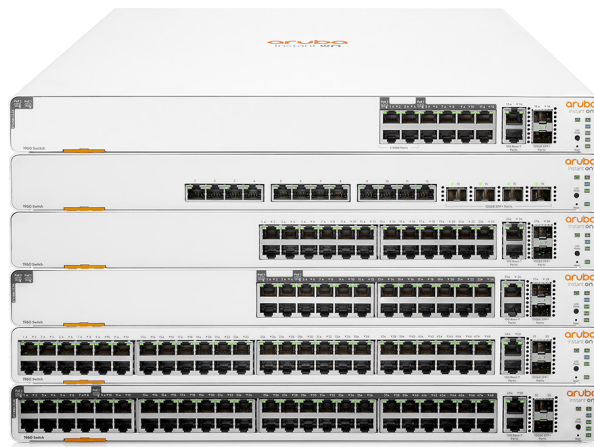


# HPE Networking Instant On Switch Series 1960

High-performance, smart-managed stackable switches designed for small and growing businesses.



## A great fit for training centers, healthcare facilities, tech startups

### Product overview

In today's digital-first environment, small businesses face many challenges to stay afloat and competitive. With tight budgets and limited technical expertise, can be challenging to keep up with the explosion of devices and bandwidth-heavy applications running on the network. To optimize both performance and investment, small businesses need cost-effective, next-generation networking solutions.

The HPE Networking Instant On Switch Series 1960 is an easy-to-use and affordable wired solution for networks supporting IT, mobile and cloud applications.

Instant On 1960 switches are advanced, smart-managed, fixed configuration stackable switches designed for small and growing businesses that are easy to deploy and manage. These switches are designed to scale as

business grows, making it simple to add more employees, devices and applications. Instant On 1960 switches are made to handle today's bandwidth-heavy applications like voice and video conferencing, enabling consistent connectivity to improve user experience and application performance.

The Instant On 1960 Switch Series includes six switches: two (2) 24-port and two (2) 48-port access switches with PoE and non-PoE configurations, a 12-port 2.5 multi-gig PoE access switch, and a 12-port 10-Gigabit aggregation switch.

The access switches each have two (2) 10GBASE-T and two (2) 10GbE SFP+ uplink ports for high-bandwidth connectivity.



The 1960 aggregation switch comes with twelve (12) 10GBase-T and four (4) SFP+ ports, providing 10GbE connectivity to servers, network storage devices and access switches alike.

The 24-port and 48-port PoE access switches come with a PoE budget of 370W and 600W respectively to support the latest IoT devices. The 12-Port multi-gig switch features a 480W PoE budget for next-generation lighting and IoT hardware.

The 12-port multi-gigabit PoE switch meets the increasing demand for higher network speeds from high-speed APs and IoT devices by delivering fast connectivity and PoE power.

With PoE models, up to 30W PoE power delivery is available for Class 4 PoE devices like access points, surveillance cameras and VoIP phones. Additionally, up to 60W PoE power delivery is available for Class 6 PoE devices like pan-tilt zoom cameras and video-enabled IP-phones.

The 1960 switches provide stacking capabilities. Up to (four) 4 switches (access and aggregation can be mixed and matched in a stack) can be stacked together and managed through one single management IP address, simplifying network operations. This means up to 208 ports, including 16 10G uplink ports, can operate as one switch.

The 1960 switches support stacking through local and cloud-managed stacking modes. Local stacking provides True Stacking to easily configure, manage and troubleshoot physical switches as a single entity, while cloud-managed stacking provides ease of setup via the Instant On mobile app.

Using either the Instant On mobile app or the cloud-based web portal, you can quickly set up, monitor and manage the 1960 switch series from anywhere at any time.

### Highlights

- Simplicity at its best
  - Plug-and-play switches that work together with Instant On APs right out of the box
  - Cloud-managed stacking to configure and manage multiple switches through the Instant On mobile app
- Security you can count on
  - Protect your network from unauthorized access with Access Control List, IEEE 802.1x and VLANs
  - Automatic denial-of-service (DOS) monitors and protects the network against malicious attacks
- We've got you covered
  - No extra licensing fees for cloud management
  - Industry-leading warranty and support



## Instant On differentiators

### Easy setup and management

The Instant On mobile app allows you to set up, manage, and monitor Instant On switches and access points directly from your phone. The app provides guided step-by-step instructions to install Instant On devices to get your network up and running quickly — no technical expertise required. And the cloud-based web portal allows you to access the network from anywhere, at any time.

### Cloud-managed stacking

The Instant On mobile app and cloud-based web portal make cloud-managed stacking easy — just follow the recommendations to stack up to four (4) 1960 switches and manage as a single entity. The Instant On mobile app automatically detects members, making it easy to set up and manage the stack remotely, through a single dashboard and without the need to reboot.

### Luggage tag

Each switch has a pull-out tag, known as a luggage tag, on the front panel of the switch. The tag provides a QR code that includes switch ID information (SKU number, SKU name, serial number, and MAC address) for easy switch onboarding through the Instant On mobile app.

### High-performance with flexible options

The 1960 switch series consists of five (5) access switches and one (1) aggregation switch. The five (5) access switches are available in 12-, 24-, and 48-port PoE and 24- and 48-port non-PoE configurations, all with two (2) 10G SFP+ and two (2) 10GBase-T uplink ports. The 12-port access switch has four (4) multi-gigabit ports for next-generation network connectivity. The 12-port aggregation switch has twelve (12) ports of 10GBase-T copper connections and 4x SFP+ uplink ports to connect to a firewall or ISP handoff.

### Better together

Instant On has the capacity to automatically detect and apply the highest (critical) PoE priority to Instant On access points, which can help ensure uninterrupted power delivery and wireless network access. Wired and wireless voice traffic is prioritized with high QoS priority end-to-end for optimal voice performance.

### Optimized user experience

The Instant On mobile app provides common workflows for Instant On switches and access points, making it easier to configure, monitor and manage your network remotely without the need for additional hardware like a cloud key. You can also update firmware on your Instant On devices directly from the cloud whenever you want, from wherever you are.

