XCP v1.6.2

Reference

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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 orf 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). -newid <name>: Catalog name for a new index -md5: Checksum the files (also save the checksums when indexing) (default: False) -edupe: Include dedupe estimate in reports (see documentation for details) -nonames: Do not look up user and group names for file listings or reports -bs <n[k]>: read/write block size (default: 64k) -dircount <n[k]>: Request size for reading directories (default: 64k) -parallel <n>: Maximum concurrent batch processes (default: 7) -noId: Disables the creation of a default index (default: False) -match <filter>: 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. -id <name>: Catalog name of a previous copy index -bs <n[k]>: read/write block size (default: 64k) -dircount <n[k]>: Request size for reading directories (default: 64k) -parallel <n>: Maximum concurrent batch processes (default: 7) -dircount <n[k]>: Request size for reading directories (default: 64k)
“sync”	Differential incremental updates from source to target at the file level. -id <name>: Catalog name of a previous copy index -snap <name or path>: Access a snapshot of the source tree -nonames: Do not look up user and group names for file listings or reports -bs <n[k]>: read/write block size (default: 64k) -dircount <n[k]>: Request size for reading directories (default: 64k) -parallel <n>: Maximum concurrent batch processes (default: 7) -match <filter>: 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. -id <name>: Catalog name of a previous copy index -snap <name or path>: Access a snapshot of the source tree -stats: deep scan the modified directories and report on everything that's 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
“verify”	Three levels of assurance: statistics, structure, and full data bit by bit. -stats, -csv: Scan source and target trees in parallel and compare tree statistics -nodata: Do not check data -noattrs: Do not check attributes -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 -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) -newdata <id name>: Verify full structure + names + attributes plus new data from the last sync -noId: Disables the creation of a default index (default: False)
“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@localhost /]# ./xcp help
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
help: Display information about commands and options
```

```
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

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 checksums when indexing) (default: False)
  -duk: Same as du, with output in kilobytes
  -acl4: process nfs4 acls
  -acl4.threads <n>: per-process thread pool size (default: 100)
  -acl4.mountlist <local or NFS path>: flat file in case /usr/bin/findmnt is missing or broken
  -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 blocksize 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
  -newlog: option to opt for multiple log files (default: False)
  --loglevel <name>: option to set log level (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 checksums when indexing) (default: False)
  -edupe: Include dedupe estimate in reports (see documentation for details)
  -nonames: Do not look up user and group names for file listings or reports server
```

Parameters

The following table describes the `help` parameters.

Feature	Description
`help info`	Display documentation, examples, and tuning recommendations.

help info

Display documentation, examples, and tuning recommendations.

```
[root@localhost /]# ./xcp  help info
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029
One file to rule them all

USAGE
  xcp show [options] hosts
  xcp [scan] [options] path
  xcp copy/verify [options] source_path target_path
  xcp sync/resume [options] -id name
  xcp delete path

  Path format
    server:export[:subdirectory]

  Multipath format
    server1addr1,server1addr2,...:export[:subdirectory]

  Documentation
    commands and options: xcp help [command]
    features, performance tuning, examples: xcp help info
    (no options): scan and list a file tree


EXAMPLES
  Query a server to see its RPC services and NFS exports;
```

```
  print a human-readable tree report for one of the NFS exports;
  and list all the files from the root of a subdirectory:

    xcp show server.abc.com
    xcp scan -stats server.abc.com:/tmp
    xcp scan -l server.abc.com:/tmp:/test

  Copy from a local SAN or DAS filesystem (requires local NFS service):

    sudo xcp copy localhost:/home/smith cdot:/target

  Three-level verification: compare stats, attributes, and full data:
    sudo xcp verify -stats localhost:/home/smith cdot:/target
    sudo xcp verify -nodata localhost:/home/smith cdot:/target
    sudo xcp verify localhost:/home/smith cdot:/target

  Please run "xcp help" to see the commands and options
  Please run "xcp help info" to see the user guide, including more examples...


DESCRIPTION
  When run as "xcp <path>", without any options, xcp recursively scans the tree rooted at the
  path and prints the list of all the files. Options such as -l can change the format; option
  -md5 makes xcp read each file and print the checksums in the output. Filters (see below)
  can select which directories to enter and which files to process.

  If -newid is used, the reports and logs and metadata index of searches and copies are
  saved in the catalog tree. Using a new id also allows xcp to resume an interrupted job,
  such as a copy or a scan. Each index requires about 1GB of space for every 10 million files.
  If -md5 (or another option which enables checksumming such as -edupe) is used during the
  copy, the index will also contain the data checksums of each file.  Note that checksums are
  not used by xcp for anything; the verify feature uses a full byte-by-byte data comparison.

  Recommended use is to put the source in read-only mode during scan/copy/sync.

  All file IO (except for the local diagnostic output) is done using the NFS engine in xcp
  which bypasses the local OS client.

  When run as root, the program uses reserved source ports for the NFS3 and MNT3 sockets.

  Although xcp is many times faster than find, du, cp or rsync; xcp uses much more CPU and
memory.
  To boost the performance of crawls use faster CPUs, and to boost performance of other tasks
  (filtering, copying, etc) use a multi-core system with a lot of memory; copying a large,
  deep tree with millions of files may require a few gigabytes of RAM on the system where xcp
  is running.

  To migrate an entire multiuser file tree at once, it usually works best to export the source
  to a host with read-only and root access, and then from that host run xcp as root.

  For non-NFS filesystems (SAN + DAS) use the Unix/Linux host as the NFS server so that xcp
  can stream requests at the filesystem
  For example; to access a SAN filesystem mounted on /local on Linux just add the following to
  /etc/exports and restart the Linux NFS services (typically "sudo service nfs restart"):

    /localsrc localhost(ro,no_root_squash)
    /localdest localhost(rw,no_root_squash,async)

  The xcp path to scan /localsrc would then be "localhost:/localsrc".

  NOTE: to copy files _to_ a filesystem through the Linux NFS server, the async option improves
  performance tremendously and setting RPCNFSDCOUNT=128 in /etc/sysconfig/nfs and restarting
  nfs services may improve write performance (for RHEL/CentOS; other distros may vary)

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 timezone-independent. E.g. "14d1h" means
  the file was modified 14 days and one hour ago. Note: "current time" is actually the time when
  xcp started. The timestamp is saved in the index metadata (catalog:/xFiles/indexes/*.json)
  and will be 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 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.
  See below for some examples with the -match filters.

  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=="demo" and ext==".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): a list of lines from a local (external) file
  rand(N): match 1 out of every N files at random
  path(pattern): wildcard match for the full path
  Note: unlike most shell wildcards, pattern "/a/*" will match path /a/b/c

  The 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
      -match "type == f and modified < .5"

    Find anything with 'core' in the name ("in" is a python operator)
      -match "'core' in name"

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

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

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

    Find jpg files over 500 Megabytes (note M is a variable)
      -match "fnm('*.jpg') and size > 500*M"

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

  Xcp prints size units according to the international standard, i.e. it shows a base 2 kilobyte
  as "1 KiB", a megabyte as "1 MiB", etc; however for easier typing in filters the variable
  names for size units are K = 1KiB, M = 1MiB, etc. In both cases the values represented are
  powers of 2. File counts are shown with abbreviations of powers of 10, e.g. 1.1M = 1.1 million.

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 your system has multiple CPU's and at least a few GB of free memory.

  Searching/checksumming/copying hundreds of thousands or millions of files should usually 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/copying with xcp will be usually go faster with
  a faster host CPU. When processing many files, reading/copying will go faster with more
  cores/CPUs.  The following options control when xcp will dedicate a parallel process to a
batch:

    -batchlen: approximate files per batch (default 5000 for copying, 50000 for searching)
    -batchsize: when copying, a size threshold for the amount of data per batch (default 500M)
```

```
    -giant: single-batch file threshold; giant files will get their own batch (default 900M)

  Larger batch sizes will usually consume less cpu and more memory than smaller ones.  The
  size of the index will be smaller with larger batches.  These tunables are for mainly for
  testing purposes; usually the defaults work best.

  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 qos limiter, you may also be able to
  increase performance by opening multiple channels. The usage section above shows how to use
  multiple host target addresses and the same syntax also opens more channels to a single target.
  For example: "host1,host1:/vol/src" makes each xcp process open 2 channels to host1. In some
  WAN environments this can improve performance. Within a datacenter, if there are only 1GbE NICs
  on the host with XCP it usually helps to use the multipath syntax to leverage more than one
NIC.
  To validate that you are actually running IO over multiple paths, use OS tools to
  monitor network IO.  For example, on Linux try "sar -n DEV 2 200"

VERIFICATION, CHANGES, UPDATES
  The verify command will compare any two file trees without using a catalog index. Verify
  scans the source tree and looks up every file and directory on the target. It will also
  check modification times and other file attributes including permissions and it will read
  the files on both sides and compare the data.  Options:

    -nodata: do not verify data
    -nomods: do not verify modification times
    -noattrs: do not verify other attributes (type, size, permissions, uid, gid, nlinks)

  The verify method is useful when trees are identical but if a source directory moved or
  if its name changed, verify will not find any files under that directory even though they
  are still in the target tree. In these situations a "sync dry-run" will be more effective.

  Verify has one option which helps to detect and analyze trees with differences; with -stats
  or -csv it will do a scan of each tree and check that the statistics of the two trees match,
  such as the total number of files and directories, the number of files in the size bins (empty,
  <1k, 1-8K, etc) the tree depth bins, etc. When using a catalog, all the reports will be saved.

  With -l, all files with differences are listed in human-readable format with an asterisk in
  front of whichever fields actually differ; in these examples the modification time of 'a' is
  different and the permissions, setuid, setgid, uid, and gid of abc are all different:

         d rwxr-xr-x  ---  pete    pete    4KiB    4KiB  *31d4h wave:/export/xf:src4/a
                                                          12m5s

         *rw-rwxr-- *ug- *pete   *pete       0       0 *1y248d wave:/export/xf:src4/abc
          rw-rwxrw-  ---   bin     bin                    1m24s

  Each difference is shown with the source file on one line followed by a line with the
  target side values that differ.

  Differences which are not included in the output, such as number of hard links, will cause
  the file to be listed without any asterisks.

  The "sync dry-run" command uses the index to look for changes. In addition to detecting
  changes and modifications, the dry-run can also detect files that moved, were deleted, or
  were renamed. The first pass of the change scan reviews the index and checks every file and
  directory at the source for changes. This stage also detects files which no longer exist.

  With -l the files are listed in the same human-readable format as verify. Note that if an
  attribute changed and then changed again back to its original value, the change time will
  be different and the file will be listed without any asterisks.

  Files which were removed are shown with a '#' in front:
     #   rw-rw-r--  ---  pete  pete    4 4KiB  1y229d wave:/export/xf:src4/hi.txt

  Note the following special case for modification times: the nfs3 file attributes have
  two values for the mtime, seconds and nanoseconds but target files copied with rsync may
  have the nanoseconds set to 0 and some Unix filesystem targets such as Mac OSX may also
  set the nanoseconds to 0.  In this case, xcp will consider the mtimes the same and will
  print just one warning at the end that says "Found [n] files with same source + target
  mtime seconds but target mtime's nanosecond value is 0".  To change this behavior, use
  the "mtimewindow" option.

  The second stage reviews the index one more time and then rescans the modified directories
  and lists the files and directories which are new, were renamed, or were moved (or both
```

```
  renamed and moved). Examples:

   +  wave:/export/xf:src4/new
   +d wave:/export/xf:src4/new2
     *wave:/export/xf:src4/renamed
      wave:/export/xf:src4/f -> wave:/export/xf:src4/new/f
     *wave:/export/xf:src4/f2 -> wave:/export/xf:src4/new/f2.renamed

  TODO: Hard links that were removed or added should also be displayed in this stage

  Note that the attributes (including modification and change times) saved in the index are
scanned
  before copying and indexing, so all post-scan source changes can be detected.

  The sync command does the same scan as sync dry-run, then makes the changes required to sync up
  the target with the source, and finally replaces the old index with a new one.

