Leading the Evolution of Data Center Networks

Technology Day for Investors and Analysts

June 26, 2008

Welcome

Michael Klayko
CEO

Today's Goals

- Articulate Brocade's technology direction and plans
- Describe our key differentiation for important market segment opportunities
- Clarify our position, expectations, and plans around new technologies and trends

Key Messages for Today

- Brocade continues to execute our strategy to evolve to a larger, more comprehensive enabler of data center solutions
- We continue to deliver excellent company results, primarily because we continue to innovate
- We are proactively driving several opportunities to further differentiate in our target segments and markets
- We have deep understanding and insight as to how our new technologies will play a significant role in the evolving data center

We are organized to address a wide range of enabling technologies and solutions for Data Centers

Data Center Infrastructure

- Directors and switches
- Distance extension solutions
- Sold through over 20 OEMs

File and Data Management

- Policy-based automation for file data discovery, migration, replication
- File Servers and SharePoint Portals

Server Edge

- Bladed switch modules
- HBA product line
- Emerging opportunities

Services, Solutions, Support

- Assess, Design, Implement
- Resident consultants
- Partner and direct models

Major Data Center Trends and Drivers

Tom Buiocchi
VP Marketing

Cautionary Statements and Other Disclosures

This presentation includes forward-looking statements regarding Brocade's business outlook.

These forward-looking statements are only predictions and involve risks and uncertainties such that actual results may vary significantly. These and other risks are set forth in more detail in Form 10-K for the fiscal year ended October 27, 2007 and Form 10-Q for the quarter ended April 26, 2008. These forward-looking statements reflect beliefs, estimates and predictions as of today, and Brocade expressly assumes no obligation to update any such forward-looking statements.

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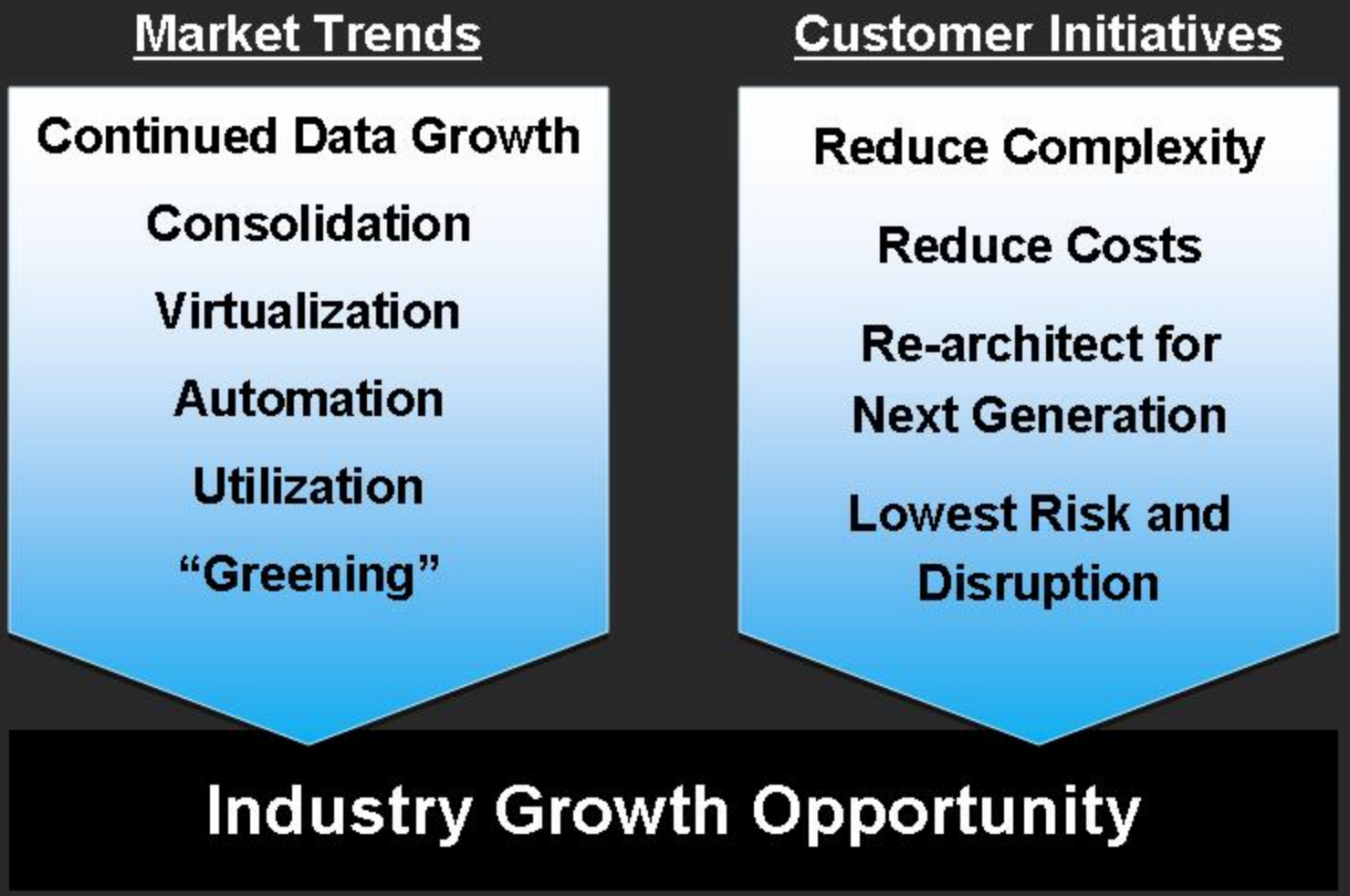
Today's Agenda

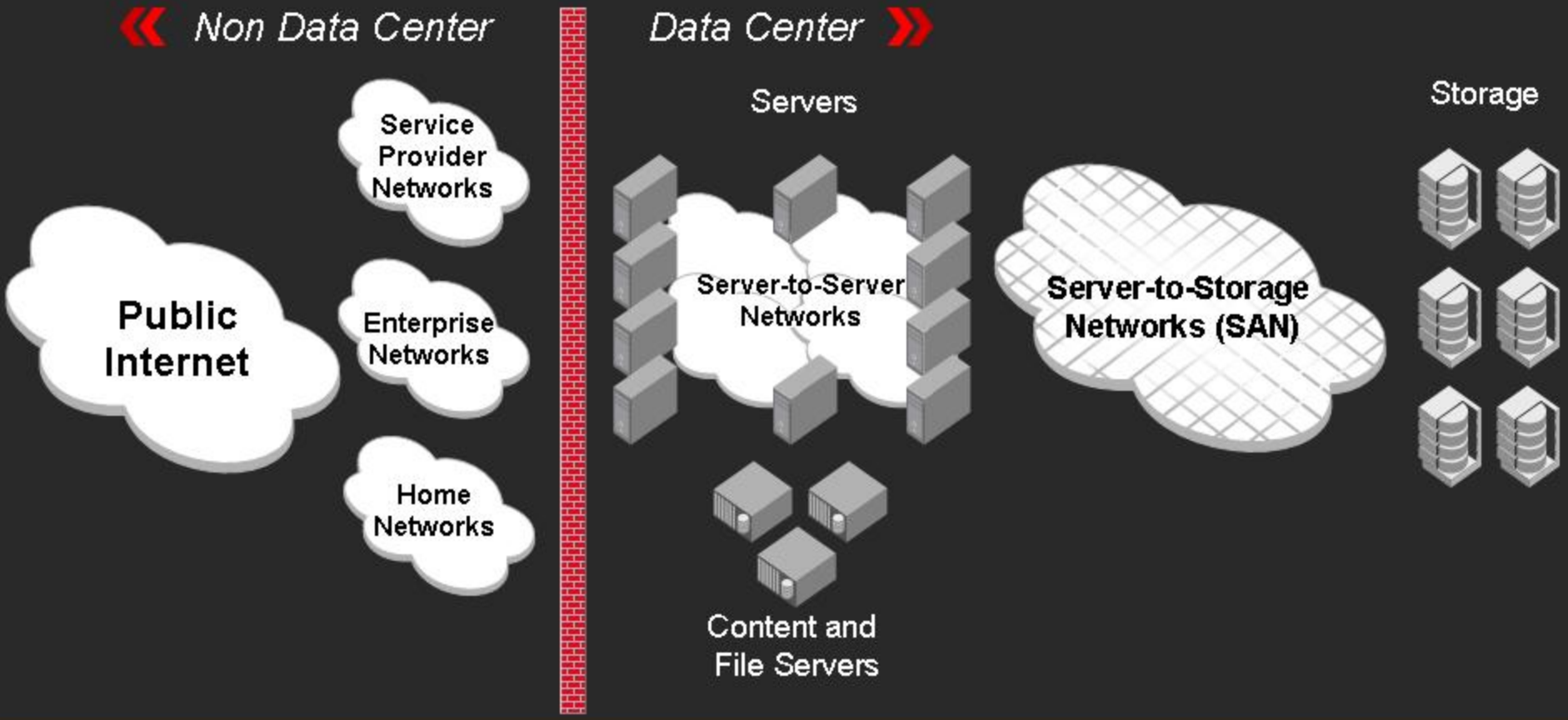
Time	Speaker	Description
01:10 – 01:20 pm	Tom Buiocchi	Data Center Trends and Drivers
01:20 – 01:40 pm	Ken Male	InfoPro - What Customers Say
01:40 – 02:10 pm	Martin Skagen	Server-to-Storage Networks
02:10 – 02:30 pm	Herman Chao	Server Edge Opportunities
02:30 – 02:45 pm	Break	
02:45 – 03:00 pm	Max Riggsbee	Converged Data Management
03:00 – 03:15 pm	Scott Podmilsak	New Services Capabilities
03:15 – 04:00 pm	Panel Q & A	Executive, Technical Panel
04:00 – 05:30 pm	Breakout Topics	Cocktails, Small Breakout Groups

Data Center Trends and Market Drivers



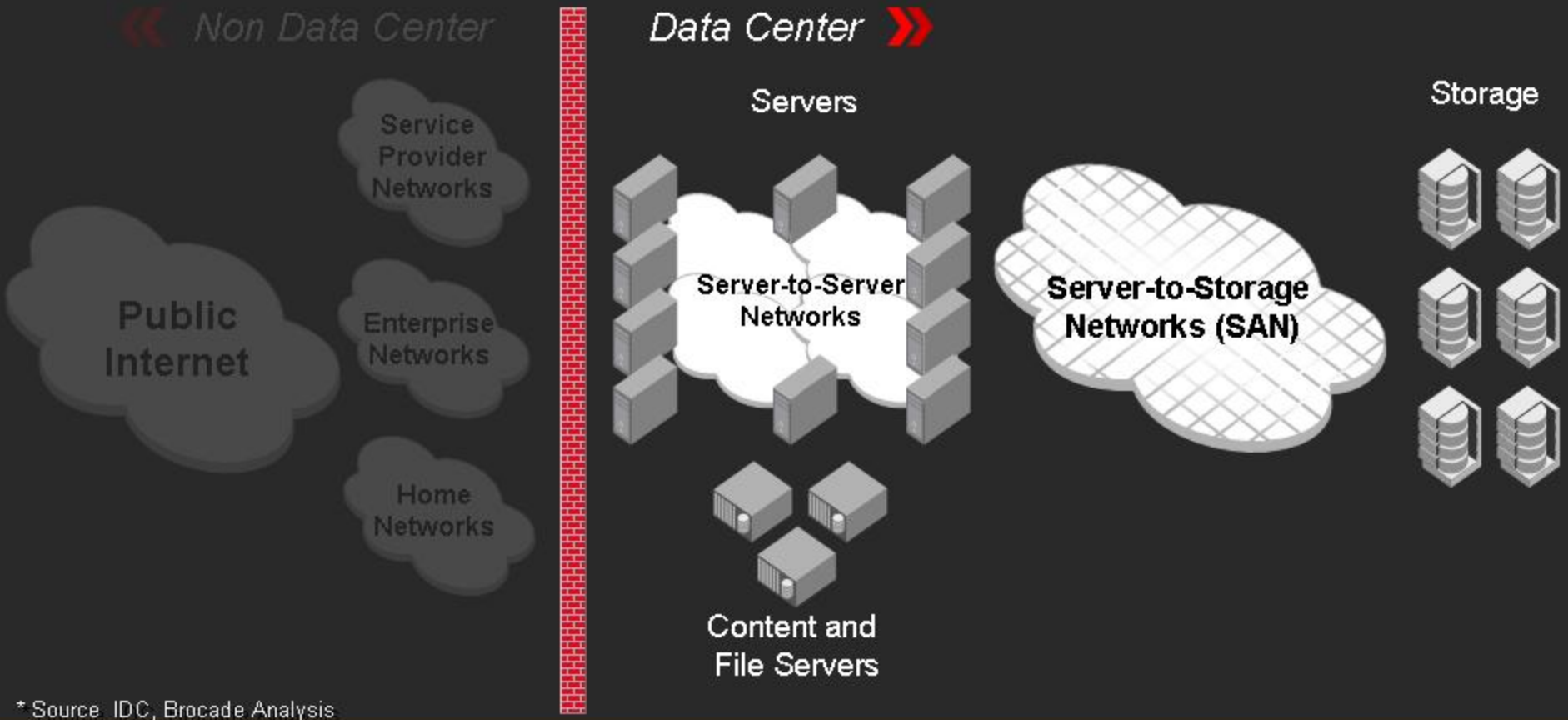
Brocade – Company Growth Drivers

Today's Networking and IT Landscape



We are Focused on the Data Center

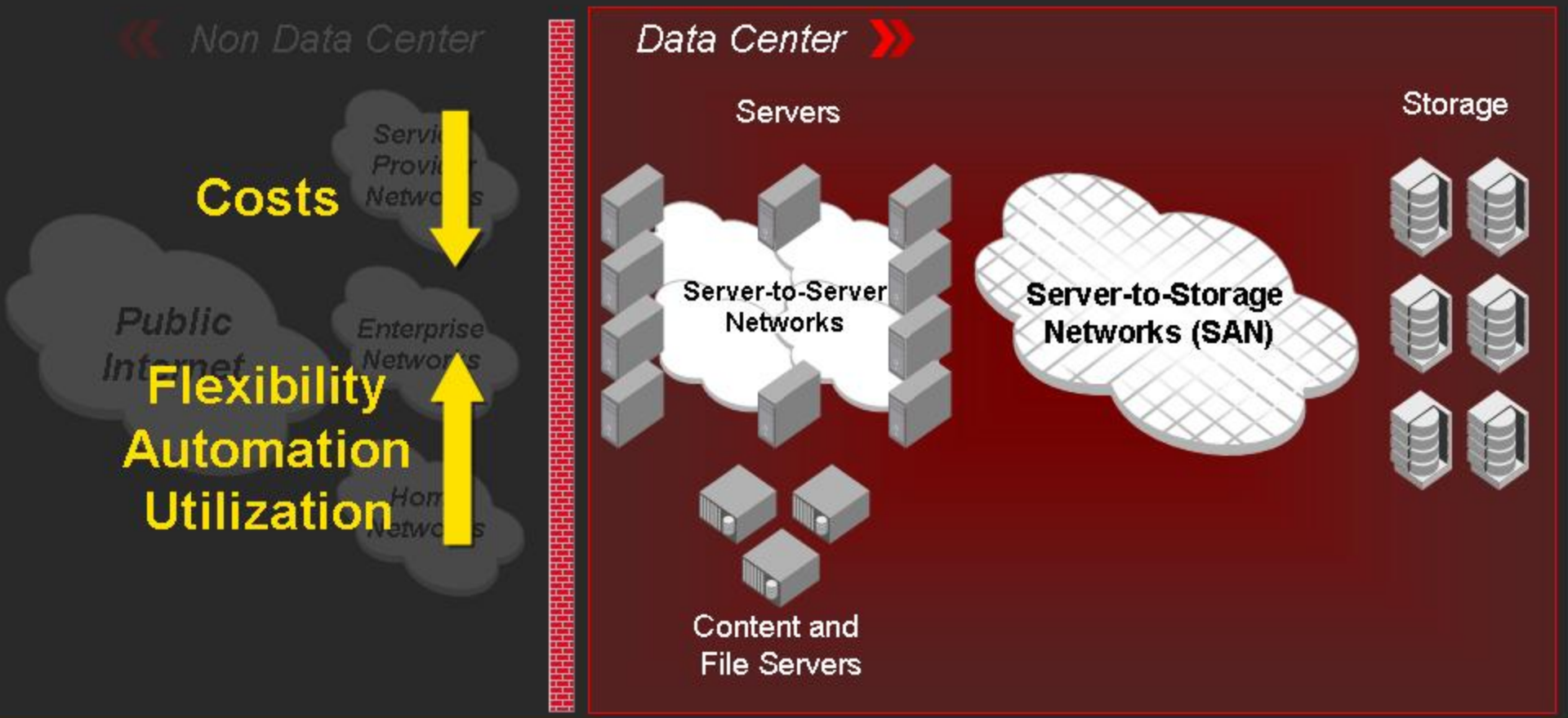
- **~$150B Data Center equipment and services TAM**



* Source IDC, Brocade Analysis

Brocade's Data Center Fabric (DCF) Strategy

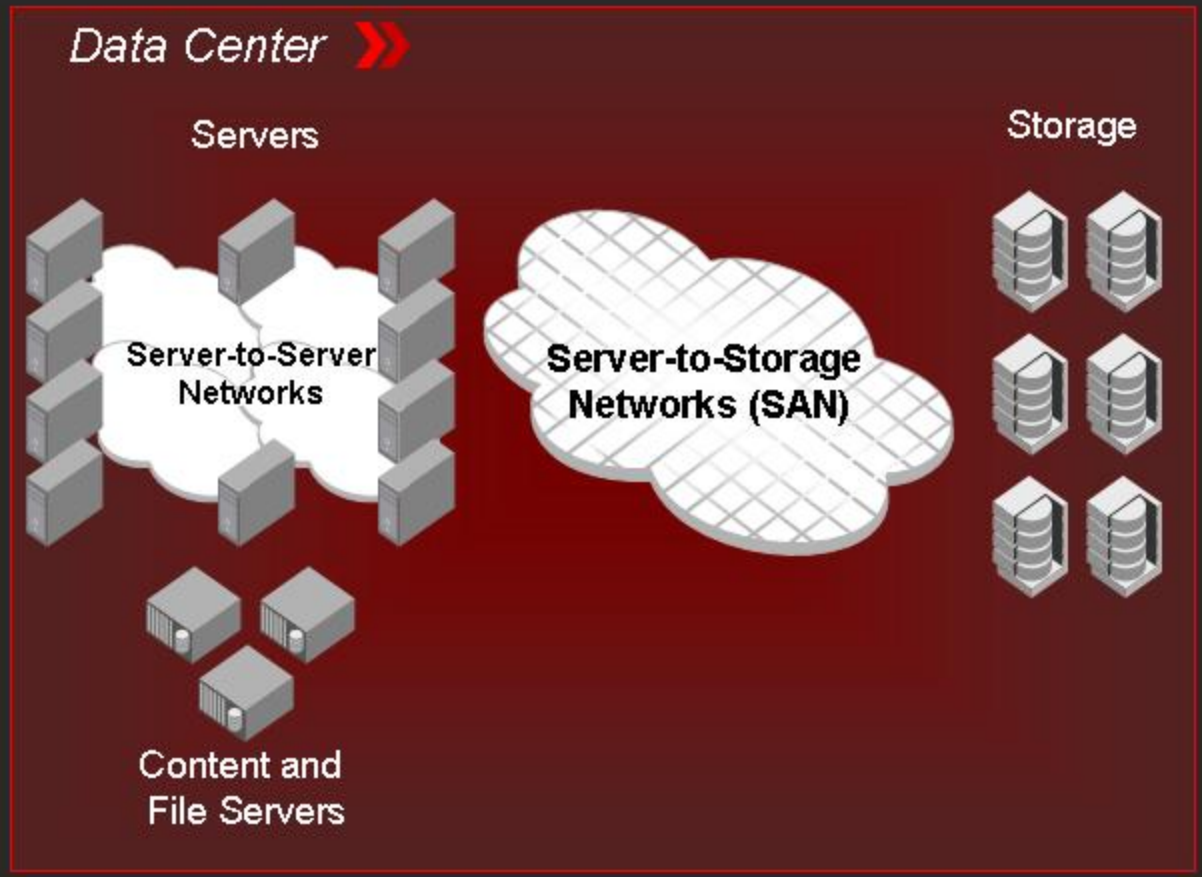
Maximum performance, flexibility, and investment protection



Brocade's Data Center Fabric (DCF) Strategy

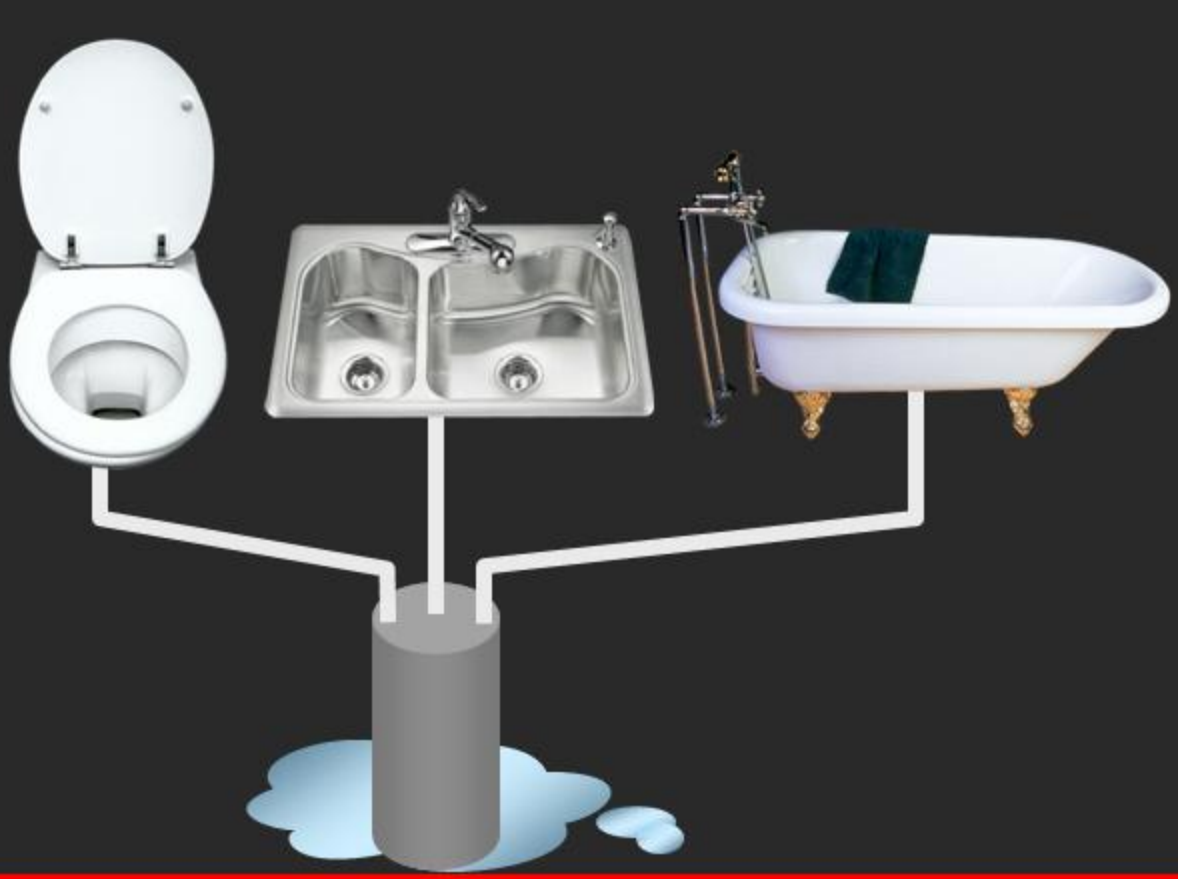
Maximum performance, flexibility, and investment protection

- *Data and Applications are the focal points*
- *Multiple fabrics, Multiple protocols*
- *Intelligence at all tiers of the architecture*
- *Investment protection and extension are critical*
- *Partnership model with server & storage OEMs*



Converged Networks vs. A Unified Network

A Graphical Example



The Customer Perspective

Ken Male

The InfoPro

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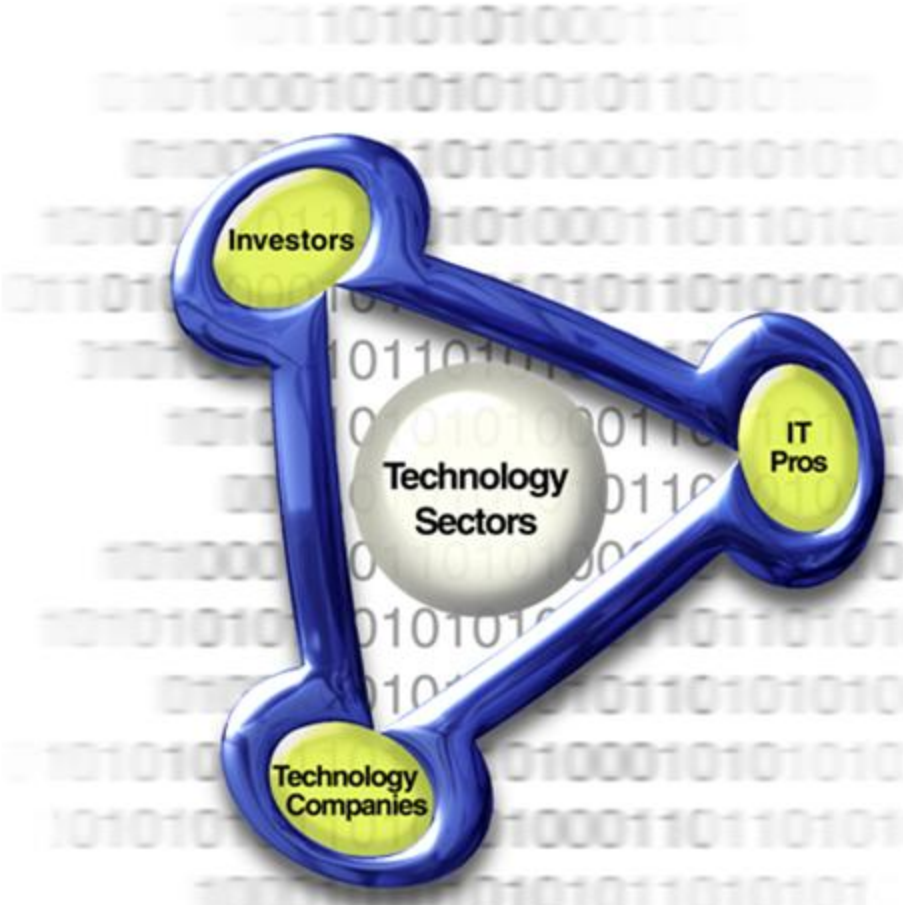
Customer Perspective and Research:
Technology Forces at Work



