

XP24000 RAID Types

	RAID 1 2D+2D	RAID 1 4D+4D	RAID 5 3D+1P	RAID 5 7D+1P	RAID 5 14D+2P	RAID 5 28D+4P	RAID 6 6D+2P																																																				
	<div style="border: 1px solid black; padding: 5px;"> Data1 Data2 Mirror1 Mirror2 </div>	<div style="border: 1px solid black; padding: 5px;"> Data1 Data2 Data3 Data4 Mirror1 Mirror2 Mirror3 Mirror4 </div>	<div style="border: 1px solid black; padding: 5px;"> Data1 Data2 Data3 Parity </div>	<div style="border: 1px solid black; padding: 5px;"> Data Data Data Data Data Data Data Parity </div>	<div style="border: 1px solid black; padding: 5px;"> <table border="1" style="width: 100%; text-align: center;"> <tr><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td></tr> <tr><td>P</td><td>P</td></tr> </table> </div>	D	D	D	D	D	D	D	D	D	D	D	D	D	D	P	P	<div style="border: 1px solid black; padding: 5px;"> <table border="1" style="width: 100%; text-align: center;"> <tr><td>D</td><td>D</td><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td><td>D</td><td>D</td></tr> <tr><td>D</td><td>D</td><td>D</td><td>D</td></tr> <tr><td>P</td><td>P</td><td>P</td><td>P</td></tr> </table> </div>	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	P	P	P	P	<div style="border: 1px solid black; padding: 5px;"> Data Data Data Data Data Data Parity P Parity Q </div>
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Capacity Efficiency	50%	50%	75%	87.5%	87.5%	87.5%	75%																																																				
Relative LDEV Performance*	1	2	1	1.8	3.2	5.9	1.2																																																				
Write Performance	2x Write	2x Write	2x Read Modify 2x Write	2x Read Modify 2x Write	2x Read Modify 2x Write	2x Read Modify 2x Write	3x Read Modify 3x Write																																																				
Fault Tolerance	High 1 of 4 +1 of 2	High 1 of 8 +1 of 6	Med to High 1 of 4	Medium 1 of 8	Medium 1 of 8	Medium 1 of 8	Highest 2 of 8																																																				

*IO pattern: 8k, random, 60/40 RW mix

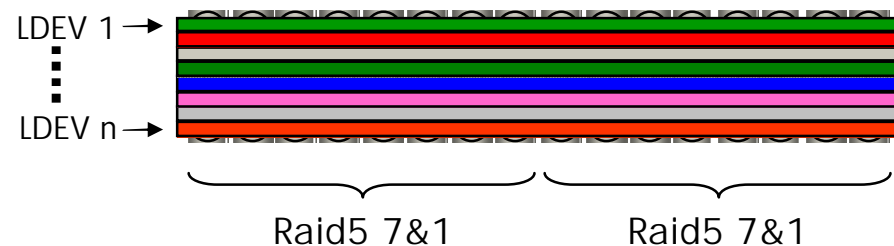
LDEV Interleaving (Striping)

- 2 or 4 7D+1D RAID5 Groups can be bonded to build larger LDEVs that stripe across 16 or even 32 disks to increase single LDEV/LUN performance.
- Use interleaving when your server/OS does not provide a decent volume manager with striping capabilities

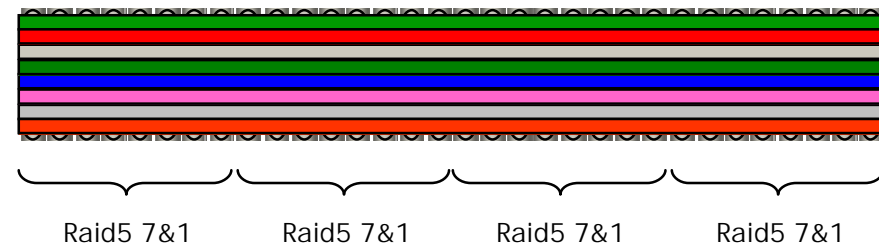
Candidates are:

