



## gRPC Commands

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This module describes the commands used to use the gRPC Protocol to define network operations with data models.

For detailed information about gRPC concepts, configuration tasks, and examples, see the *Use gRPC Protocol to Define Network Operations with Data Models in the Cisco ASR 9000 Series Router* module in the *Programmability Configuration Guide for Cisco ASR 9000 Series Routers*.

gRPC encodes requests and responses in binary. gRPC is extensible to other content types along with Protobuf. The Protobuf binary data object in gRPC is transported over HTTP/2.

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## grpc aaa accounting queue-size

To configure the number of accounting records in a queue, use the **grpc aaa accounting queue-size** command in the Global Configuration mode.

**grpc aaa accounting queue-size** *size*

<b>Syntax Description</b>	<i>size</i>	Specifies the number of accounting history records in a queue. The default value is 40, and it ranges from 1—512.
<b>Command Default</b>	None	
<b>Command Modes</b>	Global Configuration mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 24.3.1	The command was introduced.
<b>Usage Guidelines</b>	None	
<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	config-services	read, write

This example configures the maximum size for history record processing queues to the specified value.

```
Router# configure
Router(config)# grpc aaa accounting queue-size 30
Router(config)# end
```

## gRPC certificate common-name

To allow the router (tunnel client) to dial out to a collector (tunnel server), use the **gRPC** command in the XR Config mode. To remove the **gRPC** service, use the **no** form of this command.

**gRPC certificate common-name** *WORD*

<b>Syntax Description</b>	<i>WORD</i>	Specifies the common name when certificate is generated, default: <b>ems.cisco.com</b> .
<b>Command Default</b>	None	
<b>Command Modes</b>	XR Config mode	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 24.1.1	This command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	config-services	read, write

### Examples

The following example shows how to specify a common-name:

```
Router(config)#gRPC
Router(config-gRPC)#certificate common-name
Router(config-gRPC)#commit
```

# gnsi load service authorization policy

To instruct the router to load the service authorization policy file into its memory and update the policy, use the **gnsi load service authorization policy** command in Global Configuration Mode.

**gnsi load service authorization policy** *file\_path*

<b>Syntax Description</b>	<i>file-path</i> Specifies the path of the policy file.
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<b>Command Default</b>	Enabled, by default
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<b>Command Modes</b>	Global Configuration Mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 7.11.1	This command was introduced.

<b>Usage Guidelines</b>	A policy file which has no specified or the policy is invalid, the default behavior will transition to the zero-policy behavior. Zero-policy allows all gRPC services to all the users if their profiles are configured.
-------------------------	--

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	config-services	read, write

This example shows how to activate the authorization policy test.json in the router.

```
Router(config)#gnsi load service authorization policy /disk0:/test.json
Successfully loaded policy
```

## grpc gnsi service certz ssl-profile-id

To instruct the router to load the certz.proto, use the **grpc gnsi service certz ssl-profile-id** command in Global Configuration Mode. To disable the SSL profiles configured with certz.proto, use the no form of the command.

**grpc gnsi service certz ssl-profile-id** *ssl-profile name*

<b>Syntax Description</b>	<i>ssl-profile name</i> Specifies the SSL-profile name for which certz. proto needs to be activated.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	Global Configuration Mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 24.1.1	This command was introduced.

<b>Usage Guidelines</b>	If Certz. proto is not active, then gNOI cert.proto is taken into consideration. If neither certz.proto nor cert.proto is active, then TLS trustpoint's data is considered.
-------------------------	---

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	config-services	read, write

This example shows how to activate the certz.proto in the router.

```
Router(config)#grpc gnsi service certz ssl-profile-id gNxi
Router(config)#commit
```

## grpc max-concurrent-streams

To specify a limit on the number of concurrent streams per gRPC connection to be applied on the server, use the **grpc max-concurrent-streams** command in the Global Configuration mode. To restore the default value, use the **no** form of this command.

**grpc max-concurrent-streams limit**

<b>Syntax Description</b>	<b>max-concurrent-streams limit</b>	Specifies the limit on the number of concurrent streams per gRPC connection to be applied on the server. The range is from 1 to 128. The command default is 32.
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**Command Default** By default, the maximum concurrent streams per gRPC connection is 32.

