



# **cluster time-service commands**

## ONTAP commands

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# Table of Contents

- cluster time-service commands ..... 1
  - cluster time-service ntp key create ..... 1
    - Description ..... 1
    - Parameters ..... 1
    - Examples ..... 1
    - Related Links ..... 1
  - cluster time-service ntp key delete ..... 1
    - Description ..... 2
    - Parameters ..... 2
    - Examples ..... 2
    - Related Links ..... 2
  - cluster time-service ntp key modify ..... 2
    - Description ..... 2
    - Parameters ..... 2
    - Examples ..... 3
  - cluster time-service ntp key show ..... 3
    - Description ..... 3
    - Parameters ..... 3
    - Examples ..... 3
  - cluster time-service ntp security modify ..... 4
    - Description ..... 4
    - Parameters ..... 4
    - Examples ..... 4
    - Related Links ..... 4
  - cluster time-service ntp security show ..... 4
    - Description ..... 5
    - Examples ..... 5
  - cluster time-service ntp server create ..... 5
    - Description ..... 5
    - Parameters ..... 5
    - Examples ..... 6
    - Related Links ..... 6
  - cluster time-service ntp server delete ..... 6
    - Description ..... 6
    - Parameters ..... 6
    - Examples ..... 7
  - cluster time-service ntp server modify ..... 7
    - Description ..... 7
    - Parameters ..... 7
    - Examples ..... 8
    - Related Links ..... 8
  - cluster time-service ntp server reset ..... 8
    - Description ..... 8

Parameters .....	8
Examples .....	8
cluster time-service ntp server show .....	9
Description .....	9
Parameters .....	9
Examples .....	10
cluster time-service ntp status show .....	10
Description .....	10
Parameters .....	10
Examples .....	12
Related Links .....	12

# cluster time-service commands

## cluster time-service ntp key create

Create an NTP symmetric authentication key

**Availability:** This command is available to *cluster* administrators at the *admin* privilege level.

### Description

The `cluster time-service ntp key create` command creates a cryptographic key that can be used to verify that Network Time Protocol (NTP) packets are coming from a configured NTP server.

To use the created key it must be assigned to the required NTP server configuration using the [cluster time-service ntp server create](#) or [cluster time-service ntp server modify](#) commands.



The id, key-type and value must all be configured identically on both the ONTAP cluster and the external NTP time server for the cluster to be able to synchronize time to that server.

### Parameters

**-id <integer> - NTP Symmetric Authentication Key ID**

Uniquely identifies this key in the cluster. Must be an integer between 1 and 65535.

**-type <sha1> - NTP Symmetric Authentication Key Type**

The cryptographic algorithm that this key is used with. Only SHA1 is currently supported.

**-value <text> - NTP Symmetric Authentication Key Value**

A 40 character hexadecimal digit string that represents a cryptographic key that is shared with the NTP server.

### Examples

The following example creates a new SHA-1 NTP symmetric authentication key.

```
cluster1::> cluster time-service ntp key create 1 sha1
2e874852e7d41cda65b23915aa5544838b366c51
```

### Related Links

- [cluster time-service ntp server create](#)
- [cluster time-service ntp server modify](#)

## cluster time-service ntp key delete

Delete an NTP symmetric authentication key

**Availability:** This command is available to *cluster* administrators at the *admin* privilege level.

## Description

Delete an NTP symmetric authentication key.



It is not possible to delete a key that is referenced in an existing NTP server configuration. Remove all references to this key using the [cluster time-service ntp server modify](#) or [cluster time-service ntp server delete](#) commands before attempting to delete the key using this command.

## Parameters

**-id <integer>** - NTP Symmetric Authentication Key ID

Unique identifier of this key in the cluster.

## Examples

The following example deletes the NTP key with ID 1.

```
cluster1::> cluster time-service ntp key delete 1
```

## Related Links

- [cluster time-service ntp server modify](#)
- [cluster time-service ntp server delete](#)

# cluster time-service ntp key modify

Modify an NTP symmetric authentication key

**Availability:** This command is available to *cluster* administrators at the *admin* privilege level.

## Description

The `cluster time-service ntp key modify` command modifies a Network Time Protocol (NTP) symmetric authentication key.