Ken Male
CEO & Founder

TheInfoPro (TIP)
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Lufthansa
Pfizer
HSBC
Panasonic
MERCK
Reed Elsevier
Fidelity INVESTMENTS
Pitney Bowes
experian
KeyCorp
BARCLAYS
DOW CORNING

- 200+ Decision Makers interviewed in 6 month waves by key IT sectors
- Average interview is 1 hour
- TIP*Network* today in excess of 800 organizations

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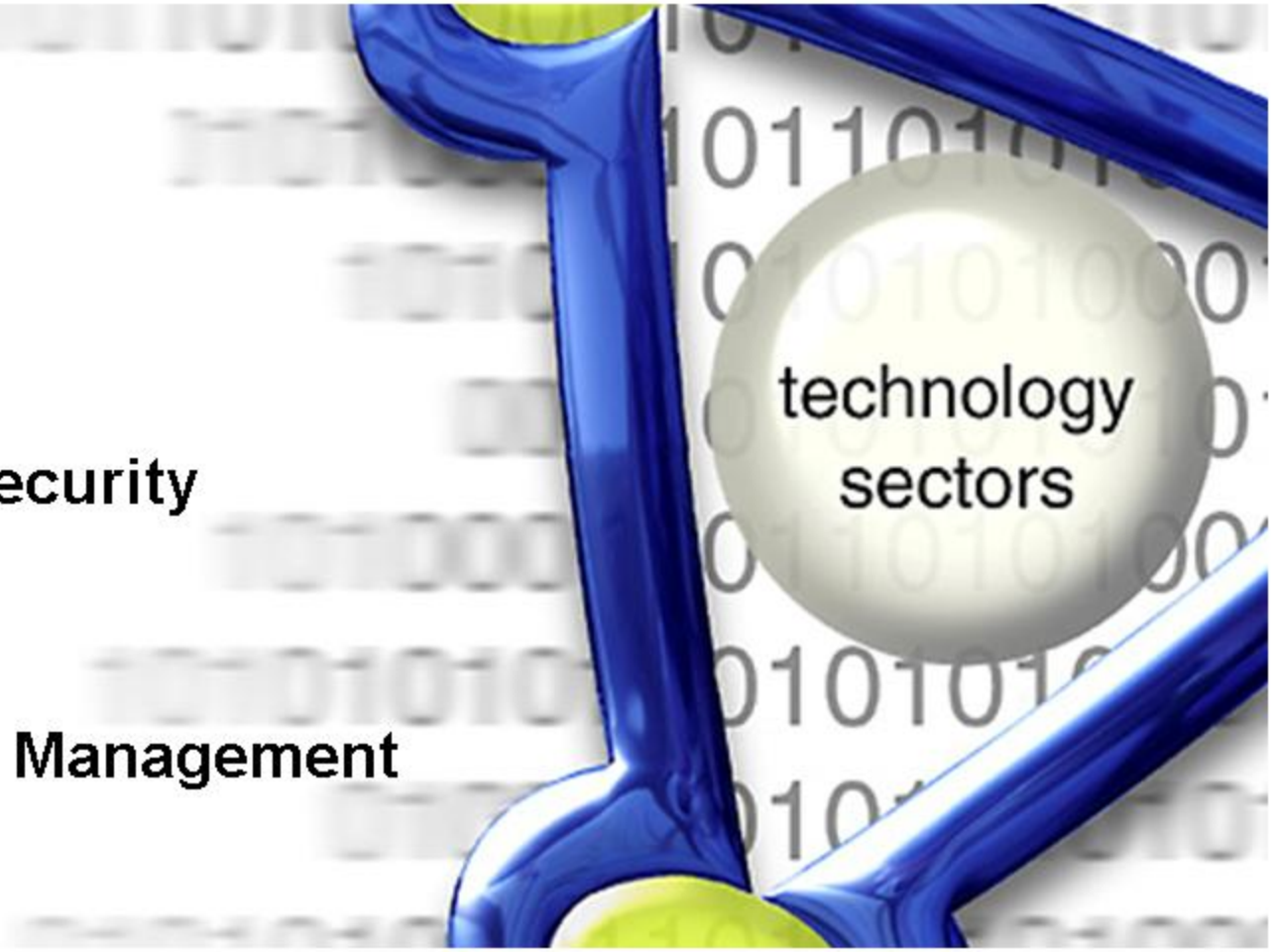
Technology Sectors Investigated

- Storage
- Servers
- Networking
- Information Security
- Sourcing
- Infrastructure Management

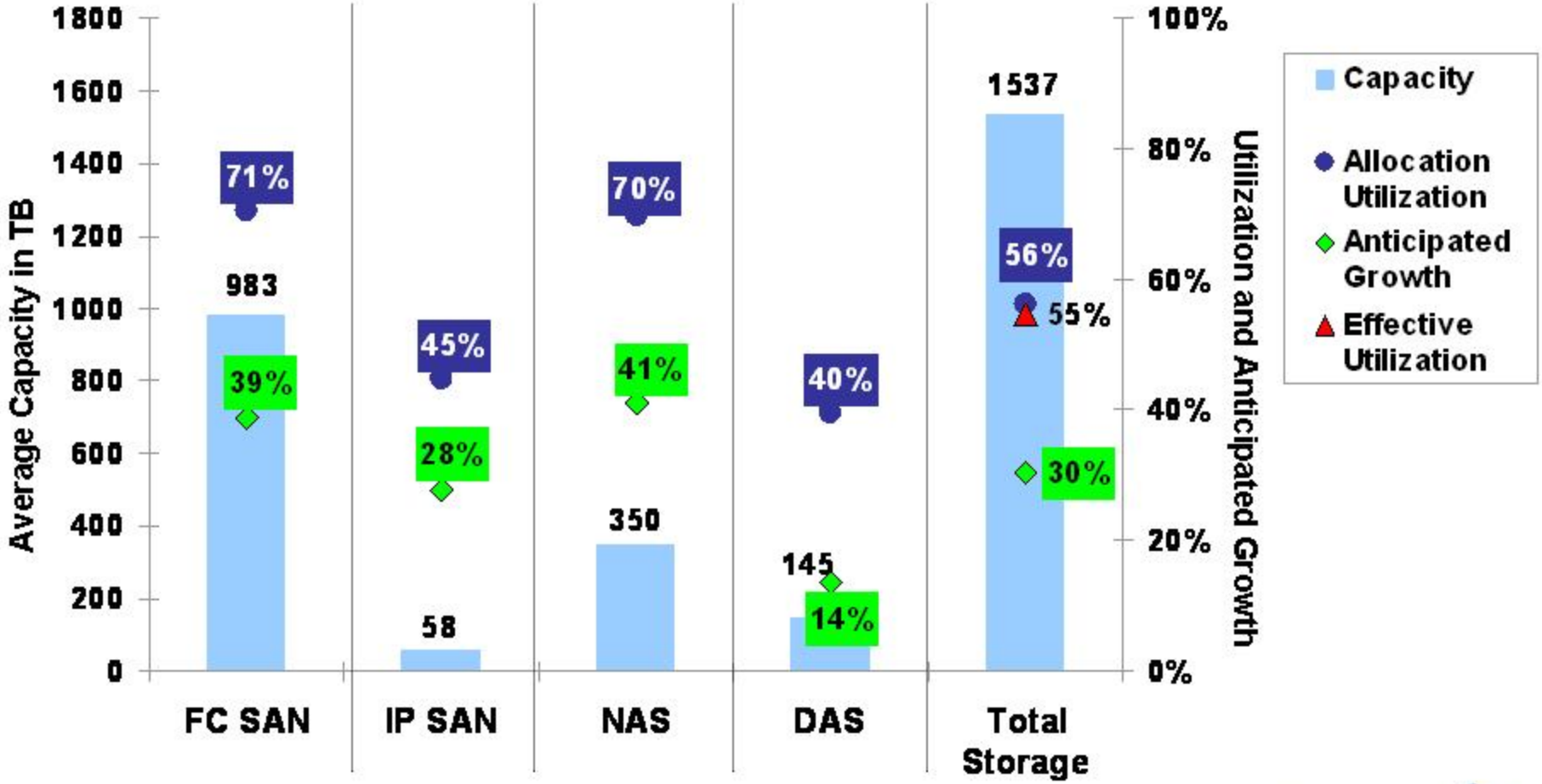
  Software*



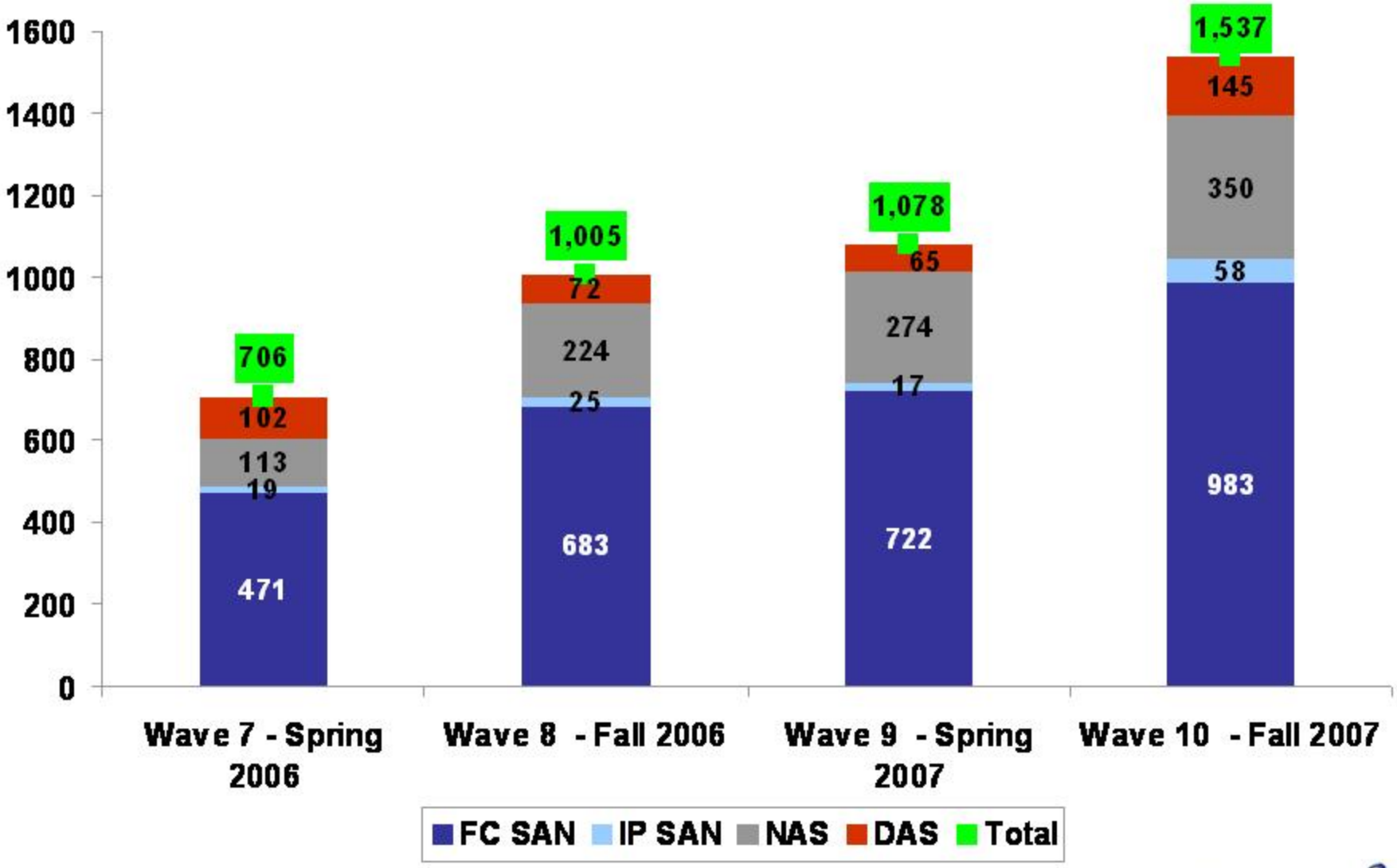
TIP's Storage Research

Current Storage Capacity, Utilization, and Anticipated Growth: FC SAN / IP SAN / NAS / DAS

What is your company's overall capacity for each (in usable terabytes) at the time of the interview? What is the allocation utilization (used/available)? What is your best guess for your effective utilization? What is the percentage growth rate (projected) for this year?



Total Capacity Time Series

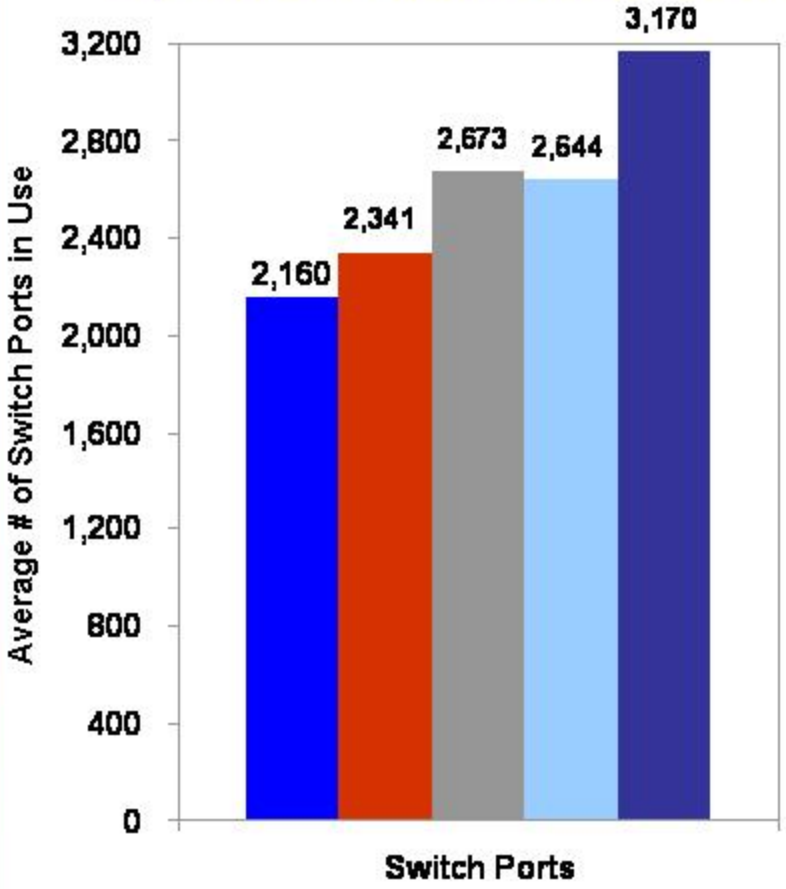


(1/8/08): F1000 Sample. Wave 7 n=147, Wave 8 n=140, Wave 9 n=146, Wave 10 n=147

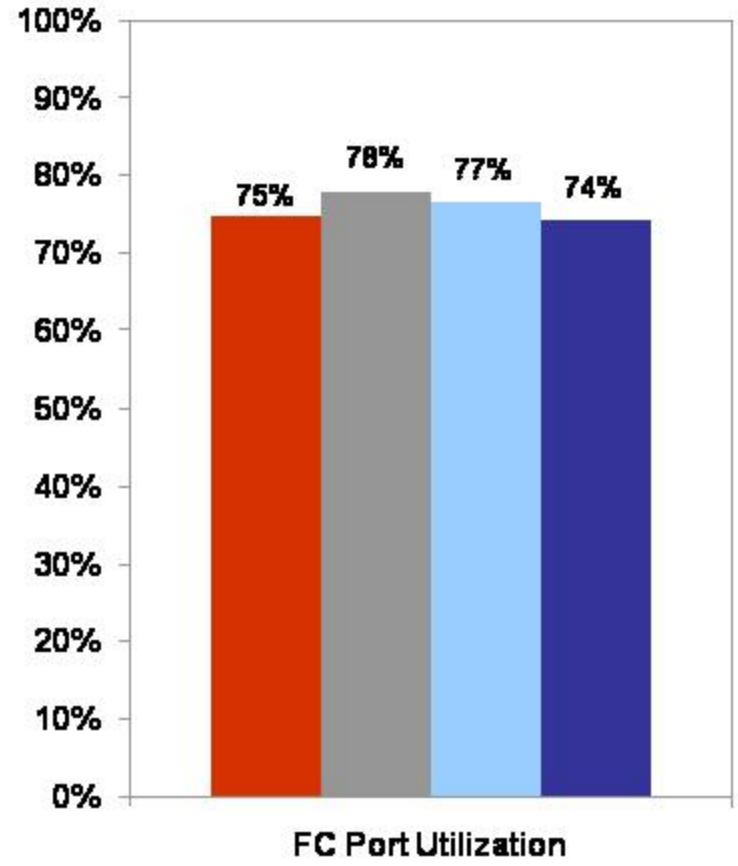
F1000 Switch Port Utilization Rate Changes

How many Fibre Channel switch ports do you have, and what is your switch port utilization?

Reported Number of Switch Ports



Reported Switch Utilization (Active Ports)



(1/8/08): F1000 Sample. **Wave 7:** Switch Ports n=142, Utilization n=139. **Wave 8:** Switch Ports n=132, Utilization n=131. **Wave 9:** Switch Ports n=135, Utilization n=131, **Wave 10:** Switch Ports n=132, Utilization n=132

Storage Networking Technology Heat Index®

Rank	Technology	Heat Score
1	Deduplication	100
2	Virtual Tape Library (VTL) for Open Systems	66
3	4 Gbps Fibre Channel	51
4	Remote Block Mirroring / Wide Area Replication (Async)	43
5	Boot from SAN / Boot from NAS / Boot from IP SAN Software	41
6	Fabric-based Intelligence	39
6	Serial ATA Drives (SATA)	39
8	Block Replication / Snapshots / Single Point in Time (Sync)	37
8	Fixed Content / Content Addressed Storage (CAS) Array	37
8	Wide Area File Services (WAFS)	37
11	Multi-protocol Switch (FC/IB/IP) including iSCSI Gateways	35
12	IP-based SAN Extension / Replication	34
13	NPIV - Virtualized I/O	33
14	Virtual Fabrics (LSAN/VSAN) Switching	28
15	File Replication / Snapshots / Single Point in Time (Sync)	27
15	Storage Diagnosis Tools / Root Cause Analysis	27
17	Remote File Mirroring / Wide Area Replication (Async)	23
18	IP SAN Storage Array	17
19	10 Gbps Ethernet for Storage including (TCA)	11
20	Serial Attached SCSI Drives (SAS)	7
21	TCP/IP Offload Engine (TOE)	5
22	Fibre Channel over Ethernet (FCoE)	0

(11/21/07): F1000 Sample. n=152

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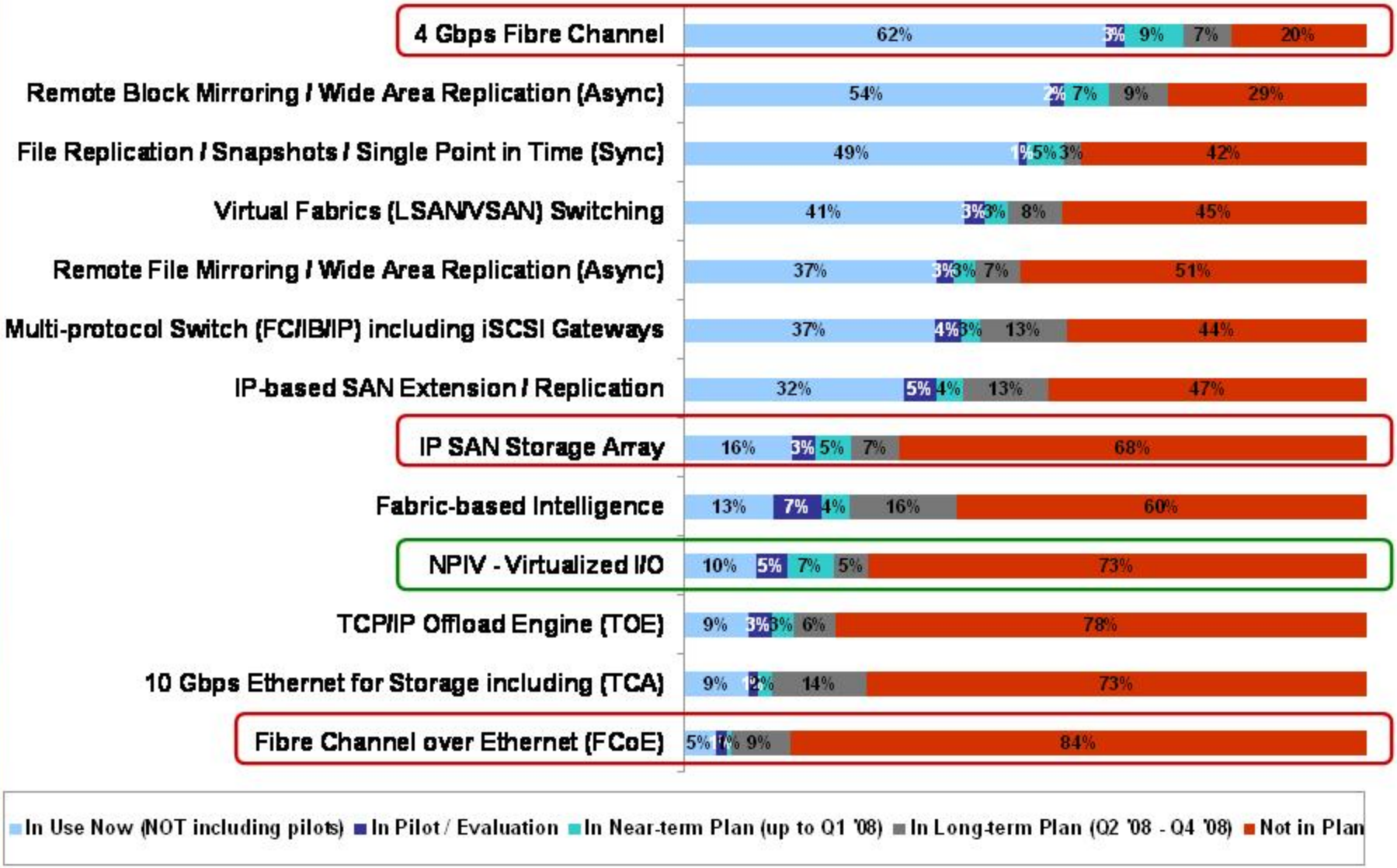
Storage Networking Technology Roadmap



