

# Server Blade Conference, Storage Issues Track

Presentation by:  
Joe Teolis  
**Emulex**

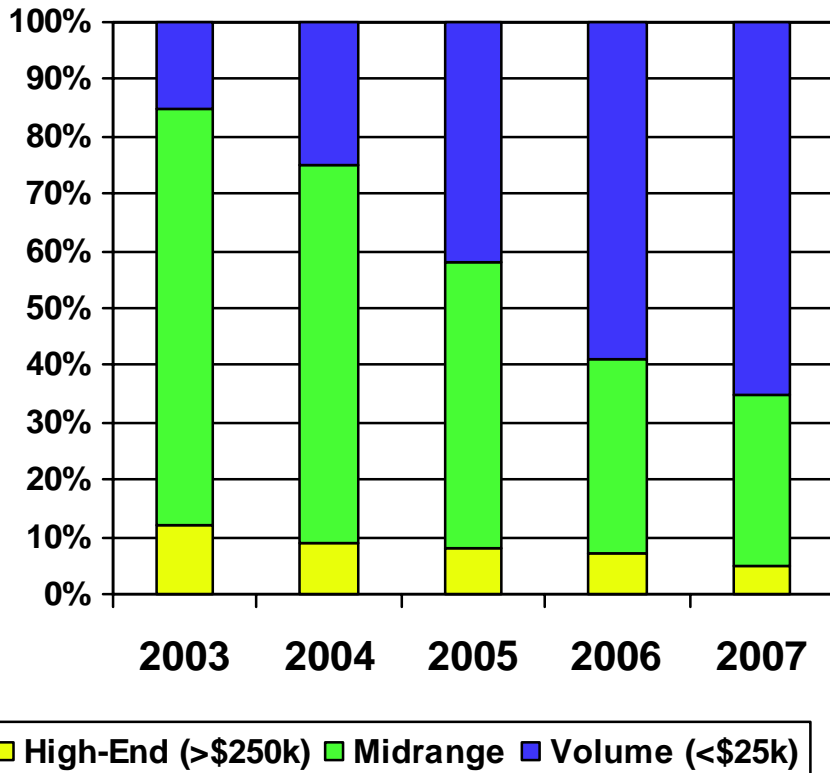
# Market Dynamics Driving Storage Connectivity

- **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:

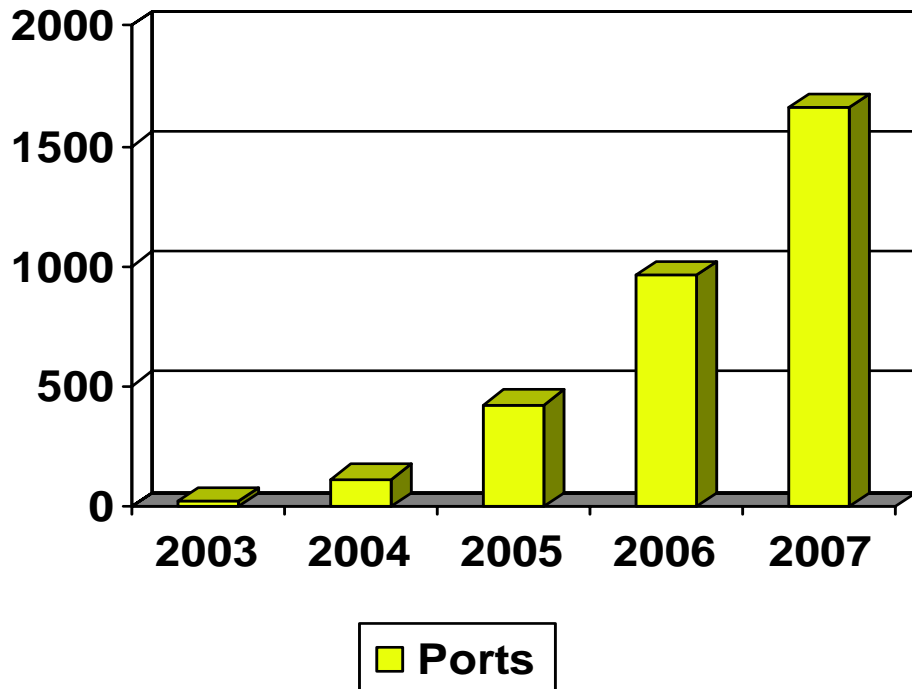
- Estimated that 15% of Servers will be SAN attached

### ■ Volume Server SAN Connections:

- FC Blades
- FC HBAs

# Blade Server Opportunity

Blade Server Fibre Channel Port  
Forecast  
(Thousands of units)

