



# Network Configuration Protocol Commands

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This chapter includes commands to configure the Network Configuration (Netconf) Protocol. More details on the Netconf protocol and the Yang model, please see the *System Security Configuration Guide for Cisco NCS 5500 Series Routers* *System Security Configuration Guide for Cisco NCS 540 Series Routers* *System Security Configuration Guide*.

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# netconf-yang agent rate-limit

To set the rate-limit for the netconf yang agent, use the **netconf-yang agent rate-limit** command in the appropriate mode. To delete the set rate-limit, use the **no** form of the command.

**netconf-yang agent rate-limit** *bytes*  
**no netconf-yang agent rate-limit** *bytes*

|                           |                                                                                                                                                                    |                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Syntax Description</b> | <i>bytes</i> The number of bytes to process per second. Range is 4096-4294967295. It is based on the size of the request(s) from the client to the netconf server. |                              |
| <b>Command Default</b>    | By default, no limit is set                                                                                                                                        |                              |
| <b>Command Modes</b>      | XR Config mode                                                                                                                                                     |                              |
| <b>Command History</b>    | <b>Release</b>                                                                                                                                                     | <b>Modification</b>          |
|                           | Release 7.0.1                                                                                                                                                      | This command was introduced. |
| <b>Usage Guidelines</b>   | <p>No specific guidelines impact the use of this command.</p> <p>Use the <b>show netconf-yang rate-limit</b> command to check if the set limit is adequate.</p>    |                              |
| <b>Task ID</b>            | <b>Task ID</b>                                                                                                                                                     | <b>Operation</b>             |
|                           | config-services                                                                                                                                                    | read,<br>write               |

## Example

This example shows how to use the **netconf-yang agent rate-limit** command:

```
RP/0/RP0/CPU0:router # netconf-yang agent rate-limit 5000
```

# clear netconf-yang agent rate-limit

To clear the set rate-limit statistics, use the **clear netconf-yang agent rate-limit** command in the appropriate mode.

**clear netconf-yang agent rate-limit**

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

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

|                      |      |
|----------------------|------|
| <b>Command Modes</b> | EXEC |
|----------------------|------|

|                        |                |                              |
|------------------------|----------------|------------------------------|
| <b>Command History</b> | <b>Release</b> | <b>Modification</b>          |
|                        | Release 7.0.1  | This 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,<br>write   |

## Example

This example shows how to use the **clear netconf-yang agent rate-limit** command:

```
RP/0/RP0/CPU0:router # clear netconf-yang agent rate-limit
```

# clear netconf-yang agent session

To clear the specified netconf agent session, use the **clear netconf-yang agent session** in XR EXEC mode.

**clear netconf-yang agent session** *session-id*

|                    |                                                             |
|--------------------|-------------------------------------------------------------|
| Syntax Description | <i>session-id</i> The session-id which needs to be cleared. |
|--------------------|-------------------------------------------------------------|

|                 |      |
|-----------------|------|
| Command Default | None |
|-----------------|------|

|               |              |
|---------------|--------------|
| Command Modes | XR EXEC mode |
|---------------|--------------|

| Command History | Release       | Modification                 |
|-----------------|---------------|------------------------------|
|                 | Release 7.0.1 | This command was introduced. |

|                  |                                                                                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Usage Guidelines | No specific guidelines impact the use of this command.<br>The <b>show netconf-yang clients</b> command can be used to get the required session-id(s). |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|

| Task ID | Task ID         | Operation      |
|---------|-----------------|----------------|
|         | config-services | read,<br>write |

## Example

This example shows how to use the **clear netconf-yang agent session** command:

```
RP/0/RP0/CPU0:router (config) # clear netconf-yang agent session 32125
```

# netconf-yang agent session

To set the session details (limits and timeouts) for a netconf-yang agent, use the **netconf-yang agent session** command in the appropriate mode. To remove the configured session limits and timeouts, use the **no** form of the command.