 (11/7/07): F1000 Sample. n=152

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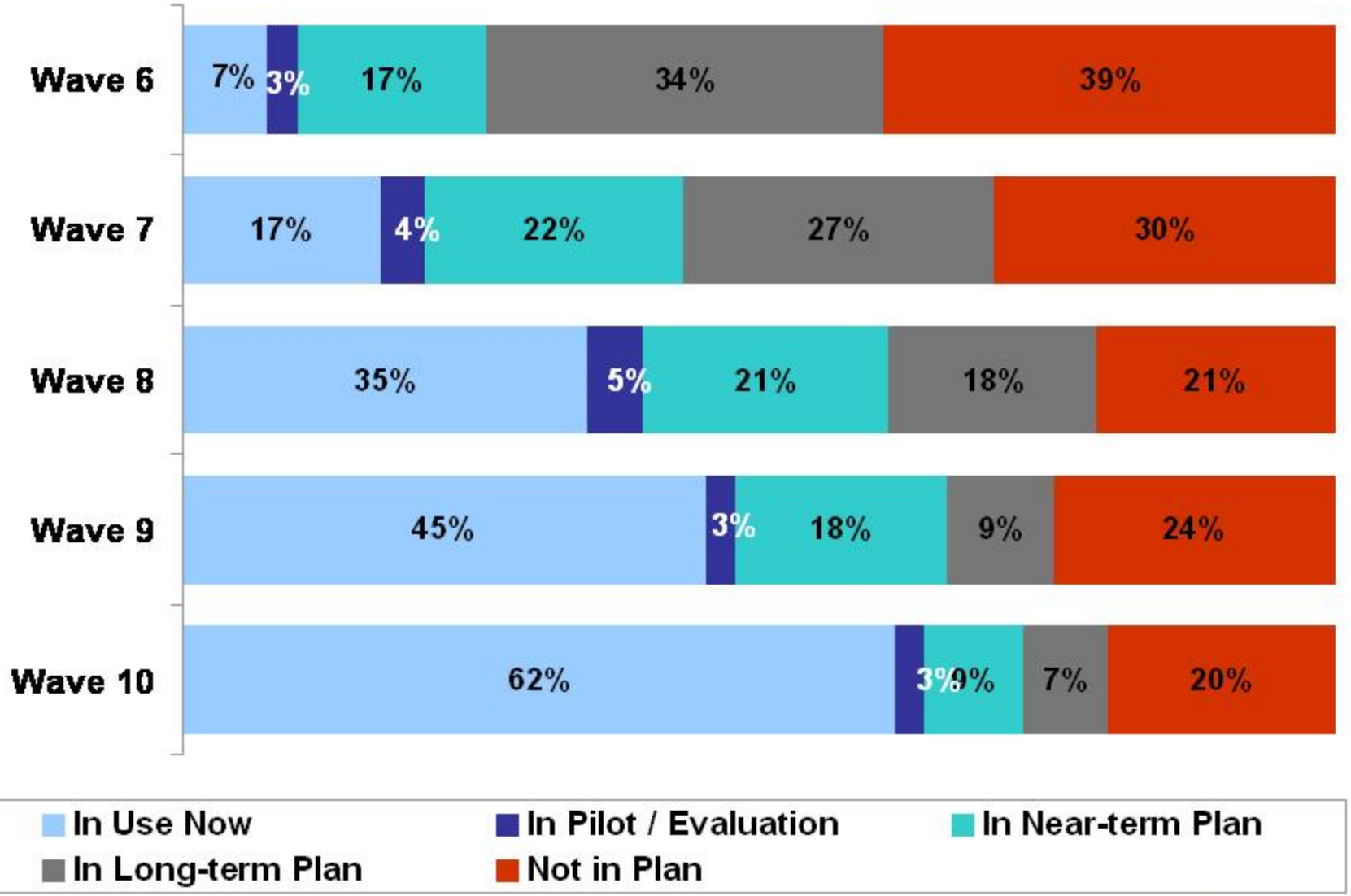
Storage Networking Technology Heat Index® Change

Technology	Wave 5 Rank	Wave 6 Rank	Wave 7 Rank	Wave 8 Rank	Wave 9 Rank	Wave 10 Rank
Deduplication*	**N/A**	**N/A**	**19**	**14**	**1**	**1**
4 Gbps Fibre Channel	**13**	**3**	**1**	**1**	**2**	**3**
Remote Block Mirroring / Wide Area Replication (Async)	4	2	8	7	14	4
Fabric-based Intelligence	**10**	**10**	**4**	**5**	**7**	**6**
Multi-protocol Switch (FC/IB/IP) including iSCSI Gateways	6	9	6	9	6	11
IP-based SAN Extension / Replication	N/A	4	5	6	9	12
NPIV - Virtualized I/O	**N/A**	**N/A**	**N/A**	**N/A**	**15**	**13**
File Replication / Snapshots / Single Point in Time (Sync)	N/A	N/A	15	12	15	15
IP SAN Storage Array	**N/A**	**N/A**	**22**	**18**	**11**	**18**
10 Gbps Ethernet for Storage including (TCA)	N/A	16	19	12	19	19
Remote File Mirroring / Wide Area Replication (Async)	**N/A**	**N/A**	**9**	**10**	**17**	**17**

(1/8/08): W 5 n=153, W 6 n=155, W 7 n=155, W 8 n=153, W 9 n=152, W 10 n=152. * Deduplication was previously part of Management Technologies prior to Wave 9

4 Gbps Fibre Channel – Implementation

Heat Index Rank: 3
Storage Networking
Wave 10



 (11/27/07): F1000 Sample. Wave 6 n=151, Wave 7 n=152, Wave 8 n=145, Wave 9 n=152, Wave 10 n=152

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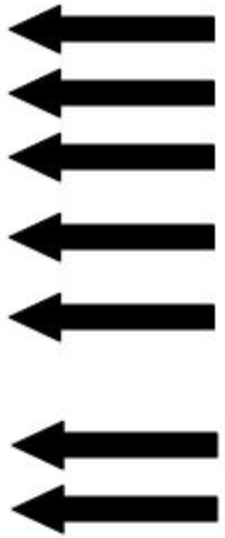
TIP's Servers Research

Server Software Technology Heat Index ®

Rank	Technology	Score
1	**Virtualization Movement and Deployment Utilities**	**100**
2	**OS-based Virtualization Services**	**96**
3	**Virtual Machine Software for Mid-tier / Application Servers**	**78**
4	**Virtualization Planning and Configuration Utilities, Load Characterizers, Co-location Tools – P to V**	**75**
5	**Virtual Machine Monitors, Management Systems**	**73**
6	Server Provisioning / Configuration Management Tools	68
7	**Application Monitoring / Management Tools**	**67**
8	**Client / Desktop Virtualization Services – Thin Client**	**65**
9	**Virtual Machine Software for Edge / Web Servers**	**61**
10	Patch Management	56
11	**Service Level Monitoring Tools**	**56**
12	Top-down Systems Management Software – Unified Infrastructure Management	53
13	**OS for Back-end / Database Servers**	**49**
13	Clustering Software – Availability	49
13	**OS for Mid-tier / Application Servers**	**49**
16	OS for Edge / Web Servers – Standalone and Blade	47
16	**Database Platform**	**47**
18	Wide Area File Services (WAFS)	37
19	**Business / IT Service Management Tools**	**29**
20	Grid Computing Enabling Layers, Utilities	15
21	**Clustering Software – High-Performance Computing (HPC)**	**4**
22	Specialized Blade Management Software	0



(8/31/07): n=147

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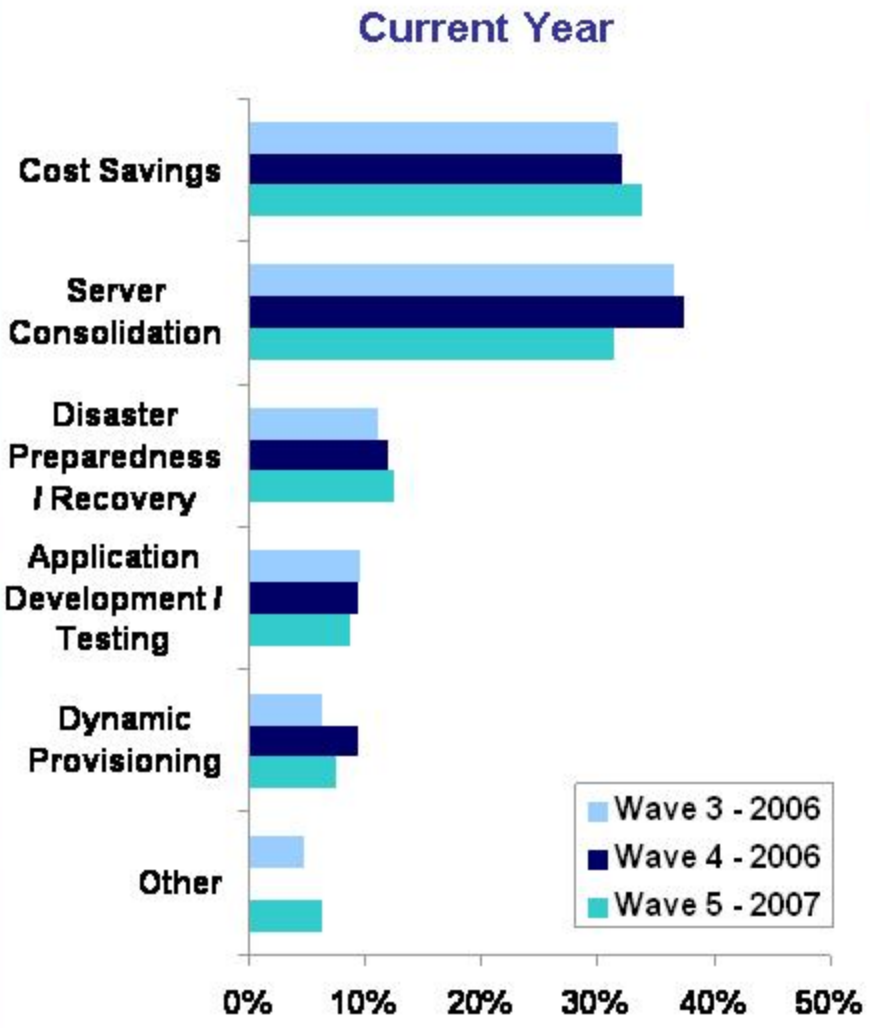
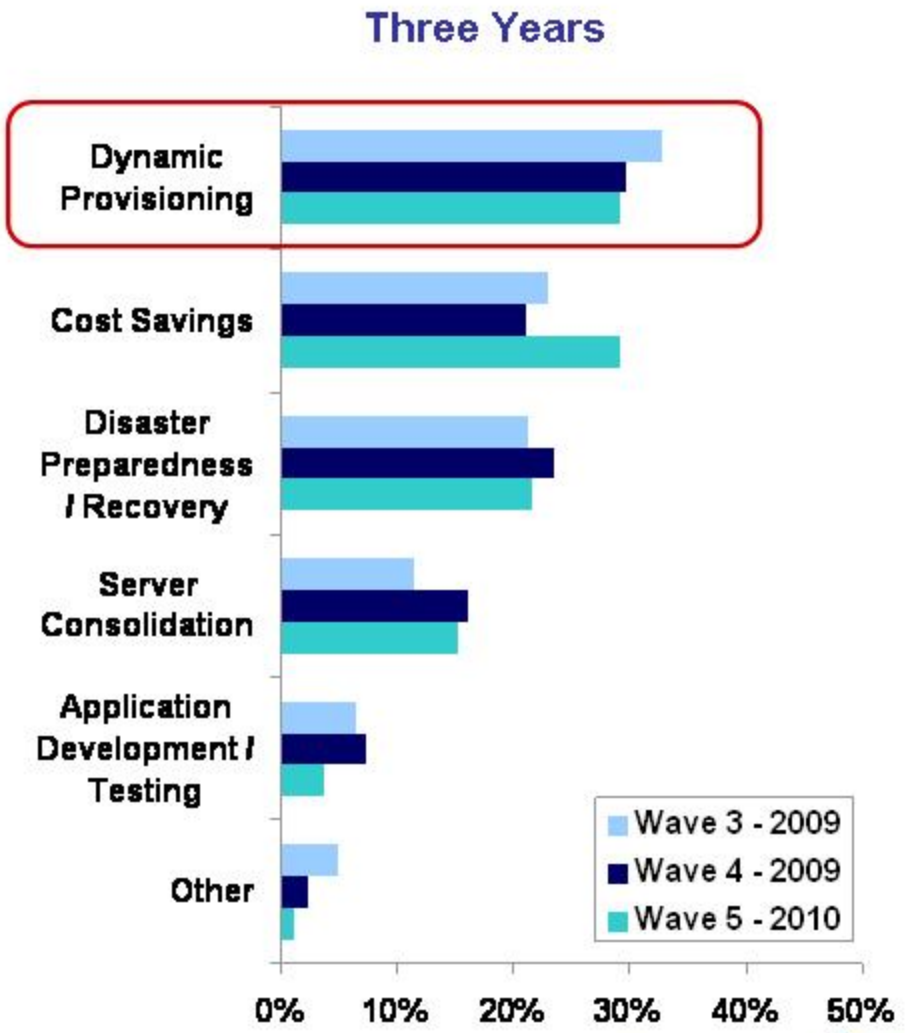
Benefit That Determines Virtualization Use

Which of these benefits is most important in determining whether server virtualization will be used for a particular application in current year? In three years?

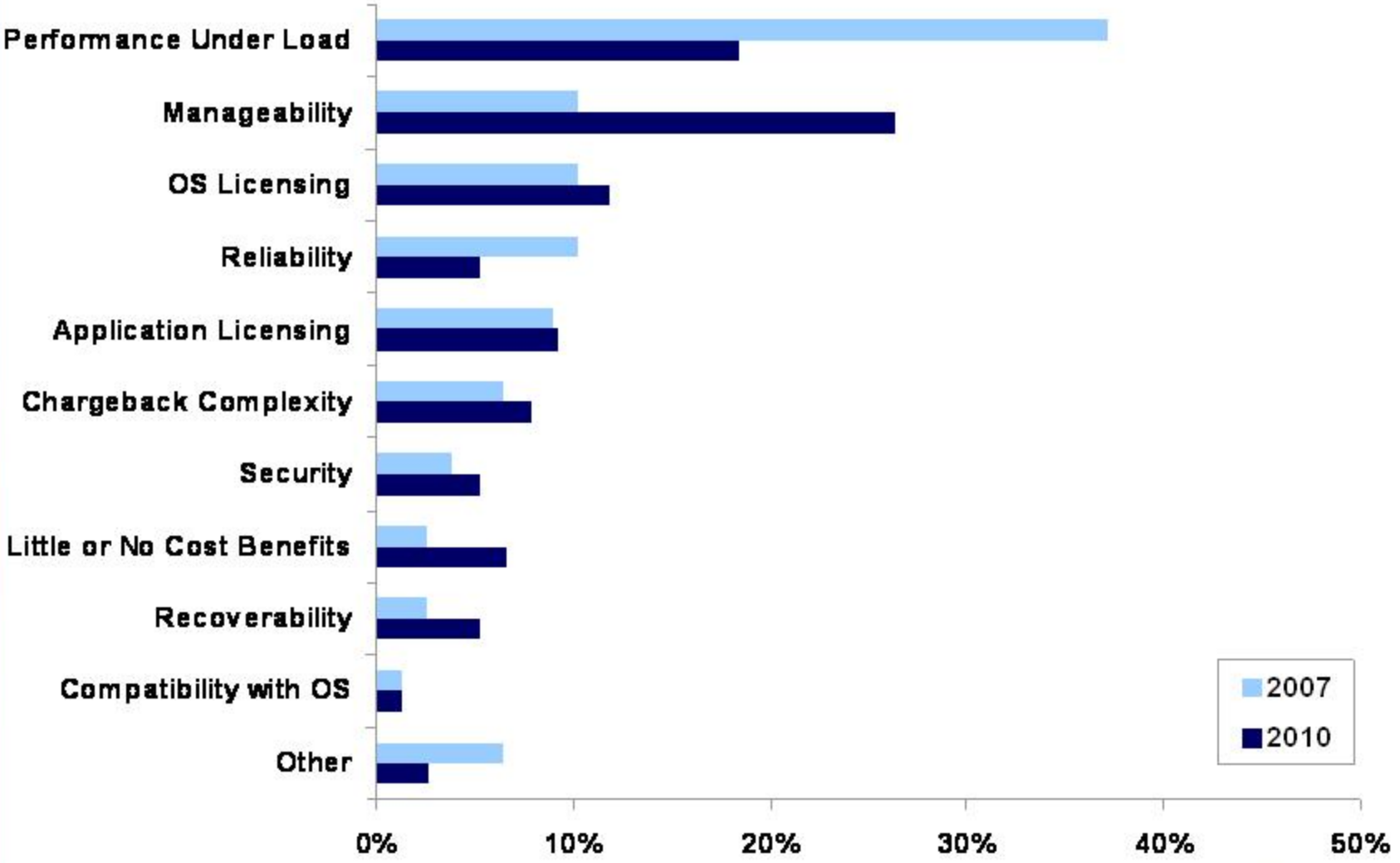




 (10/12/07): **Left Chart:** Wave 3 n=63, Wave 4 n=75, Wave 5 n=80. **Right Chart:** Wave 3 n=61, Wave 4 n=81, Wave 5 n=79

Virtualization Concerns

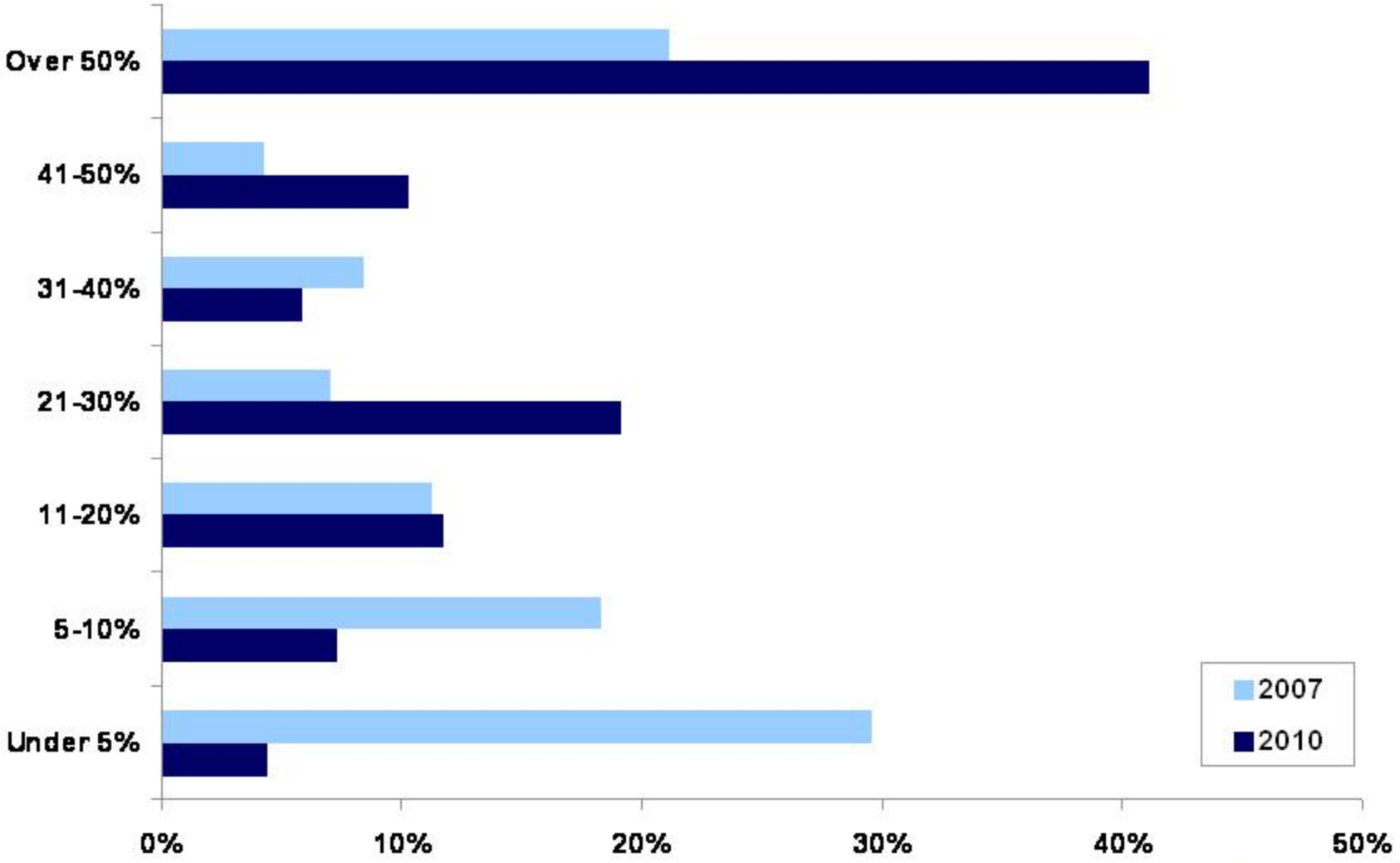
Which of these concerns is the greatest concern regarding server virtualization in 2007? In 2010?



(8/31/07): 2007 n=78, 2010 n=76

Percent of Production Servers Virtualized

What percentage of the overall server mix are production servers in 2007? What percentage of these production servers will host virtualization in 2007? In 2010?



(8/31/07): 2007 n=71, 2010 n=68

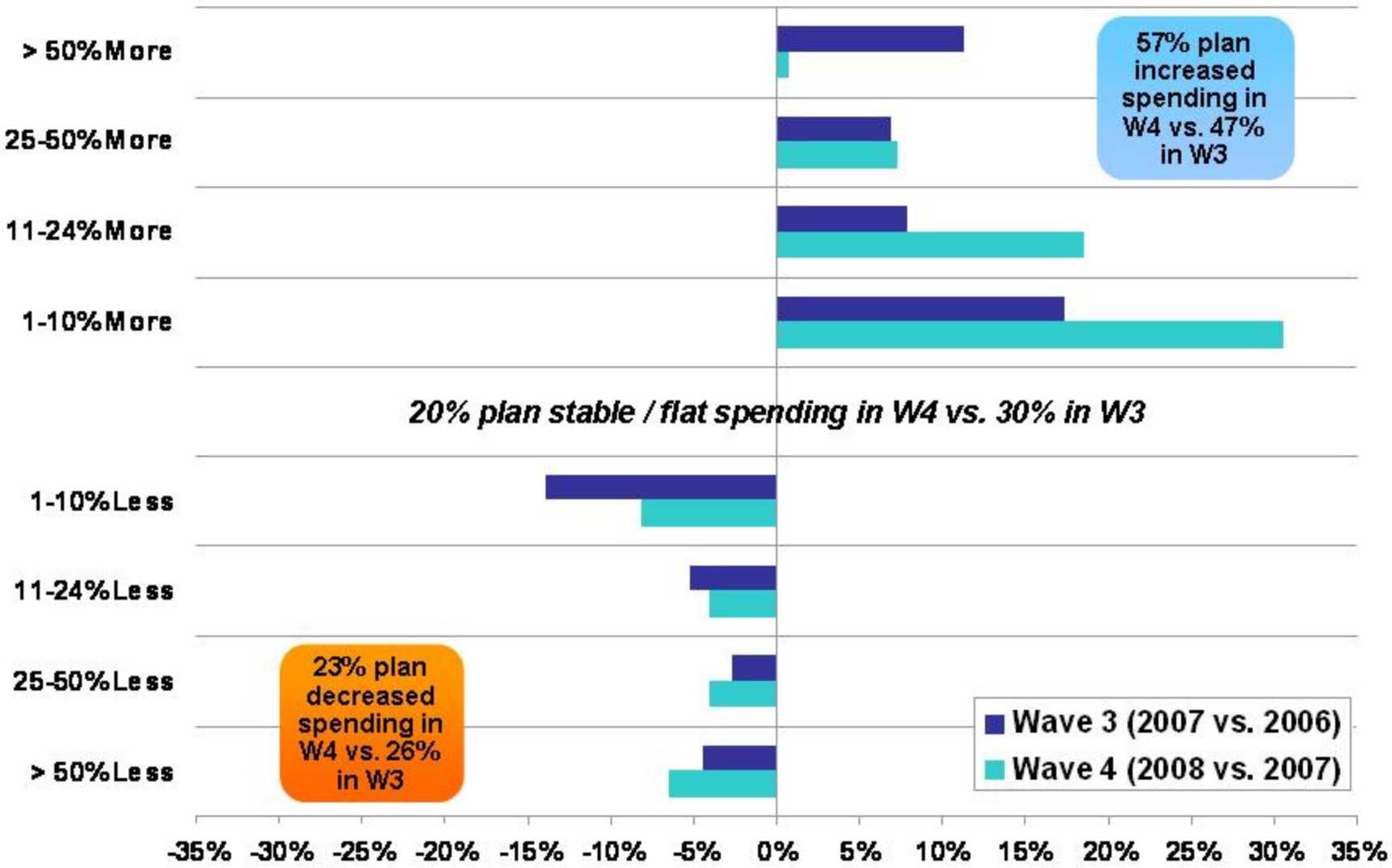
Server Hardware Technology Heat Index ® vs. Technology Adoption Index

Technology	Heat Score	Adoption Score	Delta
4 Gbps Fibre Channel (HBA)	**100**	**56**	**44**
Blade Servers – Intel (Pentium, Xeon, or Itanium)	**78**	**61**	**17**
Standalone Servers – Intel - 4 Socket - (4P)	**76**	**74**	**2**
10 Gbps Ethernet for Server Networking / Access	**73**	**18**	**55**
Network Attached Storage (NAS)	**70**	**65**	**5**
IP SAN Storage Array	**68**	**30**	**38**
Standalone Servers – Intel - 2 Socket - (2P)	**64**	**100**	**36**
Specialized Server Appliances – Storage Related	55	39	16
Standalone Servers – RISC	**53**	**81**	**28**
Standalone Servers – AMD - 2 Socket - (2P)	51	45	6
Embedded FC Switch in a Blade Chassis	**51**	**34**	**17**
Layer 4 -7 Load Balancing	47	46	1
10 Gbps Ethernet for Storage	**43**	**8**	**35**
Standalone Servers – AMD - 4 Socket - (4P)	33	24	9
Mainframe / Large Systems	**16**	**38**	**22**
InfiniBand	**15**	**2**	**13**
Blade Servers – AMD	**10**	**13**	**3**
Application Accelerators – FPGA, GPU, etc.	9	5	4
Special Purpose Servers – Fault Tolerant Systems	**3**	**15**	**12**
Special Purpose Servers – Scaled Commodity Racks	0	0	0

(8/31/07): n=147

TIP's Networking Research

Networking Budgets Change 2008 vs. 2007



 (3/24/08): Wave 3 n=115, Wave 4 n=124

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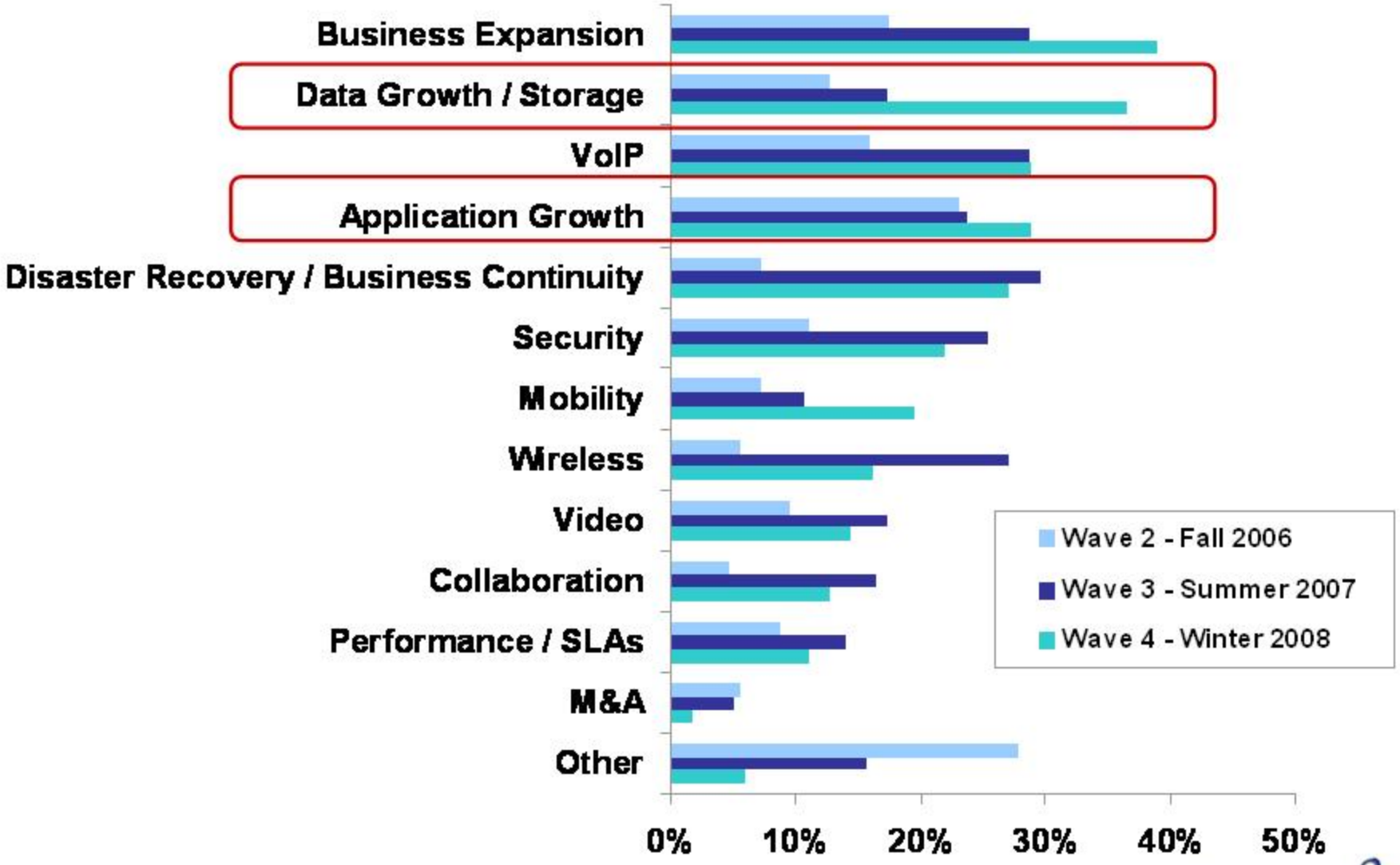
What is Driving Growth in Network Spending?