### Site inventory and topology view

The site inventory view shows all Instant On switches and access points on a single interface, and the topology view provides an intuitive structure of all Instant On devices deployed on the network — allowing you to quickly identify non-functioning devices and troubleshoot accordingly. Network issues can be easily diagnosed with connectivity tests like Ping and Traceroute.

### Built-in security

Built-in security features protect your network from external threats by blocking malware attacks and keeping unauthorized users off the network. Network traffic can be filtered and access restricted based on MAC and IP address.

### No extra licensing fees for cloud management

All features are included in the price of the hardware — there are no recurring subscription or licensing fees. Expert-level support and industry-leading limited lifetime warranty are also included, along with chat support for the life of the product.

### Multi-site remote management

The cloud-hosted web interface and mobile app make it easy to remotely manage multiple sites and networks, distributed deployments and multi-tenant deployments. Each site is logically separated and has its own configuration, statistics, guest portal, and admin read/write privileges. Instant On allows you to create three admin accounts per site, offering the option to lock accounts from accidental deletion or to allow your account to be managed by a trusted partner.

## Key features

### Management

#### Cloud-based management for entire network

The cloud-hosted web interface and mobile app make it easy to manage networks with Instant On APs and switches.

#### Simple local web GUI management

For management of individual switches, the intuitive web GUI makes management simple, even for non-technical users. Supports up to five (5) HTTP and HTTP Secure (HTTPS) sessions.

#### True stacking

Simplifies administration of multiple devices through creation of a single logical managed unit with up to (4) four Instant On 1960 switches in a ring or chain topology, using affordable Cat 6A, long-distance fiber, or localized DAC cables. The switches in the stack can either be access or aggregator switches or a combination of both. The entire stack behaves as a single switch, regardless of whether the stack is in a closet or spread over multiple kilometers.



**Hybrid stacking**

Allows both access and aggregator switches to be connected in a single stack. Hybrid stacking helps to right-size the deployment by allowing a combination of aggregation and access switches to meet the needs of the environment.

**Cloud-managed stacking**

Enables automatic configuration and formation of the stack based on recommendations from the cloud portal. Potential stack members and links are automatically detected, and with just a few taps, individual switches are converted into a stack. If a link or switch fails, the stack remedies the failure without the need to connect to the Internet.

**Secure web-management sessions with HTTPS**

Encrypts and otherwise protects management sessions through HTTP Secure (HTTPS), which prevents snooping of sensitive management information. Regardless of whether the switch is managed from the local web GUI or the cloud, data between the switch and the management interface is encrypted and secure.

**Firmware update**

Provides notification of the latest firmware with the ability to schedule updates at preferred times through the Instant On mobile app and cloud-based web portal.

**Default DHCP client mode**

Allows the switch to be directly connected to a network, enabling plug-and-play operation. In the absence of a DHCP server on the network, the switch falls back to the static address 192.168.1.1.

**Account management**

Allows administrators to add, modify, delete and transfer management accounts and passwords for secure access to Instant On cloud management solution.

**Locator LED**

Allows users to set the locator LED on a specific switch to either turn on, blink, or turn off. Simplifies troubleshooting by making it easy to locate a particular switch within a rack of similar switches. This feature can also be used to locate units in a stack.

**SNMPv1, v2c, and v3**

Facilitates remote management of the switch, as the device can be discovered and monitored from an SNMP management station.

**Simple Network Time Protocol (SNTP)**

Allows automatic synchronization of the switch date and time for accurate tracking of system events and various schedules set by the administrator.

**Management VLAN ID**

Provides secure management access to the switch for administrators from within the specified VLAN.

**Quality of Service (QoS)****Traffic prioritization**

Provides time-sensitive packets (like VoIP and video) with priority over other traffic based on DSCP or 802.1p classification.

**Class of Service (CoS)**

Sets the 802.1p/DSCP priority to queue mapping (8 queues). Supports strict priority queuing (SP) or weighted round robin (WRR) queuing.

**Access Control Lists (ACLs)**

Enables network traffic filtering by creating an ACL, adds rules and matches criteria to an ACL, and applies the ACL to permit or deny on one or more interfaces or a VLAN. Supports for 100 inbound IPv4 and MAC ACLs with up to 960 ACEs on access switches and up to 1024 ACEs on aggregation switch.

**Global trust mode**

Enables the user to define the type of trust to apply to traffic received on port or LAG interface, with 802.1p, DSCP or 802.1p-DSCP being the configurable options.

**Traffic shaping**

Allows smoothing out temporary traffic bursts over time and sets the limit on how much traffic can leave a port, as the switch can limit the transmission rate of egress frames on a per-port basis.

**Connectivity****Auto MDI/MDI-X**

Adjusts automatically for straight-through or crossover cables on all 10/100/1000 ports.

**Auto-negotiating capability**

Supports half- or full-duplex auto-negotiating capability on every port without the need to program the port anytime a new device is connected.

**10GbE fiber and copper connectivity**

Provides high-speed connectivity with dedicated two (2) 10GbE SFP+ fiber ports and two (2) 10GBase-T ports on ports on 12-, 24- and 48-port access switch models. Fiber connections are used for uplinks and other connections across longer distances, and copper ports are a cost-effective solution that uses readily available Cat6 cables. 10GbE fiber and copper ports are in addition to 1GbE copper ethernet ports, providing a higher total number of available ports.



**Smart-rate connectivity**



The 12-port multi-gig access switch (IEEE 802.3bz) supports high-speed wireless access points and includes eight (8) 1G ports supporting IEEE 802.3at Class 4 (30W), along with four (4) 2.5 multi-gig ports supporting high power IEEE 802.3bt Class 6 (60W).

**Aggregation capability**

12-port 10-Gigabit aggregator model with 12 10GBase-T and four (4) SFP+ ports providing 10GbE connectivity, ideal for servers and network storage devices while offering uplink connectivity to access switches.

**Ethernet Alliance PoE Class 6 and Class 4 certification**

Provides dedicated ports with up to 60W per port, which allows support of Class 6 PoE or 802.3bt-capable devices such as digital signage, sensors and other IoT devices. Models also support Class 4 PoE or 802.3bt-capable devices, providing up to 30W per port for devices such as video IP phones, wireless access points, and advanced pan/tilt/zoom security cameras, as well as any 15.4W 802.3af-compliant end device, mitigating the cost of additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments.

