



XCP Reference

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doccomments@netapp.com

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1 XCP NFS Command Reference

This section provides the list of available commands for XCP NFS. Each command has additional parameters and can be used alone or in combination as required.

Table 1) XCP NFS Command Reference.

Feature	Description
Core Engine Innovations	• Supports Linux, CLI only • Extreme performance (~25x comparable tools) • Multiple layers of granularity (qtrees, subdirectories, criteria-based filtering) • Easy deployment (64-bit Linux host-based software)
"help"	Displays information about XCP commands and options. Use "help info" to display documentation, examples and tuning recommendations.
"show"	Discovers servers and file systems. -v: show more detailed information about servers
"activate"	Activates XCP license on Linux client host systems
"scan"	Scopes and provides dashboards for the directories, files, and data in the file systems. -l, -q: File listing output formats -stats, -csv, -html: Tree statistics report formats -nonames: Do not look up user and group names for file listings or reports -newid <name>: Catalog name for a new index -id <name>: Catalog name of a previous copy or scan index -match <filter>: Only process files and directories that match the filter -fmt <string expression>: formatted output -du: Summarize space usage of each directory including subdirectories -md5: Checksum the files (also save the checksums when indexing) (default: False) -duk: Same as du, with output in kilobytes -depth <n>: limit the search depth -dircount <n[k]>: Request size for reading directories (default: 64k) -edupe: Include dedupe estimate in reports (see documentation for details) -bs <n[k]>: read/write block size for scans which read data with -md5 or -edupe. (default: 64k) -parallel <n>: Maximum concurrent batch processes (default: 7) -noId: Disables the creation of a default index (default: False) -subdir-names: return names of top level sub-dirs in a directory

Feature	Description
"copy"	Any to NetApp copy (third-party FSS, UNIX SAN/DAS/NAS to FAS, E-Series). <code>.-newid <name>:</code> Catalog name for a new index <code>.-md5:</code> Checksum the files (also save the checksums when indexing) (default: <code>False</code>) <code>.-edupe:</code> Include dedupe estimate in reports (see documentation for details) <code>.-nonames:</code> Do not look up user and group names for file listings or reports <code>.-bs <n[k]>:</code> read/write block size (default: <code>64k</code>) <code>.-dircount <n[k]>:</code> Request size for reading directories (default: <code>64k</code>) <code>.-parallel <n>:</code> Maximum concurrent batch processes (default: <code>7</code>) <code>.-noId:</code> Disables the creation of a default index (default: <code>False</code>) <code>.-match <filter>:</code> Only process files and directories that match the filter
"license."	Display XCP license information.
"license update."	Retrieves the latest license from the XCP server
"resume"	Fast log-based recovery of in-progress jobs. <code>.-id <name>:</code> Catalog name of a previous copy index <code>.-bs <n[k]>:</code> read/write block size (default: <code>64k</code>) <code>.-dircount <n[k]>:</code> Request size for reading directories (default: <code>64k</code>) <code>.-parallel <n>:</code> Maximum concurrent batch processes (default: <code>7</code>) <code>.-dircount <n[k]>:</code> Request size for reading directories (default: <code>64k</code>)
"sync"	Differential incremental updates from source to target at the file level. <code>.-id <name>:</code> Catalog name of a previous copy index <code>.-snap <name or path>:</code> Access a snapshot of the source tree. <code>.-nonames:</code> Do not look up user and group names for file listings or reports <code>.-bs <n[k]>:</code> read/write block size (default: <code>64k</code>) <code>.-dircount <n[k]>:</code> Request size for reading directories (default: <code>64k</code>) <code>.-parallel <n>:</code> Maximum concurrent batch processes (default: <code>7</code>) <code>.-match <filter>:</code> Only process files and directories that match the filter

Feature	Description
"sync dry-run"	Finds source changes but does not apply them to the target. <code>.-id <name>:</code> Catalog name of a previous copy index <code>.-snap <name or path>:</code> Access a snapshot of the source tree <code>-stats:</code> deep scan the modified directories and report on everything that's new <code>.-nonames:</code> Do not look up user and group names for file listings or reports <code>.-v, -l, -q:</code> File listing output formats <code>.-dircount <n[k]>:</code> Request size for reading directories (default: 64k) <code>.-parallel <n>:</code> Maximum concurrent batch processes (default: 7) <code>-target:</code> Check that the target files match the index
"verify"	Three levels of assurance: statistics, structure, and full data bit by bit. <code>.-stats, -csv:</code> Scan source and target trees in parallel and compare tree statistics <code>.-nodata:</code> Do not check data <code>.-noattrs:</code> Do not check attributes <code>.-nomods:</code> Do not check file modification times <code>.-mtimewindow <s>:</code> Acceptable modification time difference for verification <code>.-newid <name>:</code> Catalog name for a new index <code>.-v, -l:</code> Output formats to list any differences found <code>.-nonames:</code> Do not look up user and group names for file listings or reports <code>.-match <filter>:</code> Only process files and directories that match the filter <code>.-bs <n[k]>:</code> read/write blocksize (default: 64k) <code>.-parallel <n>:</code> Maximum concurrent batch processes (default: 7) <code>-dircount <n[k]>:</code> Request size for reading directories (default: 64k) <code>.-noId:</code> Disables the creation of a default index (default: False)
"chmod"	Change the files and directories permissions. <code>-exclude<filter>:</code> Excludes the files and directories that match the filter. <code>-match <filter>:</code> Only processes files and directories that match the filter. <code>-reference <reference>:</code> The referenced file or directory point. <code>-v:</code> Reports the output for every processed object. <code>-mode <mode>:</code> The mode to be set.

"chown"	Change the Files and directories ownership. -exclude <filter>: Excludes the files and directories that match the filter. -match <filter>: Only processes the files and directories that match the filter. -group <group>: Sets the Linux group ID (GID) at the source. -user <user>: Sets the Linux user ID (UID) at the source. -user-from <userFrom>: Changes the UID. -group-from <groupFrom>: Changes the GID. -reference <reference>: The referenced file or directory point. -v: Reports the output for every object processed.
"delete"	Deletes everything in given path.
License Management Portal	Several types of renewable free licenses are available with options for connected and offline environments
Logging and Reporting	Events, sources, targets, files, data, and performance

1.1 help

The `help` command displays a list of commands, command parameters, and a brief description of each. The command is very useful for beginners who are new to XCP.

Syntax

```
[root@localhost /]# ./xcp help
```

Example

```
[root@scs000057864-1 linux]# ./xcp help
USAGE:
xcp [[help] [command]] -version]

optional arguments:
help Show XCP help message and exit
-version Show XCP version number and exit

To see help text, you can run:
xcp help Display this content

xcp help info Step by step usage of all commands
xcp help <command> Individual command help

command:
activate Activate an XCP license on the current host
license Show XCP license information
show Request information from host about NFS exports
scan Read all the files from export path
copy Recursively copy everything from source to target
resume Resume copy operation from the point it was halted
sync Synchronize increment changes on source to target after copy
verify Verify that the target is the same as the source
delete Delete data on the NFS exported volume
chown Change the ownership on the NFS exported volume
chmod Change the permissions on the NFS exported volume
logdump Collect all logs related to the XCP job and dump those into
a zipped folder named <ID>.zip under the current dir
```

Parameters

The following table describes the `help` parameters.

Feature	Description
<code>help info</code>	Display documentation, examples, and tuning recommendations.

help info

Display documentation, examples, and tuning recommendations.

```
root@client1 linux]# ./xcp help info
COMMAND
  info

USAGE
  help info

DESCRIPTION
  Step by step usage of the XCP command. Follow these steps after you copy the binary and license

  1. Download the XCP license and XCP binary to the Linux machine. Run XCP activate:
  xcp activate

  2. On a fresh system, the above command will fail when looking for a license in
/opt/NetApp/xFiles/xcp.
  Copy the XCP license to /opt/NetApp/xFiles/xcp and run the activate command again:
  xcp activate

  3. Check the validity of the license:
  xcp license

  4. Configure the ini file located at /opt/NetApp/xFiles/xcp/xcp.ini with catalog details:
  add catalog = catalog_nfs_server:/catalog_path

  5. List all the exports and details from the NFS server:
  xcp show server

  6. Pick up one of the exports and run a scan of the export:
  xcp scan server:/export1

  7. Initiate baseline copy:
  xcp copy -newid id1 server:/export1 server2:/export2
```

8. If the copy is halted for some reason, you can use the "xcp resume" command to resume the copy operation:

```
xcp resume -id id1
```

9. Start with incremental sync after the baseline is completed:

```
xcp sync -id id1
```

10. After copy or after every sync, you can verify to check data integrity:

```
xcp verify server:/export1 server2:/export2
```

SUPPORTED COMMANDS

help: Display information about commands and options

-exclude: Display examples of filters

-fmt: Display examples of filters

-match: Display examples of filters

help info: Display documentation, examples, and tuning recommendations

show: Request information from hosts about NFS and other RPC services

-v: Show more detailed information about servers

-loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

scan: Read all the directories in a file tree or a saved index

-l, -q: File listing output formats

-stats, -csv, -html: Tree statistics report formats

-nonames: Do not look up user and group names for file listings or reports

-newid <name>: Catalog name for a new index

-id <name>: Catalog name of a previous copy or scan index

-match <filter>: Only process files and directories that match the filter

-fmt <string expression>: Formatted output

-du: Summarize space usage of each directory, including subdirectories

-md5: Checksum the files (also save the checksum files when indexing) (default: False)

-duk: Summarize space usage of directory, include subdirectories, with output in kilobytes

-acl4: Process NFSv4 access control lists (ACLs)

-acl4.threads <n>: Per-process thread pool size (default: 100)

-depth <n>: Limit the search depth

-dircount <n[k]>: Request size for reading directories (default: 64k)

-edupe: Include deduplication estimate in reports (see documentation for details)

-bs <n[k]>: Read/write block size for scans that read data with -md5 or -edupe (default: 64k)

-parallel <n>: Maximum concurrent batch processes (default: 7)

-noId: Disable the creation of a default index (default: False)

-exclude <filter>: Exclude the files and directories that match the filter

-preserve-atime: preserve atime of the file/dir (default: False)

-nodes <name>: comma-separated list of worker nodes

-minmem: Utilize minimal memory

-s3.insecure: use http instead of https

-s3.noverify: do not verify ssl certificates

-s3.endpoint <S3 endpoint Url>: path such as https://10.65.57.176:8082

-s3.profile <profile-name>: config/cred profile to be used

-loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

copy: Recursively copy everything from source to target

-newid <name>: Catalog name for a new index

-md5: Checksum the files (also save the checksum files when indexing) (default: False)

-edupe: Include deduplication estimate in reports (see documentation for details)

-nonames: Do not look up user and group names for file listings or reports

-acl4: Process NFSv4 access control lists (ACLs)

-acl4.threads <n>: Per-process thread pool size (default: 100)

-acl4.alwaysset: call "setacl" for all ACL-capable files and directories

```

-bs <n[k]>: read/write blocksize (default: 64k)
-dircount <n[k]>: Request size for reading directories (default: 64k)
-parallel <n>: Maximum concurrent batch processes (default: 7)
-noId: Disable the creation of a default index (default: False)
-match <filter>: Only process files and directories that match the filter
-exclude <filter>: Exclude the files and directories that match the filter
-copybatch <filename [args]>: custom batch processing module
-chown: set destination uid and gid when copying as non-root user (default: False)
-preserve-ctime: preserve ctime of the file/dir (default: False)
-nodes <name>: comma-separated list of worker nodes
-minmem: Utilize minimal memory
-s3.insecure: use http instead of https
-s3.noverify: do not verify ssl certificates
-s3.endpoint <S3 endpoint Url>: path such as https://10.65.57.176:8082
-s3.profile <profile-name>: config/cred profile to be used
-loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

verify: Verify that the target is the same as the source
[no options]: Full verification of target structure, names, attributes, and data
-stats, -csv: Scan source and target trees in parallel and compare tree statistics
-nodata: Do not check data
-noattrs: Do not check attributes (default: False)
-noown: Do not check ownership (uid and gid) (default: False)
-nomods: Do not check file modification times
-mtimewindow <s>: Acceptable modification time difference for verification
-newid <name>: Catalog name for a new index
-v, -l: Output formats to list any differences found
-acl4: Process NFSv4 access control lists (ACLs)
-acl4.threads <n>: Per-process thread pool size (default: 100)
-nonames: Do not look up user and group names for file listings or reports
-match <filter>: Only process files and directories that match the filter
-bs <n[k]>: read/write blocksize (default: 64k)
-parallel <n>: Maximum concurrent batch processes (default: 7)
-dircount <n[k]>: Request size for reading directories (default: 64k)
-noId: Disable the creation of a default index (default: False)
-exclude <filter>: Exclude the files and directories that match the filter
-preserve-ctime: preserve ctime of the file/dir (default: False)
-minmem: Utilize minimal memory
-s3.insecure: use http instead of https
-s3.noverify: do not verify ssl certificates
-s3.endpoint <S3 endpoint Url>: path such as https://10.65.57.176:8082
-s3.profile <profile-name>: config/cred profile to be used
-loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

sync: Find all source changes and apply them to the target
-id <name>: Catalog name of a previous copy index
-snap <name or path>: Access a Snapshot copy of the source tree
-nonames: Do not look up user and group names for file listings or reports
-bs <n[k]>: read/write blocksize (default: 64k)
-dircount <n[k]>: Request size for reading directories (default: 64k)
-parallel <n>: Maximum concurrent batch processes (default: 7)
-acl4.threads <n>: Per-process thread pool size (default: 100)
-exclude <filter>: Exclude the files and directories that match the filter
-preserve-ctime: preserve ctime of the file/dir (default: False)
-loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

sync dry-run: Find source changes but don't apply them to the target
-id <name>: Catalog name of a previous copy index
-snap <name or path>: Access a Snapshot copy of the source tree
-stats: Deep scan the modified directories and report on everything new
-nonames: Do not look up user and group names for file listings or reports
-v, -l, -q: File listing output formats
-dircount <n[k]>: Request size for reading directories (default: 64k)
-parallel <n>: Maximum concurrent batch processes (default: 7)
-target: Check that the target files match the index
-loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

resume: Restart an interrupted copy
-id <name>: Catalog name of a previous copy index
-bs <n[k]>: read/write blocksize (default: 64k)

```

-s3.insecure: use http instead of https
 -s3.noverify: do not verify ssl certificates
 -s3.endpoint <S3 endpoint Url>: path such as https://10.65.57.176:8082
 -s3.profile <profile-name>: config/cred profile to be used
 -loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

delete: Delete everything recursively
 -match <filter>: Only process files and directories that match the filter
 -force: Delete without confirmation
 -removetopdir: remove directory including children
 -exclude <filter>: Exclude the files and directories that match the filter
 -parallel <n>: Maximum concurrent batch processes (default: 7)
 -preserve-atime: preserve atime of the file/dir (default: False)
 -minmem: Utilize minimal memory
 -s3.insecure: use http instead of https
 -s3.noverify: do not verify ssl certificates
 -s3.endpoint <S3 endpoint Url>: path such as https://10.65.57.176:8082
 -s3.profile <profile-name>: config/cred profile to be used
 -loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

activate: Activate a license on the current host
 -loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

license: Show xcp license info

license update: Retrieve the latest license from the XCP server

chown: changing ownership of a file object
 -exclude <filter>: Exclude the files and directories that match the filter
 -match <filter>: Only process files and directories that match the filter
 -group <group>: linux gid to be set at source
 -user <user>: linux uid to be set at source
 -user-from <userFrom>: user to be changed
 -group-from <groupFrom>: group to be changed
 -reference <reference>: referenced file or directory point
 -v: reports output for every object processed
 -preserve-atime: preserve atime of the file/dir (default: False)
 -minmem: Utilize minimal memory
 -loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

chmod: changing permissions of a file object
 -exclude <filter>: Exclude the files and directories that match the filter
 -match <filter>: Only process files and directories that match the filter
 -reference <reference>: referenced file or directory point
 -v: reports output for every object processed
 -mode <mode>: mode to be set
 -preserve-atime: preserve atime of the file/dir (default: False)
 -minmem: Utilize minimal memory
 -loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

logdump: Collect all logs related to the XCP job and dump those into a zipped folder named <ID>.zip under current dir
 -m <migration ID>: Filter logs by migration ID
 -j <job ID>: Filter logs by job ID

estimate: Use a saved scan index to estimate copy time
 -id <name>: Catalog name of a previous copy or scan index
 -gbit <n>: Gigabits of bandwidth to estimate best-case time (default: 1)
 -target <path>: Target to use for live test copy
 -t <n[s|m|h]>: Duration of live test copy (default: 5m)
 -bs <n[k]>: read/write blocksize (default: 64k)
 -dircount <n[k]>: Request size for reading directories (default: 64k)
 -parallel <n>: Maximum concurrent batch processes (default: 7)

-preserve-ctime: preserve ctime of the file/dir (default: False)
-loglevel <name>: Option to set log level; available levels are INFO, DEBUG (default: INFO)

OUTPUT

In the -l output, the size, space used, and modification time are all shown in human-readable format. Time is relative to the current time, so it is time zone independent. For example, "14dlh" means that the file was modified 14 days and one hour ago. Note: "current time" is the time XCP started. The timestamp is saved in the index metadata (catalog:/xFiles/indexes/*.json) and is used for reports against the index.

The -stats option prints a human-readable report to the console. Other report format options are -html or -csv. The comma-separated values (CSV) format has exact values. CSV and HTML reports are automatically saved in the catalog, if there is one.

The histograms for modified, accessed, and changed only count regular files.

FILTERS

A filter expression should evaluate to True or False in Python. Filters are used in XCP for the -match and -exclude options. See below for some examples of the filters. Use "xcp help <command>" to check which options are supported for commands.

Variables and file attributes currently available to use in a filter:

modified, accessed, changed: Floats representing age in hours
depth, size, used, uid, gid, type, nlinks, mode, fileid: Integers
name, base, ext: Strings (if name is "demo.sql" then base is "demo" and ext is ".sql")
owner, group: Strings
size units: k, m, g, t, p = K, M, G, T, P = 1024, 1048576, 2**30, 2**40, 2**50
file types: f, d, b, c, l, s, q = F, D, B, C, L, S, Q = 1, 2, 3, 4, 5, 6, 7

Functions available to use in a filter:

rxm(pattern): Regular expression match for each file name
fnm(pattern): Unix-style wildcard match for each file name
load(path): List of lines from a local (external) file
rand(N): Match one out of every N files at random
path(pattern): Wildcard match for the full path
paths(<full_file_path>): Match or exclude all NFS export paths listed in the file
Note: unlike most shell wildcards, pattern "/a/*" will match path /a/b/c

he rxm() function only runs Python re.compile (pattern) once.
Similarly, load() only reads its file once.

Filter examples:

Match files modified less than half an hour ago
"type == f and modified < .5"

Find anything with "core" in the name ("in" is a Python operator):
"'core' in name"

Same match using regular expressions:
"rxm('.*core.*')"

Same match using wildcards:
"fnm('*core*')"

Match files that are not regular files, directories, or links:
"type not in (f,d,l)"

Find jpg files over 500 megabytes (M is a variable):
"fnm(*.jpg) and size > 500*M"

Find files with "/demo/smith" in the path (x is the file; str(x) is its full path):
"/demo/smith" in str(x)"

Exclude copying anything with "f" in its name:
"fnm(*f*)"

Exclude multiple export paths specified in "/root/excludePaths.txt".
"paths('/root/excludePaths.txt')"

The file "excludePaths.txt" may contain multiple export paths where each path is listed on a new line.

The export paths may contain wildcards.

For example, 10.10.1.10:/source_vol/*.txt in file excludePaths.txt will exclude all files having ".txt" extension

If there are incremental changes in previously included directories and you want to exclude anything that

has "dir40" as a substring in its name, you can specify the new exclude filter with the sync. This overrides the exclude

filter used previously with the copy command and applies the new exclude filter.

Note that if there are incremental changes on the source after the copy operation and there are files with

"f" in their name, then these are copied on to the target when the sync operation is performed. If you want

to avoid copying such files or directories, you can use the following command:

xcp sync -exclude "'f' in name" -id <id>

PERFORMANCE

On Linux, please set the following in /etc/sysctl.conf and run "sysctl -p":

```
net.core.rmem_default = 1342177
net.core.rmem_max = 16777216
net.core.wmem_default = 1342177
net.core.wmem_max = 16777216
net.ipv4.tcp_rmem = 4096 1342177 16777216
net.ipv4.tcp_wmem = 4096 1342177 16777216
net.core.netdev_max_backlog = 300000
net.ipv4.tcp_fin_timeout = 10
```

Make sure that your system has multiple CPUs and at least a few gigabytes (GBs) of free memory.

Searching, checksumming or copying hundreds of thousands or millions of files should be many times faster with XCP than with standard tools such cp, find, du, rsync, or OS drag-and-drop.

For the case of a single file, reading or copying with XCP is usually faster with a faster host CPU. When processing many files, reading or copying is faster with more cores or CPUs.

The main performance throttle option is -parallel for the maximum number of concurrent processes as the number of concurrent directories being read and files being processed.

For small numbers of files and/or when there is a network quality of service (QoS) limiter, you might also be able to

increase performance by opening multiple channels. The usage section above shows how to use multiple host target addresses. The same syntax also opens more channels to a single target.

For example: "host1,host1:/vol/src" makes each XCP process open two channels to host1. In some

WAN environments, this can improve performance. Within a datacenter, if there are only 1 GbE network interface cards (NICs)

on the host with XCP it usually helps to use the multipath syntax to leverage more than one NIC.

To verify that you are running I/O over multiple paths, use OS tools to monitor network I/O. For example, on Linux, try "sar -n DEV 2 200".

ENVIRONMENT VARIABLES

XCP_CONFIG_DIR: Override the default location /opt/NetApp/xFiles/xcp. If set, the value should be an OS filesystem path, possibly a mounted NFS directory. When XCP_CONFIG_DIR is set, a new directory with name same as hostname is created inside the custom configuration directory path wherein new logs will be stored.

XCP_LOG_DIR: Override the default, which stores the XCP log in the configuration directory. If set, the value should be an OS filesystem path, possibly a mounted NFS directory. When XCP_LOG_DIR is set, a new directory with name same as hostname is created inside the custom log directory path wherein new logs will be stored.

XCP_CATALOG_PATH: Override the setting in xcp.ini. If set, the value should be in the XCP path format, server:export[:subdirectory].

SECURITY

All the files and directories in the catalog are world readable except for the index files, which have a ".index" suffix and are located in subdirectories under the top-level catalog "indexes" directory. Because each index file is essentially an archive of metadata of an entire file tree, the catalog should be stored on a NetApp volume with export permissions matching the actual sources and targets. Note that file data is not stored in the index, only metadata.

SUPPORT

<https://www.netapp.com/us/contact-us/support.aspx>

1.2 show

The `show` command queries the RPC services and NFS exports of one or more storage servers. The command also lists the available services and exports with the used and free capacity of each export, followed by the attributes of the root of each export.

Syntax

The `show` command requires the host name or IP address of the NFSv3 exported system.

```
[root@localhost /]# ./xcp show <IP address or hostname of NFS server>
```

Example

```
[root@localhost /]# ./xcp show <IP address or hostname of NFS server>
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

getting pmap dump from <IP address or hostname of NFS server> port 111...
getting export list from <IP address or hostname of NFS server>...
sending 3 mounts and 12 nfs requests to <IP address or hostname of NFS server>...

== RPC Services ==
'<IP address or hostname of NFS server>': UDP rpc services: MNT v1/2/3, NFS v3, NLM v4, PMAP
v2/3/4, STATUS v1
'<IP address or hostname of NFS server>': TCP rpc services: MNT v1/2/3, NFS v3/4, NLM v4, PMAP
v2/3/4, STATUS v1

== NFS Exports ==
Mounts Errors Server
      3          0 <IP address or hostname of NFS server>

      Space      Files      Space      Files
      Free       Free       Used       Used Export
  93.9 MiB    19,886    1.10 MiB    104 <IP address or hostname of NFS server>:/
  9.44 GiB     2.49M    65.7 MiB    276 <IP address or hostname of NFS server>:/catalog_vol
  84.9 GiB     22.4M    593 MiB    115 <IP address or hostname of NFS server>:/source_vol

== Attributes of NFS Exports ==
drwxr-xr-x --- root root 4KiB 4KiB 6d2h <IP address or hostname of NFS server>:/
drwxr-xr-x --- root root 4KiB 4KiB 6d2h <IP address or hostname of NFS server>:/catalog_vol
drwxr-xr-x --- root root 4KiB 4KiB 1h30m <IP address or hostname of NFS server>:/source_vol

Xcp command : xcp show <IP address or hostname of NFS server>
0 error
Speed       : 3.62 KiB in (17.9 KiB/s), 6.28 KiB out (31.1 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

Parameters

Feature	Description
<code>show -v</code>	Print verbose details about NFS servers using the IP address or host name.

1.3 License

The `license` command displays XCP license information. Before running this command, verify that the license file is downloaded and copied on the `/opt/NetApp/xFiles/xcp/` directory on the XCP server.

Syntax

```
[root@localhost /]# ./xcp license
```

Example

```
[root@localhost /]# ./xcp license
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Sun Mar 31 00:00:00 2020

Licensed to "XXX, NetApp Inc, XXX@netapp.com" until Sun Mar 31 00:00:00 2029
License type: SANDBOX
License status: ACTIVE
```

```
Customer name: N/A
Project number: N/A
Offline Host: Yes
Send statistics: No
Host activation date: N/A
License management URL: https://xcp.netapp.com
```

Parameters

Feature	Description
<code>.license update</code>	Retrieve the latest license from the XCP server.

license update

Retrieve the latest license from the XCP server.

```
[root@localhost /]# ./xcp license update
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Sun Mar 31 00:00:00 2029
```

1.4 activate

The `activate` command activates the XCP license. Before running this command, verify that the license file is downloaded and copied on the `./opt/NetApp/xFiles/xcp/.` directory on the XCP server.

Syntax

```
[root@localhost /]# ./xcp activate
```

Example

```
[root@localhost /]# ./xcp activate
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Sun Mar 31 00:00:00 2029
XCP already activated
```

1.5 scan

The `scan` command recursively scans the entire source NFSv3 exported paths and prints the statistics of file structure at the end of the `scan` command. NetApp recommends that you put the source NFS export mounts in read-only mode during the scan operation.

Syntax

```
[root@localhost /]# ./xcp scan <source NFS export path>
```

Example

```
[root@localhost /]# ./xcp scan <IP address of NFS server>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
source_vol
source_vol/r1.txt
source_vol/USER.1
source_vol/USER.2
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.1/file1.txt
source_vol/USER.1/file2.txt
source_vol/USER.1/logfile.txt
source_vol/USER.1/log1.txt
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4

Xcp command : xcp scan <IP address of NFS server>:/source_vol
```

```

18 scanned, 0 matched, 0 error
Speed      : 4.59 KiB in (4.20 KiB/s), 756 out (692/s)
Total Time : 1s.
STATUS     : PASSED

```

Parameters

The following table lists `.scan` parameters and their description.

Feature	Description
<code>.scan -l</code>	File listing output formats
<code>.scan -q</code>	File listing output formats
<code>.scan -stats</code>	Tree statistics report formats
<code>.scan -csv</code>	Tree statistics report formats
<code>.scan -html</code>	Tree statistics report formats
<code>.scan -nonames</code>	Do not look up user and group names for file listings or reports
<code>.scan -newid <name></code>	Catalog name for a new index
<code>.scan -id <name></code>	Catalog name of a previous copy or scan index
<code>scan -match <filter></code>	Only process files and directories that match the filter
<code>scan -fmt <string expression></code>	Formatted output
<code>.scan -du</code>	Summarize space usage of each directory including subdirectories
<code>.scan -md5</code>	Checksum the files (also save the checksums when indexing) (default: False)
<code>.scan -depth <n></code>	Limit the search depth
<code>.scan -dircount <n[k]></code>	Request size for reading directories (default: 64k)
<code>.scan -edupe</code>	Include dedupe estimate in reports (see documentation for details)
<code>.scan -bs <n[k]></code>	Read/write block size for scans that read data with <code>-md5</code> or <code>-edupe</code> (default: 64k)
<code>.scan -parallel <n></code>	Maximum concurrent batch processes (default: 7)
<code>.scan -noId</code>	Disables the creation of a default index (default: False)
<code>.scan -subdir-names</code>	Returns the names of the top-level sub-directories in a directory
<code>.scan -acl4</code>	Process NFS4 ACLs
<code>scan -preserve-atime</code>	Restores all files to the last accessed date on the source
<code>scan -minmem</code>	Utilizes minimal memory
<code>scan -s3.insecure</code>	Provides the option to use HTTP instead of HTTPS for S3 bucket communication.
<code>scan -s3.endpoint <S3 endpoint Url></code>	Overrides the default Amazon Web Services (AWS) endpoint URL with the specified URL for S3 bucket communication.
<code>scan -s3.profile <profile-name></code>	Specifies a profile from the AWS credential file for S3 bucket communication.
<code>scan -s3.noverify</code>	Overrides the default verification of SSL certification for S3 bucket communication.

scan -l

File listing output formats.

```
[root@localhost /]# ./xcp scan -l <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

drwxr-xr-x --- root root 4KiB 4KiB 6s source_vol
drwxr-xr-x --- root root 4KiB 4KiB 42s source_vol/USER.1
drwxr-xr-x --- root root 4KiB 4KiB 42s source_vol/USER.2
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.1/FILE_1
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.1/FILE_2
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.1/FILE_3
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.1/FILE_4
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.1/FILE_5
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.2/FILE_1
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.2/FILE_5
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.2/FILE_2
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.2/FILE_3
rw-r--r-- --- root root 1KiB 4KiB 42s source_vol/USER.2/FILE_4

Xcp command : xcp scan -l <IP address or hostname of NFSserver>:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 3.73 KiB in (4.89 KiB/s), 756 out (989/s)
Total Time : 0s.
STATUS      : PASSED
```

scan -q

File listing output formats.

```
[root@localhost /]# ./xcp scan -q <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
Xcp command : xcp scan -q <IP address or hostname of NFSserver>:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 3.73 KiB in (3.96 KiB/s), 756 out (801/s)
Total Time  : 0s.
STATUS      : PASSED
```

scan -stats

Tree statistics report formats.

```
[root@localhost /]# ./xcp scan -stats <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
== Maximum Values ==
      Size      Used      Depth      Namelen      Dirsize
      1 KiB      4 KiB          2          10          5

== Average Values ==
      Namelen      Size      Depth      Dirsize
          6      1 KiB          1          4

== Top Space Users ==
      root
      52 KiB

== Top File Owners ==
      root
      13

== Top File Extensions ==
      other
      10

== Number of files ==
      empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB 10-100MiB      >100MiB
          10

== Space used ==
      empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB 10-100MiB      >100MiB
          40 KiB

== Directory entries ==
      empty      1-10      10-100      100-1K      1K-10K      >10K
          3

== Depth ==
      0-5      6-10      11-15      16-20      21-100      >100
      13
```

```

== Accessed ==
>1 year    >1 month  1-31 days    1-24 hrs    <1 hour    <15 mins    future
                                     10

== Modified ==
>1 year    >1 month  1-31 days    1-24 hrs    <1 hour    <15 mins    future
                                     10

== Changed ==
>1 year    >1 month  1-31 days    1-24 hrs    <1 hour    <15 mins    future
                                     10

Total count: 13
Directories: 3
Regular files: 10
Symbolic links: None
Special files: None
Hard links: None,
multilink files: None,
Space Saved by Hard links (KB): 0
Sparse data: N/A
Dedupe estimate: N/A
Total space for regular files: size: 10 KiB, used: 40 KiB
Total space for symlinks: size: 0, used: 0
Total space for directories: size: 12 KiB, used: 12 KiB
Total space used: 52 KiB

Xcp command : xcp scan -stats <IP address or hostname of NFSserver>:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 3.73 KiB in (8.07 KiB/s), 756 out (1.60 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
[root@scspr1845243002 source_vol]#

```

scan-csv

Tree statistics report formats.

Note: XCP reports (.csv, .html) are saved in the catalog location specified in the xcp.ini file. The files are stored in the <catalog path>/catalog/indexes/1/reports folder. You can see sample reports in the appendix.

```

[root@localhost /]# ./xcp scan -csv <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp,1.6-dev
date,03-Mar-2020 10:51 PM EST
scan <IP address or hostname of NFS server>:/source_vol
options,"{'-csv': True}"
summary,"13 scanned, 3.73 KiB in (11.3 KiB/s), 756 out (2.23 KiB/s), 0s."

Maximum Values,Size,Used,Depth,Namelen,Dirsize
Maximum Values,1024,4096,2,10,5
Average Values,Namelen,Size,Depth,Dirsize
Average Values,6,1024,1,4
Top Space Users,root
Top Space Users,53248
Top File Owners,root
Top File Owners,13
Top File Extensions,other
Top File Extensions,10
Number of files,empty,<8KiB,8-64KiB,64KiB-1MiB,1-10MiB,10-100MiB,>100MiB
Number of files,0,10,0,0,0,0,0
Space used,empty,<8KiB,8-64KiB,64KiB-1MiB,1-10MiB,10-100MiB,>100MiB
Space used,0,40960,0,0,0,0,0
Directory entries,empty,1-10,10-100,100-1K,1K-10K,>10K
Directory entries,0,3,0,0,0,0
Depth,0-5,6-10,11-15,16-20,21-100,>100
Depth,13,0,0,0,0,0
Accessed,>1 year,>1 month,1-31 days,1-24 hrs,<1 hour,<15mins,future
Accessed,0,0,0,0,0,10,0
Modified,>1 year,>1 month,1-31 days,1-24 hrs,<1 hour,<15mins,future
Modified,0,0,0,0,0,10,0
Changed,>1 year,>1 month,1-31 days,1-24 hrs,<1 hour,<15mins,future
Changed,0,0,0,0,0,10,0

```

```

Total count,13
Directories,3
Regular files,10
Symbolic links,0
Special files,0
Hard links,0,
multilink files,0,
Space Saved by Hard links (KB),0
Sparse data,N/A
Dedupe estimate,N/A
Total space for regular files,size,10240,used,40960
Total space for symlinks,size,0,used,0
Total space for directories,size,12288,used,12288
Total space used,53248

Xcp command : xcp scan -csv <IP address or hostname of NFSserver>:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 3.73 KiB in (11.2 KiB/s), 756 out (2.22KiB/s)
Total Time : 0s.
STATUS      : PASSED

```

scan -html

Tree statistics report formats.

```

[root@localhost /]# ./xcp scan -html <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.01//EN" "http://www.w3.org/TR/html4/strict.dtd">
<html><head>

[redacted HTML contents]

</body></html>

Xcp command : xcp scan -html <IP address or hostname of NFSserver>:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 3.73 KiB in (4.31 KiB/s), 756 out (873/s)
Total Time : 0s.
STATUS      : PASSED
[root@scspr1845243002 source_vol]#

```

scan -nonames

Do not look up user and group names for file listings or reports.

Note: The `.-nonames` option only applies to file listings with `.-l` option in the scan command.

```

[root@localhost /]# ./xcp scan -nonames <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

source_vol
source_vol/USER.1
source_vol/USER.2
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4

Xcp command : xcp scan -nonames <IP address or hostname of NFSserver>:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 3.73 KiB in (4.66 KiB/s), 756 out (944/s)
Total Time : 0s.
STATUS      : PASSED

```

scan -newid <name>

Catalog name for a new index.

```
[root@localhost /]# ./xcp scan -newid ID001 <IP address or hostname of NFS server>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
Xcp command : xcp scan -newid ID001 <IP address or hostname of NFSserver>:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 13.8 KiB in (17.7 KiB/s), 53.1 KiB out (68.0KiB/s)
Total Time : 0s.
STATUS      : PASSED
```

scan -id <name>

Catalog name of a previous copy or scan index.

```
[root@localhost /]# ./xcp scan -id 3
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Sun Mar 31 00:00:00 2029
```

```
xcp: Index: {source: 10.10.1.10:/vol/ex_s01/etc/keymgr, target: None}
```

```
keymgr/root/cacert.pem
keymgr/cert/secureadmin.pem
keymgr/key/secureadmin.pem
keymgr/csr/secureadmin.pem
keymgr/root
keymgr/csr
keymgr/key
keymgr/cert
keymgr
```

```
9 reviewed, 11.4 KiB in (11.7 KiB/s), 1.33 KiB out (1.37 KiB/s), 0s.
```

scan -match <filter>

Only process files and directories that match the filter.

```
[root@localhost /]# ./xcp scan -match bin <IP address or hostname of NFS server>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
source_vol
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.1/file1.txt
source_vol/USER.1/file2.txt
source_vol/USER.1/logfile.txt
source_vol/USER.1/log1.txt
source_vol/r1.txt
source_vol/USER.1
source_vol/USER.2
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4
```

```
Filtered: 0 did not match
```

```
Xcp command : xcp scan -match bin <IP address or hostname of NFSserver>:/source_vol
18 scanned, 18 matched, 0 error
Speed       : 4.59 KiB in (6.94 KiB/s), 756 out (1.12KiB/s)
Total Time : 0s.
STATUS      : PASSED
```

scan -fmt <string expression>

Only process files and directories that match the format.

```
[root@localhost /]# ./xcp scan -fmt "{},{},{},{},{},{}'.format(name, x, ctime, atime, mtime)"
<IP address or hostname of NFS server>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
source_vol, <IP address or hostname of NFS server>:/source_vol, 1583294484.46, 1583294492.63,
1583294484.46
```

```

FILE_1, <IP address or hostname of NFS server>:/source_vol/USER.1/FILE_1, 1583293637.88,
1583293637.83, 1583293637.83
FILE_2, <IP address or hostname of NFS server>:/source_vol/USER.1/FILE_2, 1583293637.88,
1583293637.83, 1583293637.84
FILE_3, <IP address or hostname of NFS server>:/source_vol/USER.1/FILE_3, 1583293637.88,
1583293637.84, 1583293637.84
FILE_4, <IP address or hostname of NFS server>:/source_vol/USER.1/FILE_4, 1583293637.88,
1583293637.84, 1583293637.84
FILE_5, <IP address or hostname of NFS server>:/source_vol/USER.1/FILE_5, 1583293637.88,
1583293637.84, 1583293637.84
file1.txt, <IP address or hostname of NFS server>:/source_vol/USER.1/file1.txt, 1583294284.78,
1583294284.78, 1583294284.78
file2.txt, <IP address or hostname of NFS server>:/source_vol/USER.1/file2.txt, 1583294284.78,
1583294284.78, 1583294284.78
logfile.txt, <IP address or hostname of NFS server>:/source_vol/USER.1/logfile.txt,
1583294295.79, 1583294295.79, 1583294295.79
log1.txt, <IP address or hostname of NFS server>:/source_vol/USER.1/log1.txt, 1583294295.8,
1583294295.8, 1583294295.8
r1.txt, <IP address or hostname of NFS server>:/source_vol/r1.txt, 1583294484.46, 1583294484.45,
1583294484.45
USER.1, <IP address or hostname of NFS server>:/source_vol/USER.1, 1583294295.8, 1583294492.63,
1583294295.8
USER.2, <IP address or hostname of NFS server>:/source_vol/USER.2, 1583293637.95, 1583294492.63,
1583293637.95
FILE_1, <IP address or hostname of NFS server>:/source_vol/USER.2/FILE_1, 1583293637.95,
1583293637.94, 1583293637.94
FILE_5, <IP address or hostname of NFS server>:/source_vol/USER.2/FILE_5, 1583293637.96,
1583293637.94, 1583293637.94
FILE_2, <IP address or hostname of NFS server>:/source_vol/USER.2/FILE_2, 1583293637.96,
1583293637.95, 1583293637.95
FILE_3, <IP address or hostname of NFS server>:/source_vol/USER.2/FILE_3, 1583293637.96,
1583293637.95, 1583293637.95
FILE_4, <IP address or hostname of NFS server>:/source_vol/USER.2/FILE_4, 1583293637.96,
1583293637.95, 1583293637.96

Xcp command : xcp scan -fmt '{}', '{}', '{}', '{}', '{}'.format(name, x, ctime, atime, mtime) <IP address
or hostname of NFS server>:/source_vol
18 scanned, 0 matched, 0 error
Speed      : 4.59 KiB in (4.14 KiB/s), 756 out (683/s)
Total Time : 1s.
STATUS     : PASSED

```

scan-du

Summarize space usage of each directory, including subdirectories.

```

[root@localhost /]# ./xcp scan -du <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

24KiB source_vol/USER.1
24KiB source_vol/USER.2
52KiB source_vol

Xcp command : xcp scan -du <IP address or hostname of NFSserver>:/source_vol
18 scanned, 0 matched, 0 error
Speed      : 4.59 KiB in (12.9 KiB/s), 756 out (2.07KiB/s)
Total Time : 0s.
STATUS     : PASSED

```

scan-md5

Checksum the files (also save the checksums when indexing) (default: False).

Note: The checksums are not used for file verification; they are used only for file listings during scan operations.

```

[root@localhost /]# ./xcp scan -md5 <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

source_vol
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.1/FILE_1
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.1/FILE_2
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.1/FILE_3
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.1/FILE_4
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.1/FILE_5

```

```

d41d8cd98f00b204e9800998ecf8427e source_vol/USER.1/file1.txt
d41d8cd98f00b204e9800998ecf8427e source_vol/USER.1/file2.txt
d41d8cd98f00b204e9800998ecf8427e source_vol/USER.1/logfile.txt
d41d8cd98f00b204e9800998ecf8427e source_vol/USER.1/log1.txt
e894f2344aaa92289fb57bc8f597ffa9 source_vol/r1.txt
                                     source_vol/USER.1
                                     source_vol/USER.2
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.2/FILE_1
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.2/FILE_5
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.2/FILE_2
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.2/FILE_3
d47b127bc2de2d687ddc82dac354c415 source_vol/USER.2/FILE_4

```

```

Xcp command : xcp scan -md5 <IP address or hostname of NFS server>:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 16.0 KiB in (34.5 KiB/s), 2.29 KiB out (4.92 KiB/s)
Total Time : 0s.
STATUS      : PASSED

```

scan -depth <n>

Limit the search depth.

Note: This `-depth` option specifies how deep XCP can scan the files into the subdirectories.

```

[root@localhost /]# ./xcp scan -depth 2 <IP address or hostname of NFS server>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

```

```

source_vol
source_vol/r1.txt
source_vol/USER.1
source_vol/USER.2
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.1/file1.txt
source_vol/USER.1/file2.txt
source_vol/USER.1/logfile.txt
source_vol/USER.1/log1.txt
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4

```

```

Xcp command : xcp scan -depth 2 <IP address or hostname of NFS server>:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 4.59 KiB in (6.94 KiB/s), 756 out (1.12 KiB/s)
Total Time : 0s.
STATUS      : PASSED

```

scan -dircount <n[k]>

Request size for reading directories (default: 64k).

```

[root@localhost /]# ./xcp scan -dircount 64k <IP address or hostname of NFS server>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

```

```

source_vol
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.1/file1.txt
source_vol/USER.1/file2.txt
source_vol/USER.1/logfile.txt
source_vol/USER.1/log1.txt
source_vol/r1.txt
source_vol/USER.1
source_vol/USER.2
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5

```

```
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4
```

```
Xcp command : xcp scan -dircount 64k <IP address or hostname of NFS server>:/source_vol
18 scanned, 0 matched, 0 error
Speed      : 4.59 KiB in (4.79 KiB/s), 756 out (790/s)
Total Time : 0s.
STATUS : PASSED
```

scan-edupe

Include dedupe estimate in reports.

```
[root@localhost /]# ./xcp scan -edupe <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
== Maximum Values ==
      Size      Used      Depth      Namelen      Dirsize
      1 KiB      4 KiB          2          11          9

== Average Values ==
      Namelen      Size      Depth      Dirsize
          6        682          1          5

== Top Space Users ==
      root
      52 KiB

== Top File Owners ==
      root
      18

== Top File Extensions ==
      .txt      other
          5          10

== Number of files ==
      empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB 10-100MiB >100MiB
          4          11

== Space used ==
      empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB 10-100MiB >100MiB
          40 KiB

== Directory entries ==
      empty      1-10      10-100      100-1K      1K-10K      >10K
          3

== Depth ==
      0-5      6-10      11-15      16-20      21-100      >100
      18

== Accessed ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future
          4          11

== Modified ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future
          15

== Changed ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future
          15

Total count: 18
Directories: 3
Regular files: 15
Symbolic links: None
Special files: None
Hard links: None,
multilink files: None,
Space Saved by Hard links (KB): 0
Sparse data: None
```

```
Dedupe estimate: N/A
Total space for regular files: size: 10.0 KiB, used: 40KiB
Total space for symlinks: size: 0, used: 0
Total space for directories: size: 12 KiB, used: 12 KiB
Total space used: 52 KiB
```

```
Xcp command : xcp scan -edupe <IP address or hostname of NFSserver>:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 16.0 KiB in (52.7 KiB/s), 2.29 KiB out (7.52 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

scan -bs

Read/write block size for scans that read data with -md5 or -edupe (default: 64k).

```
[root@localhost /]# ./xcp scan -bs 32 <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
source_vol
source_vol/r1.txt
source_vol/USER.1
source_vol/USER.2
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.1/file1.txt
source_vol/USER.1/file2.txt
source_vol/USER.1/logfile.txt
source_vol/USER.1/log1.txt
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4
```

```
Xcp command : xcp scan -bs 32 <IP address or hostname of NFSserver>:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 4.59 KiB in (19.0 KiB/s), 756 out (3.06KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

scan -parallel

Maximum concurrent batch processes (default: 7).

```
[root@localhost /]# ./xcp scan -parallel 5 <IP address or hostname of NFS server>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
source_vol
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.1/file1.txt
source_vol/USER.1/file2.txt
source_vol/USER.1/logfile.txt
source_vol/USER.1/log1.txt
source_vol/r1.txt
source_vol/USER.1
source_vol/USER.2
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4
```

```
Xcp command : xcp scan -parallel 5 <IP address or hostname of NFSserver>:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 4.59 KiB in (7.36 KiB/s), 756 out (1.19KiB/s)
Total Time  : 0s.
```

STATUS : PASSED

scan -noId

Disables the creation of a default index (default: False).

```
[root@localhost /]# ./xcp scan -noId <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

source_vol
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.1/file1.txt
source_vol/USER.1/file2.txt
source_vol/USER.1/logfile.txt
source_vol/USER.1/log1.txt
source_vol/r1.txt
source_vol/USER.1
source_vol/USER.2
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4

Xcp command : xcp scan -noId <IP address or hostname of NFSserver>:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 4.59 KiB in (5.84 KiB/s), 756 out (963/s)
Total Time : 0s.
STATUS      : PASSED
```

scan -subdir-names

Returns the names of the top-level sub-directories in a directory.

```
[root@localhost /]# ./xcp scan -subdir-names <IP address or hostname of NFS server>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

source_vol

Xcp command : xcp scan -subdir-names <IP address or hostname of NFSserver>:/source_vol
7 scanned, 0 matched, 0 error
Speed       : 1.30 KiB in (1.21 KiB/s), 444 out (414/s)
Total Time : 1s.
STATUS      : PASSED
```

scan -acl4

Process NFS4 ACLs.

```
[root@localhost /]# ./xcp scan -acl4 <IP address or hostname of NFSserver>:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

source_vol
source_vol/USER.1/FILE_1
source_vol/USER.1/FILE_2
source_vol/USER.1/FILE_3
source_vol/USER.1/FILE_4
source_vol/USER.1/FILE_5
source_vol/USER.1/file1.txt
source_vol/USER.1/file2.txt
source_vol/USER.1/logfile.txt
source_vol/USER.1/log1.txt
source_vol/r1.txt
source_vol/USER.1
source_vol/USER.2
source_vol/USER.2/FILE_1
source_vol/USER.2/FILE_5
source_vol/USER.2/FILE_2
source_vol/USER.2/FILE_3
source_vol/USER.2/FILE_4
```

```
Xcp command : xcp scan -acl4 <IP address or hostname of NFSserver>:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 4.59 KiB in (9.12 KiB/s), 756 out (1.47 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

scan -preserve-ctime

Restores all files to the last accessed date on the source. When an NFS share is scanned, the access time is modified on the files if the storage system is configured to modify access time on read. XCP does not directly change the access time, XCP reads the files one by one and this triggers an update to the access time. The `-preserve-ctime` option resets the access time to the original value set before the XCP read operation.

```
[root@client 1 linux]# ./xcp scan -preserve-ctime 172.26.96.42:/source_vol
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to xxx xxxx [Network Appliance, Inc] until yyyy
xcp: Job ID: Job_2022-06-30_14.14.15.334173_scan
source_vol/USER2/DIR1_4/FILE_DIR1_4_1024_1
source_vol/USER2/DIR1_4/FILE_DIR1_4_13926_4
source_vol/USER2/DIR1_4/FILE_DIR1_4_65536_2
source_vol/USER2/DIR1_4/FILE_DIR1_4_7475_3
source_vol/USER2/DIR1_4/FILE_DIR1_4_20377_5
source_vol/USER2/DIR1_4/FILE_DIR1_4_26828_6
source_vol/USER2/DIR1_4/FILE_DIR1_4_33279_7
source_vol/USER2/DIR1_4/FILE_DIR1_4_39730_8
source_vol/USER1
source_vol/USER2
source_vol/USER1/FILE_USER1_1024_1
source_vol/USER1/FILE_USER1_65536_2
source_vol/USER1/FILE_USER1_7475_3
source_vol/USER1/FILE_USER1_13926_4
source_vol/USER1/FILE_USER1_20377_5
source_vol/USER1/FILE_USER1_26828_6
source_vol/USER1/FILE_USER1_33279_7
source_vol/USER1/FILE_USER1_39730_8
source_vol/USER1/DIR1_2
source_vol/USER1/DIR1_3
source_vol/USER2/FILE_USER2_1024_1
source_vol/USER2/FILE_USER2_65536_2
source_vol/USER2/FILE_USER2_7475_3
source_vol/USER2/FILE_USER2_13926_4
source_vol/USER2/FILE_USER2_20377_5
source_vol/USER2/FILE_USER2_26828_6
source_vol/USER2/FILE_USER2_33279_7
source_vol/USER2/FILE_USER2_39730_8
source_vol/USER2/DIR1_3
source_vol/USER2/DIR1_4
source_vol/USER1/DIR1_2/FILE_DIR1_2_1024_1
source_vol/USER1/DIR1_2/FILE_DIR1_2_7475_3
source_vol/USER1/DIR1_2/FILE_DIR1_2_33279_7
source_vol/USER1/DIR1_2/FILE_DIR1_2_26828_6
source_vol/USER1/DIR1_2/FILE_DIR1_2_65536_2
source_vol/USER1/DIR1_2/FILE_DIR1_2_39730_8
source_vol/USER1/DIR1_2/FILE_DIR1_2_13926_4
source_vol/USER1/DIR1_2/FILE_DIR1_2_20377_5
source_vol/USER1/DIR1_3/FILE_DIR1_3_1024_1
source_vol/USER1/DIR1_3/FILE_DIR1_3_7475_3
source_vol/USER1/DIR1_3/FILE_DIR1_3_65536_2
source_vol/USER1/DIR1_3/FILE_DIR1_3_13926_4
source_vol/USER1/DIR1_3/FILE_DIR1_3_20377_5
source_vol/USER1/DIR1_3/FILE_DIR1_3_26828_6
source_vol/USER1/DIR1_3/FILE_DIR1_3_33279_7
source_vol/USER1/DIR1_3/FILE_DIR1_3_39730_8
source_vol/USER2/DIR1_3/FILE_DIR1_3_1024_1
source_vol/USER2/DIR1_3/FILE_DIR1_3_65536_2
source_vol/USER2/DIR1_3/FILE_DIR1_3_7475_3
source_vol/USER2/DIR1_3/FILE_DIR1_3_13926_4
source_vol/USER2/DIR1_3/FILE_DIR1_3_20377_5
source_vol/USER2/DIR1_3/FILE_DIR1_3_26828_6
source_vol/USER2/DIR1_3/FILE_DIR1_3_33279_7
source_vol/USER2/DIR1_3/FILE_DIR1_3_39730_8
source_vol
```

```
Xcp command : xcp scan -preserve-atime 172.26.96.42:/source_vol
Stats       : 55 scanned
Speed       : 14.1 KiB in (21.2 KiB/s), 2.33 KiB out (3.51 KiB/s)
Total Time  : 0s.
Job ID      : Job_2022-06-30_14.14.15.334173_scan
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2022-06-30_14.14.15.334173_scan.log
STATUS      : PASSED
```

scan -minmem

Utilizes minimal memory.

```
[root@client1 linux]# ./xcp scan -minmem -q 10.231.42.181:/temp7/user7
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until xxx yyyy

Job ID: Job_2023-04-25_09.40.06.734511_scan
110,584 scanned, 20.0 MiB in (3.81 MiB/s), 109 KiB out (20.7 KiB/s), 6s
210,477 scanned, 38.0 MiB in (3.21 MiB/s), 200 KiB out (16.3 KiB/s), 11s
310,535 scanned, 56.0 MiB in (3.49 MiB/s), 292 KiB out (17.8 KiB/s), 16s
417,265 scanned, 75.3 MiB in (3.85 MiB/s), 400 KiB out (21.5 KiB/s), 21s
533,197 scanned, 96.2 MiB in (4.18 MiB/s), 506 KiB out (21.2 KiB/s), 26s
657,900 scanned, 119 MiB in (4.03 MiB/s), 614 KiB out (19.0 KiB/s), 32s
781,291 scanned, 141 MiB in (4.35 MiB/s), 735 KiB out (24.1 KiB/s), 37s
878,686 scanned, 159 MiB in (3.49 MiB/s), 814 KiB out (15.9 KiB/s), 42s

Xcp command : xcp scan -minmem -q 10.231.42.181:/temp7/user7
Stats       : 878,686 scanned
Speed       : 159 MiB in (3.66 MiB/s), 816 KiB out (18.8 KiB/s)
Total Time  : 43s.
Job ID      : Job_2023-04-25_09.40.06.734511_scan
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_09.40.06.734511_scan.log
STATUS      : PASSED
[root@client1 linux]#
```

scan -s3.insecure

Provides the option to use HTTP instead of HTTPS for S3 bucket communication.

```
[root@client1 linux]# ./xcp scan -s3.insecure s3://bucket1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx[Network Appliance, Inc] until xxx yyyy

Job ID: Job_2023-06-08_08.16.31.345201_scan
file5g_1
USER1/FILE_USER1_1024_1
USER1/FILE_USER1_1024_2
USER1/FILE_USER1_1024_3
USER1/FILE_USER1_1024_4
USER1/FILE_USER1_1024_5

Xcp command : xcp scan -s3.insecure s3:// -bucket1
Stats       : 8 scanned, 6 s3.objects
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 2s.
Job ID      : Job_2023-06-08_08.16.31.345201_scan
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-08_08.16.31.345201_scan.log
STATUS      : PASSED
```

scan -s3.endpoint <S3 endpoint Url>

Overrides the AWS endpoint URL with the specified URL for S3 bucket communication.

```
root@client1 linux]# ./xcp scan -s3.endpoint https://<endpoint_url>: s3://xcp-testing
XCP <version> (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

Job ID: Job_2023-06-13_11.23.06.029137_scan
aws_files/USER1/FILE_USER1_1024_1
aws_files/USER1/FILE_USER1_1024_2
aws_files/USER1/FILE_USER1_1024_3
aws_files/USER1/FILE_USER1_1024_4
aws_files/USER1/FILE_USER1_1024_5

Xcp command : xcp scan -s3.endpoint https://<endpoint_url>: s3://xcp-testing
Stats       : 8 scanned, 5 s3.objects
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 0s.
Job ID      : Job_2023-06-13_11.23.06.029137_scan
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-13_11.23.06.029137_scan.log
STATUS      : PASSED
```

scan -s3.profile <profile-name >

Specifies a profile from the AWS credential file for S3 bucket communication.

```
[root@client1 linux]# ./xcp scan -s3.profile sg -s3.endpoint https://<endpoint_url>:
s3://bucket1
XCP <version> (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_2023-06-08_08.47.11.963479_scan
 1 scanned, 0 in (0/s), 0 out (0/s), 5s
USER1/FILE_USER1_1024_1
USER1/FILE_USER1_1024_2
USER1/FILE_USER1_1024_3
USER1/FILE_USER1_1024_4
USER1/FILE_USER1_1024_5

Xcp command : xcp scan -s3.profile sg -s3.endpoint https://<endpoint_url>: s3://bucket1
Stats       : 7 scanned, 5 s3.objects
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 6s.
Job ID      : Job_2023-06-08_08.47.11.963479_scan
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-08_08.47.11.963479_scan.log
STATUS      : PASSED
[root@client1 linux]#
```

scan -s3.noverify

Overrides the default verification of SSL certification for S3 bucket communication.

```
[root@client1 linux]# ./xcp scan -s3.noverify s3:// bucket1
XCP <version> (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_2023-06-13_11.00.59.742237_scan
aws_files/USER1/FILE_USER1_1024_1
aws_files/USER1/FILE_USER1_1024_2
aws_files/USER1/FILE_USER1_1024_3
aws_files/USER1/FILE_USER1_1024_4
aws_files/USER1/FILE_USER1_1024_5

Xcp command : xcp scan -s3.noverify s3://bucket1
Stats       : 8 scanned, 5 s3.objects
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 2s.
Job ID      : Job_2023-06-13_11.00.59.742237_scan
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-13_11.00.59.742237_scan.log
STATUS      : PASSED
```

1.6 copy

The `copy` command scans and copies the entire source directory structure to a destination NFSv3 export. The `copy` command requires having source and destination paths as variables. The scanned and copied files, throughput/speed, and elapsed time details are displayed at the end of the copy operation.

Notes:

- The run-time log file is stored under `./opt/NetApp/xFiles/xcp/xcp.log`. This path is configurable. Additional logging is stored in the catalog after each command is executed.
- If the source is a 7-Mode system, you can use Snapshot as a source. For example, `10.63.5.36:/vol/ex_s01/.snapshot/<snapshot name>`

Syntax

```
[root@localhost /]# ./xcp copy <source NFS export path> <destination NFS exportpath>
```

Example

```
[root@localhost /]# ./xcp copy <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_copy_2020-03-
03_23.46.33.153705

Xcp command : xcp copy <IP address of NFS server>:/source_vol <IP address of destination NFS
server>:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed      : 38.9 KiB in (51.2 KiB/s), 81.2 KiB out (107KiB/s)
Total Time : 0s.
STATUS     : PASSED
```

Parameters

The following table provides a list of `copy` parameters and their description.