  During the sync, modified files are recopied.

VIRTUAL FILESYSTEMS
  Every xcp process serves a virtual filesystem for control, diagnostics and testing.
  This capability is work in progress.
  For now, the service port is 62049.  If that is taken then 62050 is used, and so on.

ENVIRONMENT VARIABLES
  XCP_CONFIG_DIR - Override the default location, /opt/NetApp/xFiles/xcp.
    If set, the value should be an OS filesystem path; possibly to a mounted NFS dir.
    When a custom config dir is set, a folder named hostname (hostname of machine) is created
    under the given path and a log file will be created under this folder (hostname) with name
    xcp.log

  XCP_LOG_DIR - Override the default, which is to store the xcp log in the config dir. If set,
    the value should be an OS filesystem path; possibly to a mounted NFS dir.
    When a custom log dir is set, a folder named hostname (hostname of machine) is created under
    the given path and log file will be created under this folder (hostname) with name xcp.log

  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
  the actual sources and targets.  Note that file data is NOT stored in the index; just
  metadata.

  The virtual file service ports accept conections from localhost only.  Connections from
  root are always allowed.

NOTES
  - Xcp can fully utilize available network, storage, and local host resources,
    so it will affect other applications that need those resources.

  - Copying/scanning a filesystem may cause the server to update the access times of its files
    and/or directories. Copying from a snapshot or a read-only export should preserve the access
    time information; however that is server-dependent and should be tested in an environment
    where access time preservation is required.

  - When there are multiple hard links to a file xcp anoints the first one it
    finds as the "real" file and will copy it and count it in all the histograms, while the
    other links to the file are not counted as regular files anymore, and not copied or summed
    (however they will all be listed with the same checksum value as the original file,
    and copied by creating a link).

  - Copying a set of hard links to another directory within the *same* filesystem will result
    in a new set of hard links because the first file will be copied in full and the rest will
    be links to that one.

  - Most NFS errors from the source are just logged and printed and xcp will continue
    processing. Most errors from the target server will cause xcp to stop.

  - Error messages are printed right away; however sometimes it can take a second before the
    most recent errors are counted in the console status line.
```

```
  - ".", "..", and ".snapshot" directory entries are ignored

  - A subdirectory with a new filesystem id (AKA a filesystem junction) will not be scanned.

  - When using a filter, xcp's du only prints directories which have matches under them

  - Blocks that are all zero are not copied so the target files will be sparse.

    Both the zero-block and dedupe calculations use the default blocksize (typically 64k)
    Use "-bs 4k" to get a more accurate calculation (this may be slower and use more memory)

    The dedupe estimate uses checksums rather than comparing actual block data. Collisions
    (different blocks with same checksum) occur very rarely with negligible effect on the result.
    Dedupe estimation (-edupe) can use a lot of memory and can slow down processing

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

MORE EXAMPLES
  Recursively list all files in a subdirectory within an export:
    xcp -l localhost:/usr:share

  Crawl an export and save a report in html:
    xcp -html jelly.corp.netapp.com:/tmp > report.html

  Crawl a local filesystem print a human-readable report:
  (NFS services have to be enabled on the local unix OS; see notes above)
    xcp -stats localhost:/usr

  List a single directory but do not enter its subdirectories
    xcp -l -depth 0 server1:/vol/home:/smith/work

  Find and list a file with a specific fileid (inode) number:
    xcp -l -match 'fileid==671907' server1:/export

  Print a report to the console for files owned by root that are over 100MB:
    xcp -stats -match 'owner == "root" and size > 100*M' fs1:/export

  List regular files with ntap in the name and modified in the last half hour:
    xcp -l -match 'modified < .5 and "ntap" in name and type==f' server:/export

  Scan and log a subtree on fas6280a using "ntap1" as its catalog tag:
  (Look for the csv and html reports in the catalog after you run this)
    xcp -newid ntap1 fas6280a:/vol/home:ntap

  List the files in the catalog:
    xcp -l `grep "catalog = " /opt/NetApp/xFiles/xcp/xcp.ini | sed "s/.* = "//g`

  Check every file on the source for changes (compare current metadata to
  the indexed metadata that was stored in the catalog when the copy was made):
    xcp sync dry-run -id ntap1

  Run an html report using the index (no access to source tree is required):
    xcp -id ntap1 -html > rpt.html

  Copy subtree 'src' in volume 'dir1' on fas3050a to 'dst' on fas6280b:
    xcp -copy fas3050b:/vol/dir1:src fas6280a:/vol/dir2:dst

  List subdir 'big-files' with checksums (xcp will read and sum all files):
  (For a read IO performance test, redirect output to /dev/null or use -q)
    xcp -md5 lab6040b-data:/vol/pete1/big-files

  Checksum 1 out of every 20 regular files at random:
    xcp verify -match "type==f and rand(20)" server1:/src server2:/dst

  List an export's directory structure:
    xcp -match "type==d" server:/fs

[root@scspr1845243002 source_vol]#/
```

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 172.21.88.54
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

getting pmap dump from 172.21.88.54 port 111...
getting export list from 172.21.88.54...
sending 3 mounts and 12 nfs requests to 172.21.88.54...

== RPC Services ==
'172.21.88.54': UDP rpc services: MNT v1/2/3, NFS v3, NLM v4, PMAP v2/3/4, STATUS v1
'172.21.88.54': 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  172.21.88.54

     Space    Files      Space    Files
      Free     Free       Used     Used Export
  93.9 MiB   19,886   1.10 MiB      104 172.21.88.54:/
  9.44 GiB    2.49M   65.7 MiB      276 172.21.88.54:/catalog_vol
  84.9 GiB    22.4M    593 MiB      115 172.21.88.54:/source_vol

== Attributes of NFS Exports ==
drwxr-xr-x --- root root 4KiB 4KiB  6d2h 172.21.88.54:/
drwxr-xr-x --- root root 4KiB 4KiB  6d2h 172.21.88.54:/catalog_vol
drwxr-xr-x --- root root 4KiB 4KiB 1h30m 172.21.88.54:/source_vol


Xcp command : xcp show 172.21.88.54
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
`show -v`	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
`license update`	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 172.21.88.54:/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 172.21.88.54:/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
`scan -l`	File listing output formats
`scan -q`	File listing output formats
`scan -stats`	Tree statistics report formats
`scan -csv`	Tree statistics report formats
`scan -html`	Tree statistics report formats
`scan -nonames`	Do not look up user and group names for file listings or reports
`scan -newid <name>`	Catalog name for a new index
`scan -id <name>`	Catalog name of a previous copy or scan index
`scan -match <filter>`	Only process files and directories that match the filter
`scan -fmt <string expression>`	Formatted output
`scan -du`	Summarize space usage of each directory including subdirectories
`scan -md5`	Checksum the files (also save the checksums when indexing) (default: False)
`scan -depth <n>`	Limit the search depth
`scan -dircount <n[k]>`	Request size for reading directories (default: 64k)
`scan -edupe`	Include dedupe estimate in reports (see documentation for details)
`scan -bs <n[k]>`	Read/write block size for scans that read data with -md5 or -edupe (default: 64k)
`scan -parallel <n>`	Maximum concurrent batch processes (default: 7)
`scan -noId`	Disables the creation of a default index (default: False)
`scan -subdir-names`	Return names of top level sub-directories in a directory
`scan -acl4`	Process NFS4 ACLs

scan -l

File listing output formats.

```
[root@localhost /]# ./xcp  scan -l 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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,<15 mins,future
Accessed,0,0,0,0,0,10,0
Modified,>1 year,>1 month,1-31 days,1-24 hrs,<1 hour,<15 mins,future
Modified,0,0,0,0,0,0,10,0
Changed,>1 year,>1 month,1-31 days,1-24 hrs,<1 hour,<15 mins,future
Changed,0,0,0,0,0,0,10,0
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 172.21.88.54:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 3.73 KiB in (11.2 KiB/s), 756 out (2.22 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

scan -html

Tree statistics report formats.

```
[root@localhost /]# ./xcp  scan -html 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/source_vol
13 scanned, 0 matched, 0 error
Speed       : 13.8 KiB in (17.7 KiB/s), 53.1 KiB out (68.0 KiB/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: 10.63.5.56:/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 172.21.88.54:/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 172.21.88.54:/source_vol
18 scanned, 18 matched, 0 error
Speed       : 4.59 KiB in (6.94 KiB/s), 756 out (1.12 KiB/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)"
172.21.88.54:/source_vol
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

source_vol, 172.21.88.54:/source_vol, 1583294484.46, 1583294492.63, 1583294484.46
FILE_1, 172.21.88.54:/source_vol/USER.1/FILE_1, 1583293637.88, 1583293637.83, 1583293637.83
```

```
FILE_2, 172.21.88.54:/source_vol/USER.1/FILE_2, 1583293637.88, 1583293637.83, 1583293637.84
FILE_3, 172.21.88.54:/source_vol/USER.1/FILE_3, 1583293637.88, 1583293637.84, 1583293637.84
FILE_4, 172.21.88.54:/source_vol/USER.1/FILE_4, 1583293637.88, 1583293637.84, 1583293637.84
FILE_5, 172.21.88.54:/source_vol/USER.1/FILE_5, 1583293637.88, 1583293637.84, 1583293637.84
file1.txt, 172.21.88.54:/source_vol/USER.1/file1.txt, 1583294284.78, 1583294284.78, 1583294284.78
file2.txt, 172.21.88.54:/source_vol/USER.1/file2.txt, 1583294284.78, 1583294284.78, 1583294284.78
logfile.txt, 172.21.88.54:/source_vol/USER.1/logfile.txt, 1583294295.79, 1583294295.79,
1583294295.79
log1.txt, 172.21.88.54:/source_vol/USER.1/log1.txt, 1583294295.8, 1583294295.8, 1583294295.8
r1.txt, 172.21.88.54:/source_vol/r1.txt, 1583294484.46, 1583294484.45, 1583294484.45
USER.1, 172.21.88.54:/source_vol/USER.1, 1583294295.8, 1583294492.63, 1583294295.8
USER.2, 172.21.88.54:/source_vol/USER.2, 1583293637.95, 1583294492.63, 1583293637.95
FILE_1, 172.21.88.54:/source_vol/USER.2/FILE_1, 1583293637.95, 1583293637.94, 1583293637.94
FILE_5, 172.21.88.54:/source_vol/USER.2/FILE_5, 1583293637.96, 1583293637.94, 1583293637.94
FILE_2, 172.21.88.54:/source_vol/USER.2/FILE_2, 1583293637.96, 1583293637.95, 1583293637.95
FILE_3, 172.21.88.54:/source_vol/USER.2/FILE_3, 1583293637.96, 1583293637.95, 1583293637.95
FILE_4, 172.21.88.54:/source_vol/USER.2/FILE_4, 1583293637.96, 1583293637.95, 1583293637.96


Xcp command : xcp scan -fmt '{}, {}, {}, {}, {}'.format(name, x, ctime, atime, mtime)
172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 4.59 KiB in (12.9 KiB/s), 756 out (2.07 KiB/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 172.21.88.54:/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 172.21.88.54:/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 2 172.21.88.54:/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 2 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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: 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 -edupe 172.21.88.54:/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<n[k]>

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

```
[root@localhost /]# ./xcp  scan -bs 32 172.21.88.54:/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 32 172.21.88.54:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 4.59 KiB in (19.0 KiB/s), 756 out (3.06 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

scan -parallel

Maximum concurrent batch processes (default: 7).

```
[root@localhost /]# ./xcp  scan -parallel 5 172.21.88.54:/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 5 172.21.88.54:/source_vol
18 scanned, 0 matched, 0 error
Speed       : 4.59 KiB in (7.36 KiB/s), 756 out (1.19 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

scan -noId

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

```
[root@localhost /]# ./xcp  scan -noId 172.21.88.54:/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 172.21.88.54:/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 top level sub-directories in a directory.

```
[root@localhost /]# ./xcp  scan -subdir-names 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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 172.21.88.54:/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
```

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 export path>
```

Example

```
[root@localhost /]# ./xcp  copy 172.21.88.54:/source_vol 172.21.88.70:/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_23.46.33.153705

Xcp command : xcp copy 172.21.88.54:/source_vol 172.21.88.70:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed       : 38.9 KiB in (51.2 KiB/s), 81.2 KiB out (107 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

Parameters

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

Feature	Description
`copy -md5`	Checksum the files (also save the checksums when indexing) (default: False).
`copy -edupe`	Include deduplication estimate in reports (see documentation for details).
`copy -nonames`	Do not look up user and group names for file listings or reports.
`copy -bs <n[k]>`	Read/write block size (default: 64k).
`copy -dircount <n[k]>`	Request size for reading directories (default: 64k).
`copy -parallel <n>`	Maximum concurrent batch processes (default: 7).
`copy -match <filter>`	Only process files and directories that match the filter
`Copy -acl4`	Process NFS4 ACLs

copy -md5

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

```
[root@localhost /]# ./xcp  copy -md5 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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: 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 copy -edupe 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed       : 38.9 KiB in (53.5 KiB/s), 81.3 KiB out (112 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

copy -bs <n[k]>

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

```
[root@localhost /]# ./xcp  copy -bs 32k 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed       : 39.1 KiB in (115 KiB/s), 81.6 KiB out (241 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

copy -dircount <n[k]>

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

```
[root@localhost /]# ./xcp  copy -dircount 32k 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed       : 39.1 KiB in (56.7 KiB/s), 81.6 KiB out (119 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

copy -parallel <n>

Maximum concurrent batch processes (default: 7).