- Windows
- Linux
- Netware
- Tru64 without LSM

Read and write performance of a single LDEV/LUN on a 14&2 disk group will nearly double compared to a 7&1 group

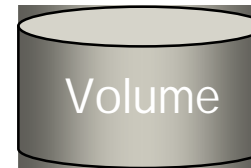


Read and write performance of a single LDEV/LUN on a 28&4 disk group will nearly quadruple compared to a 7&1 group

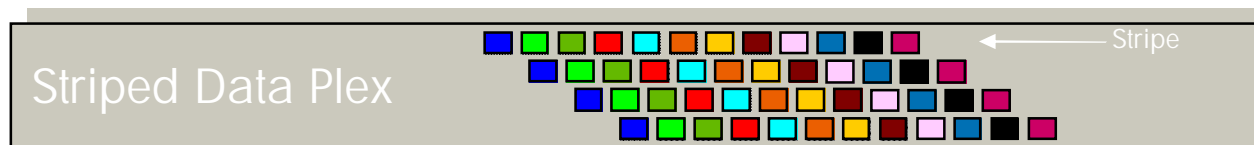


Optimal XP Backend IO Distribution

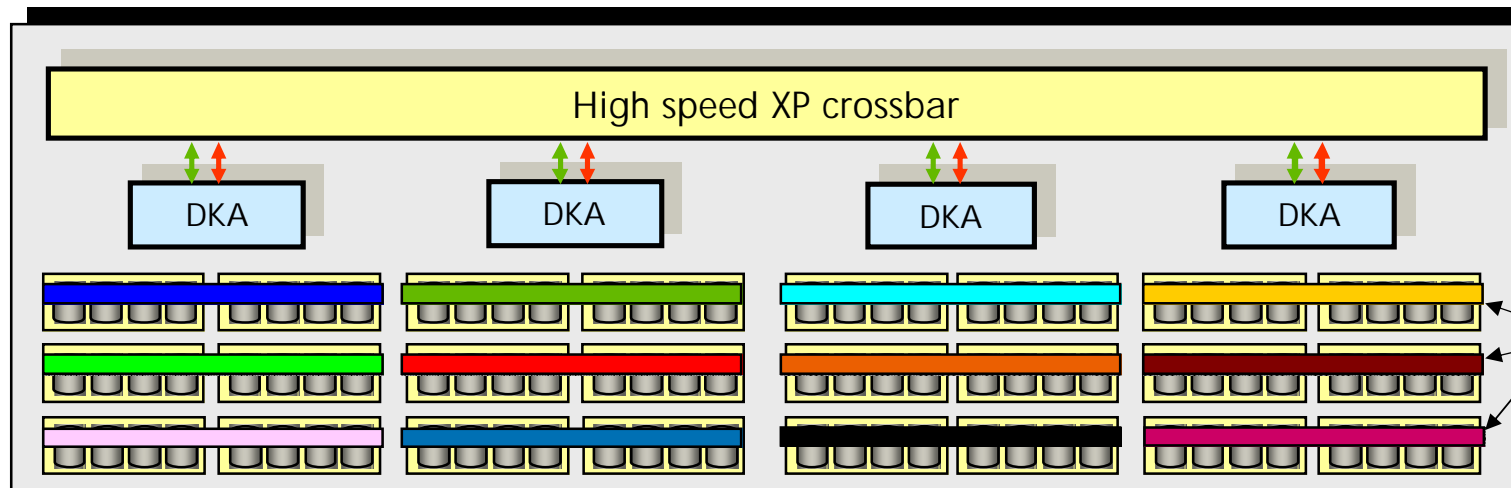
Optimal IO distribution in the backend of an XP can be achieved by the use of Volume Manager based striping (LVM, VxVM etc.)



OS View



Volume Manager



XP

Raid5 or Raid1 LDEVs