**netconf-yang agent session** { **limit** *value* | **absolute-timeout** *value* | **idle-timeout** *value* }

**no netconf-yang agent session** { **limit** *value* | **absolute-timeout** *value* | **idle-timeout** *value* }

|                    |                                                        |                                                                                                               |
|--------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Syntax Description | <b>limit</b> <i>value</i>                              | Sets the maximum count for concurrent netconf-yang sessions. Range is 1 to 1024.                              |
|                    | <b>absolute-timeout</b> <i>value</i>                   | Enables session absolute timeout and sets the absolute session lifetime. Range is 1 to 1440. Unit is minutes. |
|                    | <b>idle-timeout</b> <i>value</i>                       | Enables session idle timeout and sets the idle session lifetime. Range is 1 to 1440. Unit is minutes.         |
| Command Default    | By default, no limits are set                          |                                                                                                               |
| Command Modes      | XR Config mode                                         |                                                                                                               |
| Command History    | <b>Release</b>                                         | <b>Modification</b>                                                                                           |
|                    | Release 7.0.1                                          | This command was introduced.                                                                                  |
| Usage Guidelines   | No specific guidelines impact the use of this command. |                                                                                                               |
| Task ID            | <b>Task ID</b>                                         | <b>Operation</b>                                                                                              |
|                    | config-services                                        | read,<br>write                                                                                                |

## Example

This command shows how to use the **netconf-yang agent session** command:

```
RP/0/RP0/CPU0:router (config) # netconf-yang agent session limit
```

# netconf-yang agent ssh

To enable netconf agent over SSH (Secure Shell) , use the **netconf-yang agent ssh** command in XR Config mode. To disable netconf, use the **no** form of the command.

## netconf-yang agent ssh

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

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

|                      |                |
|----------------------|----------------|
| <b>Command Modes</b> | XR Config mode |
|----------------------|----------------|

|                        |                |                              |
|------------------------|----------------|------------------------------|
| <b>Command History</b> | <b>Release</b> | <b>Modification</b>          |
|                        | Release 7.0.1  | This command was introduced. |

|                         |                                                              |
|-------------------------|--------------------------------------------------------------|
| <b>Usage Guidelines</b> | SSH is currently the supported transport method for Netconf. |
|-------------------------|--------------------------------------------------------------|

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

|                 |                                                                          |
|-----------------|--------------------------------------------------------------------------|
| <b>Examples</b> | This example shows how to use the <b>netconf-yang agent ssh</b> command: |
|-----------------|--------------------------------------------------------------------------|

```
Router# configure
Router(config)# netconf-yang agent ssh
```

# show netconf-yang clients

To display the client details for netconf-yang, use the **show netconf-yang clients** command in XR EXEC mode.

## show netconf-yang clients

| <b>Syntax Description</b> | This command has no keywords or arguments.                                                                                             |         |              |                 |                              |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-----------------|------------------------------|
| <b>Command Default</b>    | None                                                                                                                                   |         |              |                 |                              |
| <b>Command Modes</b>      | XR EXEC mode                                                                                                                           |         |              |                 |                              |
| <b>Command History</b>    | <table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Release 7.0.1</td><td>This command was introduced.</td></tr> </table> | Release | Modification | Release 7.0.1   | This command was introduced. |
| Release                   | Modification                                                                                                                           |         |              |                 |                              |
| Release 7.0.1             | This command was introduced.                                                                                                           |         |              |                 |                              |
| <b>Usage Guidelines</b>   | No specific guidelines impact the use of this command.                                                                                 |         |              |                 |                              |
| <b>Task ID</b>            | <table> <tr> <th>Task ID</th><th>Operation</th></tr> <tr> <td>config-services</td><td>read</td></tr> </table>                          | Task ID | Operation    | config-services | read                         |
| Task ID                   | Operation                                                                                                                              |         |              |                 |                              |
| config-services           | read                                                                                                                                   |         |              |                 |                              |

## Example

This example shows how to use the **show netconf-yang clients** command:

```
RP/0/RP0/CPU0:router (config) # sh netconf-yang clients
Netconf clients
client session ID|  NC version|      client connect time|      last OP time|      last
OP type|      <lock>|
  22969|              1.1|          0d  0h  0m  2s|          11:11:24|
close-session|      No|
  15389|              1.1|          0d  0h  0m  1s|          11:11:25|
get-config|      No|
```

**Table 1: Field descriptions**

| Field name             | Description                                                      |
|------------------------|------------------------------------------------------------------|
| Client session ID      | Assigned session identifier                                      |
| NC version             | Version of the Netconf client as advertised in the hello message |
| Client connection time | Time elapsed since the client was connected                      |
| Last OP time           | Last operation time                                              |
| Last OP type           | Last operation type                                              |

 show netconf-yang clients

|                  |                                                                     |
|------------------|---------------------------------------------------------------------|
| Lock (yes or no) | To check if the session holds a lock on the configuration datastore |
|------------------|---------------------------------------------------------------------|



# show netconf-yang rate-limit

To display the statistics of the total data dropped , due to the set rate-limit, use the **show netconf-yang rate-limit** command in the appropriate mode.