What key business or technology needs are causing growth in Networking Spending?



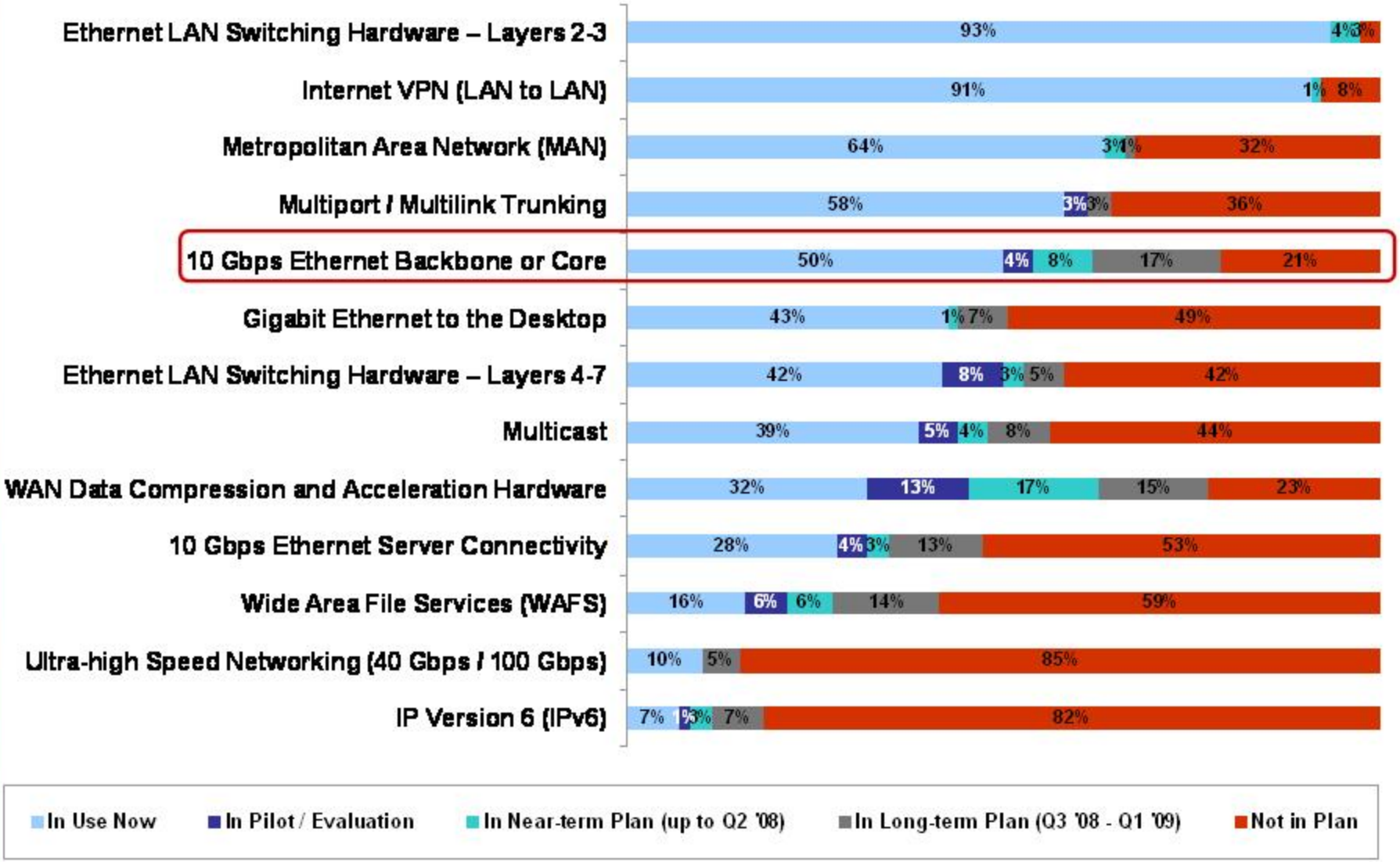
(4/4/08): Wave 2 n=126, Wave 3 n=122, Wave 4 n=118. *Note that due to multiple responses per interview, total *may exceed* 100%

Data Network Infrastructure Technology Heat Index® Change

Technology	Wave 2 Rank	Wave 3 Rank	Wave 4 Rank
WAN Data Compression and Acceleration Hardware	**10**	**3**	**1**
10 Gbps Ethernet Backbone or Core	**1**	**1**	**2**
VPNs – Based on SSL	2	2	3
Multiprotocol Label Switching (MPLS) – Service Provider Provided	17	5	4
802.11a/b/g Wireless Networks	**3**	**4**	**5**
Ethernet LAN Switching Hardware – Layers 2-3	8	7	6
Internet VPN (LAN to LAN)	**8**	**8**	**7**
Wide Area File Services (WAFS)	6	13	8
Ethernet LAN Switching Hardware – Layers 4-7	**12**	**12**	**9**
Multicast	15	6	9
Laptop / Desktop Client for WAN Optimization	**N/A**	**18**	**11**
10 Gbps Ethernet Server Connectivity	5	9	12
Gigabit Ethernet to the Desktop	**14**	**10**	**13**
Metropolitan Area Network (MAN)	16	14	14
Multiport / Multilink Trunking	**7**	**16**	**14**
Dense Wave Division Multiplexing (DWDM) Hardware	N/A	16	16
IP Version 6 (IPv6)	**23**	**15**	**17**
Ultra-high Speed Networking (40 Gbps / 100 Gbps)	N/A	N/A	18

 (4/4/08): W 2 n=126, W 3 n=133, W 4 n=130

F1000 Data Network Infrastructure Technology Roadmap



(3/7/08): F1000 Sample. n=77

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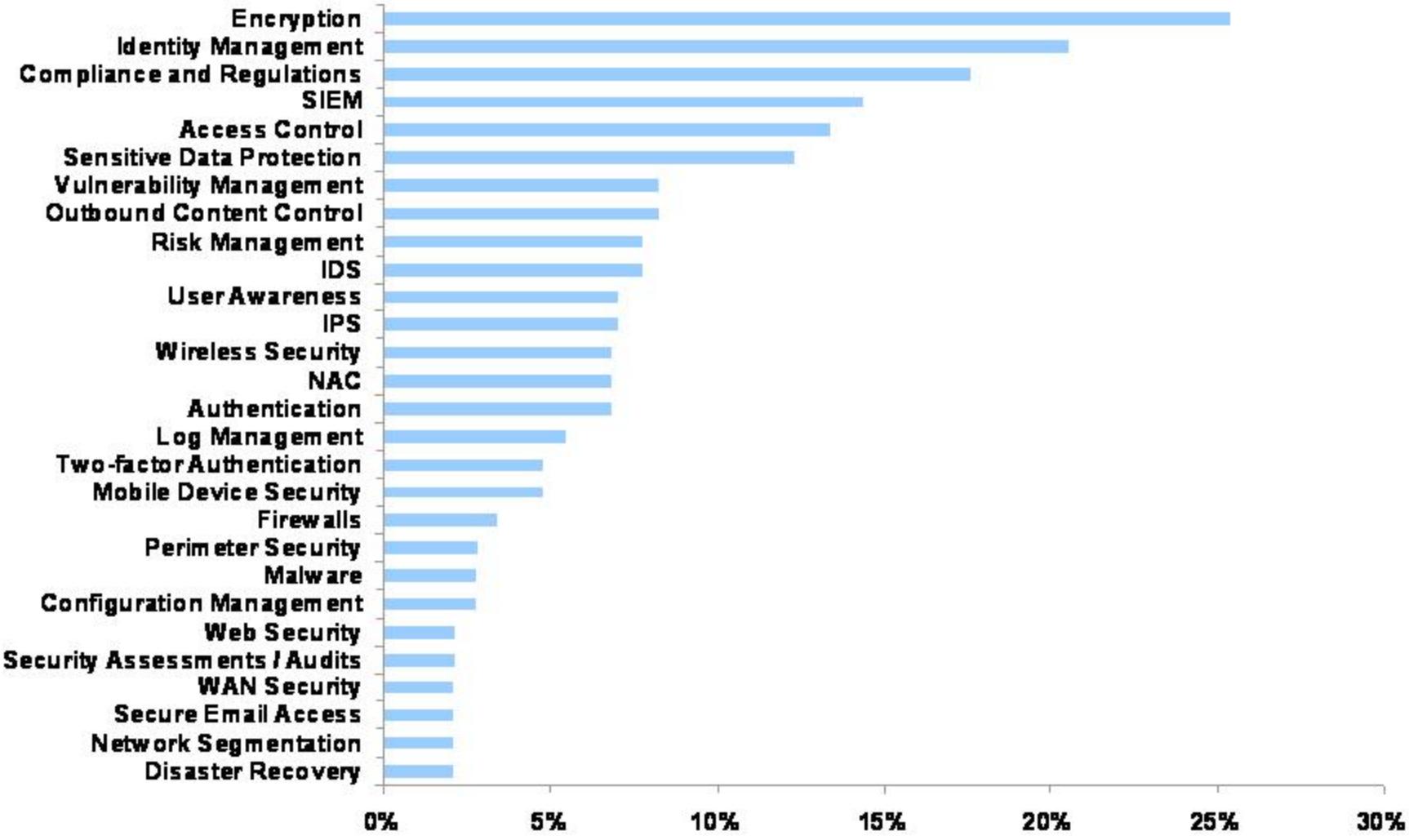
TIP's Information Security Research

Top Information Security Projects

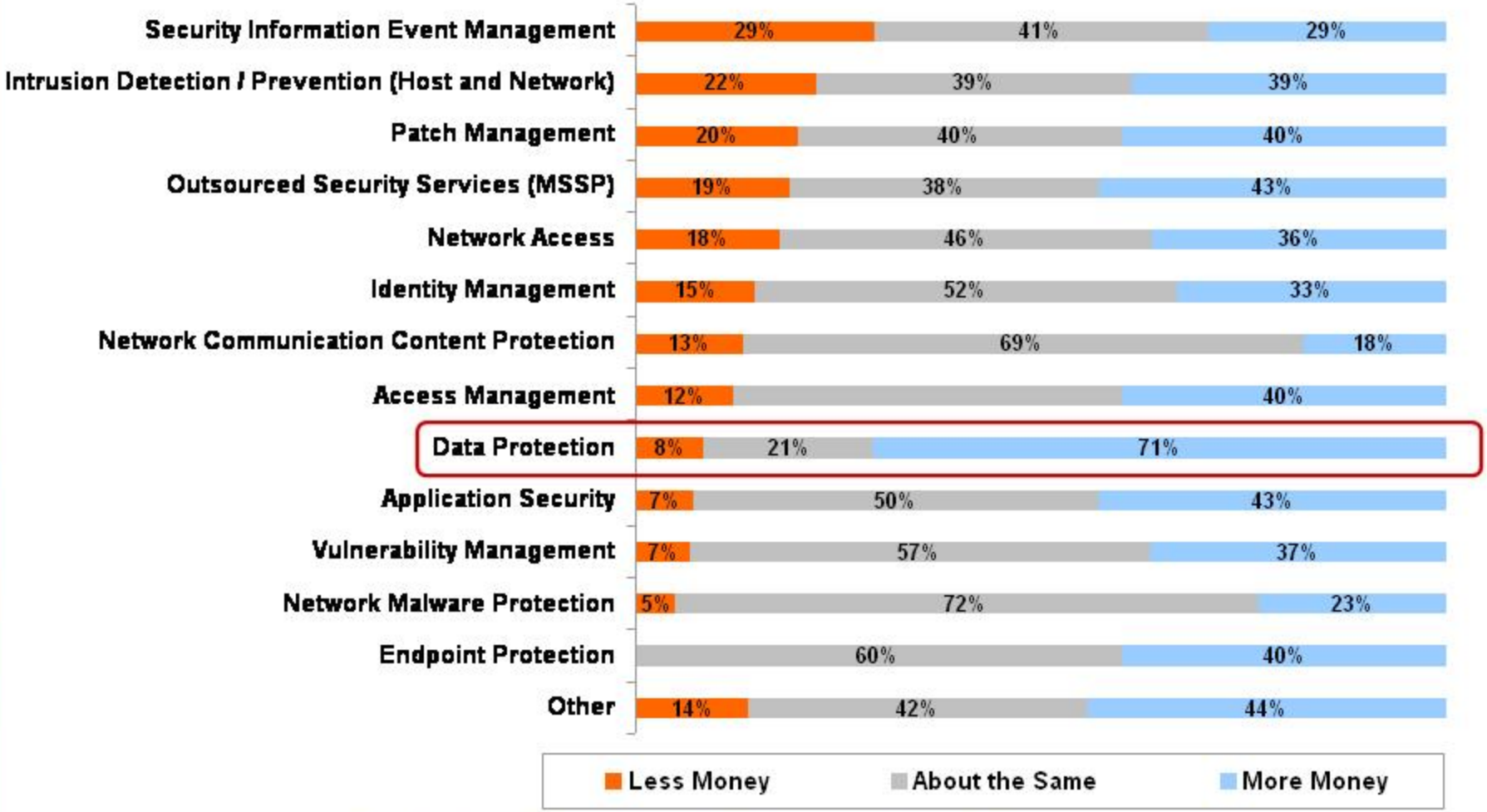
What are your organization's top three Information Security projects in the next 12 months?



(9/17/07): F1000 Sample. n=146. * Note that due to multiple responses per interview, total exceeds 100%

2007 Spending Change by Technology

Approximately how much did your spending on this product change with this vendor in 2007 compared to 2006?



Data Collected about Specific Information Security Products

(9/17/07): F1000 Sample. Security Information Event Management n=17, Intrusion Detection / Prevention (Host and Network) n=36, Patch Management n=5, Outsourced Security Services (MSSP) n=21, Network Access n=96, Identity Management n=27, Network Communication Content Protection n=45, Access Management n=25, Data Protection n=24, Application Security n=14, Vulnerability Management n=30, Network Malware Protection n=60, End Point Protection n=5, Other n=36

Select Narrative Commentary

Storage Pro

- "We are virtualizing our servers. So folks are asking for big blobs of storage today, rather than small pieces. There is a performance issue we need to be prepared for when all of the sudden instances we did not know were on a Server start hitting the SAN."

Server Pro

- "I'd like to see them [VMware} improve the efficiency with which they use network connections. We've had to dedicate six network connections per physical box."

Networking Pro

- "We've got a lot of projects – it's mostly application-based projects, but they're driving capacity increases on our virtualization environment which in turn drives the need for better performance of our network environment"

- "The demands that Server Virtualization put on our core backbone was the cause for the move to 10GB. As we move to a world of production applications on virtualized servers and the provisioning needs that will cause our bandwidth need will only increase."

SVP of Infrastructure on Unified Fabrics

- "Fabric for us likely 3+ years, especially since Mainframe and Distributed systems aren't even using the same fabric today and are so diverse"

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Server to Storage Data Center Networks

Martin Skagen

CTO – Data Center Infrastructure

Agenda

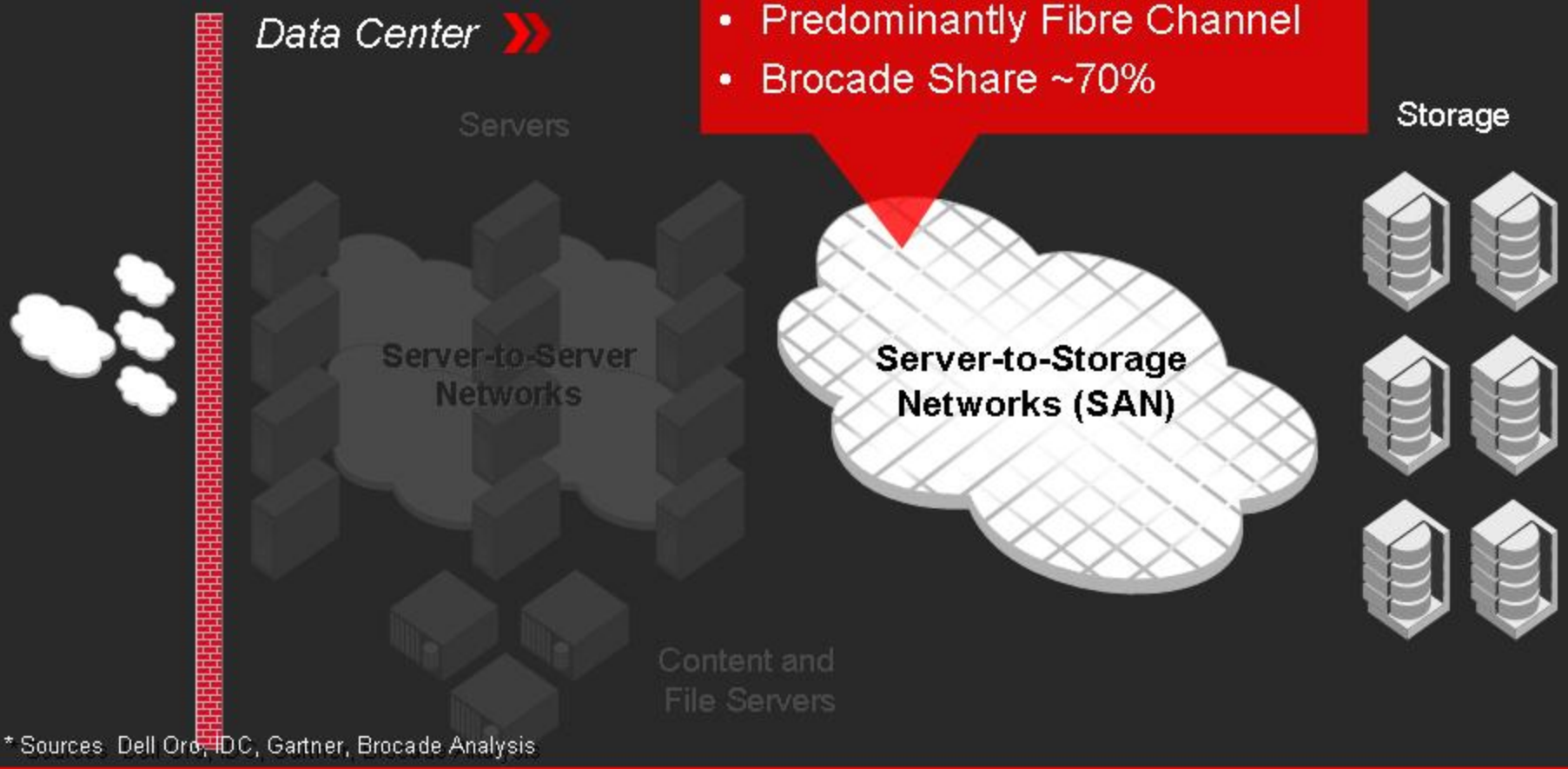
- The core SAN market today
- Evolution and expansion of Server to Storage Networking
- Expected technology advancements
- Protocol soup – setting the record straight on FCoE and others…
- Brocade product and technology strategy
- Summary

Key Points

- The core SAN market is healthy and will continue to grow. Brocade's product plans position us to extend our leadership position
- Fibre Channel will remain a key technology, with more performance and capabilities being added
- FCoE will extend FC presence, with more server-connect options to storage networks. It is expected to become relevant beginning in 2010, at the server edge
- The market will evolve in a rational, and risk-averse manner. Reliable, incremental solutions will win over "disruptive" approaches
- Brocade will continue to innovate on multiple fronts – with FC, with FCoE, and with new capabilities and functions in server-to-storage networks

The SAN Market (server-to-storage)

- ~$2B TAM in 2008*
- ~10%-15% CAGR thru 2011
- Predominantly Fibre Channel
- Brocade Share ~70%

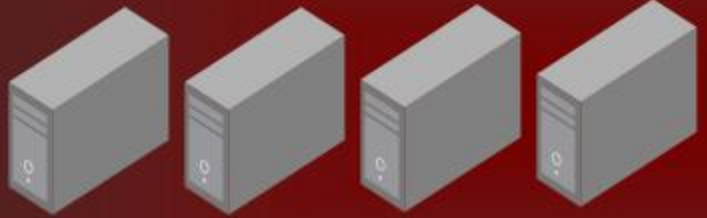


* Sources Dell Oro, IDC, Gartner, Brocade Analysis

Factors Driving Networked Storage

Customer Drivers	**Data growth and the need to access, protect, and manage** • Rich media, compliance regulations, etc. driving increased storage requirements • Networked storage is most cost-effective way to add/manage storage capacity
Technology Drivers	**Server Virtualization** • Virtualized servers drive increased server attachment to storage networks • ~20% of all servers expected to be virtualized by 2010 (IDC, currently ~5%-8%)
Economic Drivers	**The unrelenting need to consolidate and save money** • Consolidated Servers, Storage, Networks, and Data • Storage networks act as "sharing function" • Proven, well-understood ROI

The Opportunity is to Drive Greater Server Connectivity to Networked Storage



- Bladed Servers
- Virtual Servers
- Consolidation
- New Protocols
- New functions driving operating efficiencies

20%
SAN-attached
(Mid-range and high-end)

80%
Non-attached
(Mid-to-low end servers)

Brocade's Key Technology and Innovation "Plays" for Server-to-Storage Networks in the Data Center

Continue to lead in, and innovate with Fibre Channel

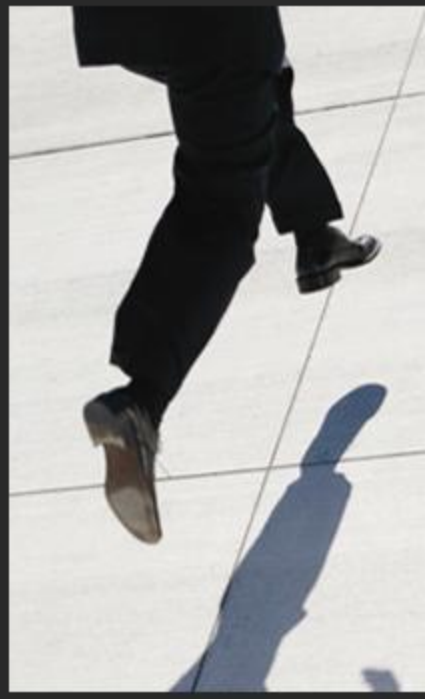
Develop and enable "New Services" in the network

Lead the path to "Newer Protocols"