**Command Modes** Global Configuration mode

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 24.1.1	This command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	config-services	read, write

**Examples** The following example shows how to set the limit of the number of concurrent streams per gRPC connection to 40:

```
Router#configure
Router(config)#grpc max-concurrent-streams 40
```

# script exec

To execute a script provided by Cisco, use the **script exec** command in EXEC mode.

```
script exec { auto-update file-name remote-server-path condition [ manual | on-run | schedule ] |
file-name }
```

Syntax Description	
<b>auto-update</b>	It enables routers to automatically update the local copy of the scripts with the latest copy of the scripts on the server.
<b>manual</b>	It enables routers to update the scripts at any specific time.
<b>on-run</b>	It enables routers to update the scripts during run time. Only the exec scripts support the on-run option.
<b>schedule</b>	It enables routers to update the scripts at a scheduled time. The schedule option does not support SCP protocol.
<i>file-name</i>	Specifies the file name of the script file. The script file must be in .py format.

**Command Default** None

**Command Modes** EXEC mode

Command History	Release	Modification
	Release 7.5.1	This command was introduced.

**Usage Guidelines** The script EXEC command opens the script utility, which allows you to execute Cisco-supplied scripts. The script utility can read standard terminal input from the user if the script you run requires input from the user.



**Note** The script utility is designed to run only Cisco-supplied scripts. You cannot execute script files that lack Cisco signatures or that have been corrupted or modified.

When you run the script, the script is downloaded and the checksum is automatically configured on the router.

- If on-run option is configured, running the script run command downloads the script.
- If manual option is configured, then you must run script update Exec command.
- If schedule option is selected, then the script is automatically updated after the specified interval.

Task ID	Task ID	Operations
	config-services	read, write

The following example displays sample3.py script is automatically updated from the remote server at <http://10.23.255.205>:

```
Router# configure  
Router(config)# script exec auto-update sample3.py http://10.23.255.205 condition manual
```



# show gnsi acctz statistics

To display the detailed statistics for GNSI Acctz accounting, use the **show gnsi acctz statistics** command in the EXEC mode.

This command provides these information:

- per service counter
- drop counter
- rate of accounting events
- history
- connected collectors
- collector per service record counters

## show gnsi acctz statistics

**Syntax Description** This command has no keywords or arguments.

**Command Default** None

**Command Modes** EXEC mode

Command History	Release	Modification
	Release 24.3.1	The command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

Task ID	Task ID	Operation
	config-services	read, write

This example displays detailed statistics for GNSI Acctz accounting with the maximum queue size specified in the [grpc aaa accounting queue-size](#) command configuration examples respectively.

```
Router#show gnsi acctz statistics
Tue Jul 23 05:59:28.755 UTC
Acctz History Buffer:
  Total Records                : 80029
  Total History Truncation     : 0
  Grpc Service Records:
    GNMI                       : 80002
    GNOI                       : 0
    GNSI                       : 4
    GRIBI                      : 0
    P4RT                       : 0
```

## show gnsi acctz statistics

```

    Unspecified                : 0
  Cmd Service Records:
    Shell                      : 0
    Cli                        : 23
    Netconf                    : 0
    Unspecified                : 0
  History snapshot:
    Max Memory Size            : 20 MB
    Memory Used                 : 0 MB
    Max Number Of Records      : 30
    Records Used                : 30
gRPC Accounting Queue:
  Grpc services:
    GNMI                       : 80002 sent, 0 dropped, 0 truncated
    GNOI                       : 0 sent, 0 dropped, 0 truncated
    GNSI                       : 4 sent, 0 dropped, 4 truncated
    GRIBI                      : 0 sent, 0 dropped, 0 truncated
    P4RT                       : 0 sent, 0 dropped, 0 truncated
    Unspecified                : 0 sent, 0 dropped, 0 truncated
  Queue Rate:
    Input                      : 80000
    Output                     : 80000
    Drop                       : 0
  Stats:
    Queue Buffer Used           : 0 MB
    Queue Enqueue              : 80006
    Queue Dequeue              : 80006
    Queue Drops                : 0
    Queue Max Time              : 14311 usec
    Queue Min Time              : 1 usec
    Queue Avg Time              : 504 usec
  Channel Stats:
    Queue Channel Size         : 512
    Queue Channel Length       : 0
    Queue Inuse Size           : 0
    Queue Size                  : 30
    Queue Low Water Mark       : 1
    Queue Water Mark           : false
    Queue Channel Closed       : false
    Queue Status                : 2
    Queue Enqueue Count        : 80006
    Queue Decrement Count      : 80006
    Queue Retry Count          : 0
    Queue Retry Full Count     : 0
  Errors:
    Queue Init Failure         : 0
    Queue Update Failure       : 0
    Queue Dequeue Failure      : 0
    Queue Invalid Parameters   : 0
SendtoAAA Accounting Queue:
  Grpc services:
    GNMI                       : 80002 sent, 0 dropped, 0 truncated
    GNOI                       : 0 sent, 0 dropped, 0 truncated
    GNSI                       : 4 sent, 0 dropped, 0 truncated
    GRIBI                      : 0 sent, 0 dropped, 0 truncated
    P4RT                       : 0 sent, 0 dropped, 0 truncated
    Unspecified                : 0 sent, 0 dropped, 0 truncated
  Queue Rate:
    Input                      : 80000
    Output                     : 80000
    Drop                       : 0
  Stats:
    Queue Buffer Used           : 0 MB
    Queue Enqueue              : 80006