## Parameters

**-id <integer>** - NTP Symmetric Authentication Key ID

Unique identifier of this key in the cluster.

**[-type <sha1>]** - NTP Symmetric Authentication Key Type

The cryptographic algorithm that this key is used with. Only SHA1 is currently supported.

### **[*-value* <text>] - NTP Symmetric Authentication Key Value**

A 40 character hexadecimal digit string that represents a cryptographic key that is shared with the NTP server.

## **Examples**

The following example modifies the NTP key with ID 1 to have a new value.

```
cluster1::> cluster time-service ntp key modify 1 -value
2e874852e7d41cda65b23915aa5544838b366c51
```

## **cluster time-service ntp key show**

Display NTP symmetric authentication keys

**Availability:** This command is available to *cluster* administrators at the *admin* privilege level.

### **Description**

The `cluster time-service ntp key show` command displays the configured Network Time Protocol (NTP) symmetric authentication keys.

### **Parameters**

**{ [*-fields* <fieldname>,...]**

If you specify the `-fields <fieldname>`, ... parameter, the command output also includes the specified field or fields. You can use '`-fields ?`' to display the fields to specify.

**| [*-instance* ] }**

If you specify the `-instance` parameter, the command displays detailed information about all fields.

**[*-id* <integer>] - NTP Symmetric Authentication Key ID**

If this parameter is specified, the command displays the keys that match the specified key ID.

**[*-type* <sha1>] - NTP Symmetric Authentication Key Type**

If this parameter is specified, the command displays the keys that match the specified key type.

**[*-value* <text>] - NTP Symmetric Authentication Key Value**

If this parameter is specified, the command displays the keys that match the specified value.

## **Examples**

The following example displays information about the NTP authentication keys in the cluster:

```
cluster1::> cluster time-service ntp key show
ID      Type      Value
-----
2       sha1      5a01120580b5a6ade6ebcd5bad7673fdd6db0113
10      sha1      1f48d2e6f02f17e3f8fa8798cc77af101df29642
2 entries were displayed.
```

## cluster time-service ntp security modify

Modify NTP security settings

**Availability:** This command is available to *cluster* administrators at the *advanced* privilege level.

### Description

The `cluster time-service ntp security modify` command allows setting of security parameters related to the Network Time Protocol (NTP) subsystem.

### Parameters

**[`-is-query-enabled {true|false}`] - Is Querying of NTP Server Enabled? (privilege: advanced)**

Setting this parameter to *true* allows querying of the NTP subsystem from systems external to the cluster. For example, querying a node using the standard "ntpq" command can be enabled by this command. The default setting is *false* to protect against possible security vulnerabilities. If querying of the NTP subsystem is disabled, the [cluster time-service ntp status show](#) command can be used to obtain similar information. Although querying of the NTP subsystem from external hosts can be disabled with this command, executing a local query to the localhost address is always enabled.

### Examples

The following example enables the querying of the NTP subsystem from clients external to the cluster:

```
cluster-1::> cluster time-service ntp security modify -is-query-enabled true
```

### Related Links

- [cluster time-service ntp status show](#)

## cluster time-service ntp security show

Display NTP security settings

**Availability:** This command is available to *cluster* administrators at the *advanced* privilege level.

## Description

The `cluster time-service ntp security show` command displays the configuration of security features related to the Network Time Protocol (NTP) subsystem.

## Examples

The following example displays the NTP security configuration of the cluster:

```
cluster1::> cluster time-service ntp security show
External queries enabled?: true
```

## cluster time-service ntp server create

### Add a NTP Server

**Availability:** This command is available to *cluster* administrators at the *admin* privilege level.

## Description

The `cluster time-service ntp server create` command associates the cluster with an external network time server for time correction and adjustment by using the Network Time Protocol (NTP).

The command resolves the time server host name to an IP address and performs several validation checks. If an error is detected during validation, it is reported.

The validation checks performed by this command include the following:

- The NTP replies to an NTP query with the specified protocol version.
- The NTP reply indicates that the external time server is synchronized to another time server.
- The distance and dispersion of the NTP reply from the "root" or source clock are within the required limits.

