



Fibre Channel: The Storage of Business™

Fibre Channel Positioning

April 2006
Revision 4

Overview

- Fibre Channel (FC) has the incumbent position (over 83%* and growing) for bet-your-business enterprise-class storage
- FC has been a serious technology since 1990 and has by far the most extensive maturity and suite of supporting standards and committees of any interconnect technology
- This set of slides provides a statement of the framework and positioning that guide the FCIA marketing and development directions

*External Block Storage by \$, Gartner, Sept 2005

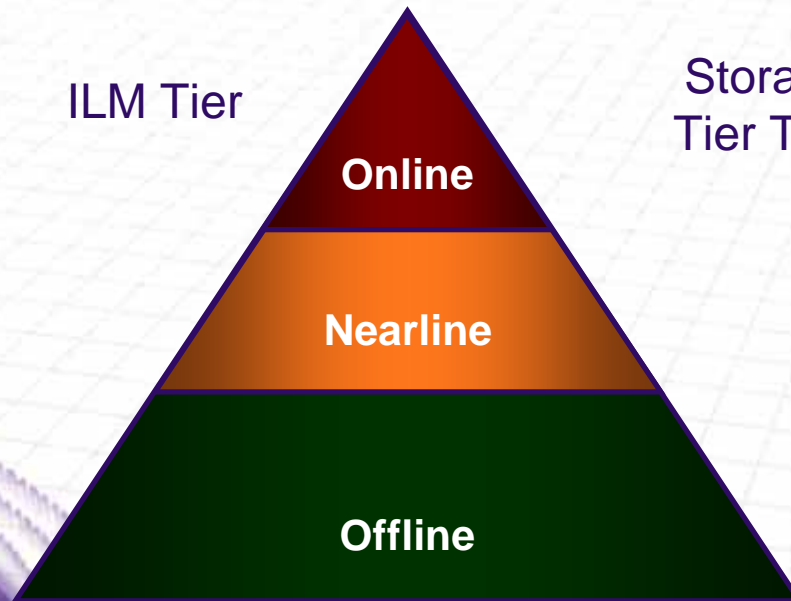
ILM Requires Tiered Storage

The SNIA Data Management Forum (DMF) definition for ILM reads:

*“Information Lifecycle Management (ILM) is comprised of the policies, processes, practices and tools used to **align the business value of information with the most appropriate and cost effective IT infrastructure** from the time information is conceived through its final disposition. Information is aligned with business processes through management of policies and service levels associated with applications, metadata, information and data.”*

Matching Data To The Most Appropriate Storage Type Is The ILM Enabler

ILM Tier



Storage
Tier Type

Enterprise-Class Disk Drives
High Performance & Reliability

Nearline Optimized Hard Disks
Nearline & Temporary Retention

Tape Backup
Long-Term Storage

Established, Trusted and Ubiquitous

- **Designed from the beginning for high throughput mission-critical applications with minimal latencies, data integrity and guaranteed delivery**
- **Supports all storage connections from disk drives to datacenters to campuses to 100 km remote sites**
- **The trusted and deployed technology in Fortune 500 for Mission Critical storage applications**
- **Innovating through initiatives like FC-SCM to bring enterprise-class capabilities to the SMB SAN market**
- **Thousands of proven reference designs**

The Safest Storage Implementation

Fastest Speeds

- **2GFC Dominates current shipping SANs**
 - Twice 1 GbE speeds and more efficient
- **4GFC Fibre Channel solutions**
 - Fastest storage interconnect available today
- **8GFC Under development**
 - Active development of 8GFC, focusing on low cost, fast time-to-market
- **10GFC Deployed today for Inter-Switch Links**
- **16GFC Fibre Channel on the horizon**

A Roadmap All the Way to 128GFC

Flexible for Tiered Storage

- **Highest performance switched interconnects for block storage traffic**
- **Highest performance disk drives**
 - Three times the IOPS of SATA
- **Highest performance tape systems**
 - Only serious option for the enterprise
- **Attaches a variety of performance and nearline-optimized solutions**
 - FC Disk Drives
 - SATA Disk Drives

Enables ILM Applications

Backward and Forward Compatibility

- **Automatically enables intermixing 8GFC, 4GFC, 2GFC & 1GFC technologies without slowdown in any point in the system**
- **Unparalleled ability to seamlessly scale**
 - Capacity
 - Performance
 - Reliability, Availability and Serviceability (RAS)

Investment Protection

Proven Interoperability

- **Extensive vendor testing and qual cycles**
- **Plugfests since 1996**
- **Active T11 interoperability profiles**
- **Multiple active interoperability test facilities**
 - UNH
 - SNIA Tech Center
 - Independent Test Labs
 - Others

Guaranteed Standards-Compliant Implementations

Continuous Enhancements

- **Provides investment protection for already installed infrastructures**
 - Preserves existing, extensive software and hardware base
- **Meeting customers' evolving needs**
 - Speed continually doubling
 - Bandwidth/Cost leader over other protocols
 - Solution enhancements
 - Lower cost solutions
 - Simplified solutions (Plug-n-play)