Fibre Channel

Assumptions, Expectations and Plans

- FC Installed base*
  - ~20 million SAN ports
  - ~$50B market value, including FC storage
- Product usage cycle ~3-7 years (>10% of installed base still running at 1G)
- Technology cycle - approximately 3 years
- Leading 8G product line ramping
- 16G now kicked-off in standards bodies
- Enterprise storage expected to be predominantly Fibre Channel until AT LEAST 2014
  - iSCSI forecast recently cut by IDC
  - First FCoE "storage-facing" *components* expected in ~2010
  - No FCoE storage expected until at least 2011-12 timeframe



* Sources - 3rd Party, Brocade Analysis

Fibre Channel — Expectations and Plans

New Capabilities for Storage Networks

When and Why

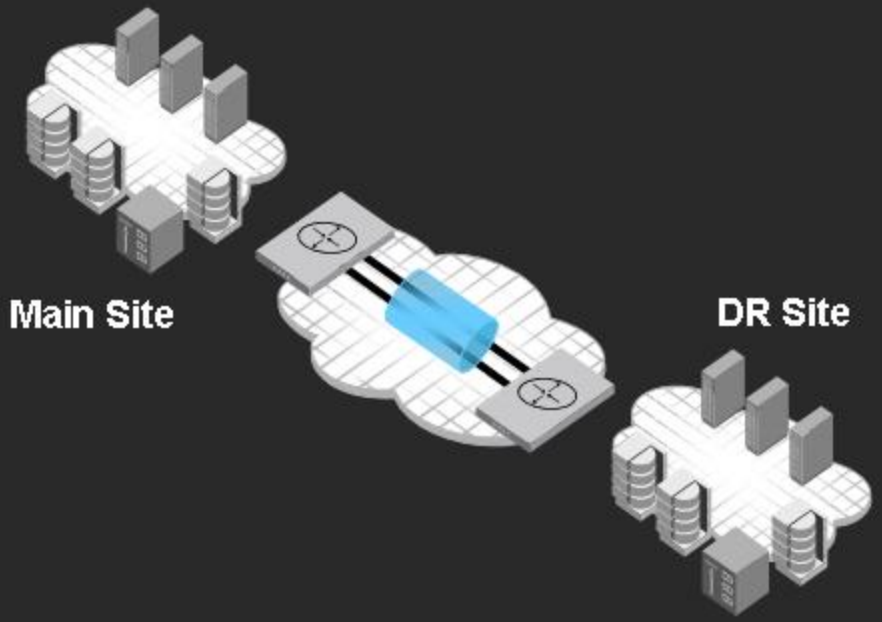
Replication for DR

Compression & De-duplication

Encryption and Security

Replication in the Fabric

Replication for DR



Why Fabric Based?
- Heterogeneous
- Better scalability
- Greater flexibility

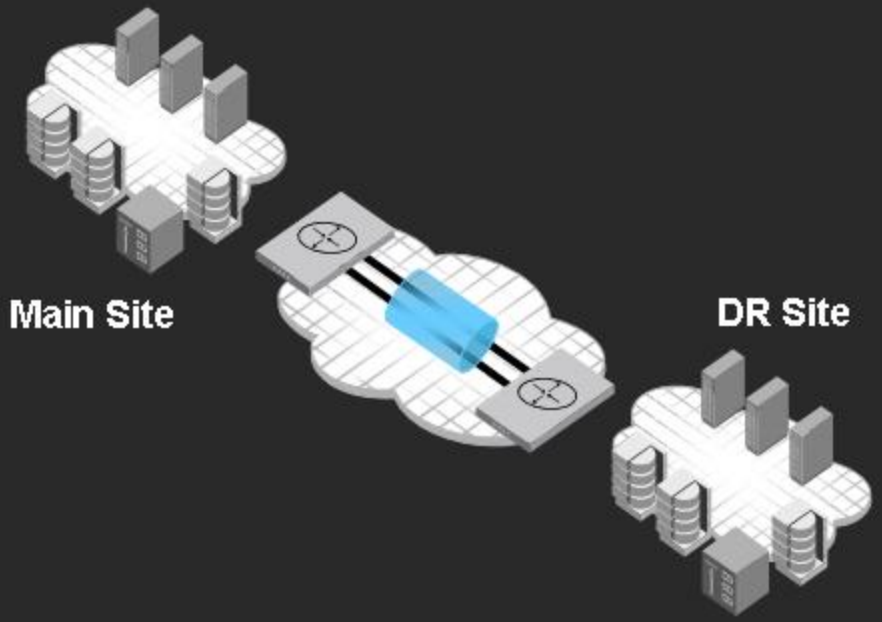
Brocade Products Today
- 7600 and DCX Blade
- Supports EMC RecoverPoint

What's Next (2009)?
- Next Generation Platform
- Other partners/solutions

Compression and De-duplication

For WAN-Replication

Compression & De-duplication



Why Fabric-based?

- Data Replication Requirements are growing exceptionally
- WAN costs are not dropping

What's different here?

- Allows 6-12 times the amount of data on the same link
- Cuts recurring WAN costs

Brocade Product (2H-2009)

- Unique product (only FC solution)
- Much higher speeds compared to classical de-dup approaches

Fabric Based Encryption and Security

Encryption and Security

Why Fabric Based?

- Non-disruptive to installed base (any storage and tape)
- Centralized Management

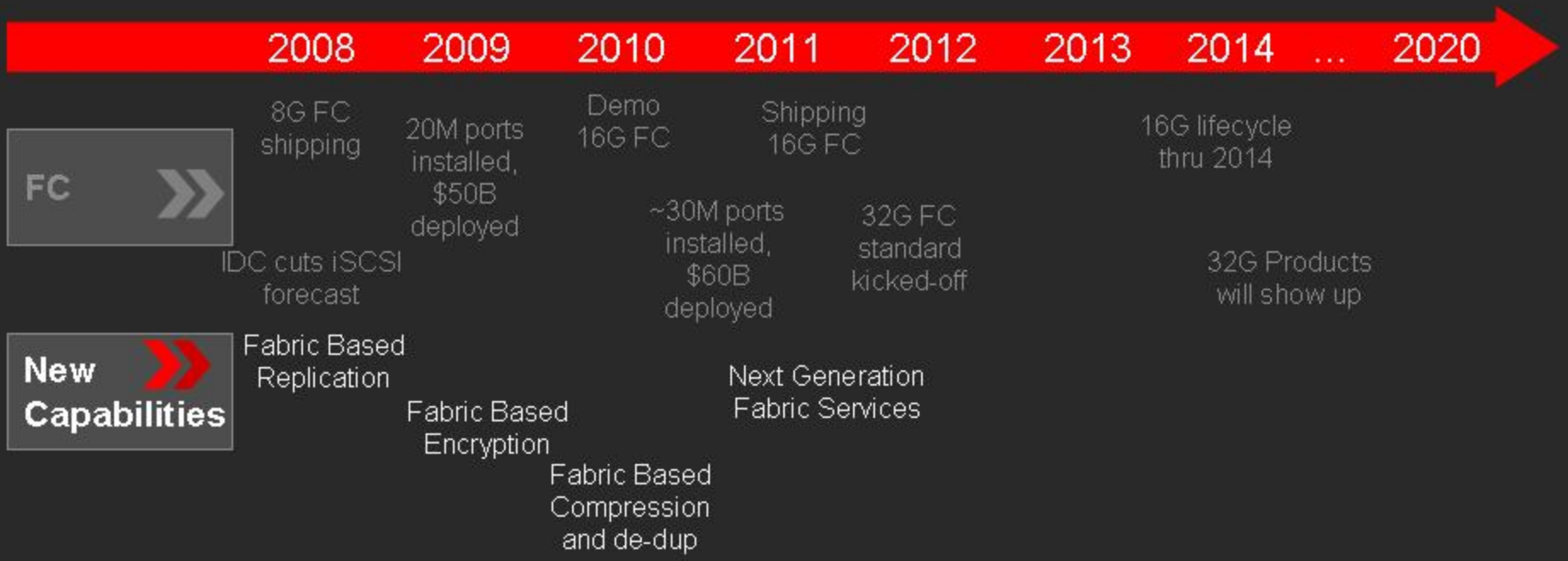
Brocade Product(s) – 2h '08

- NEW Encryption Switch, DCX blade
- 10x the performance of competition
- Partnerships with EMC/RSA and NetApp/Decru

This week's press release

- Brocade security technology to be the basis for next-generation NetApp encryption solution

New Fabric Functions – Expectations and Plans



FCoE »

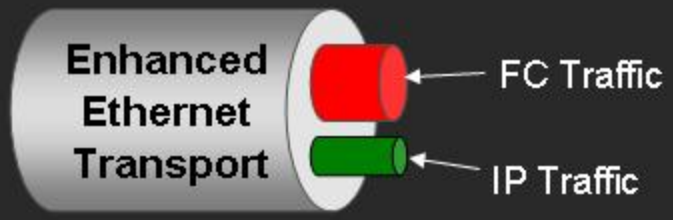
Who, What, When, Where, Why, and How

The Real Story

The Promised Benefits of FCoE

- Reduces number of physical network interfaces in the server
- Maintains the same management paradigm and tools for storage
- Will serve as a translator between storage networking and other next-generation data center networks (e.g. server-server)

Fibre Channel over Ethernet (FCoE)



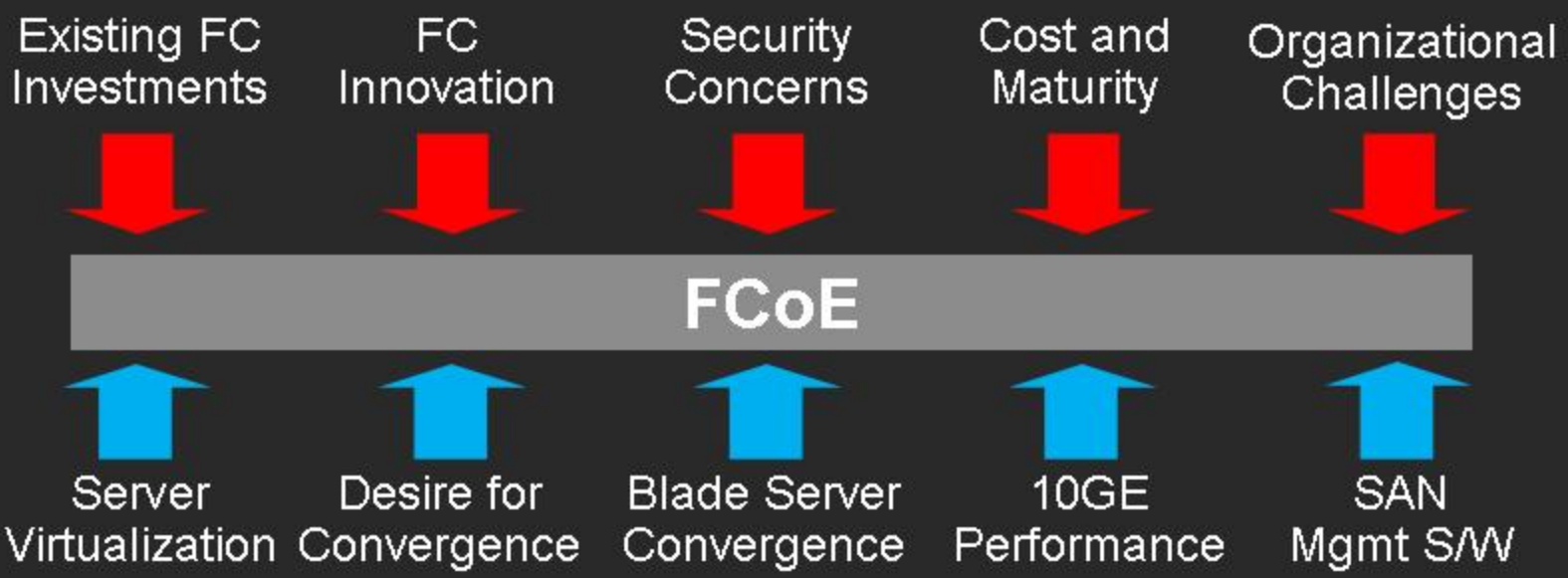
- It's pure Fibre Channel, with a new transport mechanism
- Expectation is that its destination is FC storage
- Encapsulates FC frames over a new, enhanced Ethernet (not legacy Ethernet, more on that later)
- Leverages rich set of FC fabric services for storage connectivity
- Extends investment in today's installed SAN infrastructure

FCoE Clarifications

- FCoE is Fibre Channel, not legacy Ethernet.
- The "E" is a bit of a misnomer. It's not for today's Ethernet. It's for a new protocol being developed - Converged Enhanced Ethernet (CEE), or Data Center Ethernet (DCE).
- FCoE is a growth opportunity to expand server connectivity to storage networks well beyond the 1-in-5 ratio that we have today.
- FCoE is not a network. It's an I/O consolidation play for servers, not storage (it's first-hop).
- The FC incumbent has a huge advantage in being the FCoE vendor of choice. Like today's FC networks, we do not expect mixed-vendor FCoE – FC networks.

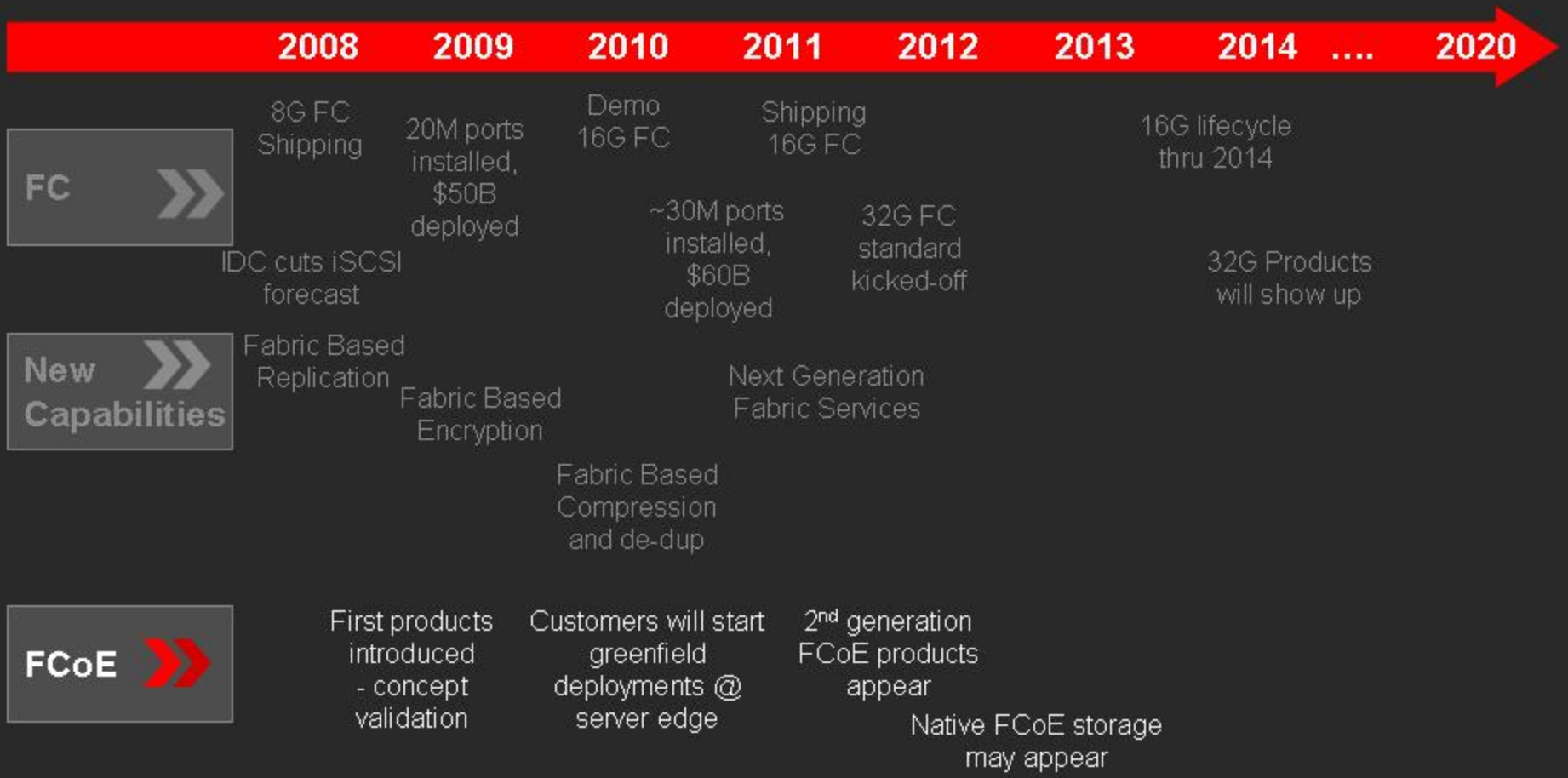
Potential FCoE Inhibitors and Accelerators

INHIBITORS

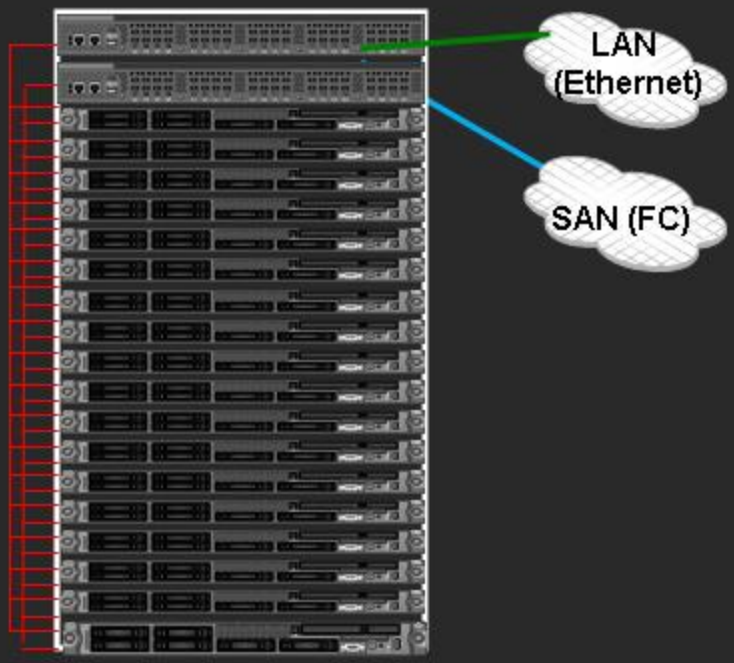


ACCELERATORS

FCoE — Expectations and Plans



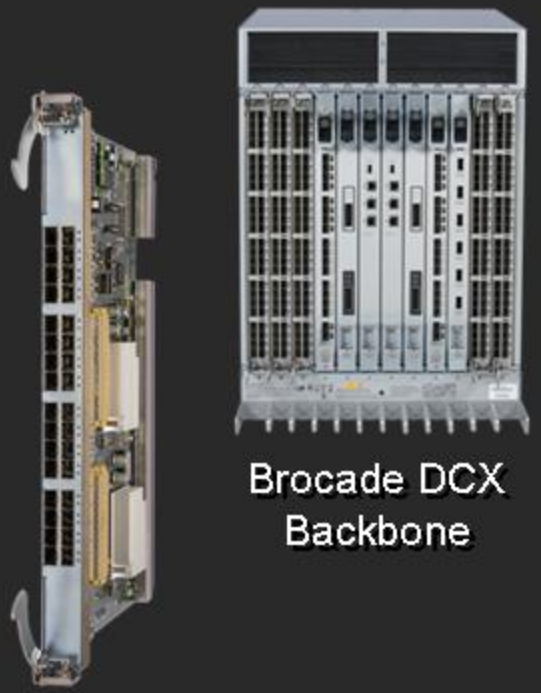
Brocade's First FCoE Product – "Top of Rack"



- FCoE switching for server-to-storage connect
- Enhanced Ethernet and L3 IPv4/v6 switching for server-server and server-corporate network connections
- 24 ports 10 GbE FCoE + 16 ports 8G FC
- Support for FC and FCoE, IEEE CEE L2 Ethernet protocols and L3 IP protocol suite
- Hardware-based link aggregation, load balancing
- Will connect to FCoE HBAs
- Compatible and interoperable with Brocade installed base

Brocade's Second FCoE Product – "End-of-Row"

- FCoE switching for server-to-storage
- 24 ports 10 GbE with FCoE translation
- Support for FC and FCoE, IEEE CEE L2 Ethernet protocols and IPv4/IPv6 L3 IP protocol suite
  - 802.1Qbb Priority-based flow control
  - 802.1Qaz Enhanced transmission selection
  - DCBX Capability exchange protocol
  - 802.1Qau congestion notification
  - TRILL
- Hardware based link aggregation
  - 40Gbit frame based trunking
  - Hash based Load Balancing

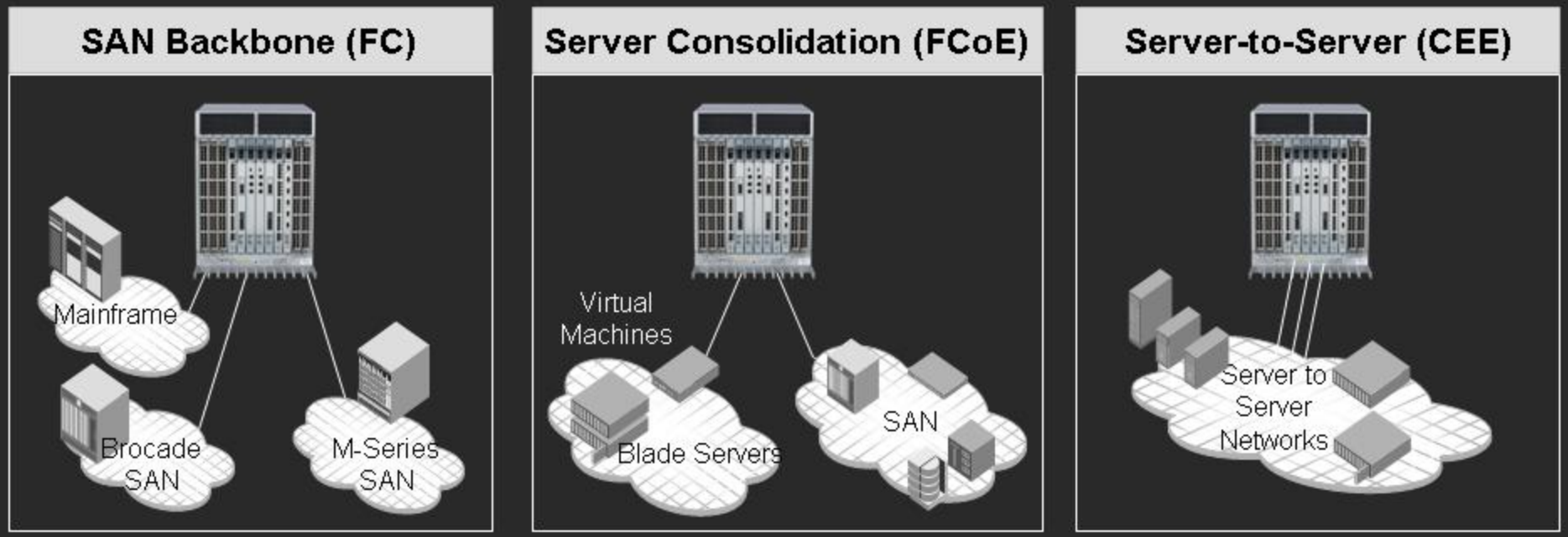


Brocade DCX Backbone

Brocade DCX

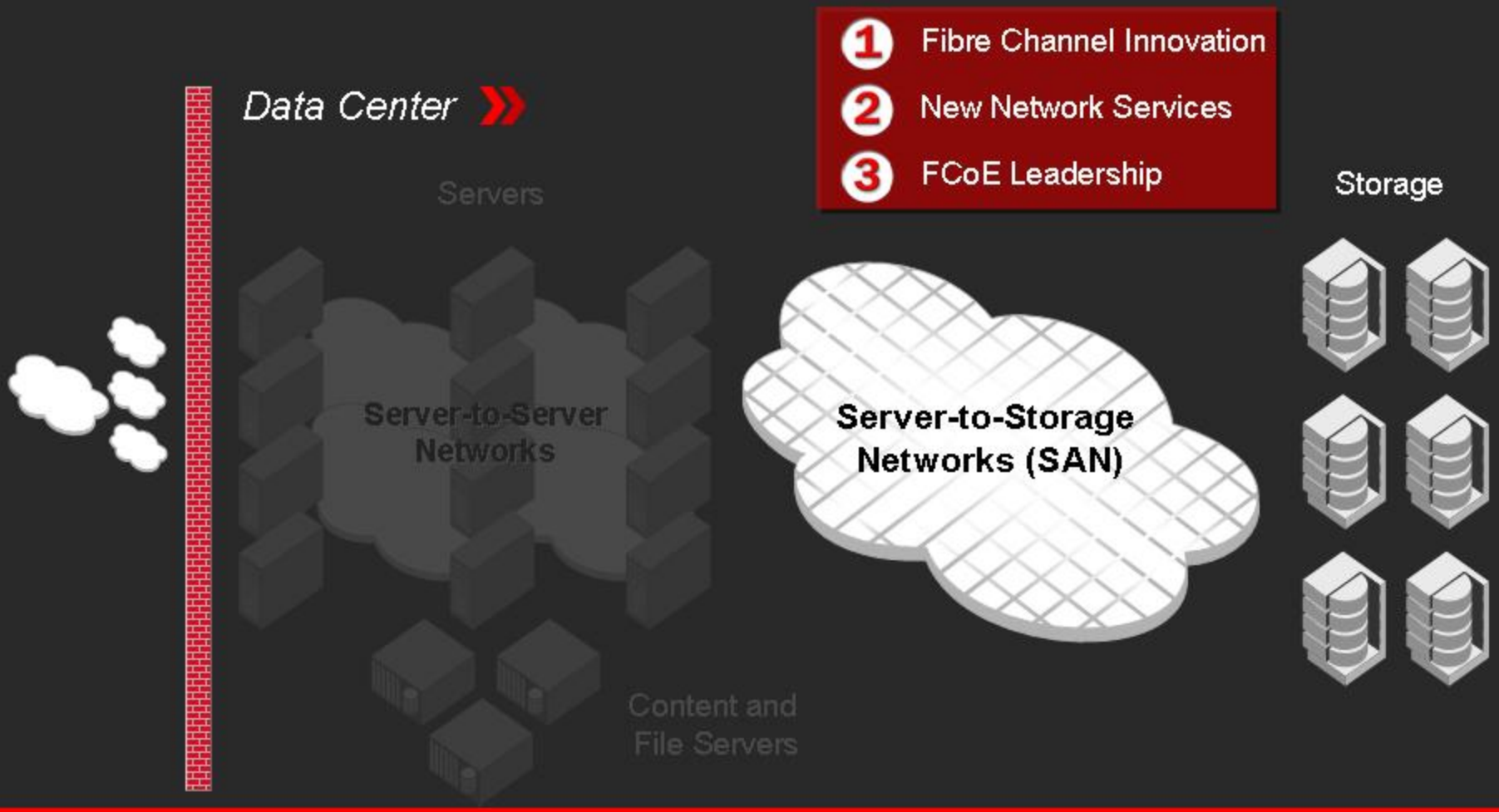
Supporting new protocols as part of Data Center Fabrics (DCF)

Data Center Fabric (DCF)



Now **2009** **2009**

Our Plays In Server-to-Storage Networking



Summary

- The core SAN market is healthy and will continue to grow.
  Brocade's product plans position us to extend our leadership position.
- *Fibre Channel will remain a key technology*, with more performance and capabilities being added.
- *FCoE will extend FC presence, with more server-connect options to storage networks*. It is expected to become relevant beginning in 2010, at the server edge.
- *The market will evolve in a rational, and risk-averse manner*. Reliable, incremental solutions will win over "disruptive" approaches.
- *Brocade will continue to innovate on multiple fronts* – with FC, with FCoE, and with new capabilities and functions in server-to-storage networks.