Feature	Description
<code>copy -md5</code>	Checksum the files (also save the checksums when indexing) (default: False).
<code>copy -edupe</code>	Include deduplication estimate in reports (see documentation for details).
<code>copy -nonames</code>	Do not look up user and group names for file listings or reports.
<code>copy -bs <n[k]></code>	Read/write block size (default: 64k).
<code>copy -dircount <n[k]></code>	Request size for reading directories (default: 64k).
<code>copy -parallel <n></code>	Maximum concurrent batch processes (default: 7).
<code>copy -match <filter></code>	Only process files and directories that match the filter
<code>copy -acl4</code>	Process NFS4 ACLs
<code>copy -preserve-ctime</code>	Restores all files to the last accessed date on the source.
<code>copy -minmem</code>	Utilizes minimal memory.
<code>copy -s3.insecure</code>	Provides the option to use HTTP instead of HTTPS for S3 bucket communication.
<code>copy -s3.endpoint <S3 endpoint Url></code>	Overrides the default AWS endpoint URL with the specified URL for S3 bucket communication.

<code>copy -s3.profile <profile-name></code>	Specifies a profile from the AWS credential file for S3 bucket communication.
<code>copy -s3.noverify</code>	Overrides the default verification of SSL certification for S3 bucket communication.

copy -md5

Checksum the files (also save the checksums when indexing) (default: False)

```
[root@localhost /]# ./xcp copy -md5 <IP address or hostname of NFS server>:/source_vol <IP
address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autoname_copy_2020-03-
03_23.47.41.137615

Xcp command : xcp copy -md5 <IP address or hostname of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed      : 38.9 KiB in (52.1 KiB/s), 81.3 KiB out (109 KiB/s)
Total Time : 0s.
STATUS     : PASSED
```

copy -edupe

Include deduplication estimate in reports.

```
[root@localhost /]# ./xcp copy -edupe <IP address or hostname of NFS server>:/source_vol <IP
address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autoname_copy_2020-03-
03_23.48.10.436325

== Maximum Values ==
      Size      Used      Depth      Namelen      Dirsize
      1 KiB      4 KiB           2          11           9

== Average Values ==
      Namelen      Size      Depth      Dirsize
           6      682           1           5

== Top Space Users ==
      root
      52 KiB

== Top File Owners ==
      root
      18

== Top File Extensions ==
      .txt      other
           5          10

== Number of files ==
      empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB 10-100MiB      >100MiB
           4          11

== Space used ==
      empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB 10-100MiB      >100MiB
           40 KiB

== Directory entries ==
      empty      1-10      10-100      100-1K      1K-10K      >10K
           3

== Depth ==
      0-5      6-10      11-15      16-20      21-100      >100
      18

== Accessed ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future
           4          11

== Modified ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future
           10          5

== Changed ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future
           10          5

Total count: 18
Directories: 3
Regular files: 15
Symbolic links: None
Special files: None
```

```
Hard links: None,  
multilink files: None,  
Space Saved by Hard links (KB): 0  
Sparse data: None
```

```
Dedupe estimate: N/A  
Total space for regular files: size: 10.0 KiB, used: 40KiB  
Total space for symlinks: size: 0, used: 0  
Total space for directories: size: 12 KiB, used: 12 KiB  
Total space used: 52 KiB
```

```
Xcp command : xcp copy -edupe <IP address or hostname of NFS server>:/source_vol <destination NFS  
export path>:/dest_vol
```

```
18 scanned, 0 matched, 17 copied, 0 error  
Speed      : 38.9 KiB in (36.7 KiB/s), 81.3 KiB out (76.7 KiB/s)  
Total Time : 1s.  
STATUS     : PASSED
```

copy -nonames

Do not look up user and group names for file listings or reports.

```
[root@localhost /]# ./xcp copy -nonames <IP address or hostname of NFS server>:/source_vol <IP  
address of destination NFS server>:/dest_vol  
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
xcp: WARNING: No index name has been specified, creating one with name: autoname_copy_2020-03-  
03_23.48.48.147261
```

```
Xcp command : xcp copy -nonames <IP address or hostname of NFS server>:/source_vol <IP address of  
destination NFS server>:/dest_vol
```

```
18 scanned, 0 matched, 17 copied, 0 error  
Speed      : 38.9 KiB in (53.5 KiB/s), 81.3 KiB out (112KiB/s)  
Total Time : 0s.  
STATUS     : PASSED
```

copy -bs <n[k]>

Read/write block size (default: 64k).

```
[root@localhost /]# ./xcp copy -bs 32k <IP address or hostname of NFS server>:/source_vol <IP  
address of destination NFS server>:/dest_vol  
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
xcp: WARNING: No index name has been specified, creating one with name: autoname_copy_2020-03-  
03_23.57.04.742145
```

```
Xcp command : xcp copy -bs 32k <IP address or hostname of NFS server>:/source_vol <IP address of  
destination NFS server>:/dest_vol
```

```
18 scanned, 0 matched, 17 copied, 0 error  
Speed      : 39.1 KiB in (115 KiB/s), 81.6 KiB out (241KiB/s)  
Total Time : 0s.  
STATUS     : PASSED
```

copy -dircount <n[k]>

Request size for reading directories (default: 64k).

```
[root@localhost /]# ./xcp copy -dircount 32k <IP address or hostname of NFS server>:/source_vol  
<IP address of destination NFS server>:/dest_vol  
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
xcp: WARNING: No index name has been specified, creating one with name: autoname_copy_2020-03-  
03_23.58.01.094460
```

```
Xcp command : xcp copy -dircount 32k <IP address or hostname of NFS server>:/source_vol <IP  
address of destination NFS server >:/dest_vol
```

```
18 scanned, 0 matched, 17 copied, 0 error  
Speed      : 39.1 KiB in (56.7 KiB/s), 81.6 KiB out (119KiB/s)  
Total Time : 0s.  
STATUS     : PASSED
```

copy -parallel <n>

Maximum concurrent batch processes (default: 7).

```
[root@localhost /]# ./xcp copy -parallel 4 <IP address or hostname of NFS server>:/source_vol
<IP address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_copy_2020-03-
03_23.59.41.477783

Xcp command : xcp copy -parallel 4 <IP address or hostname of NFS server>:/source_vol <IP address
of destination NFS server>:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed      : 39.1 KiB in (35.6 KiB/s), 81.6 KiB out (74.4KiB/s)
Total Time : 1s.
STATUS     : PASSED
```

copy -match <n>

Only process files and directories that match the filter.

```
[root@localhost /]# ./xcp copy -match bin <IP address or hostname of NFS server>:/source_vol <IP
address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_copy_2020-03-
04_00.00.07.125990

Xcp command : xcp copy -match bin <IP address or hostname of NFS server>:/source_vol <IP address
of destination NFS server>:/dest_vol
18 scanned, 18 matched, 17 copied, 0 error
Speed      : 39.1 KiB in (52.6 KiB/s), 81.7 KiB out (110KiB/s)
Total Time : 0s.
STATUS     : PASSED
```

copy -acl4

Process NFS4 ACLs.

```
[root@localhost /]# ./xcp copy -acl4 <IP address or hostname of NFS server>:/source_vol <IP
address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_copy_2020-03-
04_00.00.44.036904

Xcp command : xcp copy -acl4 <IP address or hostname of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed      : 39.1 KiB in (37.0 KiB/s), 81.7 KiB out (77.5KiB/s)
Total Time : 1s.
STATUS     : PASSED
```

copy -preserve-ctime

Restores all files to the last accessed date on the source. The -preserve-ctime option resets the access time to the original value set before the XCP read operation.

```
[root@client1 linux]# ./xcp copy -preserve-ctime 172.26.96.42:/source_vol 10.236.149.70:/dest_vol
XCP <version> (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until Sat Jul 16
22:00:59 2022

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2022-06-
30_14.22.53.742272
xcp: Job ID: Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-30_14.22.53.742272_copy

Xcp command : xcp copy -preserve-ctime 172.26.96.42:/source_vol 10.236.149.70:/dest_vol
Stats      : 55 scanned, 54 copied, 55 indexed
Speed      : 1.26 MiB in (852 KiB/s), 1.32 MiB out (896 KiB/s)
Total Time : 1s.
Migration ID: XCP_copy_2022-06-30_14.22.53.742272
Job ID     : Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-30_14.22.53.742272_copy
Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-
30_14.22.53.742272_copy.log
STATUS     : PASSED
[root@client1 linux]#
```

copy-minmem

Utilizes minimal memory.

```
[root@client1 linux]# ./xcp copy -minmem -showmem -parallel 16 10.231.42.181:/temp7/user7
10.231.42.181:/temp7/user8
XCP <version> (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-04-
25_09.51.23.298609
Job ID: Job_XCP_copy_2023-04-25_09.51.23.298609_copy
xcp: WARNING: Target 10.231.42.181:/temp7/user8 is not empty
  64,011 scanned, 4,985 copied, 20.8 MiB in (3.75 MiB/s), 9.06 MiB out (1.63 MiB/s),
peak/consumed/avail/total 14.8/14.8/16.4/31.2 GiB, pid = 202828 RSS/VMS 437 MiB/902 MiB, 5s
  93,801 scanned, 21,198 copied, 57.0 MiB in (7.18 MiB/s), 39.9 MiB out (6.13 MiB/s),
peak/consumed/avail/total 15.5/15.5/15.7/31.2 GiB, pid = 202828 RSS/VMS 503 MiB/969 MiB, 10s
.
.
.
  878,686 scanned, 858,220 copied, 824,730 indexed, 1.66 GiB in (4.78 MiB/s), 1.53 GiB out (4.81
MiB/s), peak/consumed/avail/total 15.9/15.4/15.8/31.2 GiB, pid = 202828 RSS/VMS 625 MiB/1.06
GiB, 5m47s
  878,686 scanned, 870,678 copied, 839,728 indexed, 1.68 GiB in (4.37 MiB/s), 1.55 GiB out (4.47
MiB/s), peak/consumed/avail/total 15.9/15.1/16.1/31.2 GiB, pid = 202828 RSS/VMS 625 MiB/1.06
GiB, 5m52s

Xcp command : xcp copy -minmem -showmem -parallel 16 10.231.42.181:/temp7/user7
10.231.42.181:/temp7/user8
Stats      : 878,686 scanned, 878,685 copied, 878,686 indexed
Speed      : 1.70 GiB in (4.86 MiB/s), 1.57 GiB out (4.49 MiB/s), peak/consumed/avail/total
15.9/14.2/17.0/31.2 GiB, pid = 202828 RSS/VMS 625 MiB/1.06 GiB
Total Time : 5m57s.
Migration ID: XCP_copy_2023-04-25_09.51.23.298609
Job ID     : Job_XCP_copy_2023-04-25_09.51.23.298609_copy
Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-04-25_09.51.23.298609_copy.log
STATUS     : PASSED
[root@client1 linux]#
```

copy - s3.insecure

Provides the option to use HTTP instead of HTTPS for S3 bucket communication.

```
[root@client1 linux]# ./xcp copy -s3.insecure hdfs:///user/test s3://bucket1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-06-08_09.01.47.581599
Job ID: Job_XCP_copy_2023-06-08_09.01.47.581599_copy

Xcp command : xcp copy -s3.insecure hdfs:///user/test s3://bucket1
Stats       : 8 scanned, 5 copied, 8 indexed, 5 KiB s3.data.uploaded, 5
s3.copied.single.key.file, 5 s3.copied.file
Speed       : 6.78 KiB in (1.86 KiB/s), 83.3 KiB out (22.9 KiB/s)
Total Time  : 3s.
Migration ID: XCP_copy_2023-06-08_09.01.47.581599
Job ID      : Job_XCP_copy_2023-06-08_09.01.47.581599_copy
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-08_09.01.47.581599_copy.log
STATUS      : PASSED

[root@client1 linux]# ./xcp copy -s3.insecure hdfs:///user/demo s3://bucket1
XCP <version> (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-06-08_09.15.58.807485
Job ID: Job_XCP_copy_2023-06-08_09.15.58.807485_copy

Xcp command : xcp copy -s3.insecure hdfs:///user/demo s3://bucket1
Stats       : 8 scanned, 5 copied, 8 indexed, 5 KiB s3.data.uploaded, 5
s3.copied.single.key.file, 5 s3.copied.file
Speed       : 10.4 KiB in (3.60 KiB/s), 85.3 KiB out (29.6 KiB/s)
Total Time  : 2s.
Migration ID: XCP_copy_2023-06-08_09.15.58.807485
Job ID      : Job_XCP_copy_2023-06-08_09.15.58.807485_copy
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-08_09.15.58.807485_copy.log
STATUS      : PASSED
```

copy - s3.endpoint <S3 endpoint Url>

Overrides the AWS endpoint URL with the specified URL for S3 bucket communication.

```
[root@client1 linux]# ./xcp copy -s3.endpoint https://<endpoint_url>: hdfs:///user/test
s3://xcp-testing
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-06-13_11.20.32.571348
Job ID: Job_XCP_copy_2023-06-13_11.20.32.571348_copy

Xcp command : xcp copy -s3.endpoint https://<endpoint_url> hdfs:///user/test s3://xcp-testing
Stats       : 8 scanned, 5 copied, 8 indexed, 5 KiB s3.data.uploaded, 5
s3.copied.single.key.file, 5 s3.copied.file
Speed       : 6.78 KiB in (1.77 KiB/s), 83.6 KiB out (21.8 KiB/s)
Total Time  : 3s.
Migration ID: XCP_copy_2023-06-13_11.20.32.571348
Job ID      : Job_XCP_copy_2023-06-13_11.20.32.571348_copy
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-13_11.20.32.571348_copy.log
STATUS      : PASSED

[root@scs000135349-1 linux]# ./xcp copy -s3.endpoint https://<endpoint_url>: hdfs:///user/demo
s3://xcp-testing
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-06-13_11.40.26.913130
Job ID: Job_XCP_copy_2023-06-13_11.40.26.913130_copy
15,009 scanned, 1,462 copied, 9 indexed, 1.46 MiB s3.data.uploaded, 1,491
s3.copied.single.key.file, 1,491 s3.copied.file, 4.58 MiB in (933 KiB/s), 1.72 MiB out (350
KiB/s), 5s
```

```

15,009 scanned, 4,283 copied, 9 indexed, 4.20 MiB s3.data.uploaded, 4,302
s3.copied.single.key.file, 4,302 s3.copied.file, 7.70 MiB in (629 KiB/s), 4.85 MiB out (632
KiB/s), 10s
15,009 scanned, 7,323 copied, 9 indexed, 7.17 MiB s3.data.uploaded, 7,343
s3.copied.single.key.file, 7,343 s3.copied.file, 11.0 MiB in (672 KiB/s), 8.24 MiB out (681
KiB/s), 15s
15,009 scanned, 10,427 copied, 9 indexed, 10.2 MiB s3.data.uploaded, 10,439
s3.copied.single.key.file, 10,439 s3.copied.file, 14.5 MiB in (690 KiB/s), 11.7 MiB out (695
KiB/s), 20s
15,009 scanned, 13,445 copied, 9 indexed, 13.1 MiB s3.data.uploaded, 13,454
s3.copied.single.key.file, 13,454 s3.copied.file, 17.8 MiB in (676 KiB/s), 15.0 MiB out (682
KiB/s), 25s

Xcp command : xcp copy -s3.endpoint https://<endpoint_url>: hdfs:///user/demo s3://xcp-testing
Stats      : 15,009 scanned, 15,005 copied, 15,009 indexed, 14.7 MiB s3.data.uploaded, 15,005
s3.copied.single.key.file, 15,005 s3.copied.file
Speed      : 19.2 MiB in (712 KiB/s), 17.1 MiB out (635 KiB/s)
Total Time : 27s.
Migration ID: XCP_copy_2023-06-13_11.40.26.913130
Job ID     : Job_XCP_copy_2023-06-13_11.40.26.913130_copy
Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-13_11.40.26.913130_copy.log
STATUS     : PASSED

```

copy - s3.profile <profile-name>

Specifies a profile from the AWS credential file for S3 bucket communication.

```

root@client1 linux]# ./xcp copy -s3.profile sg -s3.endpoint https://<endpoint_url>:
hdfs:///user/test s3://bucket
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-06-
08_09.03.52.437118
Job ID: Job_XCP_copy_2023-06-08_09.03.52.437118_copy
1 scanned, 9.55 KiB in (1.89 KiB/s), 12.4 KiB out (2.46 KiB/s), 5s
8 scanned, 0 in (-1945.053/s), 0 out (-2524.989/s), 10s

Xcp command : xcp copy -s3.profile sg -s3.endpoint https://<endpoint_url>: hdfs:///user/test
s3://bucket
Stats      : 8 scanned, 5 copied, 8 indexed, 5 KiB s3.data.uploaded, 5
s3.copied.single.key.file, 5 s3.copied.file
Speed      : 6.78 KiB in (639/s), 83.6 KiB out (7.69 KiB/s)
Total Time : 10s.
Migration ID: XCP_copy_2023-06-08_09.03.52.437118
Job ID     : Job_XCP_copy_2023-06-08_09.03.52.437118_copy
Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-08_09.03.52.437118_copy.log
STATUS     : PASSED

[root@client1 linux]# ./xcp copy -s3.profile sg -s3.endpoint https://<endpoint_url>
hdfs:///user/demo s3://bucket
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-06-
08_09.18.48.105804
Job ID: Job_XCP_copy_2023-06-08_09.18.48.105804_copy
1 scanned, 9.95 KiB in (1.98 KiB/s), 12.8 KiB out (2.55 KiB/s), 5s

Xcp command : xcp copy -s3.profile sg -s3.endpoint https://<endpoint_url> hdfs:///user/demo
s3://bucket
Stats      : 8 scanned, 5 copied, 8 indexed, 5 KiB s3.data.uploaded, 5
s3.copied.single.key.file, 5 s3.copied.file
Speed      : 10.4 KiB in (1.58 KiB/s), 85.6 KiB out (13.0 KiB/s)
Total Time : 6s.
Migration ID: XCP_copy_2023-06-08_09.18.48.105804
Job ID     : Job_XCP_copy_2023-06-08_09.18.48.105804_copy
Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-08_09.18.48.105804_copy.log
STATUS     : PASSED

```

copy - s3.noverify

Overrides the default verification of SSL certification for S3 bucket communication.

```

[root@client1 linux]# ./xcp copy -s3.noverify hdfs://user/test s3:// bucket1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-06-13_10.57.41.994969
Job ID: Job_XCP_copy_2023-06-13_10.57.41.994969_copy

Xcp command : xcp copy -s3.noverify hdfs://user/test s3:// bucket1
Stats       : 8 scanned, 5 copied, 8 indexed, 5 KiB s3.data.uploaded, 5
s3.copied.single.key.file, 5 s3.copied.file
Speed       : 6.78 KiB in (2.36 KiB/s), 83.3 KiB out (29.0 KiB/s)
Total Time  : 2s.
Migration ID: XCP_copy_2023-06-13_10.57.41.994969
Job ID      : Job_XCP_copy_2023-06-13_10.57.41.994969_copy
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-13_10.57.41.994969_copy.log
STATUS      : PASSED

./xcp copy -s3.profile sg -s3.noverify -s3.endpoint https://<endpoint_url>: hdfs:///user/demo
s3://bucket
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx[Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_copy_2023-06-13_11.26.56.143287
Job ID: Job_XCP_copy_2023-06-13_11.26.56.143287_copy
  1 scanned, 9.95 KiB in (1.99 KiB/s), 12.9 KiB out (2.58 KiB/s), 5s
15,009 scanned, 1,555 copied, 9 indexed, 1.54 MiB s3.data.uploaded, 1,572
s3.copied.single.key.file, 1,572 s3.copied.file, 4.68 MiB in (951 KiB/s), 1.81 MiB out (365
KiB/s), 10s
  15,009 scanned, 4,546 copied, 9 indexed, 4.46 MiB s3.data.uploaded, 4,572
s3.copied.single.key.file, 4,572 s3.copied.file, 7.95 MiB in (660 KiB/s), 5.15 MiB out (674
KiB/s), 15s
  15,009 scanned, 7,702 copied, 9 indexed, 7.53 MiB s3.data.uploaded, 7,710
s3.copied.single.key.file, 7,710 s3.copied.file, 11.5 MiB in (710 KiB/s), 8.65 MiB out (707
KiB/s), 20s
  15,009 scanned, 10,653 copied, 9 indexed, 10.4 MiB s3.data.uploaded, 10,669
s3.copied.single.key.file, 10,669 s3.copied.file, 14.7 MiB in (661 KiB/s), 11.9 MiB out (670
KiB/s), 25s
  15,009 scanned, 13,422 copied, 9 indexed, 13.1 MiB s3.data.uploaded, 13,428
s3.copied.single.key.file, 13,428 s3.copied.file, 17.8 MiB in (627 KiB/s), 15.0 MiB out (627
KiB/s), 30s

Xcp command : xcp copy -s3.profile sg -s3.noverify -s3.endpoint https://<endpoint_url>:
hdfs:///user/demo s3://bucket
Stats       : 15,009 scanned, 15,005 copied, 15,009 indexed, 14.7 MiB s3.data.uploaded, 15,005
s3.copied.single.key.file, 15,005 s3.copied.file
Speed       : 19.2 MiB in (609 KiB/s), 17.1 MiB out (543 KiB/s)
Total Time  : 32s.
Migration ID: XCP_copy_2023-06-13_11.26.56.143287
Job ID      : Job_XCP_copy_2023-06-13_11.26.56.143287_copy
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-13_11.26.56.143287_copy.log
STATUS      : PASSED

```

1.7 sync

The `.sync` command scans for changes and modifications performed on a source NFS directory using a catalog index tag name or the number of a previous copy operation. Source incremental changes are copied and applied to the target directory. The old catalog index numbers are replaced with a new one after the sync operation.

Note: During the `.sync` operation, modified files and directories are copied again to the destination NFSv3 export.

Syntax

```
[root@localhost /]# ./xcp sync -id <catalog index name>
```

Example

```
[root@localhost /]# ./xcp sync -id autaname_copy_2020-03-04_01.10.22.338436
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}
Xcp command : xcp sync -id autaname_copy_2020-03-04_01.10.22.338436
0 scanned, 0 copied, 0 modification, 0 new item, 0 delete item, 0 error
Speed       : 26.4 KiB in (27.6 KiB/s), 22.7 KiB out (23.7 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

Parameters

The following table lists the `.sync` parameters and their description.

Feature	Description
<code>.sync -id <name></code>	Catalog name of a previous copy index
<code>.sync -nonames</code>	Do not look up user and group names for file listings or reports
<code>.sync -bs <n[k]></code>	Read/write block size (default: 64k)
<code>.sync -dircount <n[k]></code>	Request size for reading directories (default: 64k)
<code>.sync -parallel <n></code>	Maximum concurrent batch processes (default: 7)
<code>.sync -snap <snapshot path></code>	Provides a new snapshot path for sync
<code>sync -preserve-atime</code>	Restores all files to the last accessed date on the source.

sync -id and sync -nonames

Do not look up user and group names for file listings or reports.

```
[root@localhost /]# ./xcp sync -id ID001 -nonames
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync -id ID001 -nonames
0 scanned, 0 copied, 0 modification, 0 new item, 0 delete item, 0 error
Speed       : 26.4 KiB in (22.2 KiB/s), 22.3 KiB out (18.8 KiB/s)
Total Time : 1s.
STATUS      : PASSED
```

sync -id and sync -bs

Read/write block size (default: 64k).

```
[root@localhost /]# ./xcp sync -id ID001 -bs 32k
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync -id ID001 -bs 32k
0 scanned, 0 copied, 0 modification, 0 new item, 0 delete item, 0 error
Speed       : 25.3 KiB in (20.4 KiB/s), 21.0 KiB out (16.9 KiB/s)
Total Time : 1s.
STATUS      : PASSED
```

sync -id and sync -dircount

Request size for reading directories (default: 64k).

```
[root@localhost /]# ./xcp sync -id ID001 -dircount 32k
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync -id ID001 -dircount 32k
0 scanned, 0 copied, 0 modification, 0 new item, 0 delete item, 0 error
Speed       : 25.3 KiB in (27.8 KiB/s), 21.0 KiB out (23.0 KiB/s)
Total Time : 0s.
STATUS      : PASSED
```

sync -id and sync -parallel

Maximum concurrent batch processes (default: 7).

```
[root@localhost /]# ./xcp sync -id ID001 -parallel 4
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync -id ID001 -parallel 4
0 scanned, 0 copied, 0 modification, 0 new item, 0 delete item, 0 error
Speed       : 25.3 KiB in (20.6 KiB/s), 21.0 KiB out (17.1 KiB/s)
Total Time : 1s.
STATUS      : PASSED
```

sync -preserve-atime

Restores all files to the last accessed date on the source. The `-preserve-atime` option resets the access time to the original value set before the XCP read operation.

```
[root@scs000057864-1 linux]# ./xcp sync -preserve-atime -id XCP_copy_2022-06-30_14.22.53.742272
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until Sat Jul 16
22:00:59 2022

xcp: Job ID: Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-30_14.27.28.660165_sync
xcp: Index: {source: 172.26.96.42:/source_vol, target: 10.236.149.70:/dest_vol}

xcp: diff 'XCP_copy_2022-06-30_14.22.53.742272': 55 reviewed, 55 checked at source, 1 modification,
54 reindexed, 23.3 KiB in (15.7 KiB/s), 25.1 KiB out (16.9 KiB/s), 1s.
xcp: sync 'XCP_copy_2022-06-30_14.22.53.742272': Starting search pass for 1 modified directory...
xcp: find changes: 55 reviewed, 55 checked at source, 1 modification, 55 re-reviewed, 54 reindexed,
28.0 KiB in (18.4 KiB/s), 25.3 KiB out (16.6 KiB/s), 1s.
xcp: sync phase 2: Rereading the 1 modified directory...
xcp: sync phase 2: 55 reviewed, 55 checked at source, 1 modification, 55 re-reviewed, 1 new dir, 54
reindexed, 29.2 KiB in (19.0 KiB/s), 25.6 KiB out (16.7 KiB/s), 1s.
xcp: sync 'XCP_copy_2022-06-30_14.22.53.742272': Deep scanning the 1 modified directory...
xcp: sync 'XCP_copy_2022-06-30_14.22.53.742272': 58 scanned, 55 copied, 56 indexed, 55 reviewed, 55
checked at source, 1 modification, 55 re-reviewed, 1 new dir, 54 reindexed, 1.28 MiB in (739
KiB/s), 1.27 MiB out (732 KiB/s), 1s.

Xcp command : xcp sync -preserve-atime -id XCP_copy_2022-06-30_14.22.53.742272
Stats       : 58 scanned, 55 copied, 56 indexed, 55 reviewed, 55 checked at source, 1 modification,
55 re-reviewed, 1 new dir, 54 reindexed
Speed       : 1.29 MiB in (718 KiB/s), 1.35 MiB out (755 KiB/s)
Total Time  : 1s.
Migration ID: XCP_copy_2022-06-30_14.22.53.742272
Job ID      : Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-30_14.27.28.660165_sync
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-
30_14.27.28.660165_sync.log
STATUS      : PASSED
```

1.8 sync dry-run

The `sync dry-run` command looks for changes or modifications made to the source NFS directory using a previous catalog index number of copy operation. This command also detects files and directories that are new or moved, deleted, or renamed since the previous copy operation. The command reports the source changes but does not apply them to the target.

Syntax

```
[root@localhost /]# ./xcp sync dry-run -id <catalog index number>
```

Example

```
[root@localhost /]# ./xcp sync dry-run -id ID001
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync dry-run -id ID001
0 matched, 0 error
Speed       : 15.2 KiB in (46.5 KiB/s), 5.48 KiB out (16.7KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

Parameters

The following table lists the `sync dry-run` parameters and their description.

Feature	Description
<code>.sync dry-run -id <name></code>	Catalog name of a previous copy index
<code>.sync dry-run -stats</code>	Deep scan the modified directories and report on everything that is new
<code>.sync dry-run -l</code>	Print details about files and directories that changed
<code>.sync -nonames</code>	Do not look up user and group names for file listings or reports
<code>.sync -dircount <n[k]></code>	Request size for reading directories (default: 64k)
<code>.sync -parallel <n></code>	Maximum concurrent batch processes (default: 7)

`sync dry-run -id`

Catalog name of a previous copy index.

```
[root@localhost /]# ./xcp sync dry-run -id ID001
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync dry-run -id ID001
0 matched, 0 error
Speed       : 15.2 KiB in (21.7 KiB/s), 5.48 KiB out (7.81KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

`sync dry-run -id` and `sync dry-run -stats`

Deep scan the modified directories and report on everything that is new.

```
[root@localhost /]# ./xcp sync dry-run -id ID001 -stats
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

4,895 reviewed, 43,163 checked at source, 12.8 MiB in (2.54 MiB/s), 5.49 MiB out (1.09 MiB/s),
5s
4,895 reviewed, 101,396 checked at source, 19.2 MiB in (1.29 MiB/s), 12.8 MiB out (1.47 MiB/s),
10s

Xcp command : xcp sync dry-run -id ID001 -stats
0 matched, 0 error
Speed       : 22.9 MiB in (1.74 MiB/s), 17.0 MiB out (1.29MiB/s)
Total Time  : 13s.
STATUS      : PASSED
```

sync dry-run -id and sync dry-run -l

Print details about files and directories that changed.

```
[root@localhost /]# ./xcp sync dry-run -id ID001 -l
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync dry-run -id ID001 -l
0 matched, 0 error
Speed       : 15.2 KiB in (13.6 KiB/s), 5.48 KiB out (4.88KiB/s)
Total Time : 1s.
STATUS      : PASSED
```

sync dry-run -id and sync dry-run -nonames

Do not look up user and group names for file listings or reports.

```
[root@localhost /]# ./xcp sync dry-run -id ID001 -nonames
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync dry-run -id ID001 -nonames
0 matched, 0 error
Speed       : 15.2 KiB in (15.8 KiB/s), 5.48 KiB out (5.70 KiB/s)
Total Time : 0s.
STATUS      : PASSED
```

sync dry-run -id and sync dry-run -dircount

Request size for reading directories (default: 64k).

```
[root@localhost /]# ./xcp sync dry-run -id ID001 -dircount 32k
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync dry-run -id ID001 -dircount 32k
0 matched, 0 error
Speed       : 15.2 KiB in (32.5 KiB/s), 5.48 KiB out (11.7KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

sync dry-run -id and sync dry-run -parallel

Maximum concurrent batch processes (default: 7).

```
[root@localhost /]# ./xcp sync dry-run -id ID001 -parallel 4
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

Xcp command : xcp sync dry-run -id ID001 -parallel 4
0 matched, 0 error
Speed       : 15.2 KiB in (25.4 KiB/s), 5.48 KiB out (9.13KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

1.9 resume

The `resume` command restarts a previously interrupted copy operation by specifying the catalog index name or number. The catalog index name or number of the previous copy operation is stored at the `<catalog path>:/catalog/indexes` directory.

Syntax

```
[root@localhost /]# ./xcp resume -id <catalog index number>
```

Example

```
[root@localhost /]# ./xcp resume -id ID001
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

xcp: resume 'ID001': Reviewing the incomplete index...
xcp: diff 'ID001': Found 652 completed directories and 31 in progress
4,658 reviewed, 362 KiB in (258 KiB/s), 7.66 KiB out (5.46 KiB/s), 1s.
xcp: resume 'ID001': Starting second pass for the in-progress directories...
xcp: resume 'ID001': Resuming the in-progress directories...
xcp: resume 'ID001': Resumed command: copy {-newid: u'ID001'}
xcp: resume 'ID001': Current options: {-id: 'ID001'}
xcp: resume 'ID001': Merged options: {-id: 'ID001', -newid: u'ID001'}
xcp: resume 'ID001': Values marked with a * include operations before resume
```

```

28,866 scanned*, 9,565 copied*, 4,658 indexed*, 108 MiB in (21.6 MiB/s), 100.0 MiB out (20.0
MiB/s), 5s
44,761 scanned*, 16,440 copied*, 4,658 indexed*, 206 MiB in (19.3 MiB/s), 191 MiB out (17.9
MiB/s), 11s
44,761 scanned*, 20,795 copied*, 4,658 indexed*, 362 MiB in (31.3 MiB/s), 345 MiB out (30.8
MiB/s), 16s
44,761 scanned*, 25,985 copied*, 4,658 indexed*, 488 MiB in (25.2 MiB/s), 465 MiB out (24.0
MiB/s), 21s
44,761 scanned*, 31,044 copied*, 4,658 indexed*, 578 MiB in (17.9 MiB/s), 558 MiB out (18.6
MiB/s), 26s
54,838 scanned*, 36,980 copied*, 14,276 indexed*, 679 MiB in (20.2 MiB/s), 657 MiB out (19.8
MiB/s), 31s
67,123 scanned*, 42,485 copied*, 29,160 indexed*, 742 MiB in (12.5 MiB/s), 720 MiB out (12.4
MiB/s), 36s
79,681 scanned*, 49,863 copied*, 39,227 indexed*, 801 MiB in (11.8 MiB/s), 779 MiB out (11.7
MiB/s), 41s
79,681 scanned*, 56,273 copied*, 39,227 indexed*, 854 MiB in (10.6 MiB/s), 832 MiB out (10.6
MiB/s), 46s
79,681 scanned*, 62,593 copied*, 39,227 indexed*, 906 MiB in (10.2 MiB/s), 881 MiB out (9.70
MiB/s), 51s
84,577 scanned*, 68,000 copied*, 44,047 indexed*, 976 MiB in (14.0 MiB/s), 951 MiB out (14.1
MiB/s), 56s
86,737 scanned*, 72,738 copied*, 49,071 indexed*, 1.04 GiB in (17.8 MiB/s), 1.01 GiB out (17.5
MiB/s), 1m1s
89,690 scanned*, 77,440 copied*, 54,110 indexed*, 1.14 GiB in (20.5 MiB/s), 1.11 GiB out (20.1
MiB/s), 1m6s

110,311 scanned*, 84,497 copied*, 74,158 indexed*, 1.24 GiB in (20.3 MiB/s), 1.21 GiB out (20.4
MiB/s), 1m11s
114,726 scanned*, 91,285 copied*, 74,158 indexed*, 1.33 GiB in (17.9 MiB/s), 1.30 GiB out (17.6
MiB/s), 1m16s
114,726 scanned*, 97,016 copied*, 74,158 indexed*, 1.46 GiB in (26.6 MiB/s), 1.43 GiB out (26.6
MiB/s), 1m21s
118,743 scanned*, 100,577 copied*, 79,331 indexed*, 1.65 GiB in (40.1 MiB/s), 1.62 GiB out (39.3
MiB/s), 1m26s
122,180 scanned*, 106,572 copied*, 84,217 indexed*, 1.77 GiB in (24.7 MiB/s), 1.74 GiB out (25.0
MiB/s), 1m31s
124,724 scanned*, 111,727 copied*, 84,217 indexed*, 1.89 GiB in (22.8 MiB/s), 1.86 GiB out (22.5
MiB/s), 1m36s
128,268 scanned*, 114,686 copied*, 99,203 indexed*, 1.99 GiB in (21.1 MiB/s), 1.96 GiB out (21.2
MiB/s), 1m41s
134,630 scanned*, 118,217 copied*, 104,317 indexed*, 2.06 GiB in (13.8 MiB/s), 2.03 GiB out
(13.7 MiB/s), 1m46s
134,630 scanned*, 121,742 copied*, 109,417 indexed*, 2.10 GiB in (9.02 MiB/s), 2.07 GiB out
(9.30 MiB/s), 1m51s
134,630 scanned*, 126,057 copied*, 109,417 indexed*, 2.20 GiB in (21.0 MiB/s), 2.17 GiB out
(21.0 MiB/s), 1m56s
134,630 scanned*, 130,034 copied*, 114,312 indexed*, 2.36 GiB in (32.1 MiB/s), 2.33 GiB out
(31.8 MiB/s), 2m1s

Xcp command : xcp resume -id ID001
134,630 scanned*, 134,630 copied*, 0 modification, 0 new item, 0 delete item, 0error
Speed      : 2.40 GiB in (19.7 MiB/s), 2.37 GiB out (19.5 MiB/s)
Total Time : 2m4s.
STATUS     : PASSED

```

Parameters

The following table lists the `resume` parameters and their description.

Feature	Description
<code>resume -id <name></code>	Catalog name of a previous copy index
<code>resume -bs <n[k]></code>	Read/write block size (default: 64k)
<code>resume -dircount <n[k]></code>	Request size for reading directories (default: 64k)
<code>resume -parallel <n></code>	Maximum concurrent batch processes (default: 7)
<code>resume -activate</code>	Activate a license on the current host
<code>resume -preserve-ctime</code>	Restores all files to the last accessed date on the source.

<code>resume -minmem</code>	Utilizes minimal memory.
<code>resume -s3.insecure</code>	Provides the option to use HTTP instead of HTTPS for S3 bucket communication.
<code>resume -s3.endpoint <S3 endpoint Url></code>	Overrides the default AWS endpoint URL with the specified URL for S3 bucket communication.
<code>resume -s3.profile <profile-name></code>	Specifies a profile from the AWS credential file for S3 bucket communication.
<code>resume -s3.noverify</code>	Overrides the default verification of SSL certification for S3 bucket communication.

resume -id<name> and resume -bs

Read/write block size (default: 64k).

```
[root@localhost /]# ./xcp resume -id ID001 -bs 32k
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

xcp: resume 'ID001': Reviewing the incomplete index...
xcp: diff 'ID001': Found 2,360 completed directories and 152 in progress
19,440 reviewed, 1.28 MiB in (898 KiB/s), 9.77 KiB out (6.71 KiB/s), 1s.
xcp: resume 'ID001': Starting second pass for the in-progress directories...
xcp: resume 'ID001': Resuming the in-progress directories...
xcp: resume 'ID001': Resumed command: copy {-newid: u'ID001'}
xcp: resume 'ID001': Current options: {-bs: '32k', -id: 'ID001'}
xcp: resume 'ID001': Merged options: {-bs: '32k', -id: 'ID001', -newid: u'ID001'}
xcp: resume 'ID001': Values marked with a * include operations before resume
 44,242 scanned*, 24,132 copied*, 19,440 indexed*, 36.7 MiB in (7.34 MiB/s), 30.6 MiB out (6.12
MiB/s), 5s
 59,558 scanned*, 30,698 copied*, 19,440 indexed*, 142 MiB in (20.9 MiB/s), 125 MiB out (18.8
MiB/s), 10s
 59,558 scanned*, 35,234 copied*, 19,440 indexed*, 203 MiB in (12.1 MiB/s), 187 MiB out (12.2
MiB/s), 15s
 59,558 scanned*, 40,813 copied*, 19,440 indexed*, 286 MiB in (16.5 MiB/s), 269 MiB out (16.5
MiB/s), 20s
 65,126 scanned*, 46,317 copied*, 24,106 indexed*, 401 MiB in (22.9 MiB/s), 382 MiB out (22.5
MiB/s), 25s
 69,214 scanned*, 53,034 copied*, 29,031 indexed*, 496 MiB in (19.0 MiB/s), 476 MiB out (18.7
MiB/s), 30s
 85,438 scanned*, 60,627 copied*, 53,819 indexed*, 591 MiB in (18.9 MiB/s), 569 MiB out (18.5
MiB/s), 35s
 94,647 scanned*, 66,948 copied*, 53,819 indexed*, 700 MiB in (21.6 MiB/s), 679 MiB out (21.9
MiB/s), 40s
 94,647 scanned*, 73,632 copied*, 53,819 indexed*, 783 MiB in (16.5 MiB/s), 761 MiB out (16.4
MiB/s), 45s
 99,683 scanned*, 80,541 copied*, 58,962 indexed*, 849 MiB in (13.0 MiB/s), 824 MiB out (12.4
MiB/s), 50s
 99,683 scanned*, 84,911 copied*, 58,962 indexed*, 1013 MiB in (32.8 MiB/s), 991 MiB out (33.2
MiB/s), 55s
101,667 scanned*, 91,386 copied*, 73,849 indexed*, 1.06 GiB in (15.4 MiB/s), 1.04 GiB out (15.4
MiB/s), 1m0s
118,251 scanned*, 98,413 copied*, 89,168 indexed*, 1.13 GiB in (14.0 MiB/s), 1.11 GiB out (13.3
MiB/s), 1m5s
124,672 scanned*, 104,134 copied*, 89,168 indexed*, 1.25 GiB in (23.9 MiB/s), 1.22 GiB out (23.2
MiB/s), 1m10s
130,171 scanned*, 109,594 copied*, 94,016 indexed*, 1.38 GiB in (25.7 MiB/s), 1.35 GiB out (25.5
MiB/s), 1m15s
134,574 scanned*, 113,798 copied*, 94,016 indexed*, 1.52 GiB in (28.6 MiB/s), 1.48 GiB out (28.2
MiB/s), 1m20s
134,574 scanned*, 118,078 copied*, 94,016 indexed*, 1.64 GiB in (24.6 MiB/s), 1.61 GiB out (25.1
MiB/s), 1m25s
134,574 scanned*, 121,502 copied*, 94,016 indexed*, 1.80 GiB in (34.0 MiB/s), 1.77 GiB out (33.0
MiB/s), 1m30s
134,630 scanned*, 126,147 copied*, 104,150 indexed*, 1.88 GiB in (16.2 MiB/s), 1.86 GiB out
(17.5 MiB/s), 1m35s
134,630 scanned*, 131,830 copied*, 119,455 indexed*, 1.95 GiB in (13.6 MiB/s), 1.92 GiB out
(13.5 MiB/s), 1m41s

Xcp command : xcp resume -id ID001 -bs 32k
134,630 scanned*, 134,630 copied*, 0 modification, 0 new item, 0 delete item, 0error
Speed      : 2.02 GiB in (19.9 MiB/s), 1.99 GiB out (19.7 MiB/s)
Total Time : 1m43s.
STATUS     : PASSED
```

resume -id and resume -dircount

Request size for reading directories (default: 64k).

```
[root@localhost /]# ./xcp resume -id ID001 -dircount 32k
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}
```

```
xcp: resume 'ID001': Reviewing the incomplete index...
xcp: diff 'ID001': Found 4,582 completed directories and 238 in progress
39,520 reviewed, 2.47 MiB in (1.49 MiB/s), 12.6 KiB out (7.62 KiB/s), 1s.
xcp: resume 'ID001': Starting second pass for the in-progress directories...
xcp: resume 'ID001': Resuming the in-progress directories...
xcp: resume 'ID001': Resumed command: copy {-newid: u'ID001'}
xcp: resume 'ID001': Current options: {-dircount: '32k', -id: 'ID001'}
xcp: resume 'ID001': Merged options: {-dircount: '32k', -id: 'ID001', -newid: u'ID001'}
xcp: resume 'ID001': Values marked with a * include operations before resume
76,626 scanned*, 43,825 copied*, 39,520 indexed*, 31.7 MiB in (6.33 MiB/s), 23.0 MiB out (4.60
MiB/s), 5s
79,751 scanned*, 49,942 copied*, 39,520 indexed*, 140 MiB in (21.7 MiB/s), 131 MiB out (21.5
MiB/s), 10s
79,751 scanned*, 55,901 copied*, 39,520 indexed*, 234 MiB in (18.8 MiB/s), 223 MiB out (18.3
MiB/s), 15s
79,751 scanned*, 61,764 copied*, 39,520 indexed*, 325 MiB in (18.0 MiB/s), 313 MiB out (17.9
MiB/s), 20s
84,791 scanned*, 68,129 copied*, 44,510 indexed*, 397 MiB in (14.3 MiB/s), 384 MiB out (14.2
MiB/s), 25s
94,698 scanned*, 74,741 copied*, 54,039 indexed*, 485 MiB in (17.4 MiB/s), 473 MiB out (17.8
MiB/s), 30s
99,734 scanned*, 80,110 copied*, 59,044 indexed*, 605 MiB in (24.1 MiB/s), 591 MiB out (23.7
MiB/s), 35s
104,773 scanned*, 86,288 copied*, 69,005 indexed*, 716 MiB in (22.2 MiB/s), 703 MiB out (22.3
MiB/s), 40s
110,076 scanned*, 93,265 copied*, 79,102 indexed*, 795 MiB in (15.8 MiB/s), 781 MiB out (15.5
MiB/s), 45s
121,341 scanned*, 100,077 copied*, 84,096 indexed*, 897 MiB in (20.4 MiB/s), 881 MiB out (19.9
MiB/s), 50s
125,032 scanned*, 105,712 copied*, 89,132 indexed*, 1003 MiB in (21.2 MiB/s), 985 MiB out (20.7
MiB/s), 55s
129,548 scanned*, 110,382 copied*, 89,132 indexed*, 1.14 GiB in (32.0 MiB/s), 1.12 GiB out (32.1
MiB/s), 1m0s
131,976 scanned*, 115,158 copied*, 94,221 indexed*, 1.23 GiB in (19.2 MiB/s), 1.21 GiB out (18.3
MiB/s), 1m5s
134,430 scanned*, 119,161 copied*, 94,221 indexed*, 1.37 GiB in (27.8 MiB/s), 1.35 GiB out (28.3
MiB/s), 1m10s
134,630 scanned*, 125,013 copied*, 109,402 indexed*, 1.47 GiB in (21.2 MiB/s), 1.45 GiB out
(21.4 MiB/s), 1m15s
134,630 scanned*, 129,301 copied*, 114,532 indexed*, 1.61 GiB in (29.4 MiB/s), 1.60 GiB out
(29.8 MiB/s), 1m20s
134,630 scanned*, 132,546 copied*, 124,445 indexed*, 1.69 GiB in (14.8 MiB/s), 1.67 GiB out
(15.0 MiB/s), 1m25s

Xcp command : xcp resume -id ID001 -dircount 32k
134,630 scanned*, 134,630 copied*, 0 modification, 0 new item, 0 delete item, 0error
Speed : 1.70 GiB in (19.7 MiB/s), 1.69 GiB out (19.5 MiB/s)
Total Time : 1m28s.
STATUS : PASSED
```

resume -id and resume -parallel

Maximum concurrent batch processes (default: 7).

```
[root@localhost /]# ./xcp resume -id ID001 -parallel 3
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Index: {source: <IP address or hostname of NFS server>:/source_vol, target: <IP address of
destination NFS server>:/dest_vol}

xcp: resume 'ID001': Reviewing the incomplete index...
xcp: diff 'ID001': Found 2,347 completed directories and 149 in progress
19,399 reviewed, 1.28 MiB in (659 KiB/s), 9.77 KiB out (4.93 KiB/s), 1s.
xcp: resume 'ID001': Starting second pass for the in-progress directories...
xcp: resume 'ID001': Resuming the in-progress directories...
xcp: resume 'ID001': Resumed command: copy {-newid: u'ID001'}
xcp: resume 'ID001': Current options: {-id: 'ID001', -parallel: 3}
xcp: resume 'ID001': Merged options: {-id: 'ID001', -newid: u'ID001', -parallel: 3}
xcp: resume 'ID001': Values marked with a * include operations before resume
39,610 scanned*, 23,642 copied*, 19,399 indexed*, 56.3 MiB in (11.2 MiB/s), 45.8 MiB out (9.15
MiB/s), 5s
39,610 scanned*, 28,980 copied*, 19,399 indexed*, 145 MiB in (17.6 MiB/s), 134 MiB out (17.6
MiB/s), 10s
```

```

48,111 scanned*, 34,782 copied*, 34,042 indexed*, 223 MiB in (15.8 MiB/s), 212 MiB out (15.7
MiB/s), 15s
55,412 scanned*, 40,468 copied*, 34,042 indexed*, 317 MiB in (18.4 MiB/s), 304 MiB out (18.1
MiB/s), 21s
59,639 scanned*, 46,980 copied*, 39,032 indexed*, 390 MiB in (14.6 MiB/s), 377 MiB out (14.5
MiB/s), 26s
69,520 scanned*, 55,251 copied*, 49,006 indexed*, 438 MiB in (9.59 MiB/s), 423 MiB out (9.21
MiB/s), 31s
78,596 scanned*, 62,054 copied*, 59,001 indexed*, 492 MiB in (10.7 MiB/s), 476 MiB out (10.6
MiB/s), 36s
79,673 scanned*, 68,163 copied*, 59,001 indexed*, 610 MiB in (23.5 MiB/s), 593 MiB out (23.5
MiB/s), 41s
84,600 scanned*, 74,238 copied*, 64,150 indexed*, 723 MiB in (22.5 MiB/s), 705 MiB out (22.3
MiB/s), 46s
94,525 scanned*, 80,754 copied*, 74,157 indexed*, 807 MiB in (16.7 MiB/s), 788 MiB out (16.4
MiB/s), 51s
94,525 scanned*, 85,119 copied*, 74,157 indexed*, 1007 MiB in (39.9 MiB/s), 988 MiB out (39.9
MiB/s), 56s
109,514 scanned*, 93,474 copied*, 89,192 indexed*, 1.08 GiB in (20.7 MiB/s), 1.06 GiB out (20.2
MiB/s), 1m1s
111,953 scanned*, 100,639 copied*, 94,248 indexed*, 1.18 GiB in (19.3 MiB/s), 1.16 GiB out (19.2
MiB/s), 1m6s
114,605 scanned*, 105,958 copied*, 94,248 indexed*, 1.36 GiB in (36.8 MiB/s), 1.34 GiB out (36.6
MiB/s), 1m11s
124,531 scanned*, 112,340 copied*, 104,275 indexed*, 1.51 GiB in (29.8 MiB/s), 1.48 GiB out
(29.4 MiB/s), 1m16s
129,694 scanned*, 117,218 copied*, 109,236 indexed*, 1.67 GiB in (33.2 MiB/s), 1.65 GiB out
(33.1 MiB/s), 1m21s
131,753 scanned*, 123,850 copied*, 114,358 indexed*, 1.80 GiB in (25.9 MiB/s), 1.77 GiB out
(25.9 MiB/s), 1m26s
134,630 scanned*, 130,829 copied*, 124,437 indexed*, 1.85 GiB in (11.2 MiB/s), 1.83 GiB out
(11.2 MiB/s), 1m31s

Xcp command : xcp resume -id ID001 -parallel 3
134,630 scanned*, 134,630 copied*, 0 modification, 0 new item, 0 delete item, 0error
Speed      : 2.02 GiB in (21.6 MiB/s), 2.00 GiB out (21.3 MiB/s)
Total Time : 1m35s.
STATUS     : PASSED

```

resume -preserve-atime

Restores all files to the last accessed date on the source. The `-preserve-atime` option resets the access time to the original value set before the XCP read operation.

```

[root@client1 linux]# ./xcp resume -preserve-atime -id XCP_copy_2022-06-30_14.22.53.742272 XCP
<version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until xx yyyy

xcp: Job ID: Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-30_14.37.07.746208_resume
xcp: Index: {source: 172.26.96.42:/source_vol, target: 10.236.149.70:/dest_vol}

xcp: Tune: Previous operation on id 'XCP_copy_2022-06-30_14.22.53.742272' already completed;
nothing to resume
0 in (0/s), 0 out (0/s), 6s

Xcp command : xcp resume -preserve-atime -id XCP_copy_2022-06-30_14.22.53.742272
Stats      :
Speed      : 0 in (0/s), 0 out (0/s)
Total Time : 6s.
Migration ID: XCP_copy_2022-06-30_14.22.53.742272
Job ID     : Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-30_14.37.07.746208_resume
Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2022-06-30_14.22.53.742272_2022-06-
30_14.37.07.746208_resume.log
STATUS     : PASSED
[root@client1 linux]#

```

resume -minmem

Utilizes minimal memory.

```
[root@client1 linux]# ./xcp resume -minmem -showmem -parallel 10 -id less_mem
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_less_mem_2023-04-25_10.02.38.526144_resume
Index: {source: 10.231.42.181:/temp7/user7, target: 10.231.42.181:/temp7/user8}

Reviewing the incomplete index...

Found 40 completed directories and 233 in progress

104,627 reviewed, 3.32 MiB in (1.76 MiB/s), 7.54 KiB out (4.00 KiB/s),
peak/consumed/avail/total 13.9/13.9/17.3/31.2 GiB, pid = 218812 RSS/VMS 369 MiB/835 MiB, 1s.

104,627 reviewed, 3.32 MiB in (1.75 MiB/s), 9.55 KiB out (5.04 KiB/s),
peak/consumed/avail/total 13.9/13.9/17.3/31.2 GiB, pid = 218812 RSS/VMS 369 MiB/835 MiB, 1s.

Starting second pass for the in-progress directories...

104,627 reviewed, 104,627 re-reviewed, 6.63 MiB in (1.84 MiB/s), 17 KiB out (4.72 KiB/s),
peak/consumed/avail/total 14.1/14.1/17.1/31.2 GiB, pid = 218812 RSS/VMS 504 MiB/969 MiB, 3s.

126,056 scanned*, 104,850 copied*, 104,627 indexed*, 12.2 MiB in (2.31 MiB/s), 2.04 MiB out
(397 KiB/s), peak/consumed/avail/total 14.4/14.4/16.8/31.2 GiB, pid = 218812 RSS/VMS 524
MiB/989 MiB, 5s

163,294 scanned*, 104,933 copied*, 104,627 indexed*, 41.3 MiB in (5.79 MiB/s), 23.1 MiB out
(4.18 MiB/s), peak/consumed/avail/total 15.0/15.0/16.2/31.2 GiB, pid = 218812 RSS/VMS 586
MiB/1.03 GiB, 10s

.

.

.

878,686 scanned*, 106,338 copied*, 844,682 indexed*, 1.49 GiB in (3.77 MiB/s), 1.36 GiB out
(3.80 MiB/s), peak/consumed/avail/total 15.3/15.0/16.2/31.2 GiB, pid = 218812 RSS/VMS 693
MiB/1.13 GiB, 5m24s

878,686 scanned*, 106,338 copied*, 868,663 indexed*, 1.51 GiB in (4.07 MiB/s), 1.38 GiB out
(4.23 MiB/s), peak/consumed/avail/total 15.3/14.5/16.7/31.2 GiB, pid = 218812 RSS/VMS 693
MiB/1.13 GiB, 5m29s

Xcp command : xcp resume -minmem -showmem -parallel 10 -id less_mem

Stats      : 878,686 scanned*, 106,338 copied*, 878,754 indexed*

Speed      : 1.51 GiB in (4.68 MiB/s), 1.38 GiB out (4.27 MiB/s), peak/consumed/avail/total
15.3/14.3/16.9/31.2 GiB, pid = 218812 RSS/VMS 693 MiB/1.13 GiB

Total Time : 5m30s.

Migration ID: less_mem

Job ID     : Job_less_mem_2023-04-25_10.02.38.526144_resume

Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_less_mem_2023-04-25_10.02.38.526144_resume.log

STATUS     : PASSED

[root@client1 linux]#
```

resume - s3.insecure

Provides the option to use HTTP instead of HTTPS for S3 bucket communication. If the `-s3.insecure` option is used with the `copy` command, it is ignored on resume. You must specify `-s3.insecure` again to use the option on resume.

```
[root@client1 linux]# ./xcp resume -s3.insecure -id XCP_copy_2023-06-08_10.31.47.381883
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_XCP_copy_2023-06-08_10.31.47.381883_2023-06-08_10.34.02.964143_resume
Index: {source: 1 hdfs:///user/demo, target: s3://bucket1/}

Reviewing the incomplete index...
Found 0 completed directories and 2 in progress
4,009 reviewed, 88.7 KiB in (76.1 KiB/s), 332 out (285/s), 1s.
4,009 reviewed, 90.9 KiB in (77.6 KiB/s), 2.44 KiB out (2.08 KiB/s), 1s.
Starting second pass for the in-progress directories...
4,009 reviewed, 4,009 re-reviewed, 179 KiB in (130 KiB/s), 2.72 KiB out (1.98 KiB/s), 1s.
 9,008 scanned*, 4,540 copied*, 4,009 indexed*, 534 KiB s3.data.uploaded, 534
s3.copied.single.key.file, 534 s3.copied.file, 2.28 MiB in (464 KiB/s), 631 KiB out (126 KiB/s),
5s
 9,008 scanned*, 5,551 copied*, 4,009 indexed*, 1.51 MiB s3.data.uploaded, 1,544
s3.copied.single.key.file, 1,544 s3.copied.file, 3.38 MiB in (222 KiB/s), 1.74 MiB out (226
KiB/s), 10s
 9,008 scanned*, 6,596 copied*, 4,009 indexed*, 2.53 MiB s3.data.uploaded, 2,595
s3.copied.single.key.file, 2,595 s3.copied.file, 4.55 MiB in (235 KiB/s), 2.91 MiB out (236
KiB/s), 15s
 9,008 scanned*, 7,658 copied*, 4,009 indexed*, 3.57 MiB s3.data.uploaded, 3,652
s3.copied.single.key.file, 3,652 s3.copied.file, 5.71 MiB in (234 KiB/s), 4.09 MiB out (238
KiB/s), 20s
 9,008 scanned*, 8,711 copied*, 4,009 indexed*, 4.60 MiB s3.data.uploaded, 4,706
s3.copied.single.key.file, 4,706 s3.copied.file, 6.88 MiB in (235 KiB/s), 5.26 MiB out (236
KiB/s), 25s

Xcp command : xcp resume -s3.insecure -id XCP_copy_2023-06-08_10.31.47.381883
Stats       : 9,008 scanned*, 9,006 copied*, 9,009 indexed*, 4.88 MiB s3.data.uploaded, 4,996
s3.copied.single.key.file, 4,996 s3.copied.file
Speed       : 7.10 MiB in (270 KiB/s), 5.76 MiB out (219 KiB/s)
Total Time  : 26s.
Migration ID: XCP_copy_2023-06-08_10.31.47.381883
Job ID      : Job_XCP_copy_2023-06-08_10.31.47.381883_2023-06-08_10.34.02.964143_resume
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-08_10.31.47.381883_2023-06-
08_10.34.02.964143_resume.log
STATUS      : PASSED
```

resume - s3.endpoint <S3 endpoint url>

Overrides the AWS endpoint URL with the specified URL for S3 bucket communication. By default, `resume` uses the S3 profile and S3 endpoint that was specified during the `copy` operation. However, if you specify a new S3 endpoint and S3 profile on resume, it overrides the default used with the `copy` command.

