

Emulex HBAs

Fibre Channel Host Bus Adapters

Emulex HBAs provide the high performance, flexibility, and scalability needed in enterprise and mid-range storage area networks (SANs).

Emulex HBAs feature driver compatibility across the entire product line, dramatically simplifying SAN management complexity and enabling seamless upgrades to new generations of products.

Emulex HBAs are firmware-upgradeable, future-proofing customer investments and eliminating 'forklift' upgrades.

Emulex HBAs enable simplified management, investment protection, and reduced downtime. This adds up to lower total cost of ownership.

Key Emulex HBA Advantages

- Backward compatible drivers simplify SAN management
- Driver independent firmware upgrades protect HBA investment
- Specialized SAN hardware on HBA for SAN performance
- Configuration utility simplifies installation and ensures robustness
- Emulex HBAs use the same qualified driver version

Questions & Answers

SANs using Emulex HBAs • 27% Greater Productivity

Q: Do you expect SANs to improve productivity?

A: Emulex can improve IT personnel productivity by reducing time spent on setup and installation (IDC*)

SANs using Emulex HBAs • 24% More Efficient

Q: Do you expect SANs to reduce storage management costs?

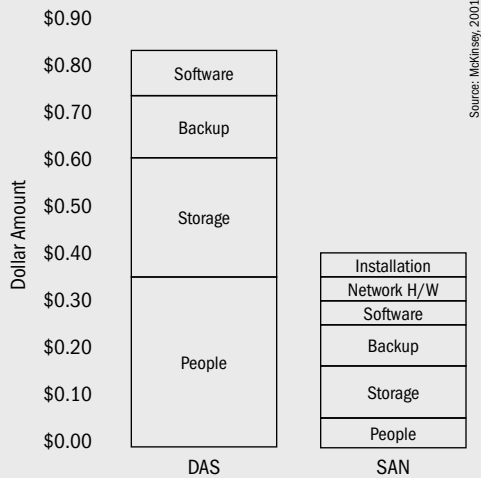
A: Emulex can reduce management costs by requiring less time to manage after setup (IDC*).

SANs using Emulex HBAs • 49.2 Hours Less Downtime per Year

Q: Do you expect SANs to improve system availability?

A: Emulex can improve system availability by requiring less downtime for upgrades and maintenance (IDC*)

SANs Cut Storage Costs In Half



SANs Cut Storage Costs in Half

SANs reduce the people cost of management 66-92%

(McKinsey, Gartner, Enterprise Storage)

SANs can improve disk utilization up to 85%

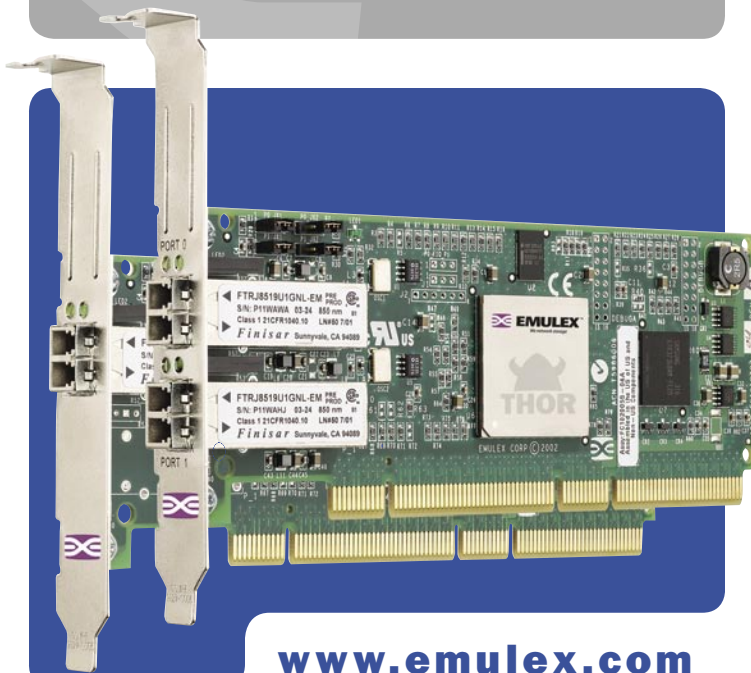
(McKinsey)

