

Blade Servers

State of the Industry 2005

Special Industry Keynote

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Your way to profitable technology markets.

- **Markets Drivers/Industry Dynamics**

Blades – An evolution from PC Servers to Supercomputers

Major Applications – Access, HPC, NIC, TP

4 Tiered Computing & Telecom Markets by Environment

Incumbents vs. Startups

- **Market Segments – Mkt.Fcst./Shares/Channels**

Market Forecast, Migrations, Supply Chain, Channels, Price Erosion

- **Industry Issues/Technology Hurdles**

Stds./Midplane, Server Mgmt/DMTF, Fabric Choices

Thermals, IP Acceleration

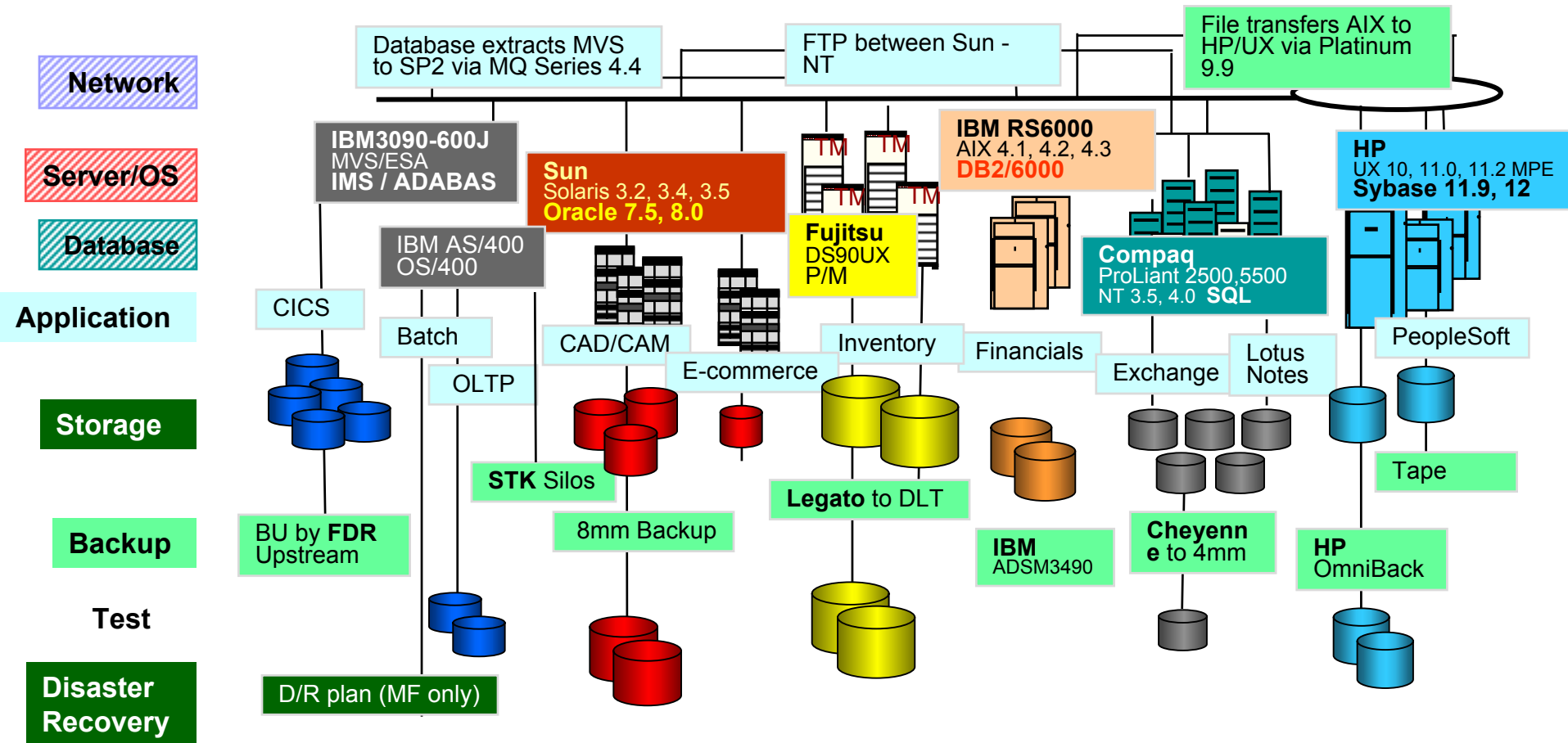
- **Futures Opportunities for Startups**

Complexity Reduction, Data Center Mgmt ,

From Next Gen PCs to Clustered Supercomputers

Interested Venture Capital

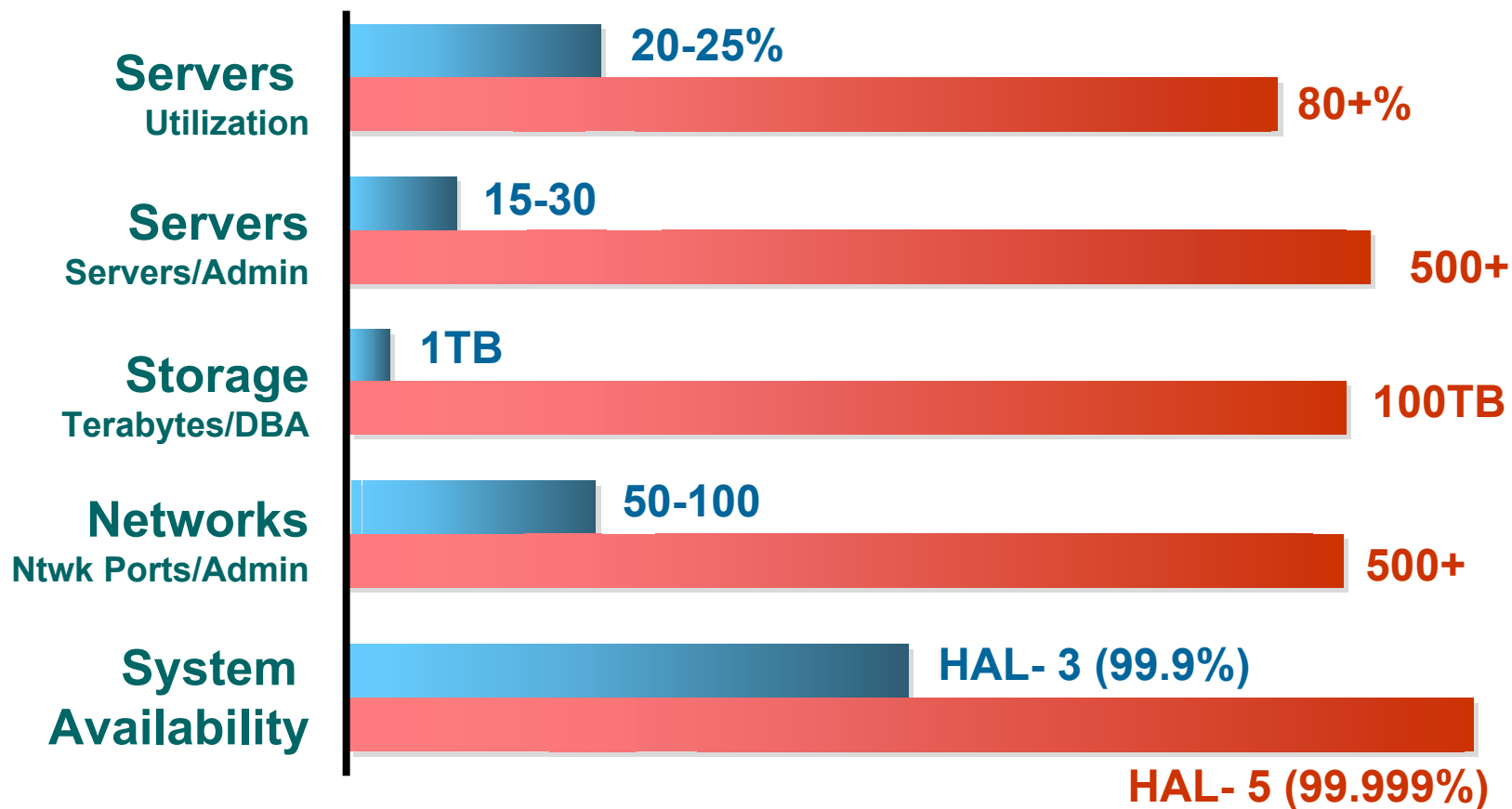
► Chaos in the Enterprise . . .



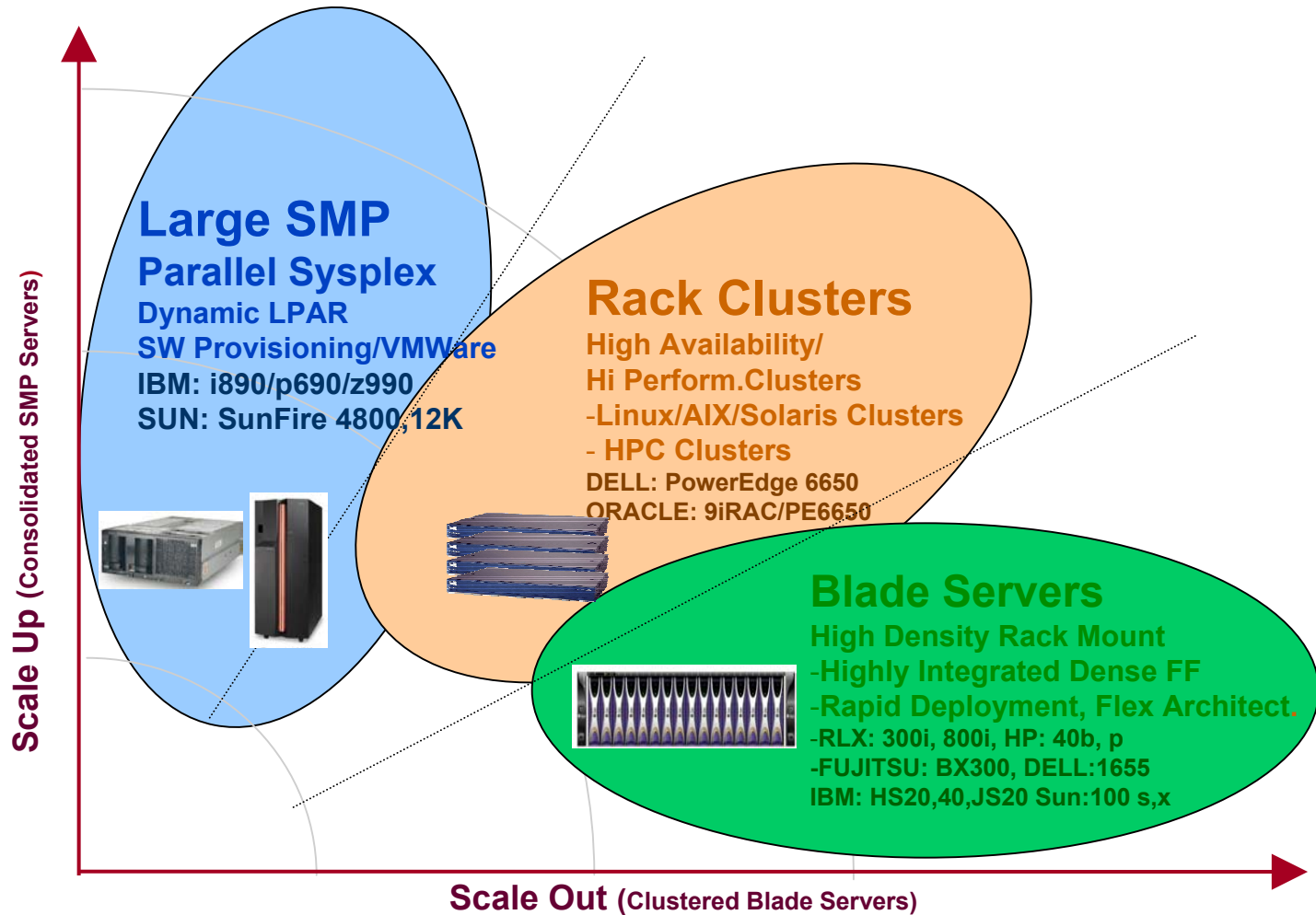
(1) Scales poorly (2) Difficult to manage (3) Reliability is questionable (4) Management costs out of control

