

Scenario: User retrieves a file from tape that is not on disk

1. User runs a command-line tool to synchronously copy a file from EOSTAPE to their local disk.

```
eos cp /eos/murrayc3/tape_dir/tape_file local_file
```

2. The command-line tool connects to the xrootd server with the mgm plugin running and requests the destination file `tape_file` be opened for reading.

3. The mgm plugin asserts the file exists on a tape VST but does not exist on a disk FST and sends the command-line tool an error such as "File X is not on disk, please bring it on-line".

4. User runs a command-line tool to request the file be prepared for access and therefore staged to disk.

```
xrdfs prepare -s root://localhost//eos/murrayc3/tape_dir/tape_file
```

DOES THE EOS MGM SUPPORT THE PREPARE COMMAND?
WILL THIS COMMAND NEED TO BE ADDED TO THE EOS COMMAND-LINE TOOL?

5. The mgm plugin checks the file is not already on disk, that the file is on tape and that there is currently no ongoing prepare operation for the file.

IS THE MGM RESPONSIBLE FOR IDENTIFYING AND COLLAPSING MULTIPLE PREPARE REQUESTS FOR THE SAME FILE?

6. The mgm plugin connects to the CTA xrootd front-end and queues a request to retrieve the file from tape. The request includes the EOS instance, EOS inode and the destination tape storage class.

7. The CTA front end checks that CTA knows the tape file location based on the EOS instance and EOS inode.

8. The CTA front end stores the retrieval request in the CTA object store.

9. In the meantime the user runs a command-line tool in a loop to decide when the file has been staged to disk.

```
fileinfo /eos/murrayc3/tape_dir/tape_file --fullpath | grep fst
```

HOW DOES THE USER EASILY DISTINGUISH BETWEEN A DISK AND A TAPE [FV]ST?

10. A tape server pulls the need to mount a tape from the CTA object store and does so.

11. The tape server pulls the retrieval request from the CTA object store.

12. The tape server connects to the xrootd server with the mgm plugin and requests the destination disk FST file be opened for writing based on its inode.

CAN THE MGM REDIRECT BASED ON INODE AS OPPOSED TO EOS LOGICAL PATH?

13. The mgm plugin redirects the tape server to a disk FST.

WILL THE MGM CHOOSE THE LEAST LOADED DISK FST?

14. The tape server opens the file on the disk FST for writing.

15. The tape drive reads blocks from the tape and writes them to the disk FST file.

16. The tape drive closes the disk FST file.

17. The disk FST notifies the mgm that the file has been staged to disk.

18. The user notices the file is now on disk and in response runs a command-line tool to synchronously copy a file from EOSTAPE to their local disk.

```
eos cp /eos/murrayc3/tape_dir/tape_file local_file
```

19. The command-line tool connects to the xrootd server with the mgm plugin running and requests the destination file tape_file be opened for reading.

20. The mgm plugin asserts the file exists on disk and redirects the command-line tool to the disk FST.

21. The command-line tool opens, reads and closes the file on the disk FST.