Infrastructure Simplification

What, Why, and How

IBM Systems

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Companies Face Increasing Information Realities

60%+ of CEOs: Need to do a better job capturing and understanding information rapidly in order to make swift business decisions

Only **1/3** of CFOs believe that the information is easy to use, tailored, cost effective or integrated

79% of companies: have 2 + repositories… 25%: have 15 +

48 disparate financial sys. and 2.7 ERP sys. in the average $1B company

85% of information is unstructured

Transactions
Customers
Employees
Partners
Products
Organizations Financials
Web Content
e-Mails
Databases
Reports
Documents
Media

30-50% of design time is copy management

17% of IT Budgets Spent on Storage HW, SW, People

30% of people's time is spent searching for relevant information

37% CGR Disk Storage Growth '96-'07

122 Terabytes Disk Storage in 2005

40% of IT budgets may be spent on integration

Sources: IBM & Industry Studies, Customer Interviews

What makes those realities real?

Multiple hardware types

Data replicated on multiple servers

Maintenance and updates must be replicated across large networks

Multiple operating environments

Ever expanding physical plant

New applications added on, not integrated
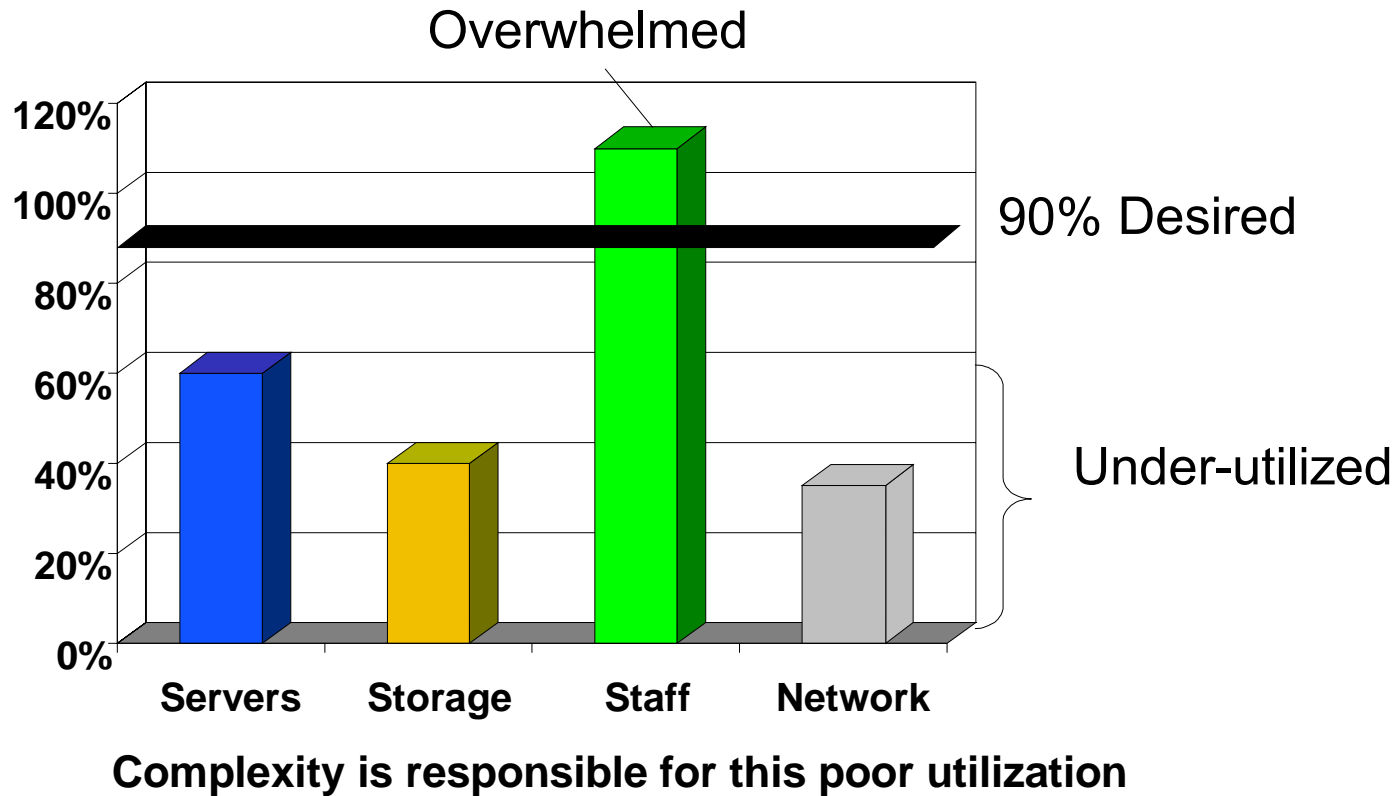
Many servers operating at low utilization

