Manage cluster NTP servers

REST API reference

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Manage cluster NTP servers

Cluster NTP servers endpoint overview

Overview

You can use this API to add external NTP servers to a cluster, update the configuration, use NTP keys, and retrieve the current NTP server configuration.

Adding an NTP server to a cluster

To add an NTP server to a cluster, issue a POST /cluster/ntp/servers request.

Fields used for adding an NTP server

Except for the name of the NTP server (host name or IP address), which is specified by the server, all fields are optional:

- `version`
- `key`

If the key is provided in POST, `authentication_enabled` is set to `true` by default.

Examples

Adding an NTP server

```
# Body
add_ntp_server.txt(body):
{
"server": "time.nist.gov"
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/servers" -d
"@add_ntp_server.txt"
```

Adding an NTP server with an authentication key

```
# Body
add_authenticated_ntp_server.txt(body):
{
"server": "time.nist.gov",
"key": { "id": 10 }
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/servers" -d
"@add_authenticated_ntp_server.txt"
```

Enabling a previously configured shared key (ID, type, and value) for an NTP server

A combination of key number or identifier (ID), type of key, and shared key value is created with /api/cluster/ntp/keys. This operation will validate the NTP authentication works.

```
# Body
enable_shared_key.txt(body):
{
"key": { "id": 10 },
"authentication_enabled": true
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster/ntp/servers/time.nist.gov" -d
"@enable_shared_key.txt"
```

Retrieve external NTP time servers

GET `/cluster/ntp/servers`

Introduced In: 9.7

Retrieves the collection of external NTP time servers ONTAP uses for time adjustment and correction.

Related ONTAP commands

- `cluster time-service ntp server show`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
server	string	query	False	Filter by server
key.id	integer	query	False	Filter by key.id
authentication_enabled	boolean	query	False	Filter by authentication_enabled
version	string	query	False	Filter by version
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
num_records	integer	Number of records.
records	array[ntp_server]	

Example response


```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 3,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication_enabled": 1,
      "key": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "id": 10
      },
      "server": "time.nist.gov",
      "version": "auto"
    }
  ]
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ntp_key_reference

Name	Type	Description
_links	_links	
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Validate an external NTP time server

POST `/cluster/ntp/servers`

Introduced In: 9.7

Validates the provided external NTP time server for usage and configures ONTAP so that all nodes in the cluster use it. The required fields are:

- `server`

Default property values

If not specified in POST, the following default property values are assigned:

- `version` - auto
- `key` - not set

If the key is provided in POST, `authentication_enabled` is set to `true` by default.

Related ONTAP commands

- `cluster time-service ntp server create`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example request

```
{
  "authentication_enabled": 1,
  "key": {
    "id": 10
  },
  "server": "time.nist.gov",
  "version": "auto"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2097163	NTP server IPv4 address was invalid.
2097164	NTP server IPv6 address was invalid.
2097165	Cannot resolve NTP server name.
2097166	NTP server address query returned no valid IP addresses.
2097167	Failed to connect to NTP server.
2097169	NTP server provided was not synchronized with a clock or another NTP server.
2097174	NTP server provided had too high of root distance.
2097177	NTP server provided an invalid stratum.
2097179	Too many NTP servers have been configured.
2097181	NTP server address was invalid. It is a special purpose address such as loopback, multicast, or broadcast address.
2097182	NTP server address was invalid. The address is neither an IPv4 or IPv6.
2097183	NTP symmetric key authentication cannot be used for a node not in a cluster.
2097185	NTP key authentication failed for the provided key.
2097193	An unknown NTP key was provided.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ntp_key_reference

Name	Type	Description
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Delete an external NTP server

DELETE `/cluster/ntp/servers/{server}`

Introduced In: 9.7

Deletes an external NTP server used by ONTAP.

Related ONTAP commands

- `cluster time-service ntp server delete`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
server	string	path	True	Server address or host name

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response


```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

Name	Type	Description
_links	_links	
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Retrieve an external NTP server configuration

GET `/cluster/ntp/servers/{server}`

Introduced In: 9.7

Retrieves the configuration of an external NTP server used by ONTAP.

Related ONTAP commands

- `cluster time-service ntp server show`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
server	string	path	True	NTP server host name, IPv4, or IPv6 address.
fields	array[string]	query	False	Specify the fields to return.

Response

```
Status: 200, Ok
```

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example response


```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_enabled": 1,
  "key": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "id": 10
  },
  "server": "time.nist.gov",
  "version": "auto"
}
```


Error

```
Status: Default, Error
```

Name	Type	Description
error	error	

Example error


```
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
```


Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ntp_key_reference

Name	Type	Description
_links	_links	
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

Update an NTP server configuration after validation

PATCH `/cluster/ntp/servers/{server}`

Introduced In: 9.7

Updates the configuration of an NTP server used by the ONTAP cluster after validation. Patchable fields are:

- `version`
- `key.id`
- `authentication_enabled`

If `authentication_enabled` is modified to `false`, the associated NTP key is removed from the server instance. If `authentication_enabled` is modified to `true`, you must provide an NTP key ID in the PATCH body.

Related ONTAP commands

- `cluster time-service ntp server modify`

Learn more

- DOC /cluster/ntp/servers

Parameters

Name	Type	In	Required	Description
server	string	path	True	Server address or host name

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 1 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example request

```
{
  "authentication_enabled": 1,
  "key": {
    "id": 10
  },
  "version": "auto"
}
```

Response

```
Status: 202, Accepted
```

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2097163	NTP server address was invalid.
2097164	NTP server address was invalid.
2097165	Could not resolve NTP server hostname.
2097166	NTP server address query returned no valid IP addresses.
2097167	Failed to connect to NTP server.

Error Code	Description
2097169	NTP server provided was not synchronized.
2097174	NTP server provided had too high of root distance.
2097177	NTP server provided had an invalid stratum.
2097181	NTP server address was invalid.
2097182	NTP server address was invalid.
2097183	NTP symmetric key authentication cannot be used for a node not in a cluster.
2097185	NTP key authentication failed for the provided key.
2097188	An invalid key identifier was provided. Identifiers must be in the range from 1 to 65535.
2097193	An unknown key was provided.
2097194	The field "authentication_enabled" cannot be false when the field NTP key is given.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

ntp_key_reference

Name	Type	Description
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

job_link

Name	Type	Description
uuid	string	The UUID of the asynchronous job that is triggered by a POST, PATCH, or DELETE operation.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message
target	string	The target parameter that caused the error.

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