Brand	Standard	Class	Min. power at the PSE port	Max. power consumed at the PD port	Wire usage	EA Certified Logo
PoE 1	IEEE 802.3 af	0-3	15.4W	13W	2 pair only	
	IEEE 802.3 at	4	30W	25.5W		
PoE 2	IEEE 802.3 bt	1-3	15.4W	13W	2 pair or 4 pair	
		4	30W	25.5W		
		5	45W	40W	4 pair only	
		6	60W	51W		

**Auto-PoE power configuration**

The switch automatically assigns the required power to a port for a PD device based on Link Layer Discovery Protocol (LLDP).

**PoE power allocation**

Supports multiple methods (LLDP-MED automatic, class of PoE, or usage-based) to allocate PoE power for more efficient energy savings.

**PoE scheduling**

Allows user to configure a specific day/time of the week (e.g., business hours) for Instant On switches to supply power to connected devices (e.g., surveillance cameras, access points etc.).

**Switching**

**Flow control**

Provides a flow-throttling mechanism propagated through the network to prevent packet loss at a congested node.

**Link flap prevention**

Minimizes network disruption by automatically detecting and disabling ports that experience link flap events.

**Spanning Tree Protocol (STP)**

Supports 802.1D STP, 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and 802.1s Multiple Spanning Tree Protocol (MSTP supported on local web only).

**BPDU filtering**

Drops BPDU packets when STP is enabled globally but disabled on a specific port.

**Loop protection**

Allows loop detection in the network for switches that do not run spanning tree, or on which STP feature is disabled.

**IGMP v1, v2, v3 /MLDv1, v2 snooping**

IGMP/MLD snooping allows the switch to forward IPv4 or IPv6 multicast traffic intelligently. With IGMP snooping enabled, the switch forwards traffic only to ports that request the multicast traffic. This prevents the switch from broadcasting traffic to all ports and possibly affecting network performance (MLD snooping/IPv6 supported on local web only).

**Link aggregation**

Groups together multiple ports up to 16 trunks with a maximum of eight (8) ports per trunk automatically using Link Aggregation Control Protocol (LACP), or manually, to form a high-bandwidth connection to the network backbone that helps prevent traffic bottlenecks.

**Link Layer Discovery Protocol (LLDP)**

Advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications.

**LLDP-MED (Media Endpoint Discovery)**

Defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN for automatic configuration of network devices such as IP phones.

**VLAN support**

Offers some of the benefits of both bridging and routing. VLANs partition the network into logical segments, which provides better administration, security, and multicast traffic management.



**Auto voice VLAN**

Automatically recognizes IP phones and assigns voice traffic to dedicated VLAN for voice traffic.

**Port mirroring**

Enables traffic on a port or VLAN to be simultaneously sent to a network analyzer for troubleshooting in case of issues.

**Auto recovery**

Allows ports to be placed in a suspended state when defined error conditions are met. Features supported by Auto Recovery are BPDU Guard, Storm Control, Port Security, Loop Protection and Link Flap Prevention.

**Network security****TPM-based security**

Includes a Trusted Platform Module (TPM) for secure hardware-based generation and storage of cryptographic keys used for secure connection to the Instant On cloud portal.

**RADIUS**

The switch supports RADIUS authentication with primary and backup server configuration.

**Automatic VLAN assignment — RADIUS assigned VLANs**

Assigns users automatically to the appropriate VLAN based on their identity and location.

**RADIUS accounting**

A robust set of attributes and statistics are available for collecting information from the switch.

**Port access control**

Authentication of network users on a per port basis prior to permitting network access. Port authentication includes RADIUS assigned VLAN or dynamic VLAN creation.

**Port security**

Limits the number of MAC addresses that can be learned on a port. If the configured limit is reached, any other addresses beyond that limit are not learned, and the frames are discarded, preventing unknown devices from forwarding packets into the network.

**DHCP snooping and IP Source Guard**

DHCP snooping provides network security by filtering DHCP messages between untrusted hosts and DHCP servers. IP Source guard utilizes the DHCP snooping database to deny network access from untrusted sources (IP Source Guard supported on local web only).

**ARP attack prevention**

ARP attack protection helps intercept, log and discard ARP packets with invalid IP-to-MAC address bindings, protecting the network from common man-in-the-middle attacks.

**Automatic denial-of-service protection**

Manages high-volume traffic and prevents denial-of-service (DoS) attacks against the network.

**Global storm control**

Protects against conditions where incoming packets flood the LAN, causing network performance degradation for all types of network traffic (unicast or multicast).

**Performance and efficiency****Energy Efficient Ethernet (EEE)**

Compliant with 802.3az standard requirements to save energy during periods of low data activity.

**Auto-port shut down**

The switch saves power by automatically shutting down power to inactive ports. Power is restored on a port upon link detection.

**Energy-efficient cooling**

Includes variable speed fans operating only at the speed necessary to maintain operating temperature to reduce excess noise and power consumption.

**Fan-less operation**

Fan-less design for 24-port non-PoE model, ideal for environments where silent operation is needed.

**Routing features****Static IPv4 routing**

Supports IPv4 static routing for up to 32 static routes and 8 VLAN routing interfaces on the access switch models and up to 512 static routes and 32 VLAN routing interfaces on aggregation model. Manual or DHCP IP address assignments can be configured to an individual port or VLAN.

**Address Resolution Protocol (ARP) Table**

The ARP table displays all the IP addresses that have been resolved to MAC addresses, either dynamically or through static entry configuration.

**DHCP relay**

Enables packets to be forwarded between a DHCP client and server that reside in different subnets.



**Features accessed through local web-management interface****Top event dashboard**

Provides notifications for critical events and quick access to the latest log events.

**Quick start-up and VLAN Wizard**

Includes a quick start-up and VLAN wizard that enable automatic configuring of initial settings such as IP address, device information and system time. VLAN wizard can be used to set up initial IDs and port membership.