- easier to re-allocate or re-provision centralized storage

SANs will reduce backup costs

- number of tape drives reduced 50-75%

(McKinsey)



Overview of the Emulex LightPulse® Fibre Channel Host Bus Adapters

Feature	Description	PCI Express HBAs					PCI-X 2.0 HBAs			PCI-X/PCI HBAs				cPCI		SBus
		LPe11000	LPe11002	LPe1150	LP10000ExDC	LP1050Ex	LP11000	LP11002	LP1150	LP10000	LP10000DC	LP1050	LP1050DC	LP101	LP9002C	LP9002S
Link Speed	2Gb/s	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	4Gb/s	✓	✓	✓			✓	✓	✓							
Dual Ports	Two Fibre Channel ports on one card		✓		✓			✓		✓		✓				
PCIe Support	2.5Gb/s - Lane	✓	✓	✓	✓	✓										
PCI-X Support	PCI-X Compliance						2.0	2.0	2.0	1.0a	1.0a	1.0a	1.0a	1.0a		
	66MHz/64-bit						✓	✓	✓	✓	✓	✓	✓	✓		
	100MHz/64-bit						✓	✓	✓	✓	✓	✓	✓	✓		
	133MHz/64-bit						✓	✓	✓	✓	✓	✓	✓	✓		
	266MHz/64-bit						✓	✓	✓	✓	✓	✓	✓	✓		
PCI Support	PCI Compliance						3.0	3.0	3.0	2.3	2.3	2.3	2.3	2.3		
	33MHz/32-bit						✓	✓	✓	✓	✓	✓	✓	✓		
	33MHz/64-bit						✓	✓	✓	✓	✓	✓	✓	✓		
	66MHz/64-bit						✓	✓	✓	✓	✓	✓	✓	✓		
SBus Support	25MHz															✓
Common Driver by OS	Windows (NT, 2000, 2003)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	Linux	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	NetWare	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	Solaris	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	HP-UX	✓	✓				✓	✓	✓	✓	✓				✓	✓
Custom Drivers		✓			✓	✓	✓		✓	✓						
FC-Tape	(FCP-2 Support)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
All Topologies	Auto detect - P to P; FC-AL; Fabric	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
SCSI & IP Support	Enables Storage management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fibre Channel Fabric Boot	x86 Boot BIOS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	EFI Boot	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	Open Boot	✓	✓		✓		✓	✓		✓	✓			✓	✓	✓
Data Buffers (per channel)	High performance over distance	64	16	16	64	16	64	16	16	64	64	16	16	8	64	16
Hardware Context Cache	High performance in switched SANs	2K	1K	1K	2K	1K	2K	1K	1K	2K	2K	1K	1K	128	2K	1K
Common Mgmt. Interface (FC-MI)	Industry-standard interface across all operating system environments	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Firmware-upgradeable	Upgrade features on installed base	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Firmware Ind. Drivers	Update F/W or drivers separately simplifies SAN management	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
End-to-end Parity	High data integrity	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
HBA Power Voltage Required	+3.3V DC	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	+5V DC						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	+12V DC	✓	✓	✓	✓	✓										✓
PCI Signaling	3.3v						✓	✓	✓							
	3.3v, 5v tolerant (keyed universal)									✓	✓	✓	✓	✓		SBus
PCI Form Factor	Short length (standard height)				✓	✓									cPCI	SBus
	Low profile (MD2) compatible	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓		
Media Interface	LC multi-mode/short wave	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LC single-mode/long wave														✓	
	intelligent diagnostics	✓	✓		✓		✓	✓		✓	✓					

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