



Manage NFS services

REST API reference

NetApp

February 06, 2026

This PDF was generated from https://docs.netapp.com/us-en/ontap-restapi/protocols_nfs_services_endpoint_overview.html on February 06, 2026. Always check docs.netapp.com for the latest.

Table of Contents

Manage NFS services	1
Manage NFS services	1
Performance monitoring	3
Retrieve the NFS configuration for SVMs	3
Expensive properties	3
Advanced properties	3
Diagnostic properties	4
Related ONTAP commands	4
Learn more	4
Parameters	4
Response	29
Error	34
Definitions	35
Create an NFS configuration for an SVM	56
Required properties	56
Default property values	56
Related ONTAP commands	59
Learn more	59
Parameters	59
Request Body	59
Response	62
Error	64
Definitions	66
Delete NFS configuration for an SVM	88
Related ONTAP commands	88
Learn more	88
Parameters	88
Response	88
Error	89
Definitions	89
Retrieve NFS configuration for an SVM	90
Related ONTAP commands	90
Learn more	90
Parameters	90
Response	91
Error	97
Definitions	98
Update NFS configuration for an SVM	117
Related ONTAP commands	117
Learn more	118
Parameters	118
Request Body	118
Response	121

Error	121
Definitions	122
Retrieve NFS protocol historical performance metrics	143
Parameters	143
Response	149
Error	152
Definitions	152

Manage NFS services

Manage NFS services

Retrieving an NFS configuration

```
# The API:
GET /api/protocols/nfs/services

# The call:
curl -X GET "https://<mgmt-ip>/api/protocols/nfs/services"
```

Retrieving the mount permissions for a specified volume for a given IP address.

```
# The API:
GET /api/protocols/nfs/services

# The call:
curl -X GET curl -X GET "https://<mgmt-
ip>/api/protocols/nfs/services/{svm.uuid}?protocol_access_rules.volume=tes
tvoll12&protocol_access_rules.client_ip=1.2.3.4&protocol_access_rules.auth_
type=sys&fields=protocol_access_rules&return_timeout=15&return_records=tru
e"

#
Returns the protocol_access_rules structure and provides access
permissions for each protocol.
"protocol_access_rules": {
  "nfs3_access_type": "read_write",
  "nfs4_access_type": "read",
  "cifs_access_type": "read_write"
}
```

Creating an NFS configuration for an SVM

```
# The API:
POST /api/protocols/nfs/services

# The call:
curl -d "@test_nfs_post.txt" -X POST "https://<mgmt-
ip>/api/protocols/nfs/services"
test_nfs_post.txt(body):
{
  "svm": {
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "protocol": {
    "v4_id_domain": "nfs-nsr-w01.rtp.netapp.com"
  },
  "vstorage_enabled": "true"
}
```

Updating an NFS configuration for an SVM

```
# The API:
PATCH /api/protocols/nfs/services/{svm.uuid}

# The call:
curl -d "@test_nfs_patch.txt" -X PATCH "https://<mgmt-
ip>/api/protocols/nfs/services/4a415601-548c-11e8-a21d-0050568bcb9"
test_nfs_patch.txt(body):
{
  "protocol": {
    "v4_id_domain": "nfs-nsr-w01.rtp.netapp.com"
  },
  "vstorage_enabled": "false"
}
```

Deleting an NFS configuration for an SVM

```
# The API:
DELETE /api/protocols/nfs/services/{svm.uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/protocols/nfs/services/4a415601-
548c-11e8-a21d-0050568bcb9"
```

Performance monitoring

Performance of the SVM can be monitored by the `metric.*` and `statistics.*` properties. These show the performance of the SVM in terms of IOPS, latency and throughput. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Retrieve the NFS configuration for SVMs

`GET /protocols/nfs/services`

Introduced In: 9.6

Retrieves the NFS configuration of SVMs.

Expensive properties

There is an added computational cost to retrieving values for these properties. They are not included by default in GET results and must be explicitly requested using the `fields` query parameter. See [Requesting specific fields](#) to learn more.

- `statistics.*`
- `metric.*`

Advanced properties

- `security.rpcsec_context_idle`
- `security.ntfs_unix_security`
- `security.chown_mode`
- `security.nt_acl_display_permission`
- `protocol.v3_features.ejukebox_enabled`
- `protocol.v3_features.connection_drop`
- `protocol.v3_features.fsid_change`
- `protocol.v3_features.mount_daemon_port`
- `protocol.v3_features.network_lock_manager_port`
- `protocol.v3_features.network_status_monitor_port`
- `protocol.v3_features.rquota_daemon_port`
- `protocol.v3_features.hide_snapshot_enabled`
- `protocol.v41_features.implementation_domain`
- `protocol.v41_features.implementation_name`
- `protocol.v40_features.acl_max_aces`
- `windows.map_unknown_uid_to_default_user`

- `exports.netgroup_trust_any_nsswitch_no_match`
- `credential_cache.negative_ttl`
- `transport.tcp_max_transfer_size`
- `root.*`
- `protocol.v41_features.trunking_enabled`
- `protocol.v42_features.seclabel_enabled`
- `protocol.v42_features.sparsefile_ops_enabled`
- `protocol.v42_features.xattrs_enabled`
- `protocol.v40_features.referrals_enabled`
- `protocol.v41_features.referrals_enabled`
- `protocol.v4_lease_seconds`
- `protocol.v4_session_slots`
- `protocol.v4_session_slot_reply_cache_size`
- `protocol.v4_fsid_change`

Diagnostic properties

- `credential_cache.transient_error_ttl`
- `access_cache_config.ttl_failure`
- `credential_cache.harvest_timeout`

Related ONTAP commands

- `vserver nfs show`
- `vserver nfs status`
- `vserver export-policy check-access`

Learn more

- [DOC /protocols/nfs/services](#)

Parameters

Name	Type	In	Required	Description
<code>protocol_access_rules.volume</code>	string	query	False	<p>Volume on which access needs to be checked.</p> <ul style="list-style-type: none"> • Introduced in: 9.10

Name	Type	In	Required	Description
protocol_access_rules.client_ip	string	query	False	IP address for the client for which access needs to be checked. • Introduced in: 9.10
protocol_access_rules.auth_type	string	query	False	Authentication method used to check the client's access to the volume. • Introduced in: 9.10 • Default value: 1
root.ignore_nt_acl	boolean	query	False	Filter by root.ignore_nt_acl • Introduced in: 9.11
root.skip_write_permission_check	boolean	query	False	Filter by root.skip_write_permission_check • Introduced in: 9.11
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
file_session_io_grouping_duration	integer	query	False	Filter by file_session_io_grouping_duration • Introduced in: 9.11 • Max value: 3600 • Min value: 60

Name	Type	In	Required	Description
extended_groups_limit	integer	query	False	Filter by extended_groups_limit <ul style="list-style-type: none"> • Introduced in: 9.8 • Max value: 1024 • Min value: 32
protocol_access_rules.nfs3_access_type	string	query	False	Filter by protocol_access_rules.nfs3_access_type <ul style="list-style-type: none"> • Introduced in: 9.10
protocol_access_rules.cifs_access_type	string	query	False	Filter by protocol_access_rules.cifs_access_type <ul style="list-style-type: none"> • Introduced in: 9.10
protocol_access_rules.nfs4_access_type	string	query	False	Filter by protocol_access_rules.nfs4_access_type <ul style="list-style-type: none"> • Introduced in: 9.10
transport.tcp_enabled	boolean	query	False	Filter by transport.tcp_enabled
transport.udp_enabled	boolean	query	False	Filter by transport.udp_enabled
transport.rdma_enabled	boolean	query	False	Filter by transport.rdma_enabled <ul style="list-style-type: none"> • Introduced in: 9.12

Name	Type	In	Required	Description
transport.tcp_max_transfer_size	integer	query	False	Filter by transport.tcp_max_transfer_size <ul style="list-style-type: none"> • Introduced in: 9.11 • Max value: 1048576 • Min value: 8192
security.permitted_encryption_types	string	query	False	Filter by security.permitted_encryption_types <ul style="list-style-type: none"> • Introduced in: 9.11
security.ntfs_unix_security	string	query	False	Filter by security.ntfs_unix_security <ul style="list-style-type: none"> • Introduced in: 9.11
security.rpcsec_context_idle	integer	query	False	Filter by security.rpcsec_context_idle <ul style="list-style-type: none"> • Introduced in: 9.11
security.chown_mode	string	query	False	Filter by security.chown_mode <ul style="list-style-type: none"> • Introduced in: 9.11
security.nt_acl_display_permission	boolean	query	False	Filter by security.nt_acl_display_permission <ul style="list-style-type: none"> • Introduced in: 9.11

Name	Type	In	Required	Description
qtree.validate_export	boolean	query	False	Filter by qtree.validate_export • Introduced in: 9.10
qtree.export_enabled	boolean	query	False	Filter by qtree.export_enabled • Introduced in: 9.10
auth_sys_extended_groups_enabled	boolean	query	False	Filter by auth_sys_extended_groups_enabled • Introduced in: 9.8
showmount_enabled	boolean	query	False	Filter by showmount_enabled • Introduced in: 9.8
rquota_enabled	boolean	query	False	Filter by rquota_enabled • Introduced in: 9.8
statistics.v3.latency_raw.other	integer	query	False	Filter by statistics.v3.latency_raw.other • Introduced in: 9.7
statistics.v3.latency_raw.total	integer	query	False	Filter by statistics.v3.latency_raw.total • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.v3.latency_raw.write	integer	query	False	Filter by statistics.v3.latency_raw.write • Introduced in: 9.7
statistics.v3.latency_raw.read	integer	query	False	Filter by statistics.v3.latency_raw.read • Introduced in: 9.7
statistics.v3.iops_raw.other	integer	query	False	Filter by statistics.v3.iops_raw.other • Introduced in: 9.7
statistics.v3.iops_raw.total	integer	query	False	Filter by statistics.v3.iops_raw.total • Introduced in: 9.7
statistics.v3.iops_raw.write	integer	query	False	Filter by statistics.v3.iops_raw.write • Introduced in: 9.7
statistics.v3.iops_raw.read	integer	query	False	Filter by statistics.v3.iops_raw.read • Introduced in: 9.7
statistics.v3.status	string	query	False	Filter by statistics.v3.status • Introduced in: 9.7

