

# Getting Started With the Cisco ASR 920 Series Router

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## Overview

Cisco ASR 920 families of routers include :

- ASR 920-I (Indoor) [ASR-920-12CZ-A/ASR-920-12CZ-D]—This sub-family has fixed ENET interfaces (12 x 1 GE + 2 x 10GE) and dual power supplies (AC or DC).
- ASR 920-C (Compact) [ASR-920-4SZ-A/ASR-920-4SZ-D]—This sub-family of routers have a compact form factor and configurable ports: 4 x 1 GE or 4 x 10 GE or any combinations of 1 GE and 10 GE among the four ports available. In addition, there are 2 x 1 GE copper ports available.
- ASR 920-O (Outdoor) [ASR-920-10SZ-PD and ASR-920-8S4Z-PD]—This sub-family is designed for deployment outdoors in an environment that is protected from rain and direct sunlight and provides cost optimized, and extended temperature range for business, residential, and mobile access services.
- ASR 920-F (Fixed) [ASR-920-24SZ-M/ASR-920-24TZ-M]—This sub-family with 1 RU form factor has fixed ENET interfaces (four 10GE and twenty-four 1GE Copper or SFP) and redundant modular power supplies (AC or DC).
- ASR 920-M (Modular) [ASR-920-24SZ-IM]—This sub-family with 1.5 RU form factor has fixed ENET interfaces (four 10GE and twenty-four 1GE Fiber), one modular interface, and redundant modular power supplies (AC or DC). The interface modules from ASR 900 family of routers can be leveraged for use with this model.
- ASR-920-12SZ-IM—Eight 1G copper ports, four SFP ports, and four 1G/10G Dual Rate ports one IM slot Power over Ethernet (PoE), and a global navigation satellite system (GNSS) port, with redundant AC or DC power supplies.

- ASR-920-12SZ-A/Cisco ASR-920-12SZ-D—This sub-family with 1 RU form factor has a single AC or DC fixed power supply with 12 (10G SFP+/1G SFP dual rate port) interfaces, Timing (1PPS/10MHz/ToD) interfaces, and a pluggable GNSS module.
- ASR-920-20SZ-M—This sub-family with 1 RU form factor has fixed ENET interfaces (four 10GE and twenty-four 1GE with four Copper ports) and redundant modular power supplies (AC or DC).

In addition to the 1G/10G interfaces, the Cisco ASR 920 Series Routers also have the following hardware interfaces for management, and timing and synchronization features:

- One Copper 10/100/1000Base-T LAN management port
- One BITS interface with RJ48 Connector
- One 1PPS or Time of Day port with RJ45 interface
- External Alarm interface with 4 Dry Contact Alarm inputs
- One RS-232 Console Port with USB A type connector

**Note** Due to the USB form factor, the flow control pins are not connected and the terminal server hosting the RS232 session must configure **no flow-control** or the console access to work correctly.

- One USB2.0 Console Port
- One USB2.0 Port for Mass Storage
- ZTP button for Zero Touch Provisioning

**Caution** A short press of the ZTP button starts the provisioning of the router. Pressing this button for 8 seconds or more leads to Powering off the System Power.

- Various LEDs for system and interface status
- The Cisco ASR-920-12SZ-IM Router also supports:
  - Power over Ethernet (PoE) port
  - Global navigation satellite system (GNSS) port

For more information, see the various Cisco ASR920 Series Routers hardware installation guides at http://www.cisco.com/c/en/us/support/routers/asr-920-series-aggregation-services-router/products-installation-guides-list.html.

All variants of the Cisco ASR 920 Series Router have 8MB of NOR flash, and 4GB of DRAM.

***Table 1: Feature Comparison for Cisco ASR 920 Series Routers***

| Feature/Functionality | ASR-920-12CZ-A/D | ASR-920-4SZ-A/D | ASR-920-10SZ-PD<br>ASR-920-8S4Z-PD | ASR-920-24SZ-M | ASR-920-24TZ-M | ASR-920-2 |
|---|---|---|---|---|---|---|
| CPU operating at | P2020—1GHz | P2020—1GHz | P2020—1GHz | P2020—1.2GHz | P2020—1.2GHz | P2020—1 |

| Feature/Functionality | ASR-920-12CZ-A/D | ASR-920-4SZ-A/D | ASR-920-10SZ-PD<br>ASR-920-8S4Z-PD | ASR-920-24SZ-M | ASR-920-24TZ-M | ASR-92 |
|---|---|---|---|---|---|---|
| DRAM | 4GB | 4GB | 4GB | 4GB | 4GB | 4GB |
| SD FLASH | 2GB | 2GB | 2GB | 2GB | 2GB | 2GB |
| 1G-10G Dual Rate Ports | Supported | Supported | Supported | Not Supported | Not Supported | Not Su |
| BITS interface | Present | Present | Not Present | Not Present | Not Present | Preser |
| Time of Day port | Present | Present | Not Present | Not Present | Not Present | Preser |
| Auto-Media-Select Combo Port | Supported | Not Supported | Not Supported | Not Supported | Not Supported | Not Su |
| Copper Ports | Supported | Supported | Supported | Not Supported | Supported | Suppo |
| SFP Ports | Supported | Supported | Supported | Supported | Not Supported | Suppo |
| Smart SFP | Supported | Supported | Supported | Not Supported | Not Supported | Not Su |
| SFP+ Ports | Supported | Supported | Supported | Supported | Supported | Suppo |
| Copper SFP | Supported | Supported | Supported | Supported | Not Supported | Suppo |
| XFP Ports | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Suppo |
| ZTP Button | Supported | Supported | Supported | Not Supported | Not Supported | Not Su |
| PoE | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Not Su |
| GNSS | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Not Su |