```
[root@client1 linux]# ./xcp resume -id XCP_copy_2023-06-13_11.48.59.454327
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_XCP_copy_2023-06-13_11.48.59.454327_2023-06-13_11.49.34.887164_resume
Index: {source: hdfs:///user/demo, target: s3://xcp-testing/}

Reviewing the incomplete index...
Found 0 completed directories and 2 in progress
9 reviewed, 4.53 KiB in (2.47 KiB/s), 188 out (102/s), 1s.
9 reviewed, 6.81 KiB in (3.70 KiB/s), 2.30 KiB out (1.25 KiB/s), 1s.

Starting second pass for the in-progress directories...
9 reviewed, 9 re-reviewed, 10.9 KiB in (5.65 KiB/s), 2.44 KiB out (1.26 KiB/s), 1s.
15,008 scanned*, 1,532 copied*, 9 indexed*, 1.50 MiB s3.data.uploaded, 1,539
s3.copied.single.key.file, 1,539 s3.copied.file, 4.64 MiB in (946 KiB/s), 1.77 MiB out (360
KiB/s), 6s
15,008 scanned*, 4,764 copied*, 9 indexed*, 4.67 MiB s3.data.uploaded, 4,784
s3.copied.single.key.file, 4,784 s3.copied.file, 8.21 MiB in (727 KiB/s), 5.38 MiB out (736
KiB/s), 11s
15,008 scanned*, 7,928 copied*, 9 indexed*, 7.75 MiB s3.data.uploaded, 7,935
```

```

15,008 scanned*, 7,928 copied*, 9 indexed*, 7.75 MiB s3.data.uploaded, 7,935
s3.copied.single.key.file, 7,935 s3.copied.file, 11.7 MiB in (703 KiB/s), 8.89 MiB out (708
KiB/s), 16s
15,008 scanned*, 10,863 copied*, 9 indexed*, 10.6 MiB s3.data.uploaded, 10,864
s3.copied.single.key.file, 10,864 s3.copied.file, 14.9 MiB in (660 KiB/s), 12.2 MiB out (664
KiB/s), 21s
15,008 scanned*, 14,060 copied*, 9 indexed*, 13.7 MiB s3.data.uploaded, 14,076
s3.copied.single.key.file, 14,076 s3.copied.file, 18.5 MiB in (716 KiB/s), 15.7 MiB out (725
KiB/s), 26s

Xcp command : xcp resume -id XCP_copy_2023-06-13_11.48.59.454327
Stats       : 15,008 scanned*, 15,006 copied*, 15,009 indexed*, 14.6 MiB s3.data.uploaded,
14,996 s3.copied.single.key.file, 14,996 s3.copied.file
Speed       : 19.2 MiB in (708 KiB/s), 17.1 MiB out (631 KiB/s)
Total Time  : 27s.
Migration ID: XCP_copy_2023-06-13_11.48.59.454327
Job ID      : Job_XCP_copy_2023-06-13_11.48.59.454327_2023-06-13_11.49.34.887164_resume
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-13_11.48.59.454327_2023-06-
13_11.49.34.887164_resume.log
STATUS      : PASSED

```

resume - s3.profile <profile-name>

Specifies a profile from the AWS credential file for S3 bucket communication. By default, `resume` uses the S3 profile and S3 endpoint that was specified during the copy operation. However, if you specify a new S3 endpoint and S3 profile on resume, it overrides the default used with the `copy` command.

```

[root@client1 linux]# ./xcp resume -s3.profile sg -s3.endpoint https://<endpoint_url>: -id
XCP_copy_2023-06-08_10.40.42.519258
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_XCP_copy_2023-06-08_10.40.42.519258_2023-06-08_10.52.18.453982_resume
Index: {source: hdfs:///user/demo target: s3://xxx-bucket/

Reviewing the incomplete index...
Found 0 completed directories and 2 in progress
9 reviewed, 4.53 KiB in (3.03 KiB/s), 188 out (126/s), 1s.
9 reviewed, 6.81 KiB in (4.52 KiB/s), 2.30 KiB out (1.53 KiB/s), 1s.
Starting second pass for the in-progress directories...
9 reviewed, 9 re-reviewed, 10.9 KiB in (6.76 KiB/s), 2.44 KiB out (1.51 KiB/s), 1s.
15,008 scanned*, 1,660 copied*, 9 indexed*, 1.64 MiB s3.data.uploaded, 1,675
s3.copied.single.key.file, 1,675 s3.copied.file, 4.75 MiB in (971 KiB/s), 1.92 MiB out (392
KiB/s), 5s
15,008 scanned*, 3,453 copied*, 9 indexed*, 3.39 MiB s3.data.uploaded, 3,467
s3.copied.single.key.file, 3,467 s3.copied.file, 6.79 MiB in (412 KiB/s), 3.91 MiB out (403
KiB/s), 10s
15,008 scanned*, 6,296 copied*, 9 indexed*, 6.16 MiB s3.data.uploaded, 6,305
s3.copied.single.key.file, 6,305 s3.copied.file, 9.86 MiB in (619 KiB/s), 7.08 MiB out (637
KiB/s), 15s
15,008 scanned*, 9,527 copied*, 9 indexed*, 9.33 MiB s3.data.uploaded, 9,554
s3.copied.single.key.file, 9,554 s3.copied.file, 13.4 MiB in (717 KiB/s), 10.7 MiB out (726
KiB/s), 20s
15,008 scanned*, 12,656 copied*, 9 indexed*, 12.4 MiB s3.data.uploaded, 12,648
s3.copied.single.key.file, 12,648 s3.copied.file, 16.9 MiB in (715 KiB/s), 14.1 MiB out (706
KiB/s), 25s

Xcp command : xcp resume -s3.profile sg -s3.endpoint https://<endpoint_url>: -id XCP_copy_2023-
06-08_10.40.42.519258
Stats       : 15,008 scanned*, 15,006 copied*, 15,009 indexed*, 14.6 MiB s3.data.uploaded,
14,996 s3.copied.single.key.file, 14,996 s3.copied.file
Speed       : 19.2 MiB in (661 KiB/s), 17.1 MiB out (590 KiB/s)
Total Time  : 29s.
Migration ID: XCP_copy_2023-06-08_10.40.42.519258
Job ID      : Job_XCP_copy_2023-06-08_10.40.42.519258_2023-06-08_10.52.18.453982_resume
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-08_10.40.42.519258_2023-06-
08_10.52.18.453982_resume.log
STATUS      : PASSED

```

resume - s3.noverify

Overrides the default verification of SSL certification for S3 bucket communication.

```
[root@client1 linux]# ./xcp resume -s3.noverify -id XCP_copy_2023-06-13_11.32.47.743708
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_XCP_copy_2023-06-13_11.32.47.743708_2023-06-13_11.33.41.388541_resume
Index: {source: hdfs:///user/demo, target: s3://bucket/}

Reviewing the incomplete index...
Found 0 completed directories and 2 in progress
9 reviewed, 4.53 KiB in (3.70 KiB/s), 188 out (153/s), 1s.
9 reviewed, 6.81 KiB in (5.52 KiB/s), 2.30 KiB out (1.87 KiB/s), 1s.
Starting second pass for the in-progress directories...
9 reviewed, 9 re-reviewed, 10.9 KiB in (8.19 KiB/s), 2.44 KiB out (1.83 KiB/s), 1s.
 15,008 scanned*, 1,643 copied*, 9 indexed*, 1.62 MiB s3.data.uploaded, 1,662
s3.copied.single.key.file, 1,662 s3.copied.file, 4.78 MiB in (969 KiB/s), 1.90 MiB out (385
KiB/s), 5s
 15,008 scanned*, 4,897 copied*, 9 indexed*, 4.78 MiB s3.data.uploaded, 4,892
s3.copied.single.key.file, 4,892 s3.copied.file, 8.38 MiB in (735 KiB/s), 5.50 MiB out (737
KiB/s), 10s
 15,008 scanned*, 8,034 copied*, 9 indexed*, 7.86 MiB s3.data.uploaded, 8,048
s3.copied.single.key.file, 8,048 s3.copied.file, 11.8 MiB in (696 KiB/s), 9.02 MiB out (708
KiB/s), 15s
 15,008 scanned*, 11,243 copied*, 9 indexed*, 11.0 MiB s3.data.uploaded, 11,258
s3.copied.single.key.file, 11,258 s3.copied.file, 15.3 MiB in (709 KiB/s), 12.6 MiB out (724
KiB/s), 20s
 15,008 scanned*, 14,185 copied*, 9 indexed*, 13.9 MiB s3.data.uploaded, 14,195
s3.copied.single.key.file, 14,195 s3.copied.file, 18.6 MiB in (662 KiB/s), 15.9 MiB out (660
KiB/s), 25s

Xcp command : xcp resume -s3.noverify -id XCP_copy_2023-06-13_11.32.47.743708
Stats       : 15,008 scanned*, 15,006 copied*, 15,009 indexed*, 14.6 MiB s3.data.uploaded,
14,996 s3.copied.single.key.file, 14,996 s3.copied.file
Speed       : 19.2 MiB in (736 KiB/s), 17.1 MiB out (657 KiB/s)
Total Time  : 26s.
Migration ID: XCP_copy_2023-06-13_11.32.47.743708
Job ID      : Job_XCP_copy_2023-06-13_11.32.47.743708_2023-06-13_11.33.41.388541_resume
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_XCP_copy_2023-06-13_11.32.47.743708_2023-06-
13_11.33.41.388541_resume.log
STATUS      : PASSED
```

1.10 verify

The verify command uses a full byte-by-byte data comparison between source and target directories after the copy operation without using a catalog index number. The command checks for modification times and other file or directory attributes including permissions. The command also reads the files on both sides and compares the data.

Note: The verify command is useful when source and target directory trees are identical. However, if a source directory is moved or renamed, verify will not find any files under that directory even though they are still in the target tree.

Syntax

```
[root@localhost /]# ./xcp verify <source NFS export path> <destination NFS exportpath>
```

Example

```
[root@localhost /]# ./xcp verify <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
04_23.54.40.893449
 32,493 scanned, 11,303 found, 7,100 compared, 7,100 same data, 374 MiB in (74.7 MiB/s), 4.74 MiB
out (971 KiB/s), 5s
 40,109 scanned, 24,208 found, 18,866 compared, 18,866 same data, 834 MiB in (91.5 MiB/s), 10.5
MiB out (1.14 MiB/s), 10s
 56,030 scanned, 14,623 indexed, 33,338 found, 27,624 compared, 27,624 same data, 1.31 GiB in
(101 MiB/s), 15.9 MiB out (1.07 MiB/s), 15s
 73,938 scanned, 34,717 indexed, 45,583 found, 38,909 compared, 38,909 same data, 1.73 GiB in
(86.3 MiB/s), 22.8 MiB out (1.38 MiB/s), 20s
 76,308 scanned, 39,719 indexed, 61,810 found, 54,885 compared, 54,885 same data, 2.04 GiB in
(62.8 MiB/s), 30.2 MiB out (1.48 MiB/s), 25s
103,852 scanned, 64,606 indexed, 77,823 found, 68,301 compared, 68,301 same data, 2.31 GiB in
(56.0 MiB/s), 38.2 MiB out (1.60 MiB/s), 30s
110,047 scanned, 69,579 indexed, 89,082 found, 78,794 compared, 78,794 same data, 2.73 GiB in
(85.6 MiB/s), 43.6 MiB out (1.06 MiB/s), 35s
113,871 scanned, 79,650 indexed, 99,657 found, 89,093 compared, 89,093 same data, 3.23 GiB in
(103 MiB/s), 49.3 MiB out (1.14 MiB/s), 40s
125,092 scanned, 94,616 indexed, 110,406 found, 98,369 compared, 98,369 same data, 3.74 GiB in
(103 MiB/s), 55.0 MiB out (1.15 MiB/s), 45s
134,630 scanned, 104,764 indexed, 120,506 found, 106,732 compared, 106,732 same data, 4.23 GiB
in (99.9 MiB/s), 60.4 MiB out (1.05 MiB/s), 50s
134,630 scanned, 114,823 indexed, 129,832 found, 116,198 compared, 116,198 same data, 4.71 GiB
in (97.2 MiB/s), 65.5 MiB out (1.04 MiB/s), 55s

Xcp command : xcp verify <IP address of NFS server>:/source_vol <IP address of destination NFS
server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error
Speed       : 4.95 GiB in (86.4 MiB/s), 69.2 MiB out (1.18 MiB/s)
Total Time : 58s.
STATUS      : PASSED
```

The following table lists the `verify` parameters and their description.

Feature	Description
<code>.verify -stats</code>	Scan source and target trees in parallel and compare tree statistics.
<code>.verify -csv</code>	Scan source and target trees in parallel and compare tree statistics.
<code>.verify -nodata</code>	Do not check data.
<code>.verify -noattrs</code>	Do not check attributes.
<code>.verify -nomods</code>	Do not check file modification times.
<code>.verify -mtimewindow <s></code>	Acceptable modification time difference for verification.
<code>.verify -v</code>	Output formats to list any differences found.
<code>.verify -l</code>	Output formats to list any differences found.
<code>.verify -nonames</code>	Do not look up user and group names for file listings or reports.
<code>.verify -match <filter></code>	Only process files and directories that match the filter.
<code>.verify -bs <n[k]></code>	Read/write blocksize (default: 64k).
<code>.verify -parallel <n></code>	Maximum concurrent batch processes (default: 7).
<code>.verify -dircount <n[k]></code>	Request size for reading directories (default: 64k).
<code>.verify -noId</code>	Disable the creation of a default index (default: False)
<code>.verify -acl4</code>	Process NFS4 ACLs
<code>verify -preserve-atime</code>	Restores all files to the last accessed date on the source.
<code>verify -minmem</code>	Utilizes minimal memory.
<code>verify -s3.insecure</code>	Provides the option to use HTTP instead of HTTPS for S3 bucket communication.
<code>verify -s3.endpoint <S3 endpoint Url></code>	Overrides the default AWS endpoint URL with the specified URL for S3 bucket communication.
<code>verify -s3.profile <profile-name></code>	Specifies a profile from the AWS credential file for S3 bucket communication.
<code>verify -s3.noverify</code>	Overrides the default verification of SSL certification for S3 bucket communication.

verify -stats

Scan source and target trees in parallel and compare tree statistics.

```
[root@localhost /]# ./xcp verify -stats <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

 228,609 scanned, 49.7 MiB in (9.93 MiB/s), 3.06 MiB out (625 KiB/s), 5s

== Number of files ==
   empty    <8KiB    8-64KiB  64KiB-1MiB    1-10MiB   10-100MiB   >100MiB
    235      73,916   43,070    4,020        129         15
   same      same      same      same      same      same
```

```

== Directory entries ==
    empty      1-10      10-100      100-1K      1K-10K      >10K
      3        10,300    2,727        67          11
    same      same      same      same      same

== Depth ==
    0-5        6-10      11-15      16-20      21-100      >100
  47,120      79,772    7,608        130
    same      same      same      same

== Modified ==
    >1 year    >1 month  1-31 days  1-24 hrs    <1 hour    <15 mins    future
                  15          116,121    5,249
                  same      same      same

Total count: 134,630 / same
Directories: 13,108 / same
Regular files: 121,385 / same
Symbolic links: 137 / same
Special files: None / same
Hard links: None / same, Multilink files: None / same

Xcp command : xcp verify -stats <IP address of NFS server>:/source_vol <IP address of destination
NFS server>:/dest_vol
269,260 scanned, 0 matched, 0 error
Speed       : 59.5 MiB in (7.44 MiB/s), 3.94 MiB out (506 KiB/s)
Total Time : 7s.
STATUS      : PASSED

```

verify -csv

Scan source and target trees in parallel and compare tree statistics.

```

[root@localhost /]# ./xcp verify -csv <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

222,028 scanned, 48.2 MiB in (9.63 MiB/s), 2.95 MiB out (603 KiB/s), 5s

== Number of files ==
    empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB 10-100MiB  >100MiB
      235      73,916    43,070    4,020        129        15
    same      same      same      same      same      same

== Directory entries ==
    empty      1-10      10-100      100-1K      1K-10K      >10K
      3        10,300    2,727        67          11
    same      same      same      same      same

== Depth ==
    0-5        6-10      11-15      16-20      21-100      >100
  47,120      79,772    7,608        130
    same      same      same      same

== Modified ==
    >1 year    >1 month  1-31 days  1-24 hrs    <1 hour    <15 mins    future
                  15          121,370
                  same      same

Total count: 134,630 / same
Directories: 13,108 / same
Regular files: 121,385 / same
Symbolic links: 137 / same
Special files: None / same
Hard links: None / same, Multilink files: None / same

Xcp command : xcp verify -csv <IP address of NFS server>:/source_vol <IP address of destination
NFS server>:/dest_vol
269,260 scanned, 0 matched, 0 error
Speed       : 59.5 MiB in (7.53 MiB/s), 3.94 MiB out (512 KiB/s)
Total Time : 7s.
STATUS      : PASSED

```

verify -stats and verify -csv

Scan source and target trees in parallel and compare tree statistics.

```
[root@localhost /]# ./xcp verify -stats -csv <IP address of NFS server>:/source_vol <IP address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

224,618 scanned, 48.7 MiB in (9.54 MiB/s), 2.98 MiB out (597 KiB/s), 5s

== Number of files ==
      empty    <8KiB    8-64KiB  64KiB-1MiB    1-10MiB  10-100MiB    >100MiB
      235      73,916    43,070    4,020        129        15
      same      same      same      same      same      same

== Directory entries ==
      empty    1-10      10-100    100-1K      1K-10K      >10K
      3        10,300    2,727      67          11
      same      same      same      same      same

== Depth ==
      0-5      6-10      11-15      16-20      21-100      >100
      47,120   79,772    7,608      130
      same      same      same      same

== Modified ==
      >1 year   >1 month   1-31 days  1-24 hrs    <1 hour     <15 mins    future
                        15          121,370
                        same      same

Total count: 134,630 / same
Directories: 13,108 / same
Regular files: 121,385 / same
Symbolic links: 137 / same
Special files: None / same
Hard links: None / same, Multilink files: None / same

Xcp command : xcp verify -stats -csv <IP address of NFS server>:/source_vol <IP address of destination NFS server>:/dest_vol
269,260 scanned, 0 matched, 0 error
Speed       : 59.5 MiB in (7.49 MiB/s), 3.94 MiB out (509 KiB/s)
Total Time  : 7s.
STATUS      : PASSED
```

verify -nodata

Do not check data.

```
[root@localhost /]# ./xcp verify -nodata <IP address of NFS server>:/source_vol <IP address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-05_02.18.01.159115
70,052 scanned, 29,795 indexed, 43,246 found, 25.8 MiB in (5.14 MiB/s), 9.39 MiB out (1.87 MiB/s), 5s
117,136 scanned, 94,723 indexed, 101,434 found, 50.3 MiB in (4.90 MiB/s), 22.4 MiB out (2.60 MiB/s), 10s

Xcp command : xcp verify -nodata <IP address of NFS server>:/source_vol <IP address of destination NFS server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (attrs, mods), 0 different item, 0 error
Speed       : 62.7 MiB in (4.65 MiB/s), 30.2 MiB out (2.24MiB/s)
Total Time  : 13s.
STATUS      : PASSED
```

verify -noattrs

Do not check attributes.

```
[root@localhost /]# ./xcp verify -noattrs <IP address of NFS server>:/source_vol <IP address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-05_02.19.14.011569
```

```

40,397 scanned, 9,917 found, 4,249 compared, 4,249 same data, 211 MiB in (41.6 MiB/s), 3.78 MiB
out (764 KiB/s), 5s
40,397 scanned, 14,533 found, 8,867 compared, 8,867 same data, 475 MiB in (52.9 MiB/s), 6.06 MiB
out (466 KiB/s), 10s
40,397 scanned, 20,724 found, 15,038 compared, 15,038 same data, 811 MiB in (67.0 MiB/s), 9.13
MiB out (628 KiB/s), 15s
40,397 scanned, 25,659 found, 19,928 compared, 19,928 same data, 1.02 GiB in (46.6 MiB/s), 11.5
MiB out (477 KiB/s), 20s
40,397 scanned, 30,535 found, 24,803 compared, 24,803 same data, 1.32 GiB in (62.0 MiB/s), 14.0
MiB out (513 KiB/s), 25s
75,179 scanned, 34,656 indexed, 39,727 found, 32,595 compared, 32,595 same data, 1.58 GiB in
(53.4 MiB/s), 20.1 MiB out (1.22 MiB/s), 30s
75,179 scanned, 34,656 indexed, 47,680 found, 40,371 compared, 40,371 same data, 1.74 GiB in
(32.3 MiB/s), 23.6 MiB out (717 KiB/s), 35s
75,179 scanned, 34,656 indexed, 58,669 found, 51,524 compared, 51,524 same data, 1.93 GiB in
(37.9 MiB/s), 28.4 MiB out (989 KiB/s), 40s
78,097 scanned, 39,772 indexed, 69,343 found, 61,858 compared, 61,858 same data, 2.12 GiB in
(39.0 MiB/s), 33.4 MiB out (1015 KiB/s), 45s
110,213 scanned, 69,593 indexed, 80,049 found, 69,565 compared, 69,565 same data, 2.37 GiB in
(51.3 MiB/s), 39.3 MiB out (1.18 MiB/s), 50s
110,213 scanned, 69,593 indexed, 86,233 found, 75,727 compared, 75,727 same data, 2.65 GiB in
(57.8 MiB/s), 42.3 MiB out (612 KiB/s), 55s
110,213 scanned, 69,593 indexed, 93,710 found, 83,218 compared, 83,218 same data, 2.93 GiB in
(56.1 MiB/s), 45.8 MiB out (705 KiB/s), 1m0s
110,213 scanned, 69,593 indexed, 99,700 found, 89,364 compared, 89,364 same data, 3.20 GiB in
(56.9 MiB/s), 48.7 MiB out (593 KiB/s), 1m5s
124,888 scanned, 94,661 indexed, 107,509 found, 95,304 compared, 95,304 same data, 3.54 GiB in
(68.6 MiB/s), 53.5 MiB out (1000 KiB/s), 1m10s
134,630 scanned, 104,739 indexed, 116,494 found, 102,792 compared, 102,792 same data, 3.94 GiB
in (81.7 MiB/s), 58.2 MiB out (949 KiB/s), 1m15s
134,630 scanned, 104,739 indexed, 123,475 found, 109,601 compared, 109,601 same data, 4.28 GiB
in (70.0 MiB/s), 61.7 MiB out (711 KiB/s), 1m20s
134,630 scanned, 104,739 indexed, 129,354 found, 115,295 compared, 115,295 same data, 4.55 GiB
in (55.3 MiB/s), 64.5 MiB out (572 KiB/s), 1m25s

Xcp command : xcp verify -noattrs <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, mods), 0
different item, 0 error
Speed      : 4.95 GiB in (56.5 MiB/s), 69.2 MiB out (789 KiB/s)
Total Time : 1m29s.
STATUS     : PASSED

```

verify -nomods

Do not check file modification times.

```

[root@localhost /]# ./xcp verify -nomods <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_02.22.33.738593
40,371 scanned, 10,859 found, 5,401 compared, 5,401 same data, 296 MiB in (59.1 MiB/s), 4.29 MiB
out (876 KiB/s), 5s
40,371 scanned, 22,542 found, 17,167 compared, 17,167 same data, 743 MiB in (88.9 MiB/s), 9.67
MiB out (1.07 MiB/s), 10s
43,521 scanned, 4,706 indexed, 32,166 found, 26,676 compared, 26,676 same data, 1.17 GiB in
(91.3 MiB/s), 14.5 MiB out (996 KiB/s), 15s
70,260 scanned, 29,715 indexed, 43,680 found, 37,146 compared, 37,146 same data, 1.64 GiB in
(96.0 MiB/s), 21.5 MiB out (1.38 MiB/s), 20s
75,160 scanned, 34,722 indexed, 60,079 found, 52,820 compared, 52,820 same data, 2.01 GiB in
(74.4 MiB/s), 29.1 MiB out (1.51 MiB/s), 25s
102,874 scanned, 69,594 indexed, 77,322 found, 67,907 compared, 67,907 same data, 2.36 GiB in
(71.2 MiB/s), 38.3 MiB out (1.85 MiB/s), 30s
110,284 scanned, 69,594 indexed, 89,143 found, 78,952 compared, 78,952 same data, 2.82 GiB in
(92.8 MiB/s), 43.9 MiB out (1.08 MiB/s), 35s
112,108 scanned, 79,575 indexed, 100,228 found, 89,856 compared, 89,856 same data, 3.25 GiB in
(89.3 MiB/s), 49.6 MiB out (1.15 MiB/s), 40s
128,122 scanned, 99,743 indexed, 111,358 found, 98,663 compared, 98,663 same data, 3.80 GiB in
(112 MiB/s), 55.8 MiB out (1.24 MiB/s), 45s
134,630 scanned, 104,738 indexed, 123,253 found, 109,472 compared, 109,472 same data, 4.36 GiB
in (114 MiB/s), 61.7 MiB out (1.16 MiB/s), 50s
134,630 scanned, 119,809 indexed, 133,569 found, 120,008 compared, 120,008 same data, 4.94 GiB
in (115 MiB/s), 67.8 MiB out (1.20 MiB/s), 55s

```

```
Xcp command : xcp verify -nomods <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs), 0
different item, 0 error
Speed      : 4.95 GiB in (90.5 MiB/s), 69.2 MiB out (1.24 MiB/s)
Total Time : 56s.
STATUS     : PASSED
```

verify -mtimewindow <s>

Acceptable modification time difference for verification.

```
[root@localhost /]# ./xcp verify -mtimewindow 2 <IP address of NFS server>:/source_vol <IP
address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
06_02.26.03.797492
 27,630 scanned, 9,430 found, 5,630 compared, 5,630 same data, 322 MiB in (64.1 MiB/s), 3.91 MiB
out (798 KiB/s), 5s
 38,478 scanned, 19,840 found, 14,776 compared, 14,776 same data, 811 MiB in (97.8 MiB/s), 8.86
MiB out (1012 KiB/s), 10s
 55,304 scanned, 14,660 indexed, 29,893 found, 23,904 compared, 23,904 same data, 1.33 GiB in
(109 MiB/s), 14.6 MiB out (1.14 MiB/s), 15s
 64,758 scanned, 24,700 indexed, 43,133 found, 36,532 compared, 36,532 same data, 1.65 GiB in
(65.3 MiB/s), 21.0 MiB out (1.28 MiB/s), 20s
 75,317 scanned, 34,655 indexed, 56,020 found, 48,942 compared, 48,942 same data, 2.01 GiB in
(72.5 MiB/s), 27.4 MiB out (1.25 MiB/s), 25s
 95,024 scanned, 54,533 indexed, 70,675 found, 61,886 compared, 61,886 same data, 2.41 GiB in
(81.3 MiB/s), 34.9 MiB out (1.49 MiB/s), 30s
102,407 scanned, 64,598 indexed, 85,539 found, 76,158 compared, 76,158 same data, 2.74 GiB in
(67.3 MiB/s), 42.0 MiB out (1.42 MiB/s), 35s
113,209 scanned, 74,661 indexed, 97,126 found, 86,525 compared, 86,525 same data, 3.09 GiB in
(72.6 MiB/s), 48.0 MiB out (1.19 MiB/s), 40s
125,040 scanned, 84,710 indexed, 108,480 found, 96,253 compared, 96,253 same data, 3.51 GiB in
(84.0 MiB/s), 53.6 MiB out (1.10 MiB/s), 45s
132,726 scanned, 99,775 indexed, 117,252 found, 103,740 compared, 103,740 same data, 4.04 GiB in
(108 MiB/s), 58.4 MiB out (986 KiB/s), 50s
134,633 scanned, 109,756 indexed, 126,700 found, 112,978 compared, 112,978 same data, 4.52 GiB
in (97.6 MiB/s), 63.6 MiB out (1.03 MiB/s), 55s
134,633 scanned, 129,807 indexed, 134,302 found, 120,779 compared, 120,779 same data, 4.95 GiB
in (86.5 MiB/s), 68.8 MiB out (1.02 MiB/s), 1m0s

Xcp command : xcp verify -mtimewindow 2 <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,633 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error
Speed      : 4.95 GiB in (83.6 MiB/s), 69.2 MiB out (1.14 MiB/s)
Total Time : 1m0s.
STATUS     : PASSED
```

verify -v

Output formats to list any differences found.

```
[root@localhost /]# ./xcp verify -v <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_02.26.30.055115
 32,349 scanned, 10,211 found, 5,946 compared, 5,946 same data, 351 MiB in (70.1 MiB/s), 4.27 MiB
out (872 KiB/s), 5s
 40,301 scanned, 21,943 found, 16,619 compared, 16,619 same data, 874 MiB in (104 MiB/s), 9.74
MiB out (1.09 MiB/s), 10s
 52,201 scanned, 14,512 indexed, 33,173 found, 27,622 compared, 27,622 same data, 1.35 GiB in
(102 MiB/s), 16.0 MiB out (1.24 MiB/s), 15s
 70,886 scanned, 34,689 indexed, 46,699 found, 40,243 compared, 40,243 same data, 1.77 GiB in
(86.2 MiB/s), 23.3 MiB out (1.47 MiB/s), 20s
 80,072 scanned, 39,708 indexed, 63,333 found, 55,743 compared, 55,743 same data, 2.04 GiB in
(55.4 MiB/s), 31.0 MiB out (1.54 MiB/s), 25s
100,034 scanned, 59,615 indexed, 76,848 found, 67,738 compared, 67,738 same data, 2.35 GiB in
(61.6 MiB/s), 37.6 MiB out (1.31 MiB/s), 30s
110,290 scanned, 69,597 indexed, 88,493 found, 78,203 compared, 78,203 same data, 2.75 GiB in
(81.7 MiB/s), 43.4 MiB out (1.14 MiB/s), 35s
116,829 scanned, 79,603 indexed, 102,105 found, 90,998 compared, 90,998 same data, 3.32 GiB in
(117 MiB/s), 50.3 MiB out (1.38 MiB/s), 40s
```

```

128,954 scanned, 94,650 indexed, 114,340 found, 101,563 compared, 101,563 same data, 3.91 GiB in
(121 MiB/s), 56.8 MiB out (1.30 MiB/s), 45s
134,630 scanned, 109,858 indexed, 125,760 found, 112,077 compared, 112,077 same data, 4.41 GiB
in (99.9 MiB/s), 63.0 MiB out (1.22 MiB/s), 50s

Xcp command : xcp verify -v <IP address of NFS server>:/source_vol <IP address of destination NFS
server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error
Speed      : 4.95 GiB in (91.7 MiB/s), 69.2 MiB out (1.25 MiB/s)
Total Time : 55s.
STATUS     : PASSED

```

verify -l

Output formats to list any differences found.

```

[root@localhost /]# ./xcp verify -l <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_02.27.58.969228
32,044 scanned, 11,565 found, 7,305 compared, 7,305 same data, 419 MiB in (83.7 MiB/s), 4.93 MiB
out (1008 KiB/s), 5s
40,111 scanned, 21,352 found, 16,008 compared, 16,008 same data, 942 MiB in (104 MiB/s), 9.64
MiB out (962 KiB/s), 10s
53,486 scanned, 14,677 indexed, 30,840 found, 25,162 compared, 25,162 same data, 1.34 GiB in
(86.4 MiB/s), 15.0 MiB out (1.07 MiB/s), 15s
71,202 scanned, 34,646 indexed, 45,082 found, 38,555 compared, 38,555 same data, 1.72 GiB in
(76.7 MiB/s), 22.5 MiB out (1.51 MiB/s), 20s
75,264 scanned, 34,646 indexed, 60,039 found, 53,099 compared, 53,099 same data, 2.00 GiB in
(58.5 MiB/s), 29.1 MiB out (1.30 MiB/s), 25s
95,205 scanned, 54,684 indexed, 76,004 found, 67,054 compared, 67,054 same data, 2.34 GiB in
(67.5 MiB/s), 37.0 MiB out (1.57 MiB/s), 30s
110,239 scanned, 69,664 indexed, 87,892 found, 77,631 compared, 77,631 same data, 2.78 GiB in
(89.7 MiB/s), 43.2 MiB out (1.23 MiB/s), 35s
115,192 scanned, 79,627 indexed, 100,246 found, 89,450 compared, 89,450 same data, 3.22 GiB in
(90.0 MiB/s), 49.4 MiB out (1.24 MiB/s), 40s
122,694 scanned, 89,740 indexed, 109,158 found, 97,422 compared, 97,422 same data, 3.65 GiB in
(89.4 MiB/s), 54.2 MiB out (978 KiB/s), 45s
134,630 scanned, 104,695 indexed, 119,683 found, 106,036 compared, 106,036 same data, 4.17 GiB
in (105 MiB/s), 59.9 MiB out (1.11 MiB/s), 50s
134,630 scanned, 109,813 indexed, 129,117 found, 115,432 compared, 115,432 same data, 4.59 GiB
in (86.1 MiB/s), 64.7 MiB out (979 KiB/s), 55s

Xcp command : xcp verify -l <IP address of NFS server>:/source_vol <IP address of destination NFS
server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error
Speed      : 4.95 GiB in (84.9 MiB/s), 69.2 MiB out (1.16 MiB/s)
Total Time : 59s.
STATUS     : PASSED

```

verify -v and verify -l

Output formats to list any differences found.

```

[root@localhost /]# ./xcp verify -v -l <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_02.30.00.952454
24,806 scanned, 8,299 found, 4,817 compared, 4,817 same data, 296 MiB in (59.1 MiB/s), 3.44 MiB
out (704 KiB/s), 5s
39,720 scanned, 20,219 found, 14,923 compared, 14,923 same data, 716 MiB in (84.0 MiB/s), 8.78
MiB out (1.07 MiB/s), 10s
44,395 scanned, 8,648 indexed, 29,851 found, 24,286 compared, 24,286 same data, 1.20 GiB in (102
MiB/s), 14.0 MiB out (1.05 MiB/s), 15s
62,763 scanned, 24,725 indexed, 40,946 found, 34,760 compared, 34,760 same data, 1.69 GiB in
(101 MiB/s), 20.2 MiB out (1.24 MiB/s), 20s
76,181 scanned, 39,708 indexed, 57,566 found, 50,595 compared, 50,595 same data, 1.98 GiB in
(58.7 MiB/s), 28.3 MiB out (1.61 MiB/s), 25s
90,411 scanned, 49,594 indexed, 73,357 found, 64,912 compared, 64,912 same data, 2.37 GiB in
(79.0 MiB/s), 35.8 MiB out (1.48 MiB/s), 30s

```

```

110,222 scanned, 69,593 indexed, 87,733 found, 77,466 compared, 77,466 same data, 2.77 GiB in
(80.5 MiB/s), 43.1 MiB out (1.45 MiB/s), 35s
116,417 scanned, 79,693 indexed, 100,053 found, 89,258 compared, 89,258 same data, 3.23 GiB in
(94.3 MiB/s), 49.4 MiB out (1.26 MiB/s), 40s
122,224 scanned, 89,730 indexed, 111,684 found, 100,059 compared, 100,059 same data, 3.83 GiB in
(123 MiB/s), 55.5 MiB out (1.22 MiB/s), 45s
134,630 scanned, 109,758 indexed, 121,744 found, 108,152 compared, 108,152 same data, 4.36 GiB
in (107 MiB/s), 61.3 MiB out (1.14 MiB/s), 50s
134,630 scanned, 119,849 indexed, 131,678 found, 118,015 compared, 118,015 same data, 4.79 GiB
in (87.2 MiB/s), 66.7 MiB out (1.08 MiB/s), 55s

Xcp command : xcp verify -v -l <IP address of NFS server>:/source_vol <IP address of destination
NFS server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error
Speed      : 4.95 GiB in (87.6 MiB/s), 69.2 MiB out (1.20 MiB/s)
Total Time : 57s.
STATUS     : PASSED

```

verify -nonames

Do not look up user and group names for file listings or reports.

```

[root@localhost /]# ./xcp verify -nonames <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_04.03.58.173082
30,728 scanned, 9,242 found, 5,248 compared, 5,248 same data, 363 MiB in (72.6 MiB/s), 3.93 MiB
out (805 KiB/s), 5s
40,031 scanned, 20,748 found, 15,406 compared, 15,406 same data, 837 MiB in (94.5 MiB/s), 9.19
MiB out (1.05 MiB/s), 10s
50,859 scanned, 9,668 indexed, 32,410 found, 26,305 compared, 26,305 same data, 1.30 GiB in
(99.5 MiB/s), 15.2 MiB out (1.20 MiB/s), 15s
73,631 scanned, 34,712 indexed, 45,362 found, 38,567 compared, 38,567 same data, 1.75 GiB in
(92.2 MiB/s), 22.6 MiB out (1.49 MiB/s), 20s
82,931 scanned, 44,618 indexed, 59,988 found, 52,270 compared, 52,270 same data, 2.08 GiB in
(66.7 MiB/s), 29.6 MiB out (1.39 MiB/s), 25s
96,691 scanned, 59,630 indexed, 77,567 found, 68,573 compared, 68,573 same data, 2.50 GiB in
(85.2 MiB/s), 38.2 MiB out (1.73 MiB/s), 30s
110,763 scanned, 74,678 indexed, 92,246 found, 82,010 compared, 82,010 same data, 2.93 GiB in
(88.8 MiB/s), 45.5 MiB out (1.45 MiB/s), 35s
120,101 scanned, 79,664 indexed, 105,420 found, 94,046 compared, 94,046 same data, 3.47 GiB in
(110 MiB/s), 51.9 MiB out (1.27 MiB/s), 40s
131,659 scanned, 99,780 indexed, 116,418 found, 103,109 compared, 103,109 same data, 4.05 GiB in
(120 MiB/s), 58.1 MiB out (1.25 MiB/s), 45s
134,630 scanned, 114,770 indexed, 127,154 found, 113,483 compared, 113,483 same data, 4.54 GiB
in (100 MiB/s), 64.1 MiB out (1.20 MiB/s), 50s

Xcp command : xcp verify -nonames <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error
Speed      : 4.95 GiB in (92.5 MiB/s), 69.2 MiB out (1.26 MiB/s)
Total Time : 54s.
STATUS     : PASSED

```

verify -match <filter>

Only process files and directories that match the filter.

```

[root@localhost /]# ./xcp verify -match bin <IP address of NFS server>:/source_vol <IP address
of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_04.16.46.005121
32,245 scanned, 25,000 matched, 10,657 found, 6,465 compared, 6,465 same data, 347 MiB in (69.4
MiB/s), 4.44 MiB out (908 KiB/s), 5s
40,306 scanned, 35,000 matched, 21,311 found, 15,969 compared, 15,969 same data, 850 MiB in (101
MiB/s), 9.44 MiB out (1024 KiB/s), 10s
55,582 scanned, 45,000 matched, 14,686 indexed, 31,098 found, 25,293 compared, 25,293 same data,
1.33 GiB in (102 MiB/s), 15.1 MiB out (1.12 MiB/s), 15s
75,199 scanned, 65,000 matched, 34,726 indexed, 45,587 found, 38,738 compared, 38,738 same data,
1.72 GiB in (77.9 MiB/s), 22.7 MiB out (1.52 MiB/s), 20s

```

```

78,304 scanned, 70,000 matched, 39,710 indexed, 61,398 found, 54,232 compared, 54,232 same data,
2.08 GiB in (75.0 MiB/s), 30.0 MiB out (1.45 MiB/s), 25s
102,960 scanned, 95,000 matched, 69,682 indexed, 78,351 found, 69,034 compared, 69,034 same
data, 2.43 GiB in (71.9 MiB/s), 38.8 MiB out (1.76 MiB/s), 30s
110,344 scanned, 105,000 matched, 69,682 indexed, 93,873 found, 83,637 compared, 83,637 same
data, 2.85 GiB in (84.2 MiB/s), 45.6 MiB out (1.36 MiB/s), 35s
121,459 scanned, 120,000 matched, 84,800 indexed, 107,012 found, 95,357 compared, 95,357 same
data, 3.30 GiB in (92.8 MiB/s), 52.3 MiB out (1.33 MiB/s), 40s
130,006 scanned, 125,000 matched, 94,879 indexed, 115,077 found, 102,104 compared, 102,104 same
data, 3.97 GiB in (136 MiB/s), 57.2 MiB out (1001 KiB/s), 45s
134,630 scanned, 134,630 matched, 109,867 indexed, 125,755 found, 112,025 compared, 112,025 same
data, 4.53 GiB in (115 MiB/s), 63.2 MiB out (1.20 MiB/s), 50s

Xcp command : xcp verify -match bin <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,630 scanned, 134,630 matched, 100% found (121,150 have data), 100% verified (data, attrs,
mods), 0 different item, 0 error
Speed      : 4.95 GiB in (92.2 MiB/s), 69.2 MiB out (1.26 MiB/s)
Total Time : 54s.
STATUS     : PASSED

```

verify -bs <n[k]>

Read/write block size (default: 64k).

```

[root@localhost /]# ./xcp verify -bs 32k <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_04.20.19.266399
29,742 scanned, 9,939 found, 5,820 compared, 5,820 same data, 312 MiB in (62.3 MiB/s), 4.58 MiB
out (938 KiB/s), 5s
40,156 scanned, 20,828 found, 15,525 compared, 15,525 same data, 742 MiB in (85.0 MiB/s), 10.2
MiB out (1.10 MiB/s), 10s
41,906 scanned, 9,846 indexed, 30,731 found, 25,425 compared, 25,425 same data, 1.14 GiB in
(85.6 MiB/s), 16.1 MiB out (1.18 MiB/s), 15s
66,303 scanned, 29,712 indexed, 42,861 found, 36,708 compared, 36,708 same data, 1.61 GiB in
(94.9 MiB/s), 23.7 MiB out (1.53 MiB/s), 20s
70,552 scanned, 34,721 indexed, 58,157 found, 51,528 compared, 51,528 same data, 1.96 GiB in
(73.0 MiB/s), 31.4 MiB out (1.53 MiB/s), 25s
100,135 scanned, 59,611 indexed, 76,047 found, 66,811 compared, 66,811 same data, 2.29 GiB in
(66.3 MiB/s), 40.7 MiB out (1.82 MiB/s), 30s
105,951 scanned, 69,665 indexed, 90,022 found, 80,330 compared, 80,330 same data, 2.71 GiB in
(85.3 MiB/s), 48.1 MiB out (1.49 MiB/s), 35s
113,440 scanned, 89,486 indexed, 101,634 found, 91,152 compared, 91,152 same data, 3.19 GiB in
(97.8 MiB/s), 55.4 MiB out (1.45 MiB/s), 40s
128,693 scanned, 94,484 indexed, 109,999 found, 97,319 compared, 97,319 same data, 3.59 GiB in
(82.6 MiB/s), 60.2 MiB out (985 KiB/s), 45s
134,630 scanned, 94,484 indexed, 119,203 found, 105,402 compared, 105,402 same data, 3.98 GiB in
(78.3 MiB/s), 65.1 MiB out (986 KiB/s), 50s
134,630 scanned, 104,656 indexed, 127,458 found, 113,774 compared, 113,774 same data, 4.49 GiB
in (103 MiB/s), 70.8 MiB out (1.15 MiB/s), 55s

Xcp command : xcp verify -bs 32k <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error
Speed      : 4.96 GiB in (84.5 MiB/s), 77.5 MiB out (1.29 MiB/s)
Total Time : 1m0s.
STATUS     : PASSED

```

verify -dircount <n[k]>

Request size for reading directories (default: 64k).

```

[root@localhost /]# ./xcp verify -dircount 32k <IP address of NFS server>:/source_vol <IP
address of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_04.28.58.235953
32,221 scanned, 10,130 found, 5,955 compared, 5,955 same data, 312 MiB in (62.1 MiB/s), 4.15 MiB
out (848 KiB/s), 5s
40,089 scanned, 21,965 found, 16,651 compared, 16,651 same data, 801 MiB in (97.5 MiB/s), 9.55
MiB out (1.07 MiB/s), 10s

```

```

51,723 scanned, 14,544 indexed, 33,019 found, 27,288 compared, 27,288 same data, 1.24 GiB in
(93.8 MiB/s), 15.6 MiB out (1.22 MiB/s), 15s
67,360 scanned, 34,733 indexed, 45,615 found, 39,341 compared, 39,341 same data, 1.73 GiB in
(100 MiB/s), 22.8 MiB out (1.43 MiB/s), 20s
82,314 scanned, 44,629 indexed, 63,276 found, 55,559 compared, 55,559 same data, 2.05 GiB in
(64.7 MiB/s), 31.0 MiB out (1.63 MiB/s), 25s
100,085 scanned, 59,585 indexed, 79,799 found, 70,618 compared, 70,618 same data, 2.43 GiB in
(77.2 MiB/s), 38.9 MiB out (1.57 MiB/s), 30s
110,158 scanned, 69,651 indexed, 93,005 found, 82,654 compared, 82,654 same data, 2.87 GiB in
(89.1 MiB/s), 45.4 MiB out (1.28 MiB/s), 35s
120,047 scanned, 79,641 indexed, 104,539 found, 93,226 compared, 93,226 same data, 3.40 GiB in
(108 MiB/s), 51.4 MiB out (1.20 MiB/s), 40s
130,362 scanned, 94,662 indexed, 114,193 found, 101,230 compared, 101,230 same data, 3.87 GiB in
(97.3 MiB/s), 56.7 MiB out (1.06 MiB/s), 45s
134,630 scanned, 104,789 indexed, 124,272 found, 110,547 compared, 110,547 same data, 4.33 GiB in
(94.2 MiB/s), 62.3 MiB out (1.12 MiB/s), 50s
134,630 scanned, 129,879 indexed, 133,227 found, 119,717 compared, 119,717 same data, 4.93 GiB in
(119 MiB/s), 68.2 MiB out (1.17 MiB/s), 55s

Xcp command : xcp verify -dircount 32k <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error
Speed      : 4.95 GiB in (89.3 MiB/s), 69.2 MiB out (1.22 MiB/s)
Total Time : 56s.
STATUS     : PASSED

```

verify -parallel <n>

Maximum concurrent batch processes (default: 7).

```

[root@localhost /]# ./xcp verify -parallel 2 <IP address of NFS server>:/source_vol <IP address
of destination NFS server>:/dest_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: WARNING: No index name has been specified, creating one with name: autaname_verify_2020-03-
05_04.35.10.356405
15,021 scanned, 6,946 found, 4,869 compared, 4,869 same data, 378 MiB in (74.5 MiB/s), 3.24 MiB
out (654 KiB/s), 5s
25,165 scanned, 9,671 indexed, 15,945 found, 12,743 compared, 12,743 same data, 706 MiB in (65.4
MiB/s), 7.81 MiB out (934 KiB/s), 10s
35,367 scanned, 19,747 indexed, 24,036 found, 19,671 compared, 19,671 same data, 933 MiB in
(45.3 MiB/s), 11.9 MiB out (827 KiB/s), 15s
45,267 scanned, 29,761 indexed, 32,186 found, 26,909 compared, 26,909 same data, 1.38 GiB in
(94.6 MiB/s), 16.5 MiB out (943 KiB/s), 20s
55,690 scanned, 39,709 indexed, 40,413 found, 34,805 compared, 34,805 same data, 1.69 GiB in
(62.8 MiB/s), 20.9 MiB out (874 KiB/s), 25s
55,690 scanned, 39,709 indexed, 48,325 found, 42,690 compared, 42,690 same data, 1.88 GiB in
(38.1 MiB/s), 24.3 MiB out (703 KiB/s), 31s
65,002 scanned, 49,670 indexed, 57,872 found, 51,891 compared, 51,891 same data, 2.04 GiB in
(33.2 MiB/s), 29.0 MiB out (967 KiB/s), 36s
75,001 scanned, 59,688 indexed, 66,789 found, 60,291 compared, 60,291 same data, 2.11 GiB in
(14.8 MiB/s), 33.4 MiB out (883 KiB/s), 41s
85,122 scanned, 69,690 indexed, 75,009 found, 67,337 compared, 67,337 same data, 2.42 GiB in
(62.3 MiB/s), 37.6 MiB out (862 KiB/s), 46s
91,260 scanned, 79,686 indexed, 82,097 found, 73,854 compared, 73,854 same data, 2.69 GiB in
(55.0 MiB/s), 41.4 MiB out (770 KiB/s), 51s
95,002 scanned, 79,686 indexed, 88,238 found, 79,707 compared, 79,707 same data, 2.99 GiB in
(60.7 MiB/s), 44.4 MiB out (608 KiB/s), 56s
105,002 scanned, 89,787 indexed, 96,059 found, 86,745 compared, 86,745 same data, 3.19 GiB in
(41.3 MiB/s), 48.4 MiB out (810 KiB/s), 1m1s
110,239 scanned, 99,872 indexed, 104,757 found, 94,652 compared, 94,652 same data, 3.47 GiB in
(57.0 MiB/s), 52.7 MiB out (879 KiB/s), 1m6s
120,151 scanned, 104,848 indexed, 111,491 found, 100,317 compared, 100,317 same data, 3.95 GiB
in (97.2 MiB/s), 56.3 MiB out (733 KiB/s), 1m11s
130,068 scanned, 114,860 indexed, 119,867 found, 107,260 compared, 107,260 same data, 4.25 GiB
in (60.5 MiB/s), 60.6 MiB out (871 KiB/s), 1m16s
134,028 scanned, 119,955 indexed, 125,210 found, 111,886 compared, 111,886 same data, 4.65 GiB
in (83.2 MiB/s), 63.7 MiB out (647 KiB/s), 1m21s
134,630 scanned, 129,929 indexed, 132,679 found, 119,193 compared, 119,193 same data, 4.93 GiB
in (56.8 MiB/s), 67.9 MiB out (846 KiB/s), 1m26s

Xcp command : xcp verify -parallel 2 <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,630 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods), 0
different item, 0 error

```

```
Speed      : 4.95 GiB in (57.8 MiB/s), 69.1 MiB out (807KiB/s)
Total Time : 1m27s.
STATUS     : PASSED
```

verify -acl4

Process NFS4 ACLs.

```
[root@scspr1845243002 TEST]# /xcp/linux/xcp verify -acl4 -noid <IP address of NFS
server>:/source_vol <IP address of destination NFS server>:/dest_vol
XCP 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

 8,830 scanned, 1,414 found, 106 compared, 106 same data, 4 nonacls, 2,732 getacls, 2,702
v3perms, 15 same acls, 11.7 MiB in (2.31 MiB/s), 442 KiB out (87.5 KiB/s), 5s
16,739 scanned, 4,266 found, 1,891 compared, 1,891 same data, 8 nonacls, 8,318 getacls, 8,288
v3perms, 15 same acls, 119 MiB in (21.4 MiB/s), 1.64 MiB out (247 KiB/s), 10s
23,212 scanned, 7,682 found, 4,427 compared, 4,427 same data, 10 nonacls, 15,033 getacls, 15,002
v3perms, 15 same acls, 259 MiB in (26.6 MiB/s), 3.14 MiB out (291 KiB/s), 15s
29,352 scanned, 11,579 found, 7,596 compared, 7,596 same data, 11 nonacls, 22,530 getacls,
22,498 v3perms, 15 same acls, 443 MiB in (35.1 MiB/s), 4.91 MiB out (346 KiB/s), 20s
33,546 scanned, 15,461 found, 10,841 compared, 10,841 same data, 11 nonacls, 30,380 getacls,
30,350 v3perms, 15 same acls, 624 MiB in (35.0 MiB/s), 6.73 MiB out (360 KiB/s), 25s
38,254 scanned, 19,030 found, 13,804 compared, 13,804 same data, 11 nonacls, 37,355 getacls,
37,324 v3perms, 15 same acls, 813 MiB in (34.5 MiB/s), 8.43 MiB out (318 KiB/s), 31s
43,613 scanned, 22,420 found, 16,789 compared, 16,789 same data, 12 nonacls, 44,374 getacls,
44,340 v3perms, 15 same acls, 1.05 GiB in (51.2 MiB/s), 10.2 MiB out (368 KiB/s), 36s
45,216 scanned, 26,369 found, 20,594 compared, 20,594 same data, 16 nonacls, 52,284 getacls,
52,254 v3perms, 15 same acls, 1.21 GiB in (33.9 MiB/s), 12.1 MiB out (372 KiB/s), 41s
51,068 scanned, 30,263 found, 24,299 compared, 24,299 same data, 17 nonacls, 59,895 getacls,
59,864 v3perms, 15 same acls, 1.31 GiB in (20.0 MiB/s), 13.7 MiB out (341 KiB/s), 46s
55,290 scanned, 34,099 found, 28,049 compared, 28,049 same data, 18 nonacls, 67,699 getacls,
67,668 v3perms, 15 same acls, 1.44 GiB in (25.6 MiB/s), 15.5 MiB out (354 KiB/s), 51s
59,748 scanned, 37,981 found, 31,516 compared, 31,516 same data, 18 nonacls, 75,395 getacls,
75,362 v3perms, 15 same acls, 1.57 GiB in (27.1 MiB/s), 17.2 MiB out (339 KiB/s), 56s
62,001 scanned, 42,788 found, 36,035 compared, 36,035 same data, 19 nonacls, 84,953 getacls,
84,922 v3perms, 15 same acls, 1.71 GiB in (26.7 MiB/s), 19.3 MiB out (414 KiB/s), 1m1s
65,748 scanned, 47,120 found, 40,002 compared, 40,002 same data, 21 nonacls, 93,842 getacls,
93,812 v3perms, 15 same acls, 1.82 GiB in (23.4 MiB/s), 21.2 MiB out (390 KiB/s), 1m6s
75,674 scanned, 51,609 found, 44,123 compared, 44,123 same data, 21 nonacls, 102,489 getacls,
102,456 v3perms, 15 same acls, 1.94 GiB in (23.7 MiB/s), 23.1 MiB out (387 KiB/s), 1m11s
77,134 scanned, 55,916 found, 48,316 compared, 48,316 same data, 23 nonacls, 111,329 getacls,
111,298 v3perms, 15 same acls, 2.05 GiB in (23.6 MiB/s), 25.0 MiB out (395 KiB/s), 1m16s
80,124 scanned, 60,037 found, 52,239 compared, 52,239 same data, 24 nonacls, 119,719 getacls,
119,688 v3perms, 15 same acls, 2.21 GiB in (31.3 MiB/s), 27.0 MiB out (399 KiB/s), 1m21s
84,923 scanned, 64,882 found, 56,435 compared, 56,435 same data, 24 nonacls, 129,096 getacls,
129,064 v3perms, 15 same acls, 2.30 GiB in (17.1 MiB/s), 29.0 MiB out (399 KiB/s), 1m27s
86,344 scanned, 69,102 found, 60,681 compared, 60,681 same data, 24 nonacls, 137,647 getacls,
137,616 v3perms, 15 same acls, 2.41 GiB in (23.8 MiB/s), 31.0 MiB out (396 KiB/s), 1m32s
94,597 scanned, 73,905 found, 64,914 compared, 64,914 same data, 24 nonacls, 147,033 getacls,
147,002 v3perms, 15 same acls, 2.51 GiB in (18.6 MiB/s), 33.0 MiB out (387 KiB/s), 1m37s
99,828 scanned, 78,138 found, 68,815 compared, 68,815 same data, 27 nonacls, 155,641 getacls,
155,610 v3perms, 15 same acls, 2.62 GiB in (22.0 MiB/s), 34.9 MiB out (380 KiB/s), 1m42s
103,677 scanned, 82,375 found, 72,680 compared, 72,680 same data, 29 nonacls, 164,183 getacls,
164,152 v3perms, 15 same acls, 2.75 GiB in (27.4 MiB/s), 36.8 MiB out (396 KiB/s), 1m47s
107,130 scanned, 86,815 found, 76,762 compared, 76,762 same data, 29 nonacls, 173,284 getacls,
173,254 v3perms, 15 same acls, 2.85 GiB in (19.1 MiB/s), 38.8 MiB out (401 KiB/s), 1m52s
108,881 scanned, 91,357 found, 81,077 compared, 81,077 same data, 31 nonacls, 182,173 getacls,
182,142 v3perms, 15 same acls, 2.98 GiB in (27.0 MiB/s), 40.8 MiB out (403 KiB/s), 1m57s
113,527 scanned, 95,467 found, 84,590 compared, 84,590 same data, 35 nonacls, 190,257 getacls,
190,226 v3perms, 15 same acls, 3.12 GiB in (27.0 MiB/s), 42.6 MiB out (345 KiB/s), 2m2s
118,765 scanned, 99,513 found, 88,126 compared, 88,126 same data, 37 nonacls, 198,592 getacls,
198,560 v3perms, 15 same acls, 3.30 GiB in (36.7 MiB/s), 44.5 MiB out (389 KiB/s), 2m7s
120,201 scanned, 103,675 found, 92,139 compared, 92,139 same data, 37 nonacls, 206,827 getacls,
206,796 v3perms, 15 same acls, 3.46 GiB in (32.8 MiB/s)
, 46.3 MiB out (380 KiB/s), 2m12s
123,084 scanned, 107,670 found, 95,725 compared, 95,725 same data, 37 nonacls, 214,883 getacls,
214,850 v3perms, 15 same acls, 3.60 GiB in (27.8 MiB/s)
, 48.2 MiB out (354 KiB/s), 2m18s
125,529 scanned, 111,027 found, 98,693 compared, 98,693 same data, 38 nonacls, 221,614 getacls,
221,584 v3perms, 15 same acls, 3.72 GiB in (24.0 MiB/s), 49.6 MiB out (295 KiB/s), 2m23s
128,272 scanned, 114,821 found, 101,850 compared, 101,850 same data, 38 nonacls, 228,791
getacls, 228,760 v3perms, 15 same acls, 3.85 GiB in (24.4 MiB/s), 51.2 MiB out (299 KiB/s), 2m28s
132,305 scanned, 118,335 found, 104,789 compared, 104,789 same data, 45 nonacls, 236,032
getacls, 235,998 v3perms, 15 same acls, 3.98 GiB in (25.5 MiB/s), 52.8 MiB out (314 KiB/s), 2m33s
134,633 scanned, 121,658 found, 107,971 compared, 107,971 same data, 67 nonacls, 242,884
getacls, 242,854 v3perms, 15 same acls, 4.18 GiB in (40.9 MiB/s), 54.5 MiB out (347 KiB/s), 2m38s
```

```

134,633 scanned, 124,392 found, 110,674 compared, 110,674 same data, 67 nonacls, 248,205
getacls, 248,174 v3perms, 15 same acls, 4.44 GiB in (52.5 MiB/s), 56.1 MiB out (319 KiB/s), 2m43s
134,633 scanned, 127,765 found, 114,009 compared, 114,009 same data, 133 nonacls, 254,849
getacls, 254,818 v3perms, 15 same acls, 4.56 GiB in (24.0 MiB/s), 57.6 MiB out (312 KiB/s), 2m48s
134,633 scanned, 130,699 found, 116,993 compared, 116,993 same data, 137 nonacls, 260,843
getacls, 260,812 v3perms, 15 same acls, 4.65 GiB in (18.7 MiB/s), 59.0 MiB out (276 KiB/s), 2m54s
134,633 scanned, 132,656 found, 119,022 compared, 119,022 same data, 137 nonacls, 264,886
getacls, 264,856 v3perms, 15 same acls, 4.84 GiB in (39.0 MiB/s), 60.2 MiB out (250 KiB/s), 2m59s
134,633 scanned, 134,363 found, 120,799 compared, 120,799 same data, 137 nonacls, 268,374
getacls, 268,344 v3perms, 15 same acls, 4.95 GiB in (21.8 MiB/s), 61.1 MiB out (188 KiB/s), 3m4s

Xcp command : xcp verify -acl4 -noid <IP address of NFS server>:/source_vol <IP address of
destination NFS server>:/dest_vol
134,633 scanned, 0 matched, 100% found (121,150 have data), 100% verified (data, attrs, mods,
acls), 0 different item, 0 error
Speed      : 4.95 GiB in (27.4 MiB/s), 61.2 MiB out (339 KiB/s)
Total Time : 3m4s.
STATUS     : PASSED

```

verify -preserve-atime

Restores all files to the last accessed date on the source. The `-preserve-atime` option resets the access time to the original value set before the XCP read operation.