► *Market Trends*

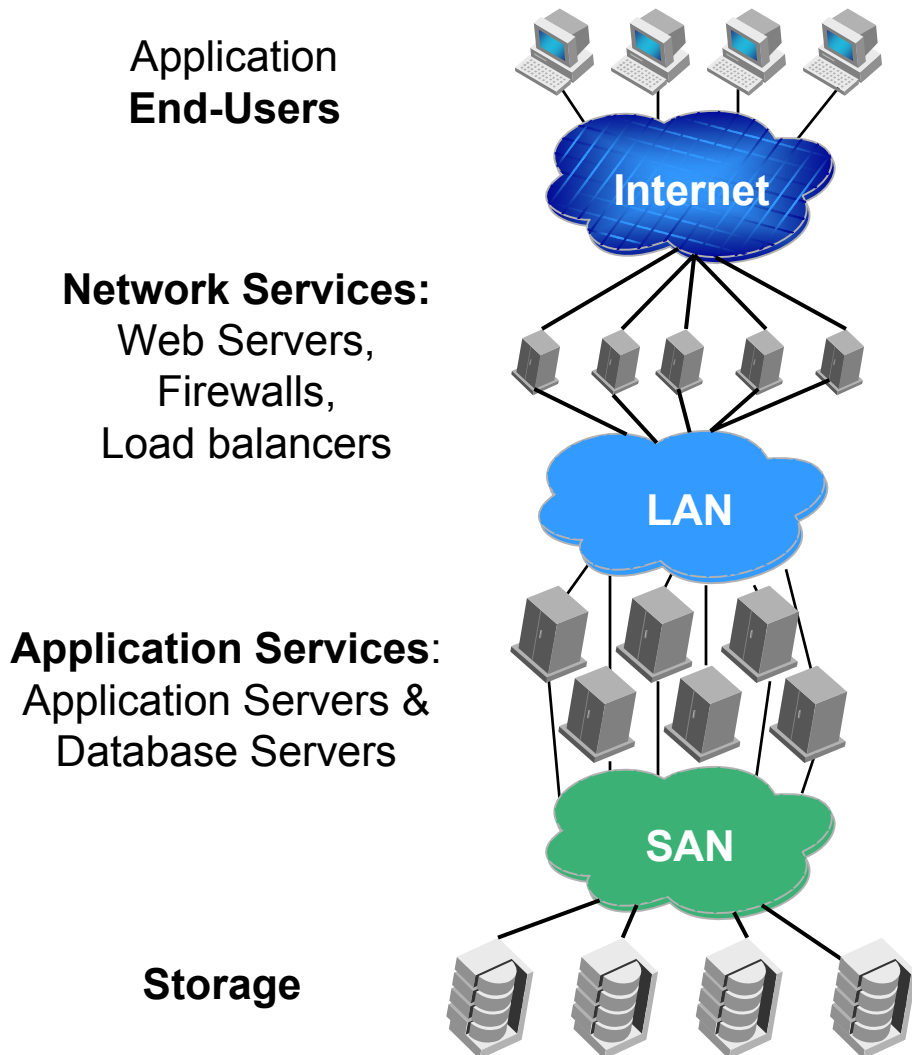
Data Center Automation Targets



► Server Market Segmentation - Platforms

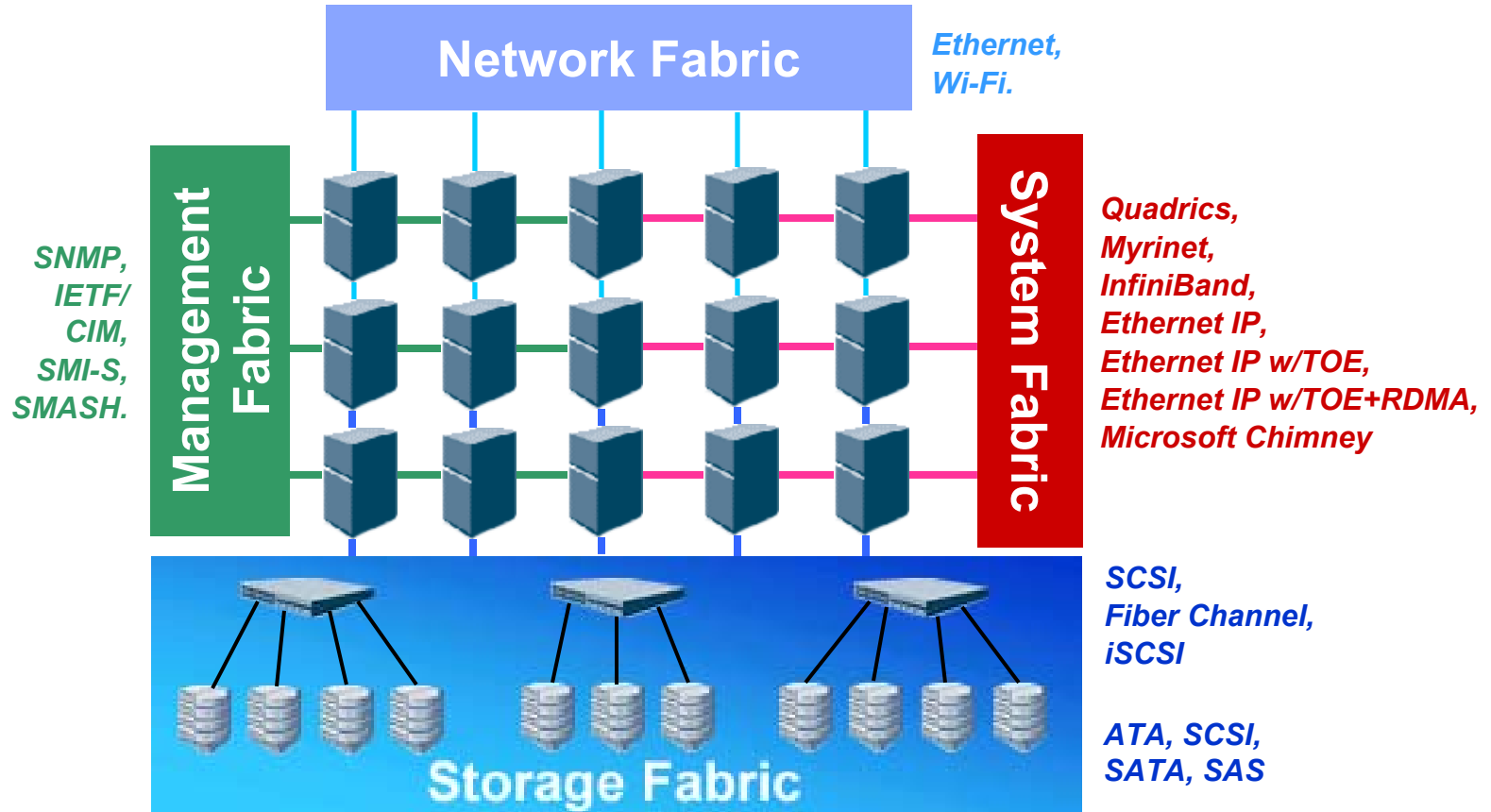


▶ 3 Tier Computing Infrastructure

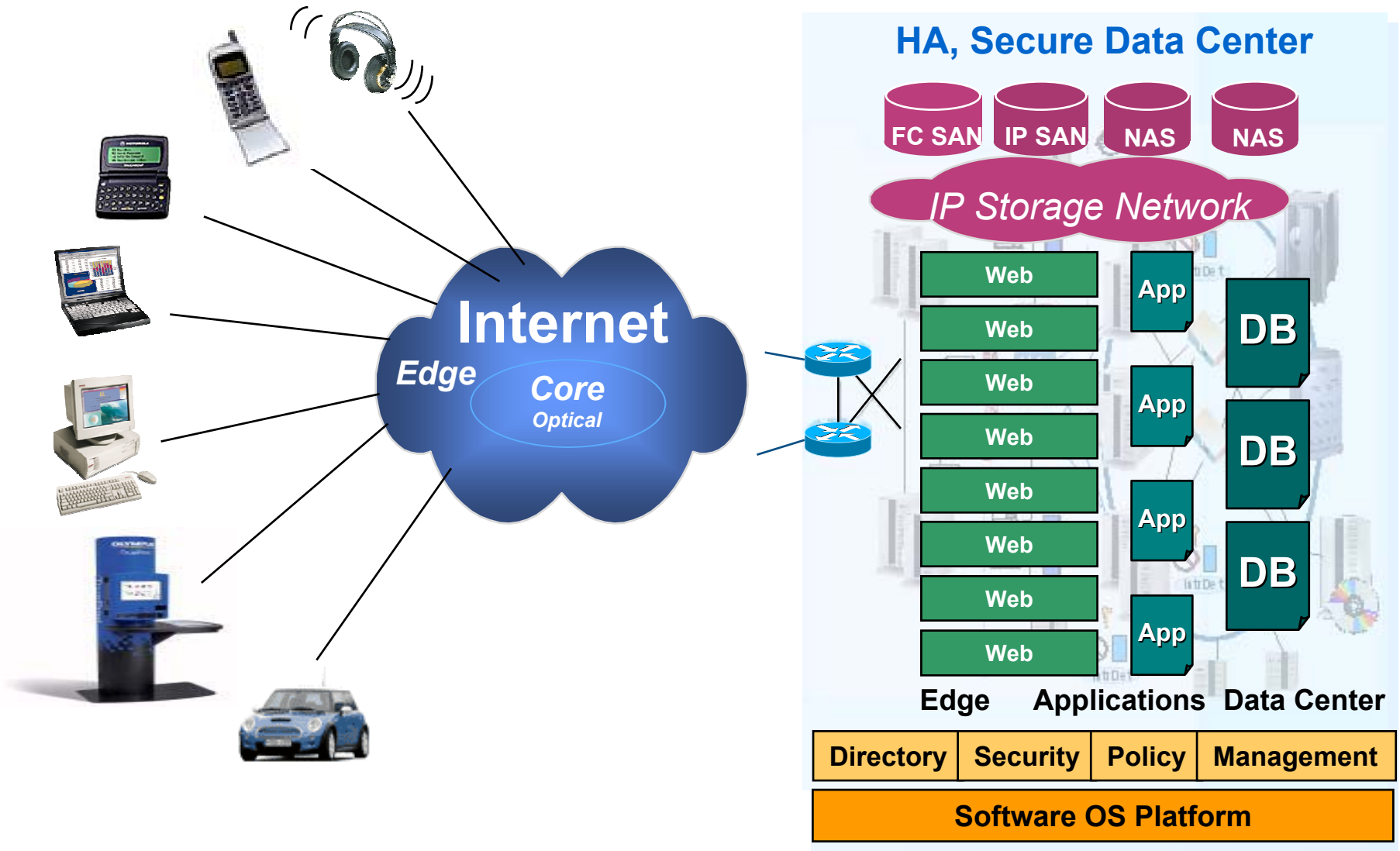


- Uniform and ubiquitous physical Connectivity – “Wire Once”
 - Any user to any server via the Internet
 - Any server to any server via the LAN
 - Any sever to any storage via the SAN
- Dynamic Logical Binding of...
 - ...server network identify
 - ...server OS version
 - ...server application assignment
 - ...application data volumes
- Resulting in
 - Application Mobility across servers
 - Data mobility across storage

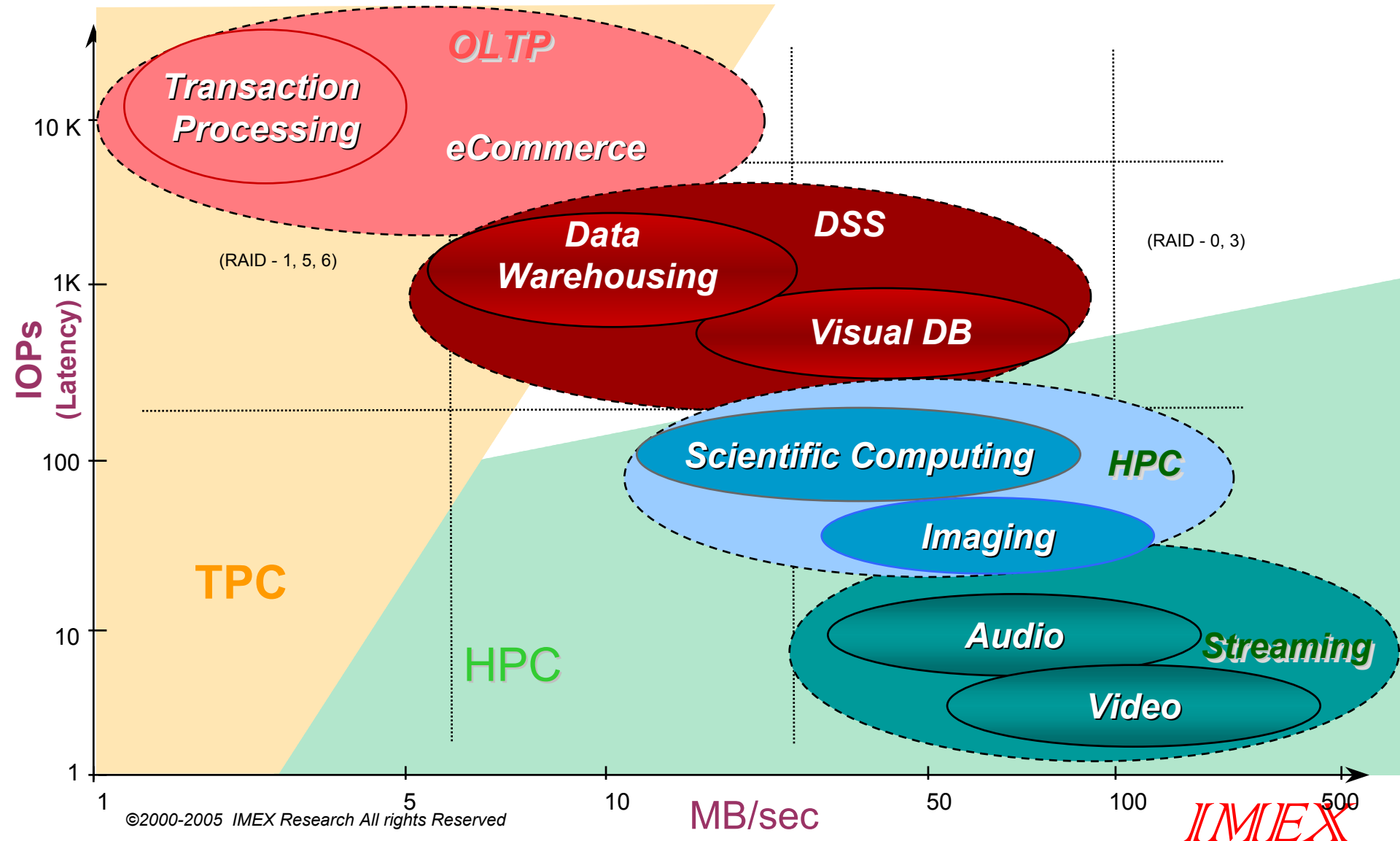
► NexGen Architecture



► End to End Internet



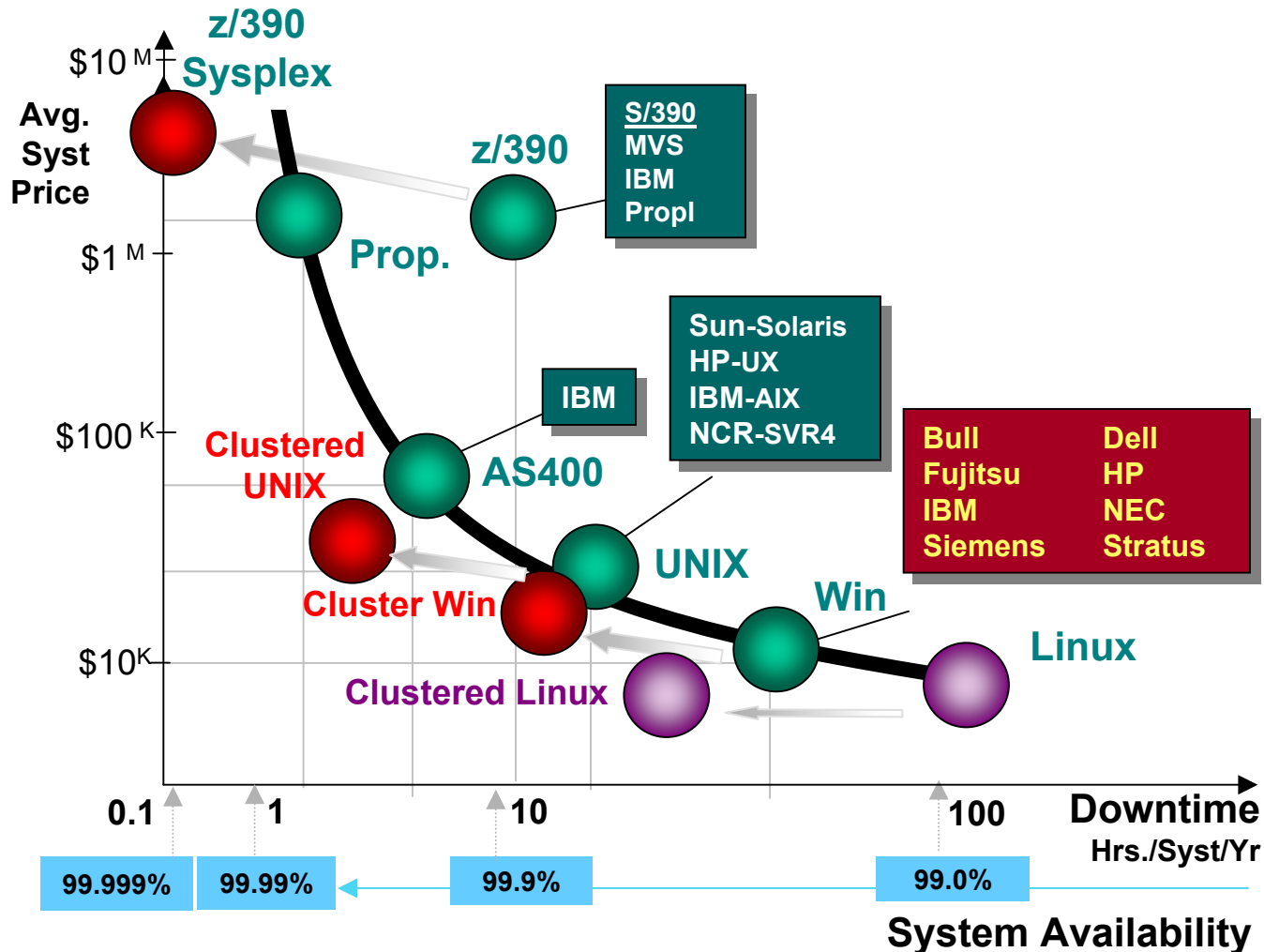
Market Segments by Applications



*IOs per second for a required response time (ms)

