IP-MIB



## Technical Specifications

- Mellanox SW-Update-MIB
  - RFC 4022 TCP-MIB
  - Mellanox Config-MIB
  - RFC 4113 UDP-MIB
- 



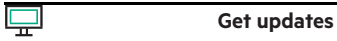
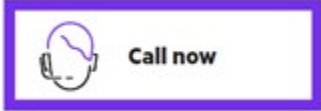
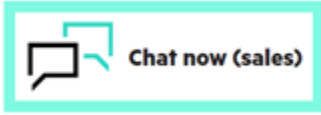
## Summary of Changes

<b>Date</b>	<b>Version History</b>	<b>Action</b>	<b>Description of Change</b>
06-Jun-2022	Version 11	Changed	Overview, Standard Features and Service and Support sections were updated
07-Feb-2022	Version 10	Changed	Configuration Information section was updated
04-Oct-2021	Version 9	Changed	Service and Support section was updated
02-Aug-2021	Version 8	Changed	Service and Support section was updated
04-May-2021	Version 7	Changed	Configuration Information and Technical Specification were updated
01-Mar-2021	Version 6	Changed	Overview, Standard Features, Configuration Information and Technical Specification were updated
03-Aug-2020	Version 5	Changed	Overview, Standard Features and Configuration Information sections were updated
06-Jul-2020	Version 4	Changed	Configuration Information section was updated
18-May-2020	Version 3	Changed	Standard Features, Configuration Information and Technical Specification were updated
06-Apr-2020	Version 2	Changed	Overview, Configuration Information and Technical Specification were updated
03-Feb-2020	Version 1	New	New QuickSpecs



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