Multiple versions of software

Labor intensive infrastructure maintenance

Customers
Transactions
Employees
Partners
Products Organizations Financials
e-Mails Databases Web Content
Reports Documents Media

The result is usually something like this:

zSeries Invasion Video shown

IT Resource Utilization

Overwhelmed

120%

100%   90% Desired

80%

60%

40%   Under-utilized

20%

0%
Servers   Storage   Staff   Network

Complexity is responsible for this poor utilization

Addressing the Infrastructure

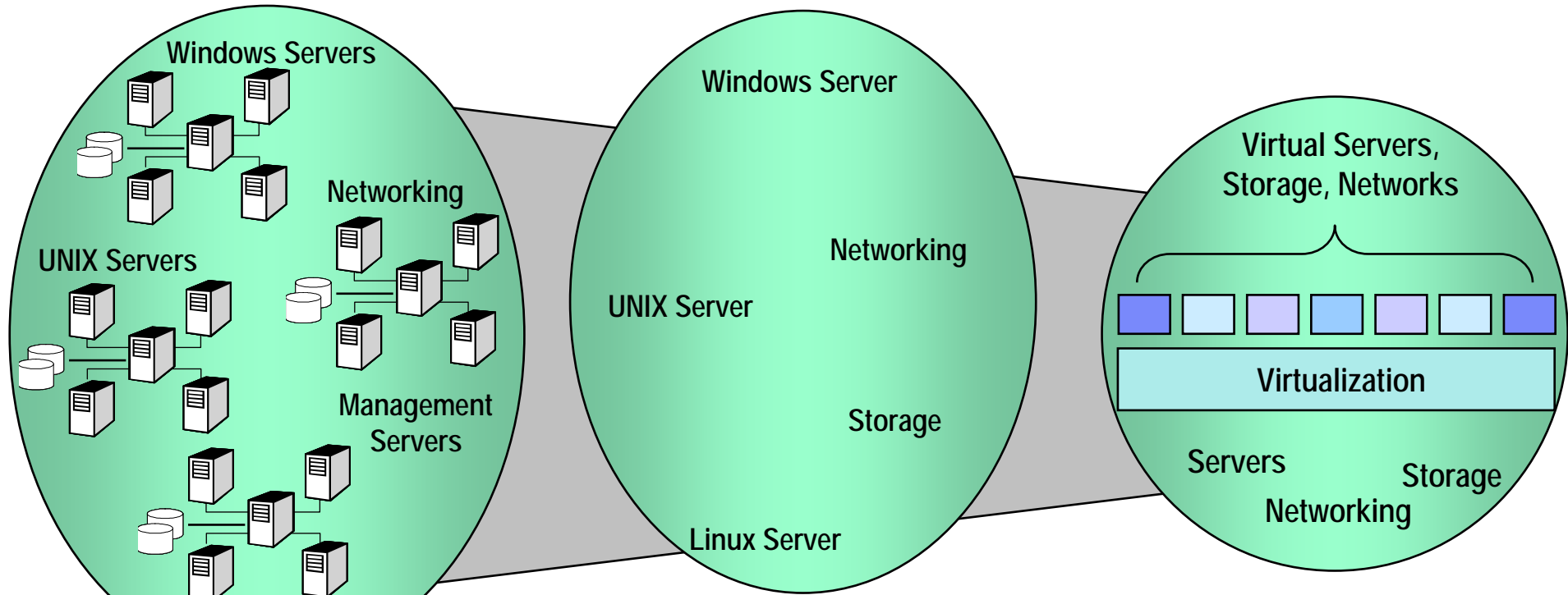**Simplify** the IT infrastructure and its management

