



## **Manage SSH server**

ONTAP 9.14.1 REST API reference

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# Manage SSH server

## Security SSH endpoint overview

### Overview

ONTAP supports SSH server that can be accessed from any standard SSH client. A user account needs to be associated with SSH as the application (refer the documentation for [api/security/accounts DOC](#) [/security/accounts](#) ). Upon connecting from a client, the user is authenticated and a command line shell is presented.

This endpoint is used to retrieve or modify the SSH configuration at the cluster level. The configuration consists of SSH security parameters (security algorithms and maximum authentication retry attempts allowed before closing the connection) and SSH connection limits.

The security algorithms include SSH key exchange algorithms, ciphers for payload encryption, and MAC algorithms. This configuration is the default for all newly created SVMs; existing SVM configurations are not impacted. The SSH connection limits include maximum connections per second, maximum simultaneous sessions from the same client host, and overall maximum SSH connections at any given point in time. The connection limits are per node and will be the same for all nodes in the cluster.

### Examples

#### Updating the SSH security parameters

Specify the algorithms in the body of the PATCH request.

```
# The API:
PATCH "/api/security/ssh"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/ssh" -d '{ "ciphers": [
"aes256_ctr", "aes192_ctr" ], "key_exchange_algorithms": [
"diffie_hellman_group_exchange_sha256", "ecdh_sha2_nistp256" ],
"mac_algorithms": [ "hmac_sha2_512_etm", "umac_128_etm" ],
"max_authentication_retry_count": 3 }'
```

#### Updating the SSH connection limits

Specify the connection limits in the body of the PATCH request.

```
# The API:
PATCH "/api/security/ssh"

# The call:
curl -X PATCH "https://<mgmt-ip>/api/security/ssh" -d '{
"connections_per_second": 8, "max_instances": 10, "per_source_limit": 5 }'
```

## Retrieving the cluster SSH server configuration

```
# The API:
GET "/api/security/ssh"

# The call:
curl -X GET "https://<mgmt-ip>/api/security/ssh"

# The response:
{
  "ciphers": [
    "aes256_ctr",
    "aes192_ctr"
  ],
  "key_exchange_algorithms": [
    "diffie_hellman_group_exchange_sha256",
    "ecdh_sha2_nistp256"
  ],
  "mac_algorithms": [
    "hmac_sha2_512_etm",
    "umac_128_etm"
  ],
  "max_authentication_retry_count": 3,
  "connections_per_second": 8,
  "max_instances": 10,
  "per_source_limit": 5,
  "_links": {
    "self": {
      "href": "/api/security/ssh"
    }
  }
}
```

# Retrieve cluster SSH server ciphers, MAC algorithms, key exchange algorithms, and connection limits

GET /security/ssh

Introduced In: 9.7

Retrieves the cluster SSH server ciphers, MAC algorithms, key exchange algorithms, and connection limits.

## Related ONTAP commands

- `security ssh`
- `security protocol ssh`

## Response

Status: 200, Ok

| Name                           | Type                   | Description   |
|--------------------------------|------------------------|---|
| <a href="#">_links</a>         | <a href="#">_links</a> |   |
| ciphers                        | array[string]          | Ciphers for encrypting the data.                                      |
| connections_per_second         | integer                | Maximum connections allowed per second.                               |
| key_exchange_algorithms        | array[string]          | Key exchange algorithms.  |
| mac_algorithms                 | array[string]          | MAC algorithms.   |
| max_authentication_retry_count | integer                | Maximum authentication retries allowed before closing the connection. |
| max_instances                  | integer                | Maximum possible simultaneous connections.                            |
| per_source_limit               | integer                | Maximum connections from the same client host.                        |

## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ciphers": [
    "aes256_ctr",
    "aes192_ctr",
    "aes128_ctr"
  ],
  "key_exchange_algorithms": [
    "diffie_hellman_group_exchange_sha256",
    "ecdh_sha2_nistp256"
  ],
  "mac_algorithms": [
    "hmac_sha2_512",
    "hmac_sha2_512_etm"
  ]
}
```

## Error

Status: Default, Error

| Name  | Type                           | Description |
|-------|--------------------------------|-------------|
| error | <a href="#">returned_error</a> |             |

### 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 | <a href="#">href</a> |             |

error\_arguments

| Name    | Type   | Description      |
|---------|--------|------------------|
| code    | string | Argument code    |
| message | string | Message argument |

returned\_error

| Name      | Type                                     | Description                                 |
|-----------|--|---|
| arguments | array[ <a href="#">error_arguments</a> ] | Message arguments                           |
| code      | string                                   | Error code                                  |
| message   | string                                   | Error message                               |
| target    | string                                   | The target parameter that caused the error. |

## Update the SSH server setting for a cluster

PATCH /security/ssh

**Introduced In:** 9.7

Updates the SSH server setting for a cluster.

### Optional parameters

- `ciphers` - Encryption algorithms for the payload
- `key_exchange_algorithms` - SSH key exchange algorithms



- `mac_algorithms` - MAC algorithms
- `max_authentication_retry_count` - Maximum authentication retries allowed before closing the connection
- `connections_per_second` - Maximum allowed connections per second
- `max_instances` - Maximum allowed connections per node
- `per_source_limit` - Maximum allowed connections from the same client host

## Related ONTAP commands

- `security ssh`
- `security protocol ssh`

## Request Body

| Name  | Type                       | Description   |
|---|----------------------------|---|
| <code>_links</code>                         | <a href="#">_links</a>     |   |
| <code>ciphers</code>                        | <code>array[string]</code> | Ciphers for encrypting the data.                                      |
| <code>connections_per_second</code>         | <code>integer</code>       | Maximum connections allowed per second.                               |
| <code>key_exchange_algorithms</code>        | <code>array[string]</code> | Key exchange algorithms.  |
| <code>mac_algorithms</code>                 | <code>array[string]</code> | MAC algorithms.   |
| <code>max_authentication_retry_count</code> | <code>integer</code>       | Maximum authentication retries allowed before closing the connection. |
| <code>max_instances</code>                  | <code>integer</code>       | Maximum possible simultaneous connections.                            |
| <code>per_source_limit</code>               | <code>integer</code>       | Maximum connections from the same client host.                        |

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ciphers": [
    "aes256_ctr",
    "aes192_ctr",
    "aes128_ctr"
  ],
  "key_exchange_algorithms": [
    "diffie_hellman_group_exchange_sha256",
    "ecdh_sha2_nistp256"
  ],
  "mac_algorithms": [
    "hmac_sha2_512",
    "hmac_sha2_512_etm"
  ]
}
```

## Response

Status: 200, Ok

## Error

Status: Default

### ONTAP Error Response Codes

| Error Code | Description  |
|------------|--|
| 10682372   | There must be at least one key exchange algorithm associated with the SSH configuration. |
| 10682373   | There must be at least one cipher associated with the SSH configuration.                 |
| 10682375   | Failed to modify SSH key exchange algorithms.  |
| 10682378   | Failed to modify SSH ciphers.  |

| Error Code | Description  |
|------------|--|
| 10682399   | Key exchange algorithm not supported in FIPS enabled mode.           |
| 10682400   | Failed to modify SSH MAC algorithms.                                 |
| 10682401   | MAC algorithm not supported in FIPS enabled mode.                    |
| 10682403   | There must be at least one MAC algorithm with the SSH configuration. |
| 10682413   | Failed to modify maximum authentication retry attempts.              |
| 10682413   | Failed to modify maximum authentication retry attempts.              |
| 10682418   | Cipher not supported in FIPS enabled mode.                           |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name  | Type                           | Description |
|-------|--------------------------------|-------------|
| error | <a href="#">returned_error</a> |             |

### 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 | <a href="#">href</a> |             |

cluster\_ssh\_server

| Name                           | Type                   | Description   |
|--------------------------------|------------------------|---|
| _links                         | <a href="#">_links</a> |   |
| ciphers                        | array[string]          | Ciphers for encrypting the data.                                      |
| connections_per_second         | integer                | Maximum connections allowed per second.                               |
| key_exchange_algorithms        | array[string]          | Key exchange algorithms.  |
| mac_algorithms                 | array[string]          | MAC algorithms.   |
| max_authentication_retry_count | integer                | Maximum authentication retries allowed before closing the connection. |
| max_instances                  | integer                | Maximum possible simultaneous connections.                            |
| per_source_limit               | integer                | Maximum connections from the same client host.                        |

error\_arguments

| Name    | Type   | Description      |
|---------|--------|------------------|
| code    | string | Argument code    |
| message | string | Message argument |

returned\_error

| Name      | Type                                     | Description                                 |
|-----------|--|---|
| arguments | array[ <a href="#">error_arguments</a> ] | Message arguments                           |
| code      | string                                   | Error code                                  |
| message   | string                                   | Error message                               |
| target    | string                                   | The target parameter that caused the error. |

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