```

[root@client1 linux]# ./xcp verify -preserve-atime
<IP_address>:/source_vol<destination_IP_address>:/dest_vol
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until Sat Jul 16
22:00:59 2022

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2022-06-
30_15.29.03.686503
xcp: Job ID: Job_2022-06-30_15.29.03.723260_verify

Xcp command : xcp verify -preserve-atime 172.26.96.42:/source_vol 10.236.149.70:/dest_vol Stats :
110 scanned, 110 indexed, 100% found (96 have data), 96 compared, 100% verified (data, attrs,
mods)
Speed      : 4.87 MiB in (3.02 MiB/s), 160 KiB out (99.4 KiB/s) Total Time : 1s.
Job ID    : Job_2022-06-30_15.29.03.723260_verify
Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_2022-06-30_15.29.03.723260_verify.log STATUS :
PASSED

```

verify -minmem

Utilizes minimal memory.

```

root@client1 linux]# ./xcp verify -minmem <IP_address>:/temp7/user7
<destination_IP_address>:/temp7/user8
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-04-
25_10.09.39.854739
Job ID: Job_2023-04-25_10.09.39.854739_verify
 34,397 scanned, 2,952 found, 2,585 compared, 2.52 KiB same data, 12.8 MiB in (2.53 MiB/s),
1.29 MiB out (263 KiB/s), 5s
.
.
.
 878,686 scanned, 859,891 indexed, 873,278 found, 858,903 compared, 839 KiB same data, 2.22
GiB in (8.91 MiB/s), 400 MiB out (1.68 MiB/s), 4m30s

Xcp command : xcp verify -minmem 10.231.42.181:/temp7/user7 10.231.42.181:/temp7/user8
Stats      : 878,686 scanned, 878,686 indexed, 100% found (864,517 have data), 864,517
compared, 100% verified (data, attrs, mods)
Speed      : 2.23 GiB in (8.36 MiB/s), 403 MiB out (1.48 MiB/s)
Total Time : 4m33s.
Job ID    : Job_2023-04-25_10.09.39.854739_verify
Log Path   : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_10.09.39.854739_verify.log
STATUS     : PASSED
[root@client1 linux]#

```

verify - s3.insecure

Provides the option to use HTTP instead of HTTPS for S3 bucket communication.

```
[root@client1 linux]# ./xcp verify -s3.insecure hdfs:///user/test s3://bucket1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] xx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-06-08_09.04.33.301709
Job ID: Job_2023-06-08_09.04.33.301709_verify

Xcp command : xcp verify -s3.insecure hdfs:///user/test s3://bucket1
Stats       : 8 scanned, 8 indexed, 100% found (5 have data), 5 compared, 100% verified (data)
Speed       : 21.3 KiB in (8.20 KiB/s), 90.8 KiB out (34.9 KiB/s)
Total Time  : 2s.
Job ID      : Job_2023-06-08_09.04.33.301709_verify
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-08_09.04.33.301709_verify.log
STATUS      : PASSED

[root@client1 linux]# ./xcp verify -s3.insecure hdfs:///user/demo s3://bucket1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy
xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-06-08_09.19.48.399814
Job ID: Job_2023-06-08_09.19.48.399814_verify

Xcp command : xcp verify -s3.insecure 1 hdfs:///user/demo s3://bucket1
Stats       : 8 scanned, 8 indexed, 100% found (5 have data), 5 compared, 100% verified (data)
Speed       : 25.3 KiB in (11.6 KiB/s), 93.2 KiB out (42.6 KiB/s)
Total Time  : 2s.
Job ID      : Job_2023-06-08_09.19.48.399814_verify
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-08_09.19.48.399814_verify.log
STATUS      : PASSED
```

verify - s3.endpoint <S3 endpoint Url>

Overrides the AWS endpoint URL with the specified URL for S3 bucket communication.

```
[root@client1 linux]# ./xcp verify -s3.endpoint https://<endpoint_url>: hdfs:///user/test s3://xcp-
testing
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-06-
13_11.20.48.203492
Job ID: Job_2023-06-13_11.20.48.203492_verify
  2 scanned, 2 found, 9.55 KiB in (1.90 KiB/s), 12.5 KiB out (2.50 KiB/s), 5s

Xcp command : xcp verify -s3.endpoint https://<endpoint_url>: hdfs:///user/test s3://xcp-testing
Stats       : 8 scanned, 8 indexed, 100% found (5 have data), 5 compared, 100% verified (data)
Speed       : 21.3 KiB in (2.28 KiB/s), 91.1 KiB out (9.72 KiB/s)
Total Time  : 9s.
Job ID      : Job_2023-06-13_11.20.48.203492_verify
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-13_11.20.48.203492_verify.log
STATUS      : PASSED

[root@scs000135349-1 linux]# ./xcp verify -s3.endpoint https://<endpoint_url>: hdfs:///user/demo
s3://xcp-testing
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-06-
13_11.41.08.035845
Job ID: Job_2023-06-13_11.41.08.035845_verify
 15,009 scanned, 9 indexed, 1,073 found, 842 compared, 842 same data, 4.66 MiB in (942 KiB/s), 182 KiB
out (35.8 KiB/s), 5s
 15,009 scanned, 9 indexed, 2,894 found, 2,711 compared, 2.65 KiB same data, 8.51 MiB in (782 KiB/s),
438 KiB out (50.7 KiB/s), 10s
 15,009 scanned, 9 indexed, 4,879 found, 4,675 compared, 4.57 KiB same data, 12.6 MiB in (826 KiB/s),
717 KiB out (55.0 KiB/s), 15s
 15,009 scanned, 9 indexed, 6,721 found, 6,531 compared, 6.38 KiB same data, 16.5 MiB in (784 KiB/s),
976 KiB out (51.3 KiB/s), 20s
 15,009 scanned, 9 indexed, 8,537 found, 8,447 compared, 8.25 KiB same data, 20.3 MiB in (784 KiB/s),
1.20 MiB out (50.8 KiB/s), 25s
 15,009 scanned, 9 indexed, 10,408 found, 10,290 compared, 10.0 KiB same data, 24.2 MiB in (786
KiB/s), 1.46 MiB out (51.9 KiB/s), 30s
 15,009 scanned, 9 indexed, 12,233 found, 12,137 compared, 11.9 KiB same data, 28.0 MiB in (775
KiB/s), 1.71 MiB out (51.0 KiB/s), 35s
 15,009 scanned, 9 indexed, 13,822 found, 13,641 compared, 13.3 KiB same data, 31.2 MiB in (648
KiB/s), 1.93 MiB out (44.3 KiB/s), 40s
 15,009 scanned, 9 indexed, 14,404 found, 14,220 compared, 13.9 KiB same data, 32.5 MiB in (255
KiB/s), 2.01 MiB out (16.1 KiB/s), 45s

Xcp command : xcp verify -s3.endpoint https://<endpoint_url>: hdfs:///user/demo s3://xcp-testing
Stats       : 15,009 scanned, 15,009 indexed, 100% found (15,005 have data), 15,005 compared, 100%
verified (data)
Speed       : 33.9 MiB in (729 KiB/s), 2.51 MiB out (53.9 KiB/s)
Total Time  : 47s.
Job ID      : Job_2023-06-13_11.41.08.035845_verify
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-13_11.41.08.035845_verify.log
STATUS      : PASSED
```

verify -s3.profile <profile-name>

Specifies a profile from the AWS credential file for S3 bucket communication.

```
[root@client1 linux]# ./xcp verify -s3.profile sg -s3.endpoint https://<endpoint_url>:
hdfs:///user/test s3://bucket
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-06-08_09.05.22.412914
Job ID: Job_2023-06-08_09.05.22.412914_verify

Xcp command : xcp verify -s3.profile sg -s3.endpoint https://<endpoint_url>:
hdfs:///user/test s3://bucket
Stats       : 8 scanned, 8 indexed, 100% found (5 have data), 5 compared, 100% verified (data)
Speed       : 21.3 KiB in (6.52 KiB/s), 91.2 KiB out (27.9 KiB/s)
Total Time  : 3s.
Job ID      : Job_2023-06-08_09.05.22.412914_verify
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-08_09.05.22.412914_verify.log
STATUS      : PASSED

[root@client1 linux]# ./xcp verify -s3.profile sg -s3.endpoint https://<endpoint_url>:
hdfs:///user/demo s3://bucket
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-06-08_09.20.53.763772
Job ID: Job_2023-06-08_09.20.53.763772_verify

Xcp command : xcp verify -s3.profile sg -s3.endpoint https://<endpoint_url>:
hdfs:///user/demo s3://bucket
Stats       : 8 scanned, 8 indexed, 100% found (5 have data), 5 compared, 100% verified (data)
Speed       : 25.3 KiB in (14.5 KiB/s), 93.7 KiB out (53.8 KiB/s)
Total Time  : 1s.
Job ID      : Job_2023-06-08_09.20.53.763772_verify
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-08_09.20.53.763772_verify.log
STATUS      : PASSED
```

verify -s3.noverify

Overrides the default verification of SSL certification for S3 bucket communication.

```
root@client1 linux]# ./xcp verify -s3.noverify hdfs://user/test s3://bucket1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx[Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-06-13_10.59.01.817044
Job ID: Job_2023-06-13_10.59.01.817044_verify

Xcp command : xcp verify -s3.noverify hdfs://user/test s3://bucket1
Stats       : 8 scanned, 8 indexed, 100% found (5 have data), 5 compared, 100% verified (data)
Speed       : 21.3 KiB in (5.84 KiB/s), 90.8 KiB out (24.9 KiB/s)
Total Time  : 3s.
Job ID      : Job_2023-06-13_10.59.01.817044_verify
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-13_10.59.01.817044_verify.log
STATUS      : PASSED

Example2
./xcp verify -s3.profile sg -s3.noverify -s3.endpoint https://<endpoint_url>: hdfs:///user/demo
s3://bucket
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

xcp: WARNING: No index name has been specified, creating one with name: XCP_verify_2023-06-13_11.29.00.543286
Job ID: Job_2023-06-13_11.29.00.543286_verify
15,009 scanned, 8 indexed, 1,194 found, 908 compared, 908 same data, 4.87 MiB in (980 KiB/s), 199 KiB
out (39.1 KiB/s), 5s
15,009 scanned, 9 indexed, 2,952 found, 2,702 compared, 2.64 KiB same data, 8.56 MiB in (745 KiB/s),
446 KiB out (48.7 KiB/s), 10s
15,009 scanned, 9 indexed, 4,963 found, 4,841 compared, 4.73 KiB same data, 12.9 MiB in (873 KiB/s),
729 KiB out (55.9 KiB/s), 15s
15,009 scanned, 9 indexed, 6,871 found, 6,774 compared, 6.62 KiB same data, 16.9 MiB in (813 KiB/s),
997 KiB out (53.4 KiB/s), 20s
15,009 scanned, 9 indexed, 8,653 found, 8,552 compared, 8.35 KiB same data, 20.6 MiB in (745 KiB/s),
1.22 MiB out (49.3 KiB/s), 25s
15,009 scanned, 9 indexed, 10,436 found, 10,333 compared, 10.1 KiB same data, 24.3 MiB in (754
KiB/s), 1.46 MiB out (49.8 KiB/s), 31s
15,009 scanned, 9 indexed, 12,226 found, 12,114 compared, 11.8 KiB same data, 28.0 MiB in (751
KiB/s), 1.71 MiB out (49.7 KiB/s), 36s
15,009 scanned, 9 indexed, 14,005 found, 13,895 compared, 13.6 KiB same data, 31.7 MiB in (756
KiB/s), 1.95 MiB out (50.0 KiB/s), 41s
15,009 scanned, 9 indexed, 14,229 found, 14,067 compared, 13.7 KiB same data, 32.2 MiB in (102
KiB/s), 1.98 MiB out (6.25 KiB/s), 46s

Xcp command : xcp verify -s3.profile sg -s3.noverify -s3.endpoint https://<endpoint_url>:
hdfs:///user/demo s3://bucket
Stats       : 15,009 scanned, 15,009 indexed, 100% found (15,005 have data), 15,005 compared, 100%
verified (data)
Speed       : 33.9 MiB in (724 KiB/s), 2.50 MiB out (53.5 KiB/s)
Total Time  : 47s.
Job ID      : Job_2023-06-13_11.29.00.543286_verify
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-13_11.29.00.543286_verify.log
STATUS      : PASSED
```

1.11 chmod

The `chmod` command scans and changes the file permission of all the files for the given directory structure. The `chmod` command requires mode or reference, NFS share, or the POSIX path as a variable. XCP `chmod` recursively changes the permissions for a given path. The `chmod` command displays the total files scanned and the permissions changed in the output.

Syntax

```
xcp chmod -mod 777 <source NFS export path>
```

```
[root@user-1 linux]# ./xcp chmod -mode 777 172.21.88.54:/source_vol
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until Sat Apr 2
23:06:05 2022

Xcp command : xcp chmod -mode 777 172.21.88.54:/source_vol
Stats       : 6 scanned, 4 changed mode
Speed       : 1.96 KiB in (2.13 KiB/s), 812 out (882/s)
Total Time  : 0s.
STATUS      : PASSED
[root@user-1 linux]#
```

Example

The following table lists the `chmod` parameters and their description.

Feature	Description
<code>chmod -exclude <filter></code>	Excludes the files and directories that match the filter.
<code>chmod -match <filter></code>	Only processes the files and directories that match the filter.
<code>chmod -reference <reference></code>	The referenced file or directory point.
<code>chmod -v</code>	Reports the output for every object processed.
<code>chmod -minmem</code>	Utilizes minimal memory.

chmod -exclude <filter>

Excludes the files and directories that match the filter.

```
[root@user-1 linux]# ./xcp chmod -exclude "fnm('3.img')" -mode 770 172.21.88.54:/s_v1/D3/
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until Sat Apr 2
23:06:05 2022
Excluded: 1 excluded, 0 did not match exclude criteria

Xcp command : xcp chmod -exclude fnm('3.img') -mode 770 172.21.88.54:/s_v1/D3/
Stats       : 5 scanned, 1 excluded, 5 changed mode
Speed       : 2.10 KiB in (7.55 KiB/s), 976 out (3.43 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
[root@user-1 linux]#
```

chmod -match <filter>:

Only processes the files and directories that match the filter.

```
[root@user-1 linux]# ./xcp chmod -match "fnm('2.img')" -mode 777 172.21.88.54:/s_v1/D2/
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until Sat Apr 2
23:06:05 2022

Filtered: 1 matched, 5 did not match

Xcp command : xcp chmod -match fnm('2.img') -mode 777 172.21.88.54:/s_v1/D2/
Stats       : 6 scanned, 1 matched, 2 changed mode
Speed       : 1.67 KiB in (1.99 KiB/s), 484 out (578/s)
Total Time  : 0s.
STATUS      : PASSED
[root@user-1 linux]#
```

chmod -reference <reference>

The referenced file or directory point.

```
root@user-1 linux]# ./xcp chmod -reference 172.21.88.54:/s_v1/D1/1.txt 172.21.88.54:/s_v1/D2/
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until Sat Apr 2
23:06:05 2022

Xcp command : xcp chmod -reference 172.21.88.54:/s_v1/D1/1.txt 172.21.88.54:/s_v1/D2/
Stats       : 6 scanned, 6 changed mode
Speed       : 3.11 KiB in (3.15 KiB/s), 1.98 KiB out (2.00 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
[root@user-1 linux]#
```

chmod -v

The `chmod-v` option reports output for every processed object.

```
[root@user-1 linux]# ./xcp chmod -mode 111 -v file:///mnt/s_v1/D1/
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until
Sat Apr 2

mode of 'file:///mnt/s_v1/D1' changed from 0777 to 0111
mode of 'file:///mnt/s_v1/D1/1.txt' changed from 0777 to 0111
mode of 'file:///mnt/s_v1/D1/softlink_1.img' changed from 0777 to 0111
mode of 'file:///mnt/s_v1/D1/softlink_to_hardlink_1.img' changed from 0777 to 0111 mode
of 'file:///mnt/s_v1/D1/1.img' changed from 0777 to 0111
mode of 'file:///mnt/s_v1/D1/hardlink_1.img' changed from 0777 to 0111 mode of
'file:///mnt/s_v1/D1/1.img1' changed from 0777 to 0111
Xcp command : xcp chmod -mode 111 -v file:///mnt/s_v1/D1/ Stats      : 7 scanned, 7
changed mode
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 0s.
STATUS      : PASSED
[root@user-1 linux]#
```

chmod -minmem

Utilizes minimal memory.

```
[root@scs000132085-1 linux]# ./xcp chmod -minmem -mode 777
10.231.42.181:/temp7/user7
XCP <version>; (c) 2023 NetApp, Inc.; Licensed toxxx [Network Appliance, Inc]
until Sat Jul 22 21:51:18 2023

Job ID: Job_2023-04-25_09.45.00.347132_chmod
 63,343 scanned, 49,250 changed mode, 18.4 MiB in (3.46 MiB/s), 7.77 MiB out (1.46
MiB/s), 5s
 122,709 scanned, 108,302 changed mode, 37.4 MiB in (3.79 MiB/s), 17.1 MiB out
(1.85 MiB/s), 10s
.
.
.
 782,418 scanned, 759,160 changed mode, 248 MiB in (3.78 MiB/s), 119 MiB out (1.83
MiB/s), 1m7s
 842,449 scanned, 818,346 changed mode, 267 MiB in (3.66 MiB/s), 129 MiB out (1.77
MiB/s), 1m12s

Xcp command : xcp chmod -minmem -mode 777 10.231.42.181:/temp7/user7
Stats       : 878,686 scanned, 866,337 changed mode
Speed       : 281 MiB in (3.69 MiB/s), 136 MiB out (1.79 MiB/s)
Total Time  : 1m16s.
Job ID      : Job_2023-04-25_09.45.00.347132_chmod
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-
25_09.45.00.347132_chmod.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

1.12 chown

The `chown` command scans and changes the ownership of all the files for the given directory structure. The `chown` command requires NFS share or the POSIX path as a variable. XCP `chown` recursively changes the ownership for a given path. The `chown` command displays the changed user ID (UID) for a file.

Syntax

```
xcp chown -user/-group <user-name/group-name> <source NFS export path>
```

Example

```
[root@user-1 linux]# ./xcp chown -user user2 -v 172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance, Inc] until
Sat Apr 2 23:06:05 2022

changed ownership of 172.168.10.210:/s_v1/smaple_set/D1 from 1001:0 to 1004:0
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/1.txt from 1001:0 to 1004:0
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/softlink_1.img from 1001:0 to 1004:0
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/1.img from 1001:0 to 1004:0
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/hardlink_1.img from 1001:0 to 1004:0
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/softlink_to_hardlink_1.img from 1001:0 to
1004:0

Xcp command : xcp chown -user user2 -v 172.168.10.210:/s_v1/smaple_set/D1
Stats       : 6 scanned, 6 changed ownership
Speed      : 2.25 KiB in (1.82 KiB/s), 1.11 KiB out (923/s)
Total Time : 1s.
STATUS     : PASSED
[root@user-1 linux]#
```

The following table lists the `chown` parameters and their description.

Feature	Description
<code>chown -exclude <filter></code>	Excludes the files and directories that match the filter.
<code>chown -match <filter></code>	Only processes the files and directories that match the filter.
<code>chown -group <group></code>	Sets the Linux group ID (GID) at the source.
<code>chown -user <user></code>	Sets the Linux UID at the source.
<code>chown -user-from <userFrom></code>	Changes the UID.
<code>chown -group-from <groupFrom></code>	Changes the GID.
<code>chown -reference <reference></code>	The referenced file or directory.
<code>chown -v</code>	Reports the output for every processed object.
<code>Chown -minmem</code>	Utilizes minimal memory.

chown -exclude <filter>

Excludes the files and directories that match the filter.

```
[root@user-1 linux]# ./xcp chown -exclude "fnm('1.img')" -user user2
172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance, Inc] until
Sat Apr 2 23:06:05 2022

Excluded: 1 excluded, 0 did not match exclude criteria

Xcp command : xcp chown -exclude fnm('1.img') -user user2 172.168.10.210:/s_v1/smaple_set/D1
Stats       : 5 scanned, 1 excluded, 5 changed ownership
Speed      : 2.10 KiB in (1.75 KiB/s), 976 out (812/s)
Total Time : 1s.
STATUS     : PASSED
[root@user-1 linux]#
```

chown -match <filter>

This option only processes files and directories that match the filter.

```
root@user-1 linux]# ./xcp chown -match "fnm('1.img')" -user user1
172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance, Inc] until
Sat Apr 2 23:06:05 2022

Filtered: 1 matched, 5 did not match

Xcp command : xcp chown -match fnm('1.img') -user user1 172.168.10.210:/s_v1/smaple_set/D1
Stats       : 6 scanned, 1 matched, 2 changed ownership
Speed       : 1.67 KiB in (1.94 KiB/s), 484 out (562/s)
Total Time  : 0s.
STATUS      : PASSED
[root@user-1 linux]#
```

chown -group

This option sets the Linux GID at the source.

```
root@user-1 linux]# ./xcp chown -group group1 172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance, Inc] until Sat
Apr 2 23:06:05 2022

Xcp command : xcp chown -group group1 172.168.10.210:/s_v1/smaple_set/D1
Stats       : 6 scanned, 6 changed ownership
Speed       : 2.25 KiB in (1.92 KiB/s), 1.11 KiB out (974/s)
Total Time  : 1s.
STATUS      : PASSED
[root@user-1 linux]#
```

chown -user

This option sets the Linux UID at the source.

```
[root@user-1 linux]# ./xcp chown -user user1 172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance, Inc] until
Sat Apr 2 23:06:05 2022

Xcp command : xcp chown -user user1 172.168.10.210:/s_v1/smaple_set/D1
Stats       : 6 scanned, 6 changed ownership
Speed       : 2.25 KiB in (3.12 KiB/s), 1.11 KiB out (1.55 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
[root@user-1 linux]#
```

chown -user-from

Changes the UID.

```
[root@user-1 linux]# ./xcp chown -user-from user1 -user user2
172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance, Inc] until Sat
Apr 2 23:06:05 2022

Xcp command : xcp chown -user-from user1 -user user2 172.168.10.210:/s_v1/smaple_set/D1
Stats       : 6 scanned, 6 changed ownership
Speed       : 2.25 KiB in (2.44 KiB/s), 1.11 KiB out (1.21 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
[root@user-1 linux]#
```

chown -group-from

Changes the GID.

```
[root@user-1 linux]# ./xcp chown -group-from group1 -group group2
172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance, Inc]
until Sat Apr 2 23:06:05 2022

Xcp command : xcp chown -group-from group1 -group group2
172.168.10.210:/s_v1/smaple_set/D1
Stats          : 6 scanned, 6 changed ownership
Speed          : 2.25 KiB in (4.99 KiB/s), 1.11 KiB out (2.47 KiB/s)
Total Time    : 0s.
STATUS        : PASSED
[root@user-1 linux]#
```

chown -reference

The referenced file or directory point.

```
[root@user-1 linux]# ./xcp chown -reference 172.168.10.210:/s_v1/smaple_set/D2/2.img
172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance,
Inc] until Sat Apr 2 23:06:05 2022

Xcp command : xcp chown -reference 172.168.10.210:/s_v1/smaple_set/D2/2.img
172.168.10.210:/s_v1/smaple_set/D1
Stats          : 6 scanned, 6 changed ownership
Speed          : 3.11 KiB in (6.25 KiB/s), 2.01 KiB out (4.05 KiB/s)
Total Time    : 0s.
STATUS        : PASSED
[root@user-1 linux]#
```

chown -v

Reports the output for every object processed.

```
[root@user-1 linux]# ./xcp chown -user-from user2 -v -user user1
172.168.10.210:/s_v1/smaple_set/D1
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to Netapp-user-1 [Network Appliance, Inc] until
Sat Apr 2 23:06:05 2022

changed ownership of 172.168.10.210:/s_v1/smaple_set/D1 from 1004:1003 to 1001:1003
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/1.img from 1004:1003 to 1001:1003
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/1.txt from 1004:1003 to 1001:1003
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/softlink_1.img from 1004:1003 to
1001:1003
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/softlink_to_hardlink_1.img from
1004:1003 to 1001:1003
changed ownership of 172.168.10.210:/s_v1/smaple_set/D1/hardlink_1.img from 1004:1003 to
1001:1003

Xcp command : xcp chown -user-from user2 -v -user user1 172.168.10.210:/s_v1/smaple_set/D1
Stats          : 6 scanned, 6 changed ownership
Speed          : 2.25 KiB in (2.02 KiB/s), 1.11 KiB out (1.00 KiB/s)
Total Time    : 1s.
STATUS        : PASSED
[root@user-1
```

chown -minmem

Utilizes minimal memory.

```
[root@user1 linux]# ./xcp chown -minmem -user demo1 10.231.42.181:/temp7/user7
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until Sat Jul
22 21:51:18 2023

Job ID: Job_2023-04-25_09.42.34.290387_chown
 45,566 scanned, 19,342 changed ownership, 11.0 MiB in (1.92 MiB/s), 3.12 MiB out (561 KiB/s),
6s
 108,382 scanned, 84,898 changed ownership, 31.5 MiB in (3.93 MiB/s), 13.4 MiB out (1.97
MiB/s), 11s
 167,843 scanned, 144,692 changed ownership, 50.7 MiB in (3.64 MiB/s), 22.8 MiB out .
.
.
.
878,686 scanned, 873,176 changed ownership, 282 MiB in (3.10 MiB/s), 137 MiB out (1.80 MiB/s),
1m21s

Xcp command : xcp chown -minmem -user demo1 10.231.42.181:/temp7/user7
Stats       : 878,686 scanned, 878,686 changed ownership
Speed       : 283 MiB in (3.45 MiB/s), 138 MiB out (1.69 MiB/s)
Total Time  : 1m21s.
Job ID      : Job_2023-04-25_09.42.34.290387_chown
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_09.42.34.290387_chown.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

1.13 logdump

The `logdump` command filters logs based on the migration ID or job ID and dumps those logs into a `.zip` file in the current directory. The `.zip` file has the same name as the migration or job ID that is used with the command.

Syntax

```
xcp logdump -m <migration ID>
xcp logdump -j <job ID>
```

Example

```
[[root@scs000052751 xcp_nfs]# xcp logdump -j Job_2022-06-14_21.49.28.060943_scan
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp: Job ID: Job_2022-06-14_21.52.48.744198_logdump

Xcp command : xcp logdump -j Job_2022-06-14_21.49.28.060943_scan
Stats       :
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 0s.
Job ID      : Job_2022-06-14_21.52.48.744198_logdump
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2022-06-14_21.52.48.744198_logdump.log
STATUS      : PASSED
[root@scs000052751 xcp_nfs]# ls Job_2022-06-14_21.49.28.060943_scan
Job_2022-06-14_21.49.28.060943_scan.log supplementary
[root@scs000052751 xcp_nfs]# ls Job_2022-06-14_21.49.28.060943_scan/supplementary/
Job_idx_2022-06-14_21.46.05.167338_copy.log Job_idx_2022-06-14_21.47.41.868410_sync.log
xcp_history.json
```

```

Job_idx_2022-06-14_21.46.35.134294_sync.log Job_idx_2022-06-
14_21.48.00.085869_sync.log
[root@scs000052751 xcp_nfs]#

[root@scs000052751 xcp_nfs]# ./xcp logdump -m idx
XCP <version>; (c) 2022 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00
2029

xcp: Job ID: Job_2022-06-14_21.56.04.218977_logdump

Xcp command : xcp logdump -m idx
Stats :
Speed : 0 in (0/s), 0 out (0/s)
Total Time : 0s.
Job ID : Job_2022-06-14_21.56.04.218977_logdump
Log Path : /opt/NetApp/xFiles/xcp/xcplogs/Job_2022-06-14_21.56.04.218977_logdump.log
STATUS : PASSED
[root@scs000052751 xcp_nfs]# ls idx
Job_idx_2022-06-14_21.46.05.167338_copy.log Job_idx_2022-06-14_21.47.41.868410_sync.log
xcp_history.json
Job_idx_2022-06-14_21.46.35.134294_sync.log Job_idx_2022-06-14_21.48.00.085869_sync.log

```

1.14 delete

The delete command deletes everything in a given path.

Syntax

```
[root@localhost /]# ./xcp delete <NFS export path>
```

Example

```

root@localhost dest_vol]# /xcp/linux/xcp delete <IP address of destination
NFSserver>:/dest_vol
XCP 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

WARNING: You have selected <IP address of destination NFS server>:/dest_vol for
removing data.Data in this path /dest_vol will be deleted.
Are you sure you want to delete (yes/no): yes
Recursively removing data in <IP address of destination NFS server>:/dest_vol ...
 31,996 scanned, 5,786 removes, 3 rmdirs, 8.27 MiB in (1.65 MiB/s), 1.52 MiB out (312
KiB/s), 5s
 40,324 scanned, 19,829 removes, 22 rmdirs, 12.2 MiB in (799 KiB/s), 3.89 MiB out
(485 KiB/s),10s
 54,281 scanned, 32,194 removes, 2,365 rmdirs, 17.0 MiB in (991 KiB/s), 6.15 MiB out
(463 KiB/s),15s
 75,869 scanned, 44,903 removes, 4,420 rmdirs, 23.4 MiB in (1.29 MiB/s), 8.60
MiB out (501KiB/s), 20s
 85,400 scanned, 59,728 removes, 5,178 rmdirs, 27.8 MiB in (881 KiB/s), 11.1 MiB out
(511 KiB/s),25s
106,391 scanned, 76,229 removes, 6,298 rmdirs, 34.7 MiB in (1.39 MiB/s), 14.0
MiB out (590KiB/s), 30s
122,107 scanned, 93,203 removes, 7,448 rmdirs, 40.9 MiB in (1.24 MiB/s), 16.9
MiB out (606KiB/s), 35s
134,633 scanned, 109,815 removes, 9,011 rmdirs, 46.5 MiB in (1.12 MiB/s), 20.0
MiB out (622KiB/s), 40s

```

```

134,633 scanned, 119,858 removes, 9,051 rmdirs, 47.9 MiB in (288 KiB/s), 21.4
MiB out (296KiB/s), 45s
134,633 scanned, 119,858 removes, 9,051 rmdirs, 47.9 MiB in (0/s), 21.4 MiB out (0/s), 50s
134,633 scanned, 121,524 removes, 9,307 rmdirs, 48.2 MiB in (51.7 KiB/s), 21.7
MiB out (49.5KiB/s), 55s

Xcp command : xcp delete <IP address of destination NFS
server>:/dest_voll134,633 scanned, 0 matched, 134,632 delete
items, 0 error
Speed      : 48.7 MiB in (869 KiB/s), 22.2 MiB out
(396 KiB/s)Total Time : 57s.
STATUS     : PASSED

```

The following table lists the `delete` parameters and their description.

Feature	Description
<code>delete -match <filter></code>	Only processes the files and directories that match the filter.
<code>delete -force</code>	Delete without confirmation.
<code>delete -removetopdir</code>	Remove the directory including child directories.
<code>delete -exclude <filter></code>	Exclude the files and directories that match the filter.
<code>delete -parallel <n></code>	Maximum concurrent batch processes (default: 7)
<code>delete -preserve-ctime</code>	Preserves access time of the file or directory (default: false).
<code>delete -minmem</code>	Utilizes minimal memory.
<code>delete -loglevel <name></code>	Option to set log the level; available levels are INFO, DEBUG (default: INFO).
<code>delete -s3.insecure</code>	Provides the option to use HTTP instead of HTTPS for S3 bucket communication.
<code>delete -s3.endpoint <S3 endpoint Url></code>	Overrides the default AWS endpoint URL with the specified URL for S3 bucket communication.
<code>delete -s3.profile <profile-name></code>	Specifies a profile from the AWS credential file for S3 bucket communication.
<code>delete -s3.noverify</code>	Overrides the default verification of SSL certification for S3 bucket communication.

delete -match <filter>

Only processes the files and directories that match the filter.

```
[root@client1 linux]# ./xcp delete -match "fnm('XCP_copy_2023-04-25_05.51.28.315997')"  
10.234.94.159:/xcp_catalog  
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until Sat Jul  
22 21:51:18 2023  
  
Job ID: Job_2023-04-25_06.10.29.637371_delete  
WARNING: You have selected 10.234.94.159:/xcp_catalog for removing data. Data in this path  
/xcp_catalog will be deleted.  
Are you sure you want to delete (yes/no): yes  
Recursively removing data in 10.234.94.159:/xcp_catalog ...  
  
Xcp command : xcp delete -match fnm('XCP_copy_2023-04-25_05.51.28.315997')  
10.234.94.159:/xcp_catalog  
Stats          : 209 scanned, 14 matched, 12 removes, 2 rmdirs  
Speed           : 58.9 KiB in (18.6 KiB/s), 8.25 KiB out (2.60 KiB/s)  
Total Time      : 3s.  
Job ID          : Job_2023-04-25_06.10.29.637371_delete  
Log Path        : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_06.10.29.637371_delete.log  
STATUS          : PASSED  
[root@scs000132085-1 linux]#
```

delete - force

Delete without confirmation.

```
[root@client1 linux]# ./xcp delete -force
10.234.94.159:/xcp_catalog/catalog/indexes/XCP_copy_2023-04-25_05.53.58.273910
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx[ Network Appliance, Inc] until Sat Jul 22
21:51:18 2023

Job ID: Job_2023-04-25_06.11.30.584440_delete
WARNING: You have selected 10.234.94.159:/xcp_catalog/catalog/indexes/XCP_copy_2023-04-
25_05.53.58.273910 for removing data. Data in this path
/xcp_catalog/catalog/indexes/XCP_copy_2023-04-25_05.53.58.273910 will be deleted.
Recursively removing data in 10.234.94.159:/xcp_catalog/catalog/indexes/XCP_copy_2023-04-
25_05.53.58.273910 ...

Xcp command : xcp delete -force 10.234.94.159:/xcp_catalog/catalog/indexes/XCP_copy_2023-04-
25_05.53.58.273910
Stats       : 14 scanned, 12 removes, 1 rmdir
Speed       : 6.44 KiB in (4.73 KiB/s), 3.59 KiB out (2.64 KiB/s)
Total Time  : 1s.
Job ID      : Job_2023-04-25_06.11.30.584440_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_06.11.30.584440_delete.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

delete -removetopdir

Removes the directory, including child directories.

```
[root@client1 linux]# ./xcp delete -force -loglevel DEBUG -removetopdir
10.231.42.181:/temp7/user9
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until Sat Jul
22 21:51:18 2023

Job ID: Job_2023-04-25_08.03.38.218893_delete
WARNING: You have selected 10.231.42.181:/temp7/user9 for removing data. Data in this path
/temp7/user9 will be deleted.
Recursively removing data in 10.231.42.181:/temp7/user9 ...
 50,500 scanned, 16,838 removes, 11.5 MiB in (2.27 MiB/s), 2.70 MiB out (547 KiB/s), 5s
 85,595 scanned, 43,016 removes, 21.5 MiB in (1.97 MiB/s), 6.70 MiB out (806 KiB/s), 10s
.
.
.
 1.01M scanned, 999,771 removes, 1,925 rmdirs, 324 MiB in (1.42 MiB/s), 153 MiB out (922
KiB/s), 3m6s

Xcp command : xcp delete -force -loglevel DEBUG -removetopdir 10.231.42.181:/temp7/user9
Stats       : 1.01M scanned, 1.01M removes, 2,041 rmdirs
Speed       : 326 MiB in (1.73 MiB/s), 155 MiB out (842 KiB/s)
Total Time  : 3m8s.
Job ID      : Job_2023-04-25_08.03.38.218893_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_08.03.38.218893_delete.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

delete - exclude <filter>

Excludes the files and directories that match the filter.

```
[root@client1 linux]# ./xcp delete -force -exclude "fnm('USER5')" 10.231.42.181:/temp7/user2/
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until Sat Jul 22
21:51:18 2023

Job ID: Job_2023-04-25_07.54.25.241216_delete
WARNING: You have selected 10.231.42.181:/temp7/user2 for removing data. Data in this path
/temp7/user2 will be deleted.
Recursively removing data in 10.231.42.181:/temp7/user2 ...
 29,946 scanned, 1 excluded, 6,492 removes, 977 rmdirs, 7.42 MiB in (1.48 MiB/s), 1.54 MiB out
(316 KiB/s), 5s

Xcp command : xcp delete -force -exclude fnm('USER5') 10.231.42.181:/temp7/user2/
Stats       : 29,946 scanned, 1 excluded, 28,160 removes, 1,785 rmdirs
Speed       : 10.6 MiB in (1.18 MiB/s), 5.03 MiB out (574 KiB/s)
Total Time  : 8s.
Job ID      : Job_2023-04-25_07.54.25.241216_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_07.54.25.241216_delete.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

delete -parallel <n>

Maximum concurrent batch processes (default: 7)

```
[root@client1 linux]# ./xcp delete -force -parallel 8 -match "fnm('2023-04-
25_05.49.26.733160*')" 10.234.94.159:/xcp_catalog/
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until Sat Jul 22
21:51:18 2023

Job ID: Job_2023-04-25_06.15.27.024987_delete
WARNING: You have selected 10.234.94.159:/xcp_catalog for removing data. Data in this path
/xcp_catalog will be deleted.
Recursively removing data in 10.234.94.159:/xcp_catalog ...

Xcp command : xcp delete -force -parallel 8 -match fnm('2023-04-25_05.49.26.733160*')
10.234.94.159:/xcp_catalog/
Stats       : 182 scanned, 1 matched, 1 remove
Speed       : 50.0 KiB in (115 KiB/s), 5.45 KiB out (12.5 KiB/s)
Total Time  : 0s.
Job ID      : Job_2023-04-25_06.15.27.024987_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_06.15.27.024987_delete.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

delete - preserve-atime

Preserves access time of the file or directory (default: false).

```
[root@client1 linux]# ./xcp delete -force -preserve-atime <IP_address>:/temp7/user2/
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until Sat Jul 22
21:51:18 2023

Job ID: Job_2023-04-25_07.55.30.972162_delete
WARNING: You have selected <IP_address>:/temp7/user2 for removing data. Data in this path
/temp7/user2 will be deleted.
Recursively removing data in <IP_address>:/temp7/user2 ...

Xcp command : xcp delete -force -preserve-atime <IP_address>:/temp7/user2/
Stats       : 256 scanned, 255 rmdirs
Speed       : 199 KiB in (108 KiB/s), 75.7 KiB out (41.1 KiB/s)
Total Time  : 1s.
Job ID      : Job_2023-04-25_07.55.30.972162_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_07.55.30.972162_delete.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

delete -minmem

Utilizes minimal memory.

```
root@client1 linux]# ./xcp delete -force -parallel 8 -minmem 10.231.42.181:/temp7/user8
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until Sat Jul 22
21:51:18 2023

Job ID: Job_2023-04-25_08.11.41.729568_delete
WARNING: You have selected 10.231.42.181:/temp7/user8 for removing data. Data in this path
/temp7/user8 will be deleted.
Recursively removing data in 10.231.42.181:/temp7/user8 ...
 45,553 scanned, 11,972 removes, 9.92 MiB in (1.70 MiB/s), 1.94 MiB out (340 KiB/s), 6s
 75,586 scanned, 44,409 removes, 19.9 MiB in (1.72 MiB/s), 6.91 MiB out (878 KiB/s), 12s
.
.
.
.
 363,856 scanned, 352,559 removes, 606 rmdirs, 115 MiB in (1.27 MiB/s), 54.2 MiB out (862
KiB/s), 1m8s

Xcp command : xcp delete -force -parallel 8 -minmem 10.231.42.181:/temp7/user8
Stats       : 363,856 scanned, 363,090 removes, 765 rmdirs
Speed       : 117 MiB in (1.65 MiB/s), 55.7 MiB out (807 KiB/s)
Total Time  : 1m10s.
Job ID      : Job_2023-04-25_08.11.41.729568_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_08.11.41.729568_delete.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

delete -loglevel <name>

Option to set log the level; available levels are INFO, DEBUG (default: INFO).

```
[root@client1 linux]# ./xcp delete -force -loglevel DEBUG -removetopdir
10.231.42.181:/temp7/user9
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until
Sat Jul 22 21:51:18 2023

Job ID: Job_2023-04-25_08.03.38.218893_delete
WARNING: You have selected 10.231.42.181:/temp7/user9 for removing data. Data in this
path /temp7/user9 will be deleted.
Recursively removing data in 10.231.42.181:/temp7/user9 ...
  50,500 scanned, 16,838 removes, 11.5 MiB in (2.27 MiB/s), 2.70 MiB out (547 KiB/s), 5s
  85,595 scanned, 43,016 removes, 21.5 MiB in (1.97 MiB/s), 6.70 MiB out (806 KiB/s),
  10s
  .
  .
  .
  1.01M scanned, 999,771 removes, 1,925 rmdirs, 324 MiB in (1.42 MiB/s), 153 MiB out
  (922 KiB/s), 3m6s

Xcp command : xcp delete -force -loglevel DEBUG -removetopdir
10.231.42.181:/temp7/user9
Stats       : 1.01M scanned, 1.01M removes, 2,041 rmdirs
Speed       : 326 MiB in (1.73 MiB/s), 155 MiB out (842 KiB/s)
Total Time  : 3m8s.
Job ID      : Job_2023-04-25_08.03.38.218893_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-25_08.03.38.218893_delete.log
STATUS      : PASSED
[root@scs000132085-1 linux]#
```

delete -s3.insecure

Provides the option to use HTTP instead of HTTPS for S3 bucket communication.

```
[root@client1 linux]# ./xcp delete -s3.insecure s3:// bucket1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xxx yyyy

Job ID: Job_2023-06-08_08.51.40.849991_delete
WARNING: You have selected s3://bucket1 for removing data. Data in this path //bucket1 will be
deleted.
Are you sure you want to delete (yes/no): yes
Recursively removing data in s3://bucket1 ...

Xcp command : xcp delete -s3.insecure s3://bucket1
Stats       : 8 scanned, 6 s3.objects, 6 s3.removed
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 5s.
Job ID      : Job_2023-06-08_08.51.40.849991_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-08_08.51.40.849991_delete.log
STATUS      : PASSED
```

delete -s3.endpoint <S3 endpoint Url>

Overrides the AWS endpoint URL with the specified URL for S3 bucket communication.

```
[root@client1 linux]# ./xcp delete -s3.endpoint https://<endpoint_url>: s3://xcp-testing
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_2023-06-13_11.39.33.042545_delete
WARNING: You have selected s3://xcp-testing for removing data. Data in this path //xcp-testing
will be deleted.
Are you sure you want to delete (yes/no): yes
Recursively removing data in s3://xcp-testing ...

Xcp command : xcp delete -s3.endpoint https://<endpoint_url>: s3://xcp-testing
Stats       : 8 scanned, 5 s3.objects, 5 s3.removed
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 4s.
Job ID      : Job_2023-06-13_11.39.33.042545_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-13_11.39.33.042545_delete.log
STATUS      : PASSED
```

delete -s3.profile <profile-name>

Specifies a profile from the AWS credential file for S3 bucket communication.

```
[root@client1 linux]# ./xcp delete -s3.profile sg -s3.endpoint https://<endpoint_url>:
s3://bucket
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx[Network Appliance, Inc] until xxxx yyyy

Job ID: Job_2023-06-08_08.53.19.059745_delete
WARNING: You have selected s3://bucket for removing data. Data in this path //bucket will be
deleted.
Are you sure you want to delete (yes/no): yes
Recursively removing data in s3://bucket ...
  1 scanned, 0 in (0/s), 0 out (0/s), 5s

Xcp command : xcp delete -s3.profile sg -s3.endpoint https://<endpoint_url>: s3:/ bucket
Stats       : 7 scanned, 5 s3.objects, 5 s3.removed
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 9s.
Job ID      : Job_2023-06-08_08.53.19.059745_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-08_08.53.19.059745_delete.log
STATUS      : PASSED
```

delete - s3.noverify

Overrides the default verification of SSL certification for S3 bucket communication.

```
[root@client-1 linux]# ./xcp delete -s3.noverify s3://bucket1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until xx yyyy

Job ID: Job_2023-06-13_10.56.19.319076_delete
WARNING: You have selected s3://bucket1 for removing data. Data in this path //bucket1 will be
deleted.
Are you sure you want to delete (yes/no): yes
Recursively removing data in s3://bucket1 ...
 2,771 scanned, 0 in (0/s), 0 out (0/s), 5s
 9,009 scanned, 9,005 s3.objects, 2,000 s3.removed, 0 in (0/s), 0 out (0/s), 10s

Xcp command : xcp delete -s3.noverify s3://bucket1
Stats       : 9,009 scanned, 9,005 s3.objects, 9,005 s3.removed
Speed       : 0 in (0/s), 0 out (0/s)
Total Time  : 15s.
Job ID      : Job_2023-06-13_10.56.19.319076_delete
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-06-13_10.56.19.319076_delete.log
STATUS      : PASSED
```

1.15 estimate

The XCP estimation feature is used to estimate the time to complete a baseline copy from the source to destination. It calculates the estimated time to do baseline copy by using all of the current available system resources, such as CPU, RAM, Network, and other parameters. You can use the `-target` option to start a sample copy operation and get the estimation time.

Syntax

```
./xcp estimate -id <newid>
```

Example

```
[root@client-01linux]# ./xcp estimate -t 100 -id estimate01 -target 10.230.12.11:/temp8
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until Sat Apr 22
22:24:56 2023

xcp: WARNING: your license will expire in less than 10 days! You can renew your license at
https://xcp.netapp.com
Job ID: Job_2023-04-12_08.09.16.126908_estimate
Starting live test for 1m40s to estimate time to copy '10.230.12.11:/temp4' to
'10.230.12.11:/temp8'...
estimate regular file copy task completed before the 1m40s duration
  0 in (0/s), 0 out (0/s), 5s
  0 in (0/s), 0 out (0/s), 10s
Estimated time to copy '10.230.12.11:/temp4' to '10.230.12.11:/temp8' based on a 1m40s live test:
5.3s

Xcp command : xcp estimate -t 100 -id estimate01 -target 10.230.12.11:/temp8
Estimated Time : 5.3s
Job ID       : Job_2023-04-12_08.09.16.126908_estimate
Log Path     : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-12_08.09.16.126908_estimate.log
STATUS      : PASSED
[root@client-01linux]#
```

The following table lists the `estimate` parameters and their description.

Feature	Description
<code>estimate -id <name></code>	The catalog name of a previous copy or scan index.
<code>estimate -gbit <n></code>	Uses gigabits of bandwidth to estimate best-case time (default: 1).
<code>estimate -target <path></code>	The target to use for live test copy.
<code>estimate -t <n[s m h]></code>	The duration of live test copy (default: 5m).
<code>estimate -bs <n[k]>></code>	The read/write block size (default: 64k).
<code>estimate -dircount <n[k]></code>	The request size for reading directories (default: 64k).
<code>estimate -parallel <n></code>	The maximum concurrent batch processes (default: 7).
<code>estimate -preserve-ctime</code>	Preserves access time of the file or directory (default: False).
<code>estimate -loglevel <name></code>	Option to set the log level; available levels are INFO, DEBUG (default: INFO)

estimate -id <name>

The catalog name of a previous copy or scan index.

```
[root@client1 linux]# ./xcp estimate -id csdata01
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until xx
YYYY
xcp: WARNING: your license will expire in less than 11 days! You can renew your license at
https://xcp.netapp.com
xcp: WARNING: XCP catalog volume is low on disk space: 99.99% used, 62.0 MiB free space.
Job ID: Job_2023-04-20_12.59.31.260914_estimate
== Best-case estimate to copy 'data-set:/user1given 1 gigabit of bandwidth ==
112 TiB of data at max 128 MiB/s: at least 10d13h

Xcp command : xcp estimate -id csdata01
Estimated Time : 10d13h
Job ID       : Job_2023-04-20_12.59.31.260914_estimate
Log Path     : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-20_12.59.31.260914_estimate.log
STATUS      : PASSED
xcp: WARNING: XCP catalog volume is low on disk space: 99.99% used, 62.0 MiB free space.
[root@client1 linux]#
```

estimate -gbit <n>

Uses gigabits of bandwidth to estimate best-case time (default: 1). This option cannot be used with the -target option.

```
[root@client-01linux]# ./xcp estimate -gbit 10 -id estimate01
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until xx yyyy
xcp: WARNING: your license will expire in less than 10 days! You can renew your license at
https://xcp.netapp.com
Job ID: Job_2023-04-12_08.12.28.453735_estimate
== Best-case estimate to copy '10.230.12.11:/temp4' given 10 gigabits of bandwidth ==
0 of data at max 1.25 GiB/s: at least 0.0s

Xcp command : xcp estimate -gbit 10 -id estimate01
Estimated Time : 0.0s
Job ID       : Job_2023-04-12_08.12.28.453735_estimate
Log Path     : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-12_08.12.28.453735_estimate.log
STATUS      : PASSED
[root@client-01linux]#
```

estimate -target <path>

The target to use for live test copy.

```
[root@client-01linux]# ./xcp estimate -t 100 -id estimate01 -target 10.230.12.11:/temp8
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until xx
YYYY

xcp: WARNING: your license will expire in less than 10 days! You can renew your license at
https://xcp.netapp.com
```

```
Job ID: Job_2023-04-12_08.09.16.126908_estimate
Starting live test for 1m40s to estimate time to copy '10.230.12.11:/temp4' to
'10.230.12.11:/temp8'...
estimate regular file copy task completed before the 1m40s duration
Log Path      : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-12_08.09.16.126908_estimate.log
STATUS        : PASSED
[root@client-01linux]#
```

estimate -t <n[s|m|h]>

The duration of live test copy (default: 5m).

```
[root@client-01linux]# ./xcp estimate -t 100 -id estimate01 -target 10.230.12.11:/temp8
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until Sat Apr
22 22:24:56 2023

xcp: WARNING: your license will expire in less than 10 days! You can renew your license at
https://xcp.netapp.com
Job ID: Job_2023-04-12_08.09.16.126908_estimate
Starting live test for 1m40s to estimate time to copy '10.230.12.11:/temp4' to
'10.230.12.11:/temp8'...
estimate regular file copy task completed before the 1m40s duration
  0 in (0/s), 0 out (0/s), 5s
  0 in (0/s), 0 out (0/s), 10s
Estimated time to copy '10.230.12.11:/temp4' to '10.230.12.11:/temp8' based on a 1m40s live
test: 5.3s

Xcp command : xcp estimate -t 100 -id estimate01 -target 10.230.12.11:/temp8
Estimated Time : 5.3s
Job ID        : Job_2023-04-12_08.09.16.126908_estimate
Log Path      : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-12_08.09.16.126908_estimate.log
STATUS        : PASSED
[root@client-01linux]#
```

estimate -bs <n[k]>

The read/write block size (default: 64k).

```
[root@client1 linux]# ./xcp estimate -id estimate01 -bs 128k
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until Mon May 1
22:17:00 2023

xcp: WARNING: your license will expire in less than 7 days! You can renew your license at
https://xcp.netapp.com
Job ID: Job_2023-04-24_08.44.12.564441_estimate
  63.2 KiB in (12.5 KiB/s), 2.38 KiB out (484/s), 5s
== Best-case estimate to copy 'xxx' given 1 gigabit of bandwidth ==
112 TiB of data at max 128 MiB/s: at least 10d13h

Xcp command : xcp estimate -id estimate01 -bs 128k
Estimated Time : 10d13h
Job ID        : Job_2023-04-24_08.44.12.564441_estimate
Log Path      : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-24_08.44.12.564441_estimate.log
STATUS        : PASSED
[root@scs000058362-1 linux]#
```

estimate -dircount <n[k]>

The requested size for reading directories (default: 64k).

```
[root@client1 linux]# ./xcp estimate -id csdata01 -dircount 128k -t 300 -target <path>
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until Mon May
1 22:17:00 2023

xcp: WARNING: your license will expire in less than 11 days! You can renew your license at
https://xcp.netapp.com
xcp: WARNING: XCP catalog volume is low on disk space: 99.99% used, 61.6 MiB free space.
Job ID: Job_2023-04-20_13.03.46.820673_estimate
Starting live test for 5m0s to estimate time to copy 'data-set:/user1 to '<path>'...
 1,909 scanned, 126 copied, 2 giants, 580 MiB in (115 MiB/s), 451 MiB out (89.5 MiB/s), 5s
 1,909 scanned, 134 copied, 2 giants, 1.23 GiB in (136 MiB/s), 1015 MiB out (112 MiB/s), 10s
 1,909 scanned, 143 copied, 2 giants, 1.88 GiB in (131 MiB/s), 1.54 GiB out (113 MiB/s), 15s
.
.
.
7,136 scanned, 2,140 copied, 4 linked, 8 giants, 33.6 GiB in (110 MiB/s), 32.4 GiB out (110
MiB/s), 4m57s
Sample test copy completed for, 300.03s
 0 in (-7215675436.180/s), 0 out (-6951487617.036/s), 5m2s
 2,186 scanned, 610 KiB in (121 KiB/s), 76.9 KiB out (15.3 KiB/s), 5m7s
Estimated time to copy 'data-set:/user1to '10.230.12.11:/mapr11' based on a 5m0s live test:
7d6h

Xcp command : xcp estimate -id csdata01 -dircount 128k -t 300 -target 10.230.12.11:/mapr11
Estimated Time : 7d6h
Job ID      : Job_2023-04-20_13.03.46.820673_estimate
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-20_13.03.46.820673_estimate.log
STATUS      : PASSED
xcp: WARNING: XCP catalog volume is low on disk space: 99.99% used, 61.6 MiB free space.
[root@client1 linux]#
```

estimate -parallel <n>

The maximum concurrent batch processes (default: 7).

```
[root@client1 linux]# ./xcp estimate -loglevel DEBUG -parallel 8 -id estimate1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until Mon May 1
22:17:00 2023

xcp: WARNING: your license will expire in less than 11 days! You can renew your license at
https://xcp.netapp.com
Job ID: Job_2023-04-20_11.36.45.535209_estimate
== Best-case estimate to copy '10.60.251.66:/users009/xxx/mnt' given 1 gigabit of bandwidth ==
6.75 GiB of data at max 128 MiB/s: at least 54.0s

Xcp command : xcp estimate -loglevel DEBUG -parallel 8 -id estimate1
Estimated Time : 54.0s
Job ID      : Job_2023-04-20_11.36.45.535209_estimate
Log Path    : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-20_11.36.45.535209_estimate.log
STATUS      : PASSED
[root@client1 linux]#
```

estimate -preserve-atime

Preserves access time of the file or directory (default: False).