**Fully IPv6 capable**

- IPv6 host: enables switches to be managed and deployed at the IPv6 network edge
- IPv6 routing: supports up to 32 IPv6 static routes on access models and up to 512 static routes on the aggregator model
- MLD snooping: forwards IPv6 multicast traffic to the appropriate interface, preventing traffic flooding
- IPv6 ACL/QoS: supports ACL and QoS for IPv6 network traffic
- IPv6 DHCP relay
- Configuration of IPv6 features on local web GUI only

**DHCP server (IPv4)**

Centralizes control and automatic assignment of IP addresses to attached hosts. In addition to IP address allocation, it also provides information such as the address of the DNS server, default router, WINS server, and domain name.

**Ingress rate limiting**

Sets and enforces per-port ingress traffic limits based on percentages or packets per second. If limits are exceeded, the switch may disable the port or send a SNMP trap to a management station.

**DNS client**

Provides a method by which host names can be mapped to IP addresses. When configured on a switch, a host name can be substituted for the IP address when executing commands from the web interface.

**Jumbo frame support**

Supports up to 9216 bytes frame size to improve the performance of large data transfers.

**Protected ports**

Protected ports, also known as port isolation, provides isolation between interfaces (Ethernet ports and LAGs) that share the same broadcast domain (VLAN). Protected ports can send traffic only to unprotected ports.

**Energy savings status**

Green Ethernet features provide estimated cumulative energy savings.

**User account management**

Password strength checking and aging feature provides enhanced security to user account administration on the local web management interface. Password management further enhances the security so that only authorized users can access the switch's web interface.

**Secure Socket Layer (SSL)**

Encrypts all HTTP traffic and secures access to the local browser-based management of the switch.

**SCP and TFTP file transfer**

Provides different mechanisms for secure file transfer through SCP (Secure Copy Protocol) or TFTP.

**Dual image support**

Provides independent primary and secondary software images for backup while upgrading.

**Diagnostics****Event logs**

Provides detailed information for problem identification and resolution.

**Session logging**

Displays the active users connected to the switch such as client IP address and duration of the individual session.

**Remote syslog**

Provides support for a single syslog server, allowing the user to redirect and store events to a remote syslog server (supported on local web only).

**Remote monitoring (RMON)**

Provides advanced monitoring and reporting capabilities for RMON group statistics, history, alarms and events. RMON data can be viewed from the local web interface or retrieved from the switch through a network management platform over SNMP (supported on local web only).

**Cable diagnostic tool**

Provides the mechanism to detect and report potential cabling issues, such as cable opens or cable shorts on copper links, in addition to providing the distance to the fault and the total length of cable (supported on local web only).

**Ping IPv4/IPv6**

The switch supports both ICMP for sending ping requests to IPv4 addresses and ICMPv6 for sending ping requests to IPv6 addresses (IPv6 supported on local web only).



**Traceroute IPv4/IPv6**

Provides information about the route a packet takes from the switch to a specific IPv4 or IPv6 address as well as the amount of time it takes for the packet to reach its destination (IPv6 supported on local web only).

**Support file**

Includes summary information for the switch including the current switch configuration, statistics and buffered log messages (supported on local web only).

**MAC address table**

Also known as the bridge table or the forwarding database, this table enables the switch to forward traffic through the appropriate port and supports up to 16K MAC address entries.

**Warranty, service and support**

Instant On Limited Lifetime Support provides 24X7 phone support for the first 90 days and chat support for the entire warranty period. Next Business Day hardware replacement is also included for the first 30 days. Upgrade to unlimited phone and chat support for either 3 or 5 years with our optional Foundation Care.

The Instant On community is also a resource to use for public crowd-sourced support or configuration questions.

Refer to the Hewlett Packard Enterprise website at [hpe.com/networking/services](https://hpe.com/networking/services) for details on the service-objective descriptions and product numbers. For details about services and targeted response times in your area, please contact your local Hewlett Packard Enterprise





## Technical specifications

	<b>Instant On 1960 12XGT 4SFP+ Switch (JL805A)</b>	<b>Instant On 1960 24G 2XGT 2SFP+ Switch (JL806A)</b>	<b>Instant On 1960 24G 20p Class4 4p Class6 PoE 2XGT 2SFP+ 370W Switch (JL807A)</b>
<b>I/O ports and slots</b>			
	1.2Gbps (5GHz) 574 Mbps (2.4GHz)	1.2Gbps (5GHz) 574 Mbps (2.4GHz)	574 Mbps (2.4GHz) 900 Mbps (aggregate switch capacity)
<b>Physical characteristics</b>			
Dimensions (D x W x H)	35.05 x 44.25 x 4.395 cm	35.05 x 44.25 x 4.395 cm	35.05 x 44.25 x 4.395 cm
Weight	9.6 lb (4.3 kg)	8.7 lb (3.9 kg)	10.4 lb (4.7 kg)
<b>Processor and memory</b>			
	Single-Core ARMv7 Cortex-A9 @2Ghz; 1GB DDR3; 512MB NAND flash; Packet buffer size: 3.0 MB	Single-Core ARM v7 Cortex-A9 @800MHz; 1GB DDR3; 512MB NAND flash; Packet buffer size: 1.5 MB	Single-Core ARM v7 Cortex-A9 @800MHz; 1GB DDR3; 512MB NAND flash; Packet buffer size: 1.5 MB
<b>Performance</b>			
100 Mb Latency <sup>1</sup>	< 7.4 uSec	< 4.4 uSec	< 4.4 uSec
1000 Mb Latency <sup>1</sup>	< 4.2 uSec	< 2.2 uSec	< 2.2 uSec
2.5G Latency <sup>1</sup>	—	—	—
10G Latency <sup>1</sup>	< 1.1 uSec	< 1.1 uSec	< 1.1 uSec
Throughput (Mpps) <sup>1</sup>	238 Mpps	95 Mpps	95 Mpps
Maximum Stacking Capacity	80 Gbps	80 Gbps	80 Gbps
Maximum Standalone Switching Capacity	320 Gbps	128 Gbps	128 Gbps
Routing Table size (# of static entries)	512 IPv4/IPv6	32 IPv4/IPv6	32 IPv4/IPv6
MAC Address table size (# of entries)	16,000 entries	16,000 entries	16,000 entries
Reliability MTBF (years)	88.8	123.0	65.3
<b>Environment</b>			
Operating temperature	0-40°C, 0-10,000 ft	0-40°C, 0-10,000 ft	0-40°C, 0-10,000 ft
Operating relative humidity	15% to 95% @ 104°F (40°C) non- condensing	15% to 95% @ 104°F (40°C) non- condensing	15% to 95% @ 104°F (40°C) non- condensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C) up to 15000 ft	-40°F to 158°F (-40°C to 70°C) up to 15000 ft	-40°F to 158°F (-40°C to 70°C) up to 15000 ft
Nonoperating/Storage relative humidity	15000 ft	15000 ft	15000 ft
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)

