Sequence ID calibration for unordered requests
**Background**

**Current protocol issue**

1) When the sequence Id mis-order is detected in the replier, the replier will return NFS4ERR_SEQ_MISORDERED.
2) The requester would then attempt to destroy and reestablish the NFSv4.1 sessions.
3) As a result of NFSv4.1 Session Reestablishment, all the responses in the slot entries of the Old session would be dropped if not support persistent session. This would impact the EOS.
Proposals of sequence calibration

Two operations, SEQUENCE_QUERY and CB_SEQUENCE_QUERY, are added to query sequence ID cached when getting NFS4ERR_SEQ_MISORDERED error.

Operation 72: SEQUENCE_QUERY-Query sequence ID of designated session and slot for re-calibration

Operation 16: CB_SEQUENCE_QUERY- Query backchannel sequence ID of designated session and slot for re-calibration

https://datatracker.ietf.org/doc/draft-mzhang-nfsv4-sequence-id-calibration/
New operation: SEQUENCE_QUERY

Operation 72: SEQUENCE_QUERY-Query sequence ID of designated session and slot for calibration

ARGUMENTS

struct SEQUENCE_QUERY4args {
    sessionid4  sqa_sessionid;
    slotid4     sqa_slotid;
};

RESULTS

struct SEQUENCE_QUERY4resok {
    Sessionid4  sqr_sessionid;
    Slotid4     sqr_slotid;
    sequenceid4 sqr_sequenceid;
};

union SEQUENCE_QUERY4res switch (nfsstat4 sqr_status) {
    case NFS4_OK:
        SEQUENCE_QUERY4resok sqr_resok4;
    default:
        void;
};
New operation: SEQENCE_QUERY

Operation 16: CB_SEQUENCE_QUERY- Query backchannel sequence ID of designated session and slot for calibration

ARGUMENT

struct CB_SEQUENCE_QUERY4args {
    sessionid4 csqa_sessionid;
    slotid4    csqa_slotid;
};

RESULT

struct CB_SEQUENCE_QUERY4resok {
    sessionid4 csqr_sessionid;
    slotid4    csqr_slotid;
    sequenceid4 csqr_sequenceid;
};

union CB_SEQUENCE_QUERY4res switch (nfsstat4 csqr_status) {
    case NFS4_OK:
        CB_SEQUENCE_QUERY4resok csqr_resok4;
    default:
        void;
};
Benefits

Provide a solution to NFS client to query correct the sequence ID and continue the remaining IO to avoid the cost of long time to reestablish the session.

Benefit:
- Avoid IO break while reestablish the session especially under the scenario that NFS IO across multiple size with long distance and IO latency is more.
- Since there is no session reestablish, so EOS feature of NFS will not be impacted.
Thank You

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