# Restrictions

- Cisco ASR-920-12SZ-A, and Cisco ASR-920-12SZ-D routers support Y.1564 only in 1 GE mode. It does not support when the ports are configured with 10 GE mode.
- The Cisco ASR 920 Series Routers do not support the **hw-module** *slot/subslot* **reload** command.
- Starting with Cisco IOS XE Everest 16.9.1, ASR 920-12SZ-IM, Cisco ASR-920-12SZ-A, and Cisco ASR-920-12SZ-D routers only load No Payload Encryption (NPE) images. If a non-NPE image is loaded, the routers stop responding.
- Specific License Reservation (SLR) is not supported on Cisco ASR 920 routers.

# Interface Naming

The following table shows the interface naming of the Cisco ASR-920-12CZ-A/ASR-920-12CZ-D ports:

| 1G SFP Only | | 1G Combo Port | | | | | | | | 10G SFP+/1G SFP[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 5 | 7 | 9 | 11 | 5X | 7X | 9X | 11X | 13 |
| 0 | 2 | 4 | 6 | 8 | 10 | 4X | 6X | 8X | 10X | 12 |

[1] Ports 12 and 13 when operating in 1G Mode is operationally up only when the peer connecting interfaces are in Auto negotiation mode.

- Interfaces 0–3 are Gigabit Ethernet SFP only ports.
- Interfaces 4X–11X-Gigabit Ethernet are combo ports that support dual media—Copper and SFP. For more information, see the *Configuring Auto Media Sense on* Cisco ASR 920 Series Routers.
- Interfaces 0 to 11 are referred to as Gigabit Ethernet 0/0/0–GigabitEthernet 0/0/11 respectively.
- Interfaces 12 and 13 are dual rate ports. These ports support 1G or 10G mode depending on the optics (SFP or SFP+ respectively) installed in these ports.

**Note** Dual-Rate functionality is supported only with the Supported SFPs, listed in the *Cisco ASR 920 Series Aggregation Services Router Hardware Installation Guide*.

- Interfaces 12 and 13 are TenGigibitEthernet 0/0/12–TenGigabitEthernet 0/0/13. The interface name remains unchanged even if an SFP is installed in the port and the port is operating in 1G mode.
- Out of Band Management Network port is referred as interface Gig0.

The following table shows the interface naming of the Cisco ASR920-4SZ-A/ASR920-4SZ-D ports:

| 1G Cu Port | 10G SFP+/1GSFP[2] | |
|---|---|---|
| 1 | 3 | 5 |
| 0 | 2 | 4 |

[2] Ports 2, 3, 4, and 5 when operating in 1G Mode is operationally up only when the peer connecting interfaces are in Auto negotiation mode.

- Interfaces 0–1 are Copper only ports with RJ45 connector.
- Interfaces 0 and 1are referred to as Gigabit Ethernet 0/0/0–GigabitEthernet 0/0/1 respectively.
- Interfaces 2 to 5 are dual rate ports. These ports support 1G or 10G mode depending on the optics (SFP or SFP+ respectively) installed in these ports.

**Note** Dual-Rate functionality is supported only with the Supported SFPs, listed in the *Cisco ASR 920 Series Aggregation Services Router Hardware Installation Guide*.

- Interfaces 2 to 5 are named as TenGigibitEthernet 0/0/2–TenGigabitEthernet 0/0/5 respectively. The interface name remains unchanged even if an SFP is installed in the port and the port is operating in 1G mode.
- Out of Band Management Network port is referred as interface Gig0.

The following table shows the interface naming of the Cisco ASR-920-10SZ-PD ports:

| **1G Cu** | **1G SFP** | | | | | | | | **10G SFP+** | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | - | - | - | - | - | - | - | - | - | - |
| 0 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

- Interfaces 0–1 are Copper only ports with RJ45 connector.
- Interfaces 2-9 are Gigabit Ethernet SFP ports.
- Interfaces 10-11 are 10-Gigabit Ethernet SFP+ ports that support 10G mode.

The following table shows the interface naming of the Cisco ASR-920-8S4Z-PD ports:

| **1G Cu** | **1G SFP** | | | | | | **10G SFP+** | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | - | - | - | - | - | - | - | - | - | - |
| 0 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |

- Interfaces 0–1 are Copper only ports with RJ45 connector.
- Interfaces 2-7 are Gigabit Ethernet SFP ports.
- Interfaces 8-11 are 10-Gigabit Ethernet SFP+ ports that support 10G mode.