```
[root@localhost /]# ./xcp  copy -parallel 4 172.21.88.54:/source_vol 172.21.88.70:/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_23.59.41.477783

Xcp command : xcp copy -parallel 4 172.21.88.54:/source_vol 172.21.88.70:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed       : 39.1 KiB in (35.6 KiB/s), 81.6 KiB out (74.4 KiB/s)
Total Time  : 1s.
STATUS      : PASSED
```

copy -match <n>

Only process files and directories that match the filter.

```
[root@localhost /]# ./xcp  copy -match bin 172.21.88.54:/source_vol 172.21.88.70:/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-
04_00.00.07.125990

Xcp command : xcp copy -match bin 172.21.88.54:/source_vol 172.21.88.70:/dest_vol
18 scanned, 18 matched, 17 copied, 0 error
Speed       : 39.1 KiB in (52.6 KiB/s), 81.7 KiB out (110 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

copy -acl4

Process NFS4 ACLs.

```
[root@localhost /]# ./xcp  copy -acl4 172.21.88.54:/source_vol 172.21.88.70:/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-
04_00.00.44.036904

Xcp command : xcp copy -acl4 172.21.88.54:/source_vol 172.21.88.70:/dest_vol
18 scanned, 0 matched, 17 copied, 0 error
Speed       : 39.1 KiB in (37.0 KiB/s), 81.7 KiB out (77.5 KiB/s)
Total Time  : 1s.
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 autoname_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: 172.21.88.54:/source_vol, target: 172.21.88.70:/dest_vol}



Xcp command : xcp sync -id autoname_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
sync -id <name>	Catalog name of a previous copy index
sync -nonames	Do not look up user and group names for file listings or reports
sync -bs <n[k]>	Read/write block size (default: 64k)
sync -dircount <n[k]>	Request size for reading directories (default: 64k)
sync -parallel <n>	Maximum concurrent batch processes (default: 7)
sync -snap <snapshot path>	Provide a new snapshot path for sync

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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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
```

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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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 (16.7 KiB/s)
Total Time  : 0s.
STATUS      : PASSED
```

Parameters

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

Feature	Description
`sync dry-run -id <name>`	Catalog name of a previous copy index
`sync dry-run -stats`	Deep scan the modified directories and report on everything that is new
`sync dry-run -l`	Print details about files and directories that changed
`sync -nonames`	Do not look up user and group names for file listings or reports
`sync -dircount <n[k]>`	Request size for reading directories (default: 64k)
`sync -parallel <n>`	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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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 (7.81 KiB/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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 (1.29 MiB/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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 (4.88 KiB/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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 (11.7 KiB/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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 (9.13 KiB/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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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, 0 error
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
`resume -id <name>`	Catalog name of a previous copy index
`resume -bs <n[k]>`	Read/write block size (default: 64k)
`resume -dircount <n[k]>`	Request size for reading directories (default: 64k)
`resume -parallel <n>`	Maximum concurrent batch processes (default: 7)
`resume -activate`	Activate a license on the current host

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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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, 0 error
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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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, 0 error
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: 172.21.88.54:/source_vol, target: 172.21.88.70:/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, 0 error
Speed       : 2.02 GiB in (21.6 MiB/s), 2.00 GiB out (21.3 MiB/s)
Total Time  : 1m35s.
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 export path>
```

Example

```
[root@localhost /]# ./xcp  verify 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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
`verify -stats`	Scan source and target trees in parallel and compare tree statistics.
`verify -csv`	Scan source and target trees in parallel and compare tree statistics.
`verify -nodata`	Do not check data.
`verify -noattrs`	Do not check attributes.
`verify -nomods`	Do not check file modification times.
`verify -mtimewindow <s>`	Acceptable modification time difference for verification.
`verify -v`	Output formats to list any differences found.
`verify -l`	Output formats to list any differences found.
`verify -nonames`	Do not look up user and group names for file listings or reports.
`verify -match <filter>`	Only process files and directories that match the filter.
`verify -bs <n[k]>`	Read/write blocksize (default: 64k).

Feature	Description
`verify -parallel <n>`	Maximum concurrent batch processes (default: 7).
`verify -dircount <n[k]>`	Request size for reading directories (default: 64k).
`verify -newdata <id name>`	Verify full structure, names, and attributes plus new data from the last sync
`verify -noId`	Disable the creation of a default index (default: False)
`Verify -acl4`	Process NFS4 ACLs

verify -stats

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

```
[root@localhost /]# ./xcp  verify -stats 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 (2.24 MiB/s)
Total Time  : 13s.
STATUS      : PASSED
```

verify -noattrs

Do not check attributes.

```
[root@localhost /]# ./xcp  verify -noattrs 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 2 172.21.88.54:/source_vol 172.21.88.70:/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_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 2 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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, 9,648 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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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_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 172.21.88.54:/source_vol 172.21.88.70:/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 2 172.21.88.54:/source_vol 172.21.88.70:/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_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 2 172.21.88.54:/source_vol 172.21.88.70:/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 (807 KiB/s)
Total Time  : 1m27s.
STATUS      : PASSED
```

verify -acl4

Process NFS4 ACLs .

```
[root@scspr1845243002 TEST]# /xcp/linux/xcp verify -acl4 -noid 172.21.88.54:/source_vol
172.21.88.70:/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 172.21.88.54:/source_vol 172.21.88.70:/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
```

1.11 delete

The `delete` command deletes everything in a given path.

Syntax

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

Example

```
[root@scspr1845243002 dest_vol]# /xcp/linux/xcp delete 172.21.88.70:/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 172.21.88.70:/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 172.21.88.70:/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 (501
KiB/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 (590
KiB/s), 30s
 122,107 scanned, 93,203 removes, 7,448 rmdirs, 40.9 MiB in (1.24 MiB/s), 16.9 MiB out (606
KiB/s), 35s
 134,633 scanned, 109,815 removes, 9,011 rmdirs, 46.5 MiB in (1.12 MiB/s), 20.0 MiB out (622
KiB/s), 40s
 134,633 scanned, 119,858 removes, 9,051 rmdirs, 47.9 MiB in (288 KiB/s), 21.4 MiB out (296
KiB/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 (49.5
KiB/s), 55s


Xcp command : xcp delete 172.21.88.70:/dest_vol
134,633 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
```

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.
		`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 RTP`
		`CLUSTER-02`
		`true true 78 days 20:50 FAS8060 RTP`
		`2 entries were displayed.`
		
		`CLUSTER::> storage failover show`
		`Takeover`
		`Node Partner 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.`

	2.	Verify that at least one non-root aggregate exists on the target system. The aggregate is normal.
		`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.`
		
		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.
		`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`
		
		Verify the SVM was created

✓	Step	Description
		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
	4.	Remove the `fcp`, `iscsi`, `ndmp`, and `cifs` protocols from the target SVM. CLUSTER::> vserver remove-protocols -vserver dest -protocols fcp,iscsi,ndmp,cifs Verify nfs is the allowed protocol for this SVM CLUSTER::> vserver show -vserver dest -fields allowed-protocols vserver allowed-protocols ------- ----------------- dest nfs
	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. CLUSTER::> vol create -vserver dest -volume dest_nfs -aggregate poc -size 150g -type RW -state online -security-style mixed [Job 648] Job succeeded: Successful
	6.	Create a data LIF to serve NFS client requests. CLUSTER::> network interface create -vserver dest -lif dest_lif -address 10.61.73.115 -netmask 255.255.255.0 -role data -data-protocol nfs -home-node CLUSTER-01 -home-port e0l Verify the LIF is successfully created. CLUSTER::> network interface show -vserver dest Logical Status Network Current Current Is Vserver Interface Admin/Oper Address/Mask Node Port Home ----------- ---------- ---------- ------------------ ------------- ------- ---- dest dest_lif up/up 10.61.73.113/24 CLUSTER-01 e0i true
	7.	Create a static route with the SVM if required CLUSTER::> network route create -vserver dest -destination 0.0.0.0/0 -gateway 192.168.100.111 Verify the route is created CLUSTER::> network route show -vserver source Vserver Destination Gateway Metric ------------------ --------------- --------------- ------

✓	Step	Description
		dest 0.0.0.0/0 10.61.73.1 20

	8.	Mount the target NFS data volume in the SVM namespace.
		`CLUSTER::> volume mount -vserver dest -volume dest_nfs -junction-path /dest_nfs -active true`
		Verify the volume is successfully mounted
		`CLUSTER::> volume show -vserver dest -fields junction-path`
		`vserver volume junction-path`
		`------- -------- -------------`
		`dest dest_nfs /dest_nfs`
		`dest dest_root /`
		`2 entries were displayed.`
		Note: You can also specify volume mount options (junction path) with the `volume create` command.

	9.	Start the NFS service on the target SVM.
		`CLUSTER::> vserver nfs start -vserver dest`
		Verify the service is started and running
		`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: -`

	10.	Check that the default NFS export policy is applied to the target SVM.
		`CLUSTER::> vserver export-policy show -vserver dest`
		`Vserver Policy Name`
		`--------------- ------------------`
		`dest default`

	11.	If required, create a new custom export policy for the target SVM.
		`CLUSTER::> vserver export-policy create -vserver dest -policyname xcpexportpolicy`
		Verify the new custom export-policy is created
		`CLUSTER::> vserver export-policy show -vserver dest`
		`Vserver Policy Name`
		`--------------- ------------------`
		`dest default`
		`dest xcpexportpolicy`
		`2 entries were displayed.`

	12.	Modify the export policy rules to allow access to NFS client(s).
		`CLUSTER::> export-policy rule modify -vserver dest -ruleindex 1 -policyname xcpexportpolicy -clientmatch 0.0.0.0/0 -rorule any -rwrule any -anon 0`
		`Verify the policy rules have modified`
		`CLUSTER::> export-policy rule show -instance`

✓	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 10.61.82.215 -authentication-method none -protocol nfs3 -access-type 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`
		`2 entries were displayed.`

	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 10.61.73.115:/dest_nfs /mnt/dest`
		Verify the mount point is successfully created.
		`[root@ localhost /]# mount | grep nfs`
		`10.61.73.115:/dest_nfs on /mnt/dest type nfs (rw,relatime,vers=3,rsize=65536,wsize=65536,namlen=255,hard,proto=tcp,timeo=600,retrans=2,sec=sys,mountaddr=10.61.82.215,mountvers=3,mountport=4046,mountproto=udp,local_lock=none,addr=10.61.73.115)`

	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 10.61.82.215`
		`== NFS Exports ==`
		`Mounts Errors Server`
		`4 0 10.61.82.215`

✓	Step	Description

		`Space Free Files Free Space Used Files Used Export`
		`23.7 GiB 778,134 356 KiB 96 10.61.82.215:/vol/nfsvol1`
		`17.5 GiB 622,463 1.46 GiB 117 10.61.82.215:/vol/nfsvol`
		`328 GiB 10.8M 2.86 GiB 7,904 10.61.82.215:/vol/vol0/home`
		`328 GiB 10.8M 2.86 GiB 7,904 10.61.82.215:/vol/vol0`
		
		`== Attributes of NFS Exports ==`
		`drwxr-xr-x --- root wheel 4KiB 4KiB 2d21h 10.61.82.215:/vol/nfsvol1`
		`drwxr-xr-x --- root wheel 4KiB 4KiB 2d21h 10.61.82.215:/vol/nfsvol`
		`drwxrwxrwx --t root wheel 4KiB 4KiB 9d22h 10.61.82.215:/vol/vol0/home`
		`drwxr-xr-x --- root wheel 4KiB 4KiB 4d0h 10.61.82.215:/vol/vol0`
		
		`3.89 KiB in (5.70 KiB/s), 7.96 KiB out (11.7 KiB/s), 0s.`

	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 `xcp scan, copy,` and `sync` operations.
		`[root@localhost /]# ./xcp scan 10.61.82.215:/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.`

	20.	Copy source 7-Mode NFSv3 exports to NFSv3 exports on the target ONTAP system.
		`[root@localhost /]# ./xcp copy 10.61.82.215:/vol/nfsvol 10.61.73.115:/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.`

	21.	After copy is finished, verify that source and destination NFSv3 exports have identical data. Run the `xcp verify` command.
		`[root@localhost /]# ./xcp verify 10.61.82.215:/vol/nfsvol 10.61.73.115:/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`
		`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 `verify` finds differences between source and destination data, then the error `no such file or directory` is reported in the summary. To fix that issue, run the `xcp sync` command to copy the source changes to the destination.

	22.	Before and during the cutover, run `verify` again. If the source has new or updated data, then perform incremental updates. Run the `xcp sync` command.

✓	Step	Description
		Note: For this operation, the previous copy index name or number is required.

		`[root@localhost /]# ./xcp sync -id 3`
		
		`Index: {source: '10.61.82.215:/vol/nfsvol', target: '10.61.73.115:/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 `xcp resume` command.

		`[root@localhost /]# ./xcp resume -id 4`
		
		`Index: {source: '10.61.82.215:/vol/nfsvol', target: '10.61.73.115:/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 `resume` finishes copying files, run `verify` 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.