Name	Type	In	Required	Description
statistics.v3.throughput_raw.write	integer	query	False	Filter by statistics.v3.throughput_raw.write • Introduced in: 9.7
statistics.v3.throughput_raw.read	integer	query	False	Filter by statistics.v3.throughput_raw.read • Introduced in: 9.7
statistics.v3.throughput_raw.total	integer	query	False	Filter by statistics.v3.throughput_raw.total • Introduced in: 9.7
statistics.v3.timestamp	string	query	False	Filter by statistics.v3.timestamp • Introduced in: 9.7
statistics.v41.latency_raw.other	integer	query	False	Filter by statistics.v41.latency_raw.other • Introduced in: 9.8
statistics.v41.latency_raw.total	integer	query	False	Filter by statistics.v41.latency_raw.total • Introduced in: 9.8
statistics.v41.latency_raw.write	integer	query	False	Filter by statistics.v41.latency_raw.write • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.v41.latency_raw.read	integer	query	False	Filter by statistics.v41.latency_raw.read • Introduced in: 9.8
statistics.v41.iops_raw.other	integer	query	False	Filter by statistics.v41.iops_raw.other • Introduced in: 9.8
statistics.v41.iops_raw.total	integer	query	False	Filter by statistics.v41.iops_raw.total • Introduced in: 9.8
statistics.v41.iops_raw.write	integer	query	False	Filter by statistics.v41.iops_raw.write • Introduced in: 9.8
statistics.v41.iops_raw.read	integer	query	False	Filter by statistics.v41.iops_raw.read • Introduced in: 9.8
statistics.v41.status	string	query	False	Filter by statistics.v41.status • Introduced in: 9.8
statistics.v41.throughput_raw.write	integer	query	False	Filter by statistics.v41.throughput_raw.write • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.v41.throughput_raw.read	integer	query	False	Filter by statistics.v41.throughput_raw.read • Introduced in: 9.8
statistics.v41.throughput_raw.total	integer	query	False	Filter by statistics.v41.throughput_raw.total • Introduced in: 9.8
statistics.v41.timestamp	string	query	False	Filter by statistics.v41.timestamp • Introduced in: 9.8
statistics.v4.latency_raw.other	integer	query	False	Filter by statistics.v4.latency_raw.other • Introduced in: 9.8
statistics.v4.latency_raw.total	integer	query	False	Filter by statistics.v4.latency_raw.total • Introduced in: 9.8
statistics.v4.latency_raw.write	integer	query	False	Filter by statistics.v4.latency_raw.write • Introduced in: 9.8
statistics.v4.latency_raw.read	integer	query	False	Filter by statistics.v4.latency_raw.read • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.v4.iops_raw.other	integer	query	False	Filter by statistics.v4.iops_raw.other • Introduced in: 9.8
statistics.v4.iops_raw.total	integer	query	False	Filter by statistics.v4.iops_raw.total • Introduced in: 9.8
statistics.v4.iops_raw.write	integer	query	False	Filter by statistics.v4.iops_raw.write • Introduced in: 9.8
statistics.v4.iops_raw.read	integer	query	False	Filter by statistics.v4.iops_raw.read • Introduced in: 9.8
statistics.v4.status	string	query	False	Filter by statistics.v4.status • Introduced in: 9.8
statistics.v4.throughput_raw.write	integer	query	False	Filter by statistics.v4.throughput_raw.write • Introduced in: 9.8
statistics.v4.throughput_raw.read	integer	query	False	Filter by statistics.v4.throughput_raw.read • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.v4.throughput_raw.total	integer	query	False	Filter by statistics.v4.throughput_raw.total • Introduced in: 9.8
statistics.v4.timestamp	string	query	False	Filter by statistics.v4.timestamp • Introduced in: 9.8
state	string	query	False	Filter by state
enabled	boolean	query	False	Filter by enabled
exports.name_service_lookup_protocol	string	query	False	Filter by exports.name_service_lookup_protocol • Introduced in: 9.11
exports.netgroup_trust_any_nsswitch_no_match	boolean	query	False	Filter by exports.netgroup_trust_any_nsswitch_no_match • Introduced in: 9.11
metric.v41.iops.other	integer	query	False	Filter by metric.v41.iops.other • Introduced in: 9.8
metric.v41.iops.total	integer	query	False	Filter by metric.v41.iops.total • Introduced in: 9.8

Name	Type	In	Required	Description
metric.v41.iops.write	integer	query	False	Filter by metric.v41.iops.write • Introduced in: 9.8
metric.v41.iops.read	integer	query	False	Filter by metric.v41.iops.read • Introduced in: 9.8
metric.v41.latency.other	integer	query	False	Filter by metric.v41.latency.other • Introduced in: 9.8
metric.v41.latency.total	integer	query	False	Filter by metric.v41.latency.total • Introduced in: 9.8
metric.v41.latency.write	integer	query	False	Filter by metric.v41.latency.write • Introduced in: 9.8
metric.v41.latency.read	integer	query	False	Filter by metric.v41.latency.read • Introduced in: 9.8
metric.v41.timestamp	string	query	False	Filter by metric.v41.timestamp • Introduced in: 9.8

Name	Type	In	Required	Description
metric.v41.throughput.write	integer	query	False	Filter by metric.v41.throughput.write • Introduced in: 9.8
metric.v41.throughput.read	integer	query	False	Filter by metric.v41.throughput.read • Introduced in: 9.8
metric.v41.throughput.total	integer	query	False	Filter by metric.v41.throughput.total • Introduced in: 9.8
metric.v41.status	string	query	False	Filter by metric.v41.status • Introduced in: 9.8
metric.v41.duration	string	query	False	Filter by metric.v41.duration • Introduced in: 9.8
metric.v3.iops.other	integer	query	False	Filter by metric.v3.iops.other • Introduced in: 9.7
metric.v3.iops.total	integer	query	False	Filter by metric.v3.iops.total • Introduced in: 9.7

Name	Type	In	Required	Description
metric.v3.iops.write	integer	query	False	Filter by metric.v3.iops.write • Introduced in: 9.7
metric.v3.iops.read	integer	query	False	Filter by metric.v3.iops.read • Introduced in: 9.7
metric.v3.latency.other	integer	query	False	Filter by metric.v3.latency.other • Introduced in: 9.7
metric.v3.latency.total	integer	query	False	Filter by metric.v3.latency.total • Introduced in: 9.7
metric.v3.latency.write	integer	query	False	Filter by metric.v3.latency.write • Introduced in: 9.7
metric.v3.latency.read	integer	query	False	Filter by metric.v3.latency.read • Introduced in: 9.7
metric.v3.timestamp	string	query	False	Filter by metric.v3.timestamp • Introduced in: 9.7

Name	Type	In	Required	Description
metric.v3.throughput.write	integer	query	False	Filter by metric.v3.throughput.write • Introduced in: 9.7
metric.v3.throughput.read	integer	query	False	Filter by metric.v3.throughput.read • Introduced in: 9.7
metric.v3.throughput.total	integer	query	False	Filter by metric.v3.throughput.total • Introduced in: 9.7
metric.v3.status	string	query	False	Filter by metric.v3.status • Introduced in: 9.7
metric.v3.duration	string	query	False	Filter by metric.v3.duration • Introduced in: 9.7
metric.v4.iops.other	integer	query	False	Filter by metric.v4.iops.other • Introduced in: 9.8
metric.v4.iops.total	integer	query	False	Filter by metric.v4.iops.total • Introduced in: 9.8

Name	Type	In	Required	Description
metric.v4.iops.write	integer	query	False	Filter by metric.v4.iops.write • Introduced in: 9.8
metric.v4.iops.read	integer	query	False	Filter by metric.v4.iops.read • Introduced in: 9.8
metric.v4.latency.other	integer	query	False	Filter by metric.v4.latency.other • Introduced in: 9.8
metric.v4.latency.total	integer	query	False	Filter by metric.v4.latency.total • Introduced in: 9.8
metric.v4.latency.write	integer	query	False	Filter by metric.v4.latency.write • Introduced in: 9.8
metric.v4.latency.read	integer	query	False	Filter by metric.v4.latency.read • Introduced in: 9.8
metric.v4.timestamp	string	query	False	Filter by metric.v4.timestamp • Introduced in: 9.8

Name	Type	In	Required	Description
metric.v4.throughput.write	integer	query	False	Filter by metric.v4.throughput.write • Introduced in: 9.8
metric.v4.throughput.read	integer	query	False	Filter by metric.v4.throughput.read • Introduced in: 9.8
metric.v4.throughput.total	integer	query	False	Filter by metric.v4.throughput.total • Introduced in: 9.8
metric.v4.status	string	query	False	Filter by metric.v4.status • Introduced in: 9.8
metric.v4.duration	string	query	False	Filter by metric.v4.duration • Introduced in: 9.8
windows.default_user	string	query	False	Filter by windows.default_user • Introduced in: 9.11
windows.v3_ms_dos_client_enabled	boolean	query	False	Filter by windows.v3_ms_dos_client_enabled • Introduced in: 9.11

Name	Type	In	Required	Description
windows.map_unknown_uid_to_default_user	boolean	query	False	Filter by windows.map_unknown_uid_to_default_user • Introduced in: 9.11
access_cache_config.ttl_failure	integer	query	False	Filter by access_cache_config.ttl_failure • Introduced in: 9.10
access_cache_config.ttl_negative	integer	query	False	Filter by access_cache_config.ttl_negative • Introduced in: 9.10
access_cache_config.isDnsTTLEnabled	boolean	query	False	Filter by access_cache_config.isDnsTTLEnabled • Introduced in: 9.10
access_cache_config.harvest_timeout	integer	query	False	Filter by access_cache_config.harvest_timeout • Introduced in: 9.10
access_cache_config.ttl_positive	integer	query	False	Filter by access_cache_config.ttl_positive • Introduced in: 9.10
protocol.v4_fsid_change	boolean	query	False	Filter by protocol.v4_fsid_change • Introduced in: 9.13

Name	Type	In	Required	Description
protocol.v4_id_domain	string	query	False	Filter by protocol.v4_id_domain
protocol.v40_enabled	boolean	query	False	Filter by protocol.v40_enabled
protocol.v4_grace_seconds	integer	query	False	Filter by protocol.v4_grace_seconds • Introduced in: 9.13
protocol.v3_64bit_identifiers_enabled	boolean	query	False	Filter by protocol.v3_64bit_identifiers_enabled • Introduced in: 9.8
protocol.v4_64bit_identifiers_enabled	boolean	query	False	Filter by protocol.v4_64bit_identifiers_enabled • Introduced in: 9.8
protocol.v4_lease_seconds	integer	query	False	Filter by protocol.v4_lease_seconds • Introduced in: 9.13
protocol.v4_subnet_filter_enabled	boolean	query	False	Filter by protocol.v4_subnet_filter_enabled • Introduced in: 9.18
protocol.v3_enabled	boolean	query	False	Filter by protocol.v3_enabled

