

Server Blade Conference, Storage Issues Track

Presentation by:
Joe Teolis
Emulex

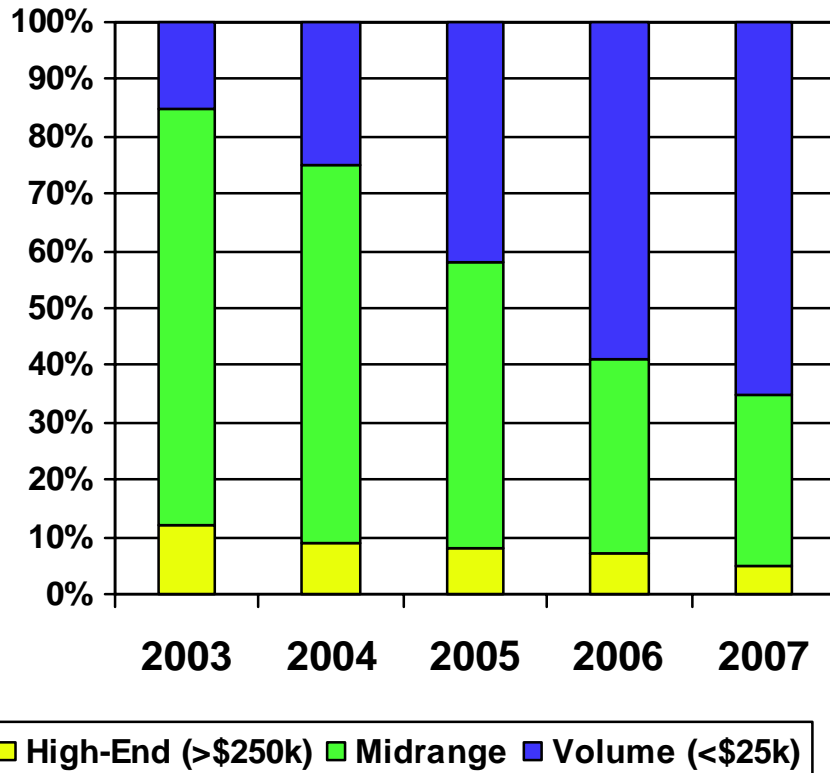
Market Dynamics Driving Storage Connectivity

- **Fibre Channel (FC) is the de facto standard for Storage Networks (SANs)**
- **Server Blades require block level storage**
- **Volume and Blade Server adoption of Fibre Channel fueled by lower cost and ease of use automation**
 - Influence of SMB needs
 - Blade requirements for Installation and Management
- **FC is the de facto standard for block level storage in Blade environments**
 - FC is proven/stable technology
 - Over 30% penetration today
 - Blade Servers grow beyond 25% of volume server market
 - FC is best suited to address block level

Where are the HBAs Going?

A Server-based Perspective

HBA Ports by Server Segments



■ 2003:

- Volume server segment represented 80% of server unit shipments
- 2% of volume servers are SAN attached, but this segment accounted for 15% of FC HBA units

■ 2005:

- 8% of volume servers are SAN attached, accounting for 42% of HBA unit sales

■ 2006:

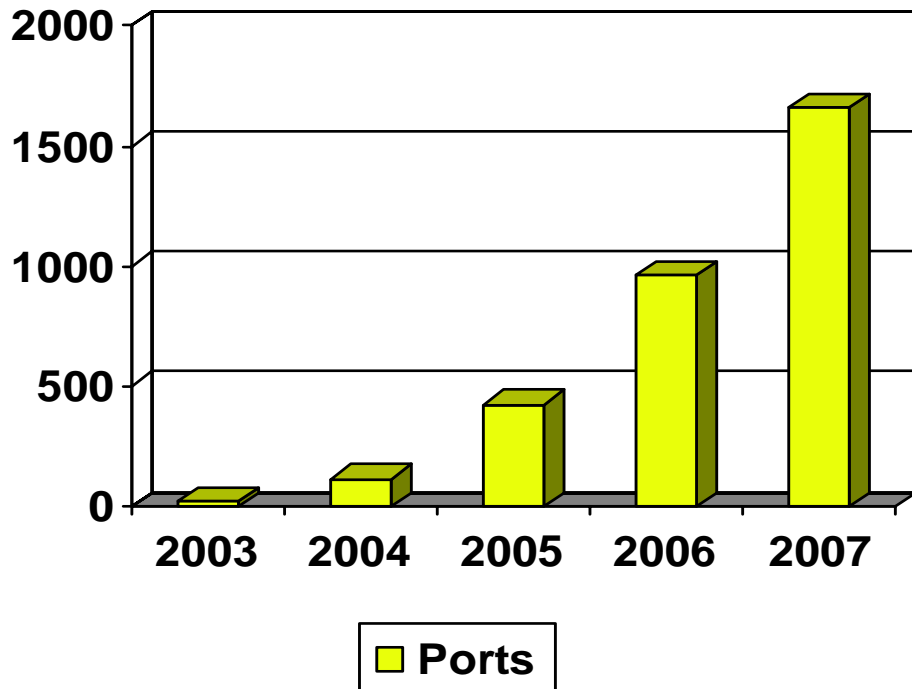
- Estimated that 15% of Servers will be SAN attached

■ Volume Server SAN Connections:

- FC Blades
- FC HBAs

Blade Server Opportunity

Blade Server Fibre Channel Port
Forecast
(Thousands of units)

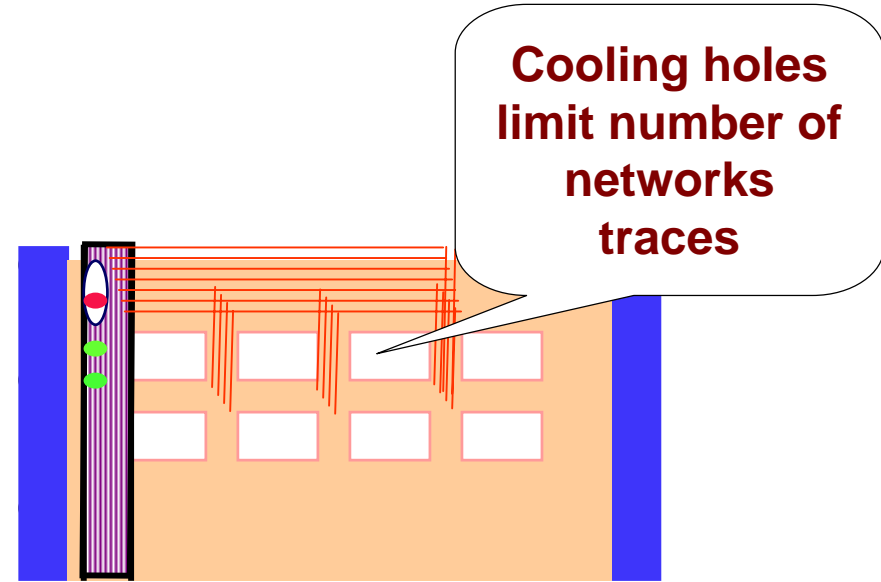
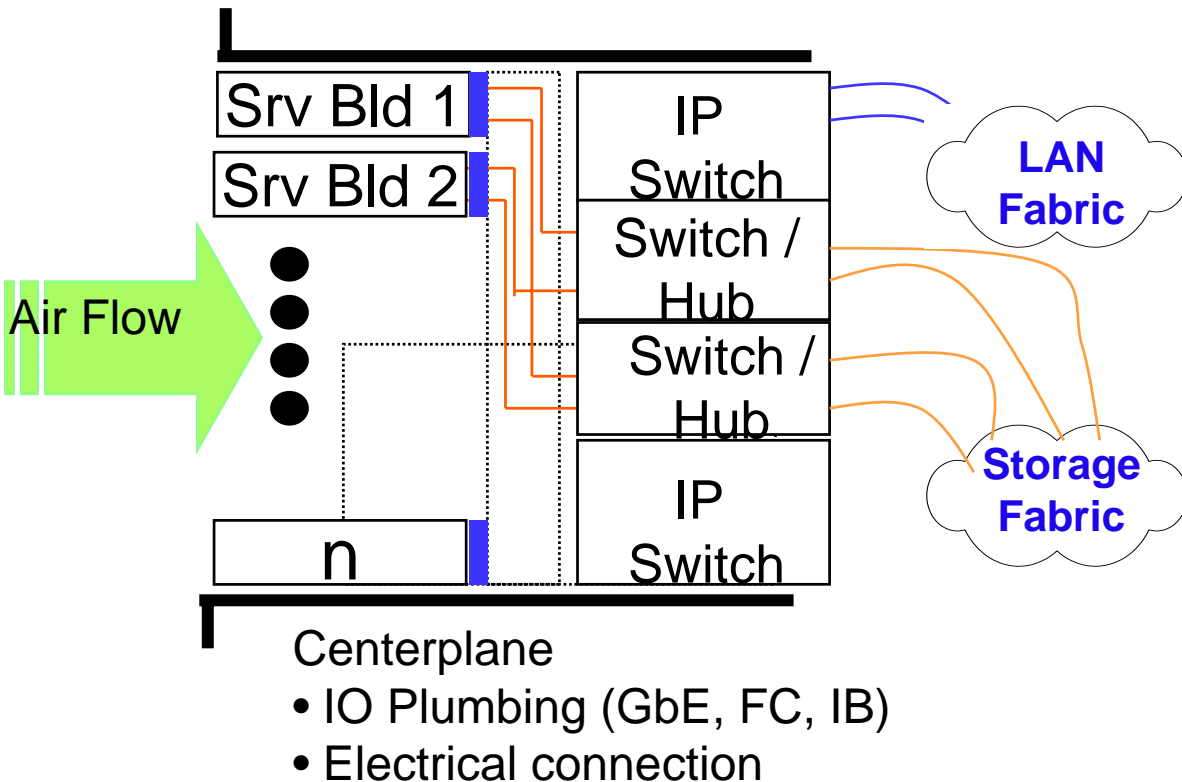