```

```

Queue Dequeue           : 80006
Queue Drops             : 0
Queue Max Time          : 66549 usec
Queue Min Time          : 1 usec
Queue Avg Time          : 2544 usec
Channel Stats:
Queue Channel Size      : 512
Queue Channel Length    : 0
Queue Inuse Size        : 0
Queue Size              : 40
Queue Low Water Mark    : 1
Queue Water Mark        : false
Queue Channel Closed    : false
Queue Status            : 2
Queue Enqueue Count     : 80006
Queue Decrement Count   : 80006
Queue Retry Count       : 0
Queue Retry Full Count  : 0
Errors:
Queue Init Failure      : 0
Queue Update Failure    : 0
Queue Dequeue Failure   : 0
Queue Invalid Parameters : 0
Cmd Accounting Queue:
Cmd services:
Shell                   : 0 sent, 0 dropped, 0 truncated
Cli                     : 23 sent, 0 dropped, 0 truncated
Netconf                 : 0 sent, 0 dropped, 0 truncated
Unspecified             : 0 sent, 0 dropped, 0 truncated
Queue Rate:
Input                   : 2
Output                  : 2
Drop                    : 0
Stats:
Queue Buffer Used        : 0 MB
Queue Enqueue           : 23
Queue Dequeue           : 23
Queue Drops             : 0
Queue Max Time          : 248 usec
Queue Min Time          : 26 usec
Queue Avg Time          : 94 usec
Channel Stats:
Queue Channel Size      : 512
Queue Channel Length    : 0
Queue Inuse Size        : 0
Queue Size              : 40
Queue Low Water Mark    : 1
Queue Water Mark        : false
Queue Channel Closed    : false
Queue Status            : 2
Queue Enqueue Count     : 23
Queue Decrement Count   : 23
Queue Retry Count       : 0
Queue Retry Full Count  : 0
Errors:
Queue Init Failure      : 0
Queue Update Failure    : 0
Queue Dequeue Failure   : 0
Queue Invalid Parameters : 0
Client Stats:
Number Of Clients       : 2
History Truncation Events : 0
Client Idle Timeouts    : 0
Record Requests         : 4

