

cisco asr 900 series aggregation services router interface

Published: September 27, 2026 | Index ID: #-

Introduction

In today's hyper connected world, service providers and large enterprises demand routers that can deliver high throughput, low latency, and robust reliability across diverse network environments. Cisco's **ASR 900 series aggregation services router** has become a cornerstone for many operators, thanks to its modular design, powerful processing capabilities, and extensive interface options. Whether you're a network engineer setting up a new edge site or a senior architect planning a multi site backbone, understanding how to configure and optimize the **ASR 900 series interface** is essential for achieving peak performance and operational resilience.

This guide dives deep into the intricacies of the *ASR 900 interface family*, covering everything from basic configuration to advanced troubleshooting. We'll explore the physical and logical interface types, best practices for port channeling, QoS tuning, redundancy mechanisms, and real world deployment scenarios. By the end of this article, you'll have a solid foundation to design, configure, and maintain your ASR 900 interfaces with confidence.

Overview of Cisco ASR 900 Series

Key Features

The **ASR 900 series** is engineered for high density edge routing and aggregation. Some of its standout features include:

- Modular chassis architecture with multiple service modules (SRM) and line cards.
- Support for up to 24 x 10 /GbE or 12 x 40 /GbE ports, plus optional 100 /GbE line cards.
- Built in service policy engine for granular QoS and traffic management.
- Advanced hardware acceleration for encryption, compression, and routing tables.
- Integrated high availability features such as HSRP, VRRP, and GLBP.

Use Cases

Typical deployment scenarios for the ASR 900 series include:

1. Edge aggregation in metro networks, providing a single point of convergence for multiple access technologies.
2. Service provider backbones, where the router handles large volumes of IP/MPLS traffic.
3. Enterprise campus cores, delivering high speed connectivity between data centers and branch offices.
4. Data center interconnects, enabling efficient routing between multiple data center sites.

Understanding Aggregation Services Router Interfaces

Physical vs Logical Interfaces

The ASR 900 distinguishes between **physical interfaces** (the actual ports on the chassis) and **logical interfaces** (the software abstraction used for configuration). Logical interfaces allow you to assign IP addresses, apply policies, and enable protocols regardless of the underlying physical port.

Interface Types

Common interface types found on the ASR 900 include:

- GigabitEthernet (GE) – 1 /GbE ports.
- TenGigabitEthernet (10GE) – 10 /GbE ports.
- FortyGigabitEthernet (40GE) – 40 /GbE ports.
- HundredGigabitEthernet (100GE) – 100 /GbE ports.
- Serial interfaces for legacy WAN links.

Interface Naming Conventions

Standard naming follows the format type# or type#/subint for subinterfaces. Examples:

- TenGigabitEthernet0/0/0 – first 10 /GbE port.
- FortyGigabitEthernet1/2/3.100 – subinterface 100 on port 3 of slot 1, subslot 2.

Configuring Basic Interfaces on ASR 900

Accessing the CLI

Begin by connecting to the router's console port or SSH session. Once logged in, enter global configuration mode:

```
Router# configure terminal
```

Enter configuration commands, one per line. End with CNTL/Z.

```
Router(config)#
```

Setting Interface Parameters

To configure a physical interface, use the interface command. For example, to enable a 10 /GbE port:

```
Router(config)# interface TenGigabitEthernet0/0/0
```

```
Router(config-if)# no shutdown
```

```
Router(config-if)# description Uplink to Core Router
```

```
Router(config-if)# exit
```

Assigning IP Addresses

For routed interfaces, assign an IP address and subnet mask:

```
Router(config)# interface TenGigabitEthernet0/0/0
```

```
Router(config-if)# ip address 192.168.10.1 255.255.255.0
```

```
Router(config-if)# exit
```

Enabling and Disabling Interfaces

Use shutdown and no shutdown to control interface state. Remember to verify with show interface status after making changes.

Advanced Interface Features

Port Channels (EtherChannel)

Port channels aggregate multiple physical links into a single logical link, improving bandwidth and redundancy. To create a channel:

```
Router(config)# interface TenGigabitEthernet0/0/0
```

```
Router(config-if)# channel-group 1 mode active
```

```
Router(config-if)# exit
```

```
Router(config)# interface TenGigabitEthernet0/0/1
```

```
Router(config-if)# channel-group 1 mode active
```

```
Router(config-if)# exit
Router(config)# interface Port-channel1
Router(config-if)# no shutdown
Router(config-if)# exit
Link Aggregation Control Protocol (LACP)
```

LACP ensures that the port channel remains stable even if one of the member links fails. The mode active command above enables LACP.

Quality of Service (QoS) on Interfaces

QoS policies can be applied per interface to prioritize traffic:

- Define class maps to match traffic.
- Configure policy maps to assign actions (bandwidth, policing).
- Apply the policy map to the interface.

```
Router(config)# class-map match-any Voice
Router(config-cmap)# match ip dscp ef
Router(config-cmap)# exit
Router(config)# policy-map QoS-Voice
Router(config-pmap)# class Voice
Router(config-pmap-c)# priority percent 20
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface TenGigabitEthernet0/0/0
Router(config-if)# service-policy input QoS-Voice
Router(config-if)# exit
Redundancy and High Availability
```

For critical links, implement HSRP, VRRP, or GLBP to provide failover:

```
Router(config)# interface TenGigabitEthernet0/0/0
Router(config-if)# standby 1 ip 10.0.0.1
Router(config-if)# standby 1 priority 110
Router(config-if)# standby 1 preempt
Router(config-if)# exit
```

Interface Troubleshooting and Diagnostics

Common Issues

- Interface flaps due to duplex mismatch.
- Incorrect speed settings causing packet loss.
- Port channel misconfigurations leading to suboptimal load balancing.
- QoS policies over policing legitimate traffic.

CLI Commands for Diagnostics

Key commands include:

- show interface status – quick status overview.

- show interface counters errors – error counters.
- show etherchannel summary – port channel status.
- show run interface – current configuration.

Using SNMP and NetFlow for Monitoring

SNMP can poll interface statistics, while NetFlow provides detailed traffic flows. Configure NetFlow on an interface:

```
Router(config)# interface TenGigabitEthernet0/0/0
Router(config-if)# flow exporter Exporter1
Router(config-if)# flow exporter template timeout 60
Router(config-if)# flow monitor Monitor1
Router(config-if)# flow monitor Monitor1 record NetFlowRecord
Router(config-if)# flow monitor Monitor1 export Exporter1
Router(config-if)# exit
```

Best Practices for Interface Design and Deployment

Design Guidelines

- Plan for future growth; leave spare slots for additional line cards.
- Use uniform speed and duplex settings across all interfaces.
- Implement port channeling early to avoid reconfiguration later.
- Document all interface assignments and IP schemes.

Security Considerations

Secure interfaces by:

- Enabling port security to limit MAC addresses.
- Using ACLs to restrict inbound/outbound traffic.
- Applying authentication protocols like 802.1X on Ethernet interfaces.
- Regularly updating firmware to patch vulnerabilities.

Performance Tuning

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