

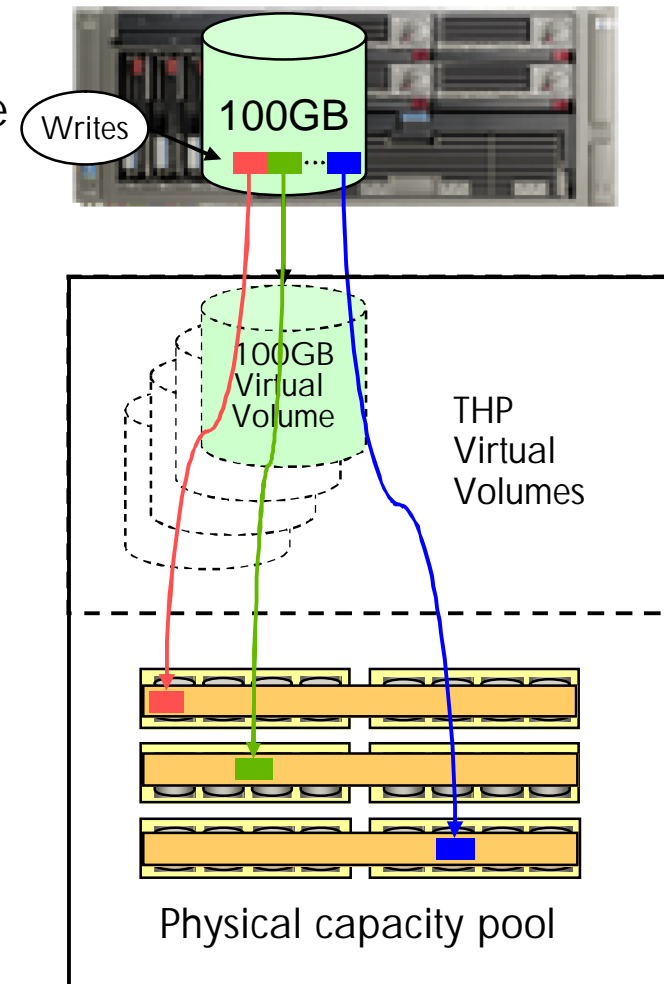
XP Thin Provisioning (THP)

Features

- THP allows over-provisioning i.e. presenting more virtual capacity than physically available
- THP V-Volumes are backed-up by a pool of physical storage with a selectable over-provisioning ratio.

Benefits

- Easy, fast and straight forward storage provisioning
- No server reconfiguration required - configure future capacity requirements upfront
- No hot-spots due to XP internal data striping and distribution -
- Only actually needed & buffer capacity needs to be purchased resulting in massive power and cost savings



