

# Network Storage

## IP SAN's (iSCSI)

### 2010



**IMMEX**  
RESEARCH.COM

An Industry Report  
Network Storage Series 2010

# IP Storage - Table of Contents

---

## 1 Executive Summary

### 1.1 Summary – State of the Industry

- 1.1.1 Drivers: Volume driven economics of IP - Confluence of Storage & Networking
- 1.1.2 Inhibitors/Issues: Standards, Interoperability
- 1.1.3 Value Proposition
- 1.1.4 Outstanding Issues

### 1.2 Prerequisites for Success

- 1.2.1 Dependencies/Thresholds/Issues/Solutions Development
- 1.2.2 Technology Barriers
- 1.2.3 Migration and displacing incumbent technologies and installed base

### 1.3 Recommendations

- 1.3.1 Keys to success for Vendors (Hardware, Software), Integrators (xSPs, Systems), End Users, Startups and Investors.

## 2 Market Drivers / Industry Dynamics

### 2.1 Exponential Growth of Data

- 2.1.1 Information Explosion Driven by Connectivity, Ubiquity and Reach of the Internet
- 2.1.2 Wide spectrum of Existing Applications, New Applications (EC, Multimedia), Continuous Availability Requirements
- 2.1.3 Autonomics – To Lower Cost of Data Storage Management vs. Acquisition Costs

### 2.2 Convergence

- 2.2.1 Storage, Servers, Networks, Telecom, Entertainment using IP everywhere

### 2.3 Volume Driven Economics of IP Everywhere

- 2.3.1 Ubiquity, Historical Installed Base Management Tools

### 2.4 Drivers

- 2.4.1 Rich Data (Bandwidth), Ease of Data Sharing (NAS/IP Storage),
- 2.4.2 Emergence of Homogeneous Peer to Peer IP Connectivity Infrastructure
- 2.4.3 Utility Model: Telestorage/SSP's Overcome distance limitations
- 2.4.4 Leverage IP Networking Tools - Class of Service, Flow Control, Scalability/Link Aggregation, VLANs, Reliability, Low Cost (Cabling/NICs), High Performance, Consolidation of Storage/Server, Increased Storage Utilization, Multi-Protocol Usage

### 2.5 Inhibitors

- 2.5.1 iSCSI Performance Myths
- 2.5.2 Interoperability with existing network standards
- 2.5.3 Integration of Transport and Storage Management
- 2.5.4 Standards Evolution: Standards Bodies (IEEE, IETF, T11) vs. defacto (market leaders)

## 3 Market Segmentation & Product Requirements

### 3.1 Market/Product Segmentation

- 3.1.1 By Large and Midrange Enterprises, Small and Entry level Systems
- 3.1.2 By Operating Environments & File Systems: (MF z/OS, UNIX & Linux, Windows, Other)
- 3.1.3 Major Strategic market positioning: Incumbent storage vendors vs. 35 startups

## **3.2 Product Requirements by Market Segments:**

- 3.2.1 Features Requirements at Product Integration Level: Embedded Components, Storage Subsystems, System Integration & Managed Systems for SSPs
- 3.2.2 4 Tier Applications: Access, Web, Application and DB/Transaction Servers
- 3.2.3 Environments: Enterprise Data Centers, IDCs, xSPs, Telecoms ...
- 3.2.4 Vertical Markets: Manufacturing, Finance, Medical, Communications, Govt., ...

## **3.3 Technology & Architectural Segmentation**

- 3.3.1 FCIP, iFCP and iSCSI standards
- 3.3.2 Migrations from Parallel SCSI, Fibre Channel and Hybrid Models

# **4 Market Demand Forecast & Market Shares**

## **4.1 WW Market Demand Forecast 2009-2013**

- 4.1.1 By OS (MF z/OS, UNIX & Linux, Windows, Other)
- 4.1.2 By Applications – OLTP (Business Processing, Collaboration, Web Infrastructure), Decision Support (Data Warehousing, OLAP..), Numeric Intensive Computing, Streaming (Data Acquisition, Medical, Video on Demand ..)
- 4.1.3 By Environment – Large & Midrange Enterprises, Small and Entry Systems
- 4.1.4 By geography (US, Europe, Asia Pacific, ROW)