Source: IDC

- **Blades will represent >25% of server unit shipments by '08 (IDC)**
 - 30%+ expected to use Fibre Channel
 - HBA blades will account for almost 50% of the "Volume Server" HBAs

Blade Architecture

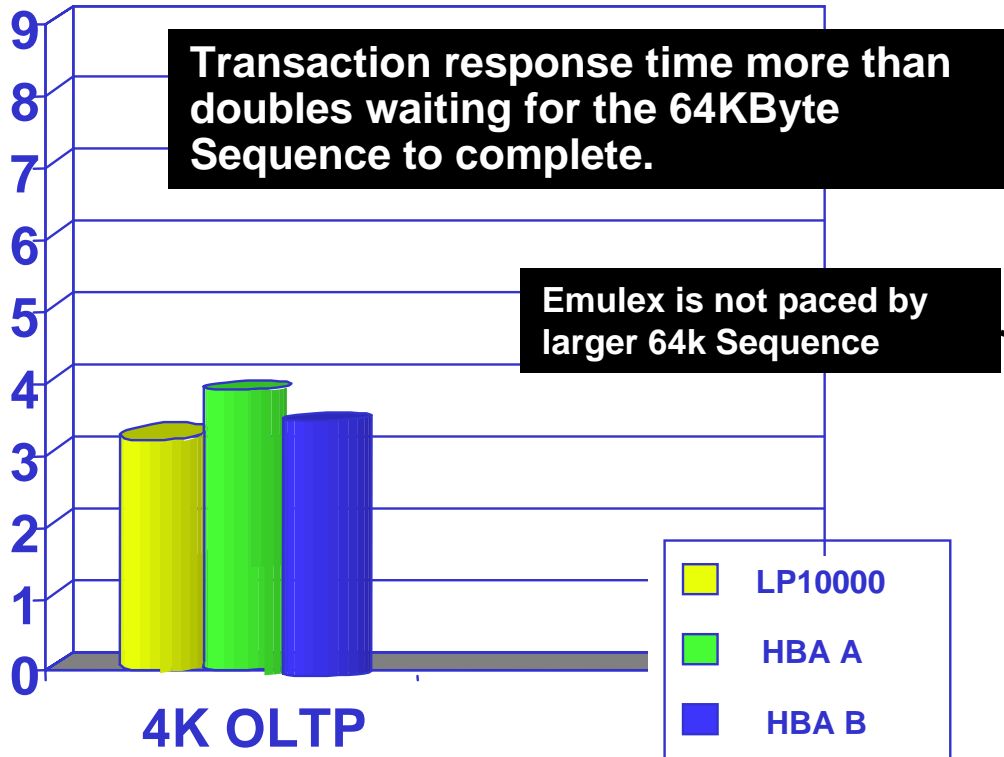
IO on Centerplane aggregated with Hubs or Switches