Opportunities at the Server Edge

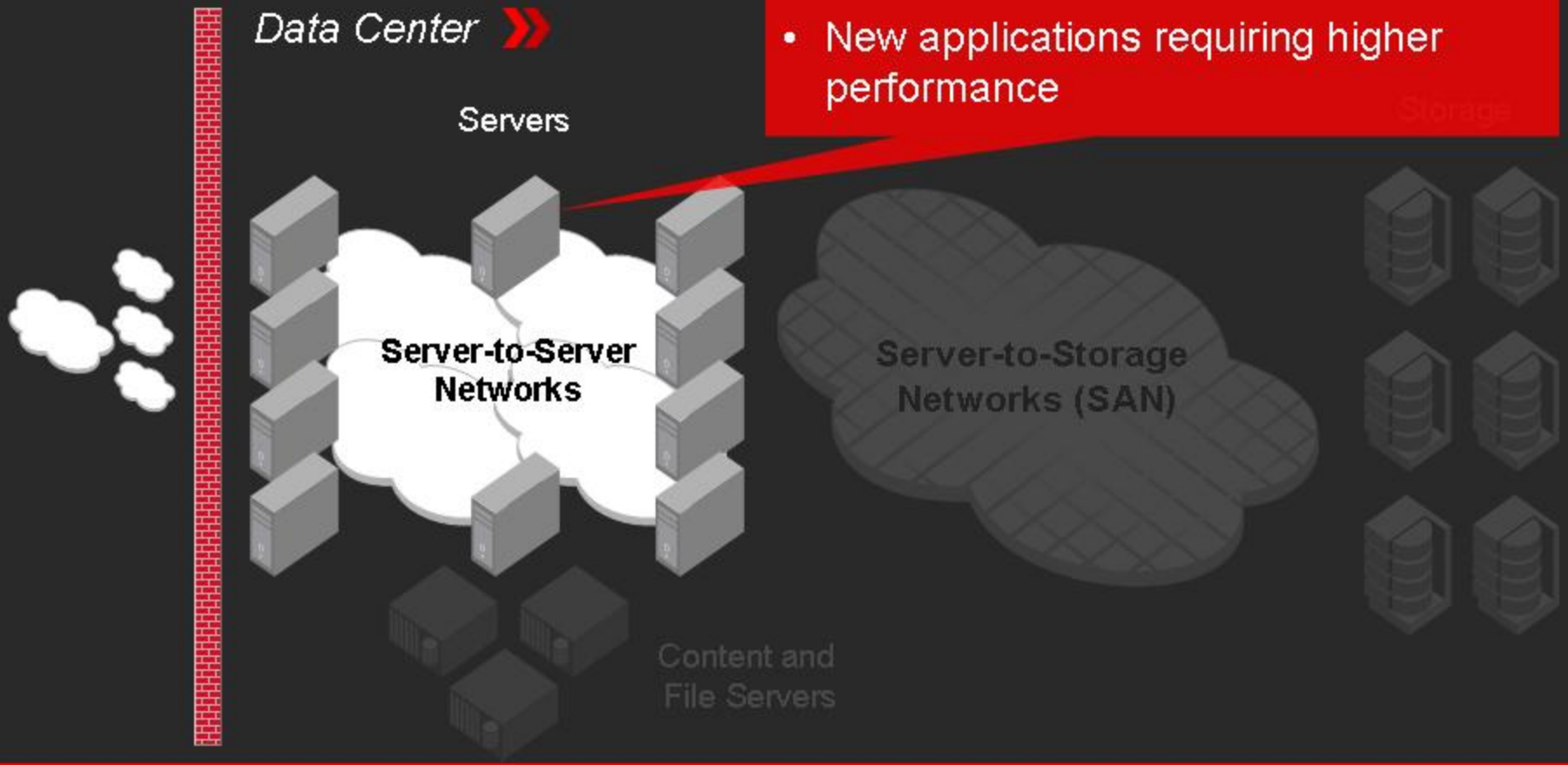
Herman Chao
Director, Product Management – Server BU

Agenda

- Evolving Challenges at the Server Edge
- Brocade Opportunities and product plans
  - Embedded switches (for bladed servers)
  - The HBA and end-to-end opportunity
  - Enhancing the Data Center Server to Server Network
- Summary

What's Going On at the Server Edge?

- Physical consolidation
- Server virtualization and automation
- New applications requiring higher performance

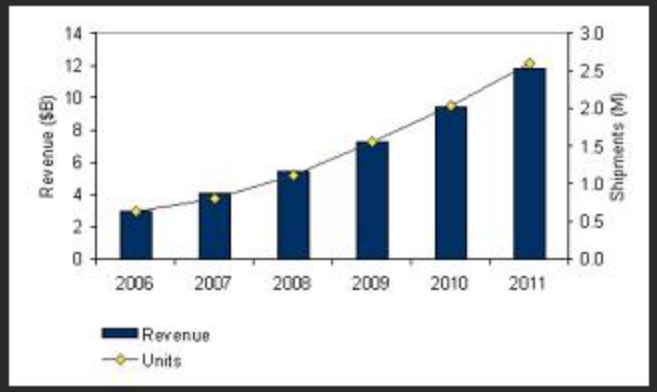


Brocade Opportunities at the Server Edge

1. Address Server Consolidation with Blades
2. End-to-end strategy (including server adapters) to address server virtualization and automation
3. Improve performance for server-to-server applications with improved networking approach

Addressing Consolidation with Blades

Server Consolidation



The Market Dynamics

- Blades are outpacing overall server market growth 29% vs. 2.2% Y–Y*
- ~20% of server market by 2011

Brocade Position Today

- ~75% market share in FC embedded switches; supply all server OEMs
- **100%** Brocade retention for 8Gb

Future Plans, Direction ('09–'10)

- Converged blades with FC plus new protocols
- Adding intelligence and leverage with HBA capabilities ("end-to-end")

* Sources - IDC, Brocade Analysis

Enabling and Optimizing Server Virtualization with Differentiated HBAs and New "End–End" Capabilities

Server Consolidation

Server Virtualization, Automation

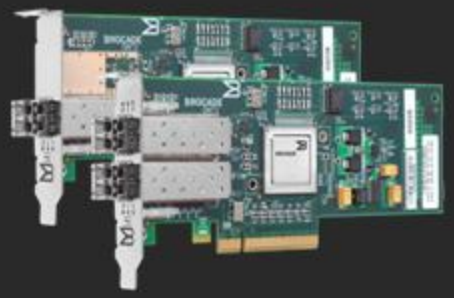
Improving Application Performance

Why Brocade is Getting into the HBA Business Now

Technical Reasons	• Opportunity to innovate - Server virtualization changes the game, host connectivity intelligence and greater performance required • I/O technology cycles (8G, FCoE) at the edge
Economic Reasons	• High leverage in technology, channels, testing, customers, support • Significant market opportunity
Customer Reasons	• Common service and support across infrastructure • New end-to-end capabilities driving lower operational costs

Enabling and Optimizing Server Virtualization with Differentiated HBAs and New "End–End" Capabilities

Server Virtualization, Automation



400 Series 4Gb FC
800 Series 8Gb FC
1000 Series 10GbE FCoE

Market and Opportunity

- $1.1B FC TAM* + Emerging 10GbE
- Technical and economic factors for entering the business now

Brocade-Designed Products

- 8/4Gb FC HBAs & Mezzanine cards
- 10GbE FCoE Adapters and Mezzanine

Plans, timing, and progress

- FC HBAs available today
- O/S Certifications
- FCoE Adapters beginning 1H '09
- Major OEM commitments ***for both***

* Source – Dell Oro, Brocade Analysis

Server Virtualization Changes the Game

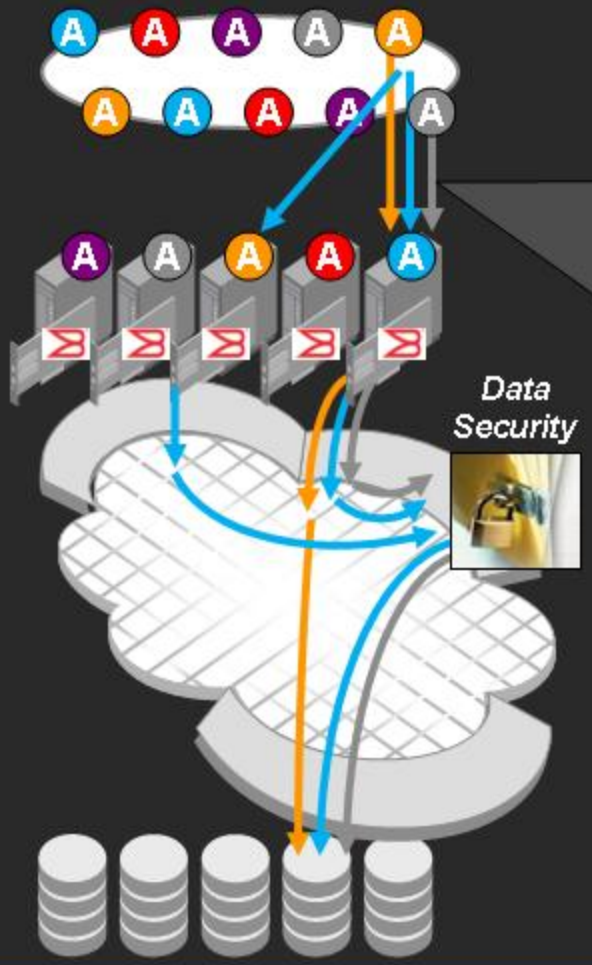
Virtual apps need more flexibility, integration, and performance in the fabric

Applications

Servers

Data Center Fabric

Storage

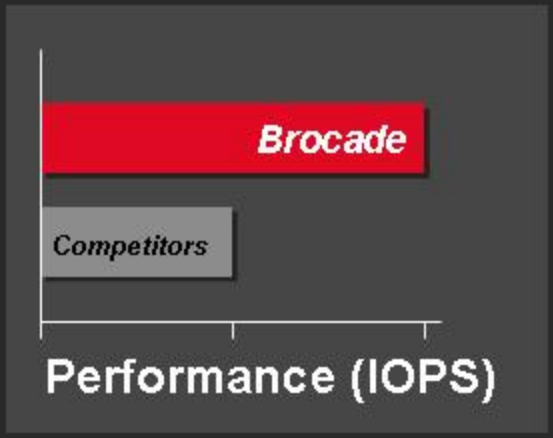


- **Advanced HBA functionality required for virtualized servers**
- **Multiple applications sharing the same server will have different network requirements**
- **End-to-end network automation required to enable application mobility**
- **Higher performance needed to handle consolidated workloads**

Brocade HBAs

Technology Advantage = Performance Advantage

- Highly integrated ASIC leveraged from several generations of proven Brocade switching and routing technology
- Hardware-based FC protocol stack (vs. competitor's firmware-based) enables the highest levels of performance in the industry
- Industry leading power–performance ratio
- Above points apply to both FC HBAs and FCoE "converged" server adapters



Brocade's Unique End-to-End Advantage

Adaptive Networking Technologies

Brocade FC and FCoE HBAs

- Security (User authentication, encryption)
- Isolation (zoning, virtual fabrics)
- Hardware-based adaptive networking QoS
- Maximum end-end performance with Trunking
- Automatic, agentless distribution of upgrades
- Common provisioning, configuration, management, diagnostics

Brocade DCX and switches

Patented Technology

App#12/119,440	Automatic Adjustment of Logical Channels
App#12/119,436	Method and System of facilitating Application Oriented Quality Of Service
App#12/119,430	Method and System for facilitating Quality of Service in Edge Device
App#12/119,457	Workload Management with Network Dynamics
App#12/119,448	Method and System for Congestion Management
App#11/782,894	Method and Apparatus for Determining Bandwidth Consuming Flows in a Network
App#61/002,252	Adaptive Networking Advanced Data Center Technology

Brocade HBA Advantages

Unique capabilities for the Virtualized Data Center

		BROCADE	COMPETITION
Basic	• 1, 2, 4, 8 Gbit/sec to PCIe Gen 2.0 (x8 lanes) • Low-profile design, single- and dual-port options • N_Port ID Virtualization (NPIV) • T10 CRC, FC-SP, SFP+, DMI, SCSI-FCP, FC-TAPE, IP-FC • Multiple OS drivers and Universal boot support	✓	✓
Advanced Capabilities	**Performance** • 500,000 IOPS per port, N_Port Trunking	✓	✗
	Virtualization Mobility • Dynamic state migration of link and port personality profile	✓	✗
	Quality of Service • Priority levels & Congestion flow control	✓	✗
	Security • On-chip encryption engine for in-flight data protection	✓	✗
	Unified SAN Management • Single pane of glass for adapters, switches, & directors	✓	✗

Improving Application Performance with Better Server-to-Server Networking

Server Consolidation

Server Virtualization, Automation

Improved Application Performance

Improving Application Performance with Better Server-to-Server Networking

Improved Application Performance

Market Need and Opportunity

- Improved server networking performance, scalability, and efficiency
- $2B market opportunity in data center*

Ethernet Innovation

- Converged Enhanced Ethernet (CEE)
- 10G, deterministic, low-latency, for data center networks

Brocade Progress and Plans

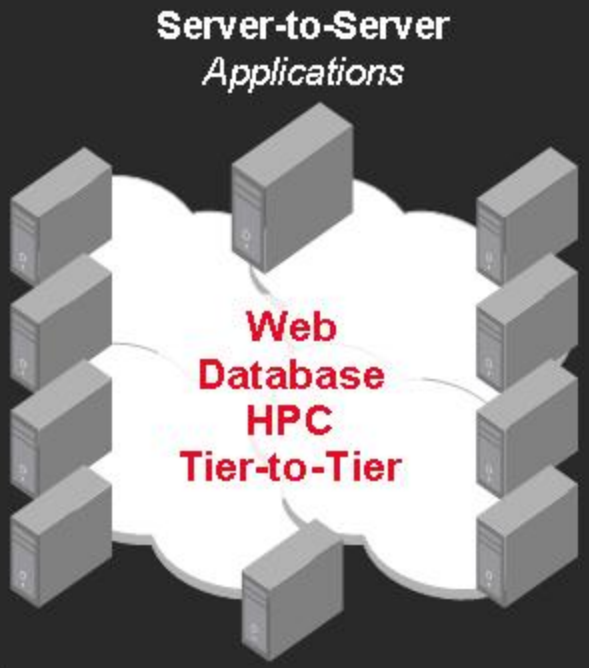
- CEE Blades for DCX, 2H '09
- Secured Tier 1 OEM design win for switch and adapter (2009)

* Sources - Dell Oro, Brocade Analysis

Market Need and Opportunity

A better solution needed for improved Application Performance

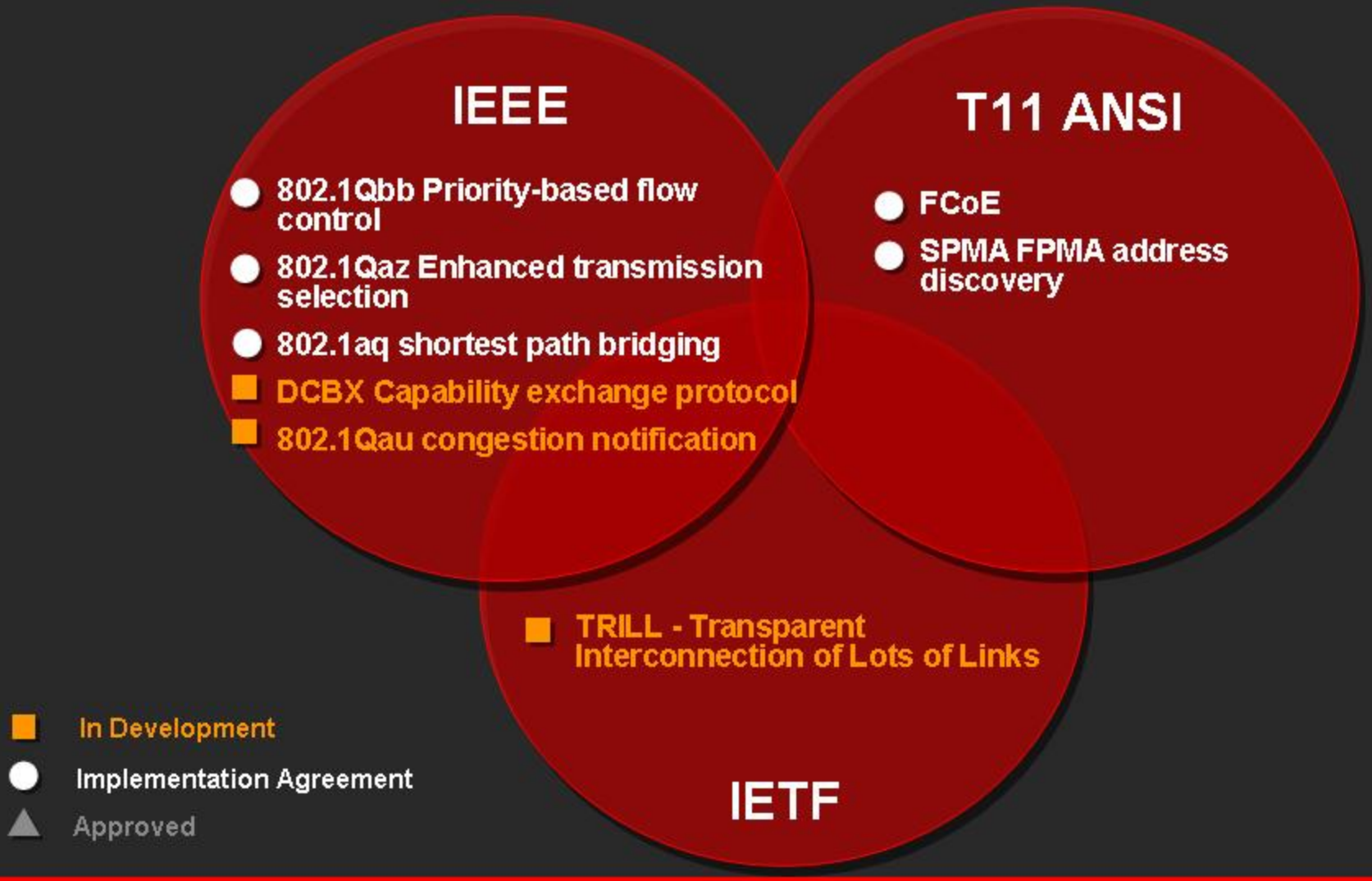
- Data Center Server Networking Applications require Higher Performance and Scalability
  - Server Virtualization (Application mobility)
  - Business Logic Messaging (XML appliances, Database Redundancy)
  - Web Serving and NAS
  - HPC Clustering
- The Compromise of Legacy Technologies
  - Poor manageability, thin industry support (IB)
  - Non-deterministic nature, low performance (legacy Ethernet)
  - Proprietary (Myrinet, Quadrics, etc.)



These Requirements are Driving Innovation and New Industry Standards

- New Deterministic, low-latency, reliable 10Gb Ethernet for data center applications
  - Reliable transport for carrying FC in FCoE
  - High performance server-to-server networking
- Called Converged Enhanced Ethernet (CEE)
  - 16 vendors who are committed to an open standard (via IEEE and IETF)
  - Brocade helping to drive and author these standards
- Data Center Ethernet (DCE) is a Cisco trademark
  - Expected to be a proprietary implementation of CEE

CEE Innovation in the Standards Bodies



Brocade's Opportunity and Advantage in Server-to-Server Networks

- Heritage of building data center class products
- Leveraging Brocade technologies and expertise
  - Deterministic and predictable bandwidth
  - Low latency
  - Cut-through switching
  - Scalable multi-pathing
  - High port count density and backplane performance
- Unique end-to-end provisioning, management, and network functionality for the virtualized data center

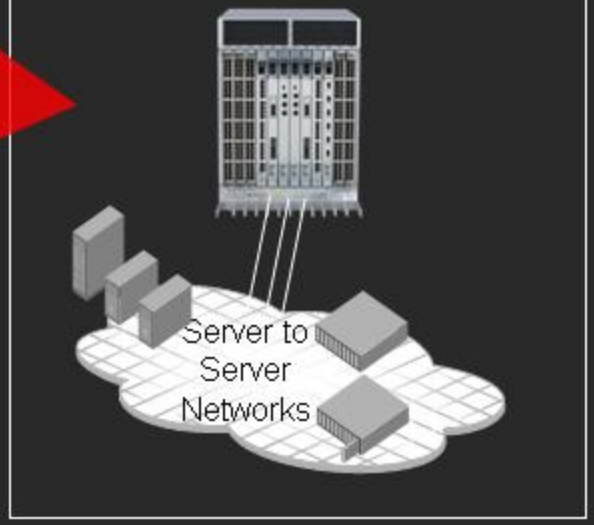
Brocade DCX

Extending new protocols as part of Data Center Fabrics (DCF)

Data Center Fabric (DCF)

- **Multi-protocol capable, CEE-ready today**
- **CEE blades in 2009**
- **Performance, power and scale advantages**
  - 384 10GE ports per chassis (full line rate performance)
  - 7+ TB backplane
  - Leading power efficiency
  - Ahead of *ALL* nearest competitors
- **Network flexibility and consolidation for lower data center TCO**
- **Unique end-to-end advantages**

Server-to-Server (CEE)



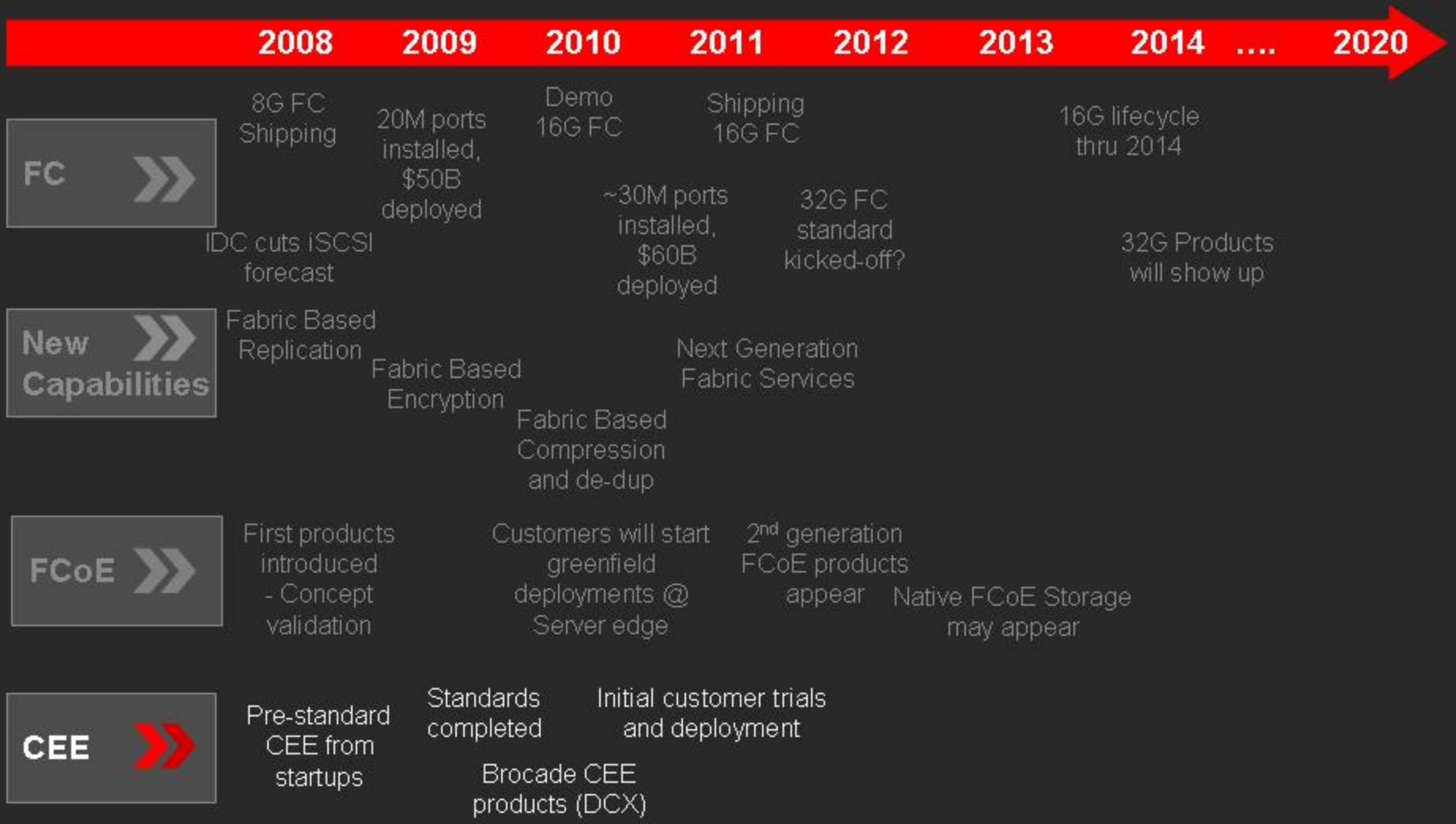
2009

Brocade's 10GE CEE Core Blade (2H 09)