```
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              RTP
CLUSTER-02
          true   true        78 days 20:50 FAS8060              RTP
2 entries were displayed.

CLUSTER::> storage failover show
                              Takeover
Node           Partner        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.
```

	2.	Verify that at least one non-root aggregate exists on the target system. The aggregate is normal.

```
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.
```

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.

```
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
```

Verify the SVM was created

```
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:
```

✓	Step	Description
		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

	4.	Remove the `fcp`, `iscsi`, `ndmp`, and `cifs` protocols from the target SVM.
		`CLUSTER::> vserver remove-protocols -vserver dest -protocols fcp,iscsi,ndmp,cifs`
		Verify NFS is the allowed protocol for this SVM
		`CLUSTER::> vserver show -vserver dest -fields allowed-protocols`
		`vserver allowed-protocols`
		`------- -----------------`
		`dest nfs`

	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.
		`CLUSTER::> vol create -vserver dest -volume dest_nfs -aggregate poc -size 150g -type RW -state online -security-style mixed`
		`[Job 648] Job succeeded: Successful`

	6.	Create a data LIF to serve NFS client requests.
		`CLUSTER::> network interface create -vserver dest -lif dest_lif -address 10.61.73.115 -netmask 255.255.255.0 -role data -data-protocol nfs -home-node CLUSTER-01 -home-port e0l`
		Verify the LIF is successfully created.
		`CLUSTER::> network interface show -vserver dest`
		`Logical Status Network Current Current Is`
		`Vserver Interface Admin/Oper Address/Mask Node Port Home`
		`dest`
		`dest_lif up/up 10.61.73.113/24 CLUSTER-01 e0i true`

	7.	Create a static route with the SVM if required
		`CLUSTER::> network route create -vserver dest -destination 0.0.0.0/0 -gateway 192.168.100.111`
		Verify the route is created
		`CLUSTER::> network route show -vserver source`
		`Vserver Destination Gateway Metric`
		`dest`
		`0.0.0.0/0 10.61.73.1 20`

	8.	Mount the target NFS data volume in the SVM namespace.
		`CLUSTER::> volume mount -vserver dest -volume dest_nfs -junction-path /dest_nfs -active true`
		Verify the volume is successfully mounted
		`CLUSTER::> volume show -vserver dest -fields junction-path`
		`vserver volume junction-path`
		`------- -------- -------------`

✓	Step	Description
		dest dest_nfs /dest_nfs dest dest_root / 2 entries were displayed.
		Note: You can also specify volume mount options (junction path) with the `volume create` command.
	9.	Start the NFS service on the target SVM.
		CLUSTER::> vserver nfs start -vserver dest
		Verify the service is started and running
		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: -
	10.	Check that the default NFS export policy is applied to the target SVM.
		CLUSTER::> vserver export-policy show -vserver dest Vserver Policy Name ---------- ---------- dest default
	11.	If required, create a new custom export policy for the target SVM.
		CLUSTER::> vserver export-policy create -vserver dest -policyname xcpexportpolicy
		Verify the new custom export-policy is created
		CLUSTER::> vserver export-policy show -vserver dest Vserver Policy Name ---------- ---------- dest default dest xcpexportpolicy 2 entries were displayed.
	12.	Modify the export policy rules to allow access to NFS client(s) on the target system.
		CLUSTER::> export-policy rule modify -vserver dest -ruleindex 1 -policyname xcpexportpolicy -clientmatch 0.0.0.0/0 -rorule any -rwrule any -anon 0 Verify the policy rules have modified 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

✓	Step	Description

	13.	Verify that the client has access to the target volume.
		`CLUSTER::> export-policy check-access -vserver dest -volume dest_nfs -client-ip 10.61.82.215 -authentication-method none -protocol nfs3 -access-type read-write`
		`Policy Policy Rule`
		`Path Policy Owner Owner Type Index Access`
		`/ xcpexportpolicy dest_root volume 1 read`
		`/dest_nfs xcpexportpolicy dest_nfs volume 1 read-write`
		`2 entries were displayed.`

	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 10.61.73.115:/dest_nfs /mnt/dest`
		Verify the mount point is successfully created.
		`[root@ localhost /]# mount | grep nfs`
		`10.61.73.115:/dest_nfs on /mnt/dest type nfs`

	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 10.61.82.215`
		`== NFS Exports ==`
		`Mounts Errors Server`
		`4 0 10.61.82.215`
		`Space Files Space Files`
		`Free Free Used Used Export`
		`23.7 GiB 778,134 356 KiB 96 10.61.82.215:/vol/nfsvol1`
		`17.5 GiB 622,463 1.46 GiB 117 10.61.82.215:/vol/nfsvol`
		`328 GiB 10.8M 2.86 GiB 7,904 10.61.82.215:/vol/vol0/home`
		`328 GiB 10.8M 2.86 GiB 7,904 10.61.82.215:/vol/vol0`
		`== Attributes of NFS Exports ==`
		`drwxr-xr-x --- root wheel 4KiB 4KiB 2d21h 10.61.82.215:/vol/nfsvol1`
		`drwxr-xr-x --- root wheel 4KiB 4KiB 2d21h 10.61.82.215:/vol/nfsvol`
		`drwxrwxrwx --t root wheel 4KiB 4KiB 9d22h 10.61.82.215:/vol/vol0/home`
		`drwxr-xr-x --- root wheel 4KiB 4KiB 4d0h 10.61.82.215:/vol/vol0`
		`3.89 KiB in (5.70 KiB/s), 7.96 KiB out (11.7 KiB/s), 0s.`

✓	Step	Description
	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 `xcp scan, copy,` and `sync` operations. In `sync` operations it is mandatory to pass the -snap option with a corresponding value.

		`[root@localhost /]# ./xcp scan 10.61.82.215:/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)`

	20.	Copy source 7-Mode NFSv3 snapshot (base) to NFSv3 exports on the target ONTAP system.

		`[root@localhost /]# /xcp copy 10.61.82.215:/vol/nfsvol/.snapshot/snap1 10.61.73.115:/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.`

		Note: Keep this base snapshot for further sync operations.
	21.	After copy is complete, verify that source and destination NFSv3 exports have identical data. Run the `xcp verify` command.

		`[root@localhost /]# ./xcp verify 10.61.82.215:/vol/nfsvol 10.61.73.115:/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`
		`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 `verify` finds differences between source and destination data, then the error `no such file or directory` is reported in the summary. To fix that issue, run the `xcp sync` command to copy the source changes to the destination.
	22.	Before and during the cutover, run `verify` 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 xcp sync command with “-snap” option and snapshot path.

		` [root@localhost /]# ./xcp sync -id 3`
		`Index: {source: '10.61.82.215:/vol/nfsvol/.snapshot/snap1', target: '10.61.73.115:/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...`

✓	Step	Description
		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.. **Note:** For this operation, the base snapshot is required.
	23.	To resume a previously interrupted copy operation, run the `xcp resume` command. [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: '10.61.82.215:/vol/nfsvol',/.snapshot/snap1, target: 10.237.160.55:/dest_vol} xcp: resume '7msnap_res1': Reviewing the incomplete index... xcp: diff '7msnap_res1': Found 143 completed directories and 230 in progress 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
	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(10.63.5.56:/vol1)" is mounted on the path "/mnt/vol1":

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

[root@localhost ~]# ./xcp scan -l -acl4 10.63.5.56:/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 getacls, 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 (10.63.5.56:/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 10.63.5.56:/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 10.63.5.56:/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 10.63.5.56:/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 getacls, 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.

```
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              RTP
CLUSTER-02
          true   true        78 days 20:50 FAS8060              RTP
2 entries were displayed.