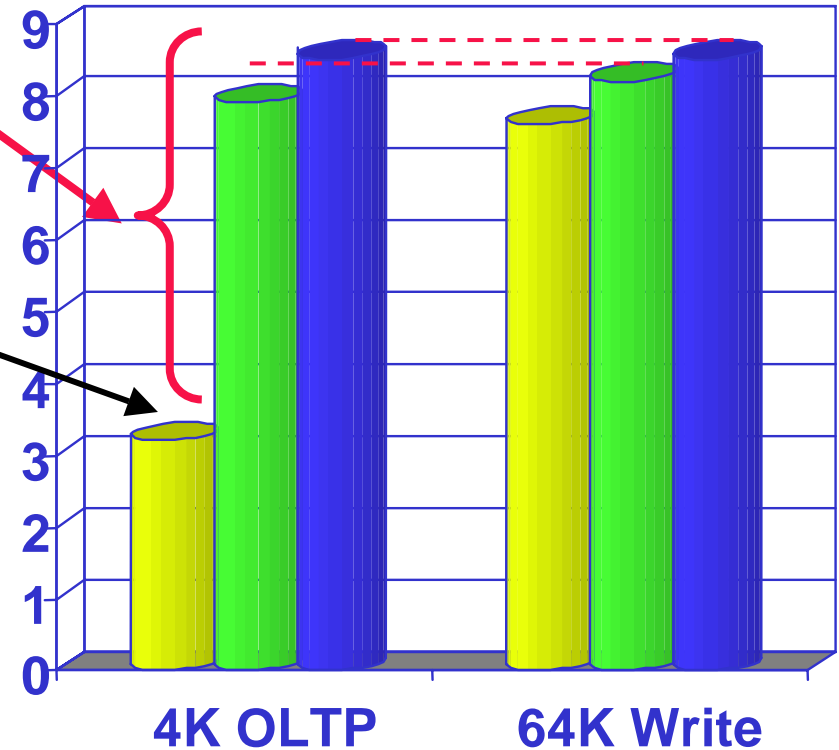
- Higher center-plane bandwidth per trace
- Higher aggregated IO BW
- Mixed workloads
 - Disk and Tape on same HBA
 - Virtualization
 - Multiple application per servers
- Exchange Server

Transaction Only

Response Time (msec)



Mixed Workload



Unlike other HBA that queue at the Sequence level, Emulex frame level queue isn't vulnerable to large IO blocking

Emulex FC IOC Solutions for Server Blades

FC IOC on Server Blade Mezzanine Card

- **Emulex Designs and Manufactures Custom Mezzanine HBAs**
 - LP1005DC-CM2 available for IBM BladeCenter