The following table shows the interface naming of the Cisco ASR-920-24SZ-IM, Cisco ASR-920-24SZ-M, ASR-920-24TZ-M ports:

| **IM Slots (for Cisco ASR-920-24SZ-IM only)** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1G SFP/Cu**[3] | | | | | | | | | | | | **10G SFP+** | |
| 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | 27 |
| 0 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 |

[3] Ports 0 -23 are Copper ports for ASR-920-24TZ-M

- Interfaces 0–23 are Gigabit Ethernet SFP ports for ASR-920-24SZ-IM, ASR-920-24SZ-M, and Copper port for ASR-920-24TZ-M.
- Interfaces 24-27 are 10-Gigabit Ethernet SFP+ ports that support 10G mode.

The following table shows the interface naming of the Cisco ASR-920-12SZ-IM:

| 10G/1G SFP | | | | 1G SFP | | | | 1G Cu | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| — | | | | — | | | | 7 | 5 | 3 | 1 |
| 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 6 | 4 | 2 | 0 |

The following table shows the interface naming of the Cisco ASR-920-12SZ-A/Cisco ASR-920-12SZ-D ports:

| 10G SFP+/1G SFP | | | | | |
|---|---|---|---|---|---|
| 1 | 3 | 5 | 7 | 9 | 11 |
| 0 | 2 | 4 | 6 | 8 | 10 |

- Interfaces 0–11 are dual rate ports. These ports support 1G or 10G mode depending on the optics (SFP or SFP+ respectively) installed in these ports.

The following table shows the interface naming of the Cisco ASR-920-20SZ-M ports:

| 1G Cu port | | 1G SFP port | | | | | | | | | | 10G SFP port | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | 27 |
| 0 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 |

- Interfaces 0–3 are Copper only ports with RJ45 connector.
- Interfaces 4-23 are Gigabit Ethernet SFP ports.
- Interfaces 24-27 are 10-Gigabit Ethernet SFP+ ports that support 10G mode.

**All** Interfaces with CU SFP, flap twice during router boot up. This behaviour is applicable to the following variants that support CU SFP:

- ASR-920-12CZ-A/D
- ASR-920-4SZ-A/D
- ASR-920-10SZ-PD and ASR-920-8S4Z-PD
- ASR-920-24SZ-M
- ASR-920-24SZ-IM
- ASR-920-12SZ-IM
- ASR-920-20SZ-M

# Interface Speed Based on Port Type

The following table shows the interface speed of the Cisco ASR-920-12SZ-A/Cisco ASR-920-12SZ-D:

| Category | Cu Ports | | | SFP ports (With Fiber SFP plugged in) | | | SFP ports (With Copper SFP plugged in) | | | SFP+ |
|---|---|---|---|---|---|---|---|---|---|---|
| **Speed** | **10M** | **100M** | **1G** | **10M** | **100M** | **1G** | **10M** | **100M** | **1G** | **10G** |
| **10G Dual rate ports** | NA | NA | NA | Not Supported | Not Supported | Yes | Not Supported | Yes | Yes | Yes |

The following table shows the interface speed of the Cisco ASR-920-20SZ-M:

| Category | Cu Ports | | | SFP ports (With Fiber SFP plugged in) | | | SFP ports (With Copper SFP plugged in) | | | SFP+ |
|---|---|---|---|---|---|---|---|---|---|---|
| **Speed** | **10M** | **100M** | **1G** | **10M** | **100M** | **1G** | **10M** | **100M** | **1G** | **10G** |
| **1G Copper /SFP ports** | Yes | Yes | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Not Supported | Yes |
| **10G Dual rate ports** | NA | NA | NA | NA | NA | NA | NA | Not Supported | Not Supported | Yes |

# VCoP Optics Support

The following table indicates the GE/Dual rate ports that support VCoP optics.

| Chassis | 1 GE Port | Dual Rate 1 GE/10 GE port |
|---|---|---|
| ASR-920-10SZ-PD | 3, 5, 7, and 9 | NA |
| ASR-920-24SZ-IM[4] | 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, and 23 | NA |
| ASR-920-12SZ-IM[5] | 0 to 11 | 12 to 15 |
| ASR-920-12CZ-A[6] | 0, 1, 10, and 11 | NA |

[4] The Cisco ASR-920-24SZ-IM, ASR-920-24SZ-M routers support a maximum of 12 VCoP smart SFPs and only on GE ports of the top row.

[5] The Cisco ASR-920-12SZ-IM router supports a maximum of 8 VCoP smart SFPs and on all GE and 10 GE ports.

[6] The Cisco ASR-920-12CZ-A/D supports a maximum of 4 VCoP smart SFPs on GE ports (0, 1, 10, and 11) with maximum ambient temperature of 65°C or it supports a maximum of 14 VCoP smart SFPs on all 12 GE + two 10 GE dual rate ports with maximum temperature of 55°C.