Name	Type	In	Required	Description
protocol.v40_features.acl_preserve	boolean	query	False	Filter by protocol.v40_features.acl_preserve • Introduced in: 9.11
protocol.v40_features.write_delegation_enabled	boolean	query	False	Filter by protocol.v40_features.write_delegation_enabled
protocol.v40_features.read_delegation_enabled	boolean	query	False	Filter by protocol.v40_features.read_delegation_enabled
protocol.v40_features.acl_enabled	boolean	query	False	Filter by protocol.v40_features.acl_enabled
protocol.v40_features.referrals_enabled	boolean	query	False	Filter by protocol.v40_features.referrals_enabled • Introduced in: 9.13
protocol.v40_features.acl_max_aces	integer	query	False	Filter by protocol.v40_features.acl_max_aces • Introduced in: 9.11 • Max value: 1024 • Min value: 192
protocol.v4_session_slot_reply_cache_size	integer	query	False	Filter by protocol.v4_session_slot_reply_cache_size • Introduced in: 9.13 • Max value: 4096 • Min value: 512

Name	Type	In	Required	Description
protocol.v41_enabled	boolean	query	False	Filter by protocol.v41_enabled
protocol.v41_features.pnfs_enabled	boolean	query	False	Filter by protocol.v41_features.pnfs_enabled
protocol.v41_features.read_delegation_enabled	boolean	query	False	Filter by protocol.v41_features.read_delegation_enabled
protocol.v41_features.acl_enabled	boolean	query	False	Filter by protocol.v41_features.acl_enabled
protocol.v41_features.write_delegation_enabled	boolean	query	False	Filter by protocol.v41_features.write_delegation_enabled
protocol.v41_features.trunking_enabled	boolean	query	False	Filter by protocol.v41_features.trunking_enabled <ul style="list-style-type: none"> Introduced in: 9.12
protocol.v41_features.referrals_enabled	boolean	query	False	Filter by protocol.v41_features.referrals_enabled <ul style="list-style-type: none"> Introduced in: 9.13
protocol.v41_features.implementation_name	string	query	False	Filter by protocol.v41_features.implementation_name <ul style="list-style-type: none"> Introduced in: 9.11

Name	Type	In	Required	Description
protocol.v41_features.implementation_domain	string	query	False	Filter by protocol.v41_features.implementation_domain • Introduced in: 9.11
protocol.v3_features.network_status_monitor_port	integer	query	False	Filter by protocol.v3_features.network_status_monitor_port • Introduced in: 9.11
protocol.v3_features.fsid_change	boolean	query	False	Filter by protocol.v3_features.fsid_change • Introduced in: 9.11
protocol.v3_features.ejukebox_enabled	boolean	query	False	Filter by protocol.v3_features.ejukebox_enabled • Introduced in: 9.11
protocol.v3_features.mount_daemon_port	integer	query	False	Filter by protocol.v3_features.mount_daemon_port • Introduced in: 9.11
protocol.v3_features.rquota_daemon_port	integer	query	False	Filter by protocol.v3_features.rquota_daemon_port • Introduced in: 9.11

Name	Type	In	Required	Description
protocol.v3_features.hide_snapshot_enabled	boolean	query	False	Filter by protocol.v3_features.hide_snapshot_enabled • Introduced in: 9.13
protocol.v3_features.connection_drop	boolean	query	False	Filter by protocol.v3_features.connection_drop • Introduced in: 9.11
protocol.v3_features.mount_root_only	boolean	query	False	Filter by protocol.v3_features.mount_root_only • Introduced in: 9.11
protocol.v3_features.network_lock_manager_port	integer	query	False	Filter by protocol.v3_features.network_lock_manager_port • Introduced in: 9.11
protocol.v42_features.xattrs_enabled	boolean	query	False	Filter by protocol.v42_features.xattrs_enabled • Introduced in: 9.12
protocol.v42_features.sparsefile_ops_enabled	boolean	query	False	Filter by protocol.v42_features.sparsefile_ops_enabled • Introduced in: 9.12

Name	Type	In	Required	Description
protocol.v42_features.seclabel_enabled	boolean	query	False	Filter by protocol.v42_features.seclabel_enabled <ul style="list-style-type: none"> Introduced in: 9.12
protocol.v4_session_slots	integer	query	False	Filter by protocol.v4_session_slots <ul style="list-style-type: none"> Introduced in: 9.13 Max value: 2000 Min value: 1
credential_cache.harvest_timeout	integer	query	False	Filter by credential_cache.harvest_timeout <ul style="list-style-type: none"> Introduced in: 9.18 Max value: 604800000 Min value: 60000
credential_cache.transient_error_ttl	integer	query	False	Filter by credential_cache.transient_error_ttl <ul style="list-style-type: none"> Introduced in: 9.11 Max value: 300000 Min value: 30000

Name	Type	In	Required	Description
credential_cache.negative_ttl	integer	query	False	Filter by credential_cache.negative_ttl <ul style="list-style-type: none"> • Introduced in: 9.11 • Max value: 604800000 • Min value: 60000
credential_cache.positive_ttl	integer	query	False	Filter by credential_cache.positive_ttl <ul style="list-style-type: none"> • Introduced in: 9.11 • Max value: 604800000 • Min value: 60000
file_session_io_grouping_count	integer	query	False	Filter by file_session_io_grouping_count <ul style="list-style-type: none"> • Introduced in: 9.11 • Max value: 120000 • Min value: 1000
vstorage_enabled	boolean	query	False	Filter by vstorage_enabled
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	<p>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.</p> <ul style="list-style-type: none"> • Default value: 15 • Max value: 120 • Min value: 0
return_records	boolean	query	False	<p>The default is true for GET calls. When set to false, only the number of records is returned.</p> <ul style="list-style-type: none"> • Default value: 1
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 NFS Server Records
records	array[nfs_service]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "access_cache_config": {
        "harvest_timeout": 3600,
        "ttl_failure": 1,
        "ttl_negative": 30,
        "ttl_positive": 60
      },
      "credential_cache": {
        "harvest_timeout": 86400000,
        "negative_ttl": 3600000,
        "positive_ttl": 3600000,
        "transient_error_ttl": 30000
      },
      "exports": {
        "name_service_lookup_protocol": "string"
      },
      "extended_groups_limit": 32,
      "file_session_io_grouping_count": 5000,
      "file_session_io_grouping_duration": 120,
      "metric": {
        "v3": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "duration": "PT15S",
          "iops": {
```

```

        "read": 200,
        "total": 1000,
        "write": 100
    },
    "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
},
"v4": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "duration": "PT15S",
    "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
},
"v41": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "duration": "PT15S",
    "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
}

```

```

    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 11:20:13 +0000"
}
},
"protocol": {
  "v40_features": {
    "acl_max_aces": 500
  },
  "v41_features": {
    "implementation_domain": "string",
    "implementation_name": "string"
  },
  "v4_id_domain": "string"
},
"protocol_access_rules": {
  "cifs_access_type": "string",
  "nfs3_access_type": "string",
  "nfs4_access_type": "string"
},
"security": {
  "chown_mode": "string",
  "ntfs_unix_security": "string",
  "permitted_encryption_types": [
    "string"
  ]
},
"state": "string",
"statistics": {

```

```

"v3": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 11:20:13 +0000"
},
"v4": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 11:20:13 +0000"
},
"v41": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,

```