```

## show gnsi acctz statistics

```

Record Responses                : 80029
Collectors:
Collector Statistics:
  IP                            : 192.168.122.1
  Port                          : 25906
  Total                          : Records: 80029, Drops: 0
  Total History Truncation      : 0
  Grpc Service Records:
    gNMI                        : Records: 80002, Drops: 0
    gNOI                        : Records: 0, Drops: 0
    gNSI                        : Records: 4, Drops: 0
    gRIBI                       : Records: 0, Drops: 0
    P4RT                        : Records: 0, Drops: 0
    Unspecified                 : Records: 0, Drops: 0
  Cmd Service Records:
    Shell                       : Records: 0, Drops: 0
    CLI                         : Records: 23, Drops: 0
    Netconf                    : Records: 0, Drops: 0
    Unspecified                 : Records: 0, Drops: 0
  gRPC Stream Stats:
    gRPC Stream Status          : 2
    gRPC Send Status            : 1
    gRPC Send Error Channel Length : 0
    gRPC Send Errors            : 0
    gRPC Send Enqueue Count     : 80029
    gRPC Send Close Count       : 0
    gRPC Stream Send Count      : 80029
    gRPC Stream Send Error Count : 0
  Send Channel Stats:
    Queue Channel Size          : 512
    Queue Channel Length        : 0
    Queue Inuse Size            : 0
    Queue Size                   : 40
    Queue Low Water Mark        : 0
    Queue Water Mark            : false
    Queue Channel Closed        : false
    Queue Status                 : 2
    Queue Enqueue Count         : 80029
    Queue Decrement Count       : 80029
    Queue Retry Count           : 0
    Queue Retry Full Count      : 0
Collector Statistics:
  IP                            : 192.168.122.1
  Port                          : 25912
  Total                          : Records: 80029, Drops: 0
  Total History Truncation      : 0
  Grpc Service Records:
    gNMI                        : Records: 80002, Drops: 0
    gNOI                        : Records: 0, Drops: 0
    gNSI                        : Records: 4, Drops: 0
    gRIBI                       : Records: 0, Drops: 0
    P4RT                        : Records: 0, Drops: 0
    Unspecified                 : Records: 0, Drops: 0
  Cmd Service Records:
    Shell                       : Records: 0, Drops: 0
    CLI                         : Records: 23, Drops: 0
    Netconf                    : Records: 0, Drops: 0
    Unspecified                 : Records: 0, Drops: 0
  gRPC Stream Stats:
    gRPC Stream Status          : 2
    gRPC Send Status            : 1
    gRPC Send Error Channel Length : 0
    gRPC Send Errors            : 0
    gRPC Send Enqueue Count     : 80029

```

```
gRPC Send Close Count      : 0
gRPC Stream Send Count    : 80029
gRPC Stream Send Error Count : 0
Send Channel Stats:
Queue Channel Size        : 512
Queue Channel Length      : 0
Queue Inuse Size          : 0
Queue Size                : 40
Queue Low Water Mark      : 0
Queue Water Mark          : false
Queue Channel Closed      : false
Queue Status              : 2
Queue Enqueue Count       : 80029
Queue Decrement Count     : 80029
Queue Retry Count         : 0
Queue Retry Full Count    : 0
Accounting Stats:
Grpc Accounting           : 80006
Cmd Accounting            : 23
Error Stats:
AAA Dequeue Failed        : 0
AAA Payload Failed        : 0
Send To AAA Failed        : 0
gRPC Dequeue Failed       : 0
Cmd Dequeue Failed        : 0
Accounting Payload Failed : 0
Record Create Failed      : 0
Get RPC Failed            : 0
Get Method Failed         : 0
Serialize Payload Failed   : 0
Record Response Payload Failed : 0
Get Local Info Failed     : 0
Get Remote Info Failed    : 0
Get Username Failed       : 0
Locald Invalid Service Type : 0
```

# show gnsi service authorization policy

To display the active gRPC service authorization policies on the router, use the **show gnsi service authorization policy** command in Global Configuration mode.

## show gnsi service authorization policy

<b>Syntax Description</b>	This command has no keywords or arguments.
---------------------------	--

<b>Command Default</b>	Enabled, by default
------------------------	---------------------

<b>Command Modes</b>	Global Configuration mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 7.11.1	The command was introduced.

<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.
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<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	config-services	read

This example displays the policy which is active on the router:

```
Router#show gnsi service authorization policy
Wed Jul 19 10:56:14.509 UTC{
  "version": "1.0",
  "created_on": 1700816204,
  "policy": {
    "name": "authz",
    "allow_rules": [
      {
        "name": "allow all gNMI for all users",
        "request": {
          "paths": [
            "*"
          ]
        },
        "source": {
          "principals": [
            "*"
          ]
        }
      }
    ],
    "deny_rules": [
      {
        "name": "deny gNMI set for oper users",
        "request": {
          "paths": [
            "/gnmi.gNMI/*"
          ]
        }
      }
    ]
  }
}
```

```
    ]
  },
  "source": {
    "principals": [
      "User1"
    ]
  }
]
}
```

# show grpc certificate

To display the active gRPC certificate management policies on the router, use the **show grpc certificate** command in EXEC mode.

## show grpc certificate

<b>Syntax Description</b>	This command has no keywords or arguments.
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<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	EXEC mode
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 24.1.1	The command was introduced.