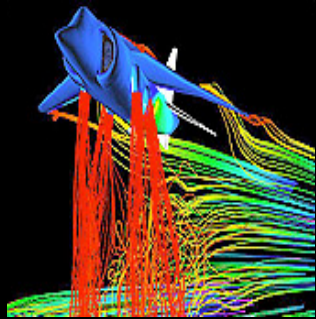
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► TPC's priority - High Availability & Syst Cost



HPC: Going from Academia to Wall St to Hollywood

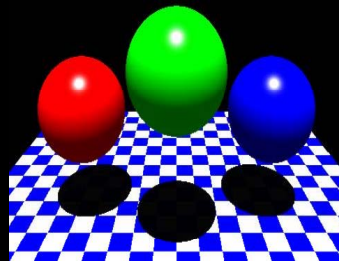
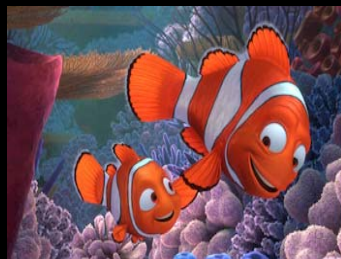
High Performance Computing



▶ 100+ Teraflops

▶ Throughput = 100 GB/s

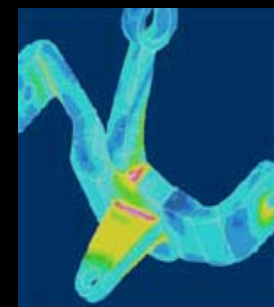
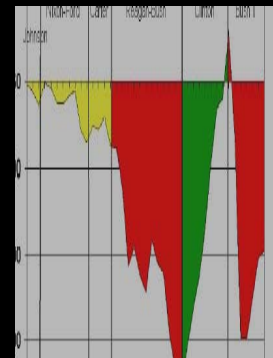
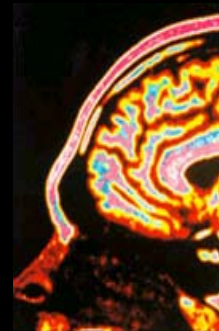
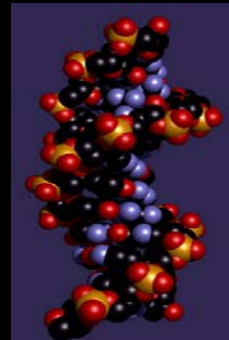
Commercial Visualization



▶ Rendering (Texture & Polygons)

▶ Throughput = 1.2 GB/s

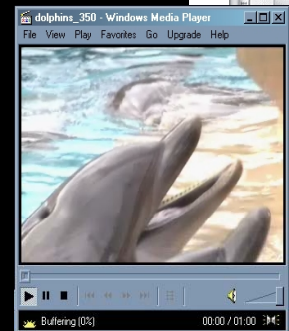
Bioinformatics Decision-Support Systems



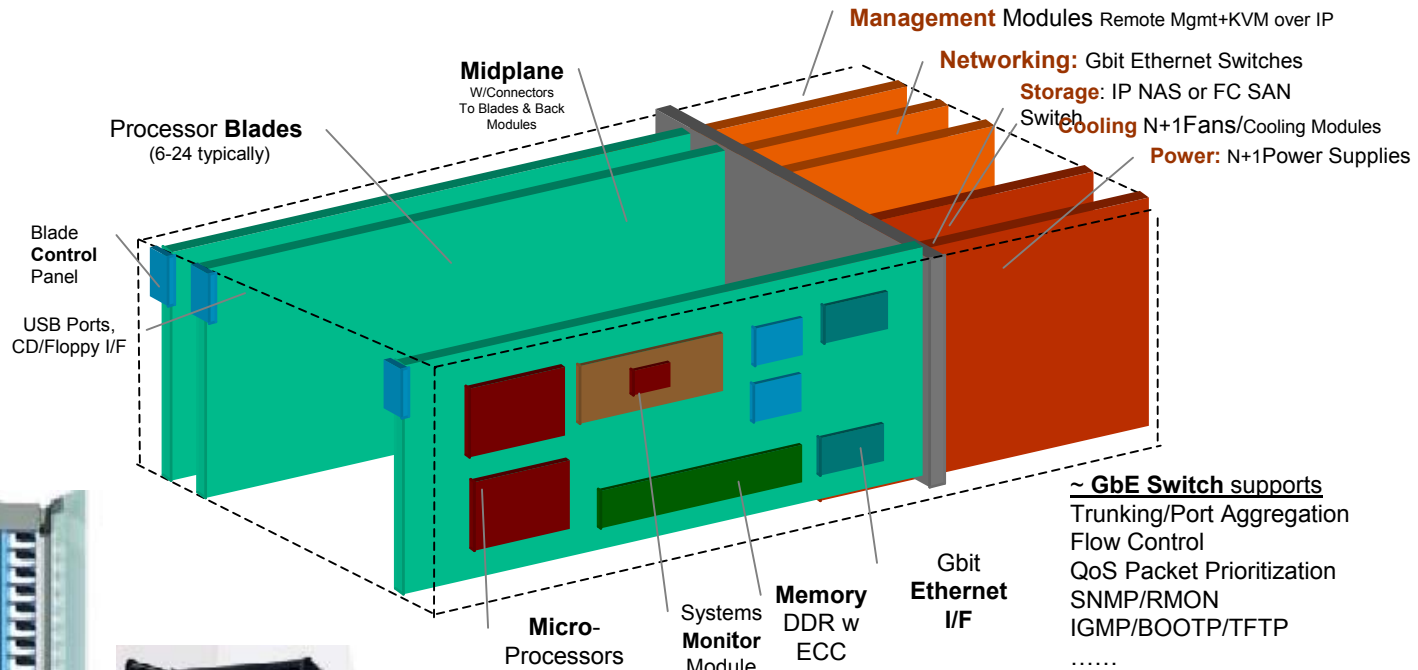
▶ Data rate & capacity

▶ Throughput : DSL/Cable

Entertainment Audio/Video OnDemand



Blades Servers - Infrastructure



© 2003 Source: IMEX Research

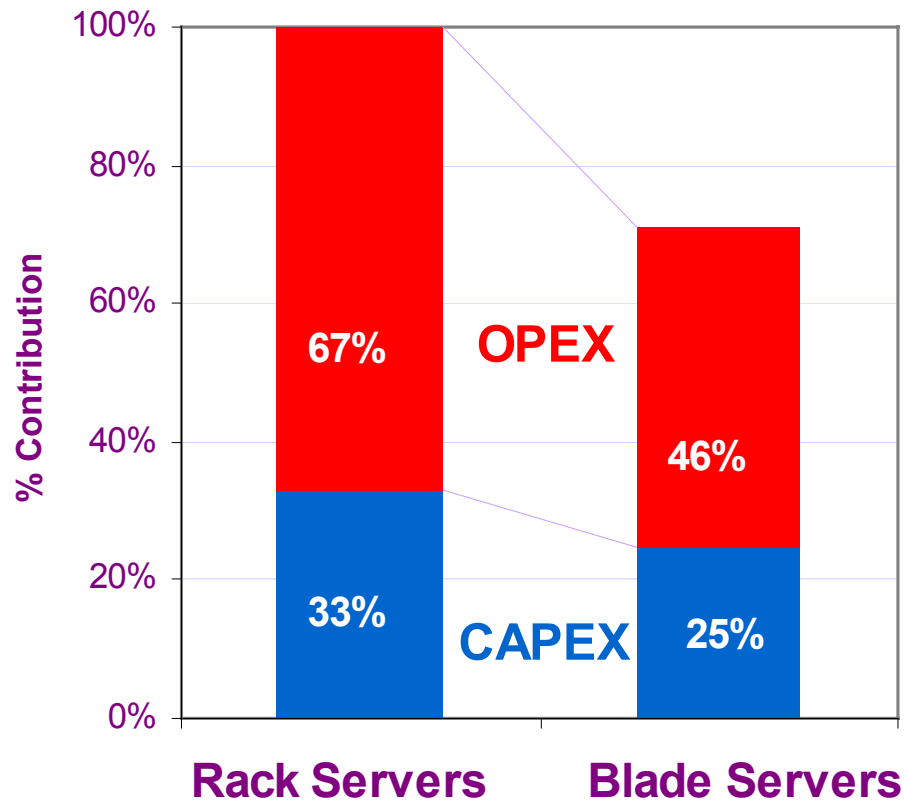


Sum
microsystem

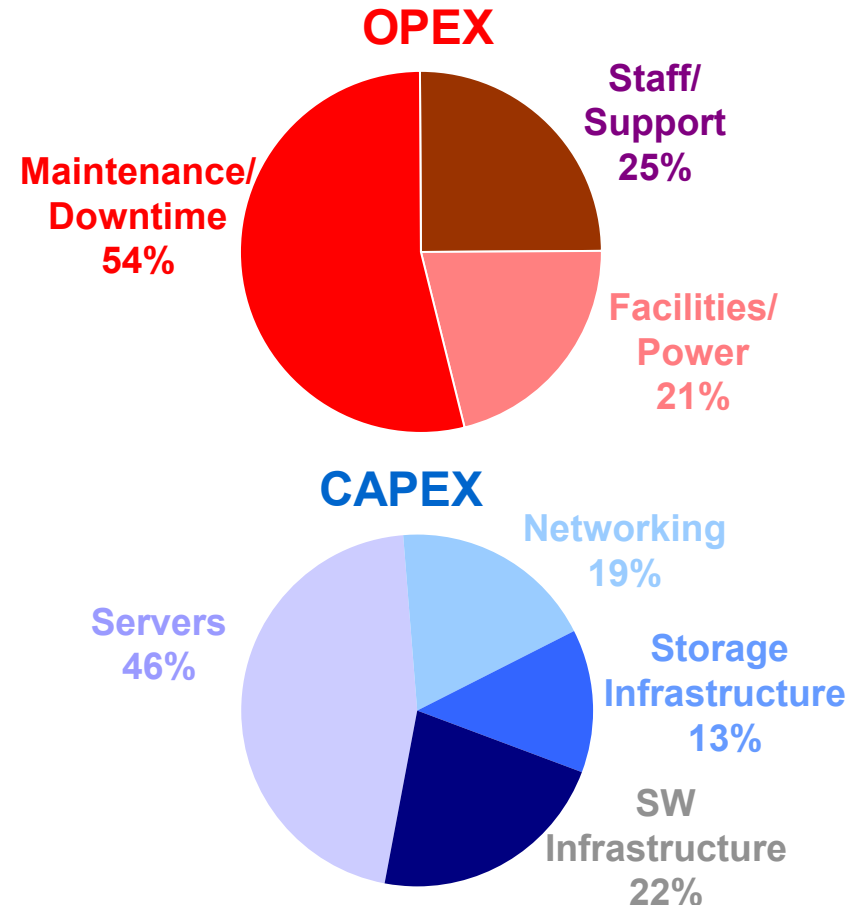


Blades - TCO Savings & ROI

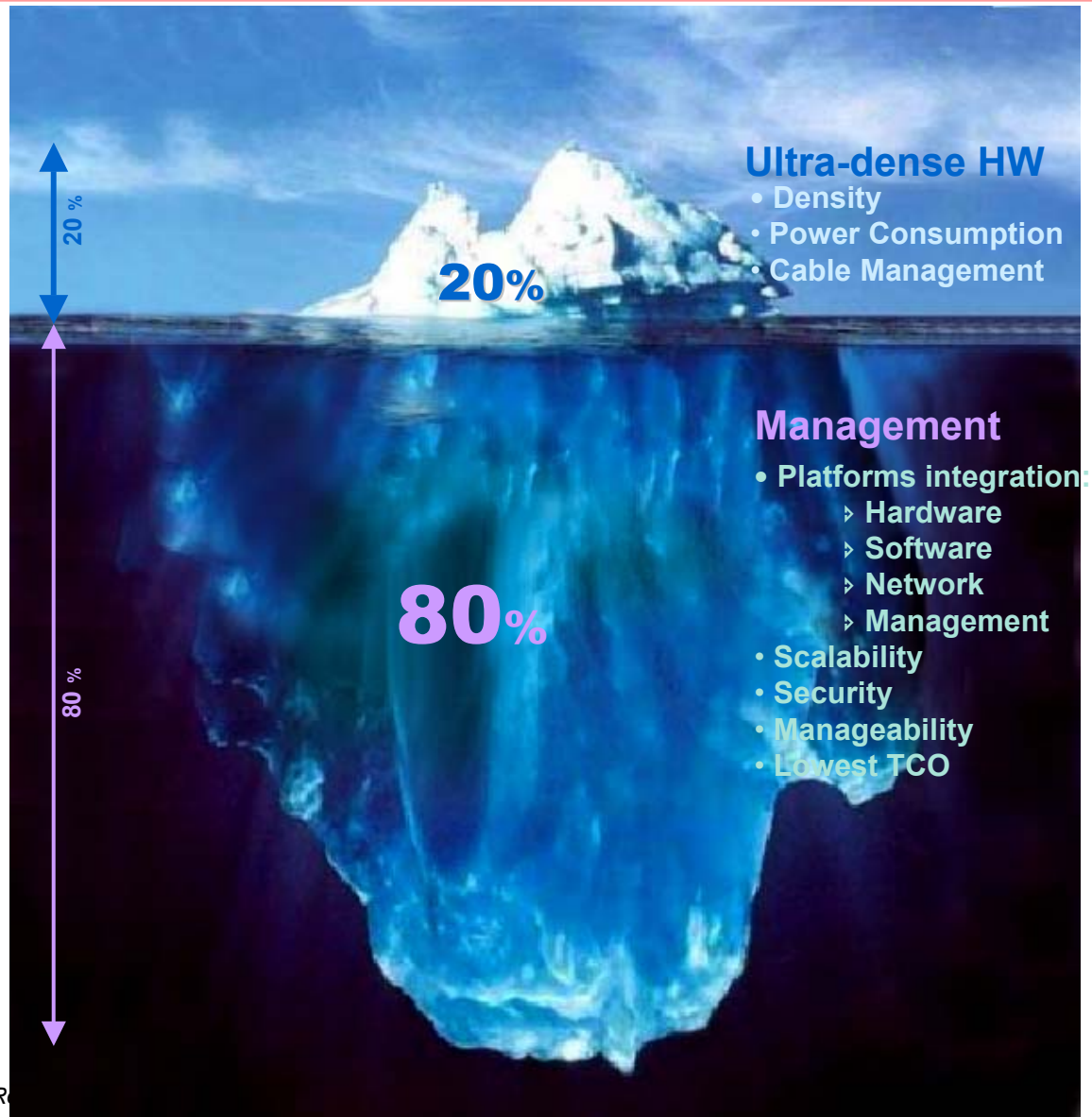
3 Year TCO Savings Rack vs. Blade Servers