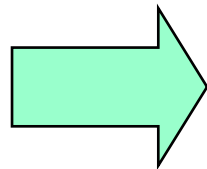**Assure** **business continuity**, security and information durability

Efficiently manage information **throughout its lifecycle**
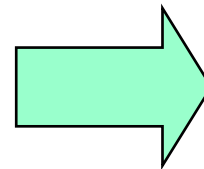
Virtualizing IT Reduces Complexity

Complex

- Islands of computing and data
- Disparate management tools
- Manual provisioning

Physical Consolidation

- Fewer devices and licenses
- Disparate management tools
- Labor intense provisioning

Logical Simplification

- Pool of resources
- Multiple OS's per server
- Rapid provisioning
- Automated management

- **Consolidation:** Leverage advances in storage density to consolidate many older devices into fewer or one – newer device.
- **Virtualization:** Separate logical representation of a resource from its physical implementation to improve flexibility and simplify management.

Technology Cornerstones

Information Services
- **Real time Access & Analytics**
- **Enterprise Search**
- **Reference/Meta Data**
- **Information Integration**
- **Content Management**
- **Databases/Warehouses**

Virtualization
- **Hardware: server, storage, network**
- **Data / information**
- **File systems**

Open Standards
- **SQL, XML**
- **Grids, OGSA**
- **Web Services**
- **SMI-S and SNIA**
- **Linux**
- **Java**

Automation
- **Systems management**
- **Provisioning**
- **Replication**

Technology Cornerstones

✓ *Greater flexibility and choice*
✓ *Improved integration and access*
✓ *Increased responsiveness, productivity, ROI*

A Virtualized, Well Managed Infrastructure is Key

Benefits:

- **Free flow of information**
- **Reduced cost and complexity**
- **Flexibility and choice**

Today – Islands of Information

Customer enters portal

web portal

order processing/history

❌ Transferring to customer service center

❌ Limited knowledge of customer buying patterns

Customer asked to re-enter information

Customer asked for additional information

❌ Customer service checks order history

customer service

marketing/sales

- **Lack of integration leads to:**
  - limited flow of information   -   lack of customer insight
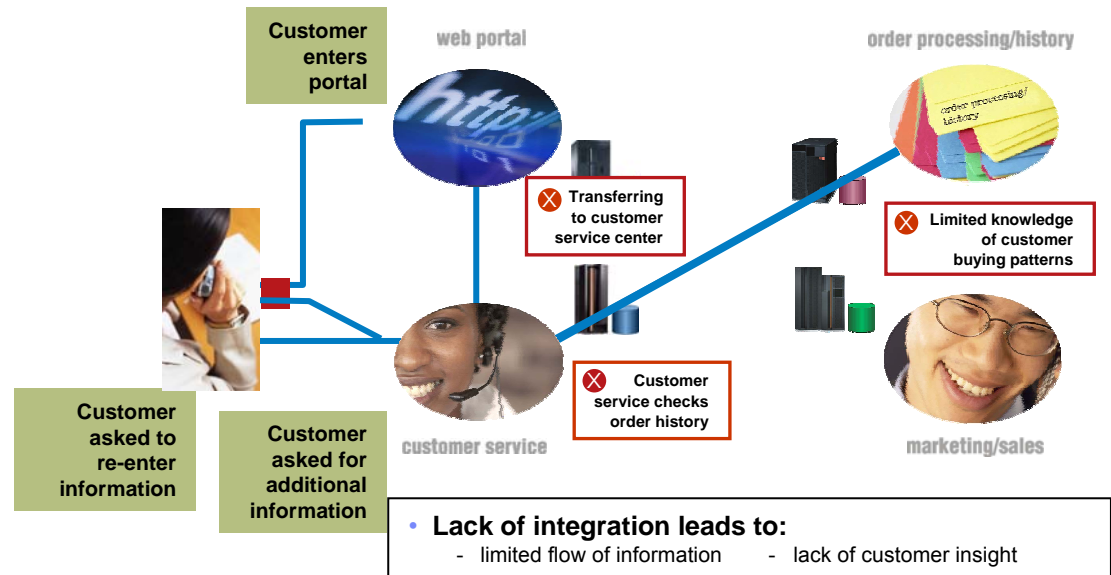