```

        "total": 1000,
        "write": 100
    },
    "status": "ok",
    "throughput_raw": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
    },
    "svm": {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "name": "svm1",
        "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "transport": {
        "tcp_max_transfer_size": 16384
    },
    "windows": {
        "default_user": "string"
    }
}
]
}

```

Error

Status: Default, Error

Name	Type	Description
error	returned_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	

access_cache_config

Name	Type	Description
harvest_timeout	integer	Specifies the time after which an entry is deleted from the access cache, if unused.
isDnsTTLEnabled	boolean	Specifies whether Dns TTL is enabled.
ttl_failure	integer	Specifies the time to live value for entries for which a failure was encountered, in seconds.
ttl_negative	integer	Specifies the time to live value of a negative access cache, in seconds.
ttl_positive	integer	Specifies the time to live value of a positive access cache, in seconds.

credential_cache

Name	Type	Description
harvest_timeout	integer	Specifies the age of the unused cached entries, in milliseconds, after which they are cleared from the cache.
negative_ttl	integer	Specifies the age in milliseconds, of the negative cached credentials after which they are cleared from the cache.
positive_ttl	integer	Specifies the age in milliseconds, of the positive cached credentials after which they are cleared from the cache.
transient_error_ttl	integer	Specifies the age in milliseconds, of the cached entries during a transient error situation.

exports

Name	Type	Description
name_service_lookup_protocol	string	Specifies the protocol to use for doing name service lookups.
netgroup_trust_any_nsswitch_no_match	boolean	Specifies if you can consider a no-match result from any of the netgroup ns-switch sources to be authoritative. If this option is enabled, then a no-match response from any of the netgroup ns-switch sources is deemed conclusive even if other sources could not be searched.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

The NFSv4 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.

Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

v3_features

Name	Type	Description
connection_drop	boolean	Specifies whether the dropping of a connection when an NFSv3 request is dropped is enabled.
ejukebox_enabled	boolean	Specifies whether NFSv3 EJUKEBOX error is enabled.
fsid_change	boolean	Specifies whether the change in FSID as NFSv3 clients traverse filesystems should be shown.
hide_snapshot_enabled	boolean	Specifies whether hiding a snapshot directory under a NFSv3 mount point is enabled.
mount_daemon_port	integer	Specifies which port the NFS mount daemon (mountd) uses.
mount_root_only	boolean	Specifies whether the SVM allows MOUNT protocol calls only from privileged ports (port numbers less than 1024).

Name	Type	Description
network_lock_manager_port	integer	Specifies which port the Network lock manager uses.
network_status_monitor_port	integer	Specifies which port the Network status monitor port uses.
rquota_daemon_port	integer	Specifies which port the NFS quota daemon port uses.

v40_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.0 ACLs is enabled.
acl_max_aces	integer	Specifies the maximum number of aces in a NFSv4.0 ACL.
acl_preserve	boolean	Specifies if the NFSv4 ACL is preserved or dropped when chmod is performed. In unified security style, this parameter also specifies if NTFS file permissions are preserved or dropped when chmod, chgrp, or chown are performed.
read_delegation_enabled	boolean	Specifies whether NFSv4.0 Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.0 referrals is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.0 Write Delegation is enabled.

v41_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.1 or later ACLs is enabled.
implementation_domain	string	Specifies the NFSv4.1 or later implementation ID domain.

Name	Type	Description
implementation_name	string	Specifies the NFSv4.1 or later implementation ID name.
pnfs_enabled	boolean	Specifies whether NFSv4.1 or later Parallel NFS is enabled.
read_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.1 referrals is enabled.
trunking_enabled	boolean	Specifies whether NFSv4.1 or later trunking is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Write Delegation is enabled.

v42_features

Name	Type	Description
seclabel_enabled	boolean	Specifies whether NFSv4.2 or later security label is enabled.
sparsefile_ops_enabled	boolean	Specifies whether NFSv4.2 or later sparsefile operation is enabled.
xattrs_enabled	boolean	Specifies whether NFSv4.2 or later extended attributes is enabled.

protocol

Name	Type	Description
v3_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv3 FSIDs and file IDs is enabled.
v3_enabled	boolean	Specifies whether NFSv3 protocol is enabled.
v3_features	v3_features	

Name	Type	Description
v40_enabled	boolean	Specifies whether NFSv4.0 protocol is enabled.
v40_features	v40_features	
v41_enabled	boolean	Specifies whether NFSv4.1 or later protocol is enabled.
v41_features	v41_features	
v42_features	v42_features	
v4_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv4.x FSIDs and file IDs is enabled.
v4_fsid_change	boolean	Specifies whether the change in FSID when NFSv4 clients traverse file systems is displayed.
v4_grace_seconds	integer	Specifies the grace period for clients to reclaim file locks after a server failure.
v4_id_domain	string	Specifies the domain portion of the string form of user and group names as defined by the NFSv4 protocol.
v4_lease_seconds	integer	Specifies the lease seconds of the NFSv4 clients. If it is inactive for more than the time displayed, all of the file lock states on a node might be lost.
v4_session_slot_reply_cache_size	integer	Specifies the number of bytes of the reply that is cached in each NFSv4.x session slot.
v4_session_slots	integer	Specifies the number of entries in NFSv4.x session slot table.
v4_subnet_filter_enabled	boolean	Specifies whether NFSv4 subnet filtering is enabled.

protocol_access_rules

Name	Type	Description
cifs_access_type	string	Access available for the CIFS protocol.
nfs3_access_type	string	Access available for the NFSv3 protocol.
nfs4_access_type	string	Access available for the NFSv4 protocol.

qtree

Name	Type	Description
export_enabled	boolean	Specifies whether qtree export is enabled.
validate_export	boolean	Specifies whether qtree export validation is enabled.

root

Name	Type	Description
ignore_nt_acl	boolean	Specifies whether Windows ACLs affect root access from NFS. If this option is enabled, root access from NFS ignores the NT ACL set on the file or directory.
skip_write_permission_check	boolean	Specifies if permission checks are to be skipped for NFS WRITE calls from root/owner. For copying read-only files to a destination folder which has inheritable ACLs, this option must be enabled.

security

Name	Type	Description
chown_mode	string	Specifies whether file ownership can be changed only by the superuser, or if a non-root user can also change file ownership. If you set this parameter to restricted, file ownership can be changed only by the superuser, even though the on-disk permissions allow a non-root user to change file ownership. If you set this parameter to unrestricted, file ownership can be changed by the superuser and by the non-root user, depending upon the access granted by on-disk permissions. If you set this parameter to use_export_policy, file ownership can be changed in accordance with the relevant export rules.
nt_acl_display_permission	boolean	Controls the permissions that are displayed to NFSv3 and NFSv4 clients on a file or directory that has an NT ACL set. When true, the displayed permissions are based on the maximum access granted by the NT ACL to any user. When false, the displayed permissions are based on the minimum access granted by the NT ACL to any user.

Name	Type	Description
ntfs_unix_security	string	<p>Specifies how NFSv3 security changes affect NTFS volumes. If you set this parameter to ignore, ONTAP ignores NFSv3 security changes. If you set this parameter to fail, this overrides the UNIX security options set in the relevant export rules. If you set this parameter to use_export_policy, ONTAP processes NFSv3 security changes in accordance with the relevant export rules.</p> <ul style="list-style-type: none"> • Default value: 1 • enum: ["ignore", "fail", "use_export_policy"] • Introduced in: 9.11 • x-nullable: true
permitted_encryption_types	array[string]	Specifies the permitted encryption types for Kerberos over NFS.
rpcsec_context_idle	integer	Specifies, in seconds, the amount of time a RPCSEC_GSS context is permitted to remain unused before it is deleted.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

Name	Type	Description
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

The NFSv4.1 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
timestamp	string	The timestamp of the performance data.

statistics

Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

transport

Name	Type	Description
rdma_enabled	boolean	Specifies whether RDMA transport is enabled for the NFS server.
tcp_enabled	boolean	Specifies whether TCP transports are enabled on the server.

Name	Type	Description
tcp_max_transfer_size	integer	Specifies the maximum transfer size in bytes, that the storage system negotiates with the client for TCP transport of data for NFSv3 and NFSv4.x protocols. The range is 8192 to 1048576.
udp_enabled	boolean	Specifies whether UDP transports are enabled on the server.

windows

Name	Type	Description
default_user	string	Specifies the default Windows user for the NFS server.
map_unknown_uid_to_default_user	boolean	Specifies whether or not the mapping of an unknown UID to the default Windows user is enabled.
v3_ms_dos_client_enabled	boolean	Specifies whether NFSv3 MS-DOS client support is enabled.

nfs_service

Name	Type	Description
_links	_links	
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.

Name	Type	Description
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
metric	metric	Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: * online - NFS server is ready to accept client requests. * offline - NFS server is not ready to accept client requests.
statistics	statistics	Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	

Name	Type	Description
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_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.

Create an NFS configuration for an SVM

POST /protocols/nfs/services

Introduced In: 9.6

Creates an NFS configuration for an SVM.

Required properties

- `svm.uuid` or `svm.name` - Existing SVM for which to create the NFS configuration.

Default property values

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

- `enabled` - *true*
- `state` - online

- transport.udp_enabled - *true*
- transport.tcp_enabled - *true*
- transport.rdma_enabled - *true*
- protocol.v3_enabled - *true*
- protocol.v3_64bit_identifiers_enabled - *false*
- protocol.v4_id_domain - defaultv4iddomain.com
- protocol.v4_64bit_identifiers_enabled - *true*
- protocol.v4_enabled - *false*
- protocol.v41_enabled - *false*
- protocol.v40_features.acl_enabled - *false*
- protocol.v40_features.read_delegation_enabled - *false*
- protocol.v40_features.write_delegation_enabled - *false*
- protocol.v41_features.acl_enabled - *false*
- protocol.v41_features.read_delegation_enabled - *false*
- protocol.v41_features.write_delegation_enabled - *false*
- protocol.v41_features.pnfs_enabled - *false*
- protocol.v4_features.subnet_filter_enabled - *false*
- vstorage_enabled - *false*
- rquota_enabled - *false*
- showmount_enabled - *true*
- auth_sys_extended_groups_enabled - *false*
- extended_groups_limit - 32
- qtree.export_enabled - *false*
- qtree.validate_export - *true*
- access_cache_config.ttl_positive - 60
- access_cache_config.ttl_negative - 30
- access_cache_config.ttl_failure - 1
- access_cache_config.harvest_timeout - 3600
- access_cache_config.isDnsTTLEnabled - *false*
- file_session_io_grouping_count - 5000
- file_session_io_grouping_duration - 120
- security.nt_acl_display_permission - *false*
- exports.netgroup_trust_any_nsswitch_no_match - *false*
- exports.name_service_lookup_protocol - *udp*

- security.permitted_encryption_types - [aes-256,aes-128,des3,des]
- security.rpcsec_context_idle - 0
- security.chown_mode - *use_export_policy*
- security.ntfs_unix_security - *use_export_policy*
- windows.v3_ms_dos_client_enabled - *false*
- windows.default_user - ""
- windows.map_unknown_uid_to_default_user - *true*
- credential_cache.positive_ttl - 3600000
- credential_cache.negative_ttl - 3600000
- credential_cache.transient_error_ttl - 30000
- credential_cache.harvest_timeout - 86400000
- protocol.v40_features.acl_preserve - *true*
- protocol.v41_features.implementation_domain - 'netapp.com'
- protocol.v40_features.acl_max_aces - 400
- protocol.v3_features.ejukebox_enabled - *true*
- protocol.v3_features.connection_drop - *true*
- protocol.v3_features.fsid_change - *true*
- protocol.v3_features.mount_daemon_port - 635
- protocol.v3_features.network_lock_manager_port - 4045
- protocol.v3_features.network_status_monitor_port - 4046
- protocol.v3_features.rquota_daemon_port - 4046
- protocol.v3_features.mount_root_only - *true*
- transport.tcp_max_transfer_size - 65536
- root.ignore_nt_acl - *false*
- root.skip_write_permission_check - *false*
- protocol.v40_features.referrals_enabled - *false*
- protocol.v41_features.referrals_enabled - *false*
- protocol.v4_fsid_change - *true*
- protocol.v4_lease_seconds - 30
- protocol.v4_grace_seconds - 45
- protocol.v4_session_slots - 180
- protocol.v4_session_slot_reply_cache_size - 640

Related ONTAP commands

- `vserver nfs create`
- `export-policy access-cache config show`

Learn more

- [DOC /protocols/nfs/services](#)

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.

Name	Type	Description
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: * online - NFS server is ready to accept client requests. * offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

Example request

```
{
  "access_cache_config": {
    "harvest_timeout": 3600,
    "ttl_failure": 1,
    "ttl_negative": 30,
    "ttl_positive": 60
  },
  "credential_cache": {
    "harvest_timeout": 86400000,
    "negative_ttl": 3600000,
    "positive_ttl": 3600000,
    "transient_error_ttl": 30000
  },
  "exports": {
    "name_service_lookup_protocol": "string"
  },
  "extended_groups_limit": 32,
  "file_session_io_grouping_count": 5000,
  "file_session_io_grouping_duration": 120,
  "protocol": {
    "v40_features": {
      "acl_max_aces": 500
    },
    "v41_features": {
      "implementation_domain": "string",
      "implementation_name": "string"
    },
    "v4_id_domain": "string"
  },
  "protocol_access_rules": {
    "cifs_access_type": "string",
    "nfs3_access_type": "string",
    "nfs4_access_type": "string"
  },
  "security": {
    "chown_mode": "string",
    "ntfs_unix_security": "string",
    "permitted_encryption_types": [
      "string"
    ]
  },
  "state": "string",
  "svm": {
    "name": "svm1",
```



```
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "transport": {
    "tcp_max_transfer_size": 16384
  },
  "windows": {
    "default_user": "string"
  }
}
```

Response

Status: 201, Created

Name	Type	Description
num_records	integer	Number of NFS Server Records
records	array[nfs_service]	

Example response