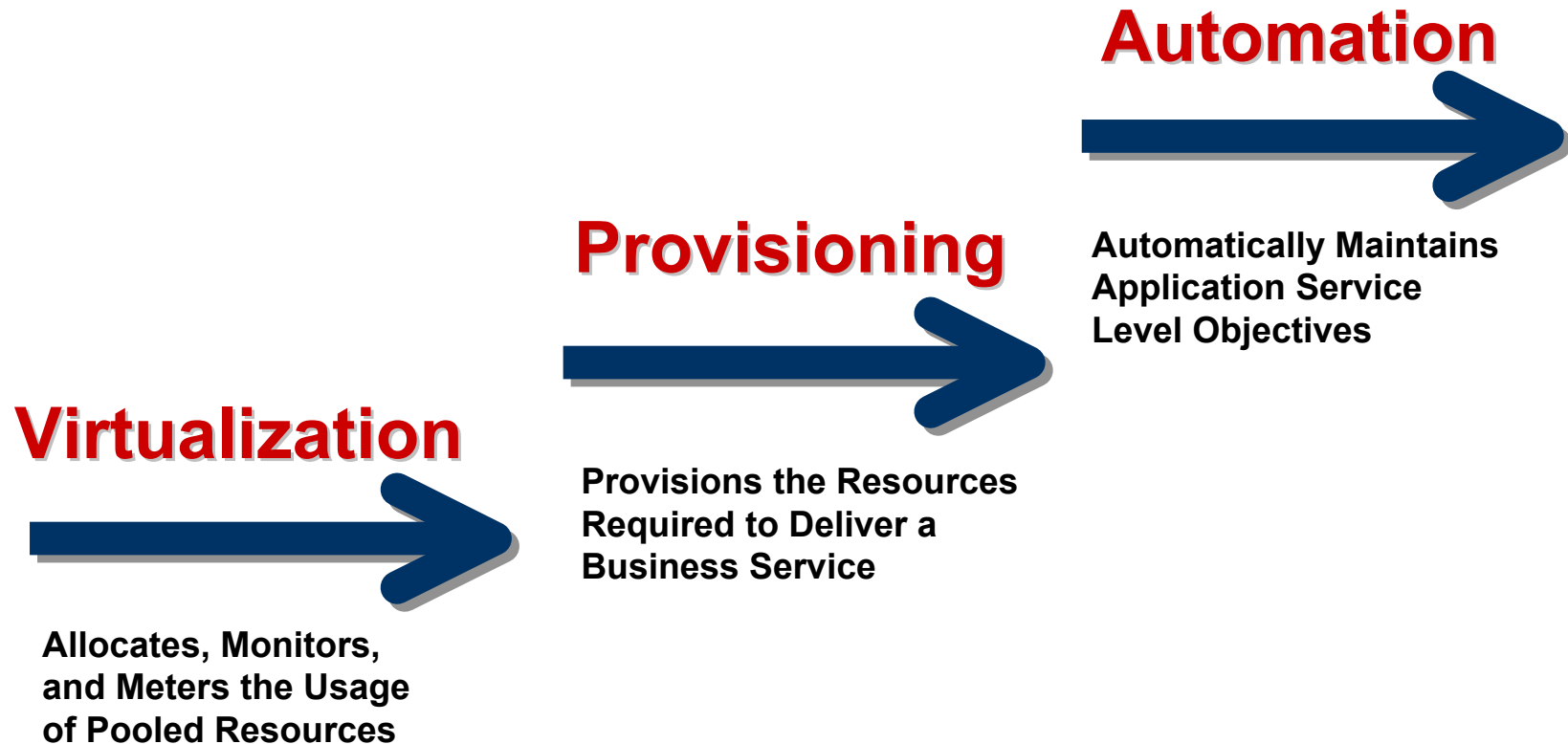
TCO Savings in..