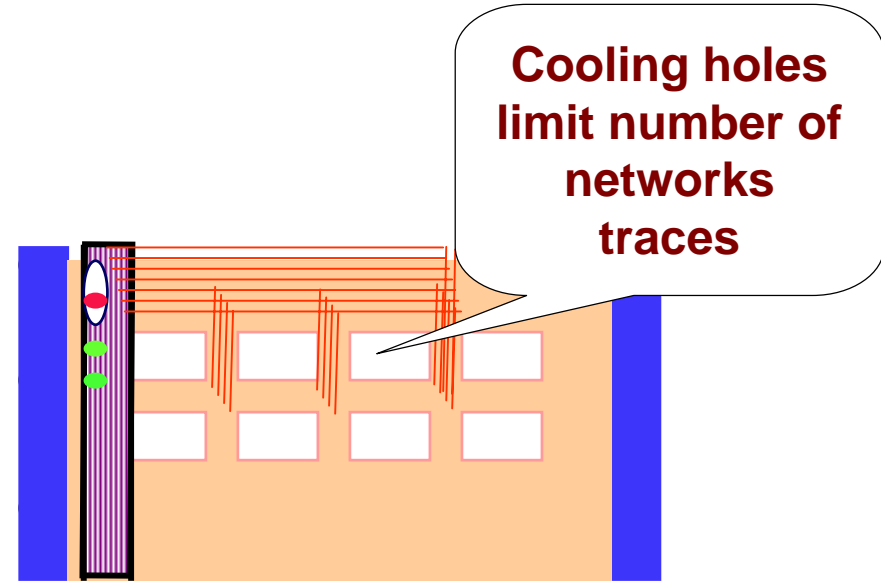
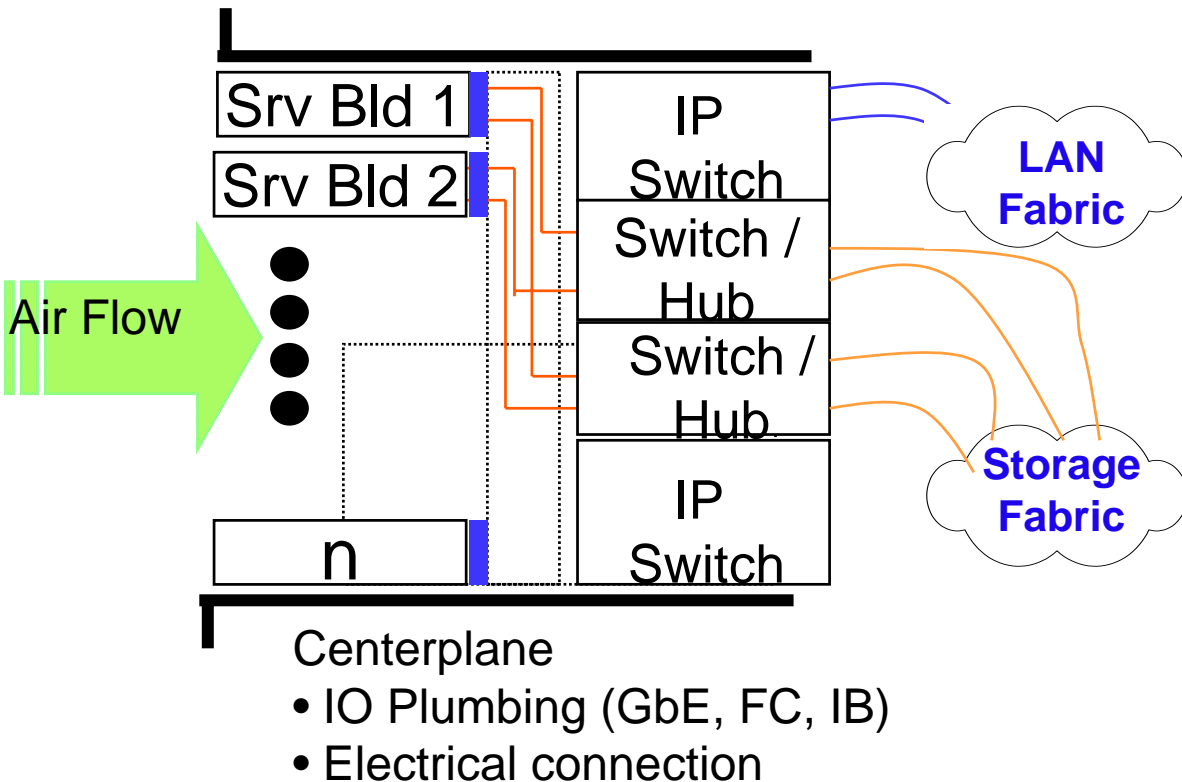