```
[root@client1 linux]# ./xcp estimate -loglevel DEBUG -preserve-atime -id estimate1
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until Mon
May 1 22:17:00 2023

xcp: WARNING: your license will expire in less than 11 days! You can renew your license at
https://xcp.netapp.com
Job ID: Job_2023-04-20_11.19.04.050516_estimate
== Best-case estimate to copy '10.60.251.66:/users009/xxx/mnt' given 1 gigabit of bandwidth
==
6.75 GiB of data at max 128 MiB/s: at least 54.0s

Xcp command : xcp estimate -loglevel DEBUG -preserve-atime -id estimate1
Estimated Time : 54.0s
Job ID       : Job_2023-04-20_11.19.04.050516_estimate
Log Path     : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-20_11.19.04.050516_estimate.log
STATUS      : PASSED
[root@client1 linux]#
```

estimate -loglevel <name>

Option to set the log level; available levels are INFO, DEBUG (default: INFO)

```
[root@client1 linux]# ./xcp estimate -loglevel DEBUG -id estimate01
XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until Mon May
1 22:17:00 2023
xcp: WARNING: your license will expire in less than 11 days! You can renew your license at
https://xcp.netapp.com
Job ID: Job_2023-04-20_11.16.17.271440_estimate
== Best-case estimate to copy 'file:///u/xxxx/mnt' given 1 gigabit of bandwidth ==
6.75 GiB of data at max 128 MiB/s: at least 54.0s

Xcp command : xcp estimate -loglevel DEBUG -id estimate01
Estimated Time : 54.0s
Job ID       : Job_2023-04-20_11.16.17.271440_estimate
Log Path     : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04-20_11.16.17.271440_estimate.log
STATUS      : PASSED
[root@client1 linux]#
```

2 XCP NFS Use Cases

This section provides the most common XCP NFS migration use cases.

2.1 How to Transition 7-Mode NFSv3 Storage to ONTAP

This section covers the step-by-step procedure for transitioning a source 7-Mode NFSv3 export to an ONTAP system.

Note: NetApp assumes that the source 7-Mode NFSv3 volume is exported and mounted on the client system and that XCP is already installed on a Linux system.

Task Table 1) Transitioning 7-Mode NFSv3 Export to ONTAP.

✓ Step	Description
1.	Verify that the target ONTAP system is healthy. <pre> CLUSTER::> cluster show Node Health Eligibility ----- CLUSTER-01 true true CLUSTER-02 true true 2 entries were displayed. CLUSTER::> node show Node Health Eligibility Uptime Model Owner Location ----- CLUSTER-01 true true 78 days 21:01 FAS8060 CLUSTER-02 true true 78 days 20:50 FAS8060 2 entries were displayed. CLUSTER::> storage failover show Node Partner Takeover Possible State Description ----- CLUSTER-01 CLUSTER-02 true Connected to CLUSTER-02 CLUSTER-02 CLUSTER-01 true Connected to CLUSTER-01 2 entries were displayed. </pre>
2.	Verify that at least one non-root aggregate exists on the target system. The aggregate is normal. <pre> CLUSTER::> storage aggregate show Aggregate Size Available Used% State #Vols Nodes RAID Status ----- aggr0 368.4GB 17.85GB 95% online 1 CLUSTER-01 raid_dp, normal aggr0_CLUSTER_02_0 368.4GB 17.85GB 95% online 1 CLUSTER-02 raid_dp, normal source 1.23TB 1.10TB 11% online 6 CLUSTER-01 raid_dp, normal 3 entries were displayed. </pre> Note: If there is no data aggregate, create a new one using the <code>storage aggr create</code> command.
3.	Create an SVM on the target cluster system. <pre> CLUSTER::> vserver create -vserver dest -rootvolume dest_root -aggregate poc - rootvolume-security-style mixed [Job 647] Job succeeded: Vserver creation completed Verify the security style and language settings of the source </pre> Verify the SVM was created

✓	Step	Description														
		<pre>CLUSTER::> vserver show -vserver dest Vserver: dest Vserver Type: data Vserver Subtype: default Vserver UUID: 91f6d786-0063-11e5-b114-00a09853a969 Root Volume: dest_root Aggregate: poc NIS Domain: - Root Volume Security Style: mixed LDAP Client: - Default Volume Language Code: C.UTF-8 Snapshot Policy: default Comment: Quota Policy: default List of Aggregates Assigned: - Limit on Maximum Number of Volumes allowed: unlimited Vserver Admin State: running Vserver Operational State: running Vserver Operational State Stopped Reason: - Allowed Protocols: nfs, cifs, fcp, iscsi, ndmp Disallowed Protocols: - Is Vserver with Infinite Volume:false QoS Policy Group: - Config Lock: false IPspace Name: Default</pre>														
	4.	Remove the <code>fcp</code>, <code>iscsi</code>, <code>ndmp</code>, and <code>cifs</code> protocols from the target SVM. <pre>CLUSTER::> vserver remove-protocols -vserver dest -protocols fcp,iscsi,ndmp,cifs</pre> Verify <code>nfs</code> is the allowed protocol for this SVM <pre>CLUSTER::> vserver show -vserver dest -fields allowed-protocols vserver allowed-protocols ----- dest nfs</pre>														
	5.	Create a new read-write data volume on the destination SVM. Verify that the security style, language settings, and capacity requirements match the source volume. <pre>CLUSTER::> vol create -vserver dest -volume dest_nfs -aggregate poc -size 150g - type RW -state online -security-style mixed [Job 648] Job succeeded: Successful</pre>														
	6.	Create a data LIF to serve NFS client requests. <pre>CLUSTER::> network interface create -vserver dest -lif dest_lif -<IP address of NFS server> -netmask 255.255.255.0 -role data -data-protocol nfs -home-node CLUSTER-01 -home-port e0i</pre> Verify the LIF is successfully created. <pre>CLUSTER::> network interface show -vserver dest</pre> <table><thead><tr><th>Vserver</th><th>Logical Interface</th><th>Status Admin/Oper</th><th>Network Address/Mask</th><th>Current Node</th><th>Current Port</th><th>Is Home</th></tr></thead><tbody><tr><td>dest</td><td>dest_lif</td><td>up/up</td><td><IP address of NFS server>/24</td><td>CLUSTER-01</td><td>e0i</td><td>true</td></tr></tbody></table>	Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home	dest	dest_lif	up/up	<IP address of NFS server>/24	CLUSTER-01	e0i	true
Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home										
dest	dest_lif	up/up	<IP address of NFS server>/24	CLUSTER-01	e0i	true										
	7.	Create a static route with the SVM if required <pre>CLUSTER::> network route create -vserver dest -destination 0.0.0.0/0 -gateway 192.168.100.111</pre> Verify the route is created <pre>CLUSTER::> network route show -vserver source</pre> <table><thead><tr><th>Vserver</th><th>Destination</th><th>Gateway</th><th>Metric</th></tr></thead><tbody></tbody></table>	Vserver	Destination	Gateway	Metric										
Vserver	Destination	Gateway	Metric													

✓	Step	Description
		<pre> dest 0.0.0.0/0 10.10.10.1 20 </pre>
	8.	Mount the target NFS data volume in the SVM namespace. <pre> CLUSTER::> volume mount -vserver dest -volume dest_nfs -junction-path /dest_nfs - active true </pre> Verify the volume is successfully mounted <pre> CLUSTER::> volume show -vserver dest -fields junction-path vserver volume junction-path ----- dest dest_nfs /dest_nfs dest dest_root / 2 entries were displayed. </pre> Note: You can also specify volume mount options (junction path) with the volume create command.
	9.	Start the NFS service on the target SVM. <pre> CLUSTER::> vserver nfs start -vserver dest </pre> Verify the service is started and running <pre> CLUSTER::> vserver nfs status The NFS server is running on Vserver "dest". CLUSTER::> nfs show Vserver: dest General Access: true v3: enabled v4.0: disabled 4.1: disabled UDP: enabled TCP: enabled Default Windows User: - Default Windows Group: - </pre>
	10.	Check that the default NFS export policy is applied to the target SVM. <pre> CLUSTER::> vserver export-policy show -vserver dest Vserver Policy Name ----- dest default </pre>
	11.	If required, create a new custom export policy for the target SVM. <pre> CLUSTER::> vserver export-policy create -vserver dest -policyname xcpexportpolicy </pre> Verify the new custom export-policy is created <pre> CLUSTER::> vserver export-policy show -vserver dest Vserver Policy Name ----- dest default dest xcpexportpolicy 2 entries were displayed. </pre>
	12.	Modify the export policy rules to allow access to NFS client(s). <pre> CLUSTER::> export-policy rule modify -vserver dest -ruleindex 1 -policyname xcpexportpolicy -clientmatch 0.0.0.0/0 -rorule any -rwrule any -anon 0 </pre> Verify the policy rules have modified <pre> CLUSTER::> export-policy rule show -instance </pre>

✓	Step	Description																		
		Vserver: dest Policy Name: xcpexportpolicy Rule Index: 1 Access Protocol: nfs3 Client Match Hostname, IP Address, Netgroup, or Domain: 0.0.0.0/0 RO Access Rule: none RW Access Rule: none User ID To Which Anonymous Users Are Mapped: 65534 Superuser Security Types: none Honor SetUID Bits in SETATTR: true Allow Creation of Devices: true																		
	13.	Verify that the client is allowed access to the volume. CLUSTER::> export-policy check-access -vserver dest -volume dest_nfs -client-ip <IP address or hostname of NFS server> -authentication-method none -protocol nfs3 -access-type read-write <table><thead><tr><th>Path</th><th>Policy</th><th>Policy Owner</th><th>Policy Owner Type</th><th>Rule Index</th><th>Access</th></tr></thead><tbody><tr><td>/</td><td>xcpexportpolicy</td><td>dest_root</td><td>volume</td><td>1</td><td>read</td></tr><tr><td>/dest_nfs</td><td>xcpexportpolicy</td><td>dest_nfs</td><td>volume</td><td>1</td><td>read-write</td></tr></tbody></table> 2 entries were displayed.	Path	Policy	Policy Owner	Policy Owner Type	Rule Index	Access	/	xcpexportpolicy	dest_root	volume	1	read	/dest_nfs	xcpexportpolicy	dest_nfs	volume	1	read-write
Path	Policy	Policy Owner	Policy Owner Type	Rule Index	Access															
/	xcpexportpolicy	dest_root	volume	1	read															
/dest_nfs	xcpexportpolicy	dest_nfs	volume	1	read-write															
	14.	Connect to the Linux NFS server. Create a mount point for the NFS exported volume. [root@localhost /]# cd /mnt [root@localhost mnt]# mkdir dest																		
	15.	Mount the target NFSv3 exported volume at this mount point. Note: The NFSv3 volumes should be exported but not necessarily be mounted by the NFS server. The XCP Linux host client mounts these volumes if they can be mounted. [root@localhost mnt]# mount -t nfs <IP address of NFS server>:/dest_nfs /mnt/dest Verify the mount point is successfully created. [root@localhost /]# mount grep nfs <IP address of NFS server>:/dest_nfs on /mnt/dest type nfs (rw,relatime,vers=3,rsize=65536,wsiz=65536,namlen=255,hard,proto=tcp,timeo=600,ret rans=2,sec=sys,mountaddr=<IP address or hostname of NFS server>,mountvers=3,mountport=4046,mountproto=udp,local_lock=none,addr=<IP address of NFS server>)																		
	16.	Create a test file on the NFS exported mount point to enable read-write access. [root@localhost dest]# touch test.txt Verify the file is created [root@localhost dest]# ls -l total 0 -rw-r--r-- 1 root bin 0 Jun 2 03:16 test.txt Note: Once the read-write test is complete, delete the file from the target NFS mount point.																		
	17.	Connect to the Linux client system in which XCP is installed. Browse to the XCP install path. [root@localhost ~]# cd /linux/ [root@localhost linux]#																		
	18.	Query the source 7-Mode NFSv3 exports by running the xcp show command on the XCP Linux client host system. [root@localhost]# ./xcp show <IP address or hostname of NFS server> == NFS Exports ==																		

✓	Step	Description
		<pre>Mounts Errors Server 4 0 <IP address or hostname of NFS server> Space Files Space Files Free Free Used Used Export 23.7 GiB 778,134 356 KiB 96 <IP address or hostname of NFS server>:/vol/nfsvol1 17.5 GiB 622,463 1.46 GiB 117 <IP address or hostname of NFS server>:/vol/nfsvol 328 GiB 10.8M 2.86 GiB 7,904 <IP address or hostname of NFS server>:/vol/vol0/home 328 GiB 10.8M 2.86 GiB 7,904 <IP address or hostname of NFS server>:/vol/vol0 == Attributes of NFS Exports == drwxr-xr-x --- root wheel 4KiB 4KiB 2d21h <IP address or hostname of NFS server>:/vol/nfsvol1 drwxr-xr-x --- root wheel 4KiB 4KiB 2d21h <IP address or hostname of NFS server>:/vol/nfsvol drwxrwxrwx --t root wheel 4KiB 4KiB 9d22h <IP address or hostname of NFS server>:/vol/vol0/home drwxr-xr-x --- root wheel 4KiB 4KiB 4d0h <IP address or hostname of NFS server>:/vol/vol0 3.89 KiB in (5.70 KiB/s), 7.96 KiB out (11.7 KiB/s), 0s.</pre>
	19.	Scan the source NFSv3 exported paths and print the statistics of their file structure. Note: NetApp recommends putting the source NFSv3 exports in read-only mode during <code>.xcp.</code> scan, copy, and sync operations. <pre>[root@localhost /]# ./xcp scan <IP address or hostname of NFS server>:/vol/nfsvol nfsvol nfsvol/n5000-uk9.5.2.1.N1.1.bin nfsvol/821_q_image.tgz nfsvol/822RC2_q_image.tgz nfsvol/NX5010_12_node_RCF_v1.3.txt nfsvol/n5000-uk9-kickstart.5.2.1.N1.1.bin nfsvol/NetApp_CN1610_1.1.0.5.stk nfsvol/glibc-common-2.7-2.x86_64.rpm nfsvol/glibc-2.7-2.x86_64.rpm nfsvol/rhel-server-5.6-x86_64-dvd.iso.filepart nfsvol/xcp nfsvol/xcp_source nfsvol/catalog 23 scanned, 7.79 KiB in (5.52 KiB/s), 1.51 KiB out (1.07 KiB/s), 1s.</pre>
	20.	Copy source 7-Mode NFSv3 exports to NFSv3 exports on the target ONTAP system. <pre>[root@localhost /]# ./xcp copy <IP address or hostname of NFS server>:/vol/nfsvol <IP address of NFS destination server>:/dest_nfs 44 scanned, 39 copied, 264 MiB in (51.9 MiB/s), 262 MiB out (51.5 MiB/s), 5s 44 scanned, 39 copied, 481 MiB in (43.3 MiB/s), 479 MiB out (43.4 MiB/s), 10s 44 scanned, 40 copied, 748 MiB in (51.2 MiB/s), 747 MiB out (51.3 MiB/s), 16s 44 scanned, 40 copied, 1.00 GiB in (55.9 MiB/s), 1.00 GiB out (55.9 MiB/s), 21s 44 scanned, 40 copied, 1.21 GiB in (42.8 MiB/s), 1.21 GiB out (42.8 MiB/s), 26s Sending statistics... 44 scanned, 43 copied, 1.46 GiB in (47.6 MiB/s), 1.45 GiB out (47.6 MiB/s), 31s.</pre>
	21.	After copy is finished, verify that source and destination NFSv3 exports have identical data. Run the <code>xcp verify</code> command. <pre>[root@localhost /]# ./xcp verify <IP address or hostname of NFS server>:/vol/nfsvol <IP address of NFS destination server>:/dest_nfs 44 scanned, 44 found, 28 compared, 27 same data, 2.41 GiB in (98.4 MiB/s), 6.25 MiB out (255 KiB/s), 26s</pre>

✓	Step	Description
		44 scanned, 44 found, 30 compared, 29 same data, 2.88 GiB in (96.4 MiB/s), 7.46 MiB out (249 KiB/s), 31s 44 scanned, 100% found (43 have data), 43 compared, 100% verified (data, attrs, mods), 2.90 GiB in (92.6 MiB/s), 7.53 MiB out (240 KiB/s), 32s. Note: If <code>verify</code> finds differences between source and destination data, then the error <code>no such file or directory</code> is reported in the summary. To fix that issue, run the <code>xcp sync</code> command to copy the source changes to the destination.
	22.	Before and during the cutover, run <code>verify</code> again. If the source has new or updated data, then perform incremental updates. Run the <code>xcp sync</code> command. Note: For this operation, the previous copy index name or number is required. <pre>[root@localhost /]# ./xcp sync -id 3</pre> Index: {source: '<IP address or hostname of NFS server>:/vol/nfsvol', target: '<NFS destination IP address>:/dest_nfs1'} 64 reviewed, 64 checked at source, 6 changes, 6 modifications, 51.7 KiB in (62.5 KiB/s), 22.7 KiB out (27.5 KiB/s), 0s. xcp: sync '3': Starting search pass for 1 modified directory... xcp: sync '3': Found 6 indexed files in the 1 changed directory xcp: sync '3': Rereading the 1 modified directory to find what's new... xcp: sync '3': Deep scanning the 1 directory that changed... Note: 11 scanned, 11 copied, 12.6 KiB in (6.19 KiB/s), 9.50 KiB out (4.66 KiB/s), 2s.
	23.	To resume a previously interrupted copy operation, run the <code>xcp resume</code> command. <pre>[root@localhost /]# ./xcp resume -id 4</pre> Index: {source: '<IP address or hostname of NFS server>:/vol/nfsvol', target: '<NFS destination IP address>:/dest_nfs7'} xcp: resume '4': WARNING: Incomplete index. xcp: resume '4': Found 18 completed directories and 1 in progress 106 reviewed, 24.2 KiB in (30.3 KiB/s), 7.23 KiB out (9.06 KiB/s), 0s. xcp: resume '4': Starting second pass for the in-progress directory... xcp: resume '4': Found 3 indexed directories and 0 indexed files in the 1 in-progress directory xcp: resume '4': In progress dirs: unindexed 1, indexed 0 xcp: resume '4': Resuming the 1 in-progress directory... 20 scanned, 7 copied, 205 MiB in (39.6 MiB/s), 205 MiB out (39.6 MiB/s), 5s 20 scanned, 14 copied, 425 MiB in (42.1 MiB/s), 423 MiB out (41.8 MiB/s), 11s 20 scanned, 14 copied, 540 MiB in (23.0 MiB/s), 538 MiB out (23.0 MiB/s), 16s 20 scanned, 14 copied, 721 MiB in (35.6 MiB/s), 720 MiB out (35.6 MiB/s), 21s 20 scanned, 15 copied, 835 MiB in (22.7 MiB/s), 833 MiB out (22.7 MiB/s), 26s 20 scanned, 16 copied, 1007 MiB in (34.3 MiB/s), 1005 MiB out (34.3 MiB/s), 31s 20 scanned, 17 copied, 1.15 GiB in (33.9 MiB/s), 1.15 GiB out (33.9 MiB/s), 36s 20 scanned, 17 copied, 1.27 GiB in (25.5 MiB/s), 1.27 GiB out (25.5 MiB/s), 41s 20 scanned, 17 copied, 1.45 GiB in (36.1 MiB/s), 1.45 GiB out (36.1 MiB/s), 46s 20 scanned, 17 copied, 1.69 GiB in (48.7 MiB/s), 1.69 GiB out (48.7 MiB/s), 51s Sending statistics... 20 scanned, 20 copied, 21 indexed, 1.77 GiB in (33.5 MiB/s), 1.77 GiB out (33.4 MiB/s), 54s. After <code>resume</code> finishes copying files, run <code>verify</code> again so that the source and destination storage have identical data.
	24	The NFSv3 client host needs to unmount the source NFSv3 exports provisioned from the 7-Mode storage and mounts the target NFSv3 exports from clustered Data ONTAP. Cutover requires an outage.

2.2 How to Transition 7-Mode volume Snapshot Copies to ONTAP

This section covers the step-by-step procedure for transitioning a source 7-Mode volume Snapshot copy to ONTAP.

Note: NetApp assumes that the source 7-Mode volume is exported and mounted on the client system and that XCP is already installed on a Linux system. A Snapshot copy is a point-in-time image of a volume that records incremental changes since the last Snapshot copy. Use the “-snap” option with a 7Mode system as the source.

Warning:

Keep the base Snapshot copy. Do not delete the base Snapshot copy after the baseline copy is complete. The base Snapshot copy is required for further sync operations.

Task Table 2) Transitioning a Source 7-Mode Volume Snapshot Copy to ONTAP..

✓	Step	Description
	1.	Verify that the target ONTAP system is healthy. <pre>CLUSTER::> cluster show Node Health Eligibility ----- CLUSTER-01 true true CLUSTER-02 true true 2 entries were displayed.</pre> <pre>CLUSTER::> node show Node Health Eligibility Uptime Model Owner Location ----- CLUSTER-01 true true 78 days 21:01 FAS8060 CLUSTER-02 true true 78 days 20:50 FAS8060 2 entries were displayed.</pre> <pre>CLUSTER::> storage failover show Node Partner Takeover ----- CLUSTER-01 CLUSTER-02 true Connected to CLUSTER-02 CLUSTER-02 CLUSTER-01 true Connected to CLUSTER-01 2 entries were displayed.</pre>
	2.	Verify that at least one non-root aggregate exists on the target system. The aggregate is normal. <pre>CLUSTER::> storage aggregate show Aggregate Size Available Used% State #Vols Nodes RAID Status ----- aggr0 368.4GB 17.85GB 95% online 1 CLUSTER-01 raid_dp, normal aggr0_CLUSTER_02_0 368.4GB 17.85GB 95% online 1 CLUSTER-02 raid_dp, normal source 1.23TB 1.10TB 11% online 6 CLUSTER-01 raid_dp, normal 3 entries were displayed.</pre> Note: If there is no data aggregate, create a new one using the <code>storage aggr create</code> command.
	3.	Create an SVM on the target cluster system. <pre>CLUSTER::> vserver create -vserver dest -rootvolume dest_root -aggregate poc - rootvolume-security-style mixed [Job 647] Job succeeded: Vserver creation completed Verify the security style and language settings of the source</pre>

✓	Step	Description														
		Verify the SVM was created <pre>CLUSTER::> vserver show -vserver dest Vserver: dest Vserver Type: data Vserver Subtype: default Vserver UUID: 91f6d786-0063-11e5-b114-00a09853a969 Root Volume: dest_root Aggregate: poc NIS Domain: - Root Volume Security Style: mixed LDAP Client: - Default Volume Language Code: C.UTF-8 Snapshot Policy: default Comment: Quota Policy: default List of Aggregates Assigned: - Limit on Maximum Number of Volumes allowed: unlimited Vserver Admin State: running Vserver Operational State: running Vserver Operational State Stopped Reason: - Allowed Protocols: nfs, cifs, fcp, iscsi, ndmp Disallowed Protocols: - Is Vserver with Infinite Volume:false QoS Policy Group: - Config Lock: false IPspace Name: Default</pre>														
	4.	Remove the fcp, iscsi, ndmp, and cifs protocols from the target SVM. <pre>CLUSTER::> vserver remove-protocols -vserver dest -protocols fcp,iscsi,ndmp,cifs</pre> Verify NFS is the allowed protocol for this SVM <pre>CLUSTER::> vserver show -vserver dest -fields allowed-protocols vserver allowed-protocols dest nfs</pre>														
	5.	Create a new read-write data volume on the destination SVM. Verify that the security style, language settings, and capacity requirements match the source volume. <pre>CLUSTER::> vol create -vserver dest -volume dest_nfs -aggregate poc -size 150g - type RW -state online -security-style mixed [Job 648] Job succeeded: Successful</pre>														
	6.	Create a data LIF to serve NFS client requests. <pre>CLUSTER::> network interface create -vserver dest -lif dest_lif -address <IP address of NFS server> -netmask 255.255.255.0 -role data -data-protocol nfs -home- node CLUSTER-01 -home-port e0i</pre> Verify the LIF is successfully created. <pre>CLUSTER::> network interface show -vserver dest</pre> <table><thead><tr><th>Vserver</th><th>Logical Interface</th><th>Status Admin/Oper</th><th>Network Address/Mask</th><th>Current Node</th><th>Current Port</th><th>Is Home</th></tr></thead><tbody><tr><td>dest</td><td>dest_lif</td><td>up/up</td><td><IP address of NFS server>/24</td><td>CLUSTER-01</td><td>e0i</td><td>true</td></tr></tbody></table>	Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home	dest	dest_lif	up/up	<IP address of NFS server>/24	CLUSTER-01	e0i	true
Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home										
dest	dest_lif	up/up	<IP address of NFS server>/24	CLUSTER-01	e0i	true										
	7.	Create a static route with the SVM if required <pre>CLUSTER::> network route create -vserver dest -destination 0.0.0.0/0 -gateway 192.168.100.111</pre>														

✓	Step	Description
		Verify the route is created <pre>CLUSTER::> network route show -vserver source Vserver Destination Gateway Metric ----- dest 0.0.0.0/0 10.10.10.1 20</pre>
	8.	Mount the target NFS data volume in the SVM namespace. <pre>CLUSTER::> volume mount -vserver dest -volume dest_nfs -junction-path /dest_nfs - active true</pre> Verify the volume is successfully mounted <pre>CLUSTER::> volume show -vserver dest -fields junction-path vserver volume junction-path ----- dest dest_nfs /dest_nfs dest dest_root / 2 entries were displayed.</pre> Note: You can also specify volume mount options (junction path) with the volume create command.
	9.	Start the NFS service on the target SVM. <pre>CLUSTER::> vserver nfs start -vserver dest</pre> Verify the service is started and running <pre>CLUSTER::> vserver nfs status The NFS server is running on Vserver "dest". CLUSTER::> nfs show Vserver: dest General Access: true v3: enabled v4.0: disabled 4.1: disabled UDP: enabled TCP: enabled Default Windows User: - Default Windows Group: -</pre>
	10.	Check that the default NFS export policy is applied to the target SVM. <pre>CLUSTER::> vserver export-policy show -vserver dest Vserver Policy Name ----- dest default</pre>
	11.	If required, create a new custom export policy for the target SVM. <pre>CLUSTER::> vserver export-policy create -vserver dest -policyname xcpexportpolicy</pre> Verify the new custom export-policy is created <pre>CLUSTER::> vserver export-policy show -vserver dest Vserver Policy Name ----- dest default dest xcpexportpolicy 2 entries were displayed.</pre>
	12.	Modify the export policy rules to allow access to NFS client(s) on the target system.

✓	Step	Description																		
		<pre>CLUSTER:> export-policy rule modify -vserver dest -ruleindex 1 -policyname xcpexportpolicy -clientmatch 0.0.0.0/0 -rorule any -rwrule any -anon 0</pre> Verify the policy rules have modified <pre>CLUSTER:> export-policy rule show -instance</pre> <pre> Vserver: dest Policy Name: xcpexportpolicy Rule Index: 1 Access Protocol: nfs3 Client Match Hostname, IP Address, Netgroup, or Domain: 0.0.0.0/0 RO Access Rule: none RW Access Rule: none User ID To Which Anonymous Users Are Mapped: 65534 Superuser Security Types: none Honor SetUID Bits in SETATTR: true Allow Creation of Devices: true</pre>																		
	13.	Verify that the client has access to the target volume. <pre>CLUSTER:> export-policy check-access -vserver dest -volume dest_nfs -client-ip <IP address or hostname of NFS server>-authentication-method none -protocol nfs3 -access-type read-write</pre> <table><thead><tr><th>Path</th><th>Policy</th><th>Policy Owner</th><th>Policy Owner Type</th><th>Rule Index</th><th>Access</th></tr></thead><tbody><tr><td>/</td><td>xcpexportpolicy</td><td>dest_root</td><td>volume</td><td>1</td><td>read</td></tr><tr><td>/dest_nfs</td><td>xcpexportpolicy</td><td>dest_nfs</td><td>volume</td><td>1</td><td>read-write</td></tr></tbody></table> 2 entries were displayed.	Path	Policy	Policy Owner	Policy Owner Type	Rule Index	Access	/	xcpexportpolicy	dest_root	volume	1	read	/dest_nfs	xcpexportpolicy	dest_nfs	volume	1	read-write
Path	Policy	Policy Owner	Policy Owner Type	Rule Index	Access															
/	xcpexportpolicy	dest_root	volume	1	read															
/dest_nfs	xcpexportpolicy	dest_nfs	volume	1	read-write															
	14.	Connect to the Linux NFS server. Create a mount point for the NFS exported volume. <pre>[root@localhost /]# cd /mnt [root@localhost mnt]# mkdir dest</pre>																		
	15.	Mount the target NFSv3 exported volume at this mount point. Note: The NFSv3 volumes should be exported but not necessarily be mounted by the NFS server. The XCP Linux host client mounts these volumes if they can be mounted. <pre>[root@localhost mnt]# mount -t nfs <IP address of NFS server>:/dest_nfs/mnt/dest</pre> Verify the mount point is successfully created. <pre>[root@localhost /]# mount grep nfs <IP address of NFS server>:/dest_nfs on /mnt/dest type nfs</pre>																		
	16.	Create a test file on the NFS exported mount point to enable read-write access. <pre>[root@localhost dest]# touch test.txt</pre> Verify the file is created <pre>[root@localhost dest]# ls -l total 0 -rw-r--r-- 1 root bin 0 Jun 2 03:16 test.txt</pre> Note: Once the read-write test is complete, delete the file from the target NFS mount point.																		
	17.	Connect to the Linux client system in which XCP is installed. Browse to the XCP install path. <pre>[root@localhost ~]# cd /linux/ [root@localhost linux]#</pre>																		
	18.	Query the source 7-Mode NFSv3 exports by running the .xcp show. command on the XCP Linux client host system. <pre>[root@localhost]# ./xcp show <IP address or hostname of NFS server></pre>																		

✓	Step	Description
		<pre> == NFS Exports == Mounts Errors Server 4 0 <IP address or hostname of NFS server> Space Files Space Files Free Free Used Used Export 23.7 GiB 778,134 356 KiB 96 <IP address or hostname of NFS server>:/vol/nfsvoll 17.5 GiB 622,463 1.46 GiB 117 <IP address or hostname of NFS server>:/vol/nfsvol 328 GiB 10.8M 2.86 GiB 7,904 <IP address or hostname of NFS server>:/vol/vol0/home 328 GiB 10.8M 2.86 GiB 7,904 <IP address or hostname of NFS server>:/vol/vol0 == Attributes of NFS Exports == drwxr-xr-x --- root wheel 4KiB 4KiB 2d21h <IP address or hostname of NFS server>:/vol/nfsvoll drwxr-xr-x --- root wheel 4KiB 4KiB 2d21h <IP address or hostname of NFS server>:/vol/nfsvol drwxrwxrwx --t root wheel 4KiB 4KiB 9d22h <IP address or hostname of NFS server>:/vol/vol0/home drwxr-xr-x --- root wheel 4KiB 4KiB 4d0h <IP address or hostname of NFS server>:/vol/vol0 3.89 KiB in (5.70 KiB/s), 7.96 KiB out (11.7 KiB/s), 0s. </pre>
	19.	Scan the source NFSv3 exported paths and print the statistics of their file structure. Note: NetApp recommends putting the source NFSv3 exports in read-only mode during <code>xcp scan</code>, <code>copy</code>, and <code>sync</code> operations. In <code>sync</code> operations it is mandatory to pass the <code>-snap</code> option with a corresponding value. <pre> [root@localhost /]# ./xcp scan <IP address or hostname of NFS server>:/vol/nfsvol/.snapshot/snap1 nfsvol nfsvol/n5000-uk9.5.2.1.N1.1.bin nfsvol/821_q_image.tgz nfsvol/822RC2_q_image.tgz nfsvol/NX5010_12_node_RCF_v1.3.txt nfsvol/n5000-uk9-kickstart.5.2.1.N1.1.bin nfsvol/catalog 23 scanned, 7.79 KiB in (5.52 KiB/s), 1.51 KiB out (1.07 KiB/s), 1s. [root@scspr1202780001 vol_acl4]# ./xcp sync -id 7msnap1 -snap 10.236.66.199:/vol/nfsvol/.snapshot/snap10 (show scan and sync) </pre>
	20.	Copy source 7-Mode NFSv3 snapshot (base) to NFSv3 exports on the target ONTAP system. <pre> [root@localhost /]# /xcp copy <IP address or hostname of NFS server>:/vol/nfsvol/.snapshot/snap1 <IP address of NFS destination server>:/dest_nfs 44 scanned, 39 copied, 264 MiB in (51.9 MiB/s), 262 MiB out (51.5 MiB/s), 5s 44 scanned, 39 copied, 481 MiB in (43.3 MiB/s), 479 MiB out (43.4 MiB/s), 10s 44 scanned, 40 copied, 748 MiB in (51.2 MiB/s), 747 MiB out (51.3 MiB/s), 16s 44 scanned, 40 copied, 1.00 GiB in (55.9 MiB/s), 1.00 GiB out (55.9 MiB/s), 21s 44 scanned, 40 copied, 1.21 GiB in (42.8 MiB/s), 1.21 GiB out (42.8 MiB/s), 26s Sending statistics... 44 scanned, 43 copied, 1.46 GiB in (47.6 MiB/s), 1.45 GiB out (47.6 MiB/s), 31s. </pre> Note: Keep this base snapshot for further sync operations.

✓	Step	Description
	21.	After copy is complete, verify that source and destination NFSv3 exports have identical data. Run the <code>xcp verify</code> command. <pre>[root@localhost /]# ./xcp verify <IP address or hostname of NFSserver>:/vol/nfsvol <IP address of NFS destination server>:/dest_nfs 44 scanned, 44 found, 28 compared, 27 same data, 2.41 GiB in (98.4 MiB/s), 6.25MiB out (255 KiB/s), 26s 44 scanned, 44 found, 30 compared, 29 same data, 2.88 GiB in (96.4 MiB/s), 7.46MiB out (249 KiB/s), 31s 44 scanned, 100% found (43 have data), 43 compared, 100% verified (data, attrs, mods), 2.90 GiB in (92.6 MiB/s), 7.53 MiB out (240 KiB/s), 32s.</pre> Note: If <code>verify</code> finds differences between source and destination data, then the error <code>no such file or directory</code> is reported in the summary. To fix that issue, run the <code>xcp sync</code> command to copy the source changes to the destination.
	22.	Before and during the cutover, run <code>verify</code> again. If the source has new or updated data, then perform incremental updates. If there are incremental changes, create a new Snapshot copy for these changes and pass that snapshot path with the “-snap” option for sync operations. Run the <code>xcp sync</code> command with “-snap” option and snapshot path. <pre>[root@localhost /]# ./xcp sync -id 3 Index: {source: '<IP address or hostname of NFS server>:/vol/nfsvol/.snapshot/snap1', target: '<IP address of NFS destination server>:/dest_nfs1'} 64 reviewed, 64 checked at source, 6 changes, 6 modifications, 51.7 KiB in (62.5 KiB/s), 22.7 KiB out (27.5 KiB/s), 0s. xcp: sync '3': Starting search pass for 1 modified directory... xcp: sync '3': Found 6 indexed files in the 1 changed directory xcp: sync '3': Rereading the 1 modified directory to find what's new... xcp: sync '3': Deep scanning the 1 directory that changed... 11 scanned, 11 copied, 12.6 KiB in (6.19 KiB/s), 9.50 KiB out (4.66 KiB/s), 2s..</pre> Note: For this operation, the base snapshot is required.
	23.	To resume a previously interrupted copy operation, run the <code>xcp resume</code> command. <pre>[root@scspr1202780001 534h_dest_vol]# ./xcp resume -id 3 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxxxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 xcp: Index: {source: '<IP address or hostname of NFS server>:/vol/nfsvol/.snapshot/snap1', target: <IP address of NFS destination server>:/dest_vol} xcp: resume '7msnap_res1': Reviewing the incomplete index... xcp: diff '7msnap_res1': Found 143 completed directories and 230 inprogress 39,688 reviewed, 1.28 MiB in (1.84 MiB/s), 13.3 KiB out (19.1 KiB/s), 0s. xcp: resume '7msnap_res1': Starting second pass for the in-progress directories... xcp: resume '7msnap_res1': Resuming the in-progress directories... xcp: resume '7msnap_res1': Resumed command: copy {-newid: u'7msnap_res1'} xcp: resume '7msnap_res1': Current options: {-id: '7msnap_res1'} xcp: resume '7msnap_res1': Merged options: {-id: '7msnap_res1', -newid: u'7msnap_res1'} xcp: resume '7msnap_res1': Values marked with a * include operations before resume 68,848 scanned*, 54,651 copied*, 39,688 indexed*, 35.6 MiB in (7.04 MiB/s), 28.1 MiB out (5.57 MiB/s), 5s</pre>
	24	The NFSv3 client host needs to unmount the source NFSv3 exports provisioned from the 7-Mode storage and mounts the target NFSv3 exports from clustered Data ONTAP. Cutover requires an outage.

2.3 How to Migrate ACLv4 from NetApp 7-Mode to a NetApp Storage System

This section covers the step-by-step procedure for transitioning a source NFSv4 export to an ONTAP system.

Note: NetApp assumes that the source NFSv4 volume is exported and mounted on the client system and that XCP is already installed on a Linux system. The source should be a NetApp 7-Mode system that support ACLs. ACL migration is supported from NetApp to NetApp only. To copy files with a special character in the name, make sure the source and destination support UTF-8 encoded language.

Prerequisites for migrating a source NFSv4 export to ONTAP.

The destination system must have NFSv4 configured.

Mount the NFSv4 source and target on XCP host. Select NFS v4.0 to match the source and target storage and verify ACLs are enabled on the source and target system.

XCP requires the source/target path to be mounted on the XCP host for ACL Processing.

In the example below, "vol1(10.10.1.10:/vol1)" is mounted on the path "/mnt/vol1":

```
[root@localhost ~]# df -h
Filesystem                                Size Used Avail Use% Mounted on
10.10.1.10:/vol1                          973M 4.2M 969M   1% /mnt/vol1

[root@localhost ~]# ./xcp scan -l -acl4 10.10.1.10:/vol1/
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Sun Mar 31 00:00:00 2029

drwxr-xr-x --- root root 4KiB 4KiB 23h42m vol1
rw-r--r-- --- root root    4    0 23h42m vol1/DIR1/FILE
drwxr-xr-x --- root root 4KiB 4KiB 23h42m vol1/DIR1/DIR11
drwxr-xr-x --- root root 4KiB 4KiB 23h42m vol1/DIR1
rw-r--r-- --- root root    4    0 23h42m vol1/DIR1/DIR11/FILE
drwxr-xr-x --- root root 4KiB 4KiB 23h42m vol1/DIR1/DIR11/DIR2
rw-r--r-- --- root root    4    0 23h42m vol1/DIR1/DIR11/DIR2/FILE
drwxr-xr-x --- root root 4KiB 4KiB 17m43s vol1/DIR1/DIR11/DIR2/DIR22

8 scanned, 8 getaccls, 1 v3perm, 7 acls, 3.80 KiB in (3.86 KiB/s), 1.21 KiB out (1.23 KiB/s), 0s.
```

There are two options for working with subdirectories:

1. For XCP to work on a subdirectory (/vol1/DIR1/DIR11), mount the complete path (10.10.1.10:/vol1/DIR1/DIR11) on the XCP host.

If the complete path is not mounted, XCP reports the following error:

```
[root@localhost ~]# ./xcp scan -l -acl4 10.10.1.10:/vol1/DIR1/DIR11
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Sun Mar 31 00:00:00 2029

xcp: ERROR: For xcp to process ACLs, please mount 10.10.1.10:/vol1/DIR1/DIR11 using the OS nfs4
client.
```

2. Use the subdirectory syntax (mount:subdirectory/qtree/snapshot) as shown in the example below:

```
[root@localhost ~]# ./xcp scan -l -acl4 10.10.1.10:/vol1:/DIR1/DIR11
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Sun Mar 31 00:00:00 2029

drwxr-xr-x --- root root 4KiB 4KiB 23h51m DIR11
rw-r--r-- --- root root    4    0 23h51m DIR11/DIR2/FILE
drwxr-xr-x --- root root 4KiB 4KiB 26m9s DIR11/DIR2/DIR22
rw-r--r-- --- root root    4    0 23h51m DIR11/FILE
drwxr-xr-x --- root root 4KiB 4KiB 23h51m DIR11/DIR2

5 scanned, 5 getaccls, 5 acls, 2.04 KiB in (3.22 KiB/s), 540 out (850/s), 0s.
```

Task Table 3) Migrating ACLv4 from NetApp 7-Mode to a NetApp Storage System.

✓	Step	Description
	1.	Verify that the target ONTAP system is healthy.
		<pre>CLUSTER::> cluster show Node Health Eligibility CLUSTER-01 true true</pre>

✓	Step	Description
		<pre>CLUSTER-02 true true 2 entries were displayed. CLUSTER::> node show Node Health Eligibility Uptime Model Owner Location ----- CLUSTER-01 true true 78 days 21:01 FAS8060 RTP CLUSTER-02 true true 78 days 20:50 FAS8060 RTP 2 entries were displayed. CLUSTER::> storage failover show Node Partner Takeover Possible State Description ----- CLUSTER-01 CLUSTER-02 true Connected to CLUSTER-02 CLUSTER-02 CLUSTER-01 true Connected to CLUSTER-01 2 entries were displayed.</pre>
	2.	Verify that at least one non-root aggregate exists on the target system. The aggregate is normal. <pre>CLUSTER::> storage aggregate show Aggregate Size Available Used% State #Vols Nodes RAID Status ----- aggr0 368.4GB 17.85GB 95% online 1 CLUSTER-01 raid_dp, normal aggr0_CLUSTER_02_0 368.4GB 17.85GB 95% online 1 CLUSTER-02 raid_dp, normal source 1.23TB 1.10TB 11% online 6 CLUSTER-01 raid_dp, normal 3 entries were displayed.</pre> Note: If there is no data aggregate, create a new one using the storage aggr create command.
	3.	Create an SVM on the target cluster system. <pre>CLUSTER::> vserver create -vserver dest -rootvolume dest_root -aggregate poc - rootvolume-security-style mixed [Job 647] Job succeeded: Vserver creation completed Verify the security style and language settings of the source</pre> Verify the SVM was created <pre>CLUSTER::> vserver show -vserver dest Vserver: dest Vserver Type: data Vserver Subtype: default Vserver UUID: 91f6d786-0063-11e5-b114-00a09853a969 Root Volume: dest_root Aggregate: poc NIS Domain: - Root Volume Security Style: mixed LDAP Client: - Default Volume Language Code: C.UTF-8 Snapshot Policy: default Comment: Quota Policy: default List of Aggregates Assigned: - Limit on Maximum Number of Volumes allowed: unlimited Vserver Admin State: running Vserver Operational State: running Vserver Operational State Stopped Reason: - Allowed Protocols: nfs, cifs, fcp, iscsi, ndmp Disallowed Protocols: -</pre>

✓	Step	Description
		<pre> Is Vserver with Infinite Volume:false QoS Policy Group: - Config Lock: false IPspace Name: Default </pre>
	4.	Remove the <code>fc</code>, <code>iscsi</code>, <code>ndmp</code>, and <code>cifs</code> protocols from the target SVM. <pre> CLUSTER::> vserver remove-protocols -vserver dest -protocols fc,iscsi,ndmp,cifs </pre> Verify <code>nfs</code> is the allowed protocol for this SVM <pre> CLUSTER::> vserver show -vserver dest -fields allowed-protocols vserver allowed-protocols dest nfs </pre>
	5.	Create a new read-write data volume on the destination SVM. Verify that the security style, language settings, and capacity requirements match the source volume. <pre> CLUSTER::> vol create -vserver dest -volume dest_nfs -aggregate poc -size 150g - type RW -state online -security-style mixed [Job 648] Job succeeded: Successful </pre>
	6.	Create a data LIF to serve NFS client requests. <pre> CLUSTER::> network interface create -vserver dest -lif dest_lif -address <IP address of NFS server> -netmask 255.255.255.0 -role data -data-protocol nfs -home- node CLUSTER-01 -home-port e0i </pre> Verify the LIF is successfully created. <pre> CLUSTER::> network interface show -vserver dest Vserver Logical Status Network Current Current Is Interface Admin/Oper Address/Mask Node Port Home dest dest_lif up/up <IP address of NFS server>/24 CLUSTER-01 e0i true </pre>
	7.	Create a static route with the SVM if required <pre> CLUSTER::> network route create -vserver dest -destination 0.0.0.0/0 -gateway 192.168.100.111 </pre> Verify the route is created <pre> CLUSTER::> network route show -vserver source Vserver Destination Gateway Metric dest 0.0.0.0/0 10.10.10.1 20 </pre>
	8.	Mount the target NFS data volume in the SVM namespace. <pre> CLUSTER::> volume mount -vserver dest -volume dest_nfs -junction-path /dest_nfs - active true </pre> Verify the volume is successfully mounted <pre> CLUSTER::> volume show -vserver dest -fields junction-path vserver volume junction-path dest dest_nfs /dest_nfs dest dest_root / 2 entries were displayed. </pre>

✓	Step	Description
		Note: You can also specify volume mount options (junction path) with the <code>volume create</code> command.
	9.	Start the NFS service on the target SVM. <pre>CLUSTER::> vserver nfs start -vserver dest</pre> Verify the service is started and running <pre>CLUSTER::> vserver nfs status The NFS server is running on Vserver "dest". CLUSTER::> nfs show Vserver: dest General Access: true v3: enabled v4.0: enabled 4.1: disabled UDP: enabled TCP: enabled Default Windows User: - Default Windows Group: -</pre>
	10.	Check that the default NFS export policy is applied to the target SVM. <pre>CLUSTER::> vserver export-policy show -vserver dest Vserver Policy Name ----- dest default</pre>
	11.	If required, create a new custom export policy for the target SVM. <pre>CLUSTER::> vserver export-policy create -vserver dest -policynamexcpexportpolicy</pre> Verify the new custom export-policy is created <pre>CLUSTER::> vserver export-policy show -vserver dest Vserver Policy Name ----- dest default dest xcpexportpolicy 2 entries were displayed.</pre>
	12.	Modify the export policy rules to allow access to NFS client(s). <pre>CLUSTER::> export-policy rule modify -vserver dest -ruleindex 1 -policynamexcpexportpolicy -clientmatch 0.0.0.0/0 -rorule any -rwrule any -anon 0</pre> Verify the policy rules have modified <pre>CLUSTER::> export-policy rule show -instance Vserver: dest Policy Name: xcpexportpolicy Rule Index: 1 Access Protocol: nfs3 Client Match Hostname, IP Address, Netgroup, or Domain: 0.0.0.0/0 RO Access Rule: none RW Access Rule: none User ID To Which Anonymous Users Are Mapped: 65534 Superuser Security Types: none Honor SetUID Bits in SETATTR: true Allow Creation of Devices: true</pre>
	13.	Verify that the client is allowed access to the volume. <pre>CLUSTER::> export-policy check-access -vserver dest -volume dest_nfs -client-ip <IP address or hostname of NFS server>-authentication-method none -protocol nfs3 - access-type read-write</pre> Policy Policy Rule

✓	Step	Description																		
		<table><tr><th>Path</th><th>Policy</th><th>Owner</th><th>Owner Type</th><th>Index</th><th>Access</th></tr><tr><td>/</td><td>xcpexportpolicy</td><td>dest_root</td><td>volume</td><td>1</td><td>read</td></tr><tr><td>/dest_nfs</td><td>xcpexportpolicy</td><td>dest_nfs</td><td>volume</td><td>1</td><td>read-write</td></tr></table> 2 entries were displayed.	Path	Policy	Owner	Owner Type	Index	Access	/	xcpexportpolicy	dest_root	volume	1	read	/dest_nfs	xcpexportpolicy	dest_nfs	volume	1	read-write
Path	Policy	Owner	Owner Type	Index	Access															
/	xcpexportpolicy	dest_root	volume	1	read															
/dest_nfs	xcpexportpolicy	dest_nfs	volume	1	read-write															
	14.	Connect to the Linux NFS server. Create a mount point for the NFS exported volume. <pre>[root@localhost ~]# cd /mnt [root@localhost mnt]# mkdir dest</pre>																		
	15.	Mount the target NFSv4 exported volume at this mount point. Note: The NFSv4 volumes should be exported but not necessarily be mounted by the NFS server. The XCP Linux host client mounts these volumes if they can be mounted. <pre>[root@localhost mnt]# mount -t nfs4 10.10.1.10:/vol1 /mnt/vol1</pre> Verify the mount point is successfully created. <pre>[root@localhost mnt]# mount grep nfs 10.10.1.10:/vol1 on /mnt/vol1 type nfs4 (rw,relatime,vers=4.0,rsize=65536,wsiz=65536,namlen=255,hard,proto=tcp,timeo=600, retrans=2,sec=sys,clientaddr=10.234.152.84,local_lock=none,addr=10.10.1.10)</pre>																		
	16.	Create a test file on the NFS exported mount point to enable read-write access. <pre>[root@localhost dest]# touch test.txt</pre> Verify the file is created <pre>[root@localhost dest]# ls -l total 0 -rw-r--r-- 1 root bin 0 Jun 2 03:16 test.txt</pre> Note: Once the read-write test is complete, delete the file from the target NFS mount point.																		
	17.	Connect to the Linux client system in which XCP is installed. Browse to the XCP install path. <pre>[root@localhost ~]# cd /linux/ [root@localhost linux]#</pre>																		
	18.	Query the source NFSv4 exports by running the <code>xcp show</code> command on the XCP Linux client host system. <pre>root@localhost]# ./xcp show 10.10.1.10 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 getting pmap dump from 10.10.1.10 port 111... getting export list from 10.10.1.10... sending 6 mounts and 24 nfs requests to 10.10.1.10... == RPC Services == '10.10.1.10': UDP rpc services: MNT v1/2/3, NFS v3, NLM v4, PMAP v2/3/4, STATUS v1 '10.10.1.10': TCP rpc services: MNT v1/2/3, NFS v3/4, NLM v4, PMAP v2/3/4, STATUS v1 == NFS Exports == Mounts Errors Server 6 0 10.10.1.10 Space Files Space Files Free Free Used Used Export 94.7 MiB 19,883 324 KiB 107 10.10.1.10:/ 971 MiB 31,023 2.19 MiB 99 10.10.1.10:/vol2 970 MiB 31,024 2.83 MiB 98 10.10.1.10:/vol1 9.33 GiB 310,697 172 MiB 590 10.10.1.10:/vol_005 43.3 GiB 1.10M 4.17 GiB 1.00M 10.10.1.10:/vol3</pre>																		

✓	Step	Description
		<pre> 36.4 GiB 1.10M 11.1 GiB 1.00M 10.10.1.10:/vol4 == Attributes of NFS Exports == drwxr-xr-x --- root root 4KiB 4KiB 6d2h 10.10.1.10:/ drwxr-xr-x --- root root 4KiB 4KiB 3d2h 10.10.1.10:/vol2 drwxr-xr-x --- root root 4KiB 4KiB 3d2h 10.10.1.10:/vol1 drwxr-xr-x --- root root 4KiB 4KiB 9d2h 10.10.1.10:/vol_005 drwxr-xr-x --- root root 4KiB 4KiB 9d4h 10.10.1.10:/vol3 drwxr-xr-x --- root root 4KiB 4KiB 9d4h10.10.1.10:/vol4 6.09 KiB in (9.19 KiB/s), 12.2 KiB out (18.3 KiB/s), 0s. </pre>
	19.	Scan the source NFSv4 exported paths and print the statistics of their file structure. Note: NetApp recommends putting the source NFSv4 exports in read-only mode during <code>.xcp</code> scan, copy, and sync operations. <pre> [root@localhost]# ./xcp scan -acl4 10.10.1.10:/vol1 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 vol1 vol1/test/f1 vol1/test 3 scanned, 3 getacls, 3 v3perms, 1.59 KiB in (1.72 KiB/s), 696 out (753/s), 0s. </pre>
	20.	Copy source NFSv4 exports to NFSv4 exports on the target ONTAP system. <pre> [root@localhost]# ./xcp copy -acl4 -newid id1 10.10.1.10:/vol1 10.10.1.10:/vol2 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 3 scanned, 2 copied, 3 indexed, 3 getacls, 3 v3perms, 1 setacl, 14.7 KiB in (11.7 KiB/s), 61 KiB out (48.4 KiB/s), 1s.. </pre>
	21.	After copy is complete, verify that source and destination NFSv4 exports have identical data. Run the <code>xcp verify</code> command. <pre> [root@localhost]# ./xcp verify -acl4 -noid 10.10.1.10:/vol110.10.1.10:/vol2 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 3 scanned, 100% found (0 have data), 100% verified (data, attrs, mods, acls), 6 getacls, 6 v3perms, 2.90 KiB in (4.16 KiB/s), 2.94 KiB out (4.22 KiB/s), 0s. </pre> Note: If <code>verify</code> finds differences between source and destination data, then the error <code>no such file or directory</code> is reported in the summary. To fix that issue, run the <code>xcp sync</code> command to copy the source changes to the destination.
	22.	Before and during the cutover, run <code>verify</code> again. If the source has new or updated data, then perform incremental updates. Run the <code>xcp sync</code> command. <pre> [root@ root@localhost]# ./xcp sync -id id1 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 xcp: Index: {source: 10.10.1.10:/vol1, target: 10.10.1.10:/vol2} 3 reviewed, 3 checked at source, no changes, 3 reindexed, 25.6 KiB in (32.3 KiB/s), 23.3 KiB out (29.5 KiB/s), 0s. </pre> Note: For this operation, the previous copy index name or number is required.
	23.	To resume a previously interrupted copy operation, run the <code>xcp resume</code> command. <pre> [root@localhost]# ./xcp resume -id id1 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 </pre>

✓	Step	Description
		<pre>xcp: Index: {source: 10.10.1.10:/vol3, target: 10.10.1.10:/vol4}</pre> <pre>xcp: resume 'idl': Reviewing the incomplete index...</pre> <pre>xcp: diff 'idl': Found 0 completed directories and 8 in progress 39,899 reviewed, 1.64 MiB in (1.03 MiB/s), 14.6 KiB out (9.23 KiB/s), 1s. xcp: resume 'idl': Starting second pass for the in-progress directories... xcp: resume 'idl': Resuming the in-progress directories... xcp: resume 'idl': Resumed command: copy {-acl4: True} xcp: resume 'idl': Current options: {-id: 'idl'} xcp: resume 'idl': Merged options: {-acl4: True, -id: 'idl'} xcp: resume 'idl': Values marked with a * include operations before resume 86,404 scanned, 39,912 copied, 39,899 indexed, 13.0 MiB in (2.60 MiB/s), 78.4 KiB out (15.6 KiB/s), 5s 86,404 scanned, 39,912 copied, 39,899 indexed, 13.0 MiB in (0/s), 78.4 KiB out (0/s), 10s 1.00M scanned, 100% found (1M have data), 1M compared, 100% verified (data, attrs, mods, acls), 2.00M getacls, 202 v3perms, 1.00M same acls, 2.56 GiB in (2.76 MiB/s), 485 MiB out (524 KiB/s), 15m48s.</pre> After resume finishes copying files, run verify again so that the source and destination storage have identical data.

2.4 How to estimate migration time

This section provides the steps to estimate the time for migration.

Task Table 4) Estimating migration time

✓	Step	Description
	1.	Run the XCP scan command to create an index file using <code>-newid <index_name></code> <pre>./xcp scan -newid <newid> IP:/source</pre> <pre>[root@client-01linux]# ./xcp scan -q -newid estimate01 10.230.12.11:/temp4 XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until Sat Apr 22 22:24:56 2023</pre> <pre>xcp: WARNING: your license will expire in less than 10 days! You can renew your license at https://xcp.netapp.com Job ID: Job_2023-04-12_08.07.37.240058_scan</pre> <pre>Xcp command : xcp scan -q -newid estimate01 10.230.12.11:/temp4 Stats : 15 scanned, 15 indexed Speed : 16.4 KiB in (25.4 KiB/s), 87.4 KiB out (135 KiB/s) Total Time : 0s. Job ID : Job_2023-04-12_08.07.37.240058_scan Log Path : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04- 12_08.07.37.240058_scan.log STATUS : PASSED [root@client-01linux]#</pre>
	2.	Estimate the time by using the scan ID you obtained in step 1. <pre>./xcp estimate -id <newid></pre> <pre>[root@client-01linux]# ./xcp estimate -t 100 -id estimate01 -target 10.230.12.11:/temp8</pre> <pre>XCP <version>; (c) 2023 NetApp, Inc.; Licensed to User1 [Network Appliance, Inc] until Sat Apr 22 22:24:56 2023</pre> <pre>xcp: WARNING: your license will expire in less than 10 days! You can renew your license at https://xcp.netapp.com</pre> <pre>Job ID: Job_2023-04-12_08.09.16.126908_estimate</pre>

	<pre> Starting live test for 1m40s to estimate time to copy '10.230.12.11:/temp4' to '10.230.12.11:/temp8'... estimate regular file copy task completed before the 1m40s duration 0 in (0/s), 0 out (0/s), 5s 0 in (0/s), 0 out (0/s), 10s Estimated time to copy '10.230.12.11:/temp4' to '10.230.12.11:/temp8' based on a 1m40s live test: 5.3s Xcp command : xcp estimate -t 100 -id estimate01 -target 10.230.12.11:/temp8 Estimated Time : 5.3s Job ID : Job_2023-04-12_08.09.16.126908_estimate Log Path : /opt/NetApp/xFiles/xcp/xcplogs/Job_2023-04- 12_08.09.16.126908_estimate.log STATUS : PASSED [root@client-01linux]# </pre>
--	--

3 XCP SMB Command Reference

This section provides the list of available commands for XCP SMB. Each command has additional parameters and can be used alone or in combination as required.

Table 2) XCP SMB Command Reference.

Feature	Description
Core Engine Innovations	• Supports Windows, CLI only • Extreme performance (~25x comparable tools) • Multiple layers of granularity (qtrees, subdirectories, criteria-based filtering) • Easy deployment (64-bit Windows host-based software)
"help"	Displays information about XCP commands and options.
"show"	Requests information from host about SMB shares.
"activate"	Activates XCP license on Windows host systems
"scan"	Reads all files and directories found on a SMB share.
"copy"	Recursively copies everything from source to destination.
"license"	Displays XCP license information.
"license update"	Retrieves the latest license from the XCP server
"sync"	Scans the source and target in parallel and updates the target with all the modifications from the source.

“verify”	Performs three levels of verification to make sure that the target is the same as the source. The command verifies statistics, structure, and full data bit by bit.
----------	---

Note: The output of XCP SMB commands can be redirected using the “>” operator. For example:

```
C:\xcp>xcp --help > help-output.txt
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00
2029
C:\xcp>
```

3.1 help

The `help` command displays a list of commands, command parameters, and a brief description of each. The command is very useful for beginners who are new to XCP.

Syntax

```
C:\Users\Administrator\Desktop\xcp>xcp --help
```

Example

```
C:\Users\Administrator\Desktop\xcp>xcp --help
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00
2029
usage: xcp [-h] [-version]
          {scan,show,listen,configure,copy,sync,verify,license,activate,help}
          ...

optional arguments:
  -h, --help            show this help message and exit
  -version              show program's version number and exit

XCP commands:
  {scan,show,listen,configure,copy,sync,verify,license,activate,help}
  scan                  Read all the files in a file tree
  show                  Request information from host about SMB shares
  listen                Run xcp service
  configure              Configure xcp.ini file
  copy                  Recursively copy everything from source to target
  sync                  Sync target with source
  verify                Verify that the target is the same as the source
  license                Show xcp license info
  activate              Activate a license on the current host
  help                  Show help for commands
```

Parameters

The following table describes the `help` parameters.

Feature	Description
<code>xcp help <command></code>	Displays examples and option details for the specified <code><command></code> .

help details

Display details, usage, arguments, and optional arguments.