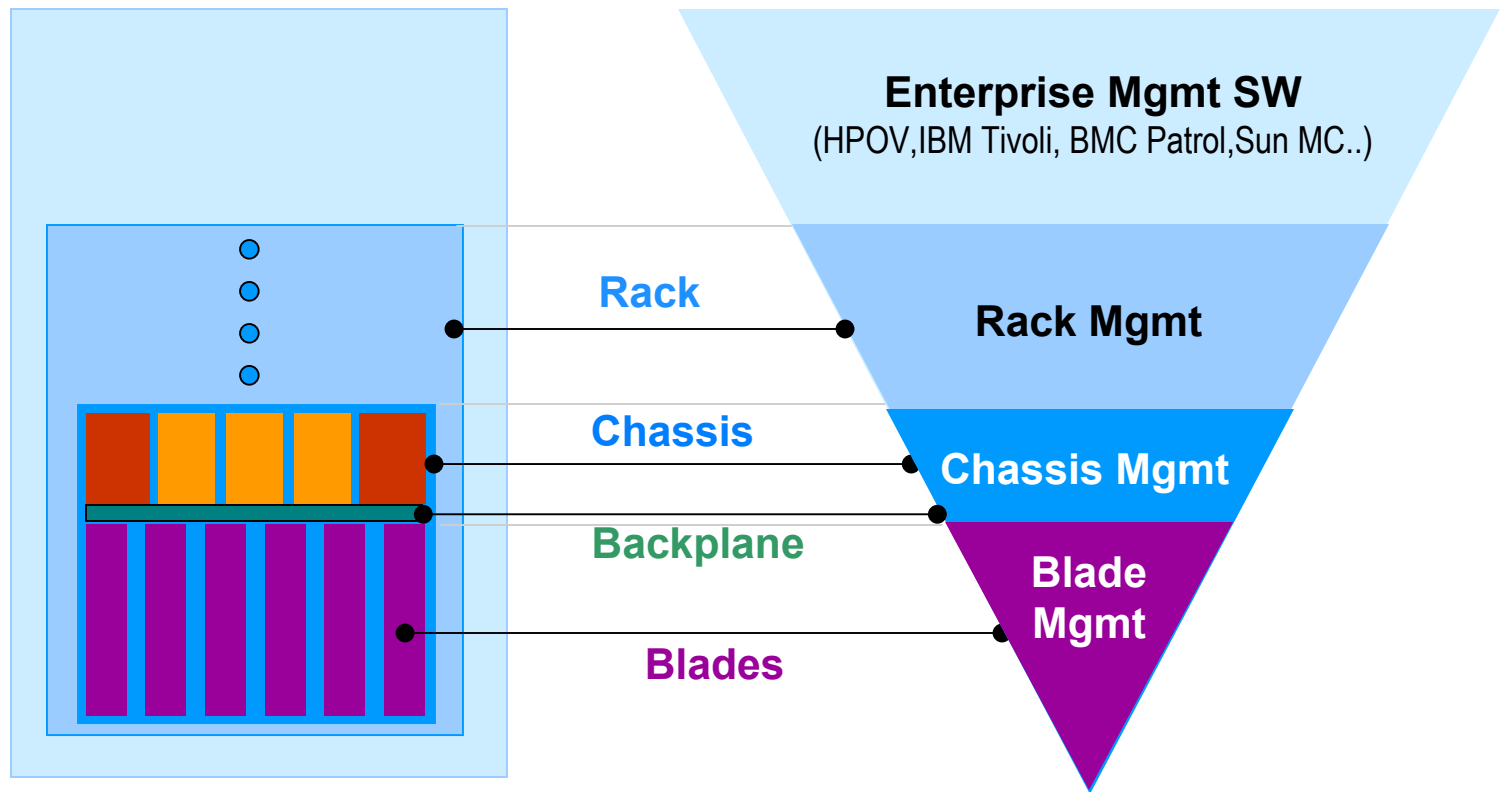
► *Management – Blade Servers*



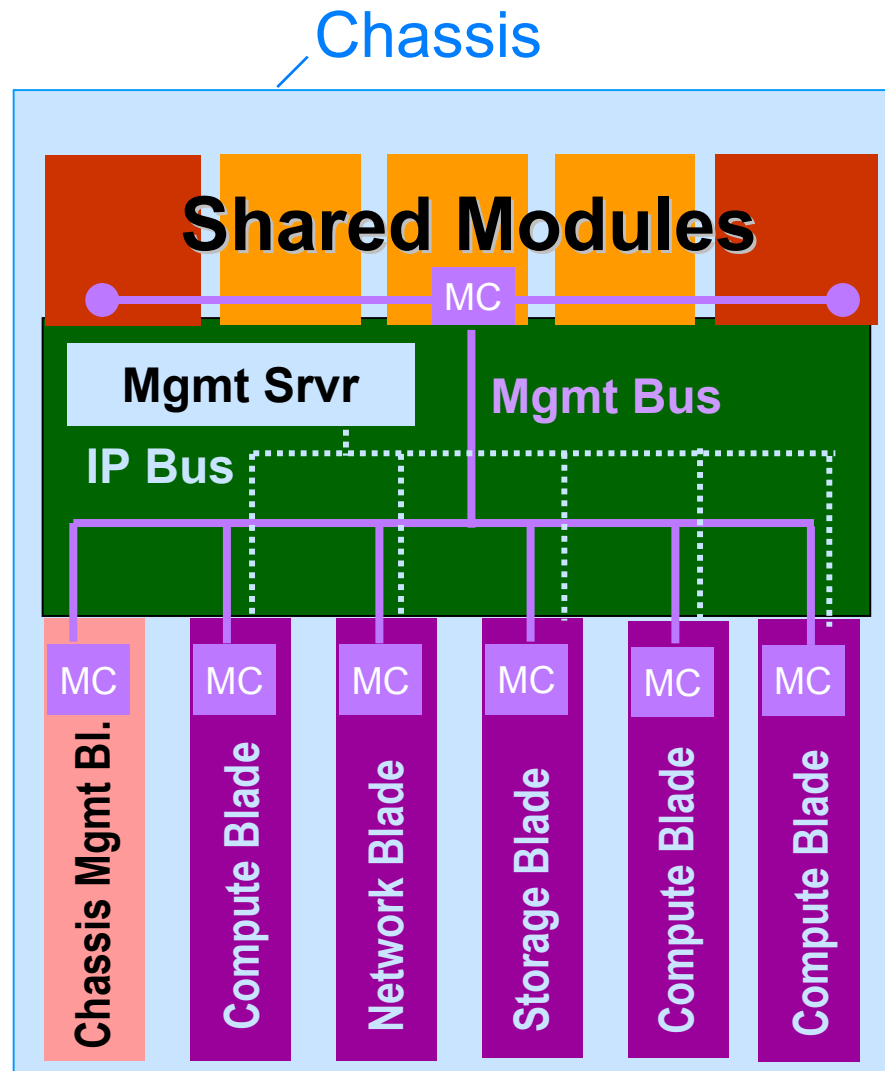
► *Blade Server Management Software*



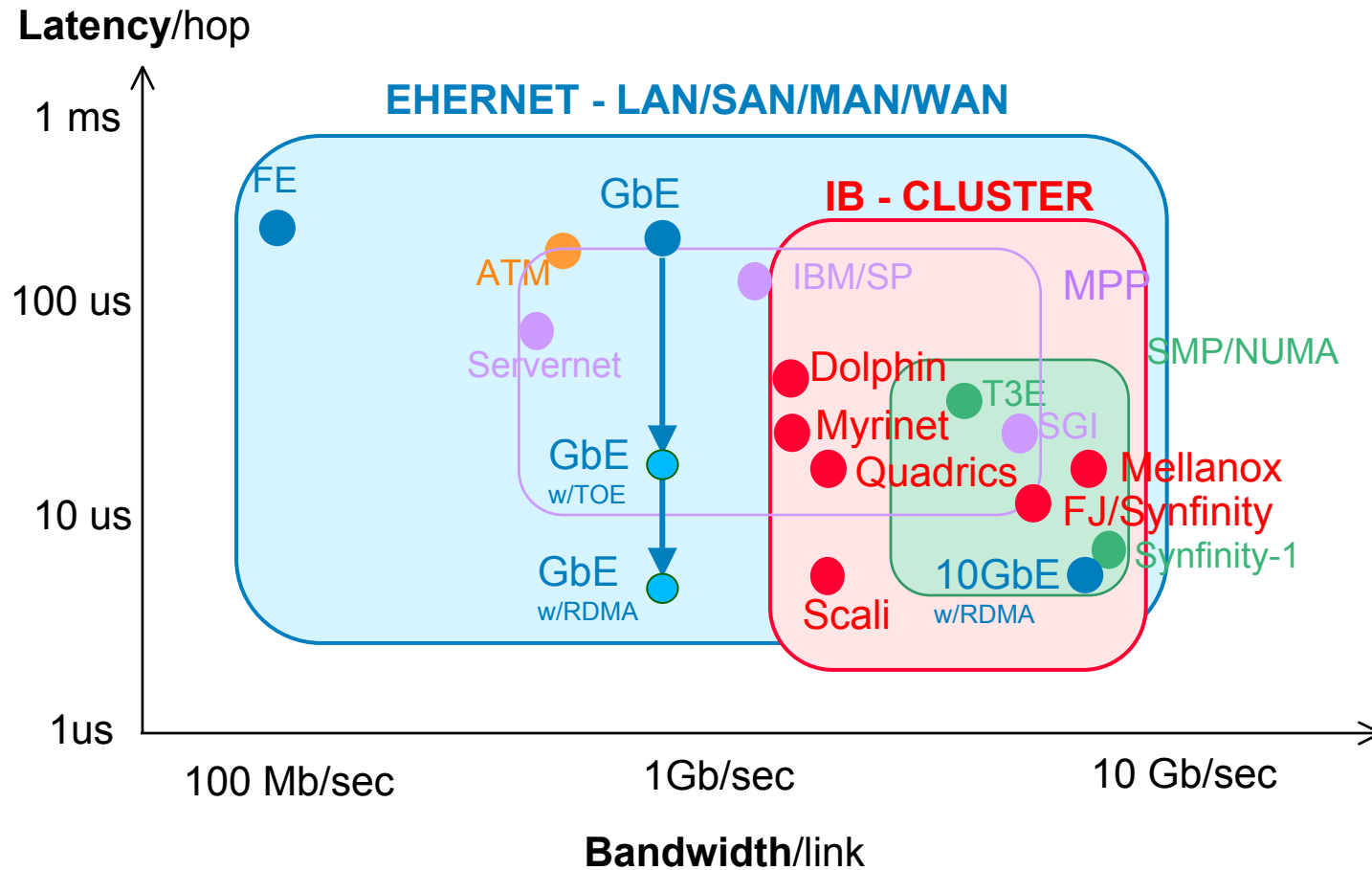
► Blade Server Management Software



► *Blades Management Architecture*

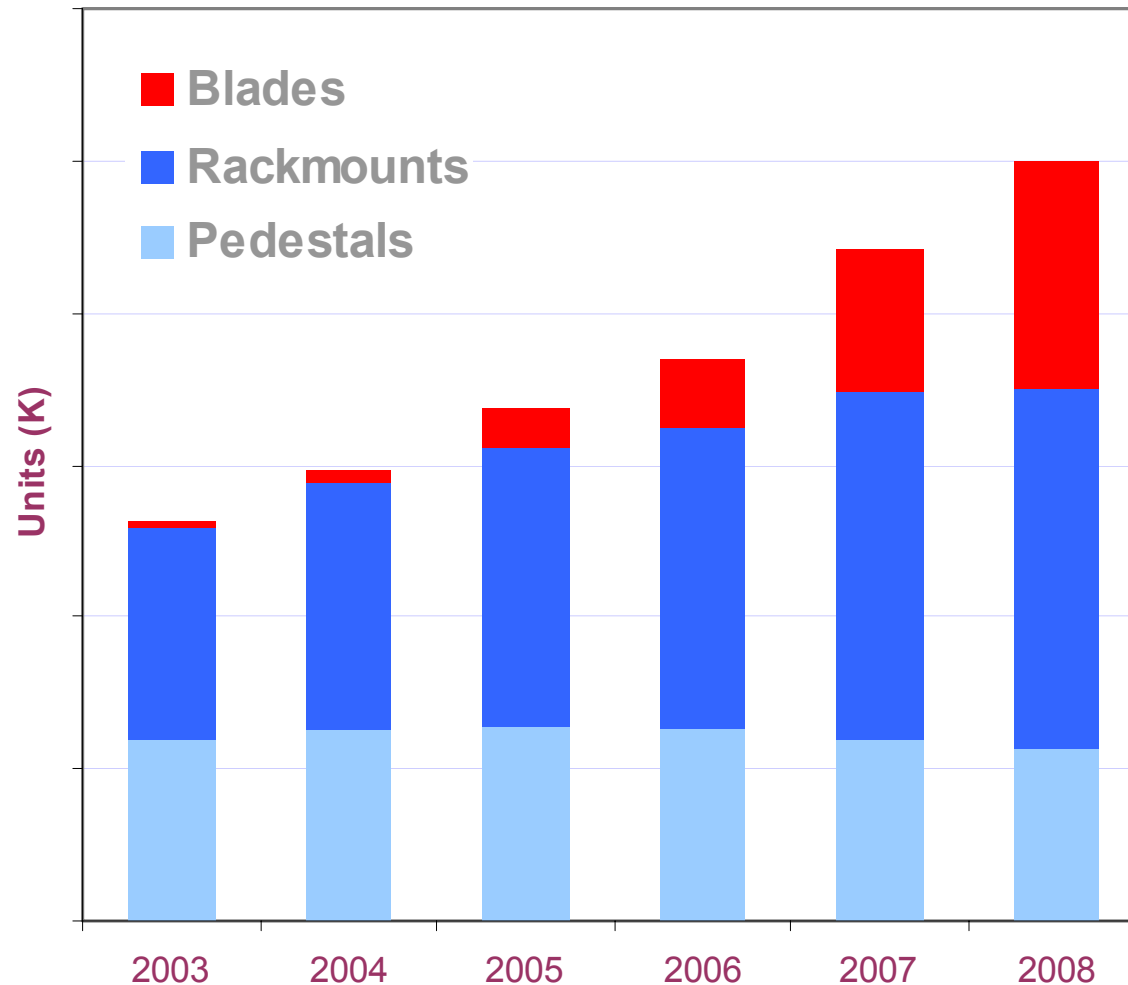


► State of Interconnect Fabrics

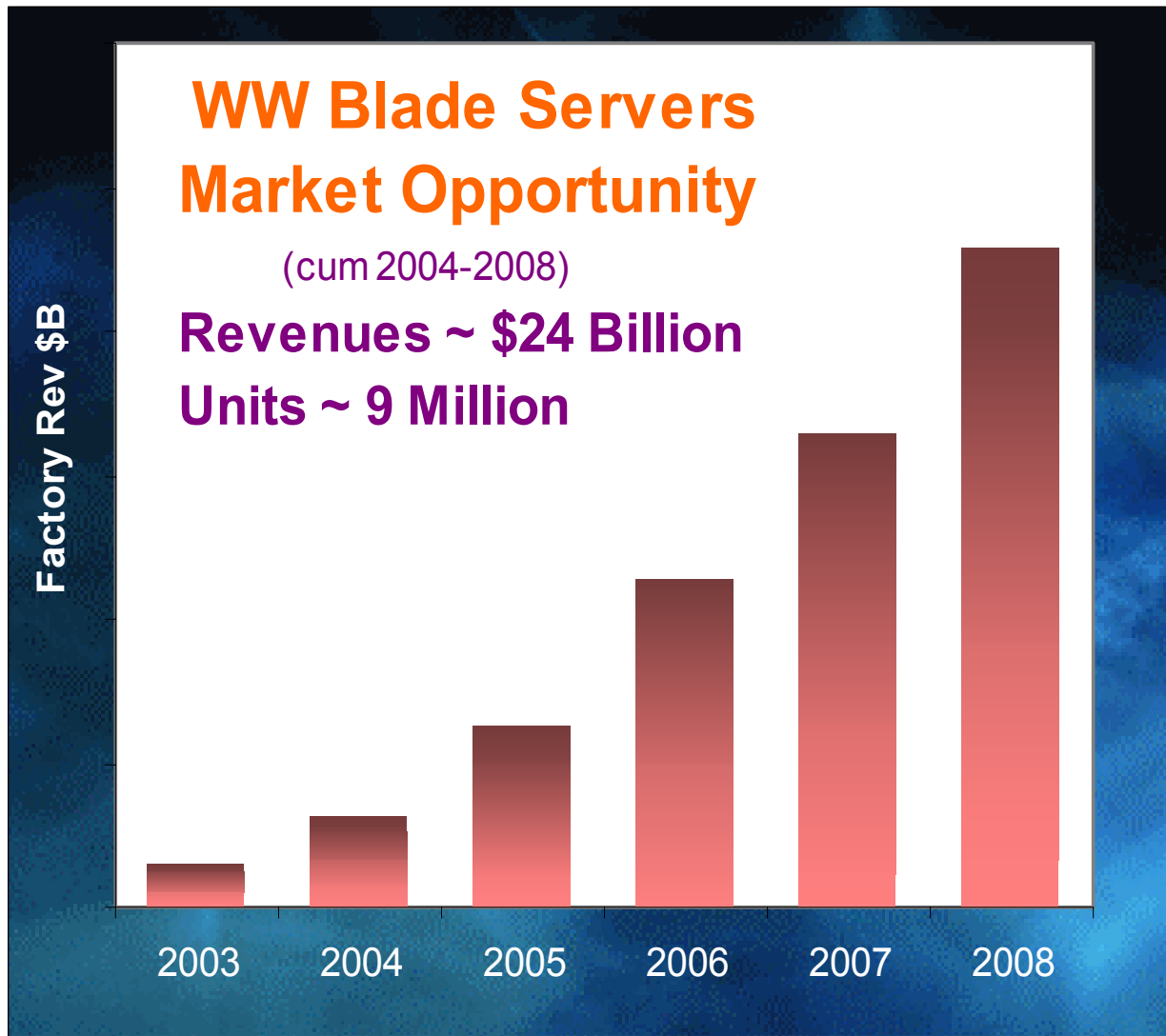




Industry Standard Servers Market (x86 based)



