



Configuring Transports

This module provides information about Nonstop Routing (NSR), Transmission Control Protocol (TCP), and User Datagram Protocol (UDP) transports on Cisco ASR 9000 Series Aggregation Services Routers .

If you have specific requirements and need to adjust the NSR, TCP, or UDP values, refer to the *Transport Stack Commands on IP Addresses and Services Command Reference for Cisco ASR 9000 Series Routers*.



Note For a complete description of the transport configuration commands listed in this module, refer to the *Cisco ASR 9000 Series Aggregation Services Router IP Addresses and Services Command Reference* publication.

Feature History for Configuring NSR, TCP, UDP, and UDP RAW Transports on the Cisco ASR 9000 Series Router

Release	Modification
Release 3.7.2	This feature was introduced.
Release 6.3.3	XIPC Queue Drop Detection and Correction feature was introduced for TCP.

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Prerequisites for Configuring NSR, TCP, UDP, Transports

The following prerequisites are required to implement NSR, TCP, UDP, Transports:

You must be in a user group associated with a task group that includes the proper task IDs. The command reference guides include the task IDs required for each command. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Information About Configuring NSR, TCP, UDP Transports

To configure NSR, TCP, and UDP transports, you must understand the following concepts:

NSR Overview

Nonstop Routing (NSR) is provided for Open Shortest Path First (OSPF) and Label Distribution Protocol (LDP) protocols for the following events:

- Route Processor (RP) failover
- Process restart for either OSPF, LDP, or TCP
- In-service software upgrades (ISSU)

In the case of the RP failover, NSR is achieved by for both TCP and the applications (OSPF or LDP).

NSR is a method to achieve High Availability (HA) of the routing protocols. TCP connections and the routing protocol sessions are migrated from the active RP to standby RP after the RP failover without letting the peers know about the failover. Currently, the sessions terminate and the protocols running on the standby RP reestablish the sessions after the standby RP goes active. Graceful Restart (GR) extensions are used in place of NSR to prevent traffic loss during an RP failover but GR has several drawbacks.

You can use the **nsr process-failures switchover** command to let the RP failover be used as a recovery action when the active TCP or active LDP restarts. When standby TCP or LDP restarts, only the NSR capability is lost till the standby instances come up and the sessions are resynchronized but the sessions do not go down. In the case of the process failure of an active OSPF, a fault-management policy is used. For more information, refer to *Implementing OSPF on Routing Configuration Guide for Cisco ASR 9000 Series Routers*.

TCP Overview

TCP is a connection-oriented protocol that specifies the format of data and acknowledgments that two computer systems exchange to transfer data. TCP also specifies the procedures the computers use to ensure that the data arrives correctly. TCP allows multiple applications on a system to communicate concurrently, because it handles all demultiplexing of the incoming traffic among the application programs.

Any IP protocol other than TCP or UDP is known as a RAW protocol.

For most sites, the default settings for the TCP, UDP, and RAW transports need not be changed.

UDP Overview

The User Datagram Protocol (UDP) is a connectionless transport-layer protocol that belongs to the IP family. UDP is the transport protocol for several well-known application-layer protocols, including Network File System (NFS), Simple Network Management Protocol (SNMP), Domain Name System (DNS), and TFTP.

Any IP protocol other than TCP, UDP, is known as a RAW protocol.

For most sites, the default settings for the TCP, UDP, and RAW transports need not be changed.

During external port scanning on ports 19 and 20, the UDP packets dropped by Nmap tool without sending an ICMP response, cause uncertainty in identifying the true state of the ports. The port states can be open, closed, or filtered.

Due to no response from the target system, the port states might misclassify as open instead of a closed or filtered state, and can lead to a false-positive situation.

Table 1: UDP port availability for Applications

Platform	Start of Range	End of Range	Availability
Cisco IOS XR 64-bit Operating System	15000	57344	Available
Cisco IOS XR 64-bit Operating System	57345	65535	Reserved
Cisco IOS XR 32-bit Operating System	15000	65535	Available

How to Configure Failover as a Recovery Action for NSR

This section contains the following procedure:

Configuring Failover as a Recovery Action for NSR

This task allows you to configure failover as a recovery action to process failures of active instances.