```
C:\Users\Administrator\Desktop\xcp>xcp help sync
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00
2029
usage: xcp sync [-h] [-v] [-parallel <n>] [-match <filter>] [-preserve-atime]
[-noatime] [-noctime] [-nomtime] [-noattrs]
[-noownership] [-atimewindow <float>] [-ctimewindow <float>]
[-mtimewindow <float>] [-acl] [-fallback-user FALLBACK_USER]
[-fallback-group FALLBACK_GROUP] [-l]

source target
Note: ONTAP does not let a SMB client modify COMPRESSED or ENCRYPTED attributes.
XCP sync will ignore these file attributes.
positional arguments:
  source
  target
optional arguments:
  -h, --help            show this help message and exit
  -v                    increase debug verbosity
  -parallel <n>         number of concurrent processes (default: <cpu-count>)
  -match <filter>       only process files and directories that match the filter
                        see `xcp help -match` for details)
  -preserve-atime        restore last accessed date on source
  -noatime              do not check file access time
  -noctime              do not check file creation time
  -nomtime              do not check file modification time
  -noattrs              do not check attributes
  -noownership          do not check ownership
  -atimewindow <float>  acceptable access time difference in seconds
  -ctimewindow <float>  acceptable creation time difference in seconds
  -mtimewindow <float>  acceptable modification time difference in seconds
```

```
-acl                copy security information
-fallback-user FALLBACK_USER
                    a user on the target machine to receive the permissions of local
(non-domain)source machine users (eg. domain\administrator)
-fallback-group     FALLBACK_GROUP
                    a group on the target machine to receive the permissions of local
(non-domain) source machine groups (eg. domain\administrators)
-l                 increase output
-root              sync acl for root directory
C:\Users\Administrator\Desktop\xcp>
```

3.2 show

The `show` command queries the RPC services and NFS exports of one or more storage servers. The command also lists the available services and exports with the used and free capacity of each export, followed by the attributes of the root of each export.

Syntax

The `show` command requires the host name or IP address of the NFSv3 exported system.

```
C:\Users\Administrator\Desktop\xcp>xcp show \\

```

Example

```
C:\Users\Administrator\Desktop\xcp>xcp show \\

```

Parameters

Feature	Description
<code>show -v</code>	Print verbose details about SMB servers using the IP address or host name.
<code>show -h, --help</code>	Show this help message and exit.

3.3 License

The `license` command displays XCP license information.

Syntax

```
C:\Users\Administrator\Desktop\xcp>xcp license
```

Example

```
C:\Users\Administrator\Desktop\xcp>xcp license
xcp license
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

Licensed to "XXX (xxxx), NetApp Inc, xxxxxxxxx@netapp.com" until Mon Dec 31 00:00:00 2029
License type: SANDBOX
License status: ACTIVE
Customer name: N/A
Project number: N/A
Offline Host: Yes
Send statistics: No
Host activation date: N/A
License management URL: https://xcp.netapp.com
```

3.4 activate

The `activate` command activates the XCP license. Before running this command, verify that the `licensefile` is downloaded and copied on the `C:\NetApp\XCP` directory on the XCP host. The license can be activated on any number of hosts.

Syntax

```
C:\Users\Administrator\Desktop\xcp>xcp activate
```

Example

```
C:\Users\Administrator\Desktop\xcp>xcp activate
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
XCP activated
C:\Users\Administrator\Desktop\xcp>
```

3.5 scan

The `scan` command recursively scans the entire SMB share and lists all the files by the end of the `scan` command.

Syntax

```
C:\Users\Administrator\Desktop\xcp>xcp scan \\<SMB share path>
```

Example

```
C:\Users\Administrator\Desktop\xcp>xcp scan \\<IP address or hostname of SMB server>\volxcp
c:\netapp\xcp\xcp scan \\<IP address of SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
volxcp\3333.txt
volxcp\SMB.txt
volxcp\SMB1.txt
volxcp\com.txt
volxcp\commands.txt
volxcp\console.txt
volxcp\linux.txt
volxcp\net use.txt
volxcp\newcom.txt
volxcp\notepad.txt
c:\netapp\xcp\xcp scan \\<IP address of SMB destination server>\source_share
60,345 scanned, 0 matched, 0 errors
Total Time : 8s
STATUS : PASSED
C:\Users\Administrator\Desktop\xcp>Parameters
```

The following table lists `scan` parameters and their description.

Feature	Description
scan -h, --help	Show this help message and exit.
scan -v	Increase debug verbosity.
scan -parallel <n>	Number of concurrent processes (default: <cpu-count>).
scan -match <filter>	Only process files and directories that match the filter
scan -exclude <filter>	Only exclude files and directories in the filter
scan -preserve-ctime	Restore last accessed date on source.
scan -depth <n>	Limit the search depth to n levels.
scan -stats	Print tree statistics report.
scan -html	Tree statistics report formats
scan -csv	Tree statistics report formats
scan -l	File listing output formats
scan -ownership	Retrieve ownership information of files and directories on the source system.
scan -du	Summarize space usage of each directory including subdirectories
scan -fmt <expression>	Format file listing according to the Python expression (see `xcp help -fmt` for details).

scan --help

This option displays detailed information about how to use the scan command.

```
C:\xcp>xcp scan --help
xcp scan --help
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

usage: xcp scan [-h] [-v] [-parallel <n>] [-match <filter>] [-exclude <filter>]
               [-preserve-ctime] [-depth <n>] [-loglevel <name>] [-stats] [-l]
               [-ownership] [-du] [-fmt <expression>]
               source

positional arguments:
  source

optional arguments:
  -h, --help            show this help message and exit
  -v                    increase debug verbosity
  -parallel <n>         number of concurrent processes (default:<cpu-count>)
  -match <filter>       only process files and directories that match the filter
                        (see `xcp help -match` for details)
  -exclude <filter>     Exclude files and directories that match the filter
                        (see `xcp help -exclude` for details)
  -preserve-ctime       restore last accessed date on source
  -depth <n>            limit the search depth
  -loglevel <name>      option to set log level filter (default:INFO)
  -stats               print tree statistics report
  -l                   detailed file listing output
  -ownership            retrieve ownership information
  -du                  summarize space usage of each directory including
                        subdirectories
  -fmt <expression>    format file listing according to the python expression
                        (see `xcp help -fmt` for details)
```

scan -v

The scan -v command increases debug verbosity. This provides detailed logging information to troubleshoot or debug in case an error or warning is reported.

```
c:\netapp\xcp>xcp scan -v \\<IP address or hostname of SMB server>\copy_share2
xcp scan -v \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
---Truncated output---
copy_share2\ASUP.pm
copy_share2\ASUP_REST.pm
copy_share2\Allflavors_v2.pm
copy_share2\Armadillo.pm
copy_share2\AsupExtractor.pm
copy_share2\BTS_Config.pm
copy_share2\Backup.pm
copy_share2\Aggregate.pm
copy_share2\Burt.pm
copy_share2\CConfig.pm
copy_share2\CIFS.pm
copy_share2\CR.pm
copy_share2\CRC.pm
copy_share2\CSHM.pm
copy_share2\CSM.pm
copy_share2\agnostic\SFXOD.pm
copy_share2\agnostic\Snapmirror.pm
copy_share2\agnostic\VolEfficiency.pm
copy_share2\agnostic\flatfile.txt
copy_share2\agnostic
copy_share2

xcp scan \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

scan -parallel <n>

Set a higher or lower number of XCP concurrent processes.

Note: The maximum value for n is 61.

```
c:\netapp\xcp>xcp scan -parallel 8 \\<IP address or hostname of SMB server>\copy_share2
xcp scan -parallel 8 \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

copy_share2\ASUP.pm
copy_share2\ASUP_REST.pm
copy_share2\Allflavors_v2.pm
copy_share2\Armadillo.pm
copy_share2\AsupExtractor.pm
copy_share2\BTS_Config.pm
copy_share2\Backup.pm
copy_share2\Aggregate.pm
copy_share2\agnostic\CifsAccess.pm
copy_share2\agnostic\DU_Cmode.pm
copy_share2\agnostic\Flexclone.pm
copy_share2\agnostic\HyA_Clone_Utils.pm
copy_share2\agnostic\Fileclone.pm
copy_share2\agnostic\Jobs.pm
copy_share2\agnostic\License.pm
copy_share2\agnostic\Panamax_Clone_Utils.pm
copy_share2\agnostic\LunCmds.pm
copy_share2\agnostic\ProtocolAccess.pm
copy_share2\agnostic\Qtree.pm
copy_share2\agnostic\Quota.pm
copy_share2\agnostic\RbacCmdFetcher.pm
copy_share2\agnostic\RbacCmdFetcher_ReadMe
copy_share2\agnostic\SFXOD.pm
copy_share2\agnostic\Snapmirror.pm
copy_share2\agnostic\VolEfficiency.pm
copy_share2\agnostic\flatfile.txt
copy_share2\agnostic
copy_share2
```

```
c:\netapp\xcp>xcp scan -parallel 8 \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

scan -match

Only process files and directories that match the filter.

In the following example, the `scan` command scans all files that have changed between 1 month and 1 year and prints a line to the console for each file found. The ISO format of its last modification time, a human-readable size of the file, its type, and its relative path are returned for each file.

```
c:\netapp\xcp>xcp scan -match "1*month < modified < 1*year" -fmt "{:>15} {:>7} {} {}'
'.format(iso(mtime), humanize_size(size), type, relpath)" \\<IP address or hostname of SMB
server>\copy_share2
xcp scan -match "1*month < modified < 1*year" -fmt "{:>15} {:>7} {} {}'
'.format(iso(mtime), humanize_size(size), type, relpath)" \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp scan -match 1*month < modified < 1*year -fmt '{:>15} {:>7} {} {}'
'.format(iso(mtime), humanize_size(size), type, relpath)" \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

In the following example, the `scan` command with `-match` lists the files that have not been modified for more than 3 months and have a size bigger than 4MB.

```
c:\netapp\xcp>xcp scan -match "modified > 3*month and size > 4194304" -fmt "{}, {}, {}'
'.format(iso(mtime), humanize_size(size), relpath)" \\<IP address or hostname of SMB
server>\copy_share2
xcp scan -match "modified > 3*month and size > 4194304" -fmt "{}, {}, {}'
'.format(iso(mtime), humanize_size(size), relpath)" \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp scan -match modified > 3*month and size > 4194304 -fmt '{}, {}, {}'
'.format(iso(mtime), humanize_size(size), relpath)" \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

The following example matches only the directories, and the formatting adds a comma between the variables `mtime` relative path and depth.

The second command redirects the same output to `name.csv`.

```
c:\netapp\xcp>xcp scan -match "type is directory" -fmt "','.join(map(str, [iso(mtime), relpath,
depth]))" \\<IP address or hostname of SMB server>\copy_share2
xcp scan -match "type is directory" -fmt "','.join(map(str, [iso(mtime), relpath, depth]))" \\<IP
address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

2013-03-07_15:41:40.376072,copy_share2\agnostic,1
2020-03-05_04:15:07.769268,copy_share2,0

xcp scan -match type is directory -fmt "','.join(map(str, [iso(mtime), relpath, depth]))" \\<IP
address or hostname of SMB server>\copy_share2
317 scanned, 2 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

```
c:\netapp\xcp>xcp scan -match "type is directory" -fmt "','.join(map(str, [iso(mtime), relpath,
depth]))" \\<IP address or hostname of SMB server>\copy_share2 > name.csv
xcp scan -match "type is directory" -fmt "','.join(map(str, [iso(mtime), relpath, depth]))"
\\<IP address or hostname of SMB server>\copy_share2 > name.csv
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

c:\netapp\xcp>
```

The following example prints the full path and the raw `mtime` value of all the files that are not directories. The `mtime` value is padded with 70 chars to facilitate a readable console report.

```
c:\netapp\xcp>xcp scan -match "type is not directory" -fmt "{}{:>70}'.format(abspath, mtime)"
\\<IP address or hostname of SMB server>\copy_share2
xcp scan -match "type is not directory" -fmt "{}{:>70}'.format(abspath, mtime)" \\<IP address
or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

--truncated output--
\\<IP address or hostname of SMB server>\copy_share2\ASUP.pm
1362688899.238098
\\<IP address or hostname of SMB server>\copy_share2\ASUP_REST.pm
1362688899.264073
\\<IP address or hostname of SMB server>\copy_share2\Allflavors_v2.pm
1362688899.394938
\\<IP address or hostname of SMB server>\copy_share2\Armadillo.pm
1362688899.402936
\\<IP address or hostname of SMB server>\copy_share2\AsupExtractor.pm
1362688899.410922
\\<IP address or hostname of SMB server>\copy_share2\BTS_Config.pm
1362688899.443902
\\<IP address or hostname of SMB server>\copy_share2\Backup.pm
1362688899.444905
\\<IP address or hostname of SMB server>\copy_share2\Aggregate.pm
1362688899.322019
\\<IP address or hostname of SMB server>\copy_share2\Burt.pm
1362688899.446889
\\<IP address or hostname of SMB server>\copy_share2\CConfig.pm
1362688899.4479
\\<IP address or hostname of SMB server>\copy_share2\CIFS.pm
1362688899.562795
\\<IP address or hostname of SMB server>\copy_share2\agnostic\ProtocolAccess.pm
1362688900.358093
\\<IP address or hostname of SMB server>\copy_share2\agnostic\Qtree.pm
1362688900.359095
\\<IP address or hostname of SMB server>\copy_share2\agnostic\Quota.pm
1362688900.360094
\\<IP address or hostname of SMB server>\copy_share2\agnostic\RbacCmdFetcher.pm
1362688900.3611
\\<IP address or hostname of SMB server>\copy_share2\agnostic\RbacCmdFetcher_ReadMe
1362688900.362094
\\<IP address or hostname of SMB server>\copy_share2\agnostic\SFXOD.pm
1362688900.363094
\\<IP address or hostname of SMB server>\copy_share2\agnostic\Snapmirror.pm
1362688900.364092
\\<IP address or hostname of SMB server>\copy_share2\agnostic\VolEfficiency.pm
1362688900.375077
\\<IP address or hostname of SMB server>\copy_share2\agnostic\flatfile.txt
1362688900.376076

xcp scan -match type is not directory -fmt '{}{:>70}'.format(abspath, mtime) \\<IP address or
hostname of SMB server>\copy_share2
317 scanned, 315 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

scan -exclude

Excludes directories and files based on the pattern in the filter.

In the following example, the `scan -exclude` command is used to exclude any file that has changed between 1 month and 1 year, and prints a line to the console for each file that is not excluded. The details printed for each file are the ISO format of its last modification time, a human-readable size of the file, its type, and its relative path.

```
c:\netapp\xcp>xcp scan -exclude "1*month < modified < 1*year" -fmt "{}{:>15} {:>7}{}"
{}'.format(iso(mtime), humanize_size(size), type, relpath)" \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic
xcp scan -exclude "1*month < modified < 1*year" -fmt "{}{:>15} {:>7} {}{}'".format(iso(mtime),
humanize_size(size), type, relpath)" \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic
XCP SMB <version>; (c) 2021 NetApp, Inc.; Licensed to Calin Salagean [NetApp Inc] until Mon Dec
31 00:00:00 2029
```

```

2013-03-07_15:39:22.852698      46 regular agnostic\P4ENV
2013-03-07_15:40:27.093887 8.40KiB regular agnostic\Client_outage.thpl
2013-03-07_15:40:38.381870 23.0KiB regular agnostic\IPv6_RA_Configuration_Of_LLA_In_SK_BSD.thpl
2013-03-07_15:40:38.382876 12.0KiB regular agnostic\IPv6_RA_Default_Route_changes.thpl
2013-03-07_15:40:38.383870 25.8KiB regular agnostic\IPv6_RA_Port_Role_Change.thpl
2013-03-07_15:40:38.385863 28.6KiB regular
agnostic\IPv6_RA_processing_And_Default_Route_Installation.thpl
2013-03-07_15:40:38.386865 21.8KiB regular agnostic\IPv6_RA_processing_large_No_Prefix.thpl
2013-03-07_15:40:40.323163      225 regular agnostic\Makefile
2013-03-07_15:40:40.324160      165 regular agnostic\Makefile.template
----truncated output ----
2013-03-07_15:45:36.668516      0 directory agnostic\tools\limits_finder\vendor\symfony\src
2013-03-07_15:45:36.668514      0 directory agnostic\tools\limits_finder\vendor\symfony
2013-03-07_15:45:40.782881      0 directory agnostic\tools\limits_finder\vendor
2013-03-07_15:45:40.992685      0 directory agnostic\tools\limits_finder
2013-03-07_15:45:53.242817      0 directory agnostic\tools
2013-03-07_15:46:11.334815      0 directory agnostic

xcp scan -exclude 1*month < modified < 1*year -fmt '{:>15} {:>7} {} {}'.format(iso(mtime),
humanize_size(size), type, relpath) \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic
140,856 scanned, 1 excluded, 0 errors
Total Time : 46s
STATUS : PASSED

```

The following example for `scan -exclude` lists the not excluded files that have not been modified for more than three months and have a size greater than 5.5 KB. The details that are printed for each file are the ISO format of its last modification time, a human-readable size of the file, its type, and its relative path.

```

c:\netapp\xcp>xcp scan -exclude "modified > 3*month and size > 5650" -fmt "{},{}, {}, {}'.format(iso(mtime), humanize_size(size), relpath)" \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic\snapmirror
xcp scan -exclude "modified > 3*month and size > 5650" -fmt "{},{}, {}, {}'.format(iso(mtime),
humanize_size(size), relpath)" \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic\snapmirror
XCP SMB <version>; (c) 2021 NetApp, Inc.; Licensed to Calin Salagean [NetApp Inc] until Mon Dec
31 00:00:00 2029

2013-03-07_15:44:53.713279, 4.31KiB, snapmirror\rsm_abort.thpl
2013-03-07_15:44:53.714269, 3.80KiB, snapmirror\rsm_break.thpl
2013-03-07_15:44:53.715270, 3.99KiB, snapmirror\rsm_init.thpl
2013-03-07_15:44:53.716268, 2.41KiB, snapmirror\rsm_quiesce.thpl
2013-03-07_15:44:53.717263, 2.70KiB, snapmirror\rsm_release.thpl
2013-03-07_15:44:53.718260, 4.06KiB, snapmirror\rsm_resume.thpl
2013-03-07_15:44:53.720256, 4.77KiB, snapmirror\rsm_resync.thpl
2013-03-07_15:44:53.721258, 3.83KiB, snapmirror\rsm_update.thpl
2013-03-07_15:44:53.724256, 4.74KiB, snapmirror\sm_quiesce.thpl
2013-03-07_15:44:53.725254, 4.03KiB, snapmirror\sm_resync.thpl
2013-03-07_15:44:53.727249, 4.30KiB, snapmirror\sm_store_complete.thpl
2013-03-07_15:44:53.729250, 0, snapmirror

xcp scan -exclude modified > 3*month and size > 5650 -fmt '{},{}, {}'.format(iso(mtime),
humanize_size(size), relpath) \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic\snapmirror
18 scanned, 6 excluded, 0 errors
Total Time : 0s
STATUS : PASSED

```

This following example excludes directories. It lists the not excluded files with formatting that adds a comma between the variables `mtime`, `relpath`, and `depth`.

```

c:\netapp\xcp>xcp scan -exclude "type is directory" -fmt "{},{}, {}, {}'.join(map(str, [iso(mtime), relpath, depth]))" \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic\snapmirror

xcp scan -exclude "type is directory" -fmt "{},{}, {}, {}'.join(map(str, [iso(mtime), relpath, depth]))"
\\<IP address or hostname of SMBserver>\localtest\arch\win32\agnostic\snapmirror
XCP SMB <version>; (c) 2021 NetApp, Inc.; Licensed to Calin Salagean [NetApp Inc] until Mon Dec
31 00:00:00 2029

2013-03-07_15:44:53.712271,snapmirror\SMutils.pm,1
2013-03-07_15:44:53.713279,snapmirror\rsm_abort.thpl,1
2013-03-07_15:44:53.714269,snapmirror\rsm_break.thpl,1

```

```

2013-03-07_15:44:53.715270,snapmirror\rsm_init.thpl,1
2013-03-07_15:44:53.716268,snapmirror\rsm_quiesce.thpl,1
2013-03-07_15:44:53.717263,snapmirror\rsm_release.thpl,1
2013-03-07_15:44:53.718260,snapmirror\rsm_resume.thpl,1
2013-03-07_15:44:53.720256,snapmirror\rsm_resync.thpl,1
2013-03-07_15:44:53.721258,snapmirror\rsm_update.thpl,1
2013-03-07_15:44:53.722261,snapmirror\sm_init.thpl,1
2013-03-07_15:44:53.723257,snapmirror\sm_init_complete.thpl,1
2013-03-07_15:44:53.724256,snapmirror\sm_quiesce.thpl,1
2013-03-07_15:44:53.725254,snapmirror\sm_resync.thpl,1
2013-03-07_15:44:53.726250,snapmirror\sm_retrieve_complete.thpl,1
2013-03-07_15:44:53.727249,snapmirror\sm_store_complete.thpl,1
2013-03-07_15:44:53.728256,snapmirror\sm_update.thpl,1
2013-03-07_15:44:53.729260,snapmirror\sm_update_start.thpl,1

xcp scan -exclude type is directory -fmt ','.join(map(str, [iso(mtime), relpath, depth])) \\<IP
address or hostname of SMB server>\localtest\arch\win32\agnostic\snapmirror
18 scanned, 1 excluded, 0 errors
Total Time : 0s
STATUS : PASSED

```

This following example prints the complete file path and the raw mtime value of all files that are not directories. The mtimevalue is padded with 70 characters to facilitate a readable console report.

```

c:\netapp\xcp>xcp scan -exclude "type is not directory" -fmt "'{} {:>70}'.format(abspath, mtime)"
\\<IP address or hostname of SMB server>\localtest\arch\win32\agnostic\snapmirror
xcp scan -exclude "type is not directory" -fmt "'{} {:>70}'.format(abspath, mtime)" \\<IP address
or hostname of SMB server>\localtest\arch\win32\agnostic\snapmirror
XCP SMB <version>; (c) 2021 NetApp, Inc.; Licensed to Calin Salagean [NetApp Inc] until Mon Dec
31 00:00:00 2029

\\<IP address or hostname of SMB server>\localtest\arch\win32\agnostic\snapmirror
1362689093.72925

xcp scan -exclude type is not directory -fmt '{} {:>70}'.format(abspath, mtime) \\<IP address or
hostname of SMB server>\localtest\arch\win32\agnostic\snapmirror
18 scanned, 17 excluded, 0 errors
Total Time : 0s
STATUS : PASSED

```

scan -preserve-ctime

Restores the last accessed date of all the files on the source.

When we scan a SMB share, the access time is modified on the files (if the storage system is configured to modify ctime on read), because XCP is reading the files one by one.

XCP never changes the ctime. XCP just reads the file, which triggers an update on ctime.

Use the -preserve-ctime option to reset the ctime to the original value before XCP read the file.

```

c:\netapp\xcp>xcp scan -preserve-ctime \\<IP address or hostname of SMB server>\copy_share2
xcp scan -preserve-ctime \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

copy_share2\ASUP.pm
copy_share2\ASUP_REST.pm
copy_share2\Allflavors_v2.pm
copy_share2\Armadillo.pm
copy_share2\AsupExtractor.pm
copy_share2\BTS_Config.pm
copy_share2\Backup.pm
copy_share2\Aggregate.pm
copy_share2\Burt.pm
copy_share2\CConfig.pm
copy_share2\agnostic\ProtocolAccess.pm
copy_share2\agnostic\Qtree.pm
copy_share2\agnostic\Quota.pm
copy_share2\agnostic\RbacCmdFetcher.pm
copy_share2\agnostic\RbacCmdFetcher_ReadMe
copy_share2\agnostic\SFXOD.pm
copy_share2\agnostic\Snapmirror.pm
copy_share2\agnostic\VolEfficiency.pm

```

```

copy_share2\agnostic\flatfile.txt
copy_share2\agnostic
copy_share2

xcp scan -preserve-atime \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 1s
STATUS : PASSED

```

scan -depth <n>

Limit the search depth of directories inside an SMB share.

Note: This `-depth` option specifies how deep XCP can scan the files into the subdirectories.

```

c:\netapp\xcp>xcp scan -depth 2 \\<IP address or hostname of SMB server>\copy_share2
xcp scan -depth 2 \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

copy_share2\ASUP.pm
copy_share2\ASUP_REST.pm
copy_share2\Allflavors_v2.pm
copy_share2\Armadillo.pm
copy_share2\AsupExtractor.pm
copy_share2\BTS_Config.pm
copy_share2\Backup.pm
copy_share2\Aggregate.pm
copy_share2\Burt.pm
copy_share2\CConfig.pm
copy_share2\CIFS.pm
copy_share2\CR.pm
copy_share2\CRC.pm
copy_share2\CSHM.pm
copy_share2\agnostic\Fileclone.pm
copy_share2\agnostic\Jobs.pm
copy_share2\agnostic\License.pm
copy_share2\agnostic\Panamax_Clone_Utils.pm
copy_share2\agnostic\LunCmds.pm
copy_share2\agnostic\ProtocolAccess.pm
copy_share2\agnostic\Qtree.pm
copy_share2\agnostic\Quota.pm
copy_share2\agnostic\RbacCmdFetcher.pm
copy_share2\agnostic\RbacCmdFetcher_ReadMe
copy_share2\agnostic\SFXOD.pm
copy_share2\agnostic\Snapmirror.pm
copy_share2\agnostic\VolEfficiency.pm
copy_share2\agnostic\flatfile.txt
copy_share2\agnostic
copy_share2

xcp scan -depth 2 \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED

```

scan -stats

Tree statistics report formats.

```

c:\netapp\xcp>xcp scan -stats \\<IP address or hostname of SMB server>\copy_share2
xcp scan -stats \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

== Maximum Values ==
      Size      Depth  Namelen  Dirsize
    3.31MiB        2       29      297

== Average Values ==
      Size      Depth  Namelen  Dirsize
    64.3KiB        1       12      158

== Top File Extensions ==
      .pm .testcases no extension  .thpl  .php  .txt
      307        2        2        2        1        1

== Number of files ==

```

empty	<8KiB	8-64KiB	64KiB-1MiB	1-10MiB	10-100MiB	>100MiB
	81	170	62	2		

```

== Space used ==
empty    <8KiB    8-64KiB  64KiB-1MiB  1-10MiB  10-100MiB  >100MiB
0        357KiB  4.59MiB  9.62MiB  5.23MiB          0          0

== Directory entries ==
empty    1-10      10-100    100-1K     1K-10K     >10K
          1          1

== Depth ==
0-5      6-10     11-15     16-20     21-100     >100
317

== Modified ==
>1 year  >1 month  1-31 days  1-24 hrs   <1 hour    <15 mins   future     invalid
315                      2

== Created ==
>1 year  >1 month  1-31 days  1-24 hrs   <1 hour    <15 mins   future     invalid
20                      297

```

Total count: 317
 Directories: 2
 Regular files: 315
 Symbolic links:
 Junctions:
 Special files:
 Total space for regular files: 19.8MiB
 Total space for directories: 0
 Total space used: 19.8MiB
 xcp scan -stats \\<IP address or hostname of SMB server>\copy_share2
 317 scanned, 0 matched, 0 errors
 Total Time : 0s
 STATUS : PASSED

scan -html

Tree statistics report formats.

Note: XCP reports (.csv, .html) are saved in the same location as where the XCP binary is present. The file name is in the following format <xcp_process_id>_<time_stamp>.html. When XCP cannot map security identifiers (SIDs) to owner names, it uses the last few digits after the final “-” in the SID to represent the owner. For example, when XCP is unable to map the SID S-1-5-21-1896871423-3211229150-3383017265-4854184 to its owner, it represents the owner by using 4854184. To see sample .csv and .html reports, go to [Sample XCP NFS and SMB Reports](#).

```

Z:\scripts\xcp\windows>xcp scan -stats -html -preserve-atime -ownership \\<IP address or hostname
of SMB server>\source_vol
XCP SMB <version>; (c) 2021 NetApp, Inc.; Licensed to Calin Salagean [NetApp Inc] until Mon Dec
31 00:00:00 2029

1,972 scanned, 0 matched, 0 errors, 7s
4,768 scanned, 0 matched, 0 errors, 12s
7,963 scanned, 0 matched, 0 errors, 17s
10,532 scanned, 0 matched, 0 errors, 22s
12,866 scanned, 0 matched, 0 errors, 27s
15,770 scanned, 0 matched, 0 errors, 32s
17,676 scanned, 0 matched, 0 errors, 37s

== Maximum Values ==
Size      Depth    Namelen    Dirsize
535KiB    16        33         45

= Average Values =
Size      Depth    Namelen    Dirsize
10.3KiB   7         11         6

== Top File SIDs ==
S-1-5-21-1896871423-3211229150-3383017265-4854184 S-1-5-32-544 S-1-5-21-1896871423-3211229150-
3383017265-3403389
9318      8470      1

== Top Space SIDs ==

```

```

S-1-5-21-1896871423-3211229150-3383017265-4854184 S-1-5-32-544 S-1-5-21-1896871423-3211229150-
3383017265-3403389
76.8MiB 69.8MiB 0

== Top File Extensions ==
.py .rst .html no extension .txt .png other
5418 3738 1974 1197 630 336 1344

== Number of files ==
empty <8KiB 8-64KiB 64KiB-1MiB 1-10MiB 10-100MiB >100MiB
168 11466 2709 294

== Space used ==
empty <8KiB 8-64KiB 64KiB-1MiB 1-10MiB 10-100MiB >100MiB
0 24.4MiB 55.3MiB 66.9MiB 0 0 0

== Directory entries ==
empty 1-10 10-100 100-1K 1K-10K >10K
42 2690 420

== Depth ==
0-5 6-10 11-15 16-20 21-100 >100
3832 12527 1424 6

== Modified ==
>1 year >1 month 1-31 days 1-24 hrs <1 hour <15 mins future invalid
11718 2961 3110

== Created ==
>1 year >1 month 1-31 days 1-24 hrs <1 hour <15 mins future invalid
1 17788

== Accessed ==
>1 year >1 month 1-31 days 1-24 hrs <1 hour <15 mins future invalid
14624 3165

Total count: 17789
Directories: 3152
Regular files: 14637
Symbolic links:
Junctions:
Special files:
Total space for regular files: 147MiB
Total space for directories: 0
Total space used: 147MiB
Dedupe estimate: N/A
Sparse data: N/A
xcp scan -stats -html -preserve-atime -ownership \\<IP address or hostname of SMB
server>\source_vol
17,789 scanned, 0 matched, 0 errors
Total Time : 39s
STATUS : PASSED

```

scan-csv

Tree statistics report formats.

```

Z:\scripts\xcp\windows>xcp scan -stats -csv -preserve-atime -ownership \\<IP address or hostname
of SMB server>\source_vol

Output:
Z:\scripts\xcp\windows>xcp scan -stats -csv -preserve-atime -ownership \\<IP address or hostname
of SMB server>\source_vol
XCP SMB <version>; (c) 2021 NetApp, Inc.; Licensed to Calin Salagean [NetApp Inc] until Mon Dec
31 00:00:00 2029

1,761 scanned, 0 matched, 0 errors, 6s
4,949 scanned, 0 matched, 0 errors, 11s
7,500 scanned, 0 matched, 0 errors, 16s
10,175 scanned, 0 matched, 0 errors, 21s
12,371 scanned, 0 matched, 0 errors, 26s
15,330 scanned, 0 matched, 0 errors, 31s
17,501 scanned, 0 matched, 0 errors, 36s

```

```

== Maximum Values ==
      Size      Depth    Namelen    Dirsize
    535KiB        16         33         45

== Average Values ==
      Size      Depth    Namelen    Dirsize
    10.3KiB         7         11         6

== Top File SIDs ==
S-1-5-21-1896871423-3211229150-3383017265-4854184 S-1-5-32-544 S-1-5-21-1896871423-3211229150-
3383017265-3403389
      9318      8470          1

== Top Space SIDs ==
S-1-5-21-1896871423-3211229150-3383017265-4854184 S-1-5-32-544 S-1-5-21-1896871423-3211229150-
3383017265-3403389
      76.8MiB      69.8MiB          0

== Top File Extensions ==
      .py      .rst      .html no extension      .txt      .png      other
      5418      3738      1974      1197      630      336      1344

== Number of files ==
      empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB      10-100MiB      >100MiB
      168      11466      2709      294

== Space used ==
      empty      <8KiB      8-64KiB 64KiB-1MiB      1-10MiB      10-100MiB      >100MiB
      0      24.4MiB      55.3MiB      66.9MiB      0      0      0

== Directory entries ==
      empty      1-10      10-100      100-1K      1K-10K      >10K
      42      2690      420

== Depth ==
      0-5      6-10      11-15      16-20      21-100      >100
      3832      12527      1424      6

== Modified ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future      invalid
      11718      2961      3110

== Created ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future      invalid
      17789

== Accessed ==
      >1 year      >1 month      1-31 days      1-24 hrs      <1 hour      <15 mins      future      invalid
      15754      2035

Total count: 17789
Directories: 3152
Regular files: 14637
Symbolic links:
Junctions:
Special files:
Total space for regular files: 147MiB
Total space for directories: 0
Total space used: 147MiB
Dedupe estimate: N/A
Sparse data: N/A
xcp scan -stats -csv -preserve-atime -ownership \\<IP address or hostname of SMB
server>\source_vol
17,789 scanned, 0 matched, 0 errors
Total Time : 40s
STATUS : PASSED

```

scan -l

Use the scan -l command for detailed file listing output.

```

c:\netapp\xcp>xcp scan -l \\<IP address or hostname of SMB server>\copy_share2
xcp scan -l \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

```

```
f 195KiB 7y0d copy_share2\ASUP.pm
f 34.7KiB 7y0d copy_share2\ASUP_REST.pm
f 4.11KiB 7y0d copy_share2\Allflavors_v2.pm
f 38.1KiB 7y0d copy_share2\Armadillo.pm
f 3.83KiB 7y0d copy_share2\AsupExtractor.pm
f 70.1KiB 7y0d copy_share2\BTS_Config.pm
f 2.65KiB 7y0d copy_share2\Backup.pm
f 60.3KiB 7y0d copy_share2\Aggregate.pm
f 36.9KiB 7y0d copy_share2\Burt.pm
f 8.98KiB 7y0d copy_share2\CConfig.pm
f 19.3KiB 7y0d copy_share2\CIFS.pm
f 20.7KiB 7y0d copy_share2\CR.pm
f 2.28KiB 7y0d copy_share2\CRC.pm
f 18.7KiB 7y0d copy_share2\CSHM.pm
f 43.0KiB 7y0d copy_share2\CSM.pm
f 19.7KiB 7y0d copy_share2\ChangeModel.pm
f 33.3KiB 7y0d copy_share2\Checker.pm
f 3.47KiB 7y0d copy_share2\Class.pm
f 37.8KiB 7y0d copy_share2\Client.pm
f 188KiB 7y0d copy_share2\agnostic\Flexclone.pm
f 15.9KiB 7y0d copy_share2\agnostic\HyA_Clone_Utils.pm
f 13.4KiB 7y0d copy_share2\agnostic\Fileclone.pm
f 41.8KiB 7y0d copy_share2\agnostic\Jobs.pm
f 24.0KiB 7y0d copy_share2\agnostic\License.pm
f 34.8KiB 7y0d copy_share2\agnostic\Panamax_Clone_Utils.pm
f 30.2KiB 7y0d copy_share2\agnostic\LunCmds.pm
f 40.9KiB 7y0d copy_share2\agnostic\ProtocolAccess.pm
f 15.7KiB 7y0d copy_share2\agnostic\Qtrees.pm
f 29.3KiB 7y0d copy_share2\agnostic\Quota.pm
f 13.7KiB 7y0d copy_share2\agnostic\RbacCmdFetcher.pm
f 5.55KiB 7y0d copy_share2\agnostic\RbacCmdFetcher_ReadMe
f 3.92KiB 7y0d copy_share2\agnostic\SFXOD.pm
f 35.8KiB 7y0d copy_share2\agnostic\Snapmirror.pm
f 40.4KiB 7y0d copy_share2\agnostic\VolEfficiency.pm
f 6.22KiB 7y0d copy_share2\agnostic\flatfile.txt
d 0 7y0d copy_share2\agnostic
d 0 19h17m copy_share2
```

```
xcp scan -l \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

scan -ownership

Retrieves ownership information for files.

Note: The -ownership option can only be used with -l, -match, -fmt, or -stats options.

```
c:\netapp\xcp>xcp scan -l -ownership \\<IP address or hostname of SMB server>\copy_share2
xcp scan -l -ownership \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
```

```
f BUILTIN\Administrators 195KiB 7y0d copy_share2\ASUP.pm
f BUILTIN\Administrators 34.7KiB 7y0d copy_share2\ASUP_REST.pm
f BUILTIN\Administrators 4.11KiB 7y0d copy_share2\Allflavors_v2.pm
f BUILTIN\Administrators 38.1KiB 7y0d copy_share2\Armadillo.pm
f BUILTIN\Administrators 3.83KiB 7y0d copy_share2\AsupExtractor.pm
f BUILTIN\Administrators 70.1KiB 7y0d copy_share2\BTS_Config.pm
f BUILTIN\Administrators 2.65KiB 7y0d copy_share2\Backup.pm
f BUILTIN\Administrators 60.3KiB 7y0d copy_share2\Aggregate.pm
f BUILTIN\Administrators 36.9KiB 7y0d copy_share2\Burt.pm
f BUILTIN\Administrators 8.98KiB 7y0d copy_share2\CConfig.pm
f BUILTIN\Administrators 19.3KiB 7y0d copy_share2\CIFS.pm
f BUILTIN\Administrators 20.7KiB 7y0d copy_share2\CR.pm
f BUILTIN\Administrators 2.28KiB 7y0d copy_share2\CRC.pm
f BUILTIN\Administrators 18.7KiB 7y0d copy_share2\CSHM.pm
f BUILTIN\Administrators 43.0KiB 7y0d copy_share2\CSM.pm
f BUILTIN\Administrators 19.7KiB 7y0d copy_share2\ChangeModel.pm
f BUILTIN\Administrators 33.3KiB 7y0d copy_share2\Checker.pm
f BUILTIN\Administrators 3.47KiB 7y0d copy_share2\Class.pm
f BUILTIN\Administrators 37.8KiB 7y0d copy_share2\Client.pm
f BUILTIN\Administrators 2.44KiB 7y0d copy_share2\ClientInfo.pm
f BUILTIN\Administrators 37.2KiB 7y0d copy_share2\ClientMgr.pm
f BUILTIN\Administrators 17.1KiB 7y0d copy_share2\ClientRPC.pm
f BUILTIN\Administrators 9.21KiB 7y0d copy_share2\ClusterAgent.pm
```

```
f BUILTIN\Administrators 15.7KiB 7y0d copy_share2\agnostic\Qtree.pm
f BUILTIN\Administrators 29.3KiB 7y0d copy_share2\agnostic\Quota.pm
f BUILTIN\Administrators 13.7KiB 7y0d copy_share2\agnostic\RbacCmdFetcher.pm
f BUILTIN\Administrators 5.55KiB 7y0d copy_share2\agnostic\RbacCmdFetcher_ReadMe
f BUILTIN\Administrators 3.92KiB 7y0d copy_share2\agnostic\SFXOD.pm
f BUILTIN\Administrators 35.8KiB 7y0d copy_share2\agnostic\Snapmirror.pm
f BUILTIN\Administrators 40.4KiB 7y0d copy_share2\agnostic\VolEfficiency.pm
f BUILTIN\Administrators 6.22KiB 7y0d copy_share2\agnostic\flatfile.txt
d BUILTIN\Administrators 0 7y0d copy_share2\agnostic
d BUILTIN\Administrators 0 19h18m copy_share2

xcp scan -l -ownership \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 1s
STATUS : PASSED
```

scan-du

Summarize space usage of each directory, including subdirectories.

```
c:\netapp\xcp>xcp scan -du \\<IP address or hostname of SMB server>\copy_share2
xcp scan -du \\<IP address or hostname of SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

 569KiB copy_share2\agnostic
19.8MiB copy_share2

xcp scan -du \\<IP address or hostname of SMB server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

scan-fmt <expression>

Formats file listing according to the defined expression.

```
c:\netapp\xcp>xcp scan -fmt "'", '.join(map(str, [relpath, name, size, depth]))' \\<IP address
or hostname of SMB server>\copy_share2
xcp scan -fmt "'", '.join(map(str, [relpath, name, size, depth]))' \\<IP address or hostname of
SMB server>\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

copy_share2\ASUP.pm, ASUP.pm, 199239, 1
copy_share2\ASUP_REST.pm, ASUP_REST.pm, 35506, 1
copy_share2\Allflavors_v2.pm, Allflavors_v2.pm, 4204, 1
copy_share2\Armadillo.pm, Armadillo.pm, 39024, 1
copy_share2\AsupExtractor.pm, AsupExtractor.pm, 3924, 1
copy_share2\BTS_Config.pm, BTS_Config.pm, 71777, 1
copy_share2\Backup.pm, Backup.pm, 2714, 1
copy_share2\Aggregate.pm, Aggregate.pm, 61699, 1
copy_share2\Burt.pm, Burt.pm, 37780, 1
copy_share2\CConfig.pm, CConfig.pm, 9195, 1
copy_share2\CIFS.pm, CIFS.pm, 19779, 1
copy_share2\CR.pm, CR.pm, 21215, 1
copy_share2\CRC.pm, CRC.pm, 2337, 1
copy_share2\agnostic\LunCmds.pm, LunCmds.pm, 30962, 2
copy_share2\agnostic\ProtocolAccess.pm, ProtocolAccess.pm, 41868, 2
copy_share2\agnostic\Qtree.pm, Qtree.pm, 16057, 2
copy_share2\agnostic\Quota.pm, Quota.pm, 30018, 2
copy_share2\agnostic\RbacCmdFetcher.pm, RbacCmdFetcher.pm, 14067, 2
copy_share2\agnostic\RbacCmdFetcher_ReadMe, RbacCmdFetcher_ReadMe, 5685, 2
copy_share2\agnostic\SFXOD.pm, SFXOD.pm, 4019, 2
copy_share2\agnostic\Snapmirror.pm, Snapmirror.pm, 36624, 2
copy_share2\agnostic\VolEfficiency.pm, VolEfficiency.pm, 41344, 2
copy_share2\agnostic\flatfile.txt, flatfile.txt, 6366, 2
copy_share2\agnostic, agnostic, 0, 1
copy_share2, , 0, 0

xcp scan -fmt "'", '.join(map(str, [relpath, name, size, depth]))' \\<IP address or hostname of SMB
server>\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

3.6 copy

The `copy` command scans and copies the entire source directory structure to a destination SMB share. The `copy` command requires having source and destination paths as variables. The scanned and copied files, throughput/speed, and elapsed time details are printed to the console once every 5 seconds.

Notes:

- The run-time log file is stored under `C:\NetApp\XCP`.
- This command copies data without ACL.

Syntax

```
C:\xcp>xcp copy \\<source SMB share> \\<IP address of SMB destination server>
```

Example

```
c:\netapp\xcp>xcp copy \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
xcp copy \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB destination
server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp copy \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB destination
server>\source_share
317 scanned, 0 matched, 316 copied, 0 errors
Total Time : 2s
STATUS : PASSED
```

Parameters

The following table provides a list of `copy` parameters and their description.

Feature	Description
<code>copy -h, --help</code>	Show this help message and exit.
<code>copy -v</code>	Increase debug verbosity.
<code>copy -parallel <n></code>	Number of concurrent processes (default: <cpu-count>).
<code>copy -match <filter></code>	Only process files and directories that match the filter (see `xcp help -match` for details).
<code>copy -exclude <filter></code>	Only exclude files and directories in the filter
<code>copy -preserve-ctime</code>	Restore last accessed date on source.
<code>Copy -acl</code>	Copy security information.
<code>copy -fallback-user FALLBACK_USER</code>	Active Directory user or local (non-domain) user on the target machine that receives the permissions of local (nondomain) source machine users. For example, domain\administrator.
<code>copy -fallback-group FALLBACK_GROUP</code>	Active Directory group or local (non-domain) group on the target machine that receives the permissions of local (nondomain) source machine groups. For example, domain\administrators.
<code>copy -root</code>	Copy ACL for root directory.
<code>copy -aclverify {yes,no}</code>	Provides an option to skip or include ACL verification during the copy -acl operation.
<code>copy -noownership</code>	Do not copy ownership.
<code>copy -bs <n></code>	Read/Write blocksize (default:1M)

copy --help

Displays detailed information about the copy command.

```
C:\Netapp\xcp>xcp.exe copy --help
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until Tue Jul
18 01:12:18 2023
usage: xcp copy [-h] [-v] [-parallel <n>] [-match <filter>] [-exclude <filter>] [-preserve-
atime] [-acl] [-fallback-user FALLBACK_USER] [-fallback-group FALLBACK_GROUP] [-loglevel
<name>] [-root]
                        [-noownership] [-aclverify
{yes,no}
] [-bs <n>]
                        source target
positional arguments:
  source
  target
optional arguments:
  -h, --help            show this help message and exit
  -v                    increase debug verbosity
  -parallel <n>         number of concurrent processes (default: <cpu-count>)
  -match <filter>       only process files and directories that match the filter (see `xcp help
-match` for details)
  -exclude <filter>     Exclude files and directories that match the filter (see `xcp help -
exclude` for details)
  -preserve-atime       restore last accessed date on source
  -acl                  copy security information
  -fallback-user FALLBACK_USER
                        the name of the user on the target machine to receive the permissions of
local (non-domain) source machine users (eg. domain\administrator)
  -fallback-group FALLBACK_GROUP
                        the name of the group on the target machine to receive the permissions
of local (non-domain) source machine groups (eg. domain\administrators)
  -loglevel <name>     option to set log level filter (default:INFO)
  -root                copy acl for root directory
  -noownership          do not copy ownership
  -aclverify {yes,no}  choose whether you need to skip acl verification
  -bs <n>              read/write block size for copy (default: 1M)
```

copy -v

Increase debug verbosity.

```
c:\netapp\xcp>xcp copy -v \\<IP address of SMB destination server>\src \\<IP address of SMB
destination server>\dest\d 1
XCP SMB <version>; (c) 2021 NetApp, Inc.; Licensed to Calin Salagean [NetApp Inc] until Mon Dec
31 00:00:00 2029

failed to set attributes for "d1": (5, 'CreateDirectory', 'Access is denied.')
failed to copy "f1.txt": (5, 'CreateFile', 'Access is denied.')
failed to set attributes for "": (5, 'SetFileAttributesW', 'Access is
denied.') error setting timestamps on "": errno (code: 5) Access is denied.
H:\p 4\xcp_latest\xcp_cifs\xcp_main.py copy -v \\<IP address of SMB destination server>\src
\\<IP address of SMB destination server>\dest\d 1
3 scanned, 0 matched, 0 skipped, 1 copied, 0 (0/s), 3
errors Total Time : 3s
STATUS : FAILED
```

copy -parallel <n>

Set a higher or lower number of XCP concurrent processes.

The default value for `-parallel` is equal to the count of CPU.

Note: The maximum value for `n` is 61.

```
c:\netapp\xcp>xcp copy -parallel 7 \\<IP address or hostname of SMB server>\copy_share2 \\<IP
address of SMB destination server>\source_share
xcp copy -parallel 7 \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp copy -parallel 7 \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
317 scanned, 0 matched, 0 skipped, 316 copied, 0 errors
Total Time : 2s
STATUS : PASSED
```

copy -match <filter>

Copies only the data that matches the argument passed.

```
c:\netapp\xcp>xcp copy -match "'gx' in name" \\<IP address or hostname of SMB server>\copy_share2
\\<IP address of SMB destination server>\source_share
xcp copy -match "'gx' in name" \\<IP address or hostname of SMB server>\copy_share2 \\<IP address
of SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp copy -match 'gx' in name \\<IP address or hostname of SMB server>\copy_share2 \\<IP address
of SMB destination server>\source_share
317 scanned, 5 matched, 4 copied, 0 errors
Total Time : 1s
STATUS : PASSED
```

copy -exclude <filter>

The `copy -exclude` command only copies data that has been excluded.

In the following example, the files and directories that have the string `resync` in their name have been excluded for copy.

```
c:\netapp\xcp>xcp copy -exclude "'resync' in name" \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic\snapmirror \\101.101.101.10\dest_lac
xcp copy -exclude "'resync' in name" \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic\snapmirror \\172.27.192.73\dest_lac
XCP SMB <version>; (c) 2021 NetApp, Inc.; Licensed to Calin Salagean [NetApp Inc] until Mon Dec
31 00:00:00 2029

xcp copy -exclude 'resync' in name \\<IP address or hostname of SMB
server>\localtest\arch\win32\agnostic\snapmirror \\101.101.101.10\dest_lac
18 scanned, 2 excluded, 0 skipped, 15 copied, 122KiB (50.5KiB/s), 0 errors
Total Time : 2s
STATUS : PASSED
```

copy -preserve-ctime

Resets the `ctime` to the original value before XCP read the file.

```
c:\netapp\xcp>xcp copy -preserve-ctime \\<IP address or hostname of SMB server>\copy_share2
\\<IP address of SMB destination server>\source_share
xcp copy -preserve-ctime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp copy -preserve-ctime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
317 scanned, 0 matched, 316 copied, 0 errors
Total Time : 2s
STATUS : PASSED
```

copy -acl

Activates the transfer of the security descriptors (ACLs).

Use the `-acl` parameter with the `-fallback-user` and `-fallback-group` options to specify a user and a group on the target machine or from Active Directory to receive the permissions of local (non-domain) source machine users or groups. This does not refer to unmatched users from Active Directory.

copy -aclverify {yes,no}

Provides an option to skip or include ACL verification during the `copy -acl` operation. The option must be used with the `copy -acl` command. By default, the ACL copy operation verifies the ACLs. If you set the `-aclverify` option to `no`, you can skip ACL verification. If you set `-aclverify` to `yes`, it requires the `fallback-user` and `fallback-group` options. If you set `-aclverify` to `no`, the `fallback-user` and `fallback-group` options are not required.

```
C:\NetApp\xcp>xcp copy -acl -aclverify yes -fallback-user SMBUSER11 -fallback-group SMBGRP1
\\10.237.161.217\source_share \\10.237.161.237\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until Tue
Apr 18 04:47:35 2023

12 scanned, 0 matched, 0 skipped, 0 copied, 0 (0/s), 0 errors, 5s, 0 acls copied
12 scanned, 0 matched, 0 skipped, 0 copied, 0 (0/s), 0 errors, 10s, 0 acls copied
12 scanned, 0 matched, 0 skipped, 0 copied, 0 (0/s), 0 errors, 15s, 0 acls copied
xcp copy -acl -aclverify yes -fallback-user SMBUSER11 -fallback-group SMBGRP1
\\10.237.161.217\source_share \\10.237.161.237\dest_share
12 scanned, 0 matched, 0 skipped, 11 copied, 10KiB (634/s), 0 errors, 11 acls copied
Total Time : 16s
STATUS : PASSED
```

```
C:\NetApp\xcp>xcp copy -acl -aclverify no \\10.237.161.217\source_share
\\10.237.161.237\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until Tue
Apr 18 04:47:35 2023
xcp copy -acl -aclverify no \\10.237.161.217\source_share \\10.237.161.237\dest_share
12 scanned, 0 matched, 0 skipped, 11 copied, 10KiB (5.61KiB/s), 0 errors, 11 acls copied
Total Time : 1s
STATUS : PASSED
```

copy -noownership

Does not copy the ownership from the source to the destination. It must be used with the **-acl** option and requires **fallback-user** and **fallback-group** as mandatory parameters.

```
C:\Netapp\xcp>xcp.exe copy -acl -noownership -fallback-user SMBUSER1 -fallback-group SMBGRP2
\\172.21.58.150\source_share \\172.21.58.166\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until Tue Jul
18 01:12:18 2023
568 scanned, 0 matched, 0 skipped, 0 copied, 0 (0/s), 0 errors, 5s, 0 acls copied
568 scanned, 0 matched, 0 skipped, 0 copied, 0 (0/s), 0 errors, 10s, 0 acls copied
568 scanned, 0 matched, 0 skipped, 135 copied, 4.26MiB (872KiB/s), 0 errors, 15s, 137 acls copied
xcp.exe copy -acl -noownership -fallback-user SMBUSER1 -fallback-group SMBGRP2
\\172.21.58.150\source_share \\172.21.58.166\dest_share
568 scanned, 0 matched, 0 skipped, 567 copied, 17.7MiB (1.01MiB/s), 0 errors, 567 acls copied
Total Time : 17s
STATUS : PASSED
```

copy -bs <n>

Option to provide read/write block size. Default is 1M.

```
c:\Netapp\xcp>xcp.exe copy -bs 32k \\172.21.58.150\source_share \\172.21.58.166\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until Tue Jul 18
01:12:18 2023
xcp.exe copy -bs 32k \\172.21.58.150\source_share \\172.21.58.166\dest_share
568 scanned, 0 matched, 0 skipped, 567 copied, 17.7MiB (6.75MiB/s), 0 errors
Total Time : 2s
STATUS : PASSED
```

3.7 sync

The **sync** command scans for changes and modifications in the source and target shares in parallel, and applies the appropriate actions (remove, modify, rename, and so on) to the target to make sure that the target is identical to the source.

The **sync** command compares data content, time stamps, file attributes, ownership, and security information.

Syntax

```
C:\xcp>xcp sync \\<source SMB share> \\<IP address of SMB destination server>
```

Example

```
c:\netapp\xcp>xcp sync \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
xcp sync \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB destination
server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
xcp sync \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB destination
server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED
```

Parameters

The following table lists the **sync** parameters and their description.

Feature	Description
sync -h, --help	Show this help message and exit.

<code>sync -v</code>	Increase debug verbosity.
<code>sync -parallel <n></code>	Number of concurrent processes (default: <cpu-count>).
<code>sync -match <filter></code>	Only process files and directories that match the filter (see `xcp help -match` for details).
<code>sync -exclude <filter></code>	Only exclude files and directories in the filter
<code>sync -preserve-ctime</code>	Restore last accessed date on source.
<code>sync -noatime</code>	Do not check file access time.
<code>sync -noctime</code>	Do not check file creation time.
<code>sync -nomtime</code>	Do not check file modification time. (This option is deprecated. Sync will continue to run without this option.)
<code>sync -noattrs</code>	Do not check attributes.
<code>sync -noownership</code>	Do not check ownership.
<code>sync -atimewindow <float></code>	Acceptable access time difference, in seconds.
<code>sync -ctimewindow <float></code>	Acceptable creation time difference, in seconds.
<code>sync -mtimewindow <float></code>	Acceptable modification time difference, in seconds,
<code>sync -acl</code>	Copy security information,
<code>sync -fallback-user FALLBACK_USER</code>	AD user or local(non-domain) user on the target machine to receive the permissions of local (nondomain) source machine users (example: domain\administrator).
<code>sync -fallback-group FALLBACK_GROUP</code>	AD group or local(non-domain) group on the target machine to receive the permissions of local(nondomain) source machine groups (example: domain\administrators).
<code>sync -l</code>	Increase output detail.
<code>sync -root</code>	Sync ACL for root directory
<code>sync -onlyacl</code>	Copy only the security information
<code>sync -aclverify{yes,no}</code>	Provides an option to include or skip ACL verification during the ACL sync operation.
<code>sync -bs <n></code>	Read/Write blocksize (default:1M)

sync --help

Displays detailed information about the `sync` command.

```

C:\Netapp\xcp>xcp sync --help
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx[Network Appliance, Inc] until Tue Jul
18 01:12:18 2023
usage: xcp sync [-h] [-v] [-parallel <n>] [-match <filter>] [-exclude <filter>] [-preserve-
atime] [-noatime] [-noctime] [-nomtime] [-noattrs] [-atimewindow <float>] [-ctimewindow <float>]
[-mtimewindow <float>] [-acl] [-fallback-user FALLBACK_USER] [-fallback-group
FALLBACK_GROUP] [-loglevel <name>] [-l] [-root] [-noownership] [-onlyacl] [-aclverify
{yes,no}]
]
                [-bs <n>]
                source target

Note: ONTAP does not let a SMB client modify COMPRESSED or ENCRYPTED attributes.
XCP sync will ignore these file attributes.

positional arguments:
  source
  target

optional arguments:
  -h, --help            show this help message and exit
  -v                    increase debug verbosity
  -parallel <n>         number of concurrent processes (default: <cpu-count>)
  -match <filter>       only process files and directories that match the filter
                        (see `xcp help -match` for details)
  -exclude <filter>     Exclude files and directories that match the filter
                        (see `xcp help -exclude` for details)
  -preserve-atime       restore last accessed date on source
  -noatime              do not check file access time
  -noctime              do not check file creation time
  -nomtime              do not check file modification time
  -noattrs              do not check attributes
  -atimewindow <float> acceptable access time difference in seconds
  -ctimewindow <float> acceptable creation time difference in seconds
  -mtimewindow <float> acceptable modification time difference in seconds
  -acl                  copy security information
  -fallback-user FALLBACK_USER
                        the name of the user on the target machine to receive the permissions of
local (non-domain) source machine users (eg. domain\administrator)
  -fallback-group FALLBACK_GROUP
                        the name of the group on the target machine to receive the permissions of
local (non-domain) source machine groups (eg. domain\administrators)
  -loglevel <name>     option to set log levelfilter
  -l                    increase output detail
  -root                 sync acl for root directory
  -noownership          do not sync ownership
  -onlyacl              sync only acls
  -aclverify {yes,no}  choose whether you need to skip acl verification
  -bs <n>               read/write block size for sync (default: 1M)

```

sync -v

Increase debug verbosity.

```
C:\XCP>xcp sync -v \\<IP address or hostname of SMB server>\vol_SMB_source_XXXXXX\warning \\<IP
address of SMB destination server>\vol_SMB_target_XXXXXX
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXXX XXXX[NetApp Inc] until Mon Dec 31 00:00:00
2029
ERROR failed to remove from target
"assembly\GAC_32\Microsoft.CertificateServices.PKIClient.Cmdlets\v4.0_6.3.0.0 31bf3856ad364e35\p
ki.psdl": [Errno 13] Access is denied: '\\\\?\\UNC\\<IP address of SMB destination
server>\\vol_SMB_tar
shil\\assembly\\GAC_32\\Microsoft.CertificateServices.PKIClient.Cmdlets\\v4.0_6.3.0.0 31bf3856ad
364e35\\pki.psdl'
ERROR failed to remove from target
"assembly\GAC_64\Microsoft.GroupPolicy.AdmTmplEditor\v4.0_6.3.0.0 31bf3856ad364e35\Microsoft.Gro
upPolicy.AdmTmplEditor.dll": [Errno 13] Access is denied: '\\\\?\\UNC\\10.61.
\vol_SMB_target_XXXXXX\\assembly\\GAC_64\\Microsoft.GroupPolicy.AdmTmplEditor\\v4.0_6.3.0.0 31bf
3856ad364e35\\Microsoft.GroupPolicy.AdmTmplEditor.dll'
1,933 scanned, 1,361 compared, 2 errors, 0 skipped, 0 copied, 1,120 removed, 5s
ERROR failed to remove from target
"assembly\GAC_64\System.Printing\v4.0_4.0.0.0 31bf3856ad364e35\System.Printing.dll": [Errno 13]
Access is denied: '\\\\?\\UNC\\<IP address of SMB destination
server>\\vol_SMB_target_XXXXXX\\assembly\
4\\System.Printing\\v4.0_4.0.0.0 31bf3856ad364e35\\System.Printing.dll'
ERROR failed to remove from target
"assembly\GAC_MSIL\Microsoft.PowerShell.Workflow.ServiceCore\v4.0_3.0.0.0 31bf3856ad364e35\Micro
soft.PowerShell.Workflow.ServiceCore.dll": [Errno 13] Access is denied: '\\\\
\\<IP address of SMB destination
server>\\vol_SMB_target_XXXXXX\\assembly\\GAC_MSIL\\Microsoft.PowerShell.Workflow.ServiceCore\\v4
.0_3.0.0.0 31bf3856ad364e35\\Microsoft.PowerShell.Workflow.ServiceCore.dll'
ERROR failed to remove from target
"assembly\GAC_MSIL\Microsoft.RightsManagementServices.ServerManager.DeploymentPlugin\v4.0_6.3.0.0
31bf3856ad364e35\Microsoft.RightsManagementServices.ServerManager.Deploymen
n.dll": [Errno 13] Access is denied: '\\\\?\\UNC\\<IP address of SMB destination
server>\\vol_SMB_target_XXXXXX\\assembly\\GAC_MSIL\\Microsoft.RightsManagementServices.ServerMana
ger.DeploymentPlugin\\v4.0_6.3.0.0 31bf3856ad364e35\\Mic
.RightsManagementServices.ServerManager.DeploymentPlugin.dll'
ERROR failed to remove from target
"assembly\GAC_MSIL\Microsoft.WSMan.Management\v4.0_3.0.0.0 31bf3856ad364e35\Microsoft.WSMan.Mana
gement.dll": [Errno 13] Access is denied: '\\\\?\\UNC\\<IP address of SMB destination
server>\\vol_SMB_
XXXXXX\\assembly\\GAC_MSIL\\Microsoft.WSMan.Management\\v4.0_3.0.0.0 31bf3856ad364e35\\Microsof
t.WSMan.Management.dll'
ERROR failed to remove from target
"assembly\GAC_MSIL\PresentationUI\v4.0_4.0.0.0 31bf3856ad364e35\PresentationUI.dll": [Errno 13]
Access is denied: '\\\\?\\UNC\\<IP address of SMB destination
server>\\vol_SMB_target_XXXXXX\\assembly\
SIL\\PresentationUI\\v4.0_4.0.0.0 31bf3856ad364e35\\PresentationUI.dll'
ERROR failed to remove from target
"assembly\GAC_MSIL\System.IO.Compression.FileSystem\v4.0_4.0.0.0 b77a5c561934e089\System.IO.Comp
ression.FileSystem.dll": [Errno 13] Access is denied: '\\\\?\\UNC\\10.61.71.5
_SMB_target_XXXXXX\\assembly\\GAC_MSIL\\System.IO.Compression.FileSystem\\v4.0_4.0.0.0 b77a5c561
934e089\\System.IO.Compression.FileSystem.dll'
ERROR failed to remove from target "assembly\GAC_MSIL\System.IdentityModel.Selectors\v4.0_4.0.0.0
b77a5c561934e089\System.IdentityModel.Selectors.dll": [Errno 13] Access is denied:
'\\\\?\\UNC\\<IP address of SMB destination server>\\v
s_target_XXXXXX\\assembly\\GAC_MSIL\\System.IdentityModel.Selectors\\v4.0_4.0.0.0 b77a5c561934e0
89\\System.IdentityModel.Selectors.dll'
2,747 scanned, 2,675 compared, 9 errors, 0 skipped, 0 copied, 2,624 removed, 10s ERROR failed to
remove from target
"assembly\GAC_MSIL\System.Web.DataVisualization\v4.0_4.0.0.0 31bf3856ad364e35\System.Web.DataVis
ualization.dll": [Errno 13] Access is denied: '\\\\?\\UNC\\<IP address of SMB destination
server>\\vol_c
rget_XXXXXX\\assembly\\GAC_MSIL\\System.Web.DataVisualization\\v4.0_4.0.0.0 31bf3856ad364e35\\Sy
stem.Web.DataVisualization.dll'
cp sync -v \\<IP address or hostname of SMB server>\vol_SMB_source_XXXXXX\warning \\<IP address
of SMB destination server>\vol_SMB_target_XXXXXX
2,831 scanned, 0 copied, 2,831 compared, 0 removed, 10 errors Total Time : 10s
STATUS : PASSED
```

sync -parallel <n>

Set a higher or lower number of XCP concurrent processes.