CLUSTER::> storage failover show
                              Takeover
Node           Partner        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.
```

✓	Step	Description

	2.	Verify that at least one non-root aggregate exists on the target system. The aggregate is normal.
		`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.`
		
		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.
		`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`
		
		Verify the SVM was created
		
		`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`

	4.	Remove the `fcp`, `iscsi`, `ndmp`, and `cifs` protocols from the target SVM.
		`CLUSTER::> vserver remove-protocols -vserver dest -protocols fcp,iscsi,ndmp,cifs`
		
		Verify nfs is the allowed protocol for this SVM
		`CLUSTER::> vserver show -vserver dest -fields allowed-protocols`
		`vserver allowed-protocols`
		`------- -----------------`
		`dest nfs`

	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.

✓	Step	Description
		`CLUSTER::> vol create -vserver dest -volume dest_nfs -aggregate poc -size 150g -type RW -state online -security-style mixed` `[Job 648] Job succeeded: Successful`

	6.	Create a data LIF to serve NFS client requests.
		`CLUSTER::> network interface create -vserver dest -lif dest_lif -address 10.61.73.115 -netmask 255.255.255.0 -role data -data-protocol nfs -home-node CLUSTER-01 -home-port e0l`
		Verify the LIF is successfully created.
		`CLUSTER::> network interface show -vserver dest`
		`Logical Status Network Current Current Is`
		`Vserver Interface Admin/Oper Address/Mask Node Port Home`
		`dest`
		`dest_lif`
		`up/up 10.61.73.113/24 CLUSTER-01 e0i true`

	7.	Create a static route with the SVM if required
		`CLUSTER::> network route create -vserver dest -destination 0.0.0.0/0 -gateway 192.168.100.111`
		Verify the route is created
		`CLUSTER::> network route show -vserver source`
		`Vserver Destination Gateway Metric`
		`dest`
		`0.0.0.0/0 10.61.73.1 20`

	8.	Mount the target NFS data volume in the SVM namespace.
		`CLUSTER::> volume mount -vserver dest -volume dest_nfs -junction-path /dest_nfs -active true`
		Verify the volume is successfully mounted
		`CLUSTER::> volume show -vserver dest -fields junction-path`
		`vserver volume junction-path`
		`dest dest_nfs /dest_nfs`
		`dest dest_root /`
		`2 entries were displayed.`
		Note: You can also specify volume mount options (junction path) with the `volume create` command.

	9.	Start the NFS service on the target SVM.
		`CLUSTER::> vserver nfs start -vserver dest`
		Verify the service is started and running
		`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`

✓	Step	Description
		`  Default Windows User:  -` `Default Windows Group:  -`

	10.	Check that the default NFS export policy is applied to the target SVM.
		`CLUSTER::> vserver export-policy show -vserver dest`
		`Vserver  Policy Name`
		`---------- ----------`
		`dest  default`

	11.	If required, create a new custom export policy for the target SVM.
		`CLUSTER::> vserver export-policy create -vserver dest -policyname xcpexportpolicy`
		Verify the new custom export-policy is created
		`CLUSTER::> vserver export-policy show -vserver dest`
		`Vserver  Policy Name`
		`---------- ----------`
		`dest  default`
		`dest  xcpexportpolicy`
		`2 entries were displayed.`

	12.	Modify the export policy rules to allow access to NFS client(s).
		`CLUSTER::> export-policy rule modify -vserver dest -ruleindex 1 -policyname xcpexportpolicy -clientmatch 0.0.0.0/0 -rorule any -rwrule any -anon 0`
		`Verify the policy rules have modified`
		`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`

	13.	Verify that the client is allowed access to the volume.
		`CLUSTER::> export-policy check-access -vserver dest -volume dest_nfs -client-ip 10.61.82.215 -authentication-method none -protocol nfs3 -access-type read-write`
		`Policy  Policy  Rule`
		`Path  Policy  Owner  Owner Type  Index Access`
		`---------- ---------- --------- ---------- ------ ----------`
		`/  xcpexportpolicy`
		`dest_root volume  1 read`
		`/dest_nfs  xcpexportpolicy`
		`dest_nfs  volume  1 read-write`
		`2 entries were displayed.`

	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 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.
		`[root@localhost mnt]# mount -t nfs4 10.63.5.56:/vol1 /mnt/vol1`
		Verify the mount point is successfully created.
		`[root@localhost mnt]# mount | grep nfs`

✓	Step	Description
		10.63.5.56:/vol1 on /mnt/vol1 type nfs4 (rw,relatime,vers=4.0,rsize=65536,wsize=65536,namlen=255,hard,proto=tcp,timeo=600, retrans=2,sec=sys,clientaddr=10.234.152.84,local_lock=none,addr=10.63.5.56)
	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 NFSv4 exports by running the `xcp show` command on the XCP Linux client host system.
		root@localhost]# ./xcp show 10.63.5.56 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 getting pmap dump from 10.63.5.56 port 111... getting export list from 10.63.5.56... sending 6 mounts and 24 nfs requests to 10.63.5.56... == RPC Services == '10.63.5.56': UDP rpc services: MNT v1/2/3, NFS v3, NLM v4, PMAP v2/3/4, STATUS v1 '10.63.5.56': 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 10.63.5.56 Space Files Space Files Free Free Used Used Export 94.7 MiB 19,883 324 KiB 107 10.63.5.56:/ 971 MiB 31,023 2.19 MiB 99 10.63.5.56:/vol2 970 MiB 31,024 2.83 MiB 98 10.63.5.56:/vol1 9.33 GiB 310,697 172 MiB 590 10.63.5.56:/vol_005 43.3 GiB 1.10M 4.17 GiB 1.00M 10.63.5.56:/vol3 36.4 GiB 1.10M 11.1 GiB 1.00M 10.63.5.56:/vol4 == Attributes of NFS Exports == drwxr-xr-x --- root root 4KiB 4KiB 6d2h 10.63.5.56:/ drwxr-xr-x --- root root 4KiB 4KiB 3d2h 10.63.5.56:/vol2 drwxr-xr-x --- root root 4KiB 4KiB 3d2h 10.63.5.56:/vol1 drwxr-xr-x --- root root 4KiB 4KiB 9d2h 10.63.5.56:/vol_005 drwxr-xr-x --- root root 4KiB 4KiB 9d4h 10.63.5.56:/vol3 drwxr-xr-x --- root root 4KiB 4KiB 9d4h 10.63.5.56:/vol4 6.09 KiB in (9.19 KiB/s), 12.2 KiB out (18.3 KiB/s), 0s.
	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 `xcp scan, copy,` and `sync` operations.
		[root@localhost]# ./xcp scan -acl4 10.63.5.56:/vol1 XCP <version>; (c) 2020 NetApp, Inc.; Licensed to xxx [NetApp Inc] until Mon Dec 31 00:00:00 2029 vol1 vol1/test/f1

✓	Step	Description
		vol1/test 3 scanned, 3 getacls, 3 v3perms, 1.59 KiB in (1.72 KiB/s), 696 out (753/s), 0s.
	20.	Copy source NFSv4 exports to NFSv4 exports on the target ONTAP system.
		[root@localhost]# ./xcp copy -acl4 -newid id1 10.63.5.56:/vol1 10.63.5.56:/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..
	21.	After copy is complete, verify that source and destination NFSv4 exports have identical data. Run the `xcp verify` command.
		[root@localhost]# ./xcp verify -acl4 -noid 10.63.5.56:/vol1 10.63.5.56:/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.
		Note: If `verify` finds differences between source and destination data, then the error `no such file or directory` is reported in the summary. To fix that issue, run the `xcp sync` command to copy the source changes to the destination.
	22.	Before and during the cutover, run `verify` again. If the source has new or updated data, then perform incremental updates. Run the `xcp sync` command.
		[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: 10.63.5.56:/vol1, target: 10.63.5.56:/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.
		Note: For this operation, the previous copy index name or number is required.
	23.	To resume a previously interrupted copy operation, run the `xcp resume` command.
		[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 xcp: Index: {source: 10.63.5.56:/vol3, target: 10.63.5.56:/vol4} xcp: resume 'id1': Reviewing the incomplete index... xcp: diff 'id1': 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 'id1': Starting second pass for the in-progress directories... xcp: resume 'id1': Resuming the in-progress directories... xcp: resume 'id1': Resumed command: copy {-acl4: True} xcp: resume 'id1': Current options: {-id: 'id1'} xcp: resume 'id1': Merged options: {-acl4: True, -id: 'id1'} xcp: resume 'id1': 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.
		After `resume` finishes copying files, run `verify` again so that the source and destination storage have identical data.

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
`xcp help <command>`	Displays examples and option details for the specified <command>.

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
(nondomain)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 \\<IP address or hostname of SMB server>
```

Example

```
C:\Users\Administrator\Desktop\xcp>xcp show \\10.61.87.235
XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to xxxx xxxx[NetApp Inc] until Mon Dec 31 00:00:00
2029
Shares Errors Server
7 0 10.61.87.235
== SMB Shares ==
Space Space Current
Free Used Connections Share Path Folder Path
0 0 N/A \\10.61.87.235\IPC$ N/A
533GiB 4.72GiB 0 \\10.61.87.235\ETC$ C:\etc
533GiB 4.72GiB 0 \\10.61.87.235\HOME C:\vol\vol0\home
533GiB 4.72GiB 0 \\10.61.87.235\C$ C:\
972MiB 376KiB 0 \\10.61.87.235\testsecure C:\vol\testsecure
12 XCP SMB v1.6 User Guide © 2020 NetApp, Inc. All rights reserved.
47.8GiB 167MiB 1 \\10.61.87.235\volxcp C:\vol\volxcp
9.50GiB 512KiB 1 \\10.61.87.235\jl C:\vol\jl
== Attributes of SMB Shares ==
Share Types Remark
IPC$ PRINTQ,IPC,SPECIAL,DEVICE Remote IPC
ETC$ SPECIAL Remote Administration
HOME DISKTREE Default Share
C$ SPECIAL Remote Administration
testsecure DISKTREE for secure copy
volxcp DISKTREE for xcpSMB
jl DISKTREE
== Permissions of SMB Shares ==
Share Entity Type
IPC$ Everyone Allow/Full Control
ETC$ Administrators Allow/Full Control
HOME Everyone Allow/Full Control
C$ Administrators Allow/Full Control
```

Parameters

Feature	Description
`show -v`	Print verbose details about SMB servers using the IP address or host name.
`show -h, --help`	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 license file 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
(c) 2020 NetApp, Inc.
License file C:\NetApp\XCP\license not found.
Register for a license at https://xcp.netapp.com
Register for license and run xcp activate command to activate the License.
```

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 \\10.61.87.235\volxcp
c:\netapp\xcp\xcp scan  \\10.237.163.71\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 \\10.237.163.71\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 -preserve-atime	Restore last accessed date on source.
scan -depth <n>	Limit the search depth to n levels.
scan -stats	Print tree statistics report.
`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

Feature	Description
`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>] [-preserve-atime]
                [-depth <n>] [--loglevel <n>] [-newlog] [-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)
  -preserve-atime    restore last accessed date on source
  -depth <n>         limit the search depth
  --loglevel <n>     option to set log level
  -newlog            option to get multiple log files
  -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   \\10.237.163.82\copy_share2
xcp scan   -v  \\10.237.163.82\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 \\10.237.163.82\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  \\10.237.163.73\copy_share2
xcp scan -parallel 8  \\10.237.163.73\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

xcp scan -parallel 8 \\10.237.163.73\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)" \\10.237.163.73\copy_share2
xcp scan -match "1*month < modified < 1*year" -fmt "'{:>15} {:>7} {} {}'.format(iso(mtime),
humanize_size(size), type, relpath)" \\10.237.163.73\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) \\10.237.163.73\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)"   \\10.237.163.82\copy_share2
xcp scan -match "modified > 3*month and size > 4194304" -fmt "'{}, {}, {}'.format(iso(mtime),
humanize_size(size), relpath)"   \\10.237.163.82\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) \\10.237.163.82\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]))" \\10.237.163.73\copy_share2
xcp scan -match "type is directory" -fmt "','.join(map(str, [iso(mtime), relpath, depth]))"
\\10.237.163.73\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]))
\\10.237.163.73\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]))"  \\10.237.163.73\copy_share2 > name.csv
xcp scan -match "type is directory" -fmt "','.join(map(str, [iso(mtime), relpath, depth]))"
\\10.237.163.73\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)"
\\10.237.163.73\copy_share2
xcp scan -match "type is not directory" -fmt "'{} {:>70}'.format(abspath, mtime)"
\\10.237.163.73\copy_share2
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

--truncated output--
\\10.237.163.73\copy_share2\ASUP.pm
1362688899.238098
\\10.237.163.73\copy_share2\ASUP_REST.pm
1362688899.264073
\\10.237.163.73\copy_share2\Allflavors_v2.pm
1362688899.394938
\\10.237.163.73\copy_share2\Armadillo.pm
1362688899.402936
\\10.237.163.73\copy_share2\AsupExtractor.pm
1362688899.410922
\\10.237.163.73\copy_share2\BTS_Config.pm
1362688899.443902
\\10.237.163.73\copy_share2\Backup.pm
1362688899.444905
\\10.237.163.73\copy_share2\Aggregate.pm
1362688899.322019
\\10.237.163.73\copy_share2\Burt.pm
1362688899.446889
\\10.237.163.73\copy_share2\CConfig.pm
1362688899.4479
\\10.237.163.73\copy_share2\CIFS.pm
1362688899.562795
\\10.237.163.73\copy_share2\agnostic\ProtocolAccess.pm
1362688900.358093
\\10.237.163.73\copy_share2\agnostic\Qtree.pm
1362688900.359095
```

```
\\10.237.163.73\copy_share2\agnostic\Quota.pm
1362688900.360094
\\10.237.163.73\copy_share2\agnostic\RbacCmdFetcher.pm
1362688900.3611
\\10.237.163.73\copy_share2\agnostic\RbacCmdFetcher_ReadMe
1362688900.362094
\\10.237.163.73\copy_share2\agnostic\SFXOD.pm
1362688900.363094
\\10.237.163.73\copy_share2\agnostic\Snapmirror.pm
1362688900.364092
\\10.237.163.73\copy_share2\agnostic\VolEfficiency.pm
1362688900.375077
\\10.237.163.73\copy_share2\agnostic\flatfile.txt
1362688900.376076

xcp scan -match type is not directory -fmt '{} {:>70}'.format(abspath, mtime)
\\10.237.163.73\copy_share2
317 scanned, 315 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

scan -preserve-atime

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 `atime` on read), because XCP is reading the files one by one.

XCP never changes the `atime`. XCP just reads the file, which triggers an update on `atime`.

Use the `-preserve-atime` option to reset the `atime` to the original value before XCP read the file.