```
{
  "num_records": 1,
  "records": [
    {
      "access_cache_config": {
        "harvest_timeout": 3600,
        "ttl_failure": 1,
        "ttl_negative": 30,
        "ttl_positive": 60
      },
      "credential_cache": {
        "harvest_timeout": 86400000,
        "negative_ttl": 3600000,
        "positive_ttl": 3600000,
        "transient_error_ttl": 30000
      },
      "exports": {
        "name_service_lookup_protocol": "string"
      },
      "extended_groups_limit": 32,
      "file_session_io_grouping_count": 5000,
      "file_session_io_grouping_duration": 120,
      "protocol": {
        "v40_features": {
          "acl_max_aces": 500
        },
        "v41_features": {
          "implementation_domain": "string",
          "implementation_name": "string"
        },
        "v4_id_domain": "string"
      },
      "protocol_access_rules": {
        "cifs_access_type": "string",
        "nfs3_access_type": "string",
        "nfs4_access_type": "string"
      },
      "security": {
        "chown_mode": "string",
        "ntfs_unix_security": "string",
        "permitted_encryption_types": [
          "string"
        ]
      }
    }
  ],
}
```

```

    "state": "string",
    "svm": {
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "transport": {
      "tcp_max_transfer_size": 16384
    },
    "windows": {
      "default_user": "string"
    }
  }
]
}

```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
1534829	The port numbers allowed are 635 (the default) and 1024 through 9999
2621516	This operation is only supported on a data SVM
2621570	This operation is not permitted on an SVM that is configured as the destination for SVM DR.
2621574	This operation is not permitted on an SVM that is configured as the destination of a MetroCluster SVM relationship
2621706	The specified SVM UUID is incorrect for the specified SVM name
3276852	NFSv4.1 implementation name length for the SVM must be less than 256 bytes.
3276872	NFSv4 lease timeout value must not be less than 10.

Error Code	Description
3276873	NFSv4 lease timeout value must be between 10 and (protocol.v4_grace_seconds-1).
3276874	NFSv4 grace timeout value must not be greater than 180.
3276875	NFSv4 grace timeout value must be between (protocol.v4_lease_seconds+1) and 180.
3276900	NFSv4.1 implementation name cannot be an empty string
3276916	Vserver is not running
3277038	Cannot enable \"showmount\" feature because it requires an effective cluster version of Data ONTAP 8.3.0 or later
3277048	The port numbers allowed are 635 (the default) and 1024 through 9999
3277049	Cannot enable \"showmount\" feature on ID-Discard Vserver. Ensure that the Vserver is initialized and retry the command
3277052	NFSv4.x access to transitioned volumes in this Vserver could trigger conversion of non-Unicode directories to Unicode, which might impact data-serving performance. Before enabling NFSv4.x for this Vserver, refer to the Data and Configuration Transition Guide
3277069	Cannot disable TCP because the SnapDiff RPC server is in the \"on\" state
3277085	The port numbers allowed are 1024 through 9999
3277089	Attempting to create an NFS server using 64-bits for NFSv3 FSIDs and File IDs on Vserver. Older client software might not work with 64-bit identifiers
3277099	Domain name contains invalid characters or it is too short. Allowed characters are: alphabetical characters (A-Za-z), numeric characters (0-9), minus sign (-), and the period (.). The first character must be alphabetical or numeric, last character must not be a minus sign or a period. Minimum supported length: 2 characters, maximum of 256 characters
3277140	Cannot set \"transport.tcp_max_transfer_size\" to a value other than multiples of 4096
2621507	The NFS protocol is not allowed for the specified SVM.

Error Code	Description
2621519	SVM name is invalid. The SVM name must begin with a letter or an underscore. If the SVM is of type "sync-source", the maximum supported length is 41. Otherwise, the maximum supported length is 47.
262196	Field "access_cache_config.harvest_timeout" cannot be set in this operation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_cache_config

Name	Type	Description
harvest_timeout	integer	Specifies the time after which an entry is deleted from the access cache, if unused.
isDnsTTLEnabled	boolean	Specifies whether Dns TTL is enabled.
ttl_failure	integer	Specifies the time to live value for entries for which a failure was encountered, in seconds.
ttl_negative	integer	Specifies the time to live value of a negative access cache, in seconds.
ttl_positive	integer	Specifies the time to live value of a positive access cache, in seconds.

credential_cache

Name	Type	Description
harvest_timeout	integer	Specifies the age of the unused cached entries, in milliseconds, after which they are cleared from the cache.
negative_ttl	integer	Specifies the age in milliseconds, of the negative cached credentials after which they are cleared from the cache.

Name	Type	Description
positive_ttl	integer	Specifies the age in milliseconds, of the positive cached credentials after which they are cleared from the cache.
transient_error_ttl	integer	Specifies the age in milliseconds, of the cached entries during a transient error situation.

exports

Name	Type	Description
name_service_lookup_protocol	string	Specifies the protocol to use for doing name service lookups.
netgroup_trust_any_nsswitch_no_match	boolean	Specifies if you can consider a no-match result from any of the netgroup ns-switch sources to be authoritative. If this option is enabled, then a no-match response from any of the netgroup ns-switch sources is deemed conclusive even if other sources could not be searched.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

v3_features

Name	Type	Description
connection_drop	boolean	Specifies whether the dropping of a connection when an NFSv3 request is dropped is enabled.
ejukebox_enabled	boolean	Specifies whether NFSv3 EJUKEBOX error is enabled.
fsid_change	boolean	Specifies whether the change in FSID as NFSv3 clients traverse filesystems should be shown.
hide_snapshot_enabled	boolean	Specifies whether hiding a snapshot directory under a NFSv3 mount point is enabled.
mount_daemon_port	integer	Specifies which port the NFS mount daemon (mountd) uses.
mount_root_only	boolean	Specifies whether the SVM allows MOUNT protocol calls only from privileged ports (port numbers less than 1024).
network_lock_manager_port	integer	Specifies which port the Network lock manager uses.
network_status_monitor_port	integer	Specifies which port the Network status monitor port uses.
rquota_daemon_port	integer	Specifies which port the NFS quota daemon port uses.

v40_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.0 ACLs is enabled.
acl_max_aces	integer	Specifies the maximum number of aces in a NFSv4.0 ACL.
acl_preserve	boolean	Specifies if the NFSv4 ACL is preserved or dropped when chmod is performed. In unified security style, this parameter also specifies if NTFS file permissions are preserved or dropped when chmod, chgrp, or chown are performed.
read_delegation_enabled	boolean	Specifies whether NFSv4.0 Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.0 referrals is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.0 Write Delegation is enabled.

v41_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.1 or later ACLs is enabled.
implementation_domain	string	Specifies the NFSv4.1 or later implementation ID domain.
implementation_name	string	Specifies the NFSv4.1 or later implementation ID name.
pnfs_enabled	boolean	Specifies whether NFSv4.1 or later Parallel NFS is enabled.
read_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.1 referrals is enabled.

Name	Type	Description
trunking_enabled	boolean	Specifies whether NFSv4.1 or later trunking is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Write Delegation is enabled.

v42_features

Name	Type	Description
seclabel_enabled	boolean	Specifies whether NFSv4.2 or later security label is enabled.
sparsefile_ops_enabled	boolean	Specifies whether NFSv4.2 or later sparsefile operation is enabled.
xattrs_enabled	boolean	Specifies whether NFSv4.2 or later extended attributes is enabled.

protocol

Name	Type	Description
v3_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv3 FSIDs and file IDs is enabled.
v3_enabled	boolean	Specifies whether NFSv3 protocol is enabled.
v3_features	v3_features	
v40_enabled	boolean	Specifies whether NFSv4.0 protocol is enabled.
v40_features	v40_features	
v41_enabled	boolean	Specifies whether NFSv4.1 or later protocol is enabled.
v41_features	v41_features	
v42_features	v42_features	
v4_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv4.x FSIDs and file IDs is enabled.

Name	Type	Description
v4_fsid_change	boolean	Specifies whether the change in FSID when NFSv4 clients traverse file systems is displayed.
v4_grace_seconds	integer	Specifies the grace period for clients to reclaim file locks after a server failure.
v4_id_domain	string	Specifies the domain portion of the string form of user and group names as defined by the NFSv4 protocol.
v4_lease_seconds	integer	Specifies the lease seconds of the NFSv4 clients. If it is inactive for more than the time displayed, all of the file lock states on a node might be lost.
v4_session_slot_reply_cache_size	integer	Specifies the number of bytes of the reply that is cached in each NFSv4.x session slot.
v4_session_slots	integer	Specifies the number of entries in NFSv4.x session slot table.
v4_subnet_filter_enabled	boolean	Specifies whether NFSv4 subnet filtering is enabled.

protocol_access_rules

Name	Type	Description
cifs_access_type	string	Access available for the CIFS protocol.
nfs3_access_type	string	Access available for the NFSv3 protocol.
nfs4_access_type	string	Access available for the NFSv4 protocol.

qtree

Name	Type	Description
export_enabled	boolean	Specifies whether qtree export is enabled.
validate_export	boolean	Specifies whether qtree export validation is enabled.

root

Name	Type	Description
ignore_nt_acl	boolean	Specifies whether Windows ACLs affect root access from NFS. If this option is enabled, root access from NFS ignores the NT ACL set on the file or directory.
skip_write_permission_check	boolean	Specifies if permission checks are to be skipped for NFS WRITE calls from root/owner. For copying read-only files to a destination folder which has inheritable ACLs, this option must be enabled.

security

Name	Type	Description
chown_mode	string	Specifies whether file ownership can be changed only by the superuser, or if a non-root user can also change file ownership. If you set this parameter to restricted, file ownership can be changed only by the superuser, even though the on-disk permissions allow a non-root user to change file ownership. If you set this parameter to unrestricted, file ownership can be changed by the superuser and by the non-root user, depending upon the access granted by on-disk permissions. If you set this parameter to use_export_policy, file ownership can be changed in accordance with the relevant export rules.

Name	Type	Description
nt_acl_display_permission	boolean	Controls the permissions that are displayed to NFSv3 and NFSv4 clients on a file or directory that has an NT ACL set. When true, the displayed permissions are based on the maximum access granted by the NT ACL to any user. When false, the displayed permissions are based on the minimum access granted by the NT ACL to any user.
ntfs_unix_security	string	<p>Specifies how NFSv3 security changes affect NTFS volumes. If you set this parameter to ignore, ONTAP ignores NFSv3 security changes. If you set this parameter to fail, this overrides the UNIX security options set in the relevant export rules. If you set this parameter to use_export_policy, ONTAP processes NFSv3 security changes in accordance with the relevant export rules.</p> <ul style="list-style-type: none"> • Default value: 1 • enum: ["ignore", "fail", "use_export_policy"] • Introduced in: 9.11 • x-nullable: true
permitted_encryption_types	array[string]	Specifies the permitted encryption types for Kerberos over NFS.
rpcsec_context_idle	integer	Specifies, in seconds, the amount of time a RPCSEC_GSS context is permitted to remain unused before it is deleted.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

transport

Name	Type	Description
rdma_enabled	boolean	Specifies whether RDMA transport is enabled for the NFS server.
tcp_enabled	boolean	Specifies whether TCP transports are enabled on the server.
tcp_max_transfer_size	integer	Specifies the maximum transfer size in bytes, that the storage system negotiates with the client for TCP transport of data for NFSv3 and NFSv4.x protocols. The range is 8192 to 1048576.
udp_enabled	boolean	Specifies whether UDP transports are enabled on the server.

windows

Name	Type	Description
default_user	string	Specifies the default Windows user for the NFS server.
map_unknown_uid_to_default_user	boolean	Specifies whether or not the mapping of an unknown UID to the default Windows user is enabled.
v3_ms_dos_client_enabled	boolean	Specifies whether NFSv3 MS-DOS client support is enabled.

nfs_service

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	

Name	Type	Description
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: * online - NFS server is ready to accept client requests. * offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

nfs_service

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.

Name	Type	Description
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: <ul style="list-style-type: none"> • online - NFS server is ready to accept client requests. • offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_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 NFS configuration for an SVM