Note: The maximum value for n is 61. The sync -parallel <n> command syncs with number of concurrent processes (default: <cpu-count>).

```
C:\xcp>xcp sync -parallel 5 \\<IP address or hostname of SMB server>\volxcp
\\10.216.50.212\xcp1_test1
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00
2029
658 scanned, 244 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 5s
658 scanned, 606 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10s
658 scanned, 658 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10s
Sending statistics...
C:\xcp>.
```

sync -match <filter>

Scans the source and target tree and compares only the files or directories that match the filter argument. If there are any differences, it applies the required actions on the target to keep them in sync.

```
c:\netapp\xcp>xcp sync -match "'gx' in name" \\<IP address or hostname of SMB server>\copy_share2
\\<IP address of SMB destination server>\source_share
xcp sync -match "'gx' in name" \\<IP address or hostname of SMB server>\copy_share2 \\<IP address
of SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -match 'gx' in name \\<IP address or hostname of SMB server>\copy_share2 \\<IP address
of SMB destination server>\source_share
634 scanned, 0 copied, 10 compared, 0 removed, 0errors
Total Time : 2s
STATUS : PASSED
```

sync -preserve-atime

Resets the atime to the original value before XCP read the file.

```
c:\netapp\xcp>xcp sync -preserve-atime \\<IP address or hostname of SMB server>\copy_share2 \\<IP
address of SMB destination server>\source_share
xcp sync -preserve-atime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -preserve-atime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0errors
Total Time : 4s
STATUS : PASSED
```

sync -noatime

Syncs all the differences of the source to the target, but it ignores files that only have differences in access time.

```
c:\netapp\xcp>xcp sync -noatime \\<IP address or hostname of SMB server>\copy_share2 \\<IP
address of SMB destination server>\source_share
xcp sync -noatime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
XCP 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -noatime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0errors
Total Time : 3s
STATUS : PASSED
```

sync -noctime

Syncs all the differences of the source to the target, but it ignores files that only have differences in creation time.

```
c:\netapp\xcp>xcp sync -noctime \\<IP address or hostname of SMB server>\copy_share2 \\<IP
address of SMB destination server>\source_share
xcp sync -noctime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -noctime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED
```

sync -noctime

Syncs all the differences of the source to the target, but it ignores files that only have differences in modification time. (This option is deprecated. Sync will continue to run without this option.)

```
c:\netapp\xcp>xcp sync -nomtime \\<IP address or hostname of SMB server>\copy_share2 \\<IP
address of SMB destination server>\source_share
xcp sync -nomtime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -nomtime \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED
```

sync -noattr

Syncs all the differences of the source to the target, but it ignores files that only have differences in file attributes. XCP copies a file only if it has a different content (the ACLs are transferred).

```
c:\netapp\xcp>xcp sync -noattr \\<IP address or hostname of SMB server>\copy_share2 \\<IP
address of SMB destination server>\source_share
xcp sync -noattr \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -noattr \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED
```

sync -bs <n>

Option to provide read/write block size. Default is 1M.

```
C:\Netapp\xcp>xcp.exe sync -bs 64k \\172.21.58.150\source_share \\172.21.58.166\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until Tue Jul
18 01:12:18 2023
1,136 scanned, 0 copied, 1,135 compared, 0 skipped, 95 removed, 0 errors, 5s
xcp.exe sync -bs 64k \\172.21.58.150\source_share \\172.21.58.166\dest_share
1,136 scanned, 283 copied, 1,136 compared, 0 skipped, 283 removed, 0 errors
Total Time : 10s
STATUS : PASSED
```


sync -noownership

Syncs all the differences of the source to the target, but it ignores files that only have differences in ownership.

```
>xcp sync -noownership \\<IP address or hostname of SMB server>\vol_SMB_source_XXXXXX \\<IP
address of SMB destination server>\vol_SMB_target_XXXXXX
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXXX XXXX[NetApp Inc] until Mon Dec 31 00:00:00
2029
    Truncated Output
302,909 scanned, 301,365 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 9m46s
307,632 scanned, 303,530 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 9m51s
308,434 scanned, 305,462 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 9m56s
310,824 scanned, 307,328 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10m1s
313,238 scanned, 310,083 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10m6s
314,867 scanned, 313,407 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10m11s
318,277 scanned, 315,856 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10m17s
321,005 scanned, 318,384 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10m22s
322,189 scanned, 321,863 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10m27s
323,906 scanned, 323,906 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10m29s
xcp sync -noownership \\<IP address or hostname of SMB server>\vol_SMB_source_XXXXXX \\<IP
address of SMB destination server>\vol_SMB_target_XXXXXX
323,906 scanned, 0 copied, 323,906 compared, 0 removed, 0 errors
Total Time : 10m29s
STATUS : PASSED
```

sync -atimewindow <float>

The `-atimewindow` specifies the acceptable difference, in seconds, for the `atime` of a file, from source to destination. XCP does not report files as being different if the difference in `atime` is less than `<value>`.

In the following example, XCP accepts a difference in `atime` for up to 10 minutes between the source and the destination files, and it does not update the `atime` on the target.

```
c:\netapp\xcp>xcp sync -atimewindow 600 \\<IP address or hostname of SMBserver>\copy_share2
\\<IP address of SMB destination server>\source_share
xcp sync -atimewindow 600 \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -atimewindow 600 \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED
```

sync -ctimewindow <float>

The `-ctimewindow` specifies the acceptable difference, in seconds, for the `ctime` of a file, from source to destination. So XCP does not report files as being different if the difference in `ctime` is less than `<value>`.

```
c:\netapp\xcp>xcp sync -ctimewindow 600 \\<IP address or hostname of SMBserver>\copy_share2
\\<IP address of SMB destination server>\source_share
xcp sync -ctimewindow 600 \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -ctimewindow 600 \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED
```

sync -mtimewindow <float>

The `-mtimewindow` specifies the acceptable difference, in seconds, for the `mtime` of a file, from source to destination. So XCP does not report files as being different if the difference in `mtime` is less than `<value>`.

```

c:\netapp\xcp>xcp sync -mtimewindow 600 \\<IP address or hostname of SMB server>\copy_share2
\\<IP address of SMB destination server>\source_share
xcp sync -mtimewindow 600 \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -mtimewindow 600 \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED

```

sync -acl

XCP sync -acl -fallback-user <user> -fallback-group <group> compares the data and the security information from the source with the target and applies the required actions on the target. The -fallback-user and -fallback-group are a user or group on the target machine or in the Active Directory, to receive the permissions of the local (nondomain) source users or groups.

Note: You cannot use the -acl option without the -fallback-user and -fallback-group options.

```

C:\xcp>xcp sync -acl -fallback-user "DOMAIN\gabi" -fallback-group "DOMAIN\Group" \\<IP address or
hostname of SMB server>\performance_SMB_home_dirs \\<IP address of SMB destination
server>\performance_SMB_home_dirs
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00 2029
 10,796 scanned, 4,002 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 3s
 15,796 scanned, 8,038 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10s
 15,796 scanned, 8,505 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 15s
 15,796 scanned, 8,707 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 20s
 15,796 scanned, 8,730 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 25s
 15,796 scanned, 8,749 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 30s
 15,796 scanned, 8,765 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 35s
 15,796 scanned, 8,786 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 40s
 15,796 scanned, 8,956 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 45s
 15,796 scanned, 9,320 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 50s
 15,796 scanned, 9,339 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 55s
 15,796 scanned, 9,363 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m0s
 15,796 scanned, 10,019 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m5s
 15,796 scanned, 10,042 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m10s
 15,796 scanned, 10,059 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m15s
 15,796 scanned, 10,075 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m20s
 15,796 scanned, 10,091 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m25s
 15,796 scanned, 10,108 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m30s
 15,796 scanned, 10,929 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m35s
 15,796 scanned, 12,443 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m40s
 15,796 scanned, 13,963 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m45s
 15,796 scanned, 15,488 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m50s
 15,796 scanned, 15,796 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m51s
xcp sync --acl -fallback-user "DOMAIN\gabi" -fallback-group "DOMAIN\Group"
15,796 scanned, 0 copied, 15,796 compared, 0 removed, 0 errors
Total Time : 1m51
STATUS : PASSED

```

sync -l

Provides detailed logging information in the standard output of all the actions that are performed by XCP on the target.

```

c:\netapp\xcp>xcp sync -l \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of
SMB destination server>\source_share
xcp sync -l \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB destination
server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

File "atime" changed, timestamps set for "agnostic"
File "atime" changed, timestamps set for "<root>"
xcp sync -l \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB destination
server>\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED

```

sync -onlyacl

The XCP `sync -onlyacl -fallback-user <user> -fallback-group <group>` command compares the security information between the source with the target and applies the required actions on the target. The `-fallback-user` and `-fallback-group` are a user or group on the target machine or in the Active Directory that receives the permissions of the local (nondomain) source users or groups.

Note: You cannot use the `-onlyacl` option without the `-fallback-user` and `-fallback-group` options.

```
C:\Users\ctladmin\Desktop>xcp sync -onlyacl -fallback-user SMBUSER1 -fallback-group SMBGRP1
\\10.237.170.5\source_share \\10.237.161.197\dest_share
XCP SMB <version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc] until
Sat Apr 16 23:57:52 2022

 8,814 scanned, 0 copied,      620 compared, 0 skipped, 0 removed, 0 errors, 6s
 9,294 scanned, 0 copied,    2,064 compared, 0 skipped, 0 removed, 0 errors, 11s
12,614 scanned, 0 copied,    3,729 compared, 0 skipped, 0 removed, 0 errors, 16s
13,034 scanned, 0 copied,    5,136 compared, 0 skipped, 0 removed, 0 errors, 21s
14,282 scanned, 0 copied,    7,241 compared, 0 skipped, 0 removed, 0 errors, 26s
14,282 scanned, 0 copied,    8,101 compared, 0 skipped, 0 removed, 0 errors, 31s
14,282 scanned, 0 copied,    8,801 compared, 0 skipped, 0 removed, 0 errors, 36s
14,282 scanned, 0 copied,    9,681 compared, 0 skipped, 0 removed, 0 errors, 41s
14,282 scanned, 0 copied,   10,405 compared, 0 skipped, 0 removed, 0 errors, 46s
14,282 scanned, 0 copied,   11,431 compared, 0 skipped, 0 removed, 0 errors, 51s
14,282 scanned, 0 copied,   12,471 compared, 0 skipped, 0 removed, 0 errors, 56s
14,282 scanned, 0 copied,   13,495 compared, 0 skipped, 0 removed, 0 errors, 1m1s
14,282 scanned, 0 copied,   14,282 compared, 0 skipped, 0 removed, 0 errors, 1m6s

xcp sync -onlyacl -preserve-atime -fallback-user SMBUSER1 -fallback-group SMBGRP1
\\10.237.170.5\source_share \\10.237.161.197\dest_share
14,282 scanned, 0 copied, 14,282 compared, 0 skipped, 0 removed, 0 errors
Total Time : 1m7s
STATUS : PASSED
```

sync -aclverify {yes,no}

Provides an option to include or skip ACL verification during the ACL sync operation. The option can only be used with the `sync -acl` and `sync -onlyacl` commands. ACL sync performs ACL verification by default. If you set the `-aclverify` option to `no`, you can skip ACL verification. If you set `-aclverify` to `yes`, it requires the `fallback-user` and `fallback-group` options. If you set `-aclverify` to `no`, the `fallback-user` and `fallback-group` options are not required.

```
C:\NetApp\xcp>xcp sync -acl -aclverify yes -fallback-user SMBUSER11 -fallback-group
SMBGRP1 \\10.237.161.217\source_share \\10.237.161.237\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until
Tue Apr 18 04:47:35 2023

25 scanned, 0 copied, 24 compared, 0 skipped, 0 removed, 0 errors, 5s, 0 acls copied
25 scanned, 0 copied, 24 compared, 0 skipped, 0 removed, 0 errors, 10s, 0 acls copied
25 scanned, 0 copied, 24 compared, 0 skipped, 0 removed, 0 errors, 15s, 0 acls copied
xcp sync -acl -aclverify yes -fallback-user SMBUSER11 -fallback-group SMBGRP1
\\10.237.161.217\source_share \\10.237.161.237\dest_share
25 scanned, 1 copied, 25 compared, 0 skipped, 0 removed, 0 errors, 12 acls copied
Total Time : 16s
STATUS : PASSED
C:\NetApp\xcp>xcp sync -acl -aclverify no \\10.237.161.217\source_share
\\10.237.161.237\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until
Tue Apr 18 04:47:35 2023
xcp sync -acl -aclverify no \\10.237.161.217\source_share \\10.237.161.237\dest_share
27 scanned, 1 copied, 27 compared, 0 skipped, 0 removed, 0 errors, 13 acls copied
Total Time : 2s
STATUS : PASSED
C:\NetApp\xcp>xcp sync -onlyacl -aclverify yes -fallback-user SMBUSER11 -fallback-group
SMBGRP1 \\10.237.161.217\source_share \\10.237.161.237\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until
Tue Apr 18 04:47:35 2023 24 scanned, 0 copied, 24 compared, 0 skipped, 0 removed, 0
errors, 5s, 0 acls copied
24 scanned, 0 copied, 24 compared, 0 skipped, 0 removed, 0 errors, 10s, 0 acls copied
24 scanned, 0 copied, 24 compared, 0 skipped, 0 removed, 0 errors, 15s, 0 acls copied
xcp sync -onlyacl -aclverify yes -fallback-user SMBUSER11 -fallback-group SMBGRP1
\\10.237.161.217\source_share \\10.237.161.237\dest_share
```

```
C:\NetApp\xcp>xcp sync -onlyacl -aclverify no \\10.237.161.217\source_share
\\10.237.161.237\dest_share
XCP SMB <version>; (c) 2023 NetApp, Inc.; Licensed to xxxx [Network Appliance, Inc] until
Tue Apr 18 04:47:35 2023
xcp sync -onlyacl -aclverify no \\10.237.161.217\source_share \\10.237.161.237\dest_share
24 scanned, 0 copied, 24 compared, 0 skipped, 0 removed, 0 errors, 11 acls copied
Total Time : 2s
STATUS : PASSED
```

3.8 verify

The `verify` command reads both source and target shares and compares them, providing information about what is different. You can use the command on any source and destination, regardless of the tool used to perform the copy or sync.

Syntax

```
C:\xcp>xcp verify \\<source SMB share> \\<IP address of SMB destination server>
```

Example

```
c:\netapp\xcp>xcp verify -v \\<source SMB share> \source_share \\<IP address of SMB
destination server>\dest_share
xcp verify -v \\<source SMB share> \source_share \\<IP address of SMB destination
server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -v \\<source SMB share> \source_share \\<IP address of SMB destination
server>\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

Feature	Description
<code>verify -h, --help</code>	Show this help message and exit.
<code>verify -v</code>	Increase debug verbosity.
<code>verify -parallel <n></code>	Number of concurrent processes (default: <cpu-count>).
<code>verify -match <filter></code>	Only process files and directories that match the filter (see <code>`xcp help -match`</code> for details).
<code>verify -exclude <filter></code>	Only exclude files and directories in the filter
<code>verify -preserve-ctime</code>	Restore last accessed date on source.
<code>verify -nodata</code>	Do not check data.
<code>verify -ctime</code>	Verify file access time.
<code>verify -noctime</code>	Do not check file creation time.
<code>verify -nomtime</code>	Do not check file modification time.
<code>verify -noattrs</code>	Do not check attributes.
<code>verify -noownership</code>	Do not check ownership.
<code>verify -noacls</code>	Do not check ACLs.
<code>verify -atimewindow <float></code>	Acceptable access time difference, in seconds.
<code>verify -ctimewindow <float></code>	Acceptable creation time difference, in seconds.
<code>verify -mtimewindow <float></code>	Acceptable modification time difference, in seconds.
<code>verify -stats</code>	Scan source and target trees in parallel and compare tree statistics.

<code>verify -fallback-user FALLBACK_USER</code>	Active Directory user or local (non-domain) user on the target machine that receives the permission of local (non-domain) machine users.
--	--

Feature	Description
	For example, domain\administrator.
verify -fallback-group FALLBACK_GROUP	Active Directory group or local (non-domain) group on the target machine that receives the permission of local (non-domain) groups/ For example, domain\administrator.
verify -l	Detailed file listing output.
verify -root	Verify ACL for root directory
verify -onlyacl	Compares only the security information between the source and destination

verify --help

Displays detailed information about the verify command.

```
C:\Netapp\xcp>xcp verify -help
SMB <version>; (c) 2023 NetApp, Inc.; Licensed to XXX[Network Appliance, Inc] until Tue Apr 18
04:47:35 2023

usage: xcp verify [-h] [-v] [-parallel <n>] [-match <filter>] [-exclude <filter>] [-preserve-
atime] [-loglevel <name>] [-fallback-user FALLBACK_USER] [-fallback-group FALLBACK_GROUP] [-
noacls] [-nodata]
                    [-stats] [-l] [-root] [-noownership] [-onlyacl] [-noctime] [-nomtime] [-
noattrs] [-atime] [-atimewindow <float>] [-ctimewindow <float>] [-mtimewindow <float>]
                    source target

Note: ONTAP does not let a SMB client modify COMPRESSED or ENCRYPTED attributes.
XCP sync will ignore these file attributes.

positional arguments:
  source
  target

optional arguments:
  -h, --help            show this help message and exit
  -v                    increase debug verbosity
  -parallel <n>         number of concurrent processes (default: <cpu-count>)
  -match <filter>       only process files and directories that match the filter
                        (see 'xcp help -match' for details)
  -exclude <filter>     Exclude files and directories that match the filter
                        (see 'xcp help -exclude' for details)
  -preserve-atime       restore last accessed date on source
  -loglevel <name>     option to set log level filter (default:INFO)
  -fallback-user FALLBACK_USER
                        a user on the target machine to translate the permissions of local
(non-domain) source machine users (eg. domain\administrator)
  -fallback-group FALLBACK_GROUP
                        a group on the target machine to translate the permissions of local
(non-domain) source machine groups (eg. domain\administrators)
  -nodata              do not check data
  -stats              scan source and target trees in parallel and compare tree statistics
  -l                  detailed file listing output
  -root               verify acl for root directory
  -noacls             do not check acls
  -noownership        do not check ownership
  -onlyacl            verify only acls
  -noctime            do not check file creation time
  -nomtime            do not check file modification time
  -noattrs            do not check attributes
  -atime              verify access time as well
  -atimewindow <float> acceptable access time difference in seconds
  -ctimewindow <float> acceptable creation time difference in seconds
  -mtimewindow <float> acceptable modification time difference in second
```

verify -v

Increase debug verbosity.

```
c:\netapp\xcp> xcp verify -v \\<IP address of SMB source server>\source_share address of SMB
destination server>\dest_share
xcp verify -v \\<IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00
2029
xcp verify -v \\< IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors Total Time : 3s
STATUS : PASSED
```

verify -parallel <n>

Verifies with the number of concurrent processes (default: <cpu-count>).

Use the `-parallel` option to set a higher or lower number of XCP concurrent processes.

Note: The maximum value for n is 61.

```
c:\netapp\xcp>xcp verify -v -parallel 8 \\<IP address of SMB source server>\source_share
\\<IP address of SMB destination server>\dest_share
xcp verify -v -parallel 8 \\<IP address of SMB source server>\source_share \\<IP
address of SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -v -parallel 8 \\<IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 4s
STATUS : PASSED
```

verify -match <filter>

Scans the source and target tree and compares only the files or directories that match the filter argument. If there are any differences, it applies the required actions on the target to keep them in sync.

```
c:\netapp\xcp>xcp verify -v -match "'Microsoft' in name" \\<IP address of SMB source server>
\source_share \\<IP address of SMB destination server>\dest_share
xcp verify -v -match "'Microsoft' in name" \\<IP address of SMB source server>\source_share
\\<IP address of SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -v -match 'Microsoft' in name \\<IP address of SMB source server> \source_share \\<IP
address of SMB destination server>\dest_share
374 scanned, 0 compared, 0 same, 0 different, 0 missing, 0 errors
Total Time : 1s
STATUS : PASSED
```

verify -preserve-ctime

Resets the `ctime` to the original value before XCP read the file.

```
c:\netapp\xcp>xcp verify -preserve-ctime \\<IP address of SMB source server>\source share \\<IP
address of SMB destination server>\dest_share
xcp verify -preserve-ctime \\<IP address of SMB source server>\source_share \\<IP address of
SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

374 scanned, 179 compared, 179 same, 0 different, 0 missing, 0 errors, 5s
xcp verify -preserve-ctime \\<IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 8s
STATUS : PASSED
```

verify -nodata

Do not compare data.

```
c:\netapp\xcp>xcp verify -nodata \\<IP address of SMB source server>\source_share \\<IP
address of SMB destination server>\dest_share
xcp verify -nodata \\<IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -nodata \\<IP address of SMB source server> \source_share \\<IP address of SMB
destination server>\dest_share : PASSED
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -atime

Compare file access time stamps from the source to destination.

```
C:\Netapp\xcp> xcp verify -ll -atime \\172.21.58.150\source_share \\172.21.58.166\dest_share
XCP SMB 1.9.2(c) 2023 NetApp, Inc.; Licensed to xxx [Network Appliance, Inc] until Tue Apr 18
04:47:35 2023

WARNING: your license will expire in less than one week! You can renew your license at
https://xcp.netapp.com
dir1: Changed (atime)
  atime
    - 2023-04-14 10:28:47 (1681482527.564423)
    + 2023-04-14 10:24:40 (1681482280.366317)
dir2: Changed (atime)
  atime
    - 2023-04-14 10:28:47 (1681482527.564424)
    + 2023-04-14 10:24:40 (1681482280.366318)
<root>: Changed (atime)
  atime
    - 2023-04-14 10:28:47 (1681482527.054403)
    + 2023-04-14 10:28:35 (1681482515.538801)
xcp verify -ll -atime \\172.21.58.150\source_share \\172.21.58.166\dest_share
14 scanned, 13 compared, 10 same, 3 different, 0 missing, 0 errors
Total Time : 1s
STATUS : FAILED
```

verify -noctime

Do not compare file creation time stamps from the source to destination.

```
c:\netapp\xcp>xcp verify -noctime \\<IP address of SMB source server>\source_share
\\<IP address of SMB destination server>\dest_share
xcp verify -noctime \\<IP address of SMB source server>\source_share          \\<IP address of
SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -noctime \\<IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share : PASSED
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -nomtime

Do not compare file modification time stamps from the source to destination.

```
c:\netapp\xcp>xcp verify -nomtime \\<IP address of SMB source server>\source_share
\\<IP address of SMB destination server>\dest_share
xcp verify -nomtime \\<IP address of SMB source server>\source_share          \\<IP address of
SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -nomtime \\<IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share : PASSED
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -noattrs

Do not check attributes.

```
c:\netapp\xcp>xcp verify -noattrs \\<IP address of SMB source server>\source_share
\\<IP address of SMB destination server>\dest_share
xcp verify -noattrs \\<IP address of SMB source server>\source_share          \\<IP address of
SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -noattrs \\<IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share : PASSED
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -noownership

Do not check ownership.

```
c:\netapp\xcp>xcp verify -noownership \\<IP address of SMB source server>
\source_share \\<IP address of SMB destination server>\dest_share
xcp verify -noownership \\<IP address of SMB source server>\source_share \\<IP
address of SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -noownership \\<IP address of SMB source server>\source_share \\<IP address of SMB
destination server>\dest_share : PASSED
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -noacIs

Do not check ACLs.

```
c:\netapp\xcp>xcp verify -noacIs -noownership \\<IP address or hostname of SMB
server>\copy_share2 \\<IP address of SMB destination server>\source_share

xcp verify -noacIs -noownership \\<IP address or hostname of SMB server>\copy_share2
\\<IP address of SMB destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -noacIs -noownership \\<IP address or hostname of SMB server>\copy_share2
\\<IP address of SMB destination server>\source_share
318 scanned, 317 compared, 317 same, 0 different, 0 missing, 0 errors
Total Time : 1s
STATUS : PASSED
```

verify -atimewindow <float>

Specifies the acceptable difference, in seconds, for the `atime` of a file, from source to destination. XCP does not report files as being different if the difference in `atime` is less than <value>. The “verify -atimewindow” command can only be used with the “-atime” flag.

```
C:\Netapp\xcp> xcp verify -atimewindow 600 -atime \\172.21.58.150\source_share
\\172.21.58.166\dest_share

XCP SMB 1.9.2; (c) 2023 NetApp, Inc.; Licensed to xxxxx[Network Appliance, Inc] until Tue Apr 18
04:47:35 2023

WARNING: your license will expire in less than one week! You can renew your license at
https://xcp.netapp.com

xcp verify -atimewindow 600 -atime \\172.21.58.150\source_share \\172.21.58.166\dest_share
14 scanned, 13 compared, 13 same, 0 different, 0 missing, 0 errors

Total Time : 0s
STATUS : PASSED
```

verify -ctimewindow <float>

Specifies the acceptable difference, in seconds, for the `ctime` of a file, from source to destination. So XCP does not report files as being different if the difference in `ctime` is less than <value>.

```
c:\netapp\xcp>xcp verify -ctimewindow 600 \\<IP address of SMB sourceserver>
\source_share \\<IP address of SMB destination server>\dest_share
xcp verify -ctimewindow 600 \\<IP address of SMB source server>\source_share \\<IP address of
SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -ctimewindow 600 \\<IP address of SMB source server>\source_share \\<IP address of
SMB destination server>\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -mtimewindow <float>

Specifies the acceptable difference, in seconds, for the `mtime` of a file, from source to destination. So XCP does not report files as being different if the difference in `mtime` is less than <value>.

```
c:\netapp\xcp>xcp verify -mtimewindow 600 \\<IP address of SMB sourceserver>
\source_share \\<IP address of SMB destination server>\dest_share
xcp verify -mtimewindow 600 \\<IP address of SMB source server>\source_share \\<IP address of
SMB destination server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -mtimewindow 600 \\<IP address of SMB source server>\source_share \\<IP address of
SMB destination server>\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -stats

Scans the source and the destination and prints a tree statistics report showing similarities or differences between the two shares.

```

c:\netapp\xcp>xcp verify -stats \\<IP address or hostname of SMB server>\copy_share2 \\<IP
address of SMB destination server>\source_share
xcp verify -stats \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

    == Number of files ==
        empty      <8KiB    8-64KiB  64KiB-1MiB    1-10MiB  10-100MiB    >100MiB
on-target          81        170        62          2
on-source          same      same      same      same

    == Directory entries ==
        empty      1-10     10-100    100-1K    1K-10K    >10K
on-target          same      same      same
on-source          same      same

    == Depth ==
        0-5        6-10     11-15     16-20     21-100     >100
on-target        317
on-source        same

    == Modified ==
        >1 year    >1 month 1-31 days    1-24 hrs    <1 hour    <15 mins    future    invalid
on-target        315
on-source        same

Total count: 317 / same / same
Directories: 2 / same / same
Regular files: 315 / same / same
Symbolic links:
Junctions:
Special files:
xcp verify -stats \\<IP address or hostname of SMB server>\copy_share2 \\<IP address of SMB
destination server>\source_share
635 scanned, 0 errors
Total Time : 1s
STATUS : PASSED

```

verify -l

Lists the differences between files and directories on the source and destination.

In the following example, during copy, the ownership information was not transferred, and we can see the differences in the command output.

```

c:\netapp\xcp>xcp verify -l \\<IP address of SMB source server>\source_share \\<IP address of
SMB destination server>\dest_share
xcp verify -l \\<IP address of SMB source server>\source_share \\<IP address of SMB destination
server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -l \\<IP address of SMB source server>\source_share \\<IP address of SMB destination
server>\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED

```

verify -ll

Lists the detailed differences of the files or directories from the source and the target. The format is like git diff. The red value is the old one from the source, and the green value is the new one from the target.

```

c:\netapp\xcp>xcp verify -ll \\<IP address of SMB source server>\source_share \\<IP address of
SMB destination server>\dest_share
xcp verify -ll \\<IP address of SMB source server>\source_share \\<IP address of SMB destination
server>\dest_share
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -ll \\<IP address of SMB source server>\source_share \\<IP address of SMB destination
server>\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s

```

STATUS : PASSED

verify -fallback-user -fallback-group

The `verify -fallback-user` and `-fallback-group` commands lists the ACLS and ownership differences between files and directories on the source and destination.

Note: If you use `fallback-user` and `fallback-group` with the copy or sync operation, it is recommended that you use the `fallback-user` and `fallback-group` parameters with the verify operation.

```
xcp verify -fallback-user "Domain\User1" -fallback-group "Domain\group1" <source><target>
```

verify -noownership -fallback-user -fallback-group

The `verify -noownership -fallback-user` and `-fallback-group` commands lists the ACLS differences and skips verification of ownership between files and directories on the source and destination

```
xcp verify -noownership -fallback-user "Domain\User1" -fallback-group "Domain\group1" <source>  
<target>
```

verify -noacls -fallback-user -fallback-group

The `verify -noacls -fallback-user` and `-fallback-group` commands skip verification of ACLs and verify ownership between files and directories on the source and destination .

```
xcp verify -noacls -fallback-user "Domain\User1" -fallback-group "Domain\group1"<source>  
<target>
```

verify -noacls -noownership

The `verify -noacls -fallback-user` and `-fallback-group` commands skip verification of ACLs and verify ownership between files and directories on the source and destination .

```
xcp verify -noacls -noownership <source> <target>
```

verify -onlyacl

The `verify -onlyacl` command compares only the security information between the source and destination .

```
C:\Users\ctladmin\Desktop>xcp verify -onlyacl -preserve-atime -fallback-user SMBUSER1 -fallback-  
group SMBGRP1 -ll \\10.237.170.5\source_share \\10.237.161.197\dest_share  
XCP SMB <version>; (c) 2022 NetApp, Inc.; Licensed to XXX [Network Appliance, Inc]      until Sat  
Apr 16 23:57:52 2022
```

```
4,722 scanned, 0 compared, 0 same, 0 different, 0 missing, 0 errors, 5s  
7,142 scanned, 120 compared, 120 same, 0 different, 0 missing, 0 errors, 10s  
7,142 scanned, 856 compared, 856 same, 0 different, 0 missing, 0 errors, 15s  
7,142 scanned, 1,374 compared, 1,374 same, 0 different, 0 missing, 0 errors, 20s  
7,142 scanned, 2,168 compared, 2,168 same, 0 different, 0 missing, 0 errors, 25s  
7,142 scanned, 2,910 compared, 2,910 same, 0 different, 0 missing, 0 errors, 30s  
7,142 scanned, 3,629 compared, 3,629 same, 0 different, 0 missing, 0 errors, 35s  
7,142 scanned, 4,190 compared, 4,190 same, 0 different, 0 missing, 0 errors, 40s  
7,142 scanned, 4,842 compared, 4,842 same, 0 different, 0 missing, 0 errors, 45s  
7,142 scanned, 5,622 compared, 5,622 same, 0 different, 0 missing, 0 errors, 50s  
7,142 scanned, 6,402 compared, 6,402 same, 0 different, 0 missing, 0 errors, 55s  
7,142 scanned, 7,019 compared, 7,019 same, 0 different, 0 missing, 0 errors, 1m0s
```

```
xcp verify -onlyacl -preserve-atime -fallback-user SMBUSER1 -fallback-group SMBGRP1 -ll  
\\10.237.170.5\source_share \\10.237.161.197\dest_share  
7,142 scanned, 7,141 compared, 7,141 same, 0 different, 0 missing, 0 errors  
Total Time : 1m2s  
STATUS : PASSED
```

3.9 configure

The `configure` command configures the SMB system and connects to the system where the PostgreSQL database is running.

Syntax

```
c:\NetApp\XCP>xcp.exe configure
```

Example

```
C:\NetApp\XCP>xcp.exe configure
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

Please choose the menu you want to start:
1. Configure xcp.ini file
0. Quit.....
```

3.10 listen

The listen command reads the XCP binary and starts the XCP services.

Syntax

```
c:\NetApp\XCP>xcp.exe listen
```

Example

```
C:\NetApp\XCP>xcp.exe listen
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
* Serving Flask app "xcp_rest_smb_app" (lazy loading)
* Environment: production
  WARNING: This is a development server. Do not use it in a production deployment.
  Use a production WSGI server instead.
* Debug mode: off
```

4 XCP SMB Use Cases

This section provides the most common XCP SMB migration use cases.

4.1 How to Transition 7-Mode SMB Storage to ONTAP

This section covers the step-by-step procedure for transitioning a source 7-Mode SMB share to an ONTAP system.

Note: NetApp assumes that the 7-Mode and ONTAP systems are SMB licensed. The destination SVM is created. The source and destination SMB shares are exported. XCP is installed and licensed.

Task Table 4) Transitioning 7-Mode SMB Storage to ONTAP.

✓	Step	Description
	1.	Scan the SMB shares for the files and directories. <pre>C:\xcp>xcp scan -stats \\<IP address or hostname of SMB server>\performance_SMB_home_dirs XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00 2029 == Maximum Values == Size Depth Namelen Dirsize 15.6MiB 2 8 200 == Average Values == Size Depth Namelen Dirsize 540KiB 2 7 81 == Top File Extensions == .txt .tmp 5601 2200 == Number of files == empty <8KiB 8-64KiB 64KiB-1MiB 1-10MiB 10-100MiB >100MiB 46 6301 700 302 200 252 == Space used == empty <8KiB 8-64KiB 64KiB-1MiB 1-10MiB 10-100MiB >100MiB 0 6.80MiB 8.04MiB 120MiB 251MiB 3.64GiB 0 == Directory entries == empty 1-10 10-100 100-1K 1K-10K >10k 18 1 77 1 == Depth == 0-5 6-10 11-15 16-20 21-100 >100 7898 == Modified == >1 year >1 month 1-31 days 1-24 hrs <1 hour <15 mins future 2167 56 322 5353 == Created == >1 year >1 month 1-31 days 1-24 hrs <1 hour <15 mins future 2171 54 373 5300 Total count: 7898 Directories: 97 Regular files: 7801 Symbolic links: Junctions: Special files: Total space for regular files: 4.02GiB Total space for directories: 0 Total space used: 4.02GiB 7,898 scanned, 0 errors, 0s</pre>

✓	Step	Description
	2.	Copy the files (with or without ACL) from the source to the destination SMB share. The following example shows a copy with ACL. <pre> C:\xcp>xcp copy -acl -fallback-user "DOMAIN\gabi" -fallback-group "DOMAIN\Group" \\<IP address or hostname of SMB server>\performance_SMB_home_dirs \\<IP address of SMB destination server>\performance_SMB_home_dirs XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00 2029 7,898 scanned, 0 errors, 0 skipped, 184 copied, 96.1MiB (19.2MiB/s), 5s 7,898 scanned, 0 errors, 0 skipped, 333 copied, 519MiB (84.7MiB/s), 10s 7,898 scanned, 0 errors, 0 skipped, 366 copied, 969MiB (89.9MiB/s), 15s 7,898 scanned, 0 errors, 0 skipped, 422 copied, 1.43GiB (99.8MiB/s), 20s 7,898 scanned, 0 errors, 0 skipped, 1,100 copied, 1.69GiB (52.9MiB/s), 25s 7,898 scanned, 0 errors, 0 skipped, 1,834 copied, 1.94GiB (50.4MiB/s), 30s 7,898 scanned, 0 errors, 0 skipped, 1,906 copied, 2.43GiB (100MiB/s), 35s 7,898 scanned, 0 errors, 0 skipped, 2,937 copied, 2.61GiB (36.6MiB/s), 40s 7,898 scanned, 0 errors, 0 skipped, 2,969 copied, 3.09GiB (100.0MiB/s), 45s 7,898 scanned, 0 errors, 0 skipped, 3,001 copied, 3.58GiB (100.0MiB/s), 50s 7,898 scanned, 0 errors, 0 skipped, 3,298 copied, 4.01GiB (88.0MiB/s), 55s 7,898 scanned, 0 errors, 0 skipped, 5,614 copied, 4.01GiB (679KiB/s), 1m0s 7,898 scanned, 0 errors, 0 skipped, 7,879 copied, 4.02GiB (445KiB/s), 1m5s 7,898 scanned, 0 errors, 0 skipped, 7,897 copied, 4.02GiB (63.2MiB/s), 1m5s </pre> Note: If there is no data aggregate, create a new one using the storage aggr create command.
	3.	Sync the files on the source and destination. <pre> C:\xcp>xcp sync -acl -fallback-user "DOMAIN\gabi" -fallback-group "DOMAIN\Group" \\<IP address or hostname of SMB server>\performance_SMB_home_dirs \\<IP address of SMB destination server>\performance_SMB_home_dirs XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00 2029 10,796 scanned, 4,002 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 5s 15,796 scanned, 8,038 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 10s 15,796 scanned, 8,505 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 15s 15,796 scanned, 8,707 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 20s 15,796 scanned, 8,730 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 25s 15,796 scanned, 8,749 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 30s 15,796 scanned, 8,765 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 35s 15,796 scanned, 8,786 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 40s 15,796 scanned, 8,956 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 45s 8 XCP v1.6 User Guide © 2020 NetApp, Inc. All rights reserved. Step Description 15,796 scanned, 9,320 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 50s 15,796 scanned, 9,339 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 55s 15,796 scanned, 9,363 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m0s 15,796 scanned, 10,019 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m5s 15,796 scanned, 10,042 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m10s 15,796 scanned, 10,059 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m15s 15,796 scanned, 10,075 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m20s 15,796 scanned, 10,091 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m25s 15,796 scanned, 10,108 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m30s 15,796 scanned, 10,929 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m35s 15,796 scanned, 12,443 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m40s 15,796 scanned, 13,963 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m45s 15,796 scanned, 15,488 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m50s 15,796 scanned, 15,796 compared, 0 errors, 0 skipped, 0 copied, 0 removed, 1m51s </pre>
	4.	Verify that the files are copied correctly. <pre> C:\xcp> xcp verify \\<IP address or hostname of SMB server>\performance_SMB_home_dirs \\<IP address of SMB destination server>\performance_SMB_home_dir XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00 2029 8 compared, 8 same, 0 different, 0 missing, 5s 24 compared, 24 same, 0 different, 0 missing, 10s 41 compared, 41 same, 0 different, 0 missing, 15s 63 compared, 63 same, 0 different, 0 missing, 20s 86 compared, 86 same, 0 different, 0 missing, 25s 423 compared, 423 same, 0 different, 0 missing, 30s 691 compared, 691 same, 0 different, 0 missing, 35s </pre>

✓	Step	Description
		1,226 compared, 1,226 same, 0 different, 0 missing, 40s 1,524 compared, 1,524 same, 0 different, 0 missing, 45s 1,547 compared, 1,547 same, 0 different, 0 missing, 50s 1,564 compared, 1,564 same, 0 different, 0 missing, 55s 2,026 compared, 2,026 same, 0 different, 0 missing, 1m0s 2,045 compared, 2,045 same, 0 different, 0 missing, 1m5s 2,061 compared, 2,061 same, 0 different, 0 missing, 1m10s 2,081 compared, 2,081 same, 0 different, 0 missing, 1m15s 2,098 compared, 2,098 same, 0 different, 0 missing, 1m20s 2,116 compared, 2,116 same, 0 different, 0 missing, 1m25s 3,232 compared, 3,232 same, 0 different, 0 missing, 1m30s 4,817 compared, 4,817 same, 0 different, 0 missing, 1m35s 6,267 compared, 6,267 same, 0 different, 0 missing, 1m40s 7,844 compared, 7,844 same, 0 different, 0 missing, 1m45s 7,898 compared, 7,898 same, 0 different, 0 missing, 1m45s,cifs

4.2 How to Migrate CIFS Data with ACLs from a Source Storage Box to ONTAP

This section covers the step-by-step procedure for migrating CIFS data with security information from a source to a target ONTAP system

Task Table 5). Migrating CIFS Data with ACLs from a Source Storage Box to ONTAP..

✓	Step	Description
	1.	Verify that the target ONTAP system is healthy. <pre> C1_sti96-vsim-ucs540m_cluster::> cluster show Node Health Eligibility ----- sti96-vsim-ucs540m true true sti96-vsim-ucs540n true true 2 entries were displayed. C1_sti96-vsim-ucs540m_cluster::> node show Node Health Eligibility Uptime Model Owner Location ----- sti96-vsim-ucs540m true true 15 days 21:17 SIMBOX ahammed sti sti96-vsim-ucs540n true true 15 days 21:17 SIMBOX ahammed sti 2 entries were displayed. cluster::> storage failover show Node Partner Takeover ----- sti96-vsim-ucs540m sti96-vsim-ucs540n true Connected to sti96-vsim-ucs540n sti96-vsim-ucs540n sti96-vsim-ucs540m true Connected to sti96-vsim-ucs540m 2 entries were displayed. C1_sti96-vsim-ucs540m_cluster::> </pre>

✓	Step	Description																																																
	2.	Verify that at least one non-root aggregate exists on the target system. The aggregate is normal. cluster::*> storage aggregate show <table><thead><tr><th>Aggregate</th><th>Size</th><th>Available</th><th>Used%</th><th>State</th><th>#Vols</th><th>Nodes</th><th>RAID Status</th></tr></thead><tbody><tr><td>aggr0_sti96_vsim_ucs540o</td><td>7.58GB</td><td>373.3MB</td><td>95%</td><td>online</td><td>1</td><td>sti96-vsim-ucs540o</td><td>raid_dp, normal</td></tr><tr><td>aggr0_sti96_vsim_ucs540p</td><td>7.58GB</td><td>373.3MB</td><td>95%</td><td>online</td><td>1</td><td>sti96-vsim-ucs540p</td><td>raid_dp, normal</td></tr><tr><td>aggr_001</td><td>103.7GB</td><td>93.63GB</td><td>10%</td><td>online</td><td>1</td><td>sti96-vsim-ucs540p</td><td>raid_dp, normal</td></tr><tr><td>sti96_vsim_ucs540o_aggr1</td><td>23.93GB</td><td>23.83GB</td><td>0%</td><td>online</td><td>1</td><td>sti96-vsim-ucs540o</td><td>raid_dp, normal</td></tr><tr><td>sti96_vsim_ucs540p_aggr1</td><td>23.93GB</td><td>23.93GB</td><td>0%</td><td>online</td><td>0</td><td>sti96-vsim-ucs540p</td><td>raid_dp, normal</td></tr></tbody></table> 5 entries were displayed. Note: If there is no data aggregate, create a new one using the storage aggr create command.	Aggregate	Size	Available	Used%	State	#Vols	Nodes	RAID Status	aggr0_sti96_vsim_ucs540o	7.58GB	373.3MB	95%	online	1	sti96-vsim-ucs540o	raid_dp, normal	aggr0_sti96_vsim_ucs540p	7.58GB	373.3MB	95%	online	1	sti96-vsim-ucs540p	raid_dp, normal	aggr_001	103.7GB	93.63GB	10%	online	1	sti96-vsim-ucs540p	raid_dp, normal	sti96_vsim_ucs540o_aggr1	23.93GB	23.83GB	0%	online	1	sti96-vsim-ucs540o	raid_dp, normal	sti96_vsim_ucs540p_aggr1	23.93GB	23.93GB	0%	online	0	sti96-vsim-ucs540p	raid_dp, normal
Aggregate	Size	Available	Used%	State	#Vols	Nodes	RAID Status																																											
aggr0_sti96_vsim_ucs540o	7.58GB	373.3MB	95%	online	1	sti96-vsim-ucs540o	raid_dp, normal																																											
aggr0_sti96_vsim_ucs540p	7.58GB	373.3MB	95%	online	1	sti96-vsim-ucs540p	raid_dp, normal																																											
aggr_001	103.7GB	93.63GB	10%	online	1	sti96-vsim-ucs540p	raid_dp, normal																																											
sti96_vsim_ucs540o_aggr1	23.93GB	23.83GB	0%	online	1	sti96-vsim-ucs540o	raid_dp, normal																																											
sti96_vsim_ucs540p_aggr1	23.93GB	23.93GB	0%	online	0	sti96-vsim-ucs540p	raid_dp, normal																																											
	3.	Create an SVM on the target cluster system. cluster::*> vserver create -vserver vs1 -rootvolume root_vs1 -aggregate sti96_vsim_ucs540o_aggr1 -rootvolume-security-style mixed Verify the SVM was created. C2_sti96-vsim-ucs540o_cluster::*> vserver show -vserver vs1 Vserver: vs1 Vserver Type: data Vserver Subtype: default Vserver UUID: f8bc54be-d91b-11e9-b99c-005056a7e57e Root Volume: root_vs1 Aggregate: sti96_vsim_ucs540o_aggr1 NIS Domain: NSQA-RTP-NIS1 Root Volume Security Style: mixed LDAP Client: esisconfig Default Volume Language Code: C.UTF-8 Snapshot Policy: default Data Services: data-nfs, data-cifs, data-flexcache, data-iscsi Comment: vs1 Quota Policy: default List of Aggregates Assigned: - Limit on Maximum Number of Volumes allowed: unlimited Vserver Admin State: running Vserver Operational State: running Vserver Operational State Stopped Reason: - Allowed Protocols: nfs, cifs, fcp, iscsi, ndmp Disallowed Protocols: - Is Vserver with Infinite Volume: false QoS Policy Group: - Caching Policy Name: - Config Lock: false Volume Delete Retention Period: 0 IPspace Name: Default Foreground Process: - Is Msid Preserved for DR: false Force start required to start Destination in multiple IDP fan-out case: false Logical Space Reporting: false Logical Space Enforcement: false																																																

✓	Step	Description														
	4.	Create a new read-write data volume on the destination SVM. Verify that the security style, language settings, and capacity requirements match the source volume. CLUSTER CLUSTER::> vol create -vserver vs1 -volume dest_vol -aggregate aggr_001 -size 150g type RW -state online -security-style ntfs														
	5.	Create a data LIF to serve SMB client requests. CLUSTER::> network interface create -vserver vs1 -lif sti96-vsim-ucs540o_data1 -address <IP address of SMB server> -netmask 101.101.101.1 -role data -data-protocol nfs,cifs -home-node sti96-vsim-ucs540o -home-port e0d Verify the LIF is successfully created. cluster::~*> network interface show -vserver vs1 <table><tr><th>Vserver</th><th>Logical Interface</th><th>Status Admin/Oper</th><th>Network Address/Mask</th><th>Current Node</th><th>Current Port</th><th>Is Home</th></tr><tr><td>vs1</td><td>sti96-vsim-ucs540o_data1</td><td>up/up</td><td><IP address of SMB server>/20</td><td>sti96-vsim-ucs540o</td><td>e0d</td><td>true</td></tr></table>	Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home	vs1	sti96-vsim-ucs540o_data1	up/up	<IP address of SMB server>/20	sti96-vsim-ucs540o	e0d	true
Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home										
vs1	sti96-vsim-ucs540o_data1	up/up	<IP address of SMB server>/20	sti96-vsim-ucs540o	e0d	true										
	6.	Create a static route with the SVM if required network route create -vserver dest -destination 0.0.0.0/0 -gateway10.237.160.1 Verify the route is created cluster::~*> network route show -vserver vs1 <table><tr><th>Vserver</th><th>Destination</th><th>Gateway</th><th>Metric</th></tr><tr><td>vs1</td><td>0.0.0.0/0 ::/0</td><td>10.101.101.1 fd20:8ble:b255:9155::1</td><td>20 20</td></tr></table> 2 entries were displayed.	Vserver	Destination	Gateway	Metric	vs1	0.0.0.0/0 ::/0	10.101.101.1 fd20:8ble:b255:9155::1	20 20						
Vserver	Destination	Gateway	Metric													
vs1	0.0.0.0/0 ::/0	10.101.101.1 fd20:8ble:b255:9155::1	20 20													
	7.	Mount the target data volume in the SVM namespace. CLUSTER::> volume mount -vserver vs1 -volume dest_vol -junction-path /dest_vol -active true Verify the volume is successfully mounted cluster::~*> volume show -vserver vs1 -fields junction-path <table><tr><th>vserver</th><th>volume</th><th>junction-path</th></tr><tr><td>vs1</td><td>dest_vol</td><td>/dest_vol</td></tr><tr><td>vs1</td><td>root_vs1</td><td>/</td></tr></table> 2 entries were displayed. Note: You can also specify volume mount options (junction path) with the volume create command.	vserver	volume	junction-path	vs1	dest_vol	/dest_vol	vs1	root_vs1	/					
vserver	volume	junction-path														
vs1	dest_vol	/dest_vol														
vs1	root_vs1	/														
	8.	Start the CIFS service on the target SVM. cluster::~*> vserver cifs start -vserver vs1 Warning: The admin status of the CIFS server for Vserver "vs1" is already "up". Verify the service is started and running cluster::~*> Verify the service is started and running C2_sti96-vsim-ucs540o_cluster::~*> cifs show <table><tr><th>Vserver</th><th>Server Name</th><th>Status Admin</th><th>Domain/Workgroup Name</th><th>Authentication Style</th></tr><tr><td>vs1</td><td>D60AB15C2AFC4D6</td><td>up</td><td>CTL</td><td>domain</td></tr></table>	Vserver	Server Name	Status Admin	Domain/Workgroup Name	Authentication Style	vs1	D60AB15C2AFC4D6	up	CTL	domain				
Vserver	Server Name	Status Admin	Domain/Workgroup Name	Authentication Style												
vs1	D60AB15C2AFC4D6	up	CTL	domain												

✓	Step	Description																		
	9.	Check that the default export policy is applied to the target SVM. <pre>CLUSTER::> vserver export-policy show -vserver dest</pre> <table><tr><th>Vserver</th><th>Policy Name</th></tr><tr><td>dest</td><td>default</td></tr></table> If required, create a new custom export policy for the target SVM. <pre>CLUSTER::> vserver export-policy create -vserver vs1 -policyname xcpexport</pre>	Vserver	Policy Name	dest	default														
Vserver	Policy Name																			
dest	default																			
	10.	Modify the export policy rules to allow access to CIFS clients. <pre>CLUSTER::> export-policy rule modify -vserver dest -ruleindex 1 -policyname xcpexportpolicy -clientmatch 0.0.0.0/0 -rorule any -rwrule any -anon 0</pre> Verify the policy rules have modified. <pre>cluster::*> export-policy rule show -instance</pre> <pre> Vserver: vs1 Policy Name: default Rule Index: 1 Access Protocol: any List of Client Match Hostnames, IP Addresses, Netgroups, or Domains:0.0.0.0/0 RO Access Rule: any RW Access Rule: any User ID To Which Anonymous Users Are Mapped: 65534 Superuser Security Types: any Honor SetUID Bits in SETATTR: true Allow Creation of Devices: true NTFS Unix Security Options: fail Vserver NTFS Unix Security Options: use_export_policy Change Ownership Mode: restricted Vserver Change Ownership Mode: use_export_policy Policy ID: 12884901889 Vserver: vs1 Policy Name: default Rule Index: 2 Access Protocol: any List of Client Match Hostnames, IP Addresses, Netgroups, orDomains: 0:0:0:0:0:0:0:0/0 RO Access Rule: any RW Access Rule: any User ID To Which Anonymous Users Are Mapped: 65534 Superuser Security Types: none Honor SetUID Bits in SETATTR: true Allow Creation of Devices: true NTFS Unix Security Options: fail Vserver NTFS Unix Security Options: use_export_policy Change Ownership Mode: restricted Vserver Change Ownership Mode: use_export_policy Policy ID: 12884901889 2 entries were displayed.</pre>																		
	11.	Verify that the client is allowed access to the volume. <pre>cluster::*> export-policy check-access -vserver vs1 -volume dest_vol -client-ip 10.234.17.81 -authentication-method none -protocol cifs -access-type read-write</pre> <table><tr><th>Path</th><th>Policy</th><th>Policy Owner</th><th>Policy Owner Type</th><th>Rule Index</th><th>Access</th></tr><tr><td>/</td><td>default</td><td>root_vs1</td><td>volume</td><td>1</td><td>read</td></tr><tr><td>/dest_vol</td><td>default</td><td>dest_vol</td><td>volume</td><td>1</td><td>read-write</td></tr></table> 2 entries were displayed.	Path	Policy	Policy Owner	Policy Owner Type	Rule Index	Access	/	default	root_vs1	volume	1	read	/dest_vol	default	dest_vol	volume	1	read-write
Path	Policy	Policy Owner	Policy Owner Type	Rule Index	Access															
/	default	root_vs1	volume	1	read															
/dest_vol	default	dest_vol	volume	1	read-write															
	12.	Connect to the windows client system where XCP is installed. Browse to the XCP install path. <pre>C:\WRSHDNT>dir c:\netapp\xcp dir c:\netapp\xcp Volume in drive C has no label. Volume Serial Number is 5C04-C0C7</pre>																		