<sup>1</sup>Tested with 64 byte packet size



## Technical specifications

	<b>Instant On 1960 48G 2XGT 2SFP+ Switch (JL808A)</b>	<b>Instant On 1960 48G 40p Class4 8p Class6 PoE 2XGT 2SFP+ 600W Switch (JL809A)</b>	<b>Instant On 1960 8p 1G Class 4 4p SR1G/2.5G Class 6 PoE 2p 10GBASE-T 2p SFP+ 480W Switch (S0F35A)</b>
<b>I/O ports and slots</b>			
	48 RJ-45 autosensing 10/100/1000BASE-T ports (IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.an 10GBASE-T); Duplex: 100BASE-TX: half or full; 1000BASE-T: full only 10GBASE-T: full only 2 SFP+ 10GbE ports 2 RJ-45 autosensing 100/1000/10GBASE-T ports	48 RJ-45 autosensing 10/100/1000BASE-T ports with 8 ports of IEEE 802.af/at/bt CL6 PoE and 40 ports of IEEE 802.af/at CL4 PoE (IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.an 10GBASE-T); Duplex: 100BASE-TX: half or full; 1000BASE-T: full only 10GBASE-T: full only 2 SFP+ 10GbE ports 2 RJ-45 autosensing 100/1000/10GBASE-T ports	4 RJ-45 autosensing 1G/2.5GBASE-T ports with IEEE 802.af/at/bt CL6 PoE 8 RJ-45 autosensing 10/100/1000BASE-T ports with IEEE 802.af/at CL4 PoE (IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3bz Type 2.5GBase-T, IEEE 802.an 10GBASE-T); Duplex: 100BASE-TX: half or full; 1000BASE-T: full only 10GBASE-T: full only 2 SFP+ 10GbE ports 2 RJ-45 autosensing 100/1000/10GBASE-T ports
<b>Physical characteristics</b>			
Dimensions (D x W x H)	35.05 x 44.25 x 4.395 cm	40.275 x 44.25 x 4.395 cm	1.73 x 17.44 x 13.78 in (4.39 x 44.3 x 35 cm)
Weight	9.8 lb (4.4 kg)	10.8 lb (4.9 kg)	11.55lb (5.24kg)
<b>Processor and memory</b>			
	Single-Core ARM v7 Cortex-A9 @800MHz; 1GB DDR3; 512MB NAND flash; Packet buffer size: 1.5 MB	Single-Core ARM v7 Cortex-A9 @800MHz; 1GB DDR3; 512MB NAND flash; Packet buffer size: 1.5 MB	Single-Core ARM v7 Cortex-A9 @800MHz 1GB DDR3; 512MB NAND flash; Packet buffer size: 1.5 MB
<b>Performance</b>			
100 Mb Latency <sup>1</sup>	< 4.4 uSec	< 4.4 uSec	< 4.1 uSec
1000 Mb Latency <sup>1</sup>	< 2.2 uSec	< 2.2 uSec	< 1.8 uSec
2.5G Latency <sup>1</sup>	—	—	< 6.7 uSec
10G Latency <sup>1</sup>	< 1.1 uSec	< 1.1 uSec	< 2.8 uSec
Throughput (Mpps) <sup>1</sup>	131 Mpps	131 Mpps	172 Mpps
Maximum Stacking Capacity	80 Gbps	80 Gbps	80 Gbps
Maximum Standalone Switching Capacity	176 Gbps	176 Gbps	116 Gbs
Routing Table size (# of static entries)	32 IPv4/IPv6	32 IPv4/IPv6	992
MAC Address table size (# of entries)	16,000 entries	16,000 entries	16,000 entries
Reliability MTBF (years)	109.4	68.0	40.8
<b>Environment</b>			
Operating temperature	0-40°C, 0-10,000 ft	0-40°C, 0-10,000 ft	0-40°C, 0-10,000 ft
Operating relative humidity	15% to 95% @ 104°F (40°C) non-condensing	15% to 95% @ 104°F (40°C) non-condensing	15% to 95% @ 104°F (40°C) non-condensing
Nonoperating/Storage temperature	-40°F to 158°F (-40°C to 70°C) up to 15000 ft	-40°F to 158°F (-40°C to 70°C) up to 15000 ft	-40°F to 158°F (-40°C to 70°C) up to 15000 ft
Nonoperating/Storage relative humidity	15000 ft	15000 ft	15000 ft
Altitude	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)	up to 10,000 ft (3 km)

<sup>1</sup>Tested with 64 byte packet size



## Technical specifications

### Instant On 1960 12XGT 4SFP+ Switch (JL805A)

### Instant On 1960 24G 2XGT 2SFP+ Switch (JL806A)

### Instant On 1960 24G 20p Class4 4p Class6 PoE 2XGT 2SFP+ 370W Switch (JL807A)

#### Acoustics<sup>2</sup>

LWAd = 4.0 Bel

Fanless

LWAd = 3.5 Bel

#### Electrical characteristics

Frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
AC voltage	100-127VAC / 200-240VAC	100-127VAC / 200-240VAC	100-127VAC / 200-240VAC
Current	1.3A/0.4A	0.6A/0.2A	5.0A/0.4A
Maximum power rating	100-127V: 130W 200-220V: 160W	100-127V: 60W 200-220V: 80W	100-127V: 500W 200-220V: 480W
Idle power	100-127V: 60W 200-220V: 80W	100-127V: 30W 200-220V: 40W	100-127V: 40W 200-220V: 80W
PoE power	—	—	Total 370 W PoE Power (Up to 240 W of Class 6 or 370 W of Class 4 PoE)
Power Supply	Internal power supply	Internal power supply	Internal power supply

