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NFSv4.2 Server-Side Copy Testing

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NFStest

- NFStest version 2.1.5 adds support for testing server-side copy: `nfstest_ssc`
- NFStest enhancements to support SSC testing: buffered matching, conditionally display packet attribute, etc.

SSC Test Implementation

- All tests are divided into intra or inter tests
- Every single test (intra or inter) is divided into three sections:
 - Main test
 - Verify written data
 - Verify correct NFS packets

Main test

- Open both source and destination files
- Write some data to destination files
- Lock both source and destination files
- Use `copy_file_range` system call to do the copy
 - Using `syscall` directly since `copy_file_range` is not yet on `libc`. Supported only for `x86_32` and `x86_64`.
- Check for errors

Verify written data

- Find out which byte ranges were modified by the copy or copies on the destination file
- Verify copy data is correct on ranges where the copy or copies were specified
- Verify original data is left intact on ranges outside the ones specified by the copy or copies

Verify correct NFS packets

- Find out whether the copy is intra or inter
- For an inter copy, expect COPY_NOTIFY sent to source server
- For an intra copy, expect either CLONE or COPY sent to the server
- For an inter copy, expect COPY sent to the destination server

Verify correct NFS packets

- If COPY replies with synchronous=1, expect the results on the COPY reply
- If COPY replies with synchronous=0, expect CB_OFFLOAD to get the results
- If COPY/CB_OFFLOAD committed=UNSTABLE4, expect COMMIT
- Verify no READs or WRITEs are sent from the client for the range given on the COPY

nfstest_ssc

Test options:

`--server=SERVER`

Server for server side copy [default: none]

`--export=EXPORT`

Export for server side copy [default: none]

`--dst-server=DST_SERVER`

Destination server for inter server side copy [default: none]

`--dst-export=DST_EXPORT`

Destination export for inter server side copy [default: none]

nfstest_ssc

Test options:

`--ncopies=NCOPIES`

Number of concurrent copies to use on intra14 and inter14 tests [default: 4]

`--src-files=SRC_FILES`

Number of source files to use concurrently on intra15 and inter15 tests [default: 3]

`--dst-files=DST_FILES`

Number of destination files to use concurrently on intra15 and inter15 tests [default: 2]

nfstest_ssc

Test options:

`--pre-write=PRE_WRITE`

Write destination file before `copy_file_range` [default: 1]

`--locks=LOCKS`

Lock files [default: 1]



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Thank you