```
c:\netapp\xcp>xcp scan -preserve-atime \\10.237.163.73\copy_share2
xcp scan -preserve-atime \\10.237.163.73\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 \\10.237.163.73\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  \\10.237.163.73\copy_share2
xcp scan -depth 2  \\10.237.163.73\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 \\10.237.163.73\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 \\10.237.163.73\copy_share2
xcp scan -stats \\10.237.163.73\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 \\10.237.163.73\copy_share2
317 scanned, 0 matched, 0 errors
Total Time : 0s
STATUS : PASSED
```

scan -l

Use the scan -l command for detailed file listing output.

```
c:\netapp\xcp>xcp scan -l  \\10.237.163.73\copy_share2
xcp scan -l  \\10.237.163.73\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\Qtree.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 \\10.237.163.73\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  \\10.237.163.73\copy_share2
xcp scan -l -ownership  \\10.237.163.73\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 \\10.237.163.73\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   \\10.237.163.73\copy_share2
xcp scan -du   \\10.237.163.73\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 \\10.237.163.73\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]))"
\\10.237.163.73\copy_share2
xcp scan -fmt "', '.join(map(str, [relpath, name, size, depth]))"   \\10.237.163.73\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])) \\10.237.163.73\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> \\<destination SMB share>
```

Example

```
c:\netapp\xcp>xcp copy  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp copy  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp copy \\10.237.163.73\copy_share2 \\10.237.163.71\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
`copy -h, --help`	Show this help message and exit.
`copy -v`	Increase debug verbosity.
`copy -parallel <n>`	Number of concurrent processes (default: <cpu-count>).
`copy -match <filter>`	Only process files and directories that match the filter (see `xcp help -match` for details).
`copy -preserve-atime`	Restore last accessed date on source.
`Copy -acl`	Copy security information.
`copy -fallback-user FALLBACK_USER`	A user on the target machine to receive the permissions of local (nondomain) source machine users (example: domain\administrator).

Feature	Description
`copy -fallback-group FALLBACK_GROUP`	A group on the target machine to receive the permissions of local (nondomain) source machine groups (example: domain\administrators).
`copy -root`	Copy ACL for root directory

copy --help

Displays detailed information about the copy command.

```
c:\netapp\xcp>xcp copy --help
xcp copy --help
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

usage: xcp copy [-h] [-v] [-parallel <n>] [-match <filter>] [-preserve-atime]
                [-acl] [-fallback-user FALLBACK_USER]
                [-fallback-group FALLBACK_GROUP] [--loglevel <n>] [-newlog]
                [-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
                        filter (see `xcp help -match` 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)
  -root                 copy acl for root directory

c:\netapp\xcp>
```

copy -v

Increase debug verbosity.

```
C:\XCP>xcp copy -v \\10.61.77.189\vol_SMB_source_xxxxxx\warning
\\10.61.77.56\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 copy "write.exe": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\write.exe'
ERROR failed to copy "setuperr.log": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\setuperr.log'
ERROR failed to copy "splwow64.exe": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\splwow64.exe'
ERROR failed to copy "system.ini": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\system.ini'
ERROR failed to copy "vmgcoinstall.log": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\vmgcoinstall.log'
ERROR failed to copy "pyshellext.amd64.dll": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\pyshellext.amd64.dll'
ERROR failed to copy "win.ini": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\win.ini'
ERROR failed to copy "WindowsShell.Manifest": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\WindowsShell.Manifest'
ERROR failed to copy "WindowsUpdate.log": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\WindowsUpdate.log'
ERROR failed to copy "winhlp32.exe": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\winhlp32.exe'
```

```
ERROR failed to copy "py.exe": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\py.exe'
ERROR failed to copy "pyw.exe": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\pyw.exe'
ERROR failed to copy "regedit.exe": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\regedit.exe'
ERROR failed to copy "ServerStandard.xml": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\ServerStandard.xml'
ERROR failed to copy "ServerWeb.xml": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\ServerWeb.xml'
ERROR failed to copy "setupact.log": [Errno 13] Permission denied:
'\\\\?\\UNC\\10.61.77.56\\vol_SMB_target_xxxxxx\\setupact.log'
17 scanned, 16 errors, 0 skipped, 0 copied, 0 (0/s), 1s
23 xcp copy -v \\10.61.77.189\vol_SMB_source_xxxxxx\warning \\10.61.77.56\vol_SMB_target_xxxxxx
317 scanned, 0 matched, 300 copied, 16 errors
Total Time : 19s
STATUS : PASSED
```

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   \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp copy -parallel 7   \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
317 scanned, 0 matched, 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" \\10.237.163.73\copy_share2
\\10.237.163.71\source_share
xcp copy -match "'gx' in name" \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
317 scanned, 5 matched, 4 copied, 0 errors
Total Time : 1s
STATUS : PASSED
```

copy -preserve-atime

Resets the `atime` to the original value before XCP read the file.

```
c:\netapp\xcp>xcp copy  -preserve-atime   \\10.237.163.73\copy_share2
\\10.237.163.71\source_share
xcp copy  -preserve-atime   \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp copy -preserve-atime \\10.237.163.73\copy_share2 \\10.237.163.71\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 (nondomain) source machine users or groups. This does not refer to unmatched users from Active Directory.

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> \\<destination SMB share>
```

Example

```
c:\netapp\xcp>xcp sync  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync \\10.237.163.73\copy_share2 \\10.237.163.71\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.
sync -v	Increase debug verbosity.
sync -parallel <n>	Number of concurrent processes (default: <cpu-count>).
sync -match <filter>	Only process files and directories that match the filter (see `xcp help -match` for details).
sync -preserve-atime	Restore last accessed date on source.
sync -noatime	Do not check file access time.
sync -noctime	Do not check file creation time.
sync -nomtime	Do not check file modification time. (This option is deprecated. Sync will continue to run without this option.)
sync -noattrs	Do not check attributes.
sync -noownership	Do not check ownership.
sync -atimewindow <float>	Acceptable access time difference, in seconds.
sync -ctimewindow <float>	Acceptable creation time difference, in seconds.
sync -mtimewindow <float>	Acceptable modification time difference, in seconds,
sync -acl	Copy security information,
sync -fallback-user FALLBACK_USER	User on the target machine to receive the permissions of local (nondomain) source machine users (example: domain\administrator),
sync -fallback-group FALLBACK_GROUP	Group on the target machine to receive the permissions of local (nondomain) source machine groups (example: domain\administrators),

Feature	Description
`sync -l`	Increase output detail.
`sync -root`	Sync ACL for root directory

sync --help

Displays detailed information about the `sync` command.

```
c:\netapp\xcp>xcp help sync
xcp help sync
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [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] [--loglevel <n>] [-newlog]
                [-l] [-root]
                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
                        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)
  -l                    increase output detail
  -root                 sync acl for root directory

c:\netapp\xcp>
```

sync -v

Increase debug verbosity.

```
C:\XCP>xcp sync -v \\10.61.77.189\vol_SMB_source_xxxxxx\warning
\\10.61.77.56\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.psd1": [Errno 13] Access is denied: '\\\\?\\UNC\\10.61.77.56\\vol_SMB_tar
shil\\assembly\\GAC_32\\Microsoft.CertificateServices.PKIClient.Cmdlets\\v4.0_6.3.0.0__31bf3856ad
364e35\\pki.psd1'
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\\10.61.77.56\\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: '\\\\
\\10.61.77.56\\vol_SMB_target_xxxxxx\\assembly\\GAC_MSIL\\Microsoft.PowerShell.Workflow.ServiceCo
re\\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\\10.61.77.56\\vol_SMB_target_xxxxxx\\assembly\\GAC_MSIL\\Microsoft.RightsManagementSe
rvices.ServerManager.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\\10.61.77.56\\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\\10.61.77.56\\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.IdentityM
odel.Selectors.dll": [Errno 13] Access is denied: '\\\\?\\UNC\\10.61.77.56\\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\\10.61.77.56\\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 \\10.61.77.189\vol_SMB_source_xxxxxx\warning \\10.61.77.56\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 \\10.61.87.235\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" \\10.237.163.73\copy_share2
\\10.237.163.71\source_share
xcp sync -match "'gx' in name" \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
634 scanned, 0 copied, 10 compared, 0 removed, 0 errors
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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -preserve-atime \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -noatime \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\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 creation time.

```
c:\netapp\xcp>xcp sync -noctime  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -noctime  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -noctime \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED
```

sync -nomtime

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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -nomtime \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -nomtime \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
STATUS : PASSED
```

sync -noattrs

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 -noattrs   \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -noattrs   \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp sync -noattrs \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
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 \\10.61.77.189\vol_SMB_source_xxxxxx \\10.61.77.56\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 \\10.61.77.189\vol_SMB_source_xxxxxx \\10.61.77.56\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  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -atimewindow 600  \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -ctimewindow 600 \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -mtimewindow 600 \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\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 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"
\\10.61.77.189\performance_SMB_home_dirs \\10.61.77.56\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
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 : 1m51s
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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp sync -l \\10.237.163.73\copy_share2 \\10.237.163.71\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 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
634 scanned, 0 copied, 634 compared, 0 removed, 0 errors
Total Time : 3s
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> \\<destination SMB share>
```

Example

```
c:\netapp\xcp>xcp verify -v -noatime \\10.237.160.172\source_share   \\10.237.160.169\dest_share
xcp verify -v -noatime \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\dest_share
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

Feature	Description
`verify -h, --help`	Show this help message and exit.
`verify -v`	Increase debug verbosity.
`verify -parallel <n>`	Number of concurrent processes (default: <cpu-count>).
`verify -match <filter>`	Only process files and directories that match the filter (see `xcp help -match` for details).
`verify -preserve-atime`	Restore last accessed date on source.
`verify -nodata`	Do not check data.
`verify -noatime`	Do not check file access time.
`verify -noctime`	Do not check file creation time.
`verify -nomtime`	Do not check file modification time.
`verify -noattrs`	Do not check attributes.
`verify -noownership`	Do not check ownership.
`verify -noacls`	Do not check ACLs.
`verify -atimewindow <float>`	Acceptable access time difference, in seconds.
`verify -ctimewindow <float>`	Acceptable creation time difference, in seconds.
`verify -mtimewindow <float>`	Acceptable modification time difference, in seconds.
`verify -stats`	Scan source and target trees in parallel and compare tree statistics.
`verify -fallback-user FALLBACK_USER`	A user on the target machine to translate the permissions of local (non-domain) source machine users (for example: domain\administrator)
`verify -fallback-group FALLBACK_GROUP`	A group on the target machine to translate the permissions of local (non-domain) source machine users (for example: domain\administrator)
`verify -l`	Detailed file listing output.
`verify -root`	Verify ACL for root directory

verify --help

Displays detailed information about the `verify` command.

```
xcp verify --help
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

usage: xcp verify [-h] [-v] [-parallel <n>] [-match <filter>]
                  [-preserve-atime] [-nodata] [-noatime] [-noctime] [-nomtime]
                  [-noattrs] [-noownership] [-atimewindow <float>]
                  [-ctimewindow <float>] [-mtimewindow <float>]
                  [--loglevel <n>] [-newlog] [-fallback-user FALLBACK_USER]
                  [-fallback-group FALLBACK_GROUP] [-noacls] [-stats] [-l]
                  [-root]
                  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
  -nodata               do not check data
  -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
  -noacls               do not check acls
  -atimewindow <float>  acceptable access time difference in seconds
  -ctimewindow <float>  acceptable creation time difference in seconds
  -mtimewindow <float>  acceptable modification time difference in seconds
  -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)
  -stats                scan source and target trees in parallel and compare tree statistics
  -l                    detailed file listing output
  -root                 verify acl for root directory
```