#### Safety

EN/IEC 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 EN/IEC 62368-1, 2nd. & 3rd. Ed. UL 62368-1, 2nd. & 3rd. Ed. CAN/CSA C22.2 No. 62368-1, 2nd. & 3rd. Ed. EN/IEC 60825-1:2014 Class 1	EN/IEC 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 EN/IEC 62368-1, 2nd. & 3rd. Ed. UL 62368-1, 2nd. & 3rd. Ed. CAN/CSA C22.2 No. 62368-1, 2nd. & 3rd. Ed. EN/IEC 60825-1:2014 Class 2	EN/IEC 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 EN/IEC 62368-1, 2nd. & 3rd. Ed. UL 62368-1, 2nd. & 3rd. Ed. CAN/CSA C22.2 No. 62368-1, 2nd. & 3rd. Ed. EN/IEC 60825-1:2014 Class 3
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#### Emissions

EN 55032:2015/CISPR 32, Class A FCC CFR 47 Part 15: 2018 Class A ICES-003 Class A VCCI Class A CNS 13438 Class A KN 32 Class A AS/NZS CISPR 32 Class A	EN 55032:2015/CISPR 32, Class A FCC CFR 47 Part 15: 2018 Class A ICES-003 Class A VCCI Class A CNS 13438 Class A KN 32 Class A AS/NZS CISPR 32 Class A	EN 55032:2015/CISPR 32, Class A FCC CFR 47 Part 15: 2018 Class A ICES-003 Class A VCCI Class A CNS 13438 Class A KN 32 Class A AS/NZS CISPR 32 Class A
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<sup>2</sup> Acoustics measured in 23°C semi-anechoic chamber with a loading of 100% traffic and (for JL807A and JL809A) 50% PoE on all ports. Measured in accordance with ISO 7779. Declared in accordance with ECMA-109:2010. Values presented are the Declared A-Weighted Sound Power Level (LWAd) and the mean Bystander A-Weighted Sound Pressure Level (LpAm).



## Technical specifications

	<b>Instant On 1960 48G 2XGT 2SFP+ Switch (JL808A)</b>	<b>Instant On 1960 48G 40p Class4 8p Class6 PoE 2XGT 2SFP+ 600W Switch (JL809A)</b>	<b>Instant On 1960 8p 1G Class 4 4p SR1G/2.5G Class 6 PoE 2p 10GBASE-T 2p SFP+ 480W Switch (SOF35A)</b>
<b>Acoustics<sup>2</sup></b>			
	LWAd = 2.9 Bel	LWAd = 3.6 Bel	LWAd = 3.4 Bel
<b>Electrical characteristics</b>			
Frequency	50Hz/60Hz	50Hz/60Hz	50Hz/60Hz
AC voltage	100-127VAC / 200-240VAC	100-127VAC / 200-240VAC	100-127VAC / 200-240VAC
Current	1.1A/0.4A	7.9A/0.5A	6.4A/3.0A
Maximum power rating	100-127V: 110W 200-220V: 120W	100-127V: 790W 200-220V: 760W	100-127V: 635W 200-220V: 623W
Idle power	100-127V: 60W 200-220V: 80W	100-127V: 60W 200-220V: 100W	100-127V: 34W 200-220V: 40W
PoE power	—	Total 600 W PoE Power (Up to 480 W of Class 6 or 600 W of Class 4 PoE)	480W
Power Supply	Internal power supply	Internal power supply	Internal power supply
<b>Safety</b>			
	EN/IEC 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 EN/IEC 62368-1, 2nd. & 3rd. Ed. UL 62368-1, 2nd. & 3rd. Ed. CAN/CSA C22.2 No. 62368-1, 2nd. & 3rd. Ed. EN/IEC 60825-1:2014 Class 4	EN/IEC 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 EN/IEC 62368-1, 2nd. & 3rd. Ed. UL 62368-1, 2nd. & 3rd. Ed. CAN/CSA C22.2 No. 62368-1, 2nd. & 3rd. Ed. EN/IEC 60825-1:2014 Class 5	EN/IEC 62368-1, 2nd. & 3rd. Ed. UL 62368-1, 3rd. Ed. CAN/CSA C22.2 No. 62368-1, 3rd. Ed. EN/IEC 60825-1:2014 Class 1
<b>Emissions</b>			
	EN 55032:2015/CISPR 32, Class A FCC CFR 47 Part 15: 2018 Class A ICES-003 Class A VCCI Class A CNS 13438 Class A KN 32 Class A AS/NZS CISPR 32 Class A	EN 55032:2015/CISPR 32, Class A FCC CFR 47 Part 15: 2018 Class A ICES-003 Class A VCCI Class A CNS 13438 Class A KN 32 Class A AS/NZS CISPR 32 Class A	EN 55032:2015/CISPR 32, Class A FCC CFR 47 Part 15: 2020 Class A ICES-003 Class A VCCI Class A CNS 15936 Class A KN 32 Class A AS/NZS CISPR 32 Class A

<sup>2</sup> Acoustics measured in 23°C semi-anechoic chamber with a loading of 100% traffic and (for JL807A and JL809A) 50% PoE on all ports. Measured in accordance with ISO 7779. Declared in accordance with ECMA-109:2010. Values presented are the Declared A-Weighted Sound Power Level (LWAd) and the mean Bystander A-Weighted Sound Pressure Level (LpAm).



