

An Industry Report
Modular Computing Series 2010



Architecting Next Generation Data Centers

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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/Transaction Servers

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 (IB, proprietary, IP, PCI-Express)

Server Virtualization

Server I/O Technologies

Provisioning – Solutions and Standards

Automation

SAN Technologies

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