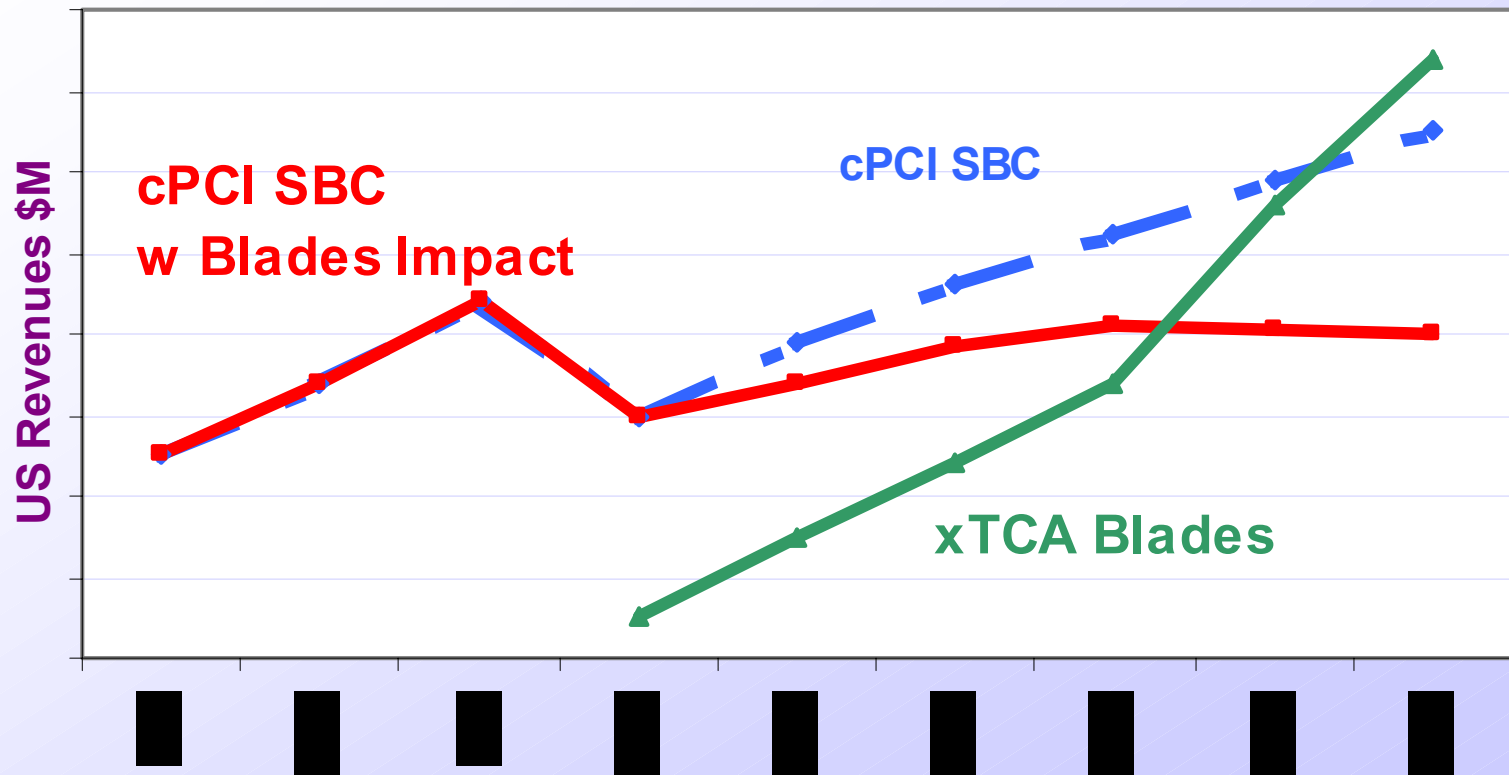
► Blade Servers Market Opportunity





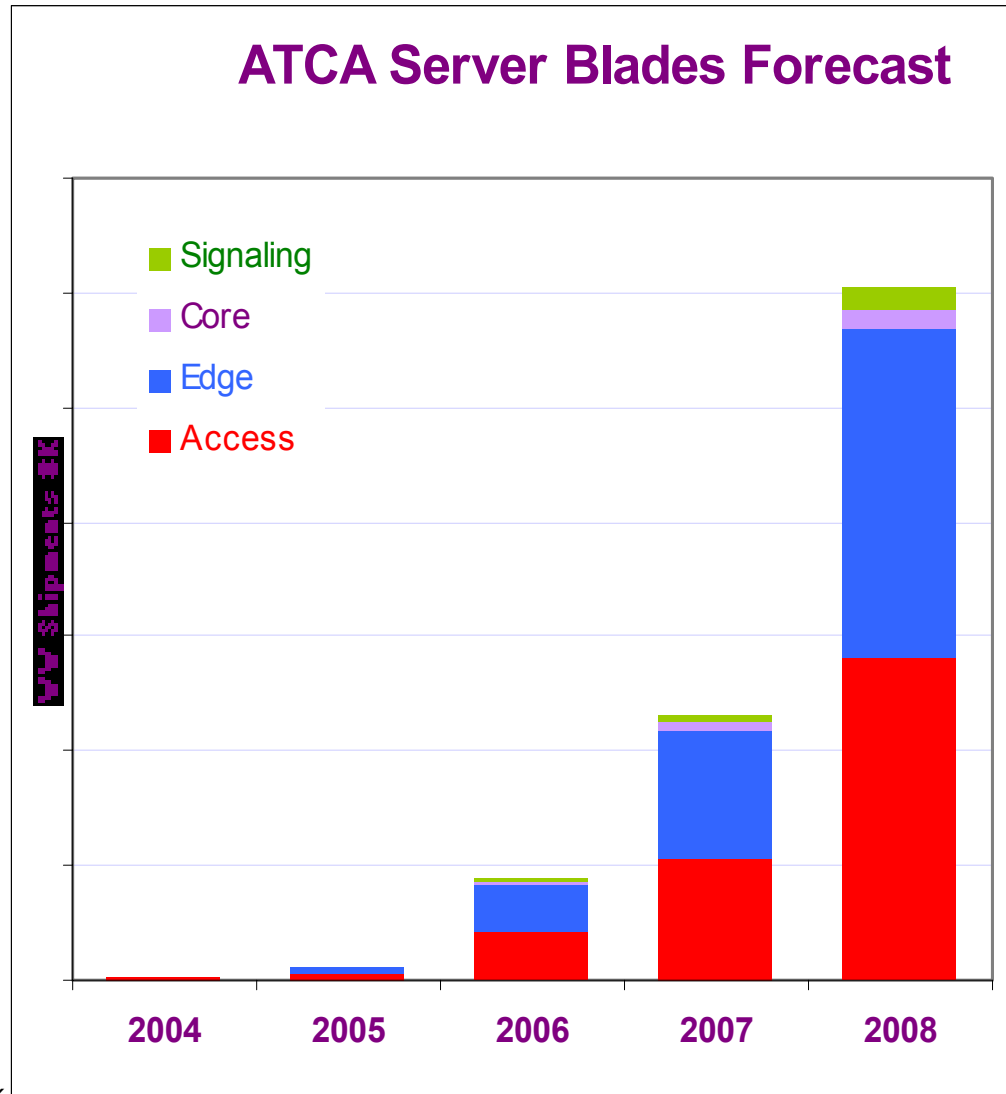
iSCSI on roadmap of storage vendors

US Market - SBC & xTCA Revenues



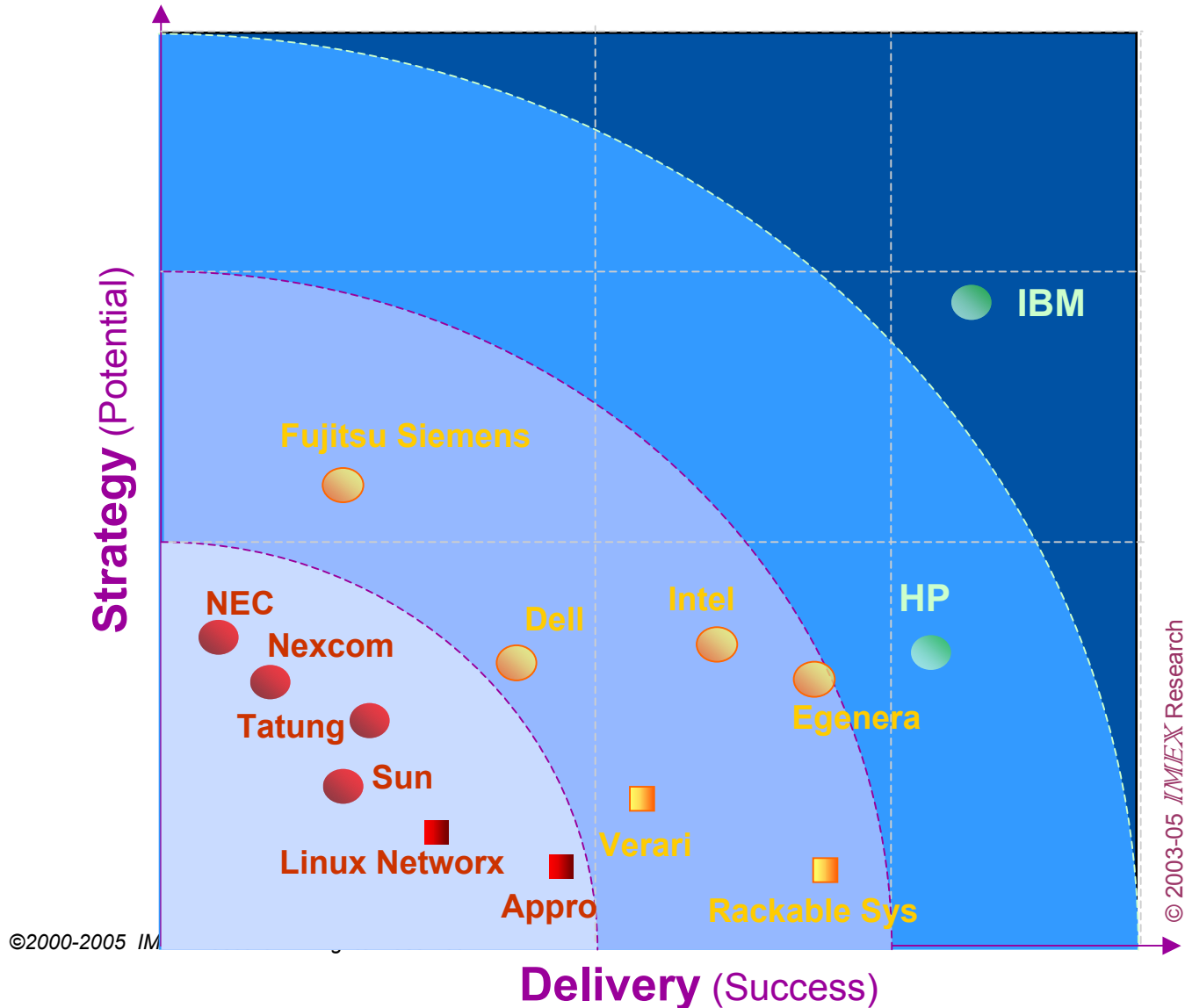


IP Telecom Server Blades




















► Blade Servers: Vendor Positioning Index

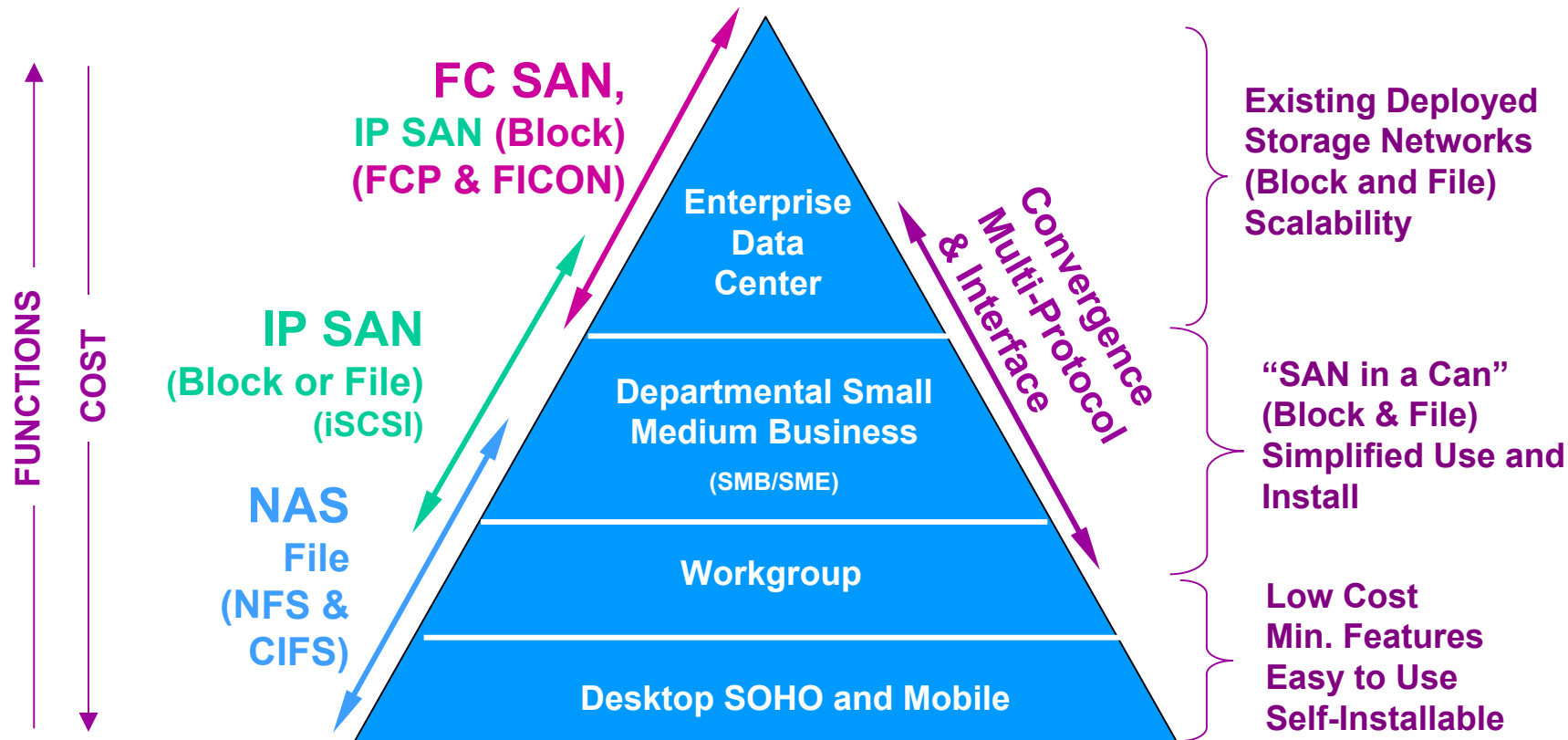
(As of Jan.2005 - See IMEX Blade Servers Report 2005 for new data & indexing metrics)



► Blade Servers – Low Cost Suppliers?

FY2003E		Taiwan NB OEM/ODM							
Taiwan NB		Quanta	Compal	Wistron	Inventec	Arima	Asustek	FIC	Others
ODM/OEM		 2382.TW	 2324.TW	 not-listed	 2356.TW	 2381.TW	 2317.TW	 2319.TW	 2319.TW
International Vendors	Dell								
	Toshiba								
	IBM								
	Fujitsu / Siemens								
	HPQ								
	NEC								
	Apple								
	Sony								
	Gateway								
	Acer								
	Hitachi								
	Asustek								
	Tatung								
	Others								
3In Syst									

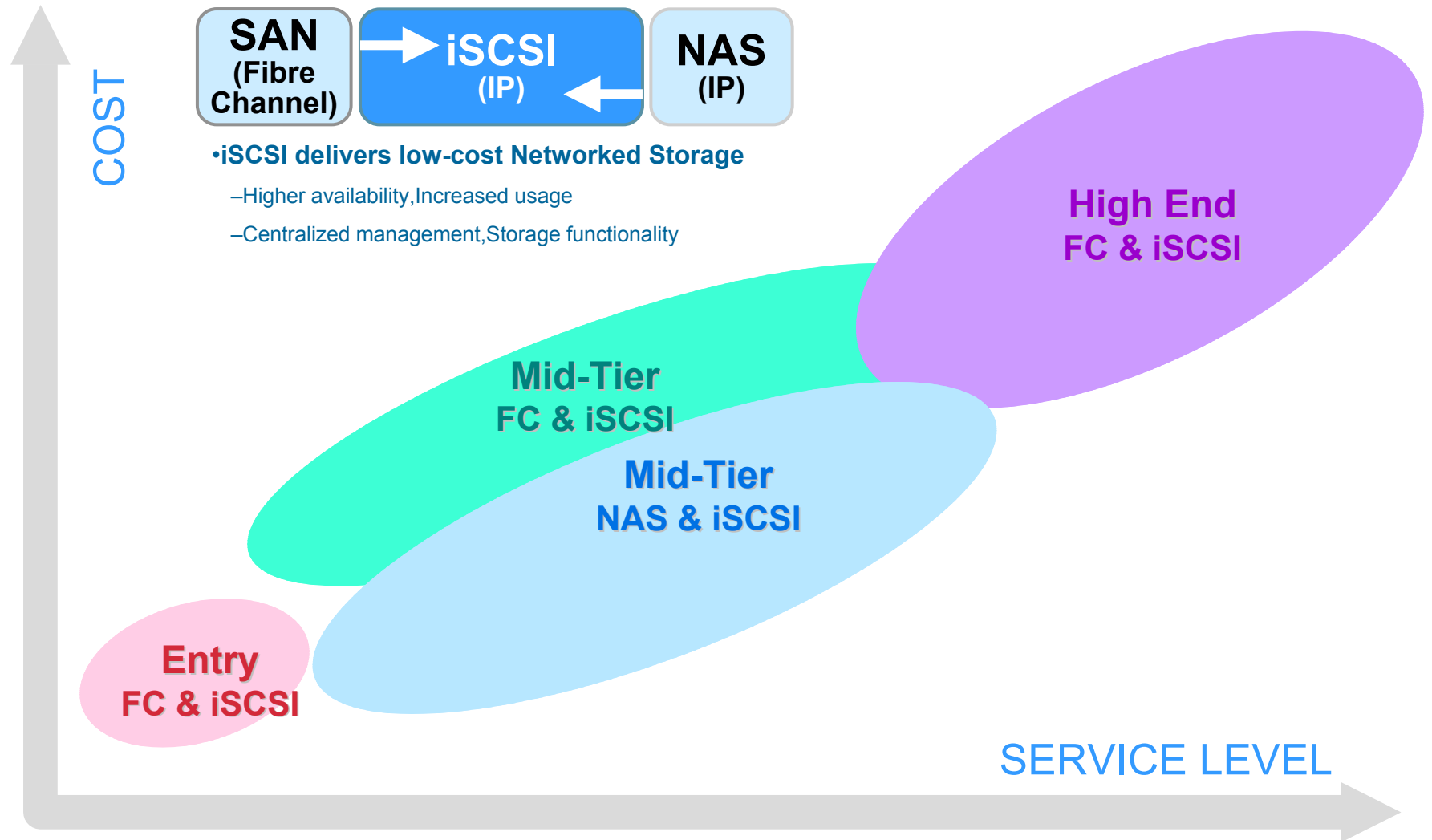
Storage Market Requirements



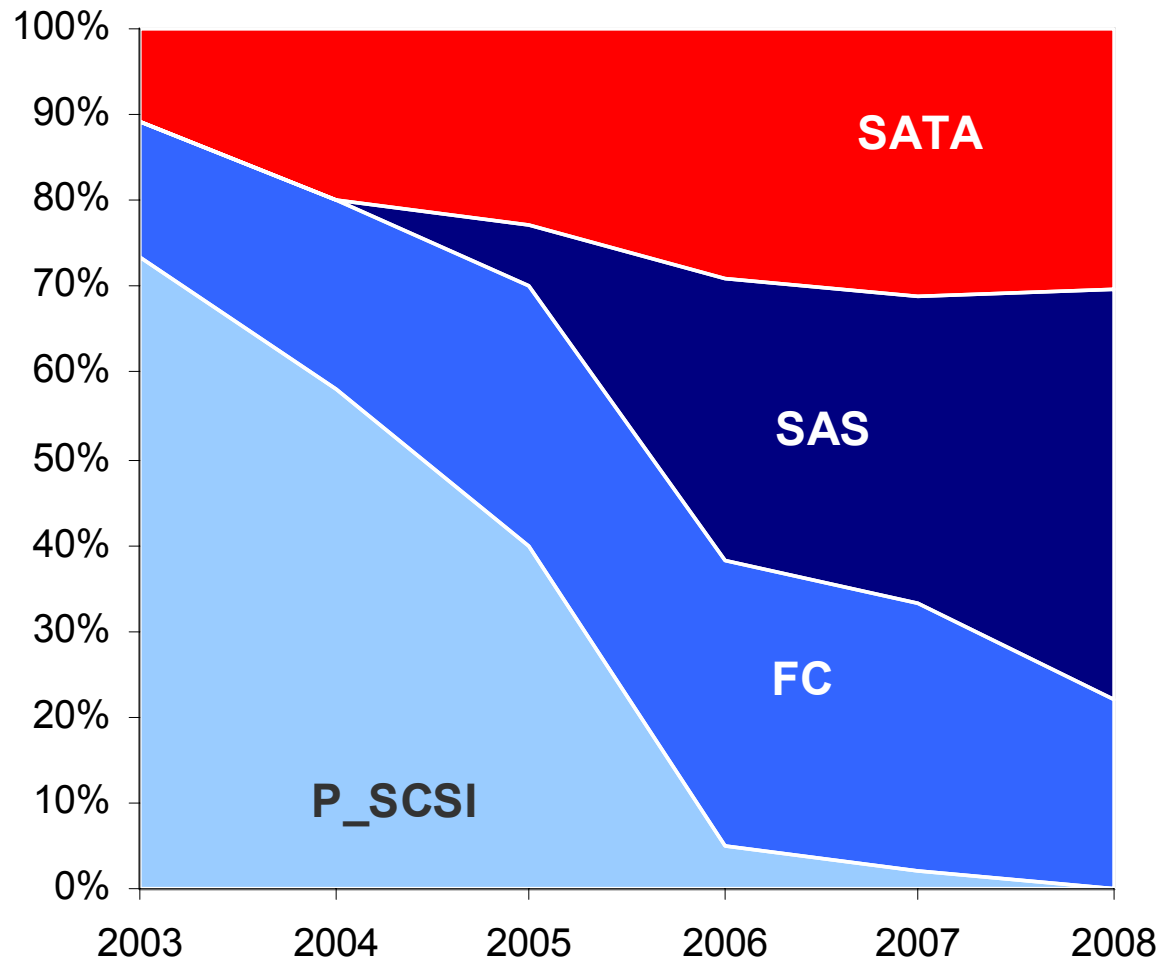
**Performance and capacity alone are no longer distinguishers
attributes between enterprise and distributed storage**