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A Virtualized, Well Managed Infrastructure is Key

Benefits:

- **Free flow of information**

- Reduced cost and complexity

- Flexibility and choice

Tomorrow – Information on Demand

Customer enters portal

web portal

order processing/history

Customized marketing

Virtualization

Customer places order

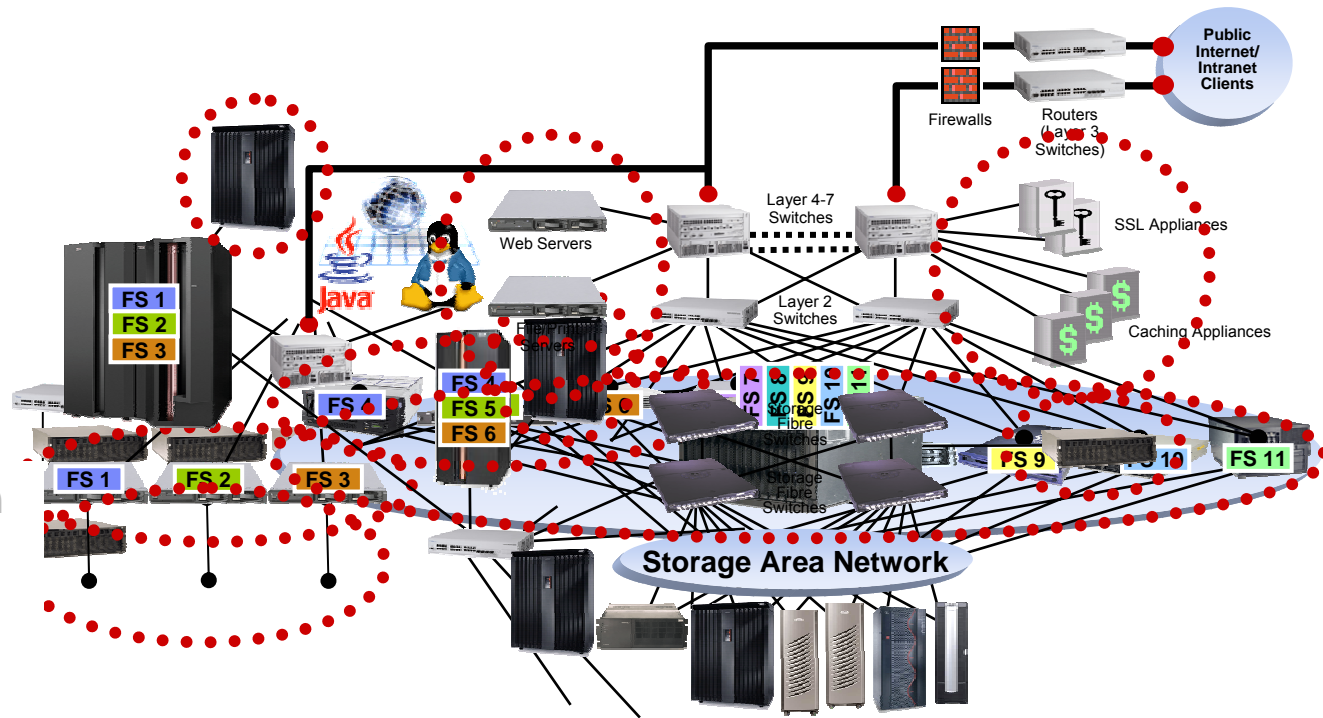customer service

marketing/sales

- **Free flow of information across the enterprise**