Future-Proof Your Storage Investments

Solid Standards Foundation for All Storage

- **Simple specifications define the FC protocol for:**
 - Guaranteed data delivery
 - Multiple copper and optical options
 - Wide range of physical interconnects
 - Comprehensive management
- **Standards supporting applications**
 - Remote SAN
 - Remote site replication
 - Disaster recovery
 - Back-end storage
 - Avionics
 - ...and others
- **Supporting technologies**
 - Storage management and interfaces
 - Security
 - Physical interoperability research and development
 - Interoperability profiles

*The **Gold Standard** for Business*

- **A clear dominance in 80%+ of business storage**
- **Proven complete SAN solutions**
 - Performance, security, management
 - Reliable, scalable
 - Many established suppliers for components
- **EXCELLENT performance / cost properties**
 - Costs less than other technologies for same performance – may be the only way to get required performance

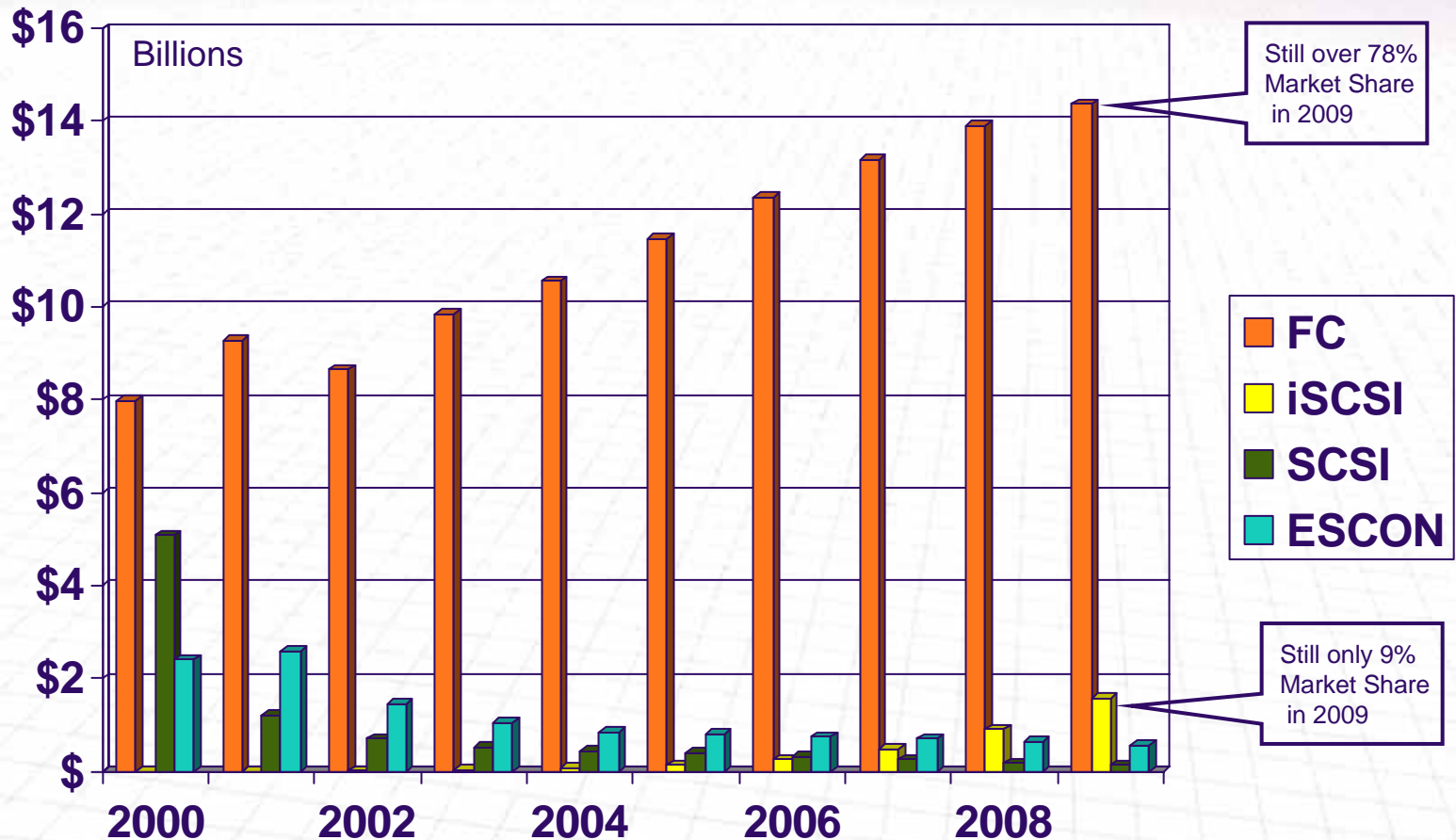
Fibre Channel: The Storage of Business

The **Gold Standard** for Storage Interconnects

- **Open industry standards**
- **Technical foundation for multiple protocols**
 - Basis for other interconnect technologies
- **Emphasis on interoperability**
 - Specifications apply at multiple connector interfaces
- **Comprehensive modeling methodologies**
 - Focused on high speed transports