**show netconf-yang rate-limit**

|                           |                                                        |                              |
|---------------------------|--------------------------------------------------------|------------------------------|
| <b>Syntax Description</b> | This command has no keywords or arguments.             |                              |
| <b>Command Default</b>    | None                                                   |                              |
| <b>Command Modes</b>      | EXEC                                                   |                              |
| <b>Command History</b>    | <b>Release</b>                                         | <b>Modification</b>          |
|                           | Release 7.0.1                                          | This 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                         |

## Example

This example shows how to use the **show netconf-yang rate-limit** command:

```
RP/0/RP0/CPU0:router # show netconf-yang rate-limit
rate-limit statistics
Total data dropped: 0 Bytes
```

# show netconf-yang statistics

To display the statistical details for netconf-yang, use the **show netconf-yang statistics** command in XR EXEC mode.

## show netconf-yang statistics

| <b>Syntax Description</b> | This command has no keywords or arguments.                                                                                             |         |              |                 |                              |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-----------------|------------------------------|
| <b>Command Default</b>    | None                                                                                                                                   |         |              |                 |                              |
| <b>Command Modes</b>      | XR EXEC mode                                                                                                                           |         |              |                 |                              |
| <b>Command History</b>    | <table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Release 7.0.1</td><td>This command was introduced.</td></tr> </table> | Release | Modification | Release 7.0.1   | This command was introduced. |
| Release                   | Modification                                                                                                                           |         |              |                 |                              |
| Release 7.0.1             | This command was introduced.                                                                                                           |         |              |                 |                              |
| <b>Usage Guidelines</b>   | No specific guidelines impact the use of this command.                                                                                 |         |              |                 |                              |
| <b>Task ID</b>            | <table> <tr> <th>Task ID</th><th>Operation</th></tr> <tr> <td>config-services</td><td>read</td></tr> </table>                          | Task ID | Operation    | config-services | read                         |
| Task ID                   | Operation                                                                                                                              |         |              |                 |                              |
| config-services           | read                                                                                                                                   |         |              |                 |                              |

## Example

This example shows how to use the **show netconf-yang statistics** command:

```
RP/0/RP0/CPU0:router (config) # sh netconf-yang statistics
```

```
Summary statistics
```

| time per request     | # requests   | total time   | min time per request | max |
|----------------------|--------------|--------------|----------------------|-----|
| avg time per request |              |              |                      |     |
| other                | 0            | 0h 0m 0s 0ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 0ms         | 0h 0m 0s 0ms |              |                      |     |
| close-session        | 4            | 0h 0m 0s 3ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 1ms         | 0h 0m 0s 0ms |              |                      |     |
| kill-session         | 0            | 0h 0m 0s 0ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 0ms         | 0h 0m 0s 0ms |              |                      |     |
| get-schema           | 0            | 0h 0m 0s 0ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 0ms         | 0h 0m 0s 0ms |              |                      |     |
| get                  | 0            | 0h 0m 0s 0ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 0ms         | 0h 0m 0s 0ms |              |                      |     |
| get-config           | 1            | 0h 0m 0s 1ms | 0h 0m 0s 1ms         |     |
| 0h 0m 0s 1ms         | 0h 0m 0s 1ms |              |                      |     |
| edit-config          | 3            | 0h 0m 0s 2ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 1ms         | 0h 0m 0s 0ms |              |                      |     |
| commit               | 0            | 0h 0m 0s 0ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 0ms         | 0h 0m 0s 0ms |              |                      |     |
| cancel-commit        | 0            | 0h 0m 0s 0ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 0ms         | 0h 0m 0s 0ms |              |                      |     |
| lock                 | 0            | 0h 0m 0s 0ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 0ms         | 0h 0m 0s 0ms |              |                      |     |
| unlock               | 0            | 0h 0m 0s 0ms | 0h 0m 0s 0ms         |     |
| 0h 0m 0s 0ms         | 0h 0m 0s 0ms |              |                      |     |

```

discard-changes      0 |      0h 0m 0s 0ms |      0h 0m 0s 0ms |
  0h 0m 0s 0ms |      0h 0m 0s 0ms |      0h 0m 0s 0ms |
validate             0 |      0h 0m 0s 0ms |      0h 0m 0s 0ms |
  0h 0m 0s 0ms |      0h 0m 0s 0ms |      0h 0m 0s 0ms |
xml parse            8 |      0h 0m 0s 4ms |      0h 0m 0s 0ms |
  0h 0m 0s 1ms |      0h 0m 0s 0ms |      0h 0m 0s 0ms |
netconf processor    8 |      0h 0m 0s 6ms |      0h 0m 0s 0ms |
  0h 0m 0s 1ms |      0h 0m 0s 0ms |

