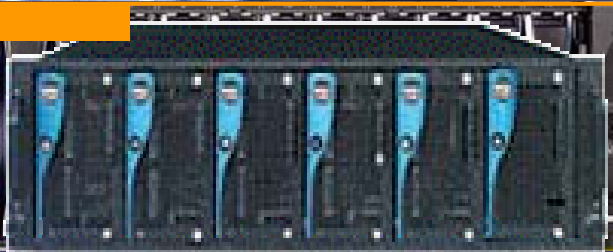


An Industry Brief  
Modular Computing Brief Series 2008



# Architecting Next Generation Data Centers

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# Architecting Next Generation Data Centers

Server Interconnects & Virtualization – Keys to next generation computing

## T A B L E O F C O N T E N T S

### 1. Executive Overview

### 2. Market Drivers & Industry Dynamics

**Data Center automation Targets**

**Applications Driven architectures**

**The rise of Blade Computing**

**Key Technologies - Clustering, Server Interconnects & Virtualization**

**Pros & cons of Proprietary vs. Open Cluster Interconnect solutions**

Interconnect Contenders: Characteristics, Status

Fibre Channel, InfiniBand, TCP/IP/Ethernet

Technology Comparison - Interconnect Fabrics

State of Cluster Interconnect Fabrics

Technology Issues – Bandwidth, Latency (Memory, LAN, WAN, TLB, Disk, Cache OS), Scaling, Storage

### 3. Market Segments & Product Requirements

**Market Segments & Product Requirements by Application**

**OLTP**

Transaction Processing (ERP/CRM/SCM), eCommerce

**IP Telecom**

VoIP, Messaging, Convergence (Voice, Data, Video)

**Decision Support Systems**

Business Intelligence, OLAP, Data Mining

**HPC / Grids**

Technical & Commercial Grids, Transaction Grids

Bioinformatics, Visualization/Rendering, Earth Resources Exploration...

HPCC Architectures, Building Block, Software, Hardware Components

Network and Server Interconnects, Management and Monitoring

**Streaming**

Medical, Entertainment Content, MP3, VOD

**Market Segments & Product Requirements by Tiers – 1,2 & 3**

**Technology Challenges**

### 4. Market Forecast & Market Shares

**WW IT Spending**

**WW Server Market Forecast (Revenues, Units, ASP)**

By OS

By Price Groups

By Processor Technologies

By Workloads

By Tiers - Web Servers, Application Servers, DB/Transactions

By Scale Up vs Scale Out Technologies

By High Availability Levels

**WW Networking Market Forecast (Revenues, Ports, ASP)**

By Gateways & Switches (Managed & Unmanaged)

By Server Interconnects (IB, GbE..)

### 5. Emerging Technologies & Standards

**Server Technologies**

Blade Servers

Clustering

Interconnect Fabrics  
Virtualization  
Provisioning  
Automation

**Industry Initiatives**

Infiniband, GEA, RDMA Consortium, MS Chimney..

**State of Progression of Interconnect & related Technologies**

TOE, RDMA, iSCSI, RDMA over IB and RDMA over IP,  
Integrated Remote Management  
FC vs. IP SANs

**Performance Benchmarks & Standards**

**6. Major Suppliers & Strategies**

**Players by Market Segment**

**Vendors in Value Chain by Technology Segment**

Infiniband (Chips, HCA/TCAs, Switches/Gateways, Systems, Solution Providers, Distributors)  
GbE/10GbE (Chips, HBA, Multifunction NICs, Hubs/Switches/Routers, Systems, Solution Providers, Distributors)

**IB Vendor Profiles**

Mellanox, Fujitsu, Infinicon, Top Spin, Voltaire, Agilent, HP, Sun, IBM ..

**GbE Vendors Profiles**

**7. Competitive Products Positioning**

**Interconnect Metrics - Latency vs. Bandwidth**

**Proprietary Interconnects Myrinet, Quadrics, ServerNet, SCI..)**

**Open Standard Interconnects (Infiniband, GbE PCI Express..)**

**Pricing Structures & Price Erosion Curves**

**8. Go-to-Market Strategies & Channels of Distribution**

**Targeted Markets – OEMs vs. Partners**

**Effective Marketing Programs**

**Channels used by Chip, Switch & System Vendors**

**Pricing Structures – OEM, Distribution, Street**

**Top 10 Potential OEMs**

**Top 50 Potential System Integrators**

**Top 50 Potential Solution Providers**

**Top 50 End Users by Vertical Industry Sectors**

**9. Recommendations**

**10. Research Methodology & Appendices**