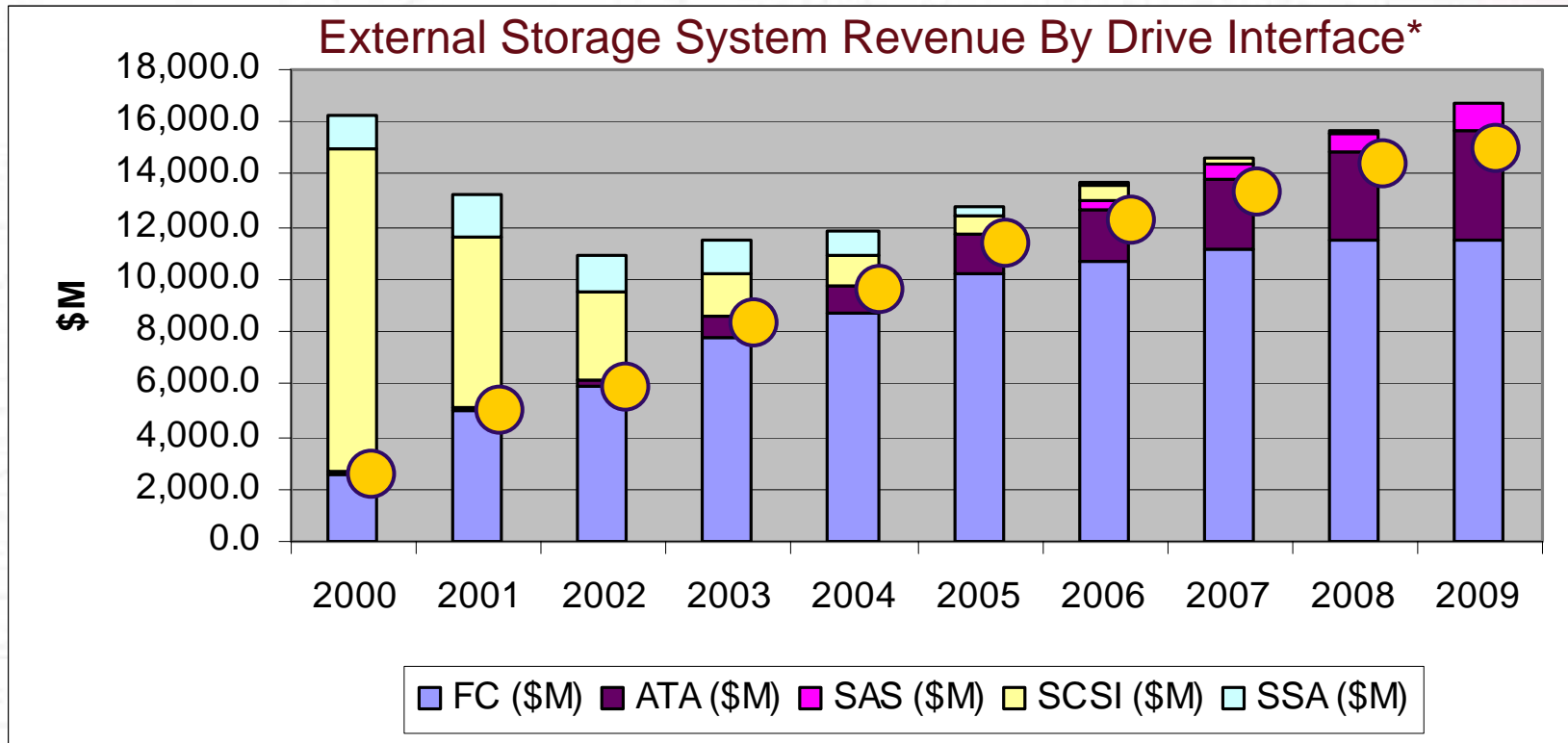
Unparalleled Maturity

Continuous SAN Market Growth



Source: Gartner External Controller Based Disk Storage WW 2005-2009
29 September 2005 – FICON included in FC

Continuous Back-End Market Growth



● FCIA Estimate: Fibre Channel Connected Storage

* External Storage means storage arrays only

Source: Gartner, September 2005

Fibre Channel: The Storage of Business

- ***Dominates the SAN market***
- ***Well understood***
- ***Easy to learn, use and implement***
- ***Protects storage investments***
- ***Future-proofs storage***
- ***Provides comprehensive solutions***
- ***Vision for extending into additional markets***
- ***Continuous speed and Bandwidth/\$ improvements***

Fibre Channel: Unchallenged in Storage