Source: IDC

- **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

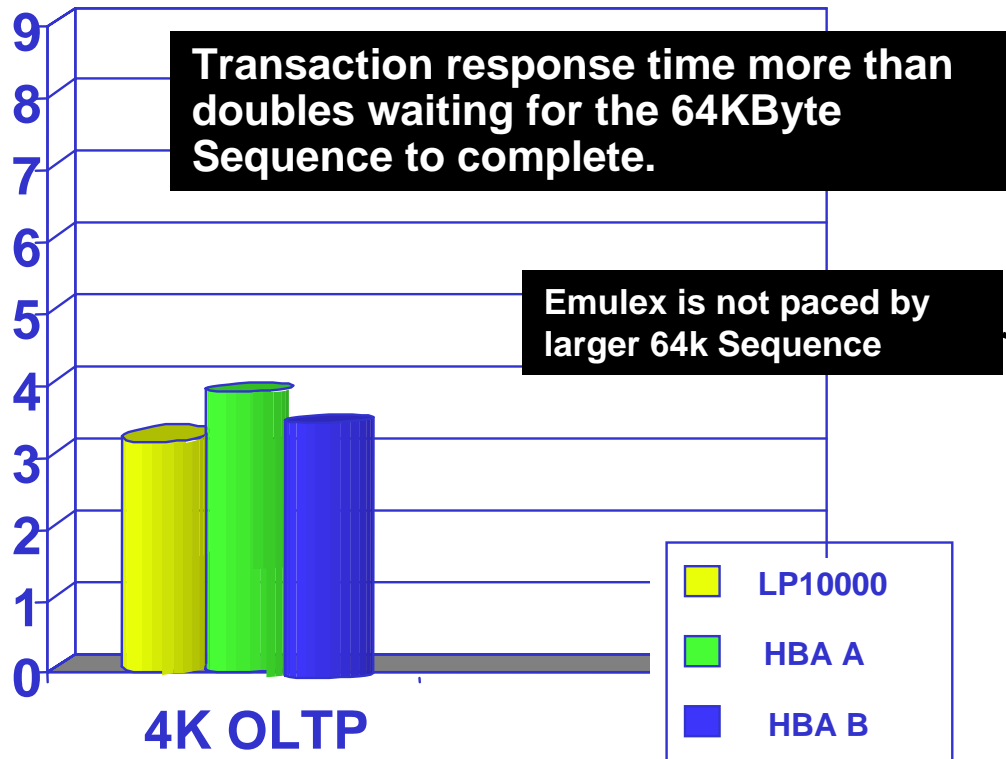
IO on Centerplane aggregated with Hubs or Switches



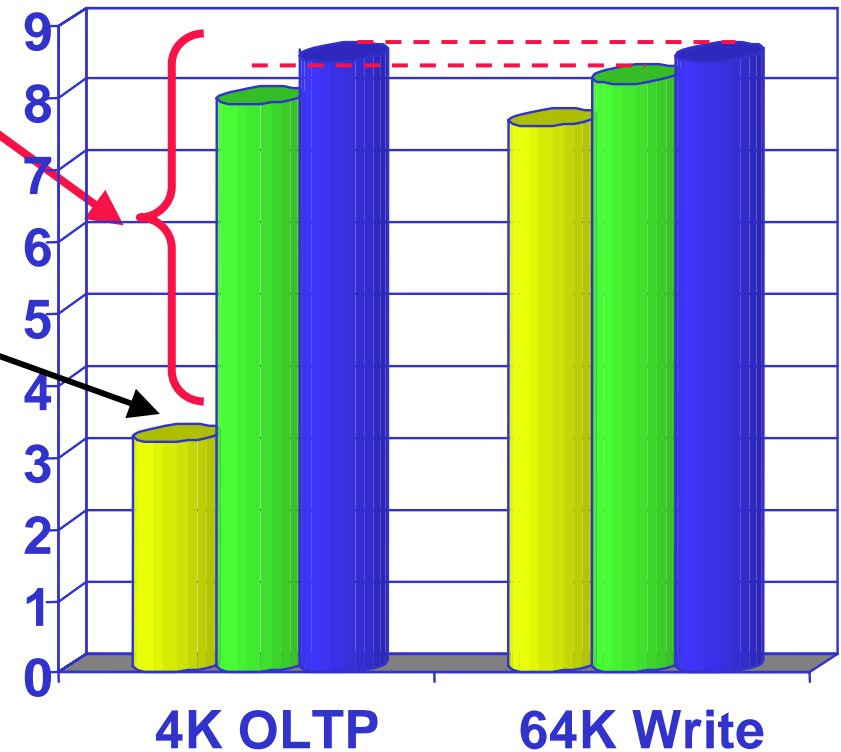
- Higher center-plane bandwidth per trace
- Higher aggregated IO BW
- Mixed workloads
  - Disk and Tape on same HBA
  - Virtualization
    - Multiple application per servers
- Exchange Server

# 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