## **4.2 WW Market Shares 2009**

- 4.2.1 By Environment - Large & Midrange Enterprises, Small and Entry Systems
- 4.2.2 By Operating System - MF z/OS, UNIX & Linux, Windows, Other

# **5 Enabling Technologies – Trends & Standards**

## **5.1 Network Stack Approach to Storage**

- 5.1.1 Application to Storage: Direct Reach via DAFS, SRP
- 5.1.2 Data Access Through Records (e.g. DB SAN or Blocks) or FS or both

## **5.2 Storage Protocols**

- 5.2.1 SCSI Architectural Model - Client/Server Ios, Initiators/Targets
- 5.2.2 SCSI Commands/Response Sequences
- 5.2.3 Interconnect Infrastructures

## **5.3 IP Protocols**

- 5.3.1 IP Addressing, Routing/Switching
- 5.3.2 Layer 2/3, Spanning Tree, ARP, OSPF, BGP

## **5.4 IP Storage Protocols & Standards**

- 5.4.1 Parallel SCSI vs. Serial

## **5.5 IP SANS – Key Leverages**

- 5.5.1 Class of service (8 Levels of Frame Prioritization for transport of Mission Critical Data over SAN)
- 5.5.2 VLAN (Segregation of devices on SAN)
- 5.5.3 Flow Control (Reliable transport of data over connectionless protocol without loss of performance e.g. UDP/IP)
- 5.5.4 Scalability (using trunking or link aggregation)
- 5.5.5 Low cost (Standard Cabling - CAT 5 or Fibre Optic – Single or multimode)
- 5.5.6 High Bandwidth Performance (1.25 Gbps)
- 5.5.7 Multiprotocol Accommodation of SCSI, FC & Native IP Storage Devices
- 5.5.8 IP Networking Tools (Control Lists, Authentication, SNMP based management, QoS)
- 5.5.9 Consolidated storage/server management
- 5.5.10 Business Continuity across enterprise utilizing existing tools
- 5.5.11 Increased Storage utilization via Networking

## **5.6 Issues**

- 6.5.1 Performance - Improving IP Storage Performance using TOE

# **6 Competitive Product Positioning & Strategies**

## **6.1 Basis of Competition: PACSIMS**

- 6.1.1 Performance – OLTP, Decision Support & Streaming Computing Environments
- 6.1.2 Availability – SLA Guarantees by HA Levels
- 6.1.3 Cost - Total Cost of Ownership (TCO)
- 6.1.4 Scalability – Virtualization, Clustering
- 6.1.5 Interoperability
- 6.1.6 Manageability (Virtualization, Autonomics/Self-Configuring, Self-Optimizing with Workload & Self-Healing ...)
- 6.1.7 Security – IPsec6 vs. CIM based

## **6.2 Business Positioning Matrix – Vision vs. Execution**

## **6.3 Keys to success for**

- 6.3.1 Incumbent Vendors -
- 6.3.2 New Leaders –
- 6.3.3 Startups – Primary exit strategy: Acquisition vs. Sustaining
- 6.3.4 Emergent Startups – Specialty Niches and emergent companies - 1st & 2nd Waves
- 6.3.5 Investors

# **7 Suppliers: Portfolio & Strategies**

# **8 Channels of Distribution**

## **8.1 Industry Structure**

## **8.2 Channels of Distribution**

- 8.2.1 By EU Business Size & Application Markets
- 8.2.2 Addressing Major Vertical Markets
- 8.2.3 Addressing High Availability Markets & Requirements

## **8.3 Pricing Structures by Channel**

## **8.4 Distributor Services**

- 8.4.1 Distributors, System Integrators, Service Provider Partnering Programs

## **8.5 Major Channel Players**

- 8.5.1 Top 65 System OEMs
- 8.5.2 Top 100 System Integrators – Large & Medium
- 8.5.3 Top 100 Federal Players
- 8.5.4 Top 75 VADs

# **9 Future Of IP Storage**

## **9.1 Convergence**

## **9.2 Virtualization**

- 9.2.1 Autonomics – Self Identification & Configuring, Application Aware Self-Optimizing, Self Management, Self Healing

## **9.3 Volume Driven Economics**

- 9.3.1 The Tsunami of Next Generation Storage & Networking

## **9.4 Strategies of Surviving Players**

# **10 Methodology & Appendices**