## Parameters

### **-server <text>** - NTP Server Host Name, IPv4 or IPv6 Address

This parameter specifies the host name or IP address of the external NTP server that is to be associated with the cluster for time correction and adjustment.

### **[-version {3|4|auto}]** - NTP Version for Server (default: auto)

Use this parameter to optionally specify the NTP protocol version that should be used for communicating with the external NTP server. If the external NTP server does not support the specified protocol version, time exchange cannot take place.

The supported values for this parameter include the following:

- 3 - Use NTP protocol version 3, which is based on Internet Standard request for comments (RFC) #1305.
- 4 - Use NTP protocol version 4, which is based on Internet Standard RFC #5905.



- `auto` - Have Data ONTAP select the NTP protocol version.

The default setting is `auto`.

#### **`[-is-preferred {true|false}]` - Is Preferred NTP Server (default: false) (privilege: advanced)**

Use this parameter to optionally specify whether the external NTP server is the primary time source for correcting and adjusting the cluster time. The responses from this source are used unless its time is outside the accepted selection range.

The default setting is `false`.

You use this parameter when a high quality radio (or GPS) based time server is being used with a set of non-radio based backup time servers.

#### **`[-key-id <integer>]` - NTP Symmetric Authentication Key ID**

Use this parameter to optionally enable NTP symmetric authentication key for communication with the specified time server. The ID must refer to a key created by the [cluster time-service ntp key create](#) command and must be a key with the same ID and value as one configured on the specified time server.

## Examples

The following example associates the cluster with an NTP server named `ntp1.example.com`.

```
cluster1::> cluster time-service ntp server create -server
ntp1.example.com
```

## Related Links

- [cluster time-service ntp key create](#)

## cluster time-service ntp server delete

Delete a NTP Server

**Availability:** This command is available to *cluster* administrators at the *admin* privilege level.

## Description

The `cluster time-service ntp server delete` command removes the association between the cluster and an external network time server that uses the Network Time Protocol (NTP).

## Parameters

#### **`-server <text>` - NTP Server Host Name, IPv4 or IPv6 Address**

This specifies the host name or IP address of an existing external NTP server that the cluster will disassociate from.

## Examples

The following example disassociates an NTP server named `ntp2.example.com` from the cluster:

```
cluster1::> cluster time-service ntp server delete -server
ntp2.example.com
```

## cluster time-service ntp server modify

### Modify NTP Server Options

**Availability:** This command is available to *cluster* administrators at the *admin* privilege level.

### Description

The `cluster time-service ntp server modify` command modifies the configuration of an existing external network time server that uses the Network Time Protocol (NTP) for time correction and adjustment.

### Parameters

#### **-server <text>** - NTP Server Host Name, IPv4 or IPv6 Address

This parameter specifies the host name or IP address of an existing external NTP server that is to be modified.

#### **[-version {3|4|auto}]** - NTP Version for Server (default: auto)

Use this parameter to optionally specify the NTP protocol version that should be used for communicating with the external NTP server. If the external NTP server does not support the specified protocol version, time exchange cannot take place.

The supported values for this parameter include the following:

- 3 - Use NTP protocol version 3, which is based on Internet Standard request for comments (RFC) #1305.
- 4 - Use NTP protocol version 4, which is based on Internet Standard RFC #5905.
- `auto` - Have Data ONTAP select the NTP protocol version.

The default setting is `auto`.

#### **[-is-preferred {true|false}]** - Is Preferred NTP Server (default: false) (privilege: advanced)

Use this parameter to optionally specify whether the external NTP server is the primary time source for correcting and adjusting the cluster time. The responses from this source are used unless its time is outside the accepted selection range

The default setting is `false`.

You use this parameter when a high quality radio (or GPS) based time server is being used with a set of non-radio based backup time servers.

This parameter is available only at the advanced privilege level and higher.

### **[`-is-authentication-enabled {true|false}`] - Is NTP Symmetric Key Authentication Enabled**

Use this parameter to optionally disable NTP symmetric key authentication for communication with the specified time server. Using this parameter and selecting `false` disables the NTP symmetric key authentication and clears the `key-id` parameter for the specified server. This parameter is not required to enable NTP symmetric key authentication, but if specified as `true` the NTP symmetric authentication key must also be specified using the `key-id` parameter.