<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.
-------------------------	--

<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	config-services	read

This example displays the active gRPC certificate management policies on the router. The below-mentioned command output is truncated version.

```
Router#show grpc certificate
Certificate:
  Data:
    Version: 3 (0x2)
    Serial Number: 32 (0x20)
    Signature Algorithm: sha256WithRSAEncryption
    Issuer: CN=localhost,O=OpenConfig,C=US
    Validity
      Not Before: Nov  8 08:49:38 2023 GMT
      Not After : Mar 22 08:49:38 2025 GMT
    Subject: CN=ems,O=OpenConfig,C=US
    Subject Public Key Info:
      Public Key Algorithm: rsaEncryption
      RSA Public-Key: (4096 bit)
      Modulus:
        00:ea:6a:6c:25:be:9f:15:71:ce:74:89:03:ec:ef:
        0b:3b:de:58:a8:7e:28:b8:cf:b3:82:91:b4:5c:42:
        e7:d8:28:98:35:bd:35:60:a7:4e:f8:77:02:46:5f:
        27:a4:16:cf:3c:e3:24:28:69:9c:22:1e:e3:52:96:
        71:87:7c:40:0c:1f:dd:30:ea:dc:40:ca:93:00:54:
        5e:de:20:54:5b:f4:2f:9f:19:6f:71:61:28:69:3d:
        97:26:ab:e1:5f:53:3c:f1:a2:c3:14:f4:01:90:1a:
        .
        .
        .
```



```
      Exponent: 65537 (0x10001)
X509v3 extensions:
  X509v3 Key Usage: critical
    Digital Signature
  X509v3 Extended Key Usage:
    TLS Web Client Authentication, TLS Web Server Authentication
  X509v3 Authority Key Identifier:
    keyid:0A:A8:9A:6A:23:34:AE:CA:96:00:2C:F3:04:38:14:E3:D4:8D:77:BD

  X509v3 Subject Alternative Name:
    DNS, IP Address:64.103.223.56
Signature Algorithm: sha256WithRSAEncryption
b9:89:ec:60:3d:8d:7d:9c:dc:08:56:89:99:44:92:98:45:b6:
97:ba:e3:e5:f2:48:b2:44:8d:db:23:bb:a1:c0:62:79:78:18:
d7:55:f6:4a:67:5b:75:e0:c0:0b:52:51:07:36:d5:6c:c7:67:
48:86:8d:dd:70:1c:9f:7c:a1:7b:aa:a5:4e:e1:ad:cf:4c:e5:
81:db:92:cf:88:70:5a:1c:8d:de:0d:e8:b3:05:de:b9:04:4d:
23:e1:de:66:e5:08:bd:2e:31:0a:07:a6:c0:00:3a:38:2f:00:
.
.
.
```

# show tech-support script

To collect logs that contain debug information for logical traces and tech-support data, use the **show tech-support script** command in EXEC mode.

```
script tech-support script { file filepath_filename | list-CLIs | time-out }
```

<b>Syntax Description</b>	<b>file filepath_filename</b> Specifies the complete path to a file, including the filename to save the log.				
	<b>list-CLIs</b> Creates a log zip file containing a list of all CLI commands executed as part of the tech-support script. The CLI commands are only listed, not executed.				
	<b>time-out</b> Specifies the timeout value for each command in seconds ranging from 120-3600 seconds. By default, the timeout is 900 seconds.				
<b>Command Default</b>	None				
<b>Command Modes</b>	EXEC mode				
<b>Command History</b>	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 7.5.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 7.5.1	This command was introduced.
Release	Modification				
Release 7.5.1	This command was introduced.				
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.				
<b>Task ID</b>	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>config-services</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	config-services	read, write
Task ID	Operations				
config-services	read, write				

This example displays how to save the logical traces and tech-support data in the test file in the disk0 path:

```
Router# show tech-support script file disk0:/test.log
Wed Sep 25 07:11:39.915 PDT
++ Show tech start time: 2024-Sep-25.071140.PDT ++
Wed Sep 25 07:11:40 PDT 2024 Waiting for gathering to complete
.....
Wed Sep 25 07:12:49 PDT 2024 Compressing show tech output
Show tech output available at 0/RP0/CPU0 : /disk0:/test.log.tgz
++ Show tech end time: 2024-Sep-25.071250.PDT ++
```