- **Optimized business value through integration, analysis and efficient management of information assets throughout their lifecycle**

A Virtualized, Well Managed Infrastructure is Key

Benefits:

- Free flow of information

- **Reduced cost and complexity**

- Flexibility and choice

Simplify the Infrastructure

Consolidate the Physical .. Virtualize Everything (Servers, Network, end-point Devices, Data)

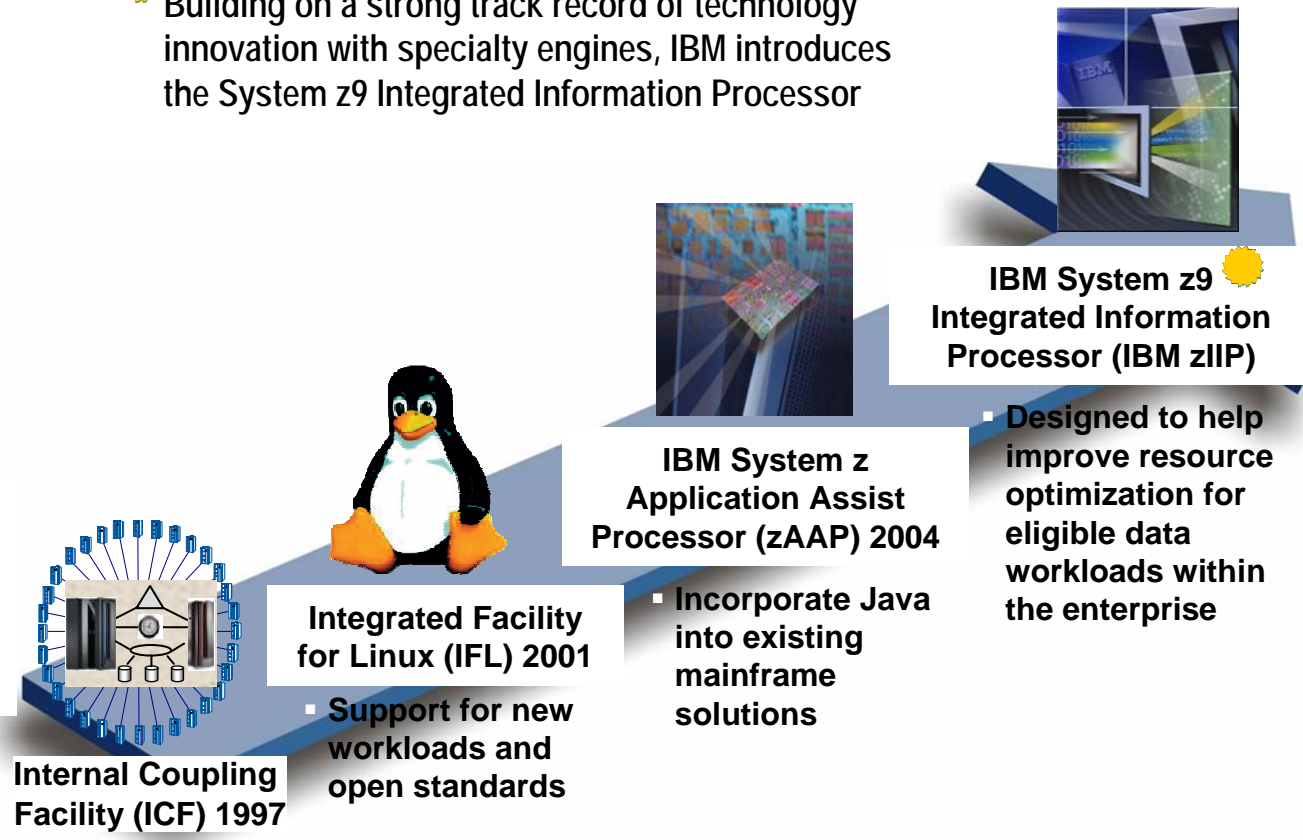# A Virtualized, Well Managed Infrastructure is Key