Traditional vs. XP Thin Provisioning

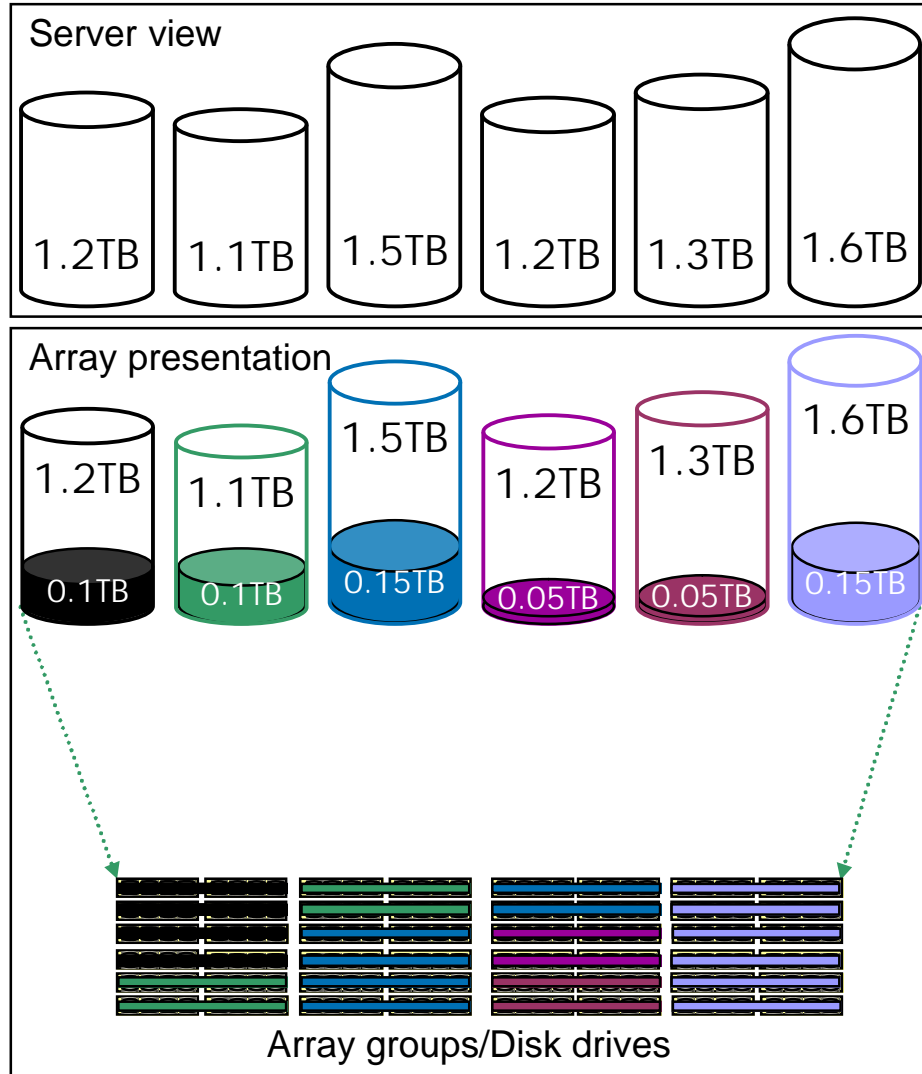
Traditional

OS visible 7.9TB
(Projected requirements)

7.9TB physically
provisioned
capacity

0.6TB of data
actually written

Physical capacity
required 7.9TB net



Traditional vs. XP Thin Provisioning

HP THP

OS visible 7.9TB
(Projected requirements)

7.9TB logically
provisioned
capacity
(V-Volumes)

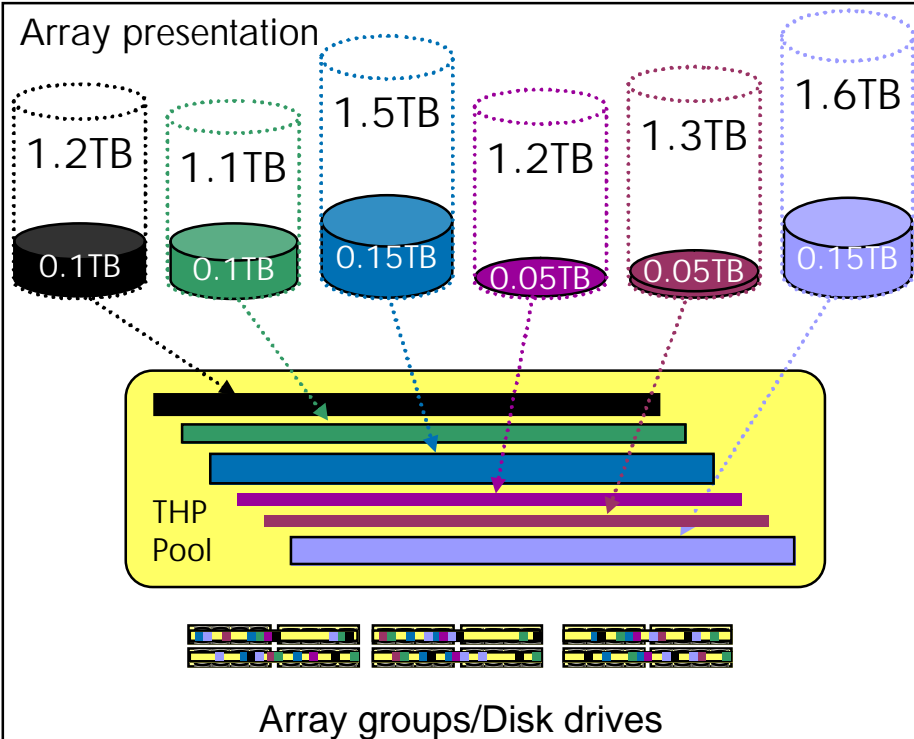
2TB THP pool
0.6TB occupied
1.4TB free

Physical and pool
capacity 2TB net

Server view



Array presentation



Traditional

OS visible 7.9TB
(Projected requirements)