When the active TCP or the NSR client of the active TCP terminates or restarts, the TCP sessions go down. To continue to provide NSR, failover is configured as a recovery action. If failover is configured, a switchover is initiated if the active TCP or an active application (for example, LDP, OSPF, and so forth) restarts or terminates.

For information on how to configure MPLS Label Distribution Protocol (LDP) for NSR, refer to the *MPLS Configuration Guide for Cisco ASR 9000 Series Routers*.

For information on how to configure NSR on a per-process level for each OSPF process, refer to the *Routing Configuration Guide for Cisco ASR 9000 Series Routers*.



Note Before performing this procedure, enable RP isolation using the **isolation enable** command for improved troubleshooting. Without enabling RP isolation, the failing process will not generate the logs required to find the root cause of the failure.

SUMMARY STEPS

1. **configure**
2. nsr process-failures switchover
3. **commit**


```
RP/0/RSP0/CPU0:Router# show tcp pak-rate stats
```

```
PR - Number of packets in 30 sec (display, if more than Rate-limit)
MPR - Maximum size packets in 30 sec (display, if more than Maximum packet rate)
```

Time	Foreign Address	Local Address	VRF	PR	MPR
Nov 19 15:56:08.464	6.6.13.7:179	6.6.13.6:23898	0x60000000	18767	1502
Nov 19 15:56:08.464	6.6.1.7:46922	6.6.1.6:179	0x60000000	107802	8932

**Note**

- These are the culprit session information and applied LPTS dynamic policer on these sessions.
- Using default BGP timers (60 sec KA and 180 sec hold timer expiry) and show commands, we can observe the number of packets received in the last 30 sec.
- After applying policer, if the number of packets received are less than the configured packet rate, after 85 sec, above details will be removed from the show command.

The following example verifies the sessions statistics at XIPC policer-index level and per-session level.

```
RP/0/RSP0/CPU0:Router# show lpts pifib hardware police location 0/3/cPU0 | i XIPC
```

```
Accept Drop
```

```
XIPC 97 Local 1000 9600 3912960 368661 01234567
```

```
RP/0/RSP0/CPU0:Router# show lpts pifib hardware police location 0/3/cPU0 | i XIPC
```

```
Accept Drop
```

```
XIPC 97 Local 1000 9600 0 0 01234567
```

**Note**

Statistics are cleared when last session under this policer index is removed.

The following example verifies the sessions statistics at XIPC policer and also provides the entries present in the hardware.

```
RP/0/RSP0/CPU0:Router# show lpts pifib hardware entry statistics location 0/3/cpu0 | i 6.6.1.7,
```

						Accept/Drop	
1754	IPV4	default	TCP	any	LU(30)	4021290/456698	any, 179 6.6.1.7, 46922
2584	IPV4	default	TCP	any	LU(30)	0/0	any, 179 6.6.1.7, any

Additional References

The following sections provide references related to configuring NSR, TCP, and UDP transports.

Related Documents

Related Topic	Document Title
the Cisco ASR 9000 Series Router Transport Stack commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	<i>Transport Stack Commands in the IP Addresses and Services Command Reference for Cisco ASR 9000 Series Routers</i>
the Cisco ASR 9000 Series Router MPLS LDP commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	<i>MPLS Label Distribution Protocol Commands in the MPLS Command Reference for Cisco ASR 9000 Series Routers</i>
the Cisco ASR 9000 Series Router OSPF commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	<i>OSPF Commands in the Routing Command Reference for Cisco ASR 9000 Series Routers</i>
MPLS Label Distribution Protocol feature information	<i>Implementing MPLS Label Distribution Protocol in the MPLS Configuration Guide for Cisco ASR 9000 Series Routers</i>
OSPF feature information	<i>Implementing OSPF in the Routing Configuration Guide for Cisco ASR 9000 Series Routers</i>

Standards

Standards	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIBs	MIBs Link
—	To locate and download MIBs, use the Cisco MIB Locator found at the following URL and choose a platform under the Cisco Access Products menu: https://mibs.cloudapps.cisco.com/ITDIT/MIBS/servlet/index

RFCs

RFCs	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
The Cisco Technical Support website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