### **[`-key-id <integer>`] - NTP Symmetric Authentication Key ID**

Use this parameter to optionally enable NTP symmetric authentication key for communication with the specified time server. The ID must refer to a key created by the [cluster time-service ntp key create](#) command and must be a key with the same ID and value as one configured on the specified time server.

## Examples

The following example modifies the NTP version of an NTP server named `ntp1.example.com`. The NTP version is changed to 4.

```
cluster1::> cluster time-service ntp server modify -server
ntp1.example.com -version 4
```

## Related Links

- [cluster time-service ntp key create](#)

# cluster time-service ntp server reset

Reset NTP server list to a default selection

**Availability:** This command is available to *cluster* administrators at the *advanced* privilege level.

## Description

The `cluster time-service ntp server reset` command replaces the current configuration with one of the selected configurations.

If none or more than one time service configuration is selected, the command will fail.

## Parameters

### **[`-use-public {true|false}`] - Reset Server List to Public Identified Defaults (default: false) (privilege: advanced)**

When set to true, this specifies that the public NTP server list used by Data ONTAP should replace the current configuration.

The default setting is `false`.

## Examples

The following example replaces the current time service configuration with the default public NTP server list

that is used by Data ONTAP.

```
cluster1::> cluster time-service ntp server reset -use-public true
```

## cluster time-service ntp server show

Display a list of NTP Servers

**Availability:** This command is available to *cluster* administrators at the *admin* privilege level.

### Description

The `cluster time-service ntp server show` command displays the association between the cluster and external network time servers that use the Network Time Protocol (NTP).

### Parameters

**{ [-fields <fieldname>,...]**

If you specify the `-fields <fieldname>,...` parameter, the command only displays the fields that you specify. For example: `-fields server, version`.

**| [-instance ] }**

If this parameter is specified, the command displays all the available field information.

**[-server <text>] - NTP Server Host Name, IPv4 or IPv6 Address**

If this parameter is specified, the command displays the external NTP servers that match the specified server name or IP address.

**[-version {3|4|auto}] - NTP Version for Server (default: auto)**

If this parameter is specified, the command displays the external NTP servers that use the specified NTP version.

**[-is-preferred {true|false}] - Is Preferred NTP Server (default: false) (privilege: advanced)**

If this parameter is specified, the command displays the external NTP server or servers that match the specified preferred server status.

**[-is-public {true|false}] - Is Public NTP Server Default (privilege: advanced)**

If this parameter is specified, the command displays the information for the external NTP servers that are either on the NTP server list defined by Data ONTAP (`true` `')` or not on the list (`false` `')`.

**[-is-authentication-enabled {true|false}] - Is NTP Symmetric Key Authentication Enabled**

If this parameter is specified, the command displays the external NTP server or servers that require NTP symmetric key authentication for communication.

**[-key-id <integer>] - NTP Symmetric Authentication Key ID**

If this parameter is specified, the command displays the external NTP server or servers that match the specified symmetric authentication key ID.

## Examples

The following example displays information about all external NTP time servers that are associated with the cluster:

```
cluster1::> cluster time-service ntp server show
                                     Is
                                     Authentication
Server                               Version Enabled      Key ID
-----
ntp1.example.com                    auto      false       -
ntp2.example.com                    auto      true        10
```

## cluster time-service ntp status show

Display status of the node's NTP client

**Availability:** This command is available to *cluster* administrators at the *advanced* privilege level.

### Description

The `cluster time-service ntp status show` command displays the status of the associations between the cluster and external network time servers that use the Network Time Protocol (NTP).

### Parameters

**{ [-fields <fieldname>,...]**

If you specify the `-fields <fieldname>, ...` parameter, the command output also includes the specified field or fields. You can use `'-fields ?'` to display the fields to specify.

**| [-instance ] }**

If this parameter is specified, the command displays detailed information about all entries.

**[-node {<nodename>|local}] - Node (privilege: advanced)**

If this parameter is specified, the command displays information related to associations on the specified node.

