5.1 TS7700 DR principles

To understand the DR capabilities of the TS7700 grid, the following topics are described:

- Data availability in the grid
- Deferred Copy Queue
- Volume ownership
- How to use cloud attached storage in your DR plan

5.1.1 Data availability

The fundamental function of the TS7700 is that all logical volumes are accessible through any of the virtual device addresses on the clusters in the grid configuration. If a copy of the logical volume is not available at that TS7700 cluster (because it does not have a copy or the copy it does have is inaccessible because of an error), and a copy is available at another TS7700 cluster in the grid, the volume is accessed through the Tape Volume Cache (TVC) at the TS7700 cluster that has the available copy. If a recall is required to place the logical volume in the TVC on the other TS7700 cluster, it is done as part of the mount operation.

Whether a copy is available at another TS7700 cluster in a multi-cluster grid depends on the Copy Consistency Policy that was assigned to the logical volume when it was written. The Copy Consistency Policy is set through the Management Class (MC) storage construct. It specifies whether and when a copy of the data is made between the TS7700 clusters in the grid configuration. The following Copy Consistency Policies can be assigned:

- Synchronous Copy (Synch): Data that is written to the cluster is compressed and simultaneously written to another specified cluster.
- Rewind Unload (RUN): Data that is created on one cluster is copied to the other cluster as part of successful RUN command processing.
- Deferred Copy (Deferred): Data that is created on one cluster is copied to the specified clusters after successful RUN command processing.
- Time Delayed (TD): If the data expires before the Time Delayed setting is reached, no copy is made, otherwise a deferred copy is created.
- No Copy (None): Data that is created on one cluster is not copied to the other cluster.

Consider when the data is available on the cluster at the DR site. With Synchronous Copy, the data is written to a secondary cluster. If the primary site is unavailable, the volume can be accessed on the cluster that specified Synch. With RUN, unless the Copy Count Override is enabled, any cluster with Run specified has a copy of the volume available. With None, no copy is written in this cluster. With Deferred and Time Delayed, a copy is available later, so it might be available at the cluster that specified Deferred or it might not yet be completed.

When you enable Copy Count Override, it is possible to limit the number of RUN consistency points that are required before the application is given back device end, which can result in fewer copies of the data that is available than your copy policies specify.

The Volume Removal policy for hybrid grid configurations is available in any grid configuration that contains at least one tape or cloud attached cluster and also should be considered. The TS7700 Disk-Only solutions have a maximum storage capacity that is the size of their TVC, and TS7700T CP0 works similarly. Therefore, after the cache fills, this policy enables logical volumes to be removed automatically from cache while a copy is retained within one or more peer clusters in the grid. If the cache is filling up, it is possible that fewer copies of the volume exist in the grid than is expected based on the copy policy alone.