```

**Table 2: Field descriptions**

| Field name           | Description                                           |
|----------------------|-------------------------------------------------------|
| Requests             | Total number of processed requests of a given type    |
| Total time           | Total processing time of all requests of a given type |
| Min time per request | Minimum processing time for a request of a given type |
| Max time per request | Maximum processing time for a request of a given type |
| Avg time per request | Average processing time for a request type            |

# ssh server capability netconf-xml

To enable NETCONF reach XML subsystem via port 22, use the **ssh server capability netconf-xml** command in the XR Config mode. Use **no** form of this command to disable NETCONF reach XML subsystem.

**ssh server capability netconf-xml**

|                           |                                                                                                                                                                                                                                       |                              |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <b>Syntax Description</b> | This command has no keywords or arguments.                                                                                                                                                                                            |                              |
| <b>Command Default</b>    | Port 22 is the default port.                                                                                                                                                                                                          |                              |
| <b>Command History</b>    | <b>Release</b>                                                                                                                                                                                                                        | <b>Modification</b>          |
|                           | Release 7.0.1                                                                                                                                                                                                                         | This command was introduced. |
| <b>Usage Guidelines</b>   | To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance. |                              |
| <b>Task ID</b>            | <b>Task ID</b>                                                                                                                                                                                                                        | <b>Operations</b>            |
|                           | crypto                                                                                                                                                                                                                                | read,<br>write               |
| <b>Examples</b>           | <p>This example shows how to use the <b>ssh server capability netconf-xml</b> command:</p> <pre>Router# configure Router(config)# ssh server capability netconf-xml</pre>                                                             |                              |

# ssh server netconf port

To configure a port for the netconf SSH server, use the **ssh server netconf port** command in XR Config mode. To return to the default port, use the **no** form of the command.

**ssh server netconf port** *port number*

|                    |                                                                                                                                                                                        |                                                                                                                                                                                                                                                                               |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax Description | <b>port</b> Port number for the netconf SSH server (default port number is 830).<br><i>port-number</i>                                                                                 |                                                                                                                                                                                                                                                                               |
| Command Default    | The default port number is 830.                                                                                                                                                        |                                                                                                                                                                                                                                                                               |
| Command Modes      | XR Config mode                                                                                                                                                                         |                                                                                                                                                                                                                                                                               |
| Usage Guidelines   | Starting with IOS-XR 6.0.0 it is no longer sufficient to configure a netconf port to enable netconf subsystem support. ssh server netconf needs to be at least configured for one vrf. |                                                                                                                                                                                                                                                                               |
| Task ID            | Task ID                                                                                                                                                                                | Operations                                                                                                                                                                                                                                                                    |
|                    | crypto                                                                                                                                                                                 | read,<br>write                                                                                                                                                                                                                                                                |
| Examples           | This example shows how to use the ssh server netconf port command with port 831:<br><br>RP/0/RP0/CPU0:router# <b>configure</b><br>RP/0/RP0/CPU0:router(config)# <b>ssh</b>             |                                                                                                                                                                                                                                                                               |
| Related Commands   | Command                                                                                                                                                                                | Description                                                                                                                                                                                                                                                                   |
|                    | ssh server netconf                                                                                                                                                                     | Configures the vrf(s), where netconf subsystem requests are to be received.                                                                                                                                                                                                   |
|                    | netconf-yang agent ssh                                                                                                                                                                 | Configures the <b>ssh netconf-yang backend</b> for the netconf subsystem (Required to allow the system to service netconf-yang requests).<br><br>For more information, see the <i>Cisco ASR 9000 Series Aggregation Services Router System Management Command Reference</i> . |

ssh server netconf port