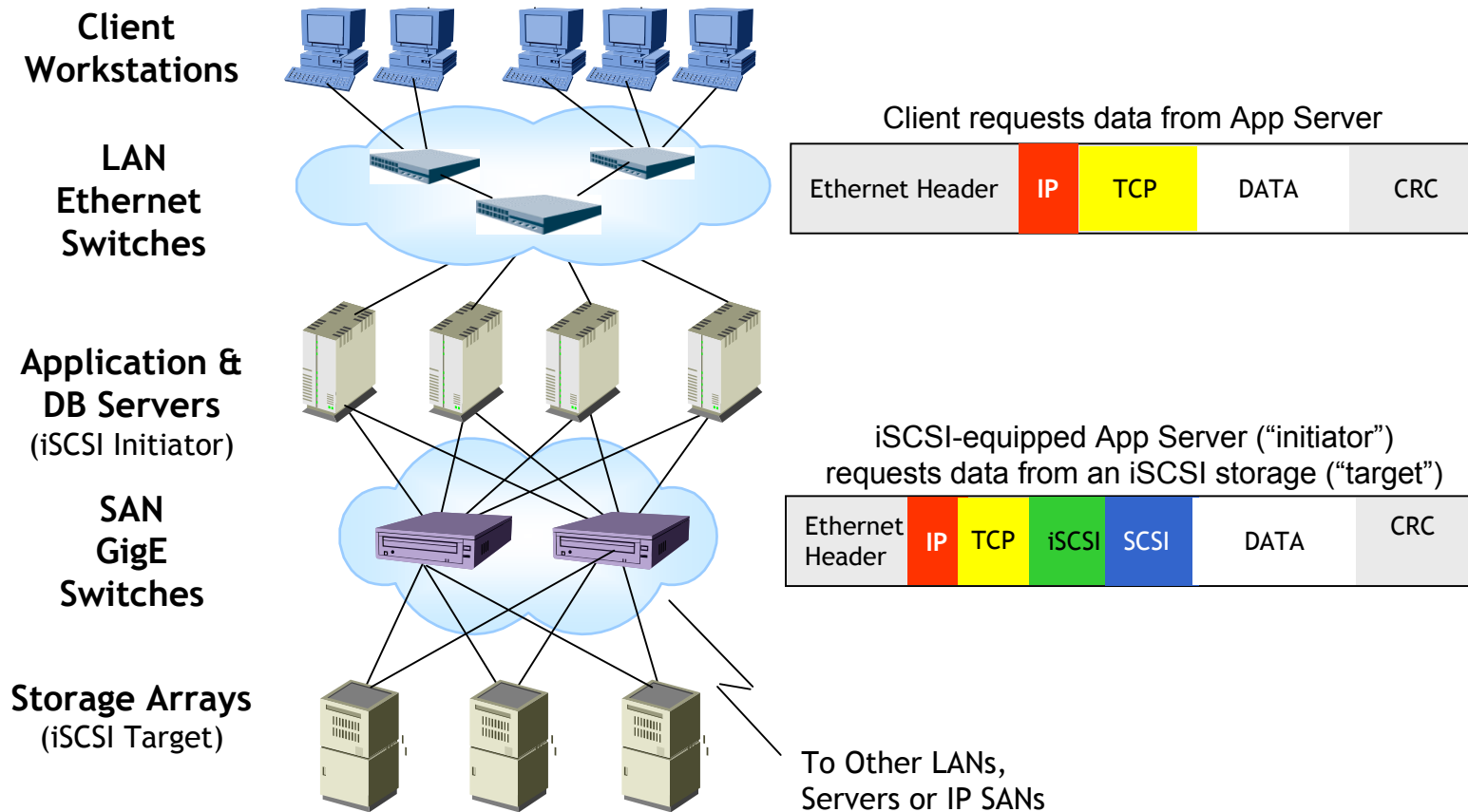
iSCSI on roadmap of storage vendors



► *Enterprise Market is now cost conscious*

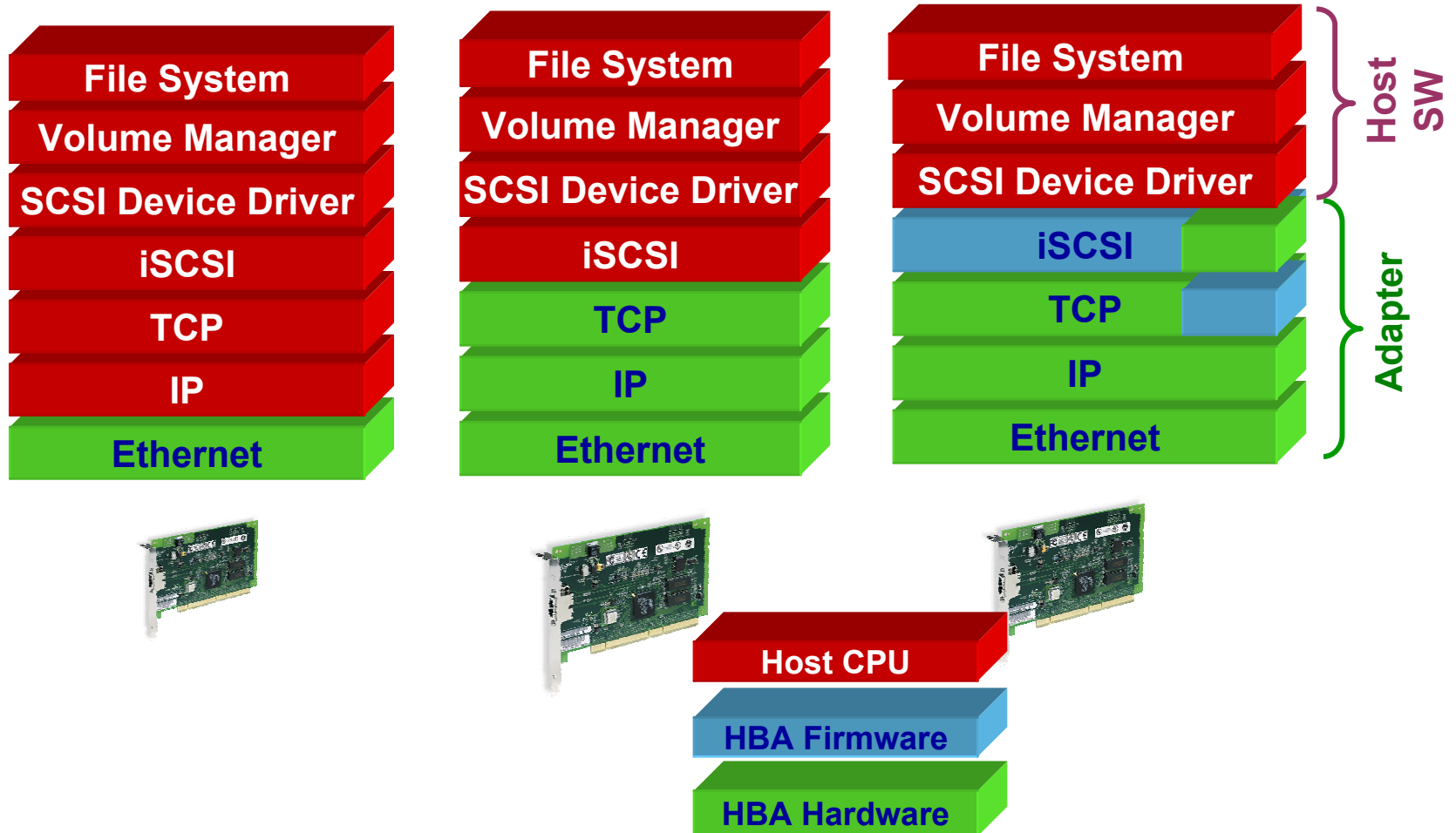


► *The iSCSI SAN*

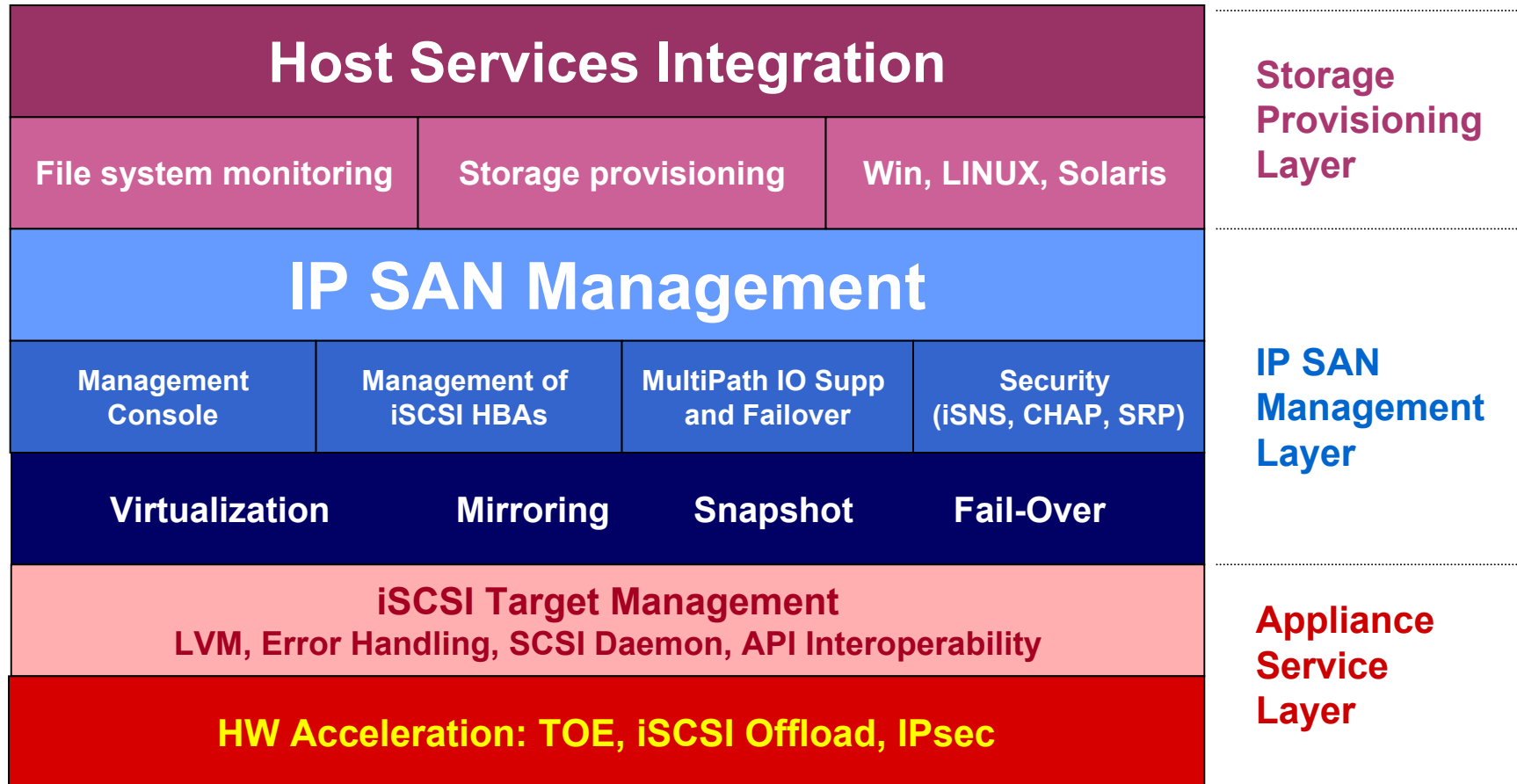


► Ethernet - TCP + iSCSI Offload Engines

Typical 1GbE NIC

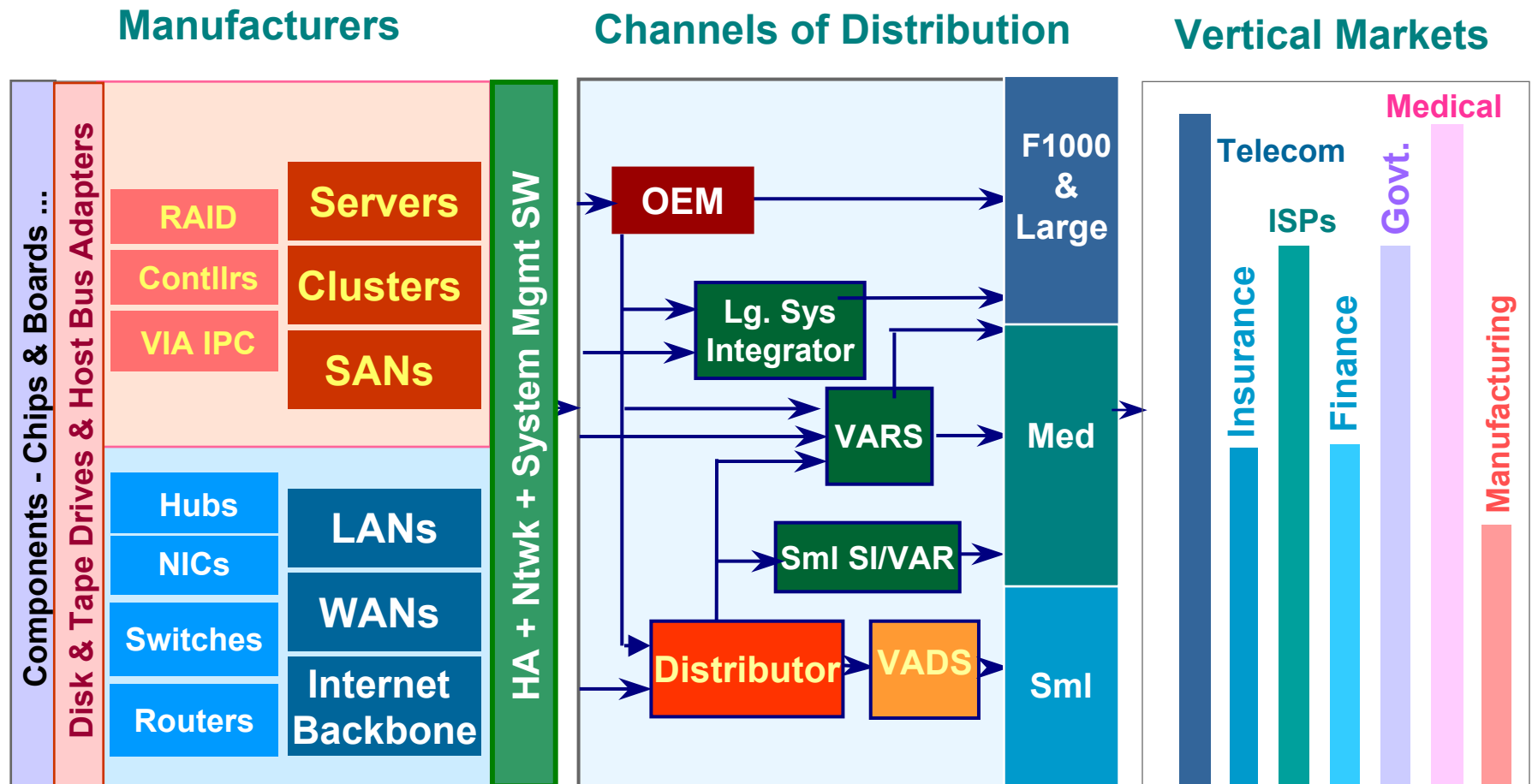


Future: IP Storage Management on a chip

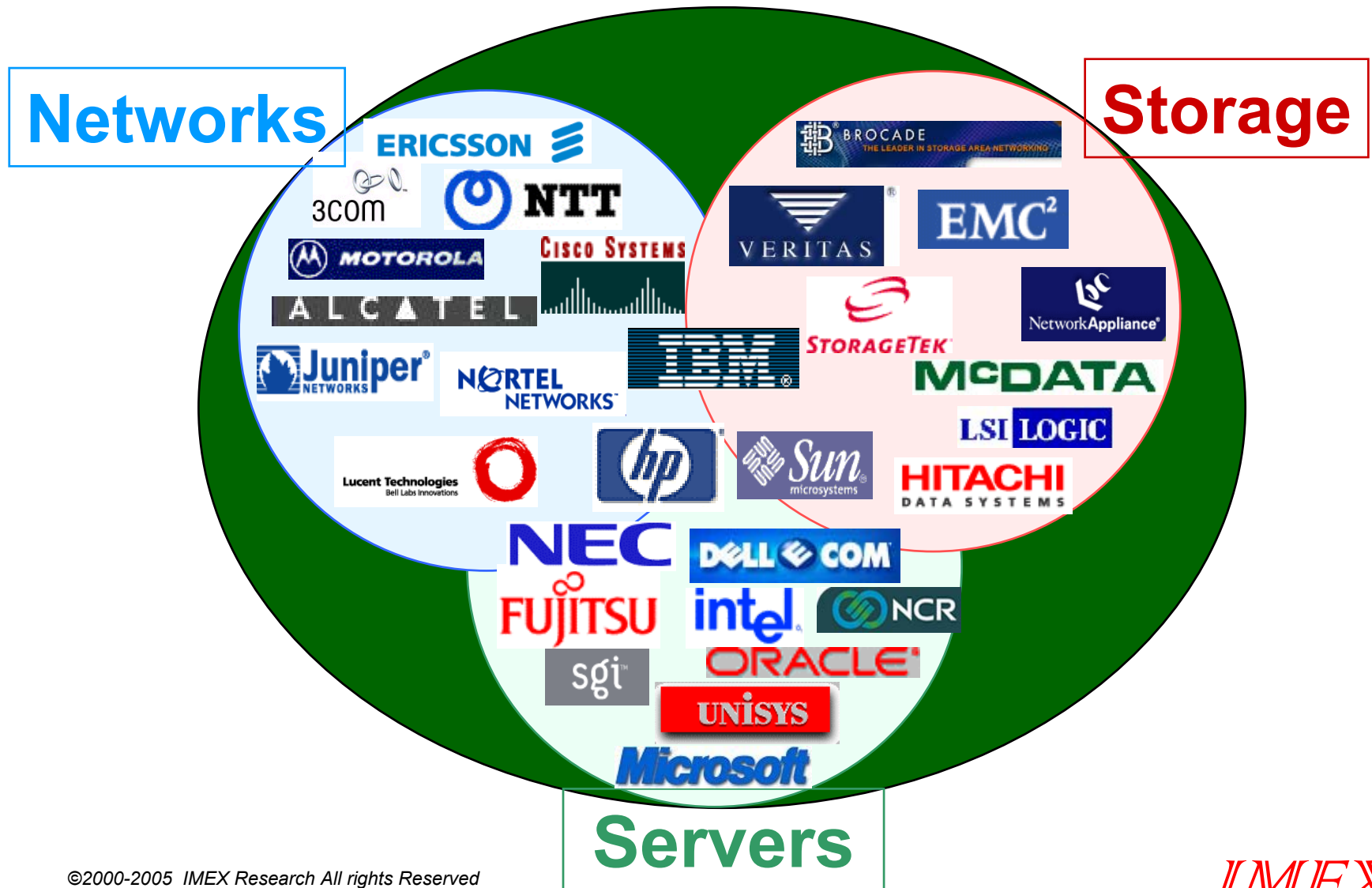


Go-to-market: Channels of Distribution

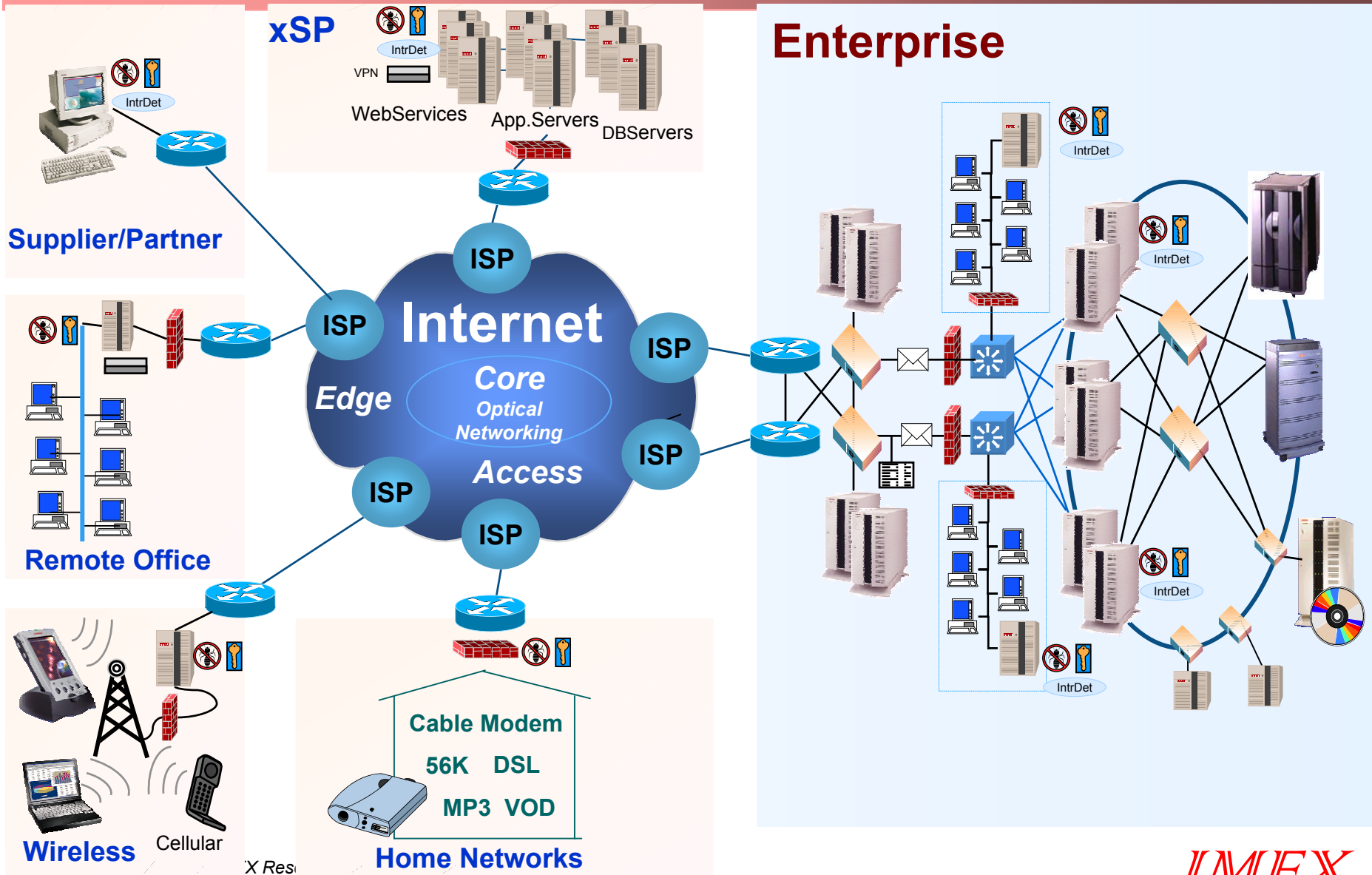
