Ingest Recovery Overview

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Ingest Recovery Approach

F&PRS Requirements

- RMA requirements discussed earlier (EOSD3900)
- Maintain data base integrity, prevent data loss/corruption (EOSD2440)

Derived Requirements

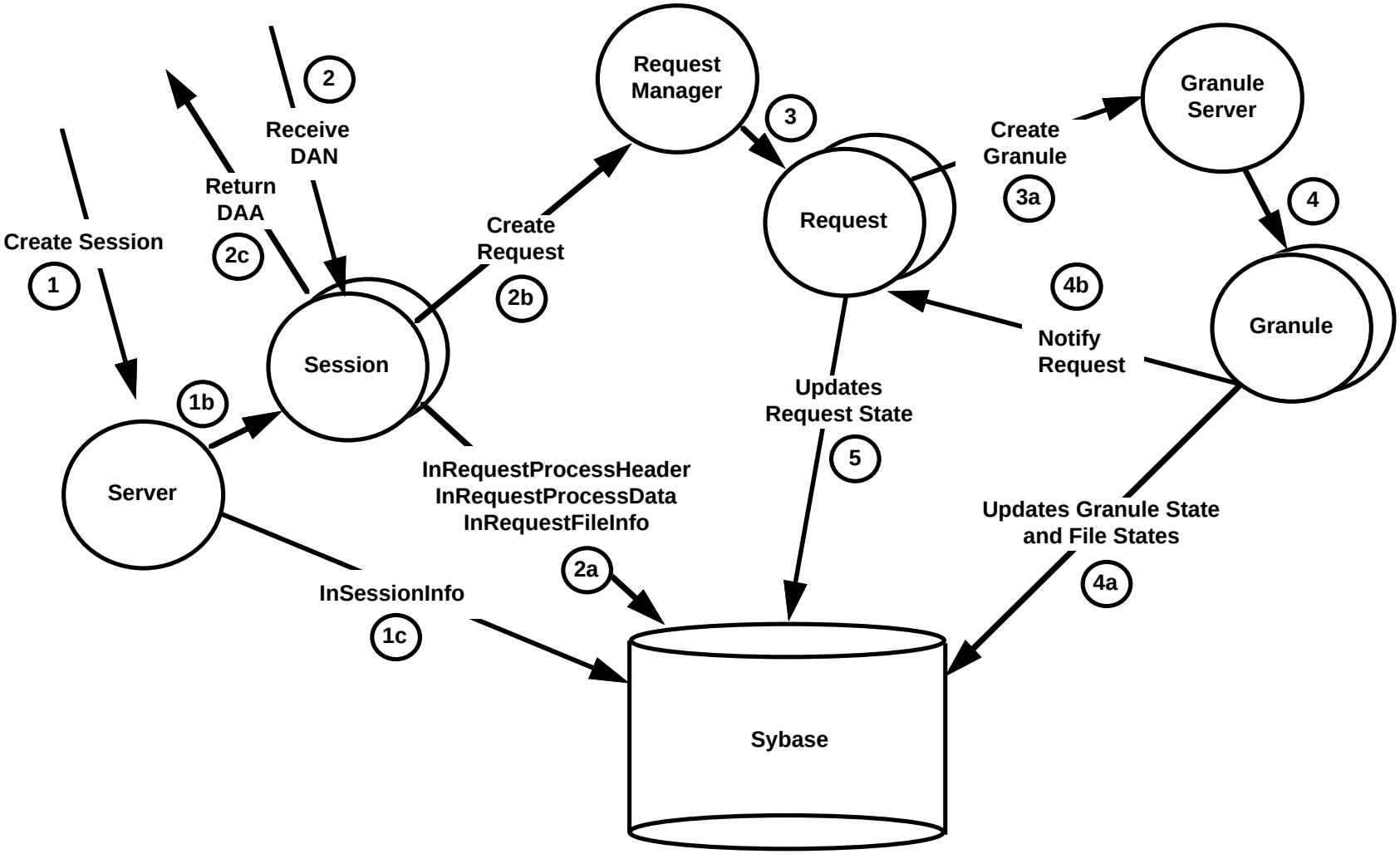
- Complete all ingest requests--upon system failure, report failure or recover
  - System failure is defined as a failure of the Ingest CSCI or the Ingest HWCI
- Checkpoint request, granule, and file information
- Provide warm restart and cold restart options to operations staff

Ingest Recovery Approach (cont.)

Ingest Recovery Design

- Request information checkpointed prior to returning an acknowledgment to requester (or Gateway)
- Request, granule, and file information checkpointed to Sybase tables
- Process startup initiated by operations staff using Process Framework
  - Cold restart, warm restart options
- Upon startup of a process, objects check for existing checkpoint information and apply
- If recovery is not possible, return failure status to requester and log events
- Upon primary processor failure, switch over to backup processor with configuration identical to the primary processor
  - Restart Ingest processes as described above

Ingest Recovery Scenario -- Checkpointing



Ingest Recovery - Initial Checkpointing

Server

- Receives request from authenticated External client
- Creates a new session
- Checkpoint InSessionInfo -- SessionId, ClientId

Session

- Receives DAN from External client
- Checkpoints DAN information in InRequestProcessHeader, InRequestProcessData, and InRequestFileInfo
- Invokes CreateRequestRPC to Request Manager
- Returns DAA to External client

Ingest Recovery - Initial Checkpointing (cont.)