Technology Evolution with Mainframe Specialty Engines

Building on a strong track record of technology innovation with specialty engines, IBM introduces the System z9 Integrated Information Processor

Benefits:

- **Free flow of information**
- **Reduced cost and complexity**
- **Flexibility and choice**

Virtualize The Server

Internal Coupling Facility (ICF) 1997

Integrated Facility for Linux (IFL) 2001
- Support for new workloads and open standards

IBM System z Application Assist Processor (zAAP) 2004
- Incorporate Java into existing mainframe solutions

IBM System z9 Integrated Information Processor (IBM zIIP)
- Designed to help improve resource optimization for eligible data workloads within the enterprise

A Virtualized, Well Managed Infrastructure is Key
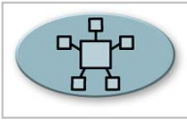

Benefits:

- **Free flow of information**
- **Reduced cost and complexity**
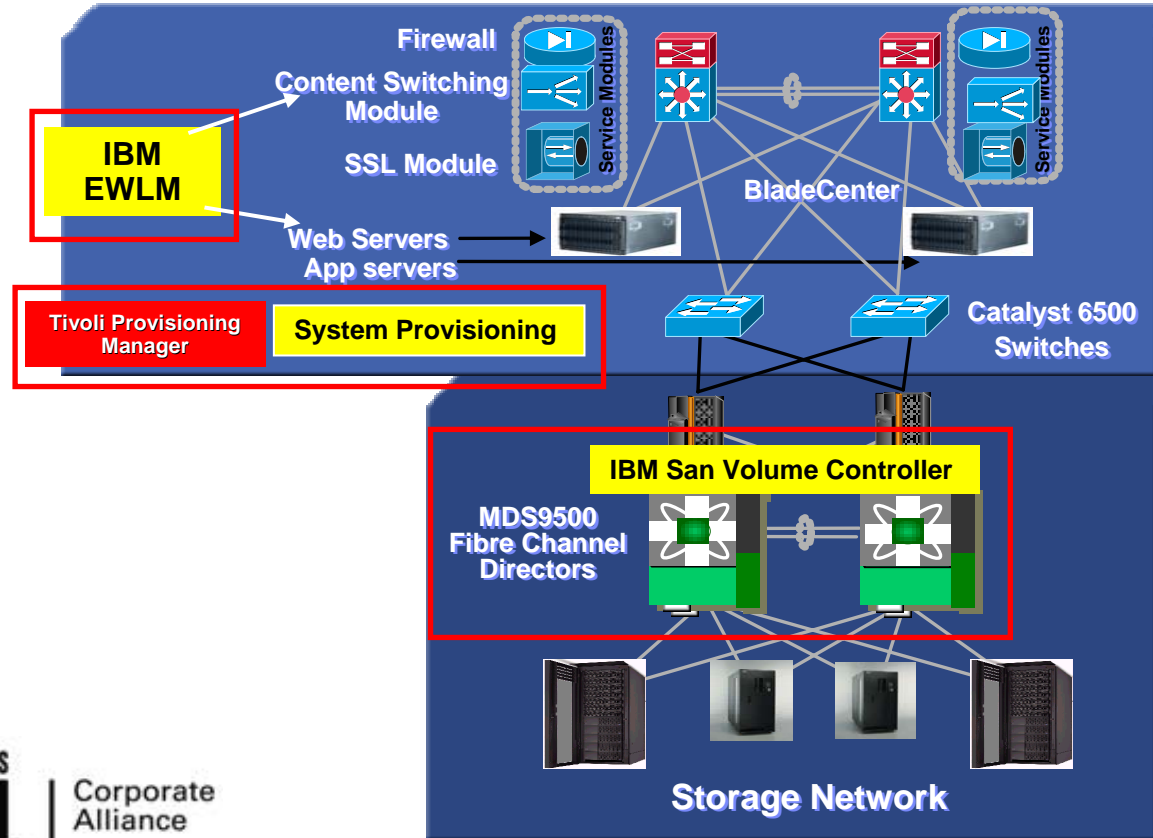- **Flexibility and choice**