✓	Step	Description
		Directory of c:\netapp\xcp <pre> 09/18/2019 09:30 AM <DIR> . 09/18/2019 09:30 AM <DIR> .. 06/25/2019 06:27 AM 304 license 09/18/2019 09:30 AM <DIR> Logs 09/29/2019 08:45 PM 12,143,105 xcp.exe 2 File(s) 12,143,409 bytes 3 Dir(s) 29,219,549,184 bytes free </pre>
	13.	Query the source node SMB exports by running the xcp show command on the XCP windowsclnt host system. <pre> C:\WRSHDNT>c:\netapp\xcp\xcp show \\<IP address of SMB server> c:\netapp\xcp\xcp show \\<IP address of SMB server> XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec31 00:00:00 2029 Shares Errors Server 6 0 <IP address of SMB server> == SMB Shares == Space Space Current Free Used Connections Share Path Folder Path 9.50GiB 4.57MiB 1 \\<IP address of SMB server>\source_share C:\source_vol 94.3MiB 716KiB 0 \\<IP address of SMB server> \ROOTSHARE C:\ 0 0 N/A \\<IP address of SMB server> \ipc\$ N/A 94.3MiB 716KiB 0 \\<IP address of SMB server> \c\$ C:\ == Attributes of SMB Shares == Share Types Remark source_share DISKTREE test share DISKTREE test_sh DISKTREE ROOTSHARE DISKTREE "\"Share mapped to top of Vserver global namespace, created bydeux_init \" ipc\$ PRINTQ,SPECIAL,IPC,DEVICE c\$ SPECIAL == Permissions of SMB Shares == Share Entity Type source_share Everyone Allow/Full Control ROOTSHARE Everyone Allow/Full Control ipc\$ Everyone Allow/Full Control c\$ Administrators Allow/Full Control/ </pre>
	14.	Run help command for copy <pre> C:\WRSHDNT>c:\netapp\xcp\xcp help copy c:\netapp\xcp\xcp help copy XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec31 00:00:00 2029 usage: xcp copy [-h] [-v] [-parallel <n>] [-match <filter>] [-preserve-atime] [-acl] [-fallback-user FALLBACK_USER] [-fallback-group FALLBACK_GROUP] [-root] source target positional arguments: source target optional arguments: -h, --help show this help message and exit -v increase debug verbosity -parallel <n> number of concurrent processes (default: <cpu-count>) -match <filter> only process files and directories that match the </pre>

✓	Step	Description																										
		-preserve-ptime -acl -fallback-user FALLBACK_USER -fallback-group FALLBACK_GROUP -root filter (see `xcp help -match` for details) restore last accessed date on source copy security information the name of the user on the target machine to receive the permissions of local (non-domain) source machine users (eg. domain\administrator) the name of the group on the target machine to receive the permissions of local (non-domain) source machine groups (eg. domain\administrators) copy acl for root directorytxt																										
	15.	On the target ONTAP system, get the list of local or Active Directory user names and local or Active Directory group names that you need to provide as values for the fallback-user and fallback-group argumentspath. cluster::*> local-user show (vserver cifs users-and-groups local-user show) <table><tr><th>Vserver</th><th>User Name</th><th>Full Name</th><th>Description</th></tr><tr><td>vs1</td><td>D60AB15C2AFC4D6\</td><td>Administrator</td><td>Built-in administrator account</td></tr></table> C2_sti96-vs1m-ucs540o_cluster::*> local-group show (vserver cifs users-and-groups local-group show) <table><tr><th>Vserver</th><th>Group Name</th><th>Description</th></tr><tr><td>vs1</td><td>BUILTIN\Administrators</td><td>Built-in Administrators group</td></tr><tr><td>vs1</td><td>BUILTIN\Backup Operators</td><td>Backup Operators group</td></tr><tr><td>vs1</td><td>BUILTIN\Guests</td><td>Built-in Guests Group</td></tr><tr><td>vs1</td><td>BUILTIN\Power Users</td><td>Restricted administrative privileges</td></tr><tr><td>vs1</td><td>BUILTIN\Users</td><td>All users</td></tr></table> 5 entries were displayed	Vserver	User Name	Full Name	Description	vs1	D60AB15C2AFC4D6\	Administrator	Built-in administrator account	Vserver	Group Name	Description	vs1	BUILTIN\Administrators	Built-in Administrators group	vs1	BUILTIN\Backup Operators	Backup Operators group	vs1	BUILTIN\Guests	Built-in Guests Group	vs1	BUILTIN\Power Users	Restricted administrative privileges	vs1	BUILTIN\Users	All users
Vserver	User Name	Full Name	Description																									
vs1	D60AB15C2AFC4D6\	Administrator	Built-in administrator account																									
Vserver	Group Name	Description																										
vs1	BUILTIN\Administrators	Built-in Administrators group																										
vs1	BUILTIN\Backup Operators	Backup Operators group																										
vs1	BUILTIN\Guests	Built-in Guests Group																										
vs1	BUILTIN\Power Users	Restricted administrative privileges																										
vs1	BUILTIN\Users	All users																										
	16.	Edit the host file to ensure that the source and the destination CIFS server are reachable to the host machine. Navigate to the following location: C:\Windows\System32\drivers\etc\hosts. Insert the following lines to the file: <Source data vserver data interface ip> <Source cifs servername> <Destination data vserver data interface ip> <Destination cifs server name> Example:																										

✓	Step	Description
		<pre> # Copyright (c) 1993-2009 Microsoft Corp. # # This is a sample HOSTS file used by Microsoft TCP/IP for Windows. # # This file contains the mappings of IP addresses to host names. Each # entry should be kept on an individual line. The IP address should # be placed in the first column followed by the corresponding host name. # The IP address and the host name should be separated by at least one # space. # # Additionally, comments (such as these) may be inserted on individual # lines or following the machine name denoted by a '#' symbol. # # For example: # # xxx.xx.xx.xx rhino.acme.com # source server # xx.xx.xx.xx x.acme.com # x client host # localhost name resolution is handled within DNS itself. # 127.0.0.1 localhost # ::1 localhost xx.xxx.xxx.x 00906A52DFE247F xx.xxx.xxx.x 42D1BBE1219CE63 </pre>
	17.	Use xcp copy command with '-acl -fallback-user/group' options to migrate CIFS data with ACLs from the source to target. For fallback-user/group options you can specify any user/group that can be found in Active Directory or local user/group to target system. <pre> C:\WRSHDNT>c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\<IP address or hostname of SMB server>\source_share \\<IP address of SMB source server>\dest_share c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\Administrator-fallback- group BUILTIN\Users \\<IP address or hostname of SMB server>\source_share \\<IP address of SMB source server>\dest_share XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec31 00:00:00 2029 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 8s 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 13s 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 18s ERROR failed to obtain fallback security principal "BUILTIN\Users". Please check if the principal with the name "BUILTIN\Users" exists on "D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "D60AB15C2AFC4D6\Administrator". Please check if the principal with the name "D60AB15C2AFC4D6\Administrator" exists on "D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "BUILTIN\Users". Please checkif the principal with the name "BUILTIN\Users" exists on"D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "BUILTIN\Users". Please checkif the principal with the name "BUILTIN\Users" exists on"D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "BUILTIN\Users". Please checkif the principal with the name "BUILTIN\Users" exists on"D60AB15C2AFC4D6". 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 23s ERROR failed to obtain fallback security principal "D60AB15C2AFC4D6\Administrator". Please check if the principal with the name "D60AB15C2AFC4D6\Administrator" exists on "D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "D60AB15C2AFC4D6\Administrator". Please check if the principal with the name "D60AB15C2AFC4D6\Administrator" exists on "D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "D60AB15C2AFC4D6\Administrator". </pre>

✓	Step	Description
		Please check if the principal with the name "D60AB15C2AFC4D6\Administrator" exists on "D60AB15C2AFC4D6". 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 28s 753 scanned, 0 errors, 0 skipped, 249 copied, 24.0KiB (4.82KiB/s), 33s 753 scanned, 0 errors, 0 skipped, 744 copied, 54.4KiB (6.07KiB/s), 38s 753 scanned, 0 errors, 0 skipped, 746 copied, 54.5KiB (20/s), 43s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (1.23KiB/s), 44s C:\WRSHDNT>
	18.	If you still get the error message 'ERROR failed to obtain fallback security principal' after adding the destination box entry in the hosts files, the user/group does not exist in the targetsystem. C:\WRSHDNT>c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\unknown_user -fallback-group BUILTIN\Users \\<IP address or hostname of SMB server>\source_share \\<IP address of SMB source server>\dest_share c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\unknown_user -fallback-group BUILTIN\Users \\<IP address or hostname of SMB server>\source_share \\<IP address of SMB source server>\dest_share XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029 ERROR failed to obtain fallback security principal "D60AB15C2AFC4D6\unknown_user". Please check if the principal with the name "D60AB15C2AFC4D6\unknown_user" exists on "D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "D60AB15C2AFC4D6\unknown_user". Please check if the principal with the name "D60AB15C2AFC4D6\unknown_user" exists on "D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "D60AB15C2AFC4D6\unknown_user". Please check if the principal with the name "D60AB15C2AFC4D6\unknown_user" exists on "D60AB15C2AFC4D6". ERROR failed to obtain fallback security principal "D60AB15C2AFC4D6\unknown_user". Please check if the principal with the name "D60AB15C2AFC4D6\unknown_user" exists on "D60AB15C2AFC4D6". 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 5s 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 10s 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 15s 753 scanned, 0 errors, 0 skipped, 284 copied, 27.6KiB (5.54KiB/s), 20s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (2.44KiB/s), 22s C:\WRSHDNT>
	19.	Use xcp copy to migrate CIFS data with ACLs (with or without the root folder). Without the root folder: C:\WRSHDNT>c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\<IP address or hostname of SMB server>\source_share \\<IP address of SMB source server>\dest_share c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\<IP address or hostname of SMB server>\source_share \\<IP address of SMB source server>\dest_share XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 5s 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 10s 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 15s 753 scanned, 0 errors, 0 skipped, 210 copied, 20.4KiB (4.08KiB/s), 20s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (2.38KiB/s), 22s C:\WRSHDNT> With the root folder: C:\WRSHDNT>c:\netapp\xcp\xcp copy -acl -root -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\<IP address or hostname of SMB server>\source_share \\<IP address of SMB source server>\dest_share c:\netapp\xcp\xcp copy -acl -root -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\<IP address or hostname of SMB server>\source_share \\<IP address of SMB source server>\dest_share XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

✓	Step	Description
		753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 5s 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 10s 753 scanned, 0 errors, 0 skipped, 0 copied, 0 (0/s), 15s 753 scanned, 0 errors, 0 skipped, 243 copied, 23.6KiB (4.73KiB/s), 20s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (6.21KiB/s), 25s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (0/s), 30s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (0/s), 35s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (0/s), 40s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (0/s), 45s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (0/s), 50s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (0/s), 55s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (0/s), 1m0s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (0/s), 1m5s 753 scanned, 0 errors, 0 skipped, 752 copied, 54.7KiB (817/s), 1m8s C:\WRSHDNT>

5 XCP Logging

XCP supports log file rotation and log filtering based on severity level.

Log file rotation

The logging module creates a new log file when the existing log file size exceeds the 50 MB limit. When the xcp.log file reaches 50MB, the module copies the contents to xcp.log.1 and sends only new logs to the xcp.log file. When the xcp.log file reaches the 50MB limit again, the module copies the contents to xcp.log.1 and the copies the contents of xcp.log.1 to xcp.log.2 and so on for 10 log rotations (until xcp.log.10). On the next log rotation, the module deletes the contents of xcp.log.10 and copies the contents xcp.log.9 to xcp.log.10.

The xcp.log file always contains recent logs. To trace the logs generated by XCP, the command executed request searches in the xcp.log file first, then in the xcp.log.1 file and so on.

Log message filtering

XCP log messages support five severity levels in order of decreasing severity:

CRITICAL, ERROR, WARNING, INFO, DEBUG.

You can filter XCP Log messages by using the XCP CLI command option "--loglevel" to specify the severity level at which logging begins.

This option filters out XCP log messages so that messages with a severity level lower than that specified in the option are not logged in the log file.

NFS and SMB Example:

```
xcp scan --loglevel debug \\10.101.101.101\test_share_mb
```

NFS log message format

All log messages are logged in the following format in the log file:

```
%(asctime)s - %(levelname)s - %(process)d %(message)
```

NFS example:

```
2020-03-18 03:35:22,781 - INFO - 4455 xcp main pid 4455 runid3112812948410038
2020-03-18 03:35:22,853 - DEBUG - 4455 xcp mount 'IP: XX.XX.XX.XX:/source_vol/agnos' Connected to
IP: XX.XX.XX.XX port 2049
2020-03-18 03:35:22,807 - WARNING - 4455 xcp IP: XX.XX.XX.XX tcp 2049 nfs3 c0 Receive buffer is
less than or equal to 256K
2020-03-18 03:35:22,844 - INFO - 4455 xcp xcp opened catalog
```

SMB log message format

All log messages are logged in the following format in the log file:

```
%(progName)s%(pid)s %(time.strftime)s %( self.name)s%( level)s: %( msg)s\n
```

SMB example:

```
2020-03-24 14:12:07,677 - INFO - xcp.main - 1836 - 2560 - XCP SMB1.6
2020-03-24 14:12:07,709 - DEBUG - xcp.main - 1836 - 2560 - It appears that you are not running
XCP as Administrator. To avoid access issues please run XCP as Administrator.
2020-03-24 4:12:07,709 - INFO - xcp.main - 1836 - 2560 - User Name: ctladmin
```

5.1 Compare logs in XCP 1.5 and XCP1.6

Comparing XCP Logging in XCP1.5 and XCP 1.6 for NFS and SMB.

No	Item	XCP 1.5	XCP1.6
1.	XCP log file	All NFS and SMB log messages are logged in a single file named "xcp.log".	All new NFS and SMB log messages are logged in the file named "xcp.log". When the "xcp.log" file reaches 50 MB, the contents are copied to "xcp.log.1". XCP 1.6x supports 10 additional log files rotated up to "xcp.log.10".
2.	Log file location	NFS xcp.log is created under the directory path: /opt/NetApp/xFiles/xcp SMB xcp.log is created under the directory path: C:\NetApp\XCP\Logs	All NFS log files are created under directory path: /opt/NetApp/xFiles/xcp/xcplogs All SMB log files are created under directory path: C:\NetApp\XCP\Logs SMB and NFS logs files are named "xcp.log", "xcp.log1", and so on up to "xcp.log.10"
3.	Log message format	"%(progName)s%(pid)s %(time.strftime)s %(self.name)s% (level)s: %(msg)s\n" NFS and SMB example xcp 2019-09-03 05:14:30 xcp: opened catalog	"%(asctime)s - %(levelname)s - %(process)d %(message)s" NFS example 2020-03-18 03:35:22,844 - INFO - 4455 xcp xcp opened catalog SMB example: 2020-03-24 14:12:07,709 - INFO - xcp.main - 1836 - 2560 - User Name: ctladmin
4.	--loglevel command line option	Does not support option to filter log messages for NFS and SMB.	Supports option to filter XCP Log messages for NFS and SMB using the XCP CLI command option "--loglevel" to specify the severity level at which logging begins. Log message severity levels: [CRITICAL, ERROR, WARNING, INFO, DEBUG] Default severity level: "INFO" Note: The use of this option is recommended for "INFO" or DEBUG level messages only.

No	Item	XCP 1.5	XCP1.6
5	Summary text for XCP commands:		Summary text displays in the following format:
			<list of applicable counters> <space> <throughput> <execution time>
	Command	counters	Line 1: <list of applicable counters>
	Scan	Scanned, Matched, Error	Line 2: Speed: <throughput>
	Copy	Scanned, Copied, Matched, Errors	Line 3: Total Time:<execution time>
	Sync	Scanned, Copied, Modifications, New Items, Delete Items, Errors	Line 4: STATUS: <passed/failed>
	Resume (N/A for SMB)	Scanned, Copied, Modifications, New Items, Delete Items, Errors	NFS Example
	Verify for NFS	Scanned, Matched, Found, Same data, Different Items, Errors	13 scanned, 0 matched, 0 error
	Verify for SMB	Scanned, Compared, Same, Different, Missing, Errors	Speed : 3.73 KiB in (4.89 KiB/s), 756 out (989/s)
Delete (N/A for SMB)	Scanned, Matched, Delete Item, Errors	Total Time : 0s.	
			STATUS : PASSED
			SMB Example
			317 scanned, 0 matched, 0 errors
			Total Time : 1s
			STATUS : PASSED

5.2 Set the logConfig option

The following is an example of the logConfig option in the xcpLogConfig.json JSON config file for NFS and SMB.

JSON configuration file "logConfig" option.

```
{
  "level": "INFO",
  "maxBytes": "52428800",
  "name": "xcp.log"
}
```

With this configuration you can filter messages according to their severity by selecting a valid `level` value from `CRITICAL`, `ERROR`, `WARNING`, `INFO`, and `Debug`.

The `maxBytes` setting lets you change the file size of the rotating log files. Here the default is 50MB. Setting the value to 0 will stop rotation and a single file will be created for all logs.

The `name` option configures the name of the log file.

If any key value pair is missing, the system uses the default value. Any mistake with the name of a key is treated as a new key, and the new key will not affect how the systems works or system functionality.

5.3 Set the eventlog option

XCP supports event messaging which you can enable using the `eventlog` option in the `xcpLogConfig.json` JSON config file.

For NFS all events messages are written to the file `xcp_event.log` located in the default location `/opt/NetApp/xFiles/xcp/` or a custom location configured using the **Error! Reference source not found.** `OR Error! Reference source not found.environment` variable. When both locations are set, `XCP_LOG_DIR` will take precedence.

For SMB, all events messages are written to the file `xcp_event.log` located in the default location `C:\NetApp\XCP\`.

JSON Configuration for Event Messaging for NFS and SMB

The following is an example of JSON configuration to enable event messaging for NFS and SMB:

Enabling 'eventlog' option using config file	Example config file with other options enabled with event log
<pre>{ "eventlog": { "isEnabled": true, "level": "INFO" }, "sanitize": false }</pre>	<pre>{ "logConfig": { "level": "INFO", "maxBytes": 52428800, "name": "xcp.log" }, "eventlog": { "isEnabled": true, "level": "INFO" }, "syslog": { "isEnabled": true, "level": "info", "serverIp": "10.101.101.10", "port": 514 }, "sanitize": false }</pre>

eventlog sub options			Description of eventlog sub options
Sub option	JSON data type	Default Value	
"isEnabled"	Boolean	false	This boolean option is used to enable event messaging. Setting it <code>false</code> will not generate any

			event messages and no event logs will be published to event log file.
"level"	String	"INFO"	Event message severity filter level. Event messaging support five severity levels in order of decreasing severity: CRITICAL, ERROR, WARNING, INFO, and DEBUG

For NFS event logs refer to the [Event logs for NFS](#).

For SMB event logs refer to the [Event logs for SMB](#).

Template for NFS event log message

<pre><Time stamp> - <Severity level> {"Event ID": <ID>, "Event Category":<category of xcp event log>, "Event Type": <type of event log>, "ExecutionId": < unique ID for each xcp command execution >, "Event Source": <host name>, "Description": <XCP event log message>}</pre>
Example: <pre>2020-07-14 07:07:07,286 - ERROR {"Event ID": 51, "Event Category": "Application failure", "Event Type": "No space left on destination error", " ExecutionId ": 408252316712, "Event Source": "NETAPP-01", "Description": "Target volume is left with no free space while executing : copy {}. Please increase the size of target volume 10.101.101.101:/cat_vol"}</pre>

Options in an event log message	Description
Event ID	The unique identifier for each event log message.
Event Category	Explains the category of event type and event log message.
Event Type	This is a short string that describes the event message. Multiple event types can belong to one category.
Description	The description field contains the event log message generated by XCP.
ExecutionId	A unique identifier for each XCP command executed.

5.4 Enable the syslog client

XCP supports a syslog client to send XCP event log messages to a remote syslog receiver for NFS and SMB. It supports the UDP protocol using the default port 514.

Configure syslog client for NFS and SMB

Enabling the syslog client requires configuring the `.syslog` option in the `xcpLogConfig.json` JSON configuration file for NFS and SMB.

The following example configuration for the syslog client for NFS and SMB:

JSON config for syslog

```
{
  "syslog":{
    "isEnabled":true,
    "level":"INFO",
    "serverIp":"10.101.101.d",
    "port":514
  },
  "sanitize":false
}
```

Syslog options

All the following options are case sensitive.

Sub options name for “syslog” config	JSON Data Type	Default	Description
isEnabled	Boolean	false	This Boolean option enables the syslog client in XCP. Setting it to false will ignore the syslog configuration
level	String	“INFO”	This option sets the message severity filter level. XCP event log messages support five severity levels in order of decreasing severity: CRITICAL, ERROR, WARNING, INFO, DEBUG
serverIp	string	None	This option lists the remote syslog server IP addresses or hostnames
port	Integer	514	This option is the remote syslog receiver port. You can configure syslog receivers to accept syslog datagrams on a different port with this option. The default UDP port is 514.

Option “sanitize”: This is a common option not to be specified within “syslog” configuration. This option has a global scope and is common to logging, event log, and syslog within JSON config. Setting this value to “true” will enable hiding sensitive information in syslog messages posted to the syslog server.

Syslog message format

Every syslog messages sent to the remote syslog server over UDP is formatted as per the RFC 5424 format for NFS and SMB.

The severity level as per RFC 5424 supported for syslog messages for XCP:

Severity values	Severity level
3	Error: error conditions
4	Warning: warning conditions
6	Informational: informational messages

7	Debug: debug-level messages
---	-----------------------------

In the syslog header for NFS and SMB, version has a value of 1 and the facility value for all messages for XCP is set to 1 (user-level messages).

<PRI> = syslog facility * 8 + severity value

XCP application syslog message format with syslog header for NFS:

Template: <PRI><version> <Time stamp> <hostname> xcp_nfs - - - <XCP message>
Example syslog message: <14>1 2020-07-08T06:30:34.341Z netapp xcp_nfs - - - INFO {"Event ID": 14, "Event Category": "XCP job status", "Event Type": "XCP scan completion", "Event Source": "netapp", "Description": "XCP scan is completed by scanning 8 items"}
XCP application message without syslog header for NFS:
Template: <message severity level i.e CRITICAL, ERROR, WARNING, INFO, DEBUG> <XCP event log message>
Example message: INFO {"Event ID": 14, "Event Category": "XCP job status", "Event Type": "XCP scan completion", "Event Source": "netapp", "Description": "XCP scan is completed by scanning 8 items"}

XCP application syslog message format with syslog header for SMB:

Template: <PRI><version> <Time stamp> <hostname> xcp_smb - - - <XCP message>
Example syslog message: <14>1 2020-07-10T10:37:18.452Z bansala01 xcp_smb - - - INFO {"Event ID": 14, "Event Category": "XCP job status", "Event Type": "XCP scan completion", "Event Source": "NETAPP-01", "Description": "XCP scan is completed by scanning 17 items"}

XCP application message without syslog header for SMB:

Template: <message severity level i.e CRITICAL, ERROR, WARNING, INFO, DEBUG> <XCP event log message>
Example message: INFO {"Event ID": 14, "Event Category": "XCP job status", "Event Type": "XCP scan completion", "Event Source": "NETAPP-01", "Description": "XCP scan is completed by scanning 17items"}

6 Event logreference

6.1 Event logs for NFS

Event Id	Event Template	Event example
401	Mounted on NFS export <mount path> with maximum read block size <read block size> bytes, maximum write block	2020-07-14 03:53:59,811 - INFO {"Event ID": 401, "Event Category": "Mountingunmounting file system", "Event Type": "Mount file system information", "ExecutionId": 408249379415, "Event Source": "NETAPP-01", "Description": "Mounted on NFS export <IP

Event Id	Event Template	Event example
	size <write block size> bytes. Mount point has mode value <mode bits> and type : <fat32 type>.	address of NFS server>:/test1 with maximum read block size 65536 bytes, maximum write block size 65536 bytes. Mount point has mode value 493 and type : Directory"} }
181	This license is issued to <username> of <company name>, license type is <license type> with <license status> status, license will expire on <expire date>	2020-07-14 03:53:59,463 - INFO {"Event ID": 181, "Event Category": "Authentication and authorization", "Event Type": "License information", "ExecutionId": 408249379415, "Event Source": "NETAPP-01", "Description": "This license is issued to NetApp User of Network Appliance, Inc, license type is SANDBOX with ACTIVE status, license will expire on Thu Jul 1 00:00:00 2021"} }
183	The license issued to <username> of <company name> will expire in less than one week	2020-07-14 04:02:55,151 - WARNING {"Event ID": 183, "Event Category": "Authentication and authorisation", "Event Type": "License warning", "ExecutionId": 408249519546, "Event Source": "NETAPP-01", "Description": "The license issued to NetApp User of Network Appliance, Inc will expire in less than one week"} }
581	Catalog path <catalog volume path> to store catalog directory is not accessible. Refer user guide for configuring catalog volume.	2020-07-14 04:05:00,857 - ERROR {"Event ID": 581, "Event Category": "Catalog and indexing", "Event Type": "Catalog exporting error", "ExecutionId": 408249552351, "Event Source": "NETAPP-01", "Description": "Catalog path <IP address of NFS server>:/test1 to store catalog directory is not accessible. Refer user guide for configuring catalog volume."} }
582	Failed creating catalog directory in catalog volume path <catalog volume path>	2020-07-14 04:10:12,895 - ERROR {"Event ID": 582, "Event Category": "Catalog and indexing", "Event Type": "Catalog directory creation error", "ExecutionId": 408249630498, "Event Source": "NETAPP-01", "Description": "Failed creating catalog directory in catalog volume path 10.234.104.250:/cat_vol"} }
584	Error in creating index directory <index id> for <command>	2020-07-14 04:52:15,918 - ERROR {"Event ID": 584, "Event Category": "Catalog and indexing", "Event Type": "Error in index creation", "ExecutionId": 408250278214, "Event Source": "NETAPP-01", "Description": "Error in creating index directory abc7 for scan"} }
586	Failed to create index <index id> in catalog volume while executing command : <command>	2020-07-14 04:45:46,275 - ERROR {"Event ID": 586, "Event Category": "Catalog and indexing", "Event Type": "Error in index creation", "ExecutionId": 408250177021, "Event Source": "NETAPP-01", "Description": "Failed to create index abc7 in catalog volume while executing command : cat_index"} }

Event Id	Event Template	Event example
		"Failed to create index abc6 in catalog volume while executing command : scan {-newid: 'abc6'}"}}
351	System resources available while executing xcp command : <command>, are : <CPU info>, <memory info>	2020-07-14 05:08:35,393 - INFO {"Event ID": 351, "Event Category": "System resource utilization", "Event Type": "Resources available for scan", "ExecutionId": 408250529264, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : scan , are: CPU: count 4, load avg (1/5/15m) 0.0, 0.0, 0.0, System memory (GiB): avail 7.3, total 7.8, free 6.6, buffer 0.1, cache 0.5"}}
13	XCP <command> is running on platform <platform info> for source <source info>	2020-07-14 05:08:35,478 - INFO {"Event ID": 13, "Event Category": "XCP job status", "Event Type": "Starting xcp scan operation", "ExecutionId": 408250529264, "Event Source": "NETAPP-01", "Description": "XCP command: scan {-newid: 'abc7'} is running on platform Linux-2.6.26-2-amd64-x86_64-with-debian-5.0.10 for source 10.234.104.250:/test1"}}
14	XCP scan completed successfully after scanning <scan item count> items. Source : <source scanned>	2020-07-14 05:08:35,653 - INFO {"Event ID": 14, "Event Category": "XCP job status", "Event Type": "XCP scan completion", "ExecutionId": 408250529264, "Event Source": "NETAPP-01", "Description": "XCP scan completed successfully after scanning 479 items. Source : 10.234.104.250:/test1"}}
354	System resources available while executing xcp command : <command>, are : <CPU info>, <memory info>	2020-07-14 05:15:13,562 - INFO {"Event ID": 354, "Event Category": "System resource utilization", "Event Type": "Resources available for copy", "ExecutionId": 408250596708, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : copy , are: CPU: count 4, load avg (1/5/15m) 0.0, 0.0, 0.0, System memory (GiB): avail 7.3, total 7.8, free 6.6, buffer 0.1, cache 0.5"}}
25	XCP <command> is running on platform <platform info> for source <copy source> and destination <copy destination/target>	2020-07-14 05:15:13,647 - INFO {"Event ID": 25, "Event Category": "XCP job status", "Event Type": "Starting xcp copy operation", "ExecutionId": 408250596708, "Event Source": "NETAPP-01", "Description": "XCP command : copy {} is running on platform Linux-2.6.26-2-amd64-x86_64-with-debian-5.0.10 for source <IP address of NFS server>:/source_vol and destination <NFS destination source>:/test1"}}
26	XCP copy completed successfully after scanning <scanned	2020-07-14 05:15:13,885 - INFO {"Event ID": 26, "Event Category": "XCP job status", "Event Type": "XCP copy completion",

Event Id	Event Template	Event example
	item count> of which <matched item count> are matched and <copied item count> items are copied to the destination. Source : <copy source>, destination : <copy destination/target>	<pre>"ExecutionId": 408250596708, "Event Source": "NETAPP-01", "Description": "XCP copy completed successfully after scanning 3 of which 0 are matched and 2 items are copied to the destination. Source : <IP address of NFS server>:/source_vol, destination : <NFS destination source>:/test1"}</pre>
16	XCP command : <command> is running on platform <platform info> for source <sync source> and destination {sync destination}	<pre>2020-07-14 06:41:20,145 - INFO {"Event ID": 16, "Event Category": "XCP job status", "Event Type": "Starting xcp sync operation", "ExecutionId": 408251920146, "Event Source": "NETAPP-01", "Description": "XCP command : sync {-id: 'autoname_copy_2020-07-14_06.22.07.233271'} is running on platform Linux-2.6.26-2-amd64-x86_64-with-debian-5.0.10 for source <IP address of NFS server>:/src_vol and destination <NFS destination source>:/dest_vol"}</pre>
352	System resources available while executing xcp command : <command>, are : <CPU info>, <memory info>	<pre>2020-07-14 06:41:28,728 - INFO {"Event ID": 352, "Event Category": "System resource utilization", "Event Type": "Resource available for sync", "ExecutionId": 408251920146, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : sync {-id: 'autoname_copy_2020-07-14_06.22.07.233271'} , are : CPU: count 4, load avg (1/5/15m) 0.1, 0.0, 0.0, System memory (GiB): avail 7.2, total 7.8, free 6.6, buffer 0.1, cache 0.5"}</pre>
17	XCP sync is completed. Total scanned <scanned item count>, copied <copied item count>, modification <modification item count>, new file <new file count>, delete item <delete item count>. Command executed : <command>	<pre>2020-07-14 06:41:29,245 - INFO {"Event ID": 17, "Event Category": "XCP job status", "Event Type": "XCP sync completion", "ExecutionId": 408251920146, "Event Source": "NETAPP-01", "Description": "XCP sync is completed. Total scanned 66, copied 0, modification 1, new file 0, delete item 0. Command executed : sync {-id: 'autoname_copy_2020-07-14_06.22.07.233271'}"}</pre>
19	XCP command : <command> is running on platform for source <verify source> and destination <verify destination>	<pre>2020-07-14 06:54:59,084 - INFO {"Event ID": 19, "Event Category": "XCP job status", "Event Type": "Starting xcp verify operation", "ExecutionId": 408252130477, "Event Source": "NETAPP-01", "Description": "XCP command : verify {} is running on platform Linux-2.6.26-2-amd64-x86_64-with-debian-5.0.10 for source <IP address of NFS</pre>

Event Id	Event Template	Event example
		server>:/src_vol and destination <IP address of NFS destination server>:/dest_vol"} }
353	System resources available while executing xcp command : <command> , are : <CUP info>, {memory info}	2020-07-14 06:54:59,085 - INFO {"Event ID": 353, "Event Category": "System resource utilization", "Event Type": "Resources available for verify", "ExecutionId": 408252130477, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : verify , are : CPU: count 4, load avg (1/5/15m) 0.0, 0.0, 0.0, System memory (GiB): avail 7.3, total 7.8, free 6.6, buffer 0.1, cache 0.5"} }
211	log file path : <file path> , severity filter level <severity level>, log message sanitization is set as <sanitization value>	2020-07-14 06:40:59,104 - INFO {"Event ID": 211, "Event Category": "Logging and supportability", "Event Type": "XCP logging information", "ExecutionId": 408251920146, "Event Source": "NETAPP-01", "Description": "Log file path : /opt/NetApp/xFiles/xcp/xcplogs/xcp.log, severity filter level INFO, log message sanitization is set as False"} }
215	Event file path: <file path>, severity filter level <severity level>, event message sanitization is set as <sanitization value>	2020-07-14 06:40:59,105 - INFO {"Event ID": 215, "Event Category": "Logging and supportability", "Event Type": "XCP event information", "ExecutionId": 408251920146, "Event Source": "NETAPP-01", "Description": "Event file path : /opt/NetApp/xFiles/xcp/xcplogs/xcp_event.log, severity filter level INFO, event message sanitization is set as False"} }
54	Catalog volume is left with no free space please increase the size of catalog volume <catalog volume running out of space>	2020-07-14 04:10:12,897 - ERROR {"Event ID": 54, "Event Category": "Application failure", "Event Type": "No space left on Catalog volume error", "ExecutionId": 408249630498, "Event Source": "NETAPP-01", "Description": "Catalog volume is left with no free space. Please increase the size of catalog volume <IP address of NFS destination server>:/cat_vol"} }
53	Catalog volume <catalog volume> is left with no free space to store index <index id> while executing <command>. Please increase the size of the catalog volume <catalog volume running out of space>	2020-07-14 04:52:15,922 - ERROR {"Event ID": 53, "Event Category": "Application failure", "Event Type": "No space left for catalog volume error", "ExecutionId": 408250278214, "Event Source": "NETAPP-01", "Description": "Catalog volume 10.234.104.250:/cat_vol is left with no free space to store index abc7 while executing : scan {-newid: 'abc7'}. Please increase the size of the catalog volume <IP address of NFS destination server>:/cat_vol"} }

Event Id	Event Template	Event example
61	NFS LIF <LIF IP> is not reachable for path <volume path without IP> while executing <command>. Please check volume is not offline and is reachable.	2020-07-14 07:38:20,100 - ERROR {"Event ID": 61, "Event Category": "Application failure", "Event Type": "NFS mount has failed", "ExecutionId": 408252799101, "Event Source": "NETAPP-01", "Description": "NFS LIF <IP address of NFS destination server>is not reachable for path /test11 while executing: scan {}. Please check volume is not offline and is reachable"}
71	TCP connection could not be established for IP address <IP>. Check network setting and configuration.	2020-07-14 07:44:44,578 - ERROR {"Event ID": 71, "Event Category": "Application failure", "Event Type": "IP is not active", "ExecutionId": 408252889541, "Event Source": "NETAPP-01", "Description": "TCP connection could not be established to the address <IP address of NFS destination server>. Check network setting and configuration."} (UT done)
51	Target volume is left with no free space while executing : <command>. Please increase the size of target volume <volume running out of space>.	2020-07-14 07:07:07,286 - ERROR {"Event ID": 51, "Event Category": "Application failure", "Event Type": "No space left on destination error", "ExecutionId": 408252316712, "Event Source": "NETAPP-01", "Description": "Target volume is left with no free space while executing : copy {}. Please increase the size of target volume <IP address of NFS destination server>:/cat_vol"}
76	Index id {} is already present . Use new index id and rerun command : <command>	2020-07-14 09:18:41,441 - ERROR {"Event ID": 76, "Event Category": "Application failure", "Event Type": "Index ID problem", "ExecutionId": null, "Event Source": "NETAPP-01", "Description": "Index id asd is already present . Use new index id and rerun command : scan {-newid: 'asd'} "}
362	CPU usage has crossed <percentage CPU used>%	2020-06-16 00:17:28,294 - ERROR {"Event ID": 362, "Event Category": "System resource utilization", "Event Type": "resources available for xcp", "Event Source": "NETAPP-01 ", "Description": "CPU Usage has crossed 90.07%"}
363	Memory Usage has crossed <percentage memory used>%	2020-06-16 00:17:28,300 - ERROR {"Event ID": 363, "Event Category": "System resource utilization", "Event Type": "resources available for xcp", "Event Source": "NETAPP-01", "Description": "Memory Usage has crossed 95%"}
22	XCP <command> is running on platform <platform information> for	2020-07-14 06:24:26,768 - INFO {"Event ID": 22, "Event Category": "XCP job status", "Event Type": "Starting xcp resume operation", "ExecutionId": 408251663404,

Event Id	Event Template	Event example
	source <resume source> and destination <resume destination>	"Event Source": "NETAPP-01", "Description": "XCP command : resume {-id: 'autaname_copy_2020-07-14_06.22.07.233271'} is running on platformLinux-2.6.26-2-amd64-x86_64-with-debian-5.0.10 for source <IP address for NFS sever>:/src_vol and destination <IP address of NFS destination server>:/dest_vol"}"
356	System resources available while executing xcp command : <command> , are : <CPU info>, <memory information>	2020-07-14 06:24:26,837 - INFO {"Event ID": 356, "Event Category": "System resource utilization", "Event Type": "Resource available for resume", "ExecutionId": 408251663404, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : resume {-id: 'autaname_copy_2020-07-14_06.22.07.233271'} , are : CPU: count 4, load avg (1/5/15m) 0.1, 0.1, 0.0, System memory (GiB): avail 7.2, total 7.8, free 6.6, buffer 0.1, cache 0.5"}"
23	XCP resume is completed. Total scanned items <scanned item count>, total copied items <copied item count>. Command executed : <command>	2020-07-14 06:26:15,608 - INFO {"Event ID": 23, "Event Category": "XCP job status", "Event Type": "XCP resume completion", "ExecutionId": 408251663404, "Event Source": "NETAPP-01", "Description": "XCP resume is completed. Total scanned items 5982, total copied items 5973. Command executed : resume {-id: 'autaname_copy_2020-07-14_06.22.07.233271'} "}
76	"Index id <index id> is already present. Use new index id and rerun command : <command>	2020-07-14 09:43:08,381 - ERROR {"Event ID": 76, "Event Category": "Application failure", "Event Type": "Index ID problem", "ExecutionId": null, "Event Source": "NETAPP-01", "Description": "Index id asd is already present . Use new index id and rerun command : scan {-newid: 'asd'} "}
82	Index id <index id> used while executing sync is incomplete. Try resume on the existing index id <index id>	2020-07-14 10:33:09,307 - ERROR {"Event ID": 82, "Event Category": "Application failure", "Event Type": "Incomplete index used for sync", "ExecutionId": null, "Event Source": "NETAPP-01", "Description": "Index id autaname_copy_2020-07-14_10.28.22.323897 used while executing sync is incomplete. Try resume on the existing index id autaname_copy_2020-07-14_10.28.22.323897."}
365	CPU utilization reduced to <CPU percentage used>%	2020-07-14 09:43:08,381 - ERROR {"Event ID": 364, "Event Category": "System resource utilization", "Event Type": "Resources available for xcp", "ExecutionId": 408251663404, "Event Source": "NETAPP-01", "Description": " CPU utilization reduced to 26%}

Event Id	Event Template	Event example
364	Memory utilization reduced to <CPU percentage used>%	2020-07-14 09:43:08,381 - INFO {"Event ID": 364, "Event Category": "Resources available for xcp", "Event Type": "Resources available for xcp", "ExecutionId": 408351663478, "Event Source": "NETAPP-01", "Description": "Memory utilization reduced to 16.2%"}
10	XCP command <command> has failed	2020-07-14 09:43:08,381 - INFO {"Event ID": 10, "Event Category": "Xcp job status", "Event Type": "XCP command failure", "ExecutionId": 4082516634506, "Event Source": "NETAPP-01", "Description": "XCP command verify has failed"}

6.2 Event logs for SMB

Event Id	Event Template	Event example
355	CPU usage has crossed <CPU percentage use>%	2020-06-23 12:42:02,705 - INFO {"Event ID": 355, "Event Category": "System resource utilization", "Event Type": "CPU usage for xcp", "Event Source": "NETAPP-01", "Description": "CPU usage has crossed 96%"}
356	Memory usage has crossed <memory percentage use>%	2020-06-23 12:42:02,705 - INFO {"Event ID": 356, "Event Category": "System resource utilization", "Event Type": "Memory usage for xcp", "Event Source": "NETAPP-01", "Description": "CPU usage has crossed 92.5%"}
61	Address was not found: <complete address over which command is fired>	2020-07-15 02:57:06,466 - ERROR {"Event ID": 61, "Event Category": "Application Failure", "Event Type": "Address was not found", "ExecutionId": 408264113696, "Event Source": "NETAPP-01", "Description": "Address was not found: \"\\\\\\\\<IP address of SMB server>\\\\cifs1\""}}
62	Interface cannot be found: < complete address over which command is fired >	2020-07-15 02:52:00,603 - ERROR {"Event ID": 62, "Event Category": "Application Failure", "Event Type": "Interface was not found", "ExecutionId": 408264071616, "Event Source": "NETAPP-01", "Description": "Interface cannot be found: \"\\\\\\\\<IP address of SMB server>\\\\cifs11\""}}
63	Invalid Address. Please make sure that the Address starts with '\\'	2020-07-15 03:00:10,422 - ERROR {"Event ID": 63, "Event Category": "Application Failure", "Event Type": "InvalidAddress", "ExecutionId": 408264197308, "Event Source": "NETAPP-01", "Description":

Event Id	Event Template	Event example
		"Invalid Address. Please make sure that the Address starts with '\\\\'"}
41	Destination volume is left with no free space please increase the size target volume: <destination volume>	2020-06-15 17:12:46,413 - ERROR {"Event ID": 41, "Event Category": "Application Failure", "Event Type": "No space left on destination error", "Event Source": "NETAPP-01", "Description": "Destination volume is left with no free space please increase the size of target volume: <IP address of SMB server>\\to"}
211	Log file path : <file path>, severity filter level <severity level>, log message sanitization is set as <value of sanitization option>	{"Event ID": 211, "Event Category": "Logging and supportability", "Event Type": "XCP logging information", "ExecutionId": 408252673852, "Event Source": "NETAPP-01", "Description": "Log file path : C:\\NetApp\\XCP\\Logs\\xcp.log, severity filter level DEBUG, log message sanitization is set as False"}
215	Event file path : <file path>, severity filter level <severity level>, Event message sanitization is set as <sanitization option>	{"Event ID": 215, "Event Category": "Logging and supportability", "Event Type": "XCP event information", "ExecutionId": 408252673852, "Event Source": "NETAPP-01", "Description": "Event file path : C:\\NetApp\\XCP\\Logs\\xcp_event.log, severity filter level INFO, Event message sanitization is set as False"}
181	This license is issued to <user name> of <company name>, license type is <license type> with <status> status, license will expire expires on <expiration date>	{"Event ID": 181, "Event Category": "Authentication and authorization", "Event Type": "license information", "ExecutionId": 408252673852, "Event Source": "NETAPP-01", "Description": "This license is issued to calin of NetApp Inc, license type is SANDBOX with ACTIVE status, license will expire on Mon Dec 31 00:00:00 2029"}
13	XCP <command> is running on platform <platform information> for source <scan source>	2020-07-15 02:12:56,917 - INFO {"EventID": 13, "Event Category": "XCP job status", "Event Type": "Starting xcp scan operation", "ExecutionId": 408263470688, "Event Source": "NETAPP-01", "Description": "XCP {scan} is running on platform Windows-8.1-6.3.9600-SP0 for source \\\\<IP address of SMB server>\\cifs"}
351	System resources available while command : <command>, are : cpu <CPU information>, total memory <total memory on system>, available memory	2020-07-15 02:12:56,917 - INFO {"Event ID": 351, "Event Category": "System resource utilization", "Event Type": "Resources available for scan", "ExecutionId": 408263470688, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : scan, are :"}

Event Id	Event Template	Event example
	<available memory for execution>	cpu 4, total memory 8.00GiB, available memory 6.81GiB"}}
14	XCP scan completed successfully after scanning <scanned items count> items. Source : <scan source>	2020-07-15 02:12:57,932 - INFO {"EventID": 14, "Event Category": "XCP job status", "Event Type": "XCP scan completion", "ExecutionId": 408263470688, "Event Source": "NETAPP-01", "Description": "XCP scan completed successfully after scanning 29 items. Source : \\\\ <ip address="" of="" server>\\cifs"}}<="" smb="" td=""></ip>
25	XCP <command> is running on platform <platform information> for source <copy source> and destination <copy destination>	2020-07-15 02:19:06,562 - INFO {"EventID": 25, "Event Category": "XCP job status", "Event Type": "Starting xcp copy operation", "ExecutionId": 408263563552, "Event Source": "NETAPP-01", "Description": "XCP {copy} is running on platform Windows-8.1-6.3.9600-SP0 for source \\\\ <ip \\\\<ip="" address="" and="" destination="" of="" server>\\cifs="" server>\\source_vol"}}<="" smb="" td=""></ip>
352	System resources available while executing command : <command>, are : cpu <CPU information>, total memory <Total memory>, available memory <memory available for execution >	2020-07-15 02:19:06,562 - INFO {"EventID": 352, "Event Category": "System resource utilization", "Event Type": "Resources available for copy", "ExecutionId": 408263563552, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : copy, are : cpu 4, total memory 8.00GiB, available memory 6.82GiB"}}
26	XCP copy completed successfully after copying <copied items count> items. Source : <copy source>, destination : <copy destination>	2020-07-15 02:19:14,500 - INFO {"EventID": 26, "Event Category": "XCP job status", "Event Type": "XCP copy completion", "ExecutionId": 408263563552, "Event Source": "NETAPP-01", "Description": "XCP copy completed successfully after copying 0 items. Source :
16	XCP <command> is running on platform <platform> for source <sync source> and destination <sync destination>	2020-07-15 02:27:10,490 - INFO {"EventID": 16, "Event Category": "XCP job status", "Event Type": "Starting xcp sync operation", "ExecutionId": 408263688308, "Event Source": "NETAPP-01", "Description": "XCP {sync} is running on platform Windows-8.1-6.3.9600-SP0 for source \\\\ <ip \\\\<ip="" address="" and="" destination="" of="" server>\\cifs="" server>\\source_vol"}}<="" smb="" td=""></ip>
353	System resources available for command : <command>, are : cpu	2020-07-15 02:27:10,490 - INFO {"EventID": 353, "Event Category": "System resource utilization", "Event Type": "Resources

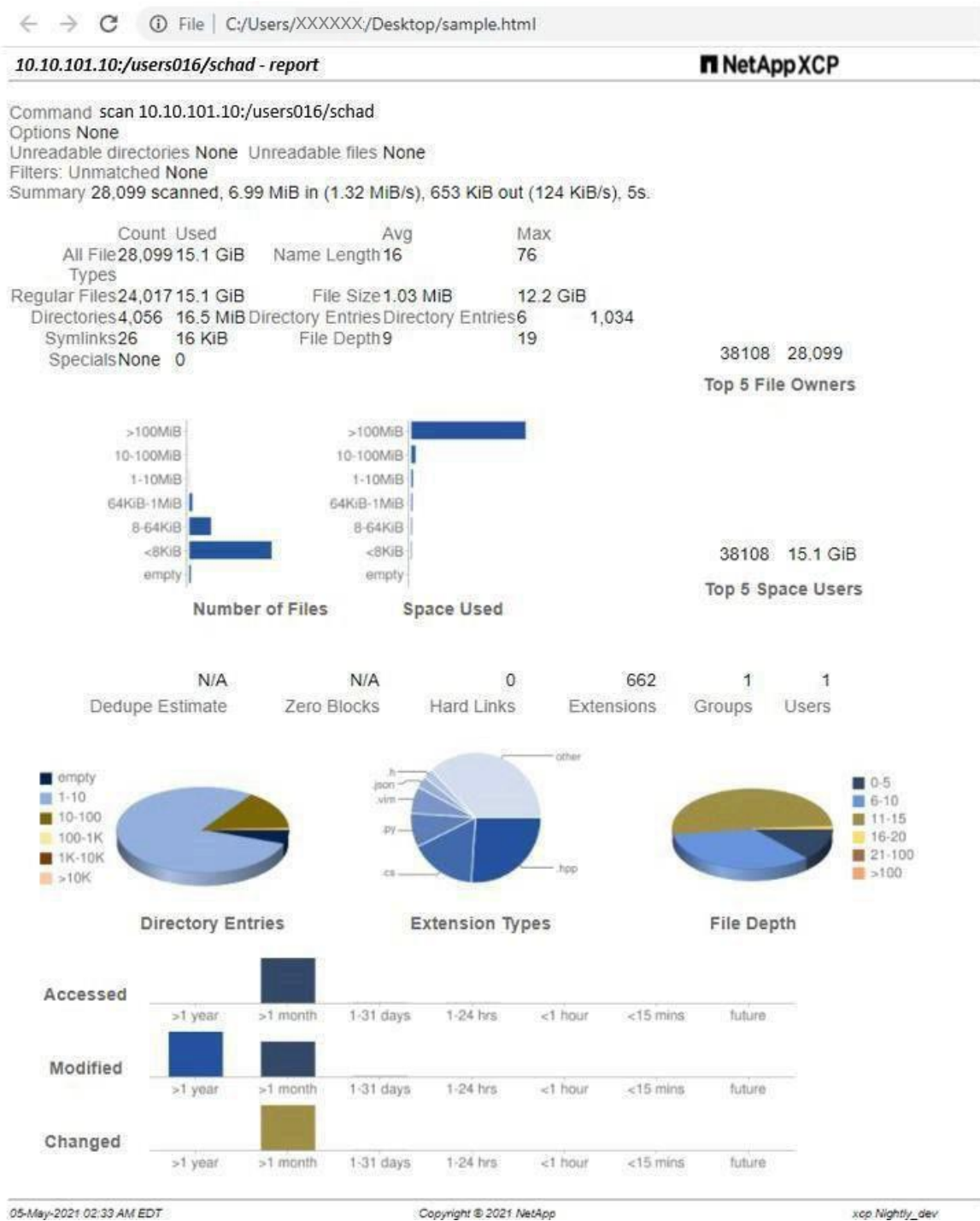
Event Id	Event Template	Event example
	<CPU information>, total memory <total memory>, available memory <available memory>	available for sync", "ExecutionId": 408263688308, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : sync, are : cpu 4, total memory 8.00GiB, available memory 6.83GiB"}
17	XCP sync completed successfully after scanning <scanned item count> items, copying <copied item count> items, comparing <compared item count> items, removing <removed item count> items. Source : <sync source>, destination : <sync destination>	2020-07-15 03:04:14,269 - INFO {"EventID": 17, "Event Category": "XCP job status", "Event Type": "XCP sync completion", "ExecutionId": 408264256392, "Event Source": "NETAPP-01", "Description": "XCP sync completed successfully after scanning 30 items, copying 20 items, comparing 30 items, removing 0 items. Source : \\<IP address of SMB server>\\cifs, destination: \\<IP address of SMB destination server>\\source_vol"}
19	XCP <command> is running on platform <platform information> for source <verify source> and destination <verify destination>	2020-07-15 03:14:04,854 - INFO {"EventID": 19, "Event Category": "XCP job status", "Event Type": "Starting xcp verify operation", "ExecutionId": 408264409944, "Event Source": "NETAPP-01", "Description": "XCP {verify -noacl} is running on platform Windows-8.1-6.3.9600-SP0 for source \\<IP address of SMB server>\\cifs and destination \\<IP address of SMB destination server>\\source_vol"}
354	System resources available for command : <command>, are : cpu <CPU information>, total memory <total memory>, available memory <available memory> for execution>	2020-07-15 03:14:04,854 - INFO {"EventID": 354, "Event Category": "System resource utilization", "Event Type": "Resources available for verify", "ExecutionId": 408264409944, "Event Source": "NETAPP-01", "Description": "System resources available while executing xcp command : verify, are : cpu 4, total memory 8.00GiB, available memory 6.80GiB"}
20	XCP verify is completed by scanning <scanned item count> items, comparing <compared item count> items	{"Event ID": 20, "Event Category": "XCP job status", "Event Type": "XCP verify completion", "command Id": 408227440800, "Event Source": "NETAPP-01", "Description": "XCP verify is completed by scanning 59 items, comparing 0 items"}
357	CPU utilization reduced to <CPU utilization percentage>%	{"Event ID": 357, "Event Category": "System resource utilization", "Event Type": "CPU usage for xcp", "Event Source": "NETAPP-01", "Description": "CPU utilization reduced to 8.2%"}
358	Memory utilization reduced to <memory	{"Event ID": 358, "Event Category": "System resource utilization", "Event Type":

Event Id	Event Template	Event example
	utilization percentage>%	"Memory usage for xcp", "Event Source": "NETAPP-01", "Description": "Memory utilization reduced to 19%"}
10	XCP command <command> has failed	2020-07-14 09:43:08,381 - INFO {"EventID": 10, "Event Category": " Xcp job status", "Event Type": "XCP command failure", "Event Source": "NETAPP-01", "Description": " XCP command H:\\console_msg\\xcp_cifs\\xcp_main_.py verify \\\\<IP address of SMB server>\\cifs \\\\<IP address of SMB destination server>\\source_vol has failed"

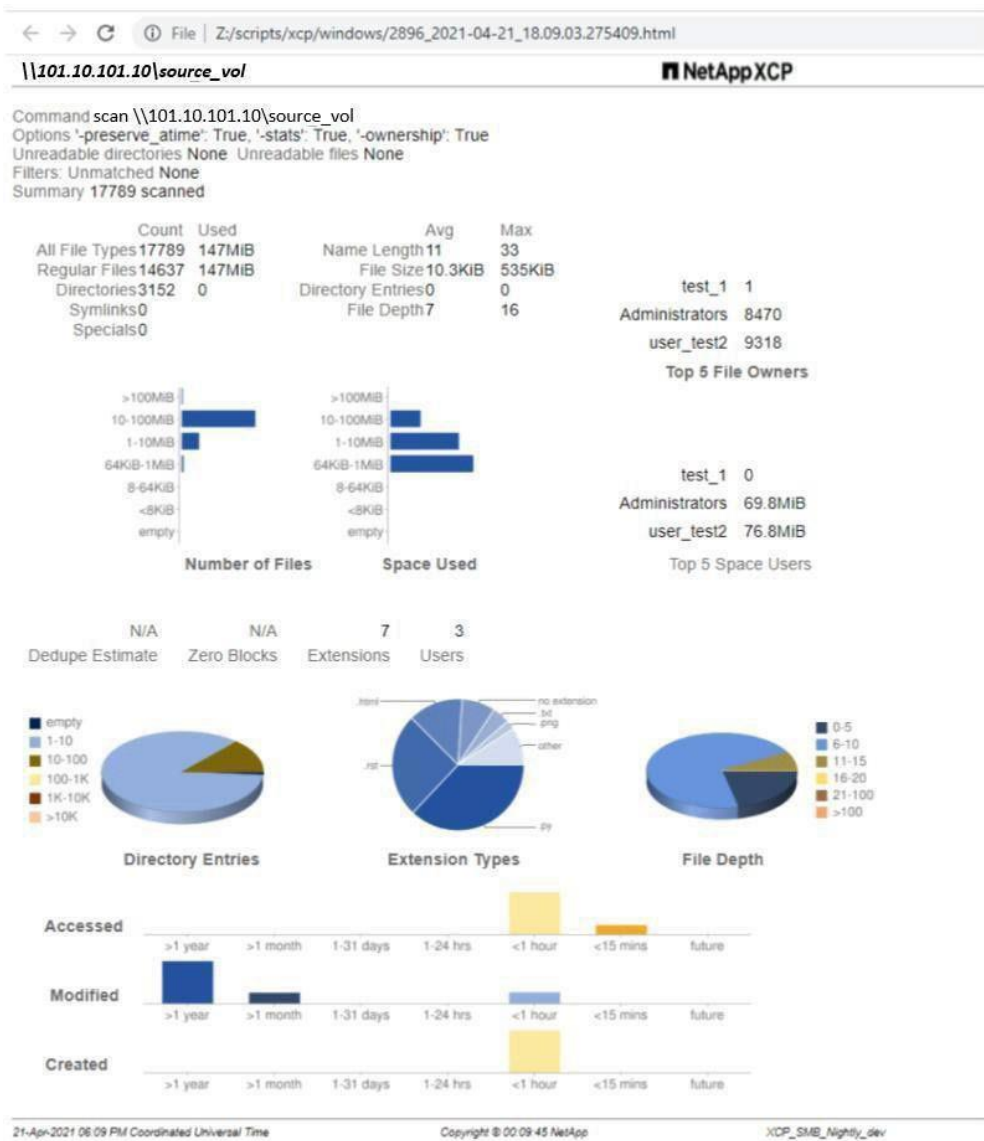
6.3 Sample XCP NFS and SMB Reports

XCP is a powerful tool. This tool can generate .csv and .html reports for NFS and SMB, for scoping migration projects. Sample .html and .csv reports are shown below.

The following is a sample .html report in NFS:



The following is a sample .html report in SMB:



The following is a sample .csv report in SMB:

```

1 xcp,XCP_SMB_Nightly_dev
2 date,21-Apr-2021 07:00 PM Coordinated Universal Time
3 scan \\101.10.101.10\source vol
4 options,\\101.10.101.10\source vol
5 summary,17789 scanned
6
7 Maximum Values,Size,Depth,Namelen,DirSize
8 Maximum Values,535KiB,16,33,0
9 Average Values,Namelen,Size,Depth,DirSize
10 Average Values,11,10.3KiB,7,0
11 Top Space Users,user_test2,Administrators,test_1
12 Top Space Users,76.8MiB,69.8MiB,0
13 Top File Owners,user_test2,Administrators,test_1
14 Top File Owners,9.10KiB,8.27KiB,1
15 Top File Extensions,.py,.rst,.html,other,no extension,.txt,.png
16 Top File Extensions,5418,3738,1974,1344,1197,630,336
17 Number of files,empty,<8KiB,8-64KiB,64KiB-1MiB,1-10MiB,10-100MiB,>100MiB
18 Number of files,168,11466,2709,294,0,0,0
19 Space used,empty,<8KiB,8-64KiB,64KiB-1MiB,1-10MiB,10-100MiB,>100MiB
20 Space used,0,25541523,58007418,70152936,0,0,0
21 empty,1-10,10-100,100-1K,1K-10K,>10K
22 Directory entries,42,2690,420,0,0,0
23 Depth,0-5,6-10,11-15,16-20,21-100,>100
24 Depth,3832,12527,1424,6,0,0
25 Accessed,>1 year,>1 month,1-31 days,1-24 hrs,<1 hour,<15 mins,future
26 Accessed,0,0,0,15754,2035,0,0
27 Modified,>1 year,>1 month,1-31 days,1-24 hrs,<1 hour,<15 mins,future
28 Modified,11718,2961,0,3110,0,0,0
29 Created,>1 year,>1 month,1-31 days,1-24 hrs,<1 hour,<15 mins,future
30 Created,0,0,0,17789,0,0,0
31 Total count,17789
32 Directories,3152
33 Regular files,14637
34 Symbolic links,0
35 Special files,0
36 Total space for regular files,147MiB
37 Total space for directories,0
38 Total space used,147MiB
39 Dedupe Estimate,N/A
40 Sparse Estimate,N/A
41

```

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