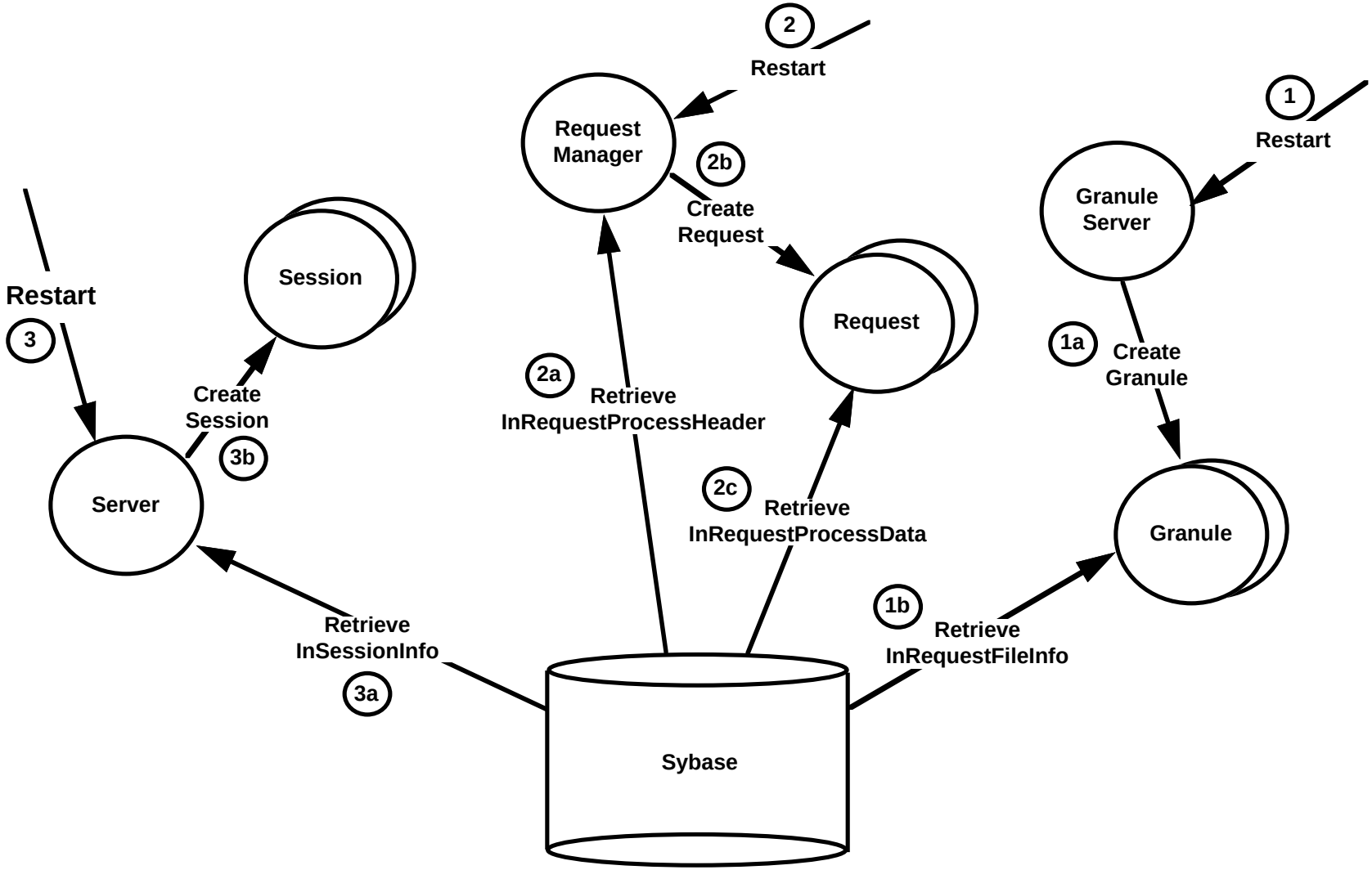
Request Manager

- Spawns request thread
- Sends asynchronous message to GranuleServer for each granule in the request
- Updates Request state upon request completion (Active/Suspend/Cancel/ Resume/Complete/Complete with Errors)

Granule Server

- Processes the granule (InGranuleAsync_S)
- Updates granule state and file state -- Transfer(Err)/Preproc(Err)/Insert(Err)
- InGranuleAsync_C Informs Request upon Granule completion

Ingest Recovery Scenario -- Recovery



Ingest Recovery - Recovery Steps

GranuleServer warm restart

- Recreate InGranuleAsync_S using SRF infrastructure capability
- Retrieve last checkpointed state from InRequestProcessData/InRequestFileInfo
- Continue processing from point of failure

Request Manager warm restart

- Retrieve all Active requests in InRequestProcessHeader
- Recreate Request thread for each request

Individual InRequest pthreads

- Retrieve all incomplete (not failed) granules in InRequestProcessData
- Recreate InGranuleAsync_C objects for active InGranuleAsync_S objects
- Process pending messages in associated SRF message queues

Ingest Recovery - Recovery Steps (cont.)

InServer warm restart

- **Retrieve all sessions in InSessionInfo**
- **Create sessions**

Ingest Transition to Release B

Preliminary Steps

- Installation of required MSS, CSS infrastructure components
- Use of MSS Mode Management
  - Allows concurrent Release A operations with Release B testing

Operational Switchover

- Install Release B Ingest software
- Shut down Release A Ingest subsystem
  - Use MSS Process Framework for a graceful shutdown
  - Ongoing ingest request processing checkpointed
- Restart Release B Ingest subsystem
  - Use MSS Process Framework to restart in warm restart mode
  - Ingest subsystem components recover ongoing ingest request processing
- Reload Release B data bases if necessary (e.g., if data base structure changed)