



Manage cluster NTP servers

ONTAP 9.8 REST API reference

NetApp
April 02, 2024

Table of Contents

- Manage cluster NTP servers 1
 - Cluster NTP servers endpoint overview 1
 - Retrieve external NTP time servers 2
 - Validate an external NTP time server 7
 - Delete an external NTP server 13
 - Retrieve an external NTP server configuration 16
 - Update an NTP server configuration after validation 21

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 |
|------------------------|---------------|-------|----------|---|
| key.id | integer | query | False | Filter by key.id |
| version | string | query | False | Filter by version |
| authentication_enabled | boolean | query | False | Filter by authentication_enabled |
| server | string | query | False | Filter by server |
| 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. <ul style="list-style-type: none"> • 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. <ul style="list-style-type: none"> • 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 |
|--------------------------|---------------------|--------------------|
| <code>_links</code> | <code>_links</code> | |
| <code>num_records</code> | integer | Number of records. |
| <code>records</code> | 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 | <p>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.</p> <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none">• Default value: |

Request Body

| 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 request

```

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

```

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "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. |

| Error Code | Description |
|------------|----------------------------------|
| 2097193 | An unknown NTP key was provided. |

| 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. |

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. |

job_link

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |

| 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 |
| return_timeout | integer | query | False | <p>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.</p> <ul style="list-style-type: none"> • 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 | <p>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.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| 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 request

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

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

```
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "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. |
| 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. |

| 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. |

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. |

job_link

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |

| 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. |

Copyright information

Copyright © 2024 NetApp, Inc. All Rights Reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means—graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system—without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

LIMITED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (b)(3) of the Rights in Technical Data -Noncommercial Items at DFARS 252.227-7013 (FEB 2014) and FAR 52.227-19 (DEC 2007).

Data contained herein pertains to a commercial product and/or commercial service (as defined in FAR 2.101) and is proprietary to NetApp, Inc. All NetApp technical data and computer software provided under this Agreement is commercial in nature and developed solely at private expense. The U.S. Government has a non-exclusive, non-transferrable, nonsublicensable, worldwide, limited irrevocable license to use the Data only in connection with and in support of the U.S. Government contract under which the Data was delivered. Except as provided herein, the Data may not be used, disclosed, reproduced, modified, performed, or displayed without the prior written approval of NetApp, Inc. United States Government license rights for the Department of Defense are limited to those rights identified in DFARS clause 252.227-7015(b) (FEB 2014).

Trademark information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.