

# What happens if we do nothing on OTA

- Lustre is EOL and will need to be replaced, 1PB ~ £60k/year
- FIRE will still consume tape
- Only FIRE can use tape
- OTA will not be able to write small files and will build backlog for weeks, maybe months until the data are replicated to tape.
- We cannot recover from tape unless we buy more drives.

Folder with all data: [TAPE at EBI](#)

## How much data do I need to move from NetApp to Tape to make it cost-neutral

### In general terms

The full setup cost would be ~£628k, including 75K in additional tapes for FIRE, an extra frame for the library to accommodate the new drives without removing the old ones, and 23PB/year Black Pearl. With that set-up, the tape cost would average to £15k/PB. This cost includes datacentre space and 1FTE to maintain the infrastructure.

NetApp has an average cost of £50K/PB - however, each PB is mirrored and we will account for £100K/PB since moving 1PB to tape will also remove 1PB of Netapp mirrored data. We have been unable to discover if the NetApp costs quoted include data centre space and maintenance costs.

Summary:

Every 1PB moved from NetApp to Tape would represent saving a total cost of £85k.

**Moving 10PB from NetApp to Tape would save £850k.**

### Option A: Sizing for FIRE

Sizing the new tape interface (Black Pearl S Series ~ 23PB/year capacity) to the FIRE needs means FIRE has priority on writing data and without considering the migration of old FIRE data (i.e. that currently residing on OTA-controlled tape) into the solution, we would have an extra throughput of 12PB available in 2020 and 5PB in 2021.

Currently, EBI has 17PB of Netapp as primary copy, and 16PB as mirrored data, if 1/3 (5PB of primary data) of that data would be moved to Tape we would be saving £425k, which is more than the cost of the Black Pearl S series setup, plus the frame extension and 6 new drives, which is around £400k

If we are looking to do the bare minimum investment, Black pearl S series, plus 3 drives into the current library, in the current location, that would have a cost of £200K, and by moving 2PB of NetApp data to Tape it would become cost-neutral, including OTA at zero cost.

## Option B: Sizing for HSM + FIRE, without moving the library

Purchasing a Black Pearl P series (88PB/year) would also require purchasing drives for it, we could leave OTA without drives but we would still need to buy some more.

Existing drives LTO8 : 3\*250MB/s ~21PB/year read/write capacity

New drives LTO8: 9\*250MB/s ~ 65PB/year + 21 => 87PB/year

We could replace some or all of the old drives, expecting that we do not need to recover (read data). That way we would not need to add the extra frame to the Spectra library for now. That would cost £80k in drives.

While it may seem reasonable to invest in the 88PB/year solution, I am not sure we will be able to fully utilize it since we may not have enough data to be moved to Tape. This is an open question until we know more about EBI's data lifecycle.

Since the 23PB/year solution can be migrated into the 88PB/year solution it would seem realistic to start small.

## What is the minimum needed to start evolving into the Black Pearl solution

- 3 new drives, replacing 3 old LTO6 (capacity ~22PB/year) £40k
- Black Pearl S 23PB/year (in comms rack) £120k
- 22PB of tapes LTO8 £135k

FIRE would start using it right away. 12PB/year of new data.

Other teams can start using it right away as a single offline copy archive, up to 10PB/year.

All bandwidth and tape not used by other teams would be used by FIRE to migrate data from OTA to the new system, aiming to retire OTA ASAP.

When data are migrated from OTA to the new system we will configure the old drives on the new system, so we can reuse all old tapes.

# What other places can we spend the 250K Year 3 HCA money

NB. Ideally items should be ordered, invoiced and on-site by 31st May 2020. After discussion with EBI HCA tem the following applies:

Can request carry-over to year 4 budget but there is a finite chance this will be denied - unspent funds will be lost.

Business case for carry-over i.e. to spend money within the calendar year 2020 (or earlier) with outline plan and comment on mitigating circumstances - COVID disruption to order fulfillment, uncertainty over deliveries etc.

- Extra 10Gbps dual-port card for the last 20 servers bought.
  - May require network switches upgrade
- Ram for the last 20 servers bought.
- Ram for the 2 OTA servers

Requires quotations from sysinf/sysops. (requested)