```
DELETE /protocols/nfs/services/{svm.uuid}
```

Introduced In: 9.6

Deletes the NFS configuration of an SVM.

Related ONTAP commands

- `vserver nfs delete`

Learn more

- [DOC /protocols/nfs/services](#)

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	

Response

```
Status: 200, Ok
```

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
3276916	Vserver is not running
3277008	NFS Kerberos must be disabled on all LIFs of Vserver before deleting the NFS configuration. When all LIFs are disabled, try the operation
3277009	NFS Kerberos realms associated with the Vserver are deleted
3277111	Internal error. Failed to remove NFS-specific security trace filter for Vserver
3277112	Internal error. Failed to modify the protocols field of a security trace filter for Vserver

Name	Type	Description
error	returned_error	

Example error

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

Definitions

See Definitions

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_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 NFS configuration for an SVM

GET /protocols/nfs/services/{svm.uuid}

Introduced In: 9.6

Retrieves the NFS configuration of an SVM.

Related ONTAP commands

- `vserver nfs show`
- `vserver nfs status`

Learn more

- [DOC /protocols/nfs/services](#)

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	

Name	Type	In	Required	Description
fields	array[string]	query	False	Specify the fields to return.

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
metric	metric	Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	

Name	Type	Description
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	<p>Specifies the state of the NFS service on the SVM. The following values are supported:</p> <ul style="list-style-type: none"> • online - NFS server is ready to accept client requests. • offline - NFS server is not ready to accept client requests.
statistics	statistics	Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "access_cache_config": {
    "harvest_timeout": 3600,
    "ttl_failure": 1,
    "ttl_negative": 30,
    "ttl_positive": 60
  },
  "credential_cache": {
    "harvest_timeout": 86400000,
    "negative_ttl": 3600000,
    "positive_ttl": 3600000,
    "transient_error_ttl": 30000
  },
  "exports": {
    "name_service_lookup_protocol": "string"
  },
  "extended_groups_limit": 32,
  "file_session_io_grouping_count": 5000,
  "file_session_io_grouping_duration": 120,
  "metric": {
    "v3": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "duration": "PT15S",
      "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
      },
      "status": "ok",
      "throughput": {
```



```

        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
},
"v4": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "duration": "PT15S",
    "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
},
"v41": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "duration": "PT15S",
    "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "latency": {
        "read": 200,
        "total": 1000,

```

```

        "write": 100
    },
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
}
},
"protocol": {
    "v40_features": {
        "acl_max_aces": 500
    },
    "v41_features": {
        "implementation_domain": "string",
        "implementation_name": "string"
    },
    "v4_id_domain": "string"
},
"protocol_access_rules": {
    "cifs_access_type": "string",
    "nfs3_access_type": "string",
    "nfs4_access_type": "string"
},
"security": {
    "chown_mode": "string",
    "ntfs_unix_security": "string",
    "permitted_encryption_types": [
        "string"
    ]
},
"state": "string",
"statistics": {
    "v3": {
        "iops_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
        },
        "latency_raw": {
            "read": 200,
            "total": 1000,
            "write": 100
        }
    },

```

```

    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
  },
  "v4": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
  },
  "v41": {
    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
  }
}

```

```

},
"svm": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "svm1",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
},
"transport": {
  "tcp_max_transfer_size": 16384
},
"windows": {
  "default_user": "string"
}
}

```

Error

Status: Default, Error

Name	Type	Description
error	returned_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	

access_cache_config

Name	Type	Description
harvest_timeout	integer	Specifies the time after which an entry is deleted from the access cache, if unused.
isDnsTTLEnabled	boolean	Specifies whether Dns TTL is enabled.
ttl_failure	integer	Specifies the time to live value for entries for which a failure was encountered, in seconds.
ttl_negative	integer	Specifies the time to live value of a negative access cache, in seconds.
ttl_positive	integer	Specifies the time to live value of a positive access cache, in seconds.

credential_cache

Name	Type	Description
harvest_timeout	integer	Specifies the age of the unused cached entries, in milliseconds, after which they are cleared from the cache.
negative_ttl	integer	Specifies the age in milliseconds, of the negative cached credentials after which they are cleared from the cache.

Name	Type	Description
positive_ttl	integer	Specifies the age in milliseconds, of the positive cached credentials after which they are cleared from the cache.
transient_error_ttl	integer	Specifies the age in milliseconds, of the cached entries during a transient error situation.

exports

Name	Type	Description
name_service_lookup_protocol	string	Specifies the protocol to use for doing name service lookups.
netgroup_trust_any_nsswitch_no_match	boolean	Specifies if you can consider a no-match result from any of the netgroup ns-switch sources to be authoritative. If this option is enabled, then a no-match response from any of the netgroup ns-switch sources is deemed conclusive even if other sources could not be searched.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

v3_features

Name	Type	Description
connection_drop	boolean	Specifies whether the dropping of a connection when an NFSv3 request is dropped is enabled.
ejukebox_enabled	boolean	Specifies whether NFSv3 EJUKEBOX error is enabled.
fsid_change	boolean	Specifies whether the change in FSID as NFSv3 clients traverse filesystems should be shown.
hide_snapshot_enabled	boolean	Specifies whether hiding a snapshot directory under a NFSv3 mount point is enabled.
mount_daemon_port	integer	Specifies which port the NFS mount daemon (mountd) uses.
mount_root_only	boolean	Specifies whether the SVM allows MOUNT protocol calls only from privileged ports (port numbers less than 1024).
network_lock_manager_port	integer	Specifies which port the Network lock manager uses.
network_status_monitor_port	integer	Specifies which port the Network status monitor port uses.
rquota_daemon_port	integer	Specifies which port the NFS quota daemon port uses.

v40_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.0 ACLs is enabled.
acl_max_aces	integer	Specifies the maximum number of aces in a NFSv4.0 ACL.
acl_preserve	boolean	Specifies if the NFSv4 ACL is preserved or dropped when chmod is performed. In unified security style, this parameter also specifies if NTFS file permissions are preserved or dropped when chmod, chgrp, or chown are performed.
read_delegation_enabled	boolean	Specifies whether NFSv4.0 Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.0 referrals is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.0 Write Delegation is enabled.

v41_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.1 or later ACLs is enabled.
implementation_domain	string	Specifies the NFSv4.1 or later implementation ID domain.
implementation_name	string	Specifies the NFSv4.1 or later implementation ID name.
pnfs_enabled	boolean	Specifies whether NFSv4.1 or later Parallel NFS is enabled.
read_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.1 referrals is enabled.

Name	Type	Description
trunking_enabled	boolean	Specifies whether NFSv4.1 or later trunking is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Write Delegation is enabled.

v42_features

Name	Type	Description
seclabel_enabled	boolean	Specifies whether NFSv4.2 or later security label is enabled.
sparsefile_ops_enabled	boolean	Specifies whether NFSv4.2 or later sparsefile operation is enabled.
xattrs_enabled	boolean	Specifies whether NFSv4.2 or later extended attributes is enabled.

protocol

Name	Type	Description
v3_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv3 FSIDs and file IDs is enabled.
v3_enabled	boolean	Specifies whether NFSv3 protocol is enabled.
v3_features	v3_features	
v40_enabled	boolean	Specifies whether NFSv4.0 protocol is enabled.
v40_features	v40_features	
v41_enabled	boolean	Specifies whether NFSv4.1 or later protocol is enabled.
v41_features	v41_features	
v42_features	v42_features	
v4_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv4.x FSIDs and file IDs is enabled.

Name	Type	Description
v4_fsid_change	boolean	Specifies whether the change in FSID when NFSv4 clients traverse file systems is displayed.
v4_grace_seconds	integer	Specifies the grace period for clients to reclaim file locks after a server failure.
v4_id_domain	string	Specifies the domain portion of the string form of user and group names as defined by the NFSv4 protocol.
v4_lease_seconds	integer	Specifies the lease seconds of the NFSv4 clients. If it is inactive for more than the time displayed, all of the file lock states on a node might be lost.
v4_session_slot_reply_cache_size	integer	Specifies the number of bytes of the reply that is cached in each NFSv4.x session slot.
v4_session_slots	integer	Specifies the number of entries in NFSv4.x session slot table.
v4_subnet_filter_enabled	boolean	Specifies whether NFSv4 subnet filtering is enabled.

protocol_access_rules

Name	Type	Description
cifs_access_type	string	Access available for the CIFS protocol.
nfs3_access_type	string	Access available for the NFSv3 protocol.
nfs4_access_type	string	Access available for the NFSv4 protocol.

qtree

Name	Type	Description
export_enabled	boolean	Specifies whether qtree export is enabled.
validate_export	boolean	Specifies whether qtree export validation is enabled.

root

Name	Type	Description
ignore_nt_acl	boolean	Specifies whether Windows ACLs affect root access from NFS. If this option is enabled, root access from NFS ignores the NT ACL set on the file or directory.
skip_write_permission_check	boolean	Specifies if permission checks are to be skipped for NFS WRITE calls from root/owner. For copying read-only files to a destination folder which has inheritable ACLs, this option must be enabled.

security

Name	Type	Description
chown_mode	string	Specifies whether file ownership can be changed only by the superuser, or if a non-root user can also change file ownership. If you set this parameter to restricted, file ownership can be changed only by the superuser, even though the on-disk permissions allow a non-root user to change file ownership. If you set this parameter to unrestricted, file ownership can be changed by the superuser and by the non-root user, depending upon the access granted by on-disk permissions. If you set this parameter to use_export_policy, file ownership can be changed in accordance with the relevant export rules.