**[-server <text>] - NTP Server Host Name, IPv4 or IPv6 Address (privilege: advanced)**

If this parameter is specified, the command displays information about the associations related to the specified NTP server. The server should be specified as it is configured in the [cluster time-service ntp server show](#) command.

**[-server-address <IP Address>] - Server IP Address (privilege: advanced)**

If this parameter is specified, the command displays information about the associations related to the NTP server with the specified IP address.

**[-is-peer-reachable {true|false}] - Is Peer Reachable and Responding to Polls? (privilege: advanced)**

If this parameter is specified as *true*, the command displays information about associations with the NTP servers that have been successfully polled.

**[-is-peer-selected {true|false}] - Is Peer Selected as Clock Source? (privilege: advanced)**

If this parameter is specified as *true*, the command displays information about associations with the NTP servers that have been selected as the current clock source.

**[-selection-state <State of NTP Peer Selection>] - State of Server Selection (privilege: advanced)**

If this parameter is specified, the command displays information about associations with the specified selection state.

**[-selection-state-text <text>] - Description of Server Selection State (privilege: advanced)**

If this parameter is specified, the command displays information about associations with the specified selection state description.

**[-poll-interval <integer>] - Poll Interval (secs) (privilege: advanced)**

If this parameter is specified, the command displays information about associations that have the specified polling interval.

**[-time-last-poll <integer>] - Time from Last Poll (secs) (privilege: advanced)**

If this parameter is specified, the command displays information about associations that are polled at the specified time.

**[-offset <double hundredths>] - Offset from Server Time (ms) (privilege: advanced)**

If this parameter is specified, the command displays information about associations with the specified offset from the NTP server.

**[-delay <double hundredths>] - Delay Time to Server (ms) (privilege: advanced)**

If this parameter is specified, the command displays information about associations with the specified travelling time to the NTP server.

**[-jitter <double hundredths>] - Maximum Offset Error (ms) (privilege: advanced)**

If this parameter is specified, the command displays information about associations with the specified offset error from the NTP server.

**[-reachability <Hex String>] - Reachability of Server (privilege: advanced)**

If this parameter is specified, the command displays information about associations with the specified reachability to the NTP server. Reachability is specified as a hexbyte that has a bit to represent the success of each of the last eight polls of the specified server. A set bit represents a successful poll. The least significant bit represents the most recent poll, the next most significant bit the poll before that, and so on.

**[-server-stratum <integer>] - Stratum of Server Clock (privilege: advanced)**

If this parameter is specified, the command displays information about associations with NTP servers with the specified clock stratum.

**[-server-reference <text>] - Reference Clock at Server (privilege: advanced)**

If this parameter is specified, the command displays information about associations with NTP servers using the specified clock as reference.

## **[~~-reported-errors~~ <NTP Peer and Packet Errors>,...] - Reported Packet and Peer Errors (privilege: advanced)**

If this parameter is specified, the command displays information about associations with the specified errors.

## **Examples**

The following example displays the status of the NTP associations of the cluster:

```
cluster-1::*>cluster time-service ntp status show
Node: node-1
Server                Reachable  Selection State          Offset
(ms)
-----
ntp1.eng.netapp.com   true      Currently Selected Server
39.122
ntp2.eng.netapp.com   true      Candidate Server
37.786
2 entries were displayed.
```

The following example displays the status of the association with the specified external NTP server:

```
cluster-1::*>cluster time-service ntp status show -instance -server
ntp1.example.com
Node: node-1
NTP Server Host Name, IPv4 or IPv6 Address: ntp1.example.com
Server IP Address: 10.56.32.33
Is Peer Reachable and Responding to Polls?: true
Is Peer Selected as Clock Source?: true
State of Server Selection: sys_peer
Description of Server Selection State: Currently Selected Server
Poll Interval (secs): 64
Time from Last Poll (secs): 1
Offset from Server Time (ms): 26.736
Delay Time to Server (ms): 61.772
Maximum Offset Error (ms): 3.064
Reachability of Server: 01
Stratum of Server Clock: 2
Reference Clock at Server: 10.56.68.21
Reported Packet and Peer Errors: -
```

## **Related Links**

- [cluster time-service ntp server show](#)

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