

VSP 5000 HDP and HDT Pool Configuration Best Practices

Objective

Understand Best practices for Pool Design for Non-Tiered and Tiered Pools (HDP and HDT).

Environment

- VSP 5000 Series (RAID900, DKC910I)
 - VSP 5100, VSP 5100H, VSP 5500, VSP 5500H
- Hitachi Dynamic Provisioning (HDP)
- Hitachi Dynamic Tiering (HDT)

Guidance

When creating or changing pools how the pool is logically constructed can have impacts to performance, isolation, and scalability. Most customers will choose "Resource Availability" where there are fewer pools (larger pools) to maximize the savings for ADR. Some customers will choose an "Isolation Configuration" to keep different groups isolated to a certain CBX. The final group is customers expanding from a smaller configuration by adding a CBX.

When a Pool is constrained to a single CBX (or a subset of total CBX) "Isolation Configuration":

In this case the customer has clients which are restricted to only one or some of the CBX. In this configuration for best performance each of the CBX that the host is configured to should have an equal number of PG behind only the CBX that have the hosts. The smaller the number of PG, the more important it is to balance them out between the CBX that the hosts are restricted to.

When a Pool is spread across multiple CBX "Resource Availability":

This is the most common configuration. In this case the best design is to assign an equal number of PG behind each CBX. When the pool size is small (1-2PG per CBX), and there is a difference in the number of RG per CBX, differences in busy rates across the PG may be higher.



When a Customer is growing by adding a CBX:

First ensure that the customer is at the most current microcode. Enhancements for adding a CBX and rebalancing the page allocations are greatly improved at current microcode levels. Ideally the new CBX will have additional backend storage to balance out across. Ideally the additional storage is enough to balance out the allocations. However in many cases the customer is not always adding large amounts of storage when adding a new CBX. For smaller pools the customer may want to consider either adding a small amount of storage, or shrinking PG out of the Pool, and moving those PG to the new CBX.

If ADR is used, after adding the new CBX, the customer may wish to re-balance the page ownership of the deduplication pool. System Option Mode (SOM) 1195 will re-balance the pages of a LDEV to the optimal deduplication volume in the pool. SOM 1195 is effective at rebalancing the ownership of an LDEV when there is either a Pool Expansion, or a ZPR (Zero Page Reclaim).

Mode 1195 = ON:

- Pages of DP volumes allocated to parity groups of the owning CBX pair are re-balanced to parity groups of the same CBX pair to equalize the usage rate among parity groups in the owning CBX pair.
- Pages of DP volumes allocated to parity groups of a non-owning CBX pairs are relocated across to parity groups of the owner CBX pair to equalize the usage rate among parity groups in the owner CBX pair.

Note: when the parity groups on the owning CBX pairs are full additional pages will be relocated to parity groups of non-owner CBX pairs to equalize the usage rate among parity groups in the non-owner CBX pairs.

This mode will act on all LDEVs in the Pool when an expansion is performed.

This mode will act on an individual LDEV when a ZPR of that LDEV is performed.

Additional Notes

Internal Notes