Name	Type	Description
nt_acl_display_permission	boolean	Controls the permissions that are displayed to NFSv3 and NFSv4 clients on a file or directory that has an NT ACL set. When true, the displayed permissions are based on the maximum access granted by the NT ACL to any user. When false, the displayed permissions are based on the minimum access granted by the NT ACL to any user.
ntfs_unix_security	string	<p>Specifies how NFSv3 security changes affect NTFS volumes. If you set this parameter to ignore, ONTAP ignores NFSv3 security changes. If you set this parameter to fail, this overrides the UNIX security options set in the relevant export rules. If you set this parameter to use_export_policy, ONTAP processes NFSv3 security changes in accordance with the relevant export rules.</p> <ul style="list-style-type: none"> • Default value: 1 • enum: ["ignore", "fail", "use_export_policy"] • Introduced in: 9.11 • x-nullable: true
permitted_encryption_types	array[string]	Specifies the permitted encryption types for Kerberos over NFS.
rpcsec_context_idle	integer	Specifies, in seconds, the amount of time a RPCSEC_GSS context is permitted to remain unused before it is deleted.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

transport

Name	Type	Description
rdma_enabled	boolean	Specifies whether RDMA transport is enabled for the NFS server.
tcp_enabled	boolean	Specifies whether TCP transports are enabled on the server.
tcp_max_transfer_size	integer	Specifies the maximum transfer size in bytes, that the storage system negotiates with the client for TCP transport of data for NFSv3 and NFSv4.x protocols. The range is 8192 to 1048576.
udp_enabled	boolean	Specifies whether UDP transports are enabled on the server.

windows

Name	Type	Description
default_user	string	Specifies the default Windows user for the NFS server.
map_unknown_uid_to_default_user	boolean	Specifies whether or not the mapping of an unknown UID to the default Windows user is enabled.
v3_ms_dos_client_enabled	boolean	Specifies whether NFSv3 MS-DOS client support is enabled.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_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 NFS configuration for an SVM

```
PATCH /protocols/nfs/services/{svm.uuid}
```

Introduced In: 9.6

Updates the NFS configuration of an SVM.

Related ONTAP commands

- `vserver nfs modify`
- `vserver nfs on`

- `vserver nfs off`
- `vserver nfs start`
- `vserver nfs stop`

Learn more

- [DOC /protocols/nfs/services](#)

Parameters

Name	Type	In	Required	Description
svm.uuid	string	path	True	

Request Body

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	

Name	Type	Description
root	root	
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	<p>Specifies the state of the NFS service on the SVM. The following values are supported:</p> <ul style="list-style-type: none"> • online - NFS server is ready to accept client requests. • offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

Example request

```
{
  "access_cache_config": {
    "harvest_timeout": 3600,
    "ttl_failure": 1,
    "ttl_negative": 30,
    "ttl_positive": 60
  },
  "credential_cache": {
    "harvest_timeout": 86400000,
    "negative_ttl": 3600000,
    "positive_ttl": 3600000,
    "transient_error_ttl": 30000
  },
  "exports": {
    "name_service_lookup_protocol": "string"
  },
  "extended_groups_limit": 32,
  "file_session_io_grouping_count": 5000,
  "file_session_io_grouping_duration": 120,
  "protocol": {
    "v40_features": {
      "acl_max_aces": 500
    },
    "v41_features": {
      "implementation_domain": "string",
      "implementation_name": "string"
    },
    "v4_id_domain": "string"
  },
  "protocol_access_rules": {
    "cifs_access_type": "string",
    "nfs3_access_type": "string",
    "nfs4_access_type": "string"
  },
  "security": {
    "chown_mode": "string",
    "ntfs_unix_security": "string",
    "permitted_encryption_types": [
      "string"
    ]
  },
  "state": "string",
  "svm": {
    "name": "svm1",
```

```

    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "transport": {
    "tcp_max_transfer_size": 16384
  },
  "windows": {
    "default_user": "string"
  }
}

```

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
1534829	The port numbers allowed are 635 (the default) and 1024 through 9999
2621516	This operation is only supported on a data SVM
2621574	This operation is not permitted on a SVM that is configured as the destination of a MetroCluster SVM relationship
3276852	NFSv4.1 implementation name length for the SVM must be less than 256 bytes.
3276872	NFSv4 lease timeout value must not be less than 10.
3276873	NFSv4 lease timeout value must be between 10 and (protocol.v4_grace_seconds-1).
3276874	NFSv4 grace timeout value must not be greater than 180.
3276875	NFSv4 grace timeout value must be between (protocol.v4_lease_seconds+1) and 180.
3276916	Vserver is not running
3276969	Ports cannot be modified when NFS access is enabled. Disable NFS access before changing port settings

Error Code	Description
3276994	Kerberos must be disabled on all LIFs on the SVM before adding or removing any encryption. Disable Kerberos on the LIF and retry the operation.
3277048	The port numbers allowed are 635 (the default) and 1024 through 9999
3277069	Cannot disable TCP because the SnapDiff RPC server is in the \"on\" state
3277085	The port numbers allowed are 1024 through 9999.
3277087	Attempting to reduce the number of bits used for NFSv3 FSIDs and File IDs from 64 to 32 on Vserver. This could result in collisions between different File IDs and is not recommended
3277088	Attempting to increase the number of bits used for NFSv3 FSIDs and File IDs from 32 to 64 on Vserver. This could result in older client software no longer working with the volumes owned by Vserver
3277090	Attempting to disallow multiple FSIDs per mount point on Vserver. Since this Vserver currently uses 32-bit NFSv3 FSIDs and File IDs, this could result in collisions between different File IDs and is not recommended
3277099	Domain name contains invalid characters or its too short. Allowed characters are: alphabetical characters (A-Za-z), numeric characters (0-9), minus sign (-), and the period (.). The first character must be alphabetical or numeric, last character must not be a minus sign or a period. Minimum supported length: 2 characters, maximum of 256 characters
3277140	Cannot set "transport.tcp_max_transfer_size" to a value other than multiples of 4096

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

access_cache_config

Name	Type	Description
harvest_timeout	integer	Specifies the time after which an entry is deleted from the access cache, if unused.
isDnsTTLEnabled	boolean	Specifies whether Dns TTL is enabled.
ttl_failure	integer	Specifies the time to live value for entries for which a failure was encountered, in seconds.
ttl_negative	integer	Specifies the time to live value of a negative access cache, in seconds.
ttl_positive	integer	Specifies the time to live value of a positive access cache, in seconds.

credential_cache

Name	Type	Description
harvest_timeout	integer	Specifies the age of the unused cached entries, in milliseconds, after which they are cleared from the cache.
negative_ttl	integer	Specifies the age in milliseconds, of the negative cached credentials after which they are cleared from the cache.

Name	Type	Description
positive_ttl	integer	Specifies the age in milliseconds, of the positive cached credentials after which they are cleared from the cache.
transient_error_ttl	integer	Specifies the age in milliseconds, of the cached entries during a transient error situation.

exports

Name	Type	Description
name_service_lookup_protocol	string	Specifies the protocol to use for doing name service lookups.
netgroup_trust_any_nsswitch_no_match	boolean	Specifies if you can consider a no-match result from any of the netgroup ns-switch sources to be authoritative. If this option is enabled, then a no-match response from any of the netgroup ns-switch sources is deemed conclusive even if other sources could not be searched.

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

metric

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

v3_features

Name	Type	Description
connection_drop	boolean	Specifies whether the dropping of a connection when an NFSv3 request is dropped is enabled.
ejukebox_enabled	boolean	Specifies whether NFSv3 EJUKEBOX error is enabled.
fsid_change	boolean	Specifies whether the change in FSID as NFSv3 clients traverse filesystems should be shown.
hide_snapshot_enabled	boolean	Specifies whether hiding a snapshot directory under a NFSv3 mount point is enabled.
mount_daemon_port	integer	Specifies which port the NFS mount daemon (mountd) uses.
mount_root_only	boolean	Specifies whether the SVM allows MOUNT protocol calls only from privileged ports (port numbers less than 1024).
network_lock_manager_port	integer	Specifies which port the Network lock manager uses.
network_status_monitor_port	integer	Specifies which port the Network status monitor port uses.
rquota_daemon_port	integer	Specifies which port the NFS quota daemon port uses.

v40_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.0 ACLs is enabled.
acl_max_aces	integer	Specifies the maximum number of aces in a NFSv4.0 ACL.
acl_preserve	boolean	Specifies if the NFSv4 ACL is preserved or dropped when chmod is performed. In unified security style, this parameter also specifies if NTFS file permissions are preserved or dropped when chmod, chgrp, or chown are performed.
read_delegation_enabled	boolean	Specifies whether NFSv4.0 Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.0 referrals is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.0 Write Delegation is enabled.

v41_features

Name	Type	Description
acl_enabled	boolean	Specifies whether NFSv4.1 or later ACLs is enabled.
implementation_domain	string	Specifies the NFSv4.1 or later implementation ID domain.
implementation_name	string	Specifies the NFSv4.1 or later implementation ID name.
pnfs_enabled	boolean	Specifies whether NFSv4.1 or later Parallel NFS is enabled.
read_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Read Delegation is enabled.
referrals_enabled	boolean	Specifies whether NFSv4.1 referrals is enabled.

Name	Type	Description
trunking_enabled	boolean	Specifies whether NFSv4.1 or later trunking is enabled.
write_delegation_enabled	boolean	Specifies whether NFSv4.1 or later Write Delegation is enabled.

v42_features

Name	Type	Description
seclabel_enabled	boolean	Specifies whether NFSv4.2 or later security label is enabled.
sparsefile_ops_enabled	boolean	Specifies whether NFSv4.2 or later sparsefile operation is enabled.
xattrs_enabled	boolean	Specifies whether NFSv4.2 or later extended attributes is enabled.

protocol

Name	Type	Description
v3_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv3 FSIDs and file IDs is enabled.
v3_enabled	boolean	Specifies whether NFSv3 protocol is enabled.
v3_features	v3_features	
v40_enabled	boolean	Specifies whether NFSv4.0 protocol is enabled.
v40_features	v40_features	
v41_enabled	boolean	Specifies whether NFSv4.1 or later protocol is enabled.
v41_features	v41_features	
v42_features	v42_features	
v4_64bit_identifiers_enabled	boolean	Specifies whether 64-bit support for NFSv4.x FSIDs and file IDs is enabled.