Virtualize The Data

Raising the Bar for Information on Demand

- **Information on demand is essential for driving business strategies.**

- **Data is at the core of out customers' businesses, and must be leveraged for competitive advantage.**

- **For over four decades mainframes have been a leader in data and transaction serving. It's time to further leverage this asset.**

- **January 24th, IBM announced new technology innovation for advanced data serving**
  - ► Planned future directions and roadmap
  - ► New specialty engine
  - ► New DB2 function

Network Virtualization Example

- EWLM communication with Cisco Content Switching Module

- Coordinated provisioning of Systems and Network resources via inclusion of networking workflows

- Cisco MDS9000 support for IBM SAN Volume Controller

Firewall
Content Switching Module
SSL Module
IBM EWLM
Web Servers
App servers
Service Modules
BladeCenter
Service modules
Tivoli Provisioning Manager   **System Provisioning**
Catalyst 6500 Switches
IBM San Volume Controller
MDS9500 Fibre Channel Directors
Storage Network

CISCO SYSTEMS
Corporate Alliance

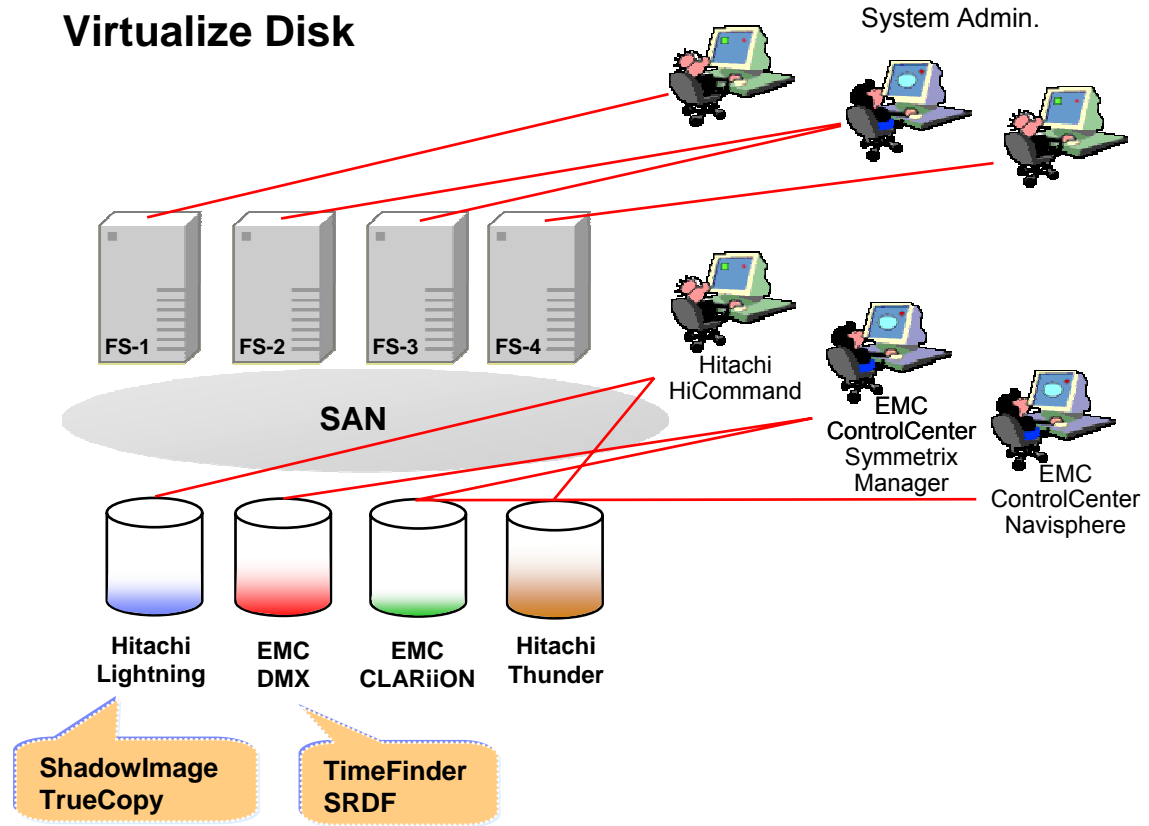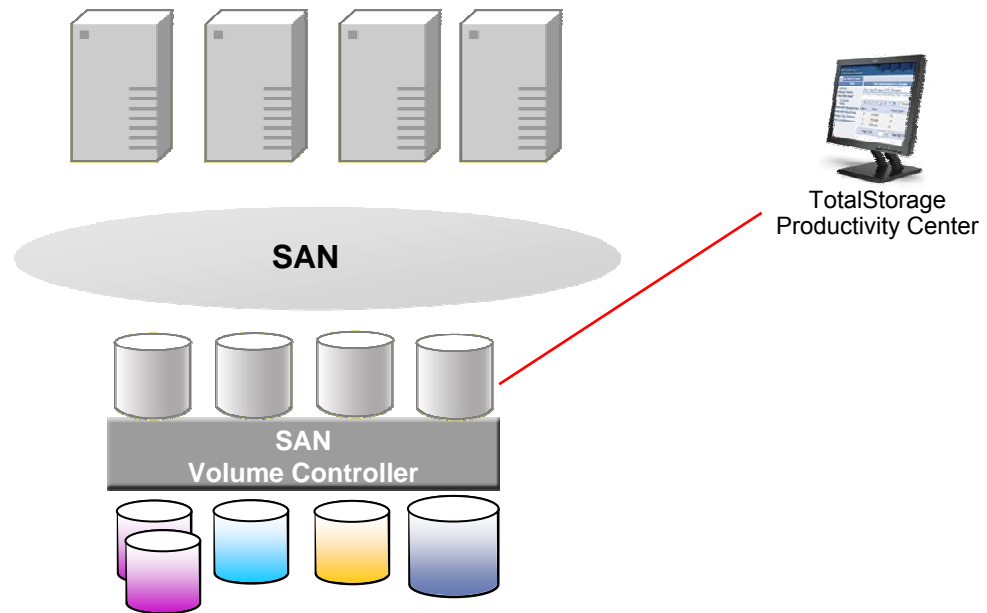## Enabling End-to-End Infrastructure Virtualization

A Virtualized, Well Managed Infrastructure is Key

Benefits:

- Free flow of information
- **Reduced cost and complexity**
- Flexibility and choice

Virtualize Disk

System Admin.

FS-1   FS-2   FS-3   FS-4

SAN

Hitachi
HiCommand

EMC
ControlCenter
Symmetrix
Manager

EMC
ControlCenter
Navisphere

Hitachi
Lightning

EMC
DMX

EMC
CLARiiON

Hitachi
Thunder

ShadowImage
TrueCopy

TimeFinder
SRDF

A Virtualized, Well Managed Infrastructure is Key

Benefits:

- Free flow of information

- **Reduced cost and complexity**