## Technical specifications

### Instant On 1960 12XGT 4SFP+ Switch (JL805A)

### Instant On 1960 24G 2XGT 2SFP+ Switch (JL806A)

### Instant On 1960 24G 20p Class4 4p Class6 PoE 2XGT 2SFP+ 370W Switch (JL807A)

#### Immunity

Generic	EN 55035, CISPR 35, KN35	EN 55035, CISPR 35, KN35	EN 55035, CISPR 35, KN35
EN	EN 55035, CISPR 35	EN 55035, CISPR 35	EN 55035:2017, CISPR 35
ESD	EN/IEC 61000-4-2	EN/IEC 61000-4-2	EN/IEC 61000-4-2
Radiated	EN/IEC 61000-4-3	EN/IEC 61000-4-3	EN/IEC 61000-4-3
EFT/Burst	EN/IEC 61000-4-4	EN/IEC 61000-4-4	EN/IEC 61000-4-4
Surge	EN/IEC 61000-4-5	EN/IEC 61000-4-5	EN/IEC 61000-4-5
Conducted	EN/IEC 61000-4-6	EN/IEC 61000-4-6	EN/IEC 61000-4-6
Power frequency magnetic field	EN/IEC 61000-4-8	EN/IEC 61000-4-8	EN/IEC 61000-4-8
Voltage dips and interruptions	EN/IEC 61000-4-11	EN/IEC 61000-4-11	EN/IEC 61000-4-11
Harmonics	EN/IEC 61000-3-2	EN/IEC 61000-3-2	EN/IEC 61000-3-2
Flicker	EN /IEC 61000-3-3	EN /IEC 61000-3-3	EN /IEC 61000-3-3

#### Device management

Instant On Cloud; Web browser; SNMP Manager	Instant On Cloud; Web browser; SNMP Manager	Instant On Cloud; Web browser; SNMP Manager
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#### Mounting

Mounting Positions and Supported Racking	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet. 2-post rack kit included Supports table-top mounting Supports rack-mounting Supports wall-mounting with ports facing either up or down Supports under-table mounting using the brackets provided	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet. 2-post rack kit included Supports table-top mounting Supports rack-mounting Supports wall-mounting with ports facing either up or down Supports under-table mounting using the brackets provided	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet. 2-post rack kit included. Supports table-top mounting Supports rack-mounting Supports wall-mounting with ports facing either up or down Supports under-table mounting using the brackets provided
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#### Transceivers

Instant On 1G SFP LC SX 500m OM2 MMF Transceiver (R9D16A)
Aruba 1G SFP LC LX 10km SMF Transceiver (J4859D)
Instant On 1G SFP RJ45 T 100m Cat5e Transceiver (R9D17A)
Instant On 10G SFP+ LC SR 300m OM3 MMF Transceiver (R9D18A)
Aruba 10G SFP+ LC LR 10km SMF Transceiver (J9151E)
Instant On 10G SFP+ to SFP+ 1m DAC (R9D19A)
Instant On 10G SFP+ to SFP+ 3m DAC (R9D20A)



## Technical specifications

**Instant On 1960 48G 2XGT 2SFP+ Switch (JL808A)**

**Instant On 1960 48G 40p Class4 8p Class6 PoE 2XGT 2SFP+ 600W Switch (JL809A)**

**Instant On 1960 8p 1G Class 4 4p SR1G/2.5G Class 6 PoE 2p 10GBASE-T 2p SFP+ 480W Switch (S0F35A)**

### Immunity

Generic	EN 55035, CISPR 35, KN35	EN 55035, CISPR 35, KN35	EN 55035, CISPR 35, KN35
EN	EN 55035, CISPR 35	EN 55035, CISPR 35	EN 55035:2017, CISPR 35
ESD	EN/IEC 61000-4-2	EN/IEC 61000-4-2	EN/IEC 61000-4-2
Radiated	EN/IEC 61000-4-3	EN/IEC 61000-4-3	EN/IEC 61000-4-3
EFT/Burst	EN/IEC 61000-4-4	EN/IEC 61000-4-4	EN/IEC 61000-4-4
Surge	EN/IEC 61000-4-5	EN/IEC 61000-4-5	EN/IEC 61000-4-5
Conducted	EN/IEC 61000-4-6	EN/IEC 61000-4-6	EN/IEC 61000-4-6
Power frequency magnetic field	EN/IEC 61000-4-8	EN/IEC 61000-4-8	EN/IEC 61000-4-8
Voltage dips and interruptions	EN/IEC 61000-4-11	EN/IEC 61000-4-11	EN/IEC 61000-4-11
Harmonics	EN/IEC 61000-3-2	EN/IEC 61000-3-2	EN/IEC 61000-3-2
Flicker	EN /IEC 61000-3-3	EN /IEC 61000-3-3	EN /IEC 61000-3-3

### Device management

Instant On Cloud; Web browser; SNMP Manager	Instant On Cloud; Web browser; SNMP Manager	Instant On Cloud; Web browser; SNMP Manager
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### Mounting

Mounting Positions and Supported Racking	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet. 2-post rack kit included Supports table-top mounting Supports rack-mounting Supports wall-mounting with ports facing either up or down Supports under-table mounting using the brackets provided	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet. 2-post rack kit included Supports table-top mounting Supports rack-mounting Supports wall-mounting with ports facing either up or down Supports under-table mounting using the brackets provided	Mounts in an EIA-standard 19 in. telco rack or equipment cabinet. 2-post rack kit included. Supports table-top mounting Supports rack-mounting Supports wall-mounting with ports facing either up or down Supports under-table mounting using the brackets provided
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### Transceivers

Instant On 1G SFP LC SX 500m OM2 MMF Transceiver (R9D16A)  
 HPE Networking Instant On 1G SFP LC LX 10km SMF Transceiver (S0G20A)  
 Instant On 1G SFP RJ45 T 100m Cat5e Transceiver (R9D17A)  
 Instant On 10G SFP+ LC SR 300m OM3 MMF Transceiver (R9D18A)  
 HPE Networking Instant On 10G SFP+ LC LR 10km SMF Transceiver (S0G21A)  
 HPE Networking Instant On 10GBASE-T RJ45 30m Cat6A Transceiver (S0G18A)  
 Instant On 10G SFP+ to SFP+ 1m DAC (R9D19A)  
 Instant On 10G SFP+ to SFP+ 3m DAC (R9D20A)



## Standards and protocols

(Applies to all product in series)