Name	Type	Description
v4_fsid_change	boolean	Specifies whether the change in FSID when NFSv4 clients traverse file systems is displayed.
v4_grace_seconds	integer	Specifies the grace period for clients to reclaim file locks after a server failure.
v4_id_domain	string	Specifies the domain portion of the string form of user and group names as defined by the NFSv4 protocol.
v4_lease_seconds	integer	Specifies the lease seconds of the NFSv4 clients. If it is inactive for more than the time displayed, all of the file lock states on a node might be lost.
v4_session_slot_reply_cache_size	integer	Specifies the number of bytes of the reply that is cached in each NFSv4.x session slot.
v4_session_slots	integer	Specifies the number of entries in NFSv4.x session slot table.
v4_subnet_filter_enabled	boolean	Specifies whether NFSv4 subnet filtering is enabled.

protocol_access_rules

Name	Type	Description
cifs_access_type	string	Access available for the CIFS protocol.
nfs3_access_type	string	Access available for the NFSv3 protocol.
nfs4_access_type	string	Access available for the NFSv4 protocol.

qtree

Name	Type	Description
export_enabled	boolean	Specifies whether qtree export is enabled.
validate_export	boolean	Specifies whether qtree export validation is enabled.

root

Name	Type	Description
ignore_nt_acl	boolean	Specifies whether Windows ACLs affect root access from NFS. If this option is enabled, root access from NFS ignores the NT ACL set on the file or directory.
skip_write_permission_check	boolean	Specifies if permission checks are to be skipped for NFS WRITE calls from root/owner. For copying read-only files to a destination folder which has inheritable ACLs, this option must be enabled.

security

Name	Type	Description
chown_mode	string	Specifies whether file ownership can be changed only by the superuser, or if a non-root user can also change file ownership. If you set this parameter to restricted, file ownership can be changed only by the superuser, even though the on-disk permissions allow a non-root user to change file ownership. If you set this parameter to unrestricted, file ownership can be changed by the superuser and by the non-root user, depending upon the access granted by on-disk permissions. If you set this parameter to use_export_policy, file ownership can be changed in accordance with the relevant export rules.

Name	Type	Description
nt_acl_display_permission	boolean	Controls the permissions that are displayed to NFSv3 and NFSv4 clients on a file or directory that has an NT ACL set. When true, the displayed permissions are based on the maximum access granted by the NT ACL to any user. When false, the displayed permissions are based on the minimum access granted by the NT ACL to any user.
ntfs_unix_security	string	<p>Specifies how NFSv3 security changes affect NTFS volumes. If you set this parameter to ignore, ONTAP ignores NFSv3 security changes. If you set this parameter to fail, this overrides the UNIX security options set in the relevant export rules. If you set this parameter to use_export_policy, ONTAP processes NFSv3 security changes in accordance with the relevant export rules.</p> <ul style="list-style-type: none"> • Default value: 1 • enum: ["ignore", "fail", "use_export_policy"] • Introduced in: 9.11 • x-nullable: true
permitted_encryption_types	array[string]	Specifies the permitted encryption types for Kerberos over NFS.
rpcsec_context_idle	integer	Specifies, in seconds, the amount of time a RPCSEC_GSS context is permitted to remain unused before it is deleted.

iops_raw

The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput_raw

Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

Name	Type	Description
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.

Name	Type	Description
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
iops_raw	iops_raw	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	latency_raw	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the storage object. This should be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

statistics

Realtime performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

transport

Name	Type	Description
rdma_enabled	boolean	Specifies whether RDMA transport is enabled for the NFS server.
tcp_enabled	boolean	Specifies whether TCP transports are enabled on the server.
tcp_max_transfer_size	integer	Specifies the maximum transfer size in bytes, that the storage system negotiates with the client for TCP transport of data for NFSv3 and NFSv4.x protocols. The range is 8192 to 1048576.
udp_enabled	boolean	Specifies whether UDP transports are enabled on the server.

windows

Name	Type	Description
default_user	string	Specifies the default Windows user for the NFS server.
map_unknown_uid_to_default_user	boolean	Specifies whether or not the mapping of an unknown UID to the default Windows user is enabled.
v3_ms_dos_client_enabled	boolean	Specifies whether NFSv3 MS-DOS client support is enabled.

nfs_service

Name	Type	Description
access_cache_config	access_cache_config	
auth_sys_extended_groups_enabled	boolean	Specifies whether or not extended groups support over AUTH_SYS is enabled.
credential_cache	credential_cache	
enabled	boolean	Specifies if the NFS service is administratively enabled.
exports	exports	
extended_groups_limit	integer	Specifies the maximum auxiliary groups supported over AUTH_SYS and RPCSEC_GSS.
file_session_io_grouping_count	integer	Number of I/O operations on a file to be grouped and considered as one session for event generation applications, such as FPolicy.
file_session_io_grouping_duration	integer	The duration for which I/O operations on a file will be grouped and considered as one session for event generation applications, such as FPolicy.
protocol	protocol	
protocol_access_rules	protocol_access_rules	
qtree	qtree	
root	root	

Name	Type	Description
rquota_enabled	boolean	Specifies whether or not the remote quota feature is enabled.
security	security	
showmount_enabled	boolean	Specifies whether or not the showmount feature is enabled.
state	string	Specifies the state of the NFS service on the SVM. The following values are supported: <ul style="list-style-type: none"> • online - NFS server is ready to accept client requests. • offline - NFS server is not ready to accept client requests.
svm	svm	SVM, applies only to SVM-scoped objects.
transport	transport	
vstorage_enabled	boolean	Specifies whether or not the VMware vstorage feature is enabled.
windows	windows	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

Name	Type	Description
target	string	The target parameter that caused the error.

Retrieve NFS protocol historical performance metrics

GET /protocols/nfs/services/{svm.uuid}/metrics

Introduced In: 9.7

Retrieves historical performance metrics for the NFS protocol of an SVM.

Parameters

Name	Type	In	Required	Description
v4.status	string	query	False	Filter by v4.status <ul style="list-style-type: none"> Introduced in: 9.8
v4.duration	string	query	False	Filter by v4.duration <ul style="list-style-type: none"> Introduced in: 9.8
v4.throughput.write	integer	query	False	Filter by v4.throughput.write <ul style="list-style-type: none"> Introduced in: 9.8
v4.throughput.read	integer	query	False	Filter by v4.throughput.read <ul style="list-style-type: none"> Introduced in: 9.8
v4.throughput.total	integer	query	False	Filter by v4.throughput.total <ul style="list-style-type: none"> Introduced in: 9.8

Name	Type	In	Required	Description
v4.latency.other	integer	query	False	Filter by v4.latency.other • Introduced in: 9.8
v4.latency.total	integer	query	False	Filter by v4.latency.total • Introduced in: 9.8
v4.latency.write	integer	query	False	Filter by v4.latency.write • Introduced in: 9.8
v4.latency.read	integer	query	False	Filter by v4.latency.read • Introduced in: 9.8
v4.iops.other	integer	query	False	Filter by v4.iops.other • Introduced in: 9.8
v4.iops.total	integer	query	False	Filter by v4.iops.total • Introduced in: 9.8
v4.iops.write	integer	query	False	Filter by v4.iops.write • Introduced in: 9.8
v4.iops.read	integer	query	False	Filter by v4.iops.read • Introduced in: 9.8
timestamp	string	query	False	Filter by timestamp

Name	Type	In	Required	Description
v41.throughput.write	integer	query	False	Filter by v41.throughput.write • Introduced in: 9.8
v41.throughput.read	integer	query	False	Filter by v41.throughput.read • Introduced in: 9.8
v41.throughput.total	integer	query	False	Filter by v41.throughput.total • Introduced in: 9.8
v41.iops.other	integer	query	False	Filter by v41.iops.other • Introduced in: 9.8
v41.iops.total	integer	query	False	Filter by v41.iops.total • Introduced in: 9.8
v41.iops.write	integer	query	False	Filter by v41.iops.write • Introduced in: 9.8
v41.iops.read	integer	query	False	Filter by v41.iops.read • Introduced in: 9.8
v41.latency.other	integer	query	False	Filter by v41.latency.other • Introduced in: 9.8

Name	Type	In	Required	Description
v41.latency.total	integer	query	False	Filter by v41.latency.total • Introduced in: 9.8
v41.latency.write	integer	query	False	Filter by v41.latency.write • Introduced in: 9.8
v41.latency.read	integer	query	False	Filter by v41.latency.read • Introduced in: 9.8
v41.duration	string	query	False	Filter by v41.duration • Introduced in: 9.8
v41.status	string	query	False	Filter by v41.status • Introduced in: 9.8
v3.iops.other	integer	query	False	Filter by v3.iops.other
v3.iops.total	integer	query	False	Filter by v3.iops.total
v3.iops.write	integer	query	False	Filter by v3.iops.write
v3.iops.read	integer	query	False	Filter by v3.iops.read
v3.latency.other	integer	query	False	Filter by v3.latency.other
v3.latency.total	integer	query	False	Filter by v3.latency.total

Name	Type	In	Required	Description
v3.latency.write	integer	query	False	Filter by v3.latency.write
v3.latency.read	integer	query	False	Filter by v3.latency.read
v3.throughput.write	integer	query	False	Filter by v3.throughput.write
v3.throughput.read	integer	query	False	Filter by v3.throughput.read
v3.throughput.total	integer	query	False	Filter by v3.throughput.total
v3.duration	string	query	False	Filter by v3.duration
v3.status	string	query	False	Filter by v3.status
svm.uuid	string	path	True	Unique identifier of the SVM.

Name	Type	In	Required	Description
interval	string	query	False	<p>The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows:</p> <ul style="list-style-type: none"> • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

Name	Type	In	Required	Description
return_timeout	integer	query	False	<p>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.</p> <ul style="list-style-type: none"> • Default value: 15 • Max value: 120 • Min value: 0
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	return_records	boolean	query	False

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": [
    {
      "v3": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
        "iops": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "latency": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "status": "ok",
        "throughput": {
          "read": 200,
          "total": 1000,
          "write": 100
        },
        "timestamp": "2017-01-25 11:20:13 +0000"
      },
      "v4": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "duration": "PT15S",
```

```

    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
  },
  "v41": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 11:20:13 +0000"
  }
}
]
}

```

Error

Status: Default, Error

Name	Type	Description
error	returned_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	

iops

The rate of I/O operations observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

latency

The round trip latency in microseconds observed at the storage object.

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

throughput

The rate of throughput bytes per second observed at the storage object.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

v3

The NFSv3 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.

Name	Type	Description
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v4

The NFSv4 operations

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

Name	Type	Description
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

v41

The NFSv4.1 operations

Name	Type	Description
_links	_links	

Name	Type	Description
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:
iops	iops	The rate of I/O operations observed at the storage object.
latency	latency	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

records

Historical performance numbers, such as IOPS latency and throughput, for SVM-NFS protocol.

Name	Type	Description
v3	v3	The NFSv3 operations
v4	v4	The NFSv4 operations
v41	v41	The NFSv4.1 operations

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_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 © 2026 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.