verify -v

Increase debug verbosity.

```
c:\netapp\xcp>xcp verify -v -noatime \\10.237.160.172\source_share   \\10.237.160.169\dest_share
xcp verify -v -noatime \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\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 -noatime -parallel 8 \\10.237.160.172\source_share
\\10.237.160.169\dest_share
xcp verify -v -noatime -parallel 8 \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime -parallel 8 \\10.237.160.172\source_share \\10.237.160.169\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"  \\10.237.160.172\source_share
\\10.237.160.169\dest_share
xcp verify -v -match "'Microsoft' in name"  \\10.237.160.172\source_share
\\10.237.160.169\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 \\10.237.160.172\source_share
\\10.237.160.169\dest_share
374 scanned, 0 compared, 0 same, 0 different, 0 missing, 0 errors
```

```
Total Time : 1s
STATUS : PASSED
```

verify -preserve-atime

Resets the `atime` to the original value before XCP read the file.

```
c:\netapp\xcp>xcp verify -preserve-atime \\10.237.160.172\source_share
\\10.237.160.169\dest_share
xcp verify -preserve-atime \\10.237.160.172\source_share   \\10.237.160.169\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-atime \\10.237.160.172\source_share \\10.237.160.169\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  \\10.237.160.172\source_share   \\10.237.160.169\dest_share
xcp verify -nodata  \\10.237.160.172\source_share   \\10.237.160.169\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 \\10.237.160.172\source_share \\10.237.160.169\dest_share : PASSED
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -noatime

Do not compare file access time stamps from the source to destination.

```
c:\netapp\xcp>xcp verify -noatime  \\10.237.160.172\source_share   \\10.237.160.169\dest_share
xcp verify -noatime  \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\dest_share : PASSED
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -noctime

Do not compare file creation time stamps from the source to destination.

```
c:\netapp\xcp>xcp verify -noctime -noatime \\10.237.160.172\source_share
\\10.237.160.169\dest_share
xcp verify -noctime -noatime \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\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 -noatime \\10.237.160.172\source_share
\\10.237.160.169\dest_share
xcp verify -nomtime -noatime \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\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  -noatime \\10.237.160.172\source_share
\\10.237.160.169\dest_share
```

```
xcp verify -noattrs  -noatime \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\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   -noatime \\10.237.160.172\source_share
\\10.237.160.169\dest_share
xcp verify -noownership   -noatime \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\dest_share :
PASSED
374 scanned, 373 compared, 373 same, 0 different, 0 missing, 0 errors
Total Time : 3s
STATUS : PASSED
```

verify -noacls

Do not check ACLs.

```
c:\netapp\xcp>xcp verify -noatime -noacls -noownership   \\10.237.163.73\copy_share2
\\10.237.163.71\source_share
xcp verify -noatime -noacls -noownership   \\10.237.163.73\copy_share2
\\10.237.163.71\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -noatime -noacls -noownership \\10.237.163.73\copy_share2 \\10.237.163.71\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>.

```
c:\netapp\xcp>xcp verify -atimewindow 600  \\10.237.163.73\copy_share2
\\10.237.163.71\source_share
xcp verify -atimewindow 600  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
XCP <version>; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029

xcp verify -atimewindow 600 \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
318 scanned, 317 compared, 317 same, 0 different, 0 missing, 0 errors
Total Time : 3s
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 -noatime \\10.237.160.172\source_share
\\10.237.160.169\dest_share
xcp verify -ctimewindow 600 -noatime \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\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  -noatime \\10.237.160.172\source_share
\\10.237.160.169\dest_share
xcp verify -mtimewindow 600  -noatime \\10.237.160.172\source_share   \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\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  \\10.237.163.73\copy_share2 \\10.237.163.71\source_share
xcp verify -stats  \\10.237.163.73\copy_share2 \\10.237.163.71\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
                             81        170         62          2
 on-target                 same       same       same       same
 on-source                 same       same       same       same

          == Directory entries ==
               empty       1-10     10-100     100-1K     1K-10K       >10K
                                         1          1
 on-target                             same       same
 on-source                             same       same

          == Depth ==
                 0-5       6-10      11-15      16-20     21-100       >100
                 317
 on-target      same
 on-source      same

          == Modified ==
             >1 year   >1 month  1-31 days   1-24 hrs    <1 hour   <15 mins     future    invalid
                 315                              2
 on-target      same                            same
 on-source      same                            same

Total count: 317 / same / same
Directories: 2 / same / same
Regular files: 315 / same / same
Symbolic links:
Junctions:
Special files:
xcp verify -stats \\10.237.163.73\copy_share2 \\10.237.163.71\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 -noatime  \\10.237.160.172\source_share \\10.237.160.169\dest_share
xcp verify -l -noatime  \\10.237.160.172\source_share \\10.237.160.169\dest_share
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xcp verify -l -noatime \\10.237.160.172\source_share \\10.237.160.169\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 -noatime  \\10.237.160.172\source_share \\10.237.160.169\dest_share
xcp verify -ll -noatime  \\10.237.160.172\source_share \\10.237.160.169\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 -noatime \\10.237.160.172\source_share \\10.237.160.169\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

```
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>
```

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.

```
C:\xcp>xcp scan -stats \\10.61.77.189\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
```

✓	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.
		`C:\xcp>xcp copy -acl -fallback-user "DOMAIN\gabi" -fallback-group "DOMAIN\Group" \\10.61.77.189\performance_SMB_home_dirs \\10.61.77.56\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`
		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.
		`C:\xcp>xcp sync -acl -fallback-user "DOMAIN\gabi" -fallback-group "DOMAIN\Group" \\10.61.77.189\performance_SMB_home_dirs \\10.61.77.56\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`

	4.	Verify that the files are copied correctly.
		`C:\xcp> xcp verify \\10.61.77.189\performance_SMB_home_dirs \\10.61.77.56\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`
		`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`

✓	Step	Description
		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. 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 Takeover Node Partner Possible State Description --- --- --- --- sti96-vsim-ucs540m sti96-vsim- true Connected to sti96-vsim-ucs540n ucs540n sti96-vsim-ucs540n sti96-vsim- true Connected to sti96-vsim-ucs540m ucs540m 2 entries were displayed. C1_sti96-vsim-ucs540m_cluster::>

✓	Step	Description
	2.	Verify that at least one non-root aggregate exists on the target system. The aggregate is normal.

```
cluster::*> storage aggregate show

Aggregate     Size Available Used% State   #Vols  Nodes            RAID Status
--------- -------- --------- ----- ------- ------ ---------------- ------------
aggr0_sti96_vsim_ucs540o
            7.58GB   373.3MB   95% online       1 sti96-vsim-      raid_dp,
                                                   ucs540o          normal
aggr0_sti96_vsim_ucs540p
            7.58GB   373.3MB   95% online       1 sti96-vsim-      raid_dp,
                                                   ucs540p          normal
aggr_001   103.7GB   93.63GB   10% online       1 sti96-vsim-      raid_dp,
                                                   ucs540p          normal
sti96_vsim_ucs540o_aggr1
           23.93GB   23.83GB    0% online       1 sti96-vsim-      raid_dp,
                                                   ucs540o          normal
sti96_vsim_ucs540p_aggr1
           23.93GB   23.93GB    0% online       0 sti96-vsim-      raid_dp,
                                                   ucs540p          normal
5 entries were displayed.
```