### IEEE standards support

IEEE 802.3i	10BASE-T
IEEE 802.3u	100BASE-TX
IEEE 802.3ab	1000BASE-T
IEEE 802.3z	1000BASE-X
IEEE 802.3bz	2.5GBase-T
IEEE 802.3ae	10GBase-T
IEEE 802.2af	PoE (PoE models only)
IEEE 802.2at	PoE+ (PoE models only)
IEEE 802.2bt	PoE++ (PoE models only)
IEEE 802.3x	Flow control
IEEE 802.1p	Priority
IEEE 802.1Q	VLANs
IEEE 802.3ad	Link Aggregation Control Protocol (LACP)
IEEE 802.1X	Port Access Authentication
IEEE 802.3az	Energy-Efficient Ethernet (EEE)
IEEE 802.1D	Spanning Tree Protocol
IEEE 802.1W	Rapid Spanning Tree Protocol
IEEE 802.1S	Multiple Spanning Tree Protocol
IEEE 802.1AB	Link Layer Discovery Protocol
IEEE 802.1t	IEEE 802.1D maintenance
IEEE 802.3ac	Frame extension for VLAN tags

### IETF standards support

RFC 768	RFC 919	RFC 1533	RFC 5424	RFC 4252
RFC 783	RFC 922	RFC 1541	RFC3411	RFC 4253
RFC 791	RFC 950	RFC 1624	RFC3412	RFC 4254
RFC 792	RFC 1042	RFC 1700	RFC3413	RFC 4716
RFC 793	RFC 1071	RFC1867	RFC3414	RFC 4419
RFC 813	RFC 1123	RFC 2030	RFC3415	RFC 2869
RFC 879	RFC 1141	RFC2616	RFC2576	RFC 3580
RFC 896	RFC 1155	RFC 2131	RFC 4330	RFC 2474
RFC 826	RFC 1157	RFC 2132	RFC 3268	RFC 4541
RFC 894	RFC 1350	RFC 3164	RFC 4251	

### IETF standards management support

RFC 1213	RFC 1757	RFC 2865	RFC 2863	RFC 2576
RFC 1215	RFC 1907	RFC 2866	RFC 4022	RFC 2579
RFC 1286	RFC 2011	RFC 2869	RFC 4113	RFC 2580
RFC 1442	RFC 2012	RFC 2665	RFC 1212	RFC 3410
RFC 1451	RFC 2013	RFC 2666	RFC 1901	RFC 3417
RFC 1493	RFC 2233	RFC 2674	RFC 1908	RFC 2620
RFC 1573	RFC 2578	RFC 2737	RFC 2271	
RFC 1643	RFC 2618	RFC 2819	RFC 2295	

### IETF standard SNMP traps supported

RFC 1157	RFC 1493	RFC 1215	RFC 3416	RFC 3418
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### IETF IPv6 support

RFC 1981	RFC 2732	RFC 4193	RFC 4786	RFC 5722
RFC 2460	RFC 3484	RFC 4213	RFC 4861	RFC 5942
RFC 2464	RFC 3587	RFC 4291	RFC 4862	RFC 5952
RFC 2465	RFC 3879	RFC 4292	RFC 4943	RFC 6177
RFC 2466	RFC 4001	RFC 4293	RFC 5095	RFC 3736
RFC 2526	RFC 4007	RFC 4294	RFC 5220	RFC 2365
RFC 2710	RFC 4113	RFC 4443	RFC 5221	
RFC 2711	RFC 4147	RFC 4773	RFC 5350	



## Ordering information

### HPE Networking Instant On Switch Series 1960

Part number	Description	Ports	Uplink ports	Class 4 PoE power budget	Class 6 PoE	Class 4 PoE
JL805A	Instant On 1960 12XGT 4SFP+ Switch	12 x 10G	4 x SFP+	—	—	—
JL806A	Instant On 1960 24G 2XGT 2SFP+ Switch	24 x 1G	2 x SFP+ 2 x 10GBASE-T	—	—	—
JL807A	Instant On 1960 24G 20p Class4 4p Class6 PoE 2XGT 2SFP+ 370W Switch	24 x 1G	2 x SFP+ 2 x 10GBASE-T	370 W	4 x CL6 ports	20 x CL4 ports
JL808A	Instant On 1960 48G 2XGT 2SFP+ Switch	48 x 1G	2 x SFP+ 2 x 10GBASE-T	—	—	—
JL809A	Instant On 1960 48G 40p Class4 8p Class6 PoE 2XGT 2SFP+ 600W Switch	48 x 1G	2 x SFP+ 2 x 10GBASE-T	600 W	8 x CL6 ports	40 x CL4 ports
S0F35A	Instant On 1960 8p 1G Class 4 4p SR1G/2.5G Class 6 PoE 2p 10GBASE-T 2p SFP+ 480W Switch	8 x 1G + 4x 2.5G	2 x SFP+ 2 x 10GBASE-T	480 W	4x CL6 ports	8x CL4 ports

### 3- and 5-year support options are available

(not included in the price of the hardware)

- JL805A: 3 Year Next Business Day (NBD) Exchange (H31LBE)
- JL805A: 5 Year Next Business Day (NBD) Exchange (H31LCE)
- JL806A: 3 Year Next Business Day (NBD) Exchange (H31LDE)
- JL806A: 5 Year Next Business Day (NBD) Exchange (H31LFE)
- JL807A: 3 Year Next Business Day (NBD) Exchange (H31LGE)
- JL807A: 5 Year Next Business Day (NBD) Exchange (H31LHE)
- JL808A: 3 Year Next Business Day (NBD) Exchange (H31LJE)
- JL808A: 5 Year Next Business Day (NBD) Exchange (H31LKE)
- JL809A: 3 Year Next Business Day (NBD) Exchange (H31LLE)
- JL809A: 5 Year Next Business Day (NBD) Exchange (H31LME)
- S0F35A - 3 Year Next Business Day (NBD) Exchange (H88G0E)
- S0F35A - 5 Year Next Business Day (NBD) Exchange (H88G1E)

(Go to [Support Services Central](#) to locate Foundation Care SKUs for switches.)