Industry Structure



► Major Players in Infrastructure Convergence

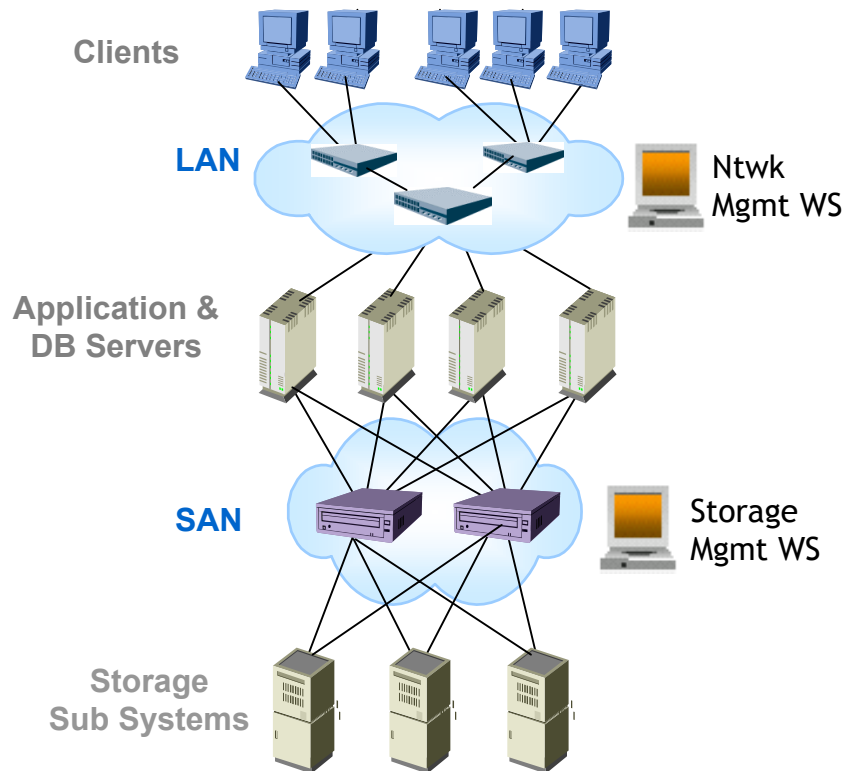


Potential for Blades - Everywhere

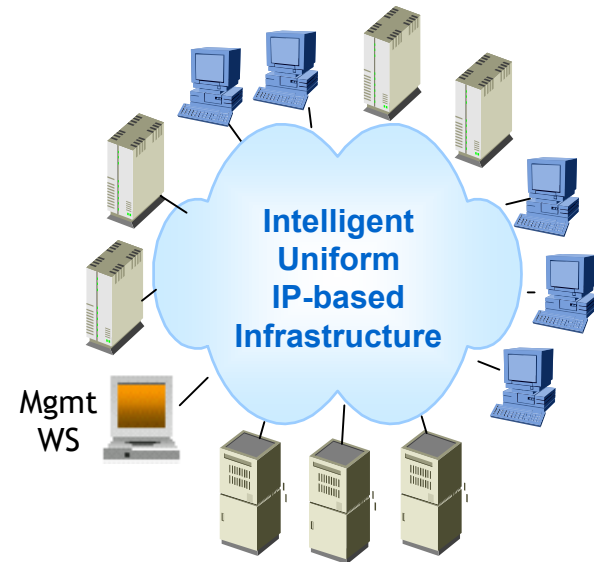


► Holy Grail - Future Intelligent IP Infrastructure

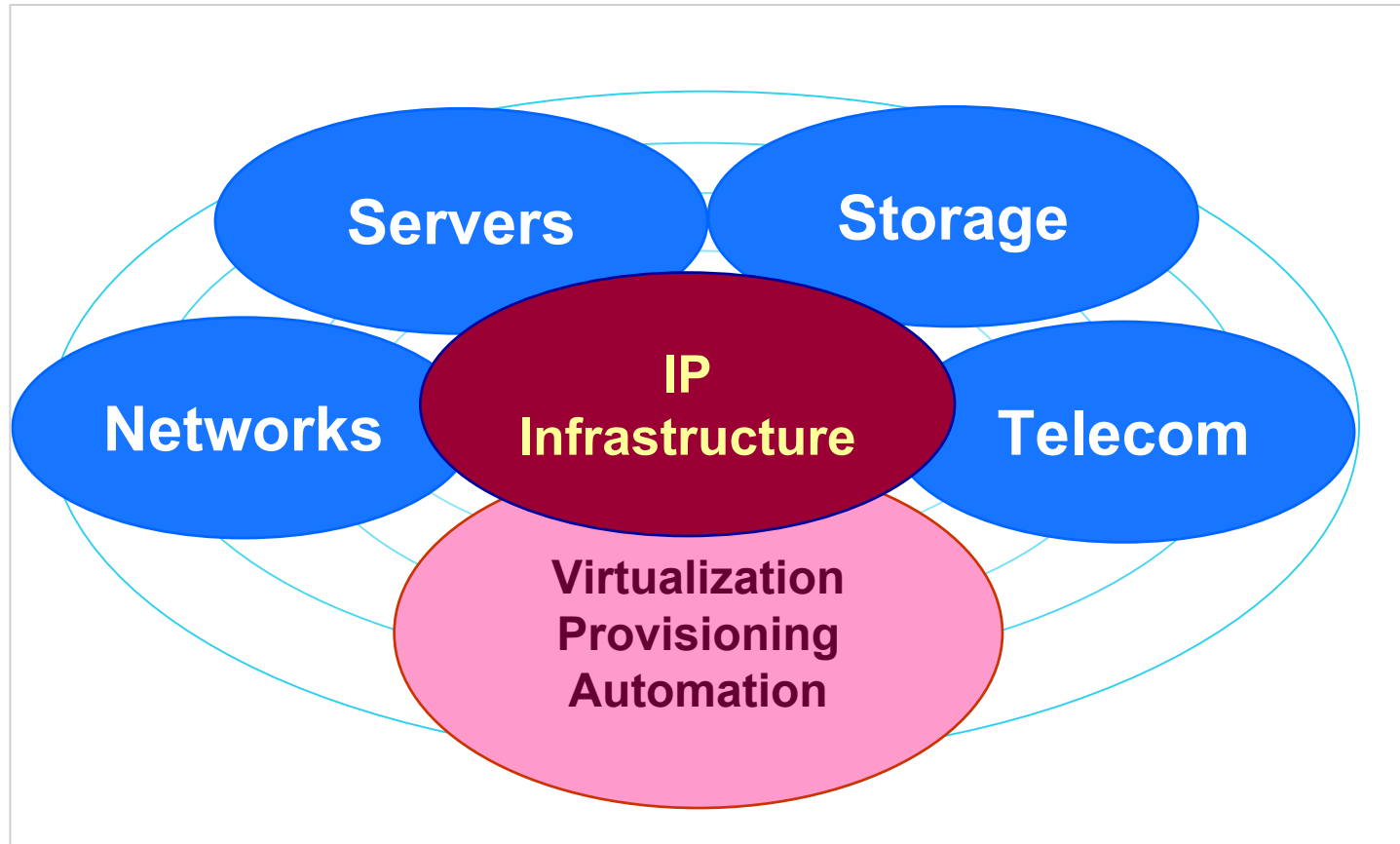
Present Data Center Infrastructure



Future Infrastructure



► *Emerging IP Based Infrastructure*



 ***For Further Information...***

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