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.

```
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 muliple 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 10.237.165.87 -netmask 255.255.240.0 -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`
		`Logical Status Network Current Current Is`
		`Vserver Interface Admin/Oper Address/Mask Node Port Home`
		`vs1`
		`sti96-vsim-ucs540o_data1`
		`up/up 10.237.165.87/20 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 -gateway 10.237.160.1`
		Verify the route is created
		`cluster::*> network route show -vserver vs1`
		`Vserver Destination Gateway Metric`
		`vs1`
		`0.0.0.0/0 10.237.160.1 20`
		`::/0 fd20:8b1e:b255:9155::1 20`
		`2 entries were displayed.`

	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`
		`vserver volume junction-path`
		`vs1 dest_vol /dest_vol`
		`vs1 root_vs1 /`
		`2 entries were displayed.`
		Note: You can also specify volume mount options (junction path) with the `volume create` command.

	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`
		`Server Status Domain/Workgroup Authentication`
		`Vserver Name Admin Name Style`
		`vs1 D60AB15C2AFC4D6 up CTL domain`

✓	Step	Description

	9.	Check that the default export policy is applied to the target SVM.
		`CLUSTER::> vserver export-policy show -vserver dest`
		`Vserver Policy Name`
		`--- ---`
		`dest default`
		If required, create a new custom export policy for the target SVM.
		`CLUSTER::> vserver export-policy create -vserver vs1 -policyname xcpexport`

	10.	Modify the export policy rules to allow access to CIFs clients.
		`CLUSTER::> export-policy rule modify -vserver dest -ruleindex 1 -policyname xcpexportpolicy -clientmatch 0.0.0.0/0 -rorule any -rwrule any -anon 0`
		Verify the policy rules have modified.
		`cluster::*> export-policy rule show -instance`
		`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, or Domains:`
		`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.`

	11.	Verify that the client is allowed access to the volume.
		`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`
		`Policy Policy Rule`
		`Path Policy Owner Owner Type Index Access`
		`--- --- --- --- --- ---`
		`/ default root_vs1 volume 1 read`
		`/dest_vol default dest_vol volume 1 read-write`
		`2 entries were displayed.`

	12.	Connect to the windows client system where XCP is installed. Browse to the XCP install path.
		`C:\WRSHDNT>dir c:\netapp\xcp`
		`dir c:\netapp\xcp`
		`Volume in drive C has no label.`
		`Volume Serial Number is 5C04-C0C7`

✓	Step	Description
		Directory of c:\netapp\xcp 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
	13.	Query the source node SMB exports by running the `xcp show` command on the XCP windows client host system. C:\WRSHDNT>c:\netapp\xcp\xcp show \\10.237.165.71 c:\netapp\xcp\xcp show \\10.237.165.71 XCP SMB 1.6; (c) 2020 NetApp, Inc.; Licensed to XXX [NetApp Inc] until Mon Dec 31 00:00:00 2029 Shares Errors Server 6 0 10.237.165.71 == SMB Shares == Space Space Current Free Used Connections Share Path Folder Path 9.50GiB 4.57MiB 1 \\10.237.165.71\source_share C:\source_vol 94.3MiB 716KiB 0 \\10.237.165.71\ROOTSHARE C:\ 0 0 N/A \\10.237.165.71\ipc$ N/A 94.3MiB 716KiB 0 \\10.237.165.71\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/
	14.	Run `help` command for copy 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 Dec 31 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 filter (see `xcp help -match` for details)

✓	Step	Description
		-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) -root copy acl for root directorytxt
	15.	On the target ONTAP system, get the list of local user and local group names that you need to provide as values for the fallback-user and fallback-group arguments path.
		cluster::*> local-user show (vserver cifs users-and-groups local-user show) Vserver User Name Full Name Description vs1 D60AB15C2AFC4D6\Administrator Built-in administrator account C2_sti96-vsim-ucs540o_cluster::*> local-group show (vserver cifs users-and-groups local-group show) 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 5 entries were displayed
	16.	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.
		C:\WRSHDNT>c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\10.237.165.79\source_share \\10.237.165.89\dest_share c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\10.237.165.79\source_share \\10.237.165.89\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), 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 check if the principal with the name "BUILTIN\Users" exists on "D60AB15C2AFC4D6". 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 "BUILTIN\Users". Please check if 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". Please check if the principal with the name "D60AB15C2AFC4D6\Administrator" exists on "D60AB15C2AFC4D6".

✓	Step	Description
		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>
	17.	If xcp copy results in the error message: 'ERROR failed to obtain fallback security principal', add the destination box in the hosts file (C:\Windows\System32\drivers\etc\hosts). Netapp storage destination box entry should be in below format: <data vserver data interface ip> 1 or more white spaces <cifs server name> cluster::*> cifs show Server Status Domain/Workgroup Authentication Vserver Name Admin Name Style ---------- --------------- --------- ---------------- -------------- vs1 D60AB15C2AFC4D6 up CTL domain C2_sti96-vsim-ucs540o_cluster::*> network interface show Logical Status Network Current Current Is Cluster sti96-vsim-ucs540p_clus1 up/up 192.168.148.136/24 sti96-vsim-ucs540p e0a true sti96-vsim-ucs540p_clus2 up/up 192.168.148.137/24 sti96-vsim-ucs540p e0b true vs1 sti96-vsim-ucs540o_data1 up/up 10.237.165.87/20 sti96-vsim-ucs540o e0d true sti96-vsim-ucs540o_data1_inet6 up/up fd20:8b1e:b255:9155::583/64 sti96-vsim-ucs540o e0d true sti96-vsim-ucs540o_data2 up/up 10.237.165.88/20 sti96-vsim-ucs540o e0e true 10.237.165.87 D60AB15C2AFC4D6 -> destination box entry to be added in hosts file.
	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 target system. C:\WRSHDNT>c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\unknown_user -fallback-group BUILTIN\Users \\10.237.165.79\source_share \\10.237.165.89\dest_share c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\unknown_user -fallback-group BUILTIN\Users \\10.237.165.79\source_share \\10.237.165.89\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

✓	Step	Description
		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 \\10.237.165.79\source_share \\10.237.165.89\dest_share c:\netapp\xcp\xcp copy -acl -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\10.237.165.79\source_share \\10.237.165.89\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 \\10.237.165.79\source_share \\10.237.165.89\dest_share c:\netapp\xcp\xcp copy -acl -root -fallback-user D60AB15C2AFC4D6\Administrator -fallback-group BUILTIN\Users \\10.237.165.79\source_share \\10.237.165.89\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, 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 \\10.234.123.227\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 runid 3112812948410038
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 SMB 1.6
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 XCP 1.6

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.

<table>
<tr><th>No</th><th>Item</th><th>XCP 1.5</th><th>XCP1.6</th></tr>
<tr><td>5</td><td>Summary text for XCP commands:
<table>
<tr><td>Command</td><td>counters</td></tr>
<tr><td>Scan</td><td>Scanned, Matched, Error</td></tr>
<tr><td>Copy</td><td>Scanned, Copied, Matched, Errors</td></tr>
<tr><td>Sync</td><td>Scanned, Copied, Modifications, New Items, Delete Items, Errors</td></tr>
<tr><td>Resume
(N/A for SMB)</td><td>Scanned, Copied, Modifications, New Items, Delete Items, Errors</td></tr>
<tr><td>Verify for NFS</td><td>Scanned, Matched, Found, Same data, Different Items, Errors</td></tr>
<tr><td>Verify for SMB</td><td>Scanned, Compared, Same, Different, Missing, Errors</td></tr>
<tr><td>Delete
(N/A for SMB)</td><td>Scanned, Matched, Delete Item, Errors</td></tr>
</table></td><td>Summary text displays in the following format:
<code><list of applicable counters> <space> <throughput> <execution time></code>

NFS Example
<code>9 scanned, 3.61 KiB in (3.70 KiB/s), 740 out (759/s), 0s.</code>

SMB Example
<code>161,951 scanned, 0 errors, 3m16s</code></td><td>Summary text displays in the following format:
<code>Line 1: <list of applicable counters></code>
<code>Line 2: Speed: <throughput></code>
<code>Line 3: Total Time: <execution time></code>
<code>Line 4: STATUS: <passed/failed></code>

NFS Example
<code>13 scanned, 0 matched, 0 error</code>
<code>Speed : 3.73 KiB in (4.89 KiB/s), 756 out (989/s)</code>
<code>Total Time : 0s.</code>
<code>STATUS : PASSED</code>

SMB Example
<code>317 scanned, 0 matched, 0 errors</code>
<code>Total Time : 1s</code>
<code>STATUS : PASSED</code></td></tr>
</table>

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 `XCP_LOG_DIR or XCP_CONFIG_DIR` 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\`.

To configure event messaging for NFS and SMB:

1. Create the `xcpLogConfig.json` JSON config file. For details, see the *Create the JSON Configuration File* section.
2. Set the eventlog option as required. For details, see the Description of options of config file section.

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": "10.234.219.87",
	  "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 `false` 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

```
<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>}
```

Example:

```
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
10.234.104.250:/cat_vol"}
```

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":"10.234.219.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 17 items"}

6 Event log reference

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 size <write block size> bytes. Mount point has mode value <mode bits> and type : <fattr3 type>.	2020-07-14 03:53:59,811 - INFO {"Event ID": 401, "Event Category": "Mounting unmounting file system", "Event Type": "Mount file system information", "ExecutionId": 408249379415, "Event Source": "NETAPP-01", "Description": "Mounted on NFS export 10.234.104.250:/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 10.234.104.250:/test11 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 Id	Event Template	Event example
		"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 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>	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":

Event Id	Event Template	Event example
	and destination <copy destination/target>	"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 10.234.103.126:/source_vol and destination 10.234.104.250:/test1"}
26	XCP copy completed successfully after scanning <scanned 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>	2020-07-14 05:15:13,885 - INFO {"Event ID": 26, "Event Category": "XCP job status", "Event Type": "XCP copy completion", "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 : 10.234.103.126:/source_vol, destination : 10.234.104.250:/test1"}
16	XCP command : <command> is running on platform <platform info> for source <sync source> and destination {sync destination}	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 10.234.104.251:/src_vol and destination 10.234.104.250:/dest_vol"}
352	System resources available while executing xcp command : <command>, are : <CPU info>, <memory info>	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"}
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>	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'}"}

Event Id	Event Template	Event example
19	XCP command : <command> is running on platform for source <verify source> and destination <verify destination>	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 10.234.104.251:/src_vol and destination 10.234.104.250:/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 10.234.104.250:/cat_vol"}
53	Catalog volume <catalog volume> is left with no free space to store index <index id> while	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":

Event Id	Event Template	Event example
	executing <command>. Please increase the size of the catalog volume <catalog volume running out of space>	"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 10.234.104.250:/cat_vol"}
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 10.234.104.250 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 10.234.204.250. 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 10.234.104.250:/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-

Event Id	Event Template	Event example
		01", "Description": "Memory Usage has crossed 95%"}
22	XCP <command> is running on platform <platform information> for source <resume source> and destination <resume destination>	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 Source": "NETAPP-01", "Description": "XCP command : resume {-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 10.234.104.251:/src_vol and destination 10.234.104.250:/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: 'autoname_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: 'autoname_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 autoname_copy_2020-07-14_10.28.22.323897 used while executing sync is incomplete. Try resume on the existing index id autoname_copy_2020-07-14_10.28.22.323897."}

Event Id	Event Template	Event example
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%}
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: \"\\\\10.234.204.253\\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":

Event Id	Event Template	Event example
		"Interface cannot be found: \"\\\\10.234.104.253\\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": "Invalid Address", "ExecutionId": 408264197308, "Event Source": "NETAPP-01", "Description": "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: 10.234.104.253\\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 {"Event ID": 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 \\\\10.234.104.253\\cifs"}

Event Id	Event Template	Event example
351	System resources available wile command : <command>, are : cpu <CPU information>, total memory <total memory on system>, available memory <available memory for execution>	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 : 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 {"Event ID": 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 : \\\\10.234.104.253\\cifs"}
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 {"Event ID": 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 \\\\10.234.104.253\\cifs and destination \\\\10.234.81.97\\source_vol"}
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 {"Event ID": 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 {"Event ID": 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 {"Event ID": 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

Event Id	Event Template	Event example
		\\\\10.234.104.253\\cifs and destination \\\\10.234.81.97\\source_vol"}
353	System resources available for command : <command>, are : cpu <CPU information>, total memory <total memory>, available memory <available memory>	2020-07-15 02:27:10,490 - INFO {"Event ID": 353, "Event Category": "System resource utilization", "Event Type": "Resources 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 {"Event ID": 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 : \\\\10.234.104.253\\cifs, destination : \\\\10.234.81.97\\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 {"Event ID": 19, "Event Category": "XCP job status", "Event Type": "Starting xcp verify operation", "ExecutionId": 408264409944, "Event Source": "NETAPP-01", "Description": "XCP {verify -noacl -noatime} is running on platform Windows-8.1-6.3.9600-SP0 for source \\\\10.234.104.253\\cifs and destination \\\\10.234.81.97\\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 {"Event ID": 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-

Event Id	Event Template	Event example
		01", "Description": "CPU utilization reduced to 8.2%"}
358	Memory utilization reduced to <memory utilization percentage>%	{"Event ID": 358, "Event Category": "System resource utilization", "Event Type": "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 {"Event ID": 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 \\\\10.234.104.253\\cifs \\\\10.234.81.97\\source_vol has failed”

6.3 Sample XCP NFS Reports

XCP is a powerful tool. This tool can generate .csv and .html reports for NFS only, for scoping migration projects. Sample .html and .csv reports are shown below.

10.63.5.56:/vol/ex_s01 - report

XFILES

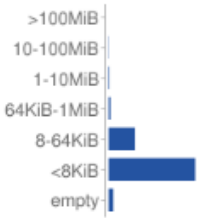
Command scan 10.63.5.56:/vol/ex_s01
Options '-stats': True
Unreadable directories None Unreadable files None
Filters: Unmatched None
Summary 6,034 scanned, 1.36 MiB in (2.15 MiB/s), 140 KiB out (221 KiB/s), 0s.

	Count	Used
All File Types	6,034	213 MiB
Regular Files	4,488	209 MiB
Directories	971	3.81 MiB
Symlinks	354	12 KiB
Specials	None	0

	Avg	Max
Name Length	11	39
File Size	51.5 KiB	10.5 MiB
Directory Entries	6	198
File Depth	5	10

daemon	9
root	891
20041	5,134

Top 5 File Owners



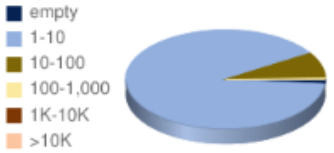
Number of Files

Space Used

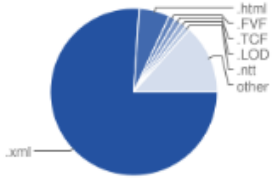
daemon	36 KiB
root	80.1 MiB
20041	132 MiB

Top 5 Space Users

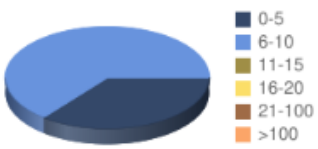
N/A	N/A	36.2 MiB	47	3	3
Dedupe Estimate	Zero Blocks	Hard Links	Extensions	Groups	Users



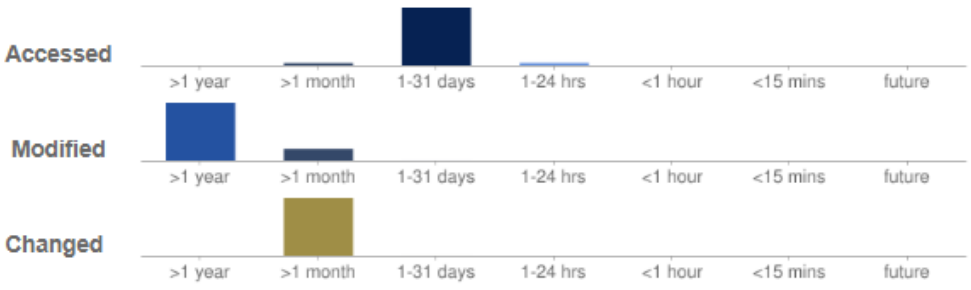
Directory Entries



Extension Types



File Depth



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