7.9TB physically
provisioned
capacity

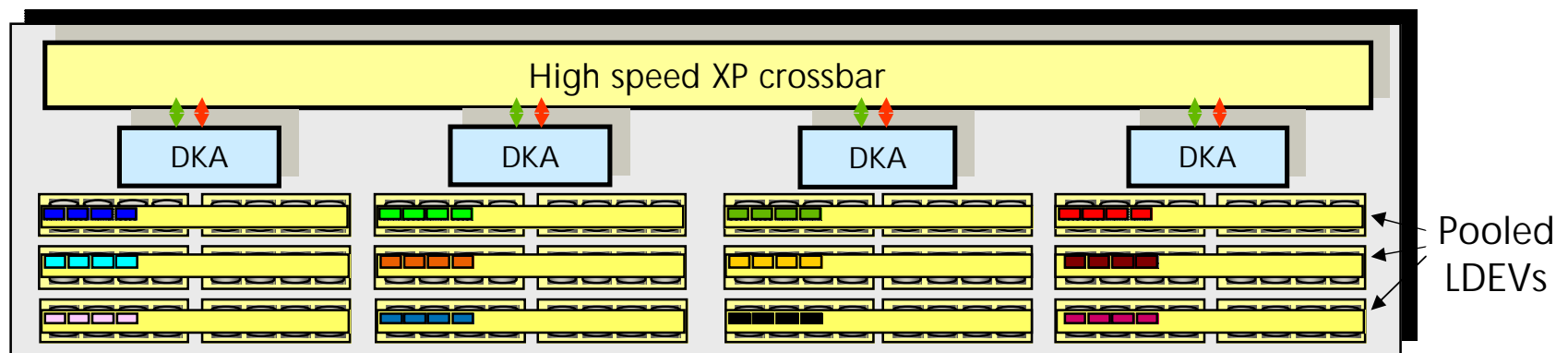
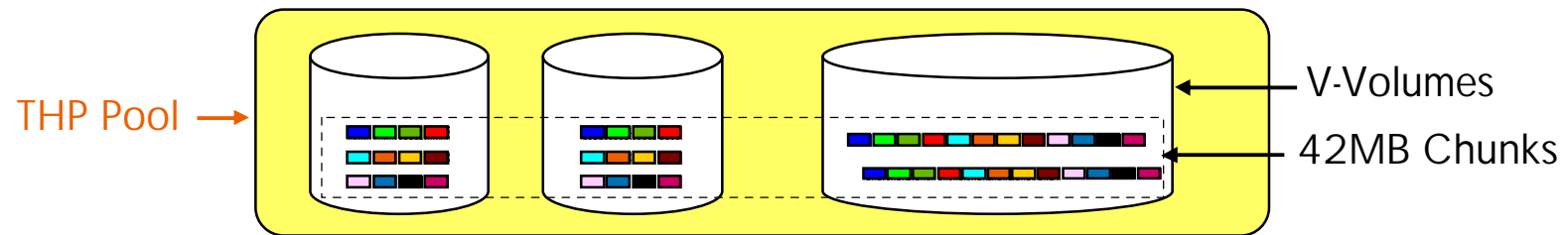
0.6TB of data
actually written

No pool

Physical capacity
required 7.9TB net

THP Performance optimization

- Data is written to the THP pool in 42MB chunks
- The 42MB chunks are distributed across all LDEVs in the THP pool
- This will prevent hot-spots and guarantee high single LUN performance
- New LDEVs can be added to the pool transparently



XP24000

HP Thin Provisioning Specs and Rules

# of THP Pools	1 to 32
# of LDEV per THP Pool	1 to 256
THP LDEV sizes	8GB to 2TB
# of V-Volumes per THP Pool	1 to 4096
V-Volume sizes	48MB to 2TB
# of V-Volumes per XP24000	1 to 8192
Max total THP Pool capacity	1.1PB
Max total V-Volume capacity	1.1PB
THP chunk size	42MB fix
Shared Memory requirement	2GB dedicated

- LDEVs can be dynamically added into the THP Pool, but cannot be removed
- THP Pool & Snapshot Pools cannot be shared