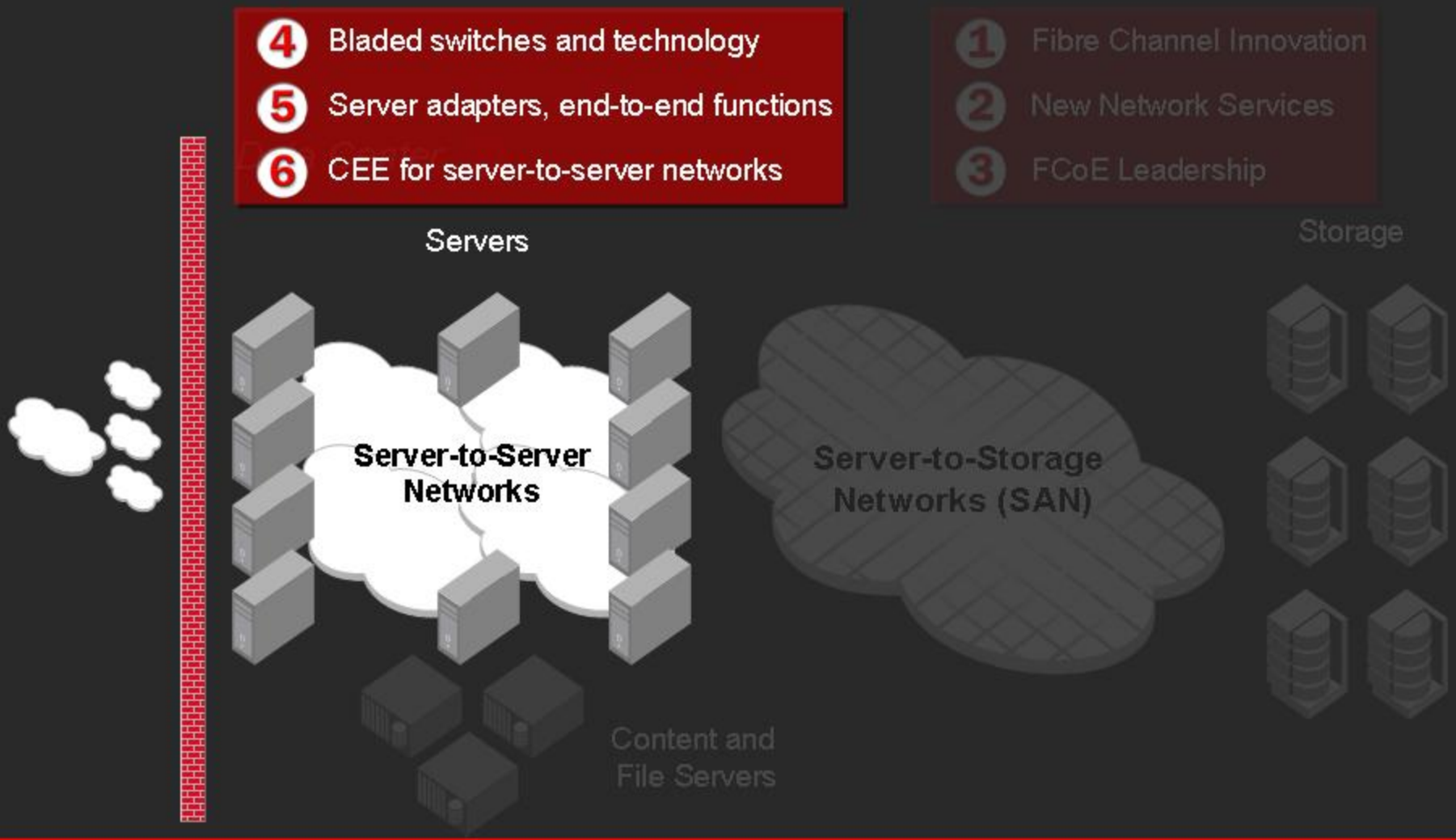
- 36 and 48 port 10 GbE L2/L3 blades
- 384 10GE ports in 14U single DCX
- Support for FC and FCoE, IEEE CEE L2 Ethernet protocols and IPv4/IPv6 L3 IP protocol suite
  - 802.1Qbb Priority-based flow control
  - 802.1Qaz Enhanced transmission selection
  - DCBX Capability exchange protocol
  - 802.1Qau congestion notification
  - TRILL
- Hardware based link aggregation
  - 40Gbit frame based trunking
  - Hash based Load Balancing

Brocade DCX Backbone

CEE — Expectations and Plans



Our Plays at the Server Edge



Summary Points

- Customers need to consolidate, virtualize, and automate their data centers. Brocade is addressing three distinct “server-edge” opportunities.
- Bladed servers are driving high-growth for Brocade embedded (blade) switches.
- The Brocade HBA opportunity is real and imminent. We have product and end-to-end advantages, and will utilize our strong end-user presence and partnerships to succeed in this market.
- Emerging “Enhanced Ethernet” technologies will address the need for better server-to-server networking in the data center, and Brocade will address these new opportunities.

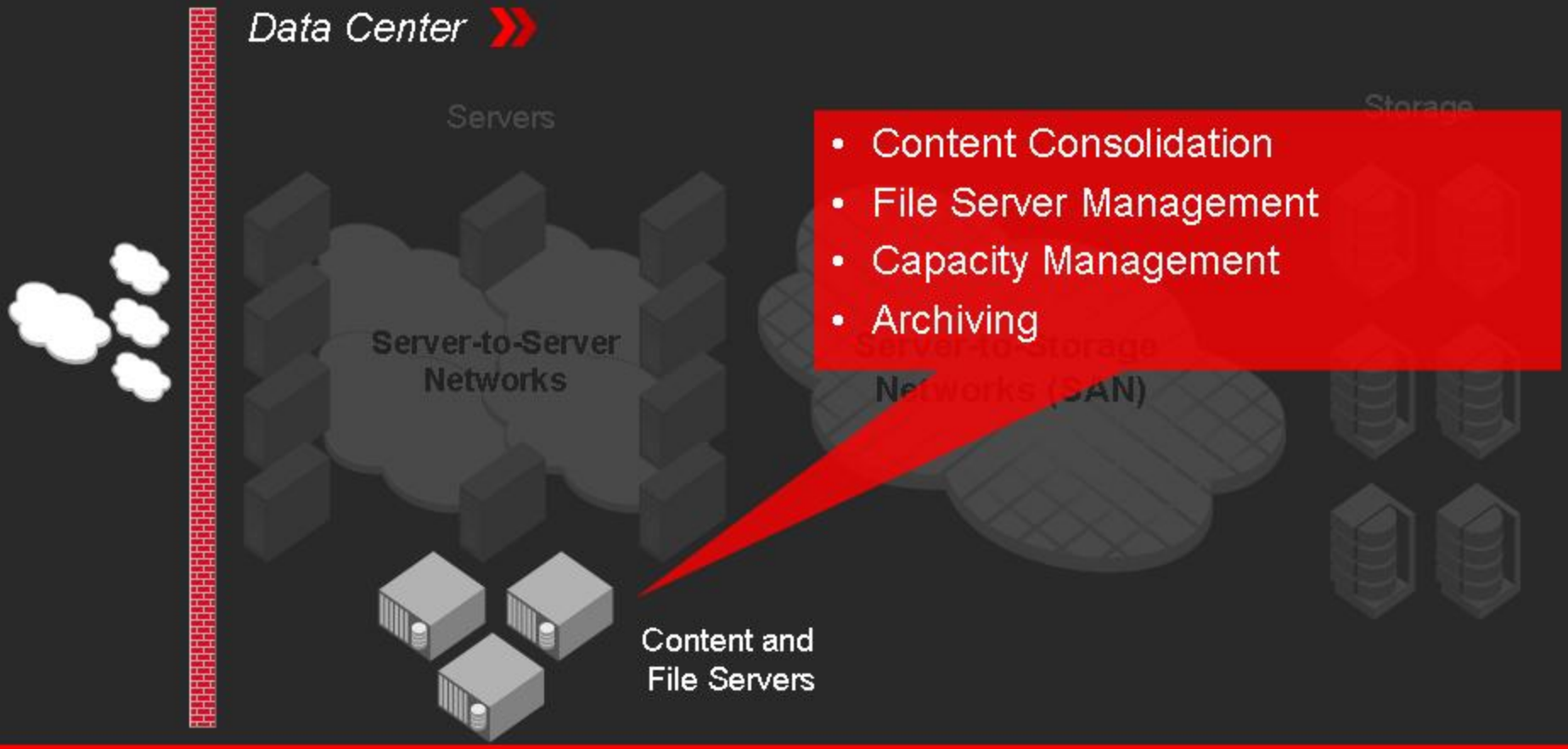
BREAK

Data Consolidation and Management

Max Riggsbee

CTO – Files Business Unit

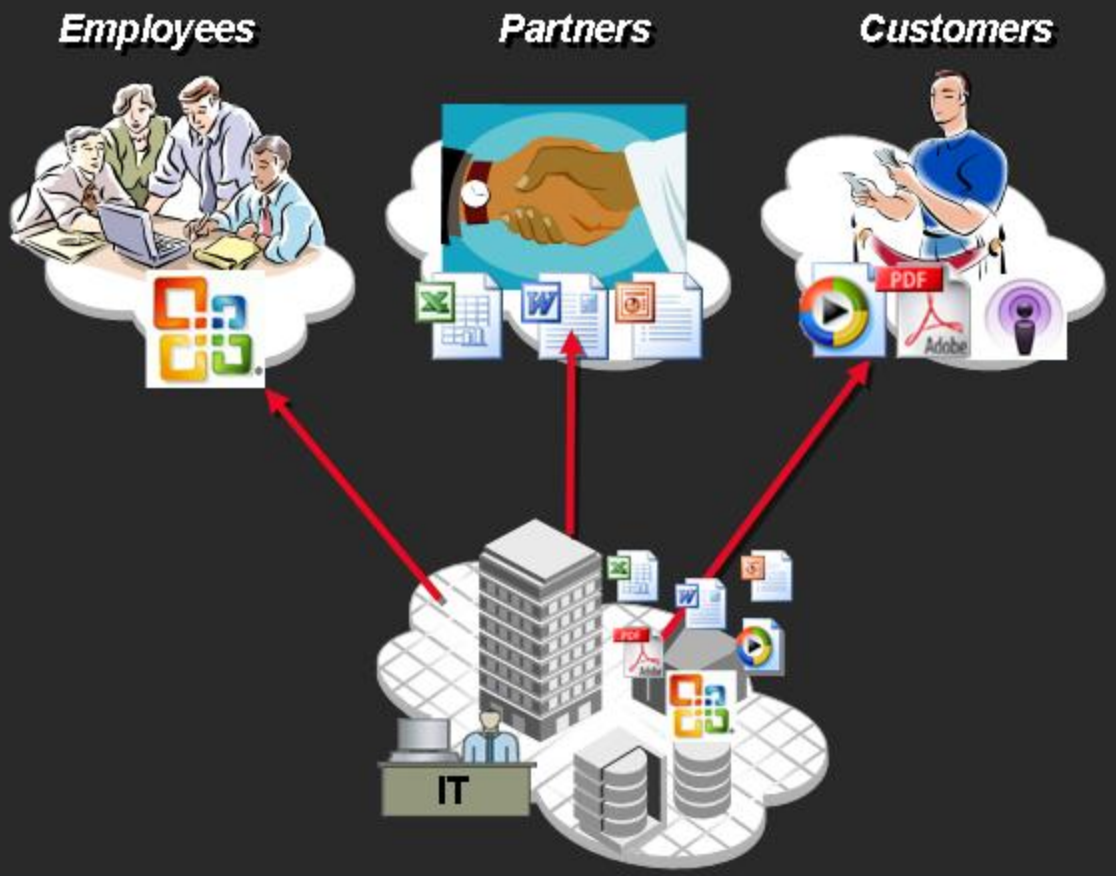
What's Going on with Data Management in the Data Center?



Key Points

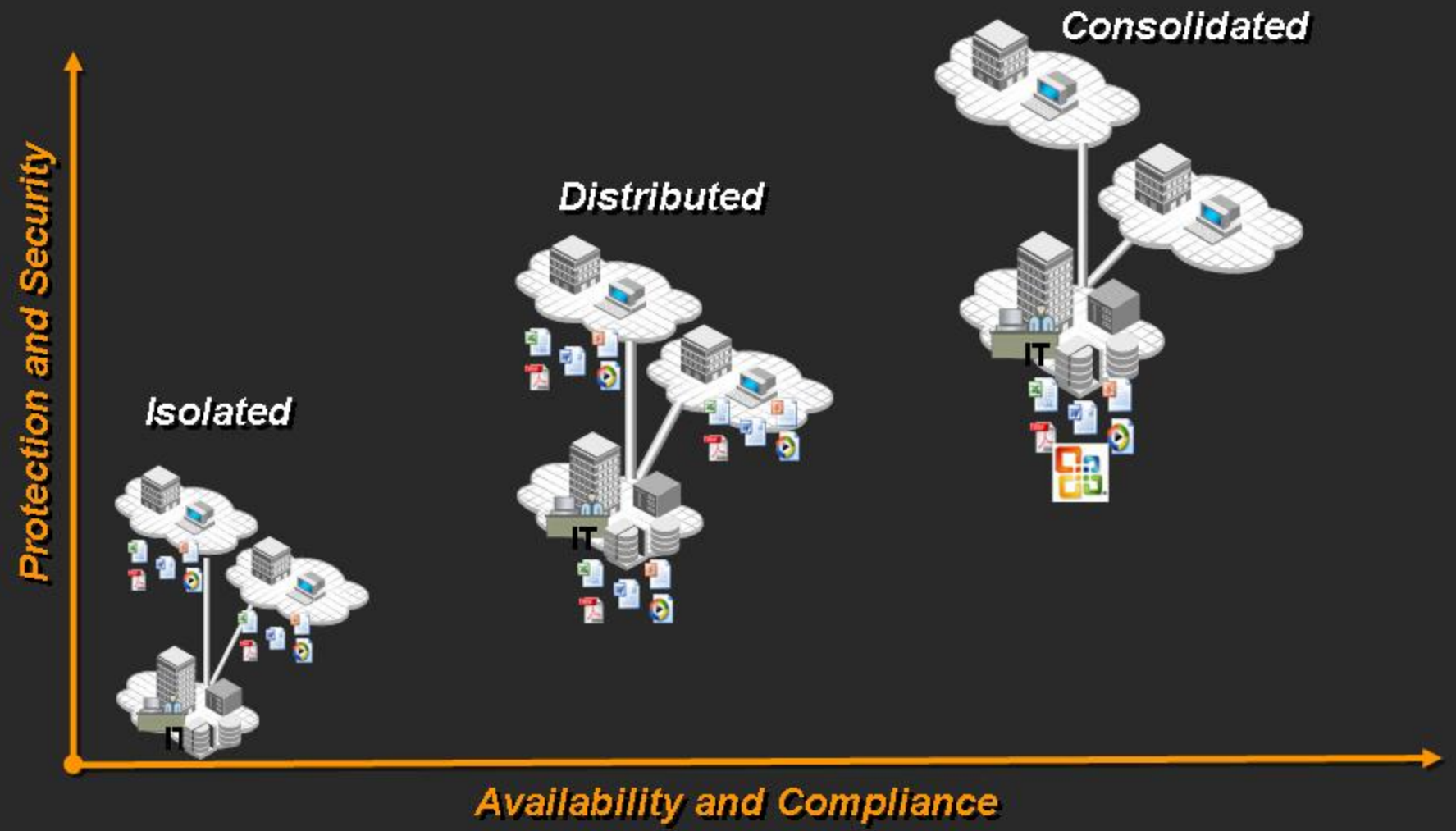
- Infrastructure consolidation is important, but full efficiencies in the data center will not be realized until *the data* is also consolidated
- File data continues to be the fastest growing segment of data in the enterprise
- Web-based collaboration and the need to access these files via portals makes the data management problem more challenging
- Our strategy is to provide more capabilities to better manage file data in mixed file server and SharePoint environments

There's a reason it's called the "*Data* Center"



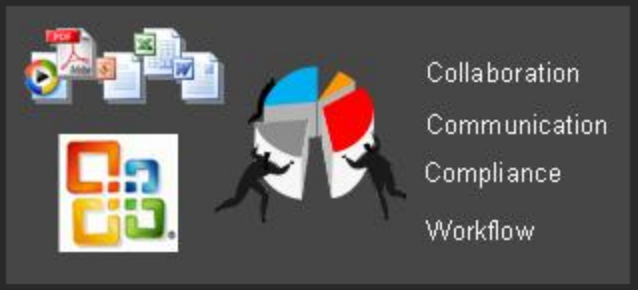
- Data Access
- Data Protection
- Data Consistency
- Data Compliance
- Data and storage optimization

Files are Moving to the Data Center



Trends Driving Data Consolidation

» **Files will continue to grow in size, quantity and complexity**

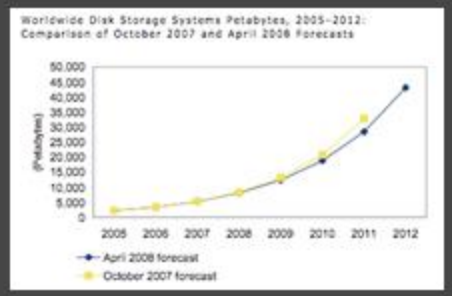


» **Web Portals will increase the demand for content**

» **File Virtualization will play a critical role in file consolidation, de-duplication and policy automation**

Files — the Fastest Capacity Consumer

SharePoint — the Emerging Business Portal



By 2012, over 80% of total disk storage systems capacity will be shipped to support file-level data.

– IDC June 2008

Organizations….expect to have 41% of their users on Office 2007 by year-end 2008…..several new SharePoint 2007 features have tight integration with Office 2007.

– Gartner Survey Results April 2008*

**177 Respondents Representing 2.7 Million PCs*

Microsoft's vision of bringing content management to the masses has been a key factor in the overall Enterprise Content Management ($2.9B in '07, 12.9% CAGR through 2011) market transformation.

– Gartner Magic Quadrant, September 2007

Brocade's File Management Products

Remote Office File Management »

« Enterprise-Wide File Discovery

StorageX | **File Insight**

Unified File Management »

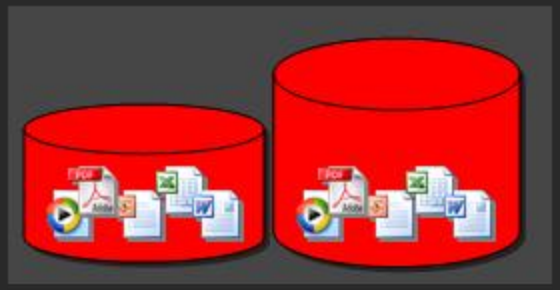
« Content Driven Migration

SharePoint File Services | **File Classification**

File Management Engine

Customer Challenges - Accessing File Servers

» **Managing Windows File Server assets non-disruptively**

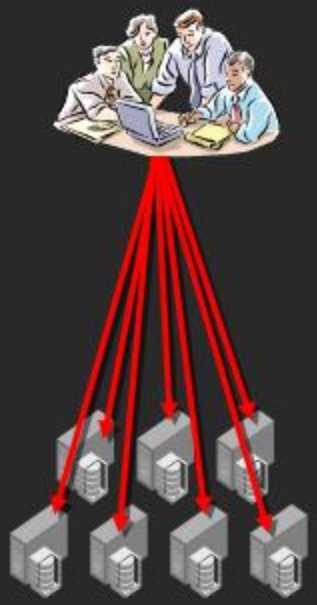


» **Optimizing file storage capacity**

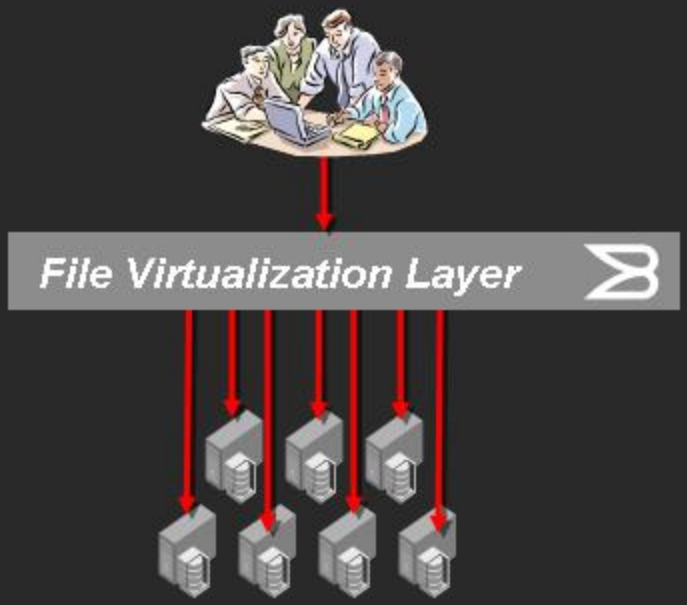
» **Centrally managing files in remote locations**

Brocade's File Virtualization Technology simplifies access and management

Without Brocade



With Brocade



Brocade File Management Engine (FME)

Manage Windows File Servers and Capacity - automatically

Compatible with Microsoft's server and networking technologies

Policy engine automates file management tasks

Brocade FME

Content Indexing and search powered by Microsoft's FAST

Open File Migration technology enables the movement of active files - anytime

Brocade FME

Key Technology Differentiator and Advantage - Windows Integration

DFS-N

- DFS-N leveraged for namespace management
- No desktop, server or storage agents
- Low risk gradual deployment

Active Directory

- Full integration with Active Directory
- Industry standard user authentication

Brocade FME

SMB/CIFS

- Native SMB protocol
- Full compatibility and maximum performance

Windows Security

- Delegated Kerberos security
- Full security and complete, accurate audit trails

Windows Management

- Seamless integration with Windows management

Brocade FME

High-Value Intellectual Property

7 patents pending with more on the way!

File Virtualization Technology

- **Redirection of client requests to present location of the file**
- **Transparent directory enumeration**
- **Interoperability with snapshot technology**

Open File Migration Technology

- **Non-disruptive open file migration**
- **Transparent namespace update**
- **Migration at any level in a namespace**
- **File placement based on content and storage functionality**

Brocade FME

Customer Deployment Case Study

Customer Profile »	Government customer with 20TB of consolidated file data
Customer Problem »	Implementing tiered storage strategy
Solution »	3x FME appliances (2 nodes for failover cluster for production environment, plus one unit for test environment)
Key Benefits »	• Effective implementation of tiered storage for disk space optimization • No recall on access from second tier • Improved performance

Customer Challenges - Moving to SharePoint

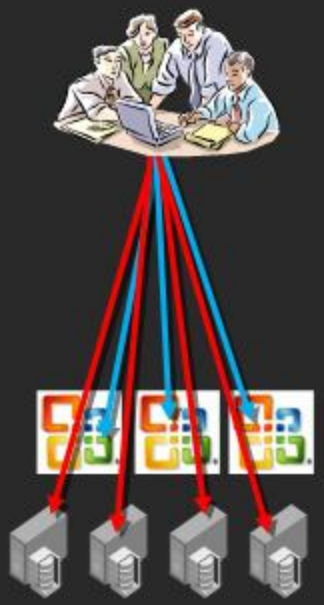
» **Which files to place in SharePoint vs. File Shares**

» **Multiple copies and archiving files**

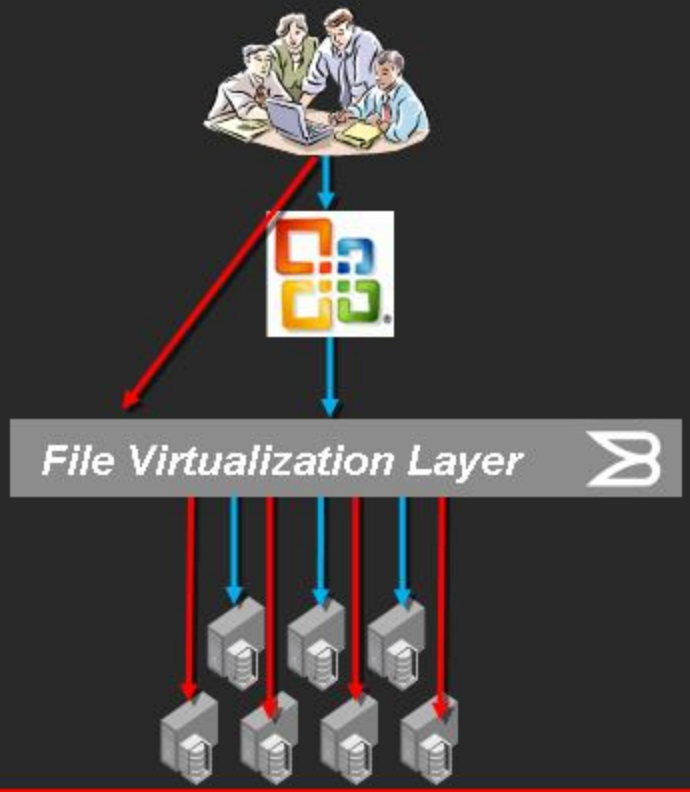
» **Managing performance**

Brocade's File Virtualization Technology simplifies file management for SharePoint

Without Brocade



With Brocade



Brocade's FME

New Key Differentiator and Advantage - SharePoint Management Services

Classify and consolidate files before moving into SharePoint. Extend portal search to virtualized file shares

Open File Migration technology enables placement of SharePoint owned files between Windows file servers

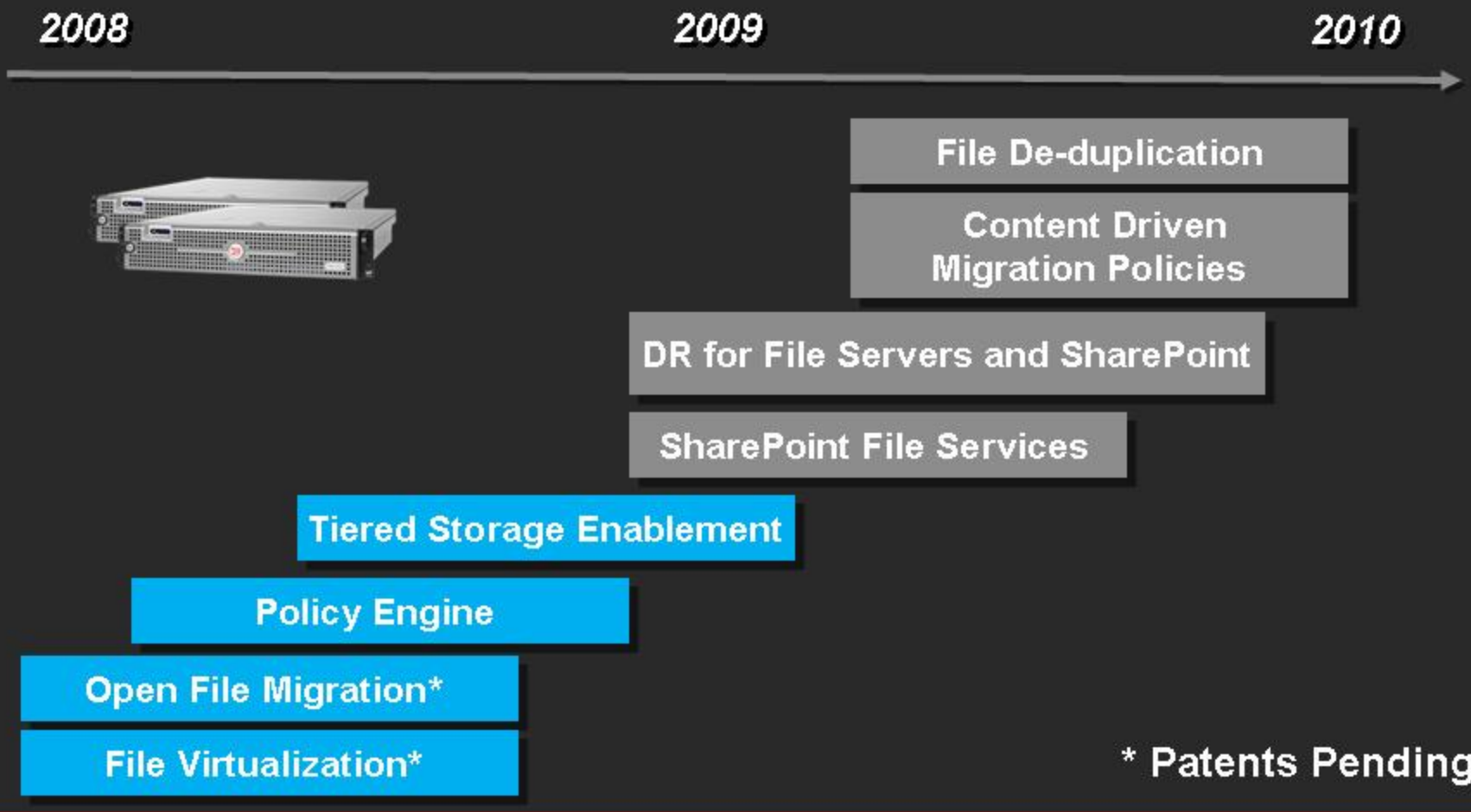
Brocade FME

Move files from existing file shares into SharePoint

Export files from SharePoint to virtualized file servers; improve portal performance and reduce capacity requirements

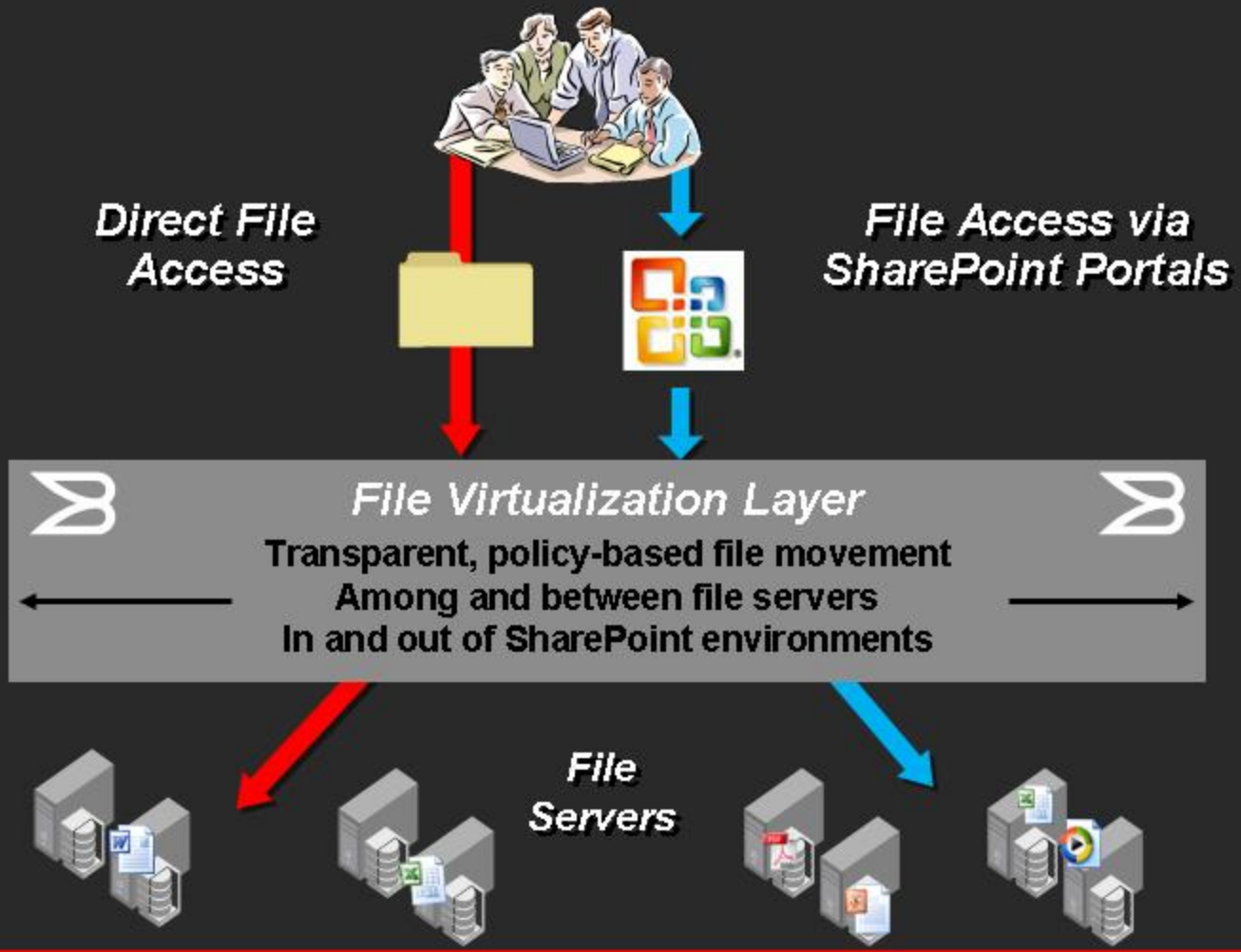
Brocade FME

Feature timeline for Windows File Servers and SharePoint

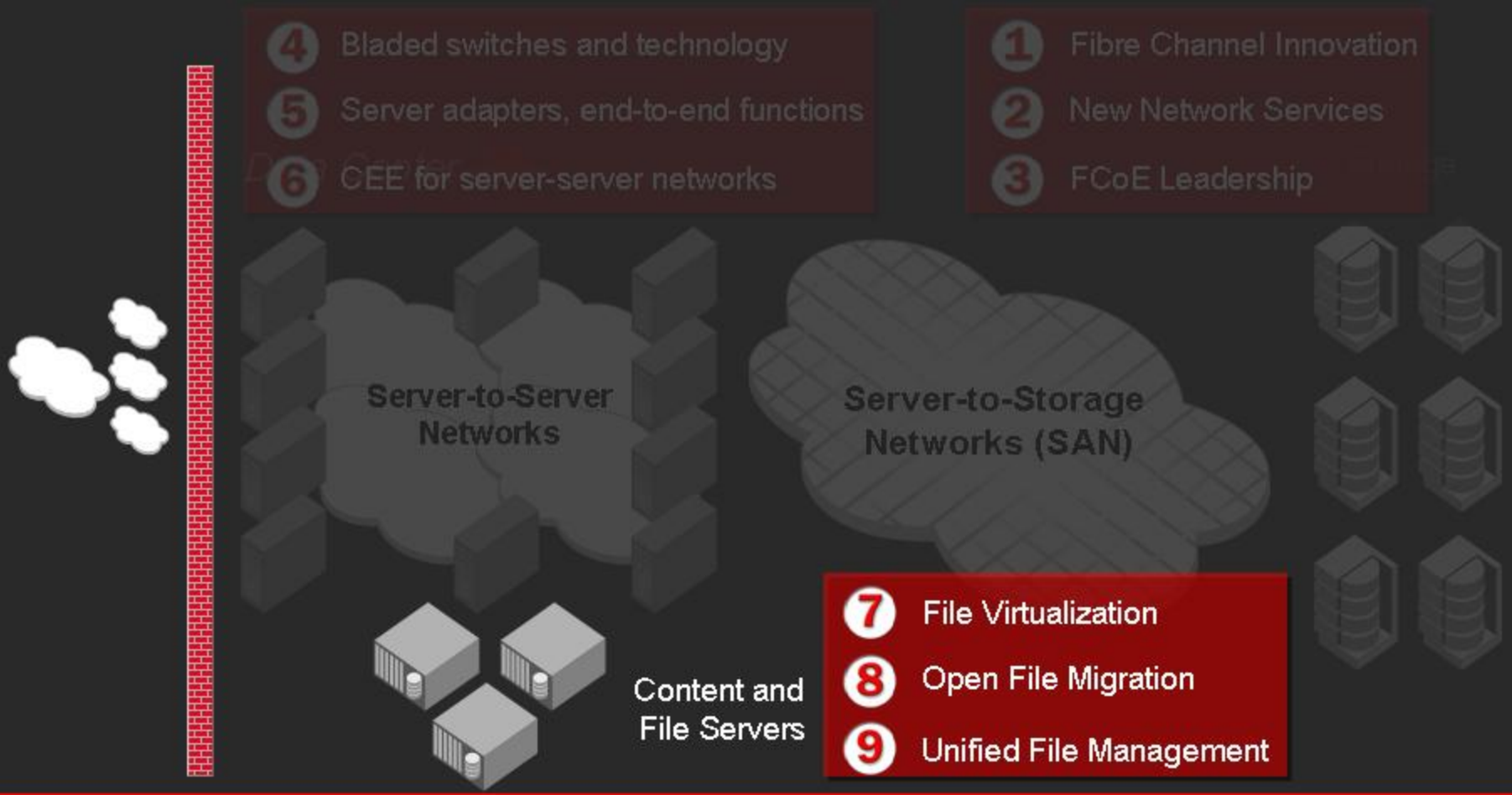


Brocade's Focus

Unified File Management Across *File Servers and SharePoint*



Our Data Management Plays in the Data Center



Summary

- Over 988 exabytes of data will exist by 2010 and by 2012, and 80% of storage capacity will be shipped to support file-level data.

  - IDC

- Microsoft-powered storage platforms store the majority of organizations' unstructured data and the strength of content management systems correlates with the overall rapid adoption and usage of Microsoft SharePoint in organizations.

  - Taneja Group study

- Brocade will innovate with our ability to unify file management across file servers and web portal technologies like SharePoint.

Brocade Data Center Services

Scott Podmilsak

Agenda

- Overview and Strategy
  - Business Model
  - Offerings and Practices
  - Growth Strategy
- New Services for the Evolving Data Center

Key Points

- Brocade has focused, very deep skill sets that are important in evolving data centers
- We help customers accelerate new technology deployment and better manage ongoing operations
- Brocade provides a vendor-neutral services model that is both direct (end-user) and partner (channel, OEM) friendly
- Brocade has recently added several new capabilities to expand its data center services portfolio

Brocade Service Offerings

Helping customers connect, share, manage & protect information

Professional Services

- Over 200 Consultants
- End-to-end storage services
- Onsite Residency services
- Design, Architecture, Implementation, Data Migration, Backup and Recovery, Security, and Virtualization

Support Services

- Over 250 Support Engineers
- Cross-OEM support
- Direct support offerings
- Supplemental (to OEM) offerings
- Onsite Residency services

Solutions

- Best Practices, Whitepapers, Tech Briefs
- Proof-of-Concept Testing
- Bundled solutions consisting of Brocade products, 3rd party products and Brocade services

Services Growth Strategy

Product Attach

Continued services and support for Brocade core products and associated applications (e.g. SAN maintenance, services, backup, disaster recovery)

Non-Product Attach

Build/acquire practices to address broader data center needs (e.g. Virtualization, Networking, Security, Ethernet, Server, Data Center Relocation)

New Partnerships and Paths to Market

Geographic Diversification

New Capabilities to Address the Broader Data Center Opportunity

Data Center Virtualization
- 1000+ implementations
- #1 "PS Only" Federal VMWare Partner

Data Center Relocations
- Over 200 Data Centers moved

Backup and Recovery
- Industry leader in IBM Tivoli Storage Manager and VERITAS NetBackup

Tiered Storage and Data Classification

Cable Management

Server
- Architecting and deploying new 8Gb networks for high density, virtualized server attachment

Ethernet
- Thought leadership on emerging FCoE and CEE standards
- Best design practices and principles

Broader networking and IP
- 10+ years experience and 300+ projects completed

Green Data Center solutions

Example – Server Virtualization Project

- **Description**
  - Physical to Virtual Server Migration
  - Pilot Engagement for IT department of a large bank
- **Goal**
  - Virtualize Windows 2003 Servers to VMware ESX 3.0
- **Services Delivered**
  - Assessment / Architecture
  - Implementation using VMotion
  - Post Implementation - testing, knowledge transfer and VMware training
- **Typical Revenue Range:** $25,000 – $250,000
- **Typical Project Duration:** 2 Weeks – 2 Months

Example – Data Center Relocation

- **Description**
  - Relocate Storage, Servers, Networks, Applications
  - From Washington D.C. to San Diego (government customer)
  - Performed with major system and storage OEM
- **Services Delivered**
  - Pre-site walkthrough and assessment
  - Logistics planning with customer
  - Project management/coordination at old site (power down)
  - Project management/coordination at new site (power up)
  - Data Migration
- **Typical Revenue Range:** $50,000 – $250,000
- **Typical Project Duration:** 4 – 12 weeks

Example – Data Migration

- **Description**
  - Customer implementing Storage Virtualization to manage increasing data
  - Needed to move data from old storage devices to new, to optimize for virtualization

- **Services Delivered**
  - Phase 1: Migration of mail server data (400 GB) done in 30 minutes
  - Phase 2: 4.3TB data migration
  - Project planning through reporting

Example – Federal Outsourcing

- **Description**
  - Large international agency
  - Top secret facility clearance required
  - Multi-year commitment

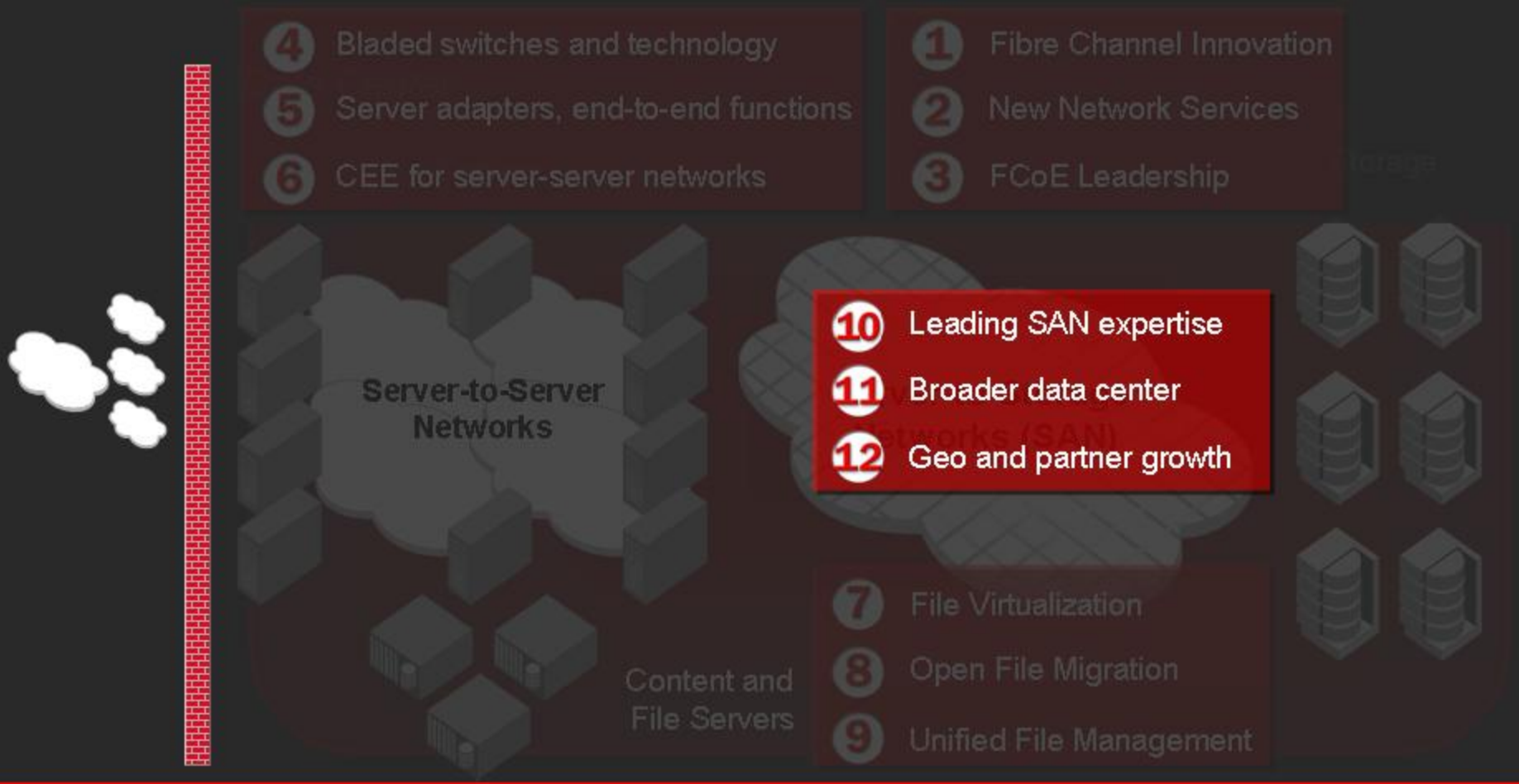
- **Services Delivered - Onsite management of:**
  - Cisco environment
  - Windows environment (server administration and support)
  - Storage administration and support
  - Security engineering and consulting

Example – Brocade Supplemental Support

- **Description**
  - Manage and support Brocade products in a multi-vendor environment
  - Premier Plus level including Brocade Resident for On-site Support
  - OEM friendly model

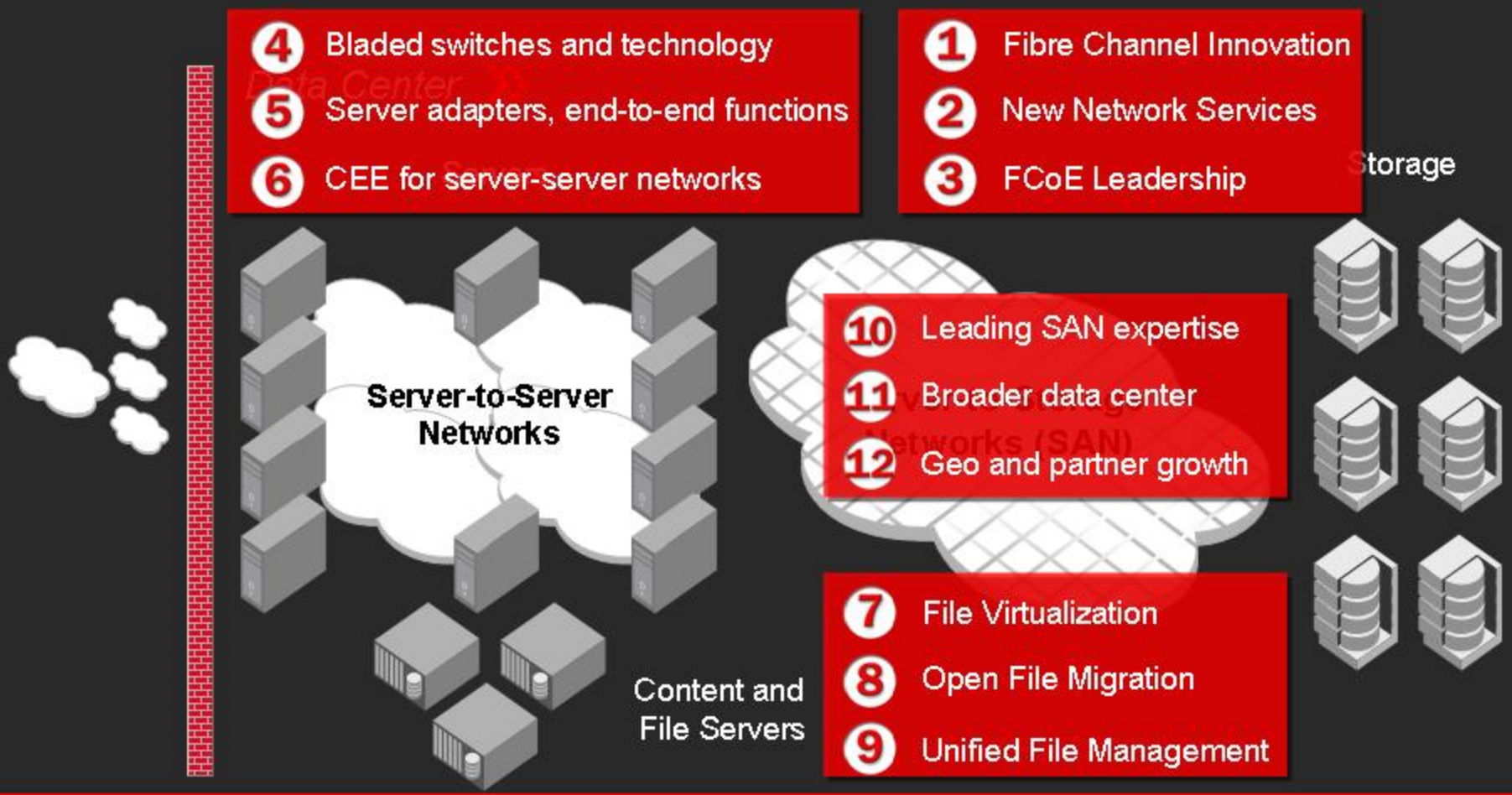
- **Services Delivered**
  - 24x7 Call support on a Multi-Vendor Environment
  - Support Account management and release planning
  - Quarterly service reviews
  - Onsite staff augmentation
  - Consulting services for DCF Design, Back-up & Recovery and Virtualization
- **Typical Project Duration:** 6 months – 3 years

Brocade Services



Summary Points and Concluding Remarks

Our Plays in the Data Center



Key Messages for Today

- Brocade continues to execute our strategy to evolve to a larger, more comprehensive enabler of data center solutions
- We continue to deliver excellent company results, primarily because we continue to innovate
- We are proactively driving several opportunities to further differentiate in our target segments and markets
- We have deep understanding and insight as to how our new technologies will play a significant role in the evolving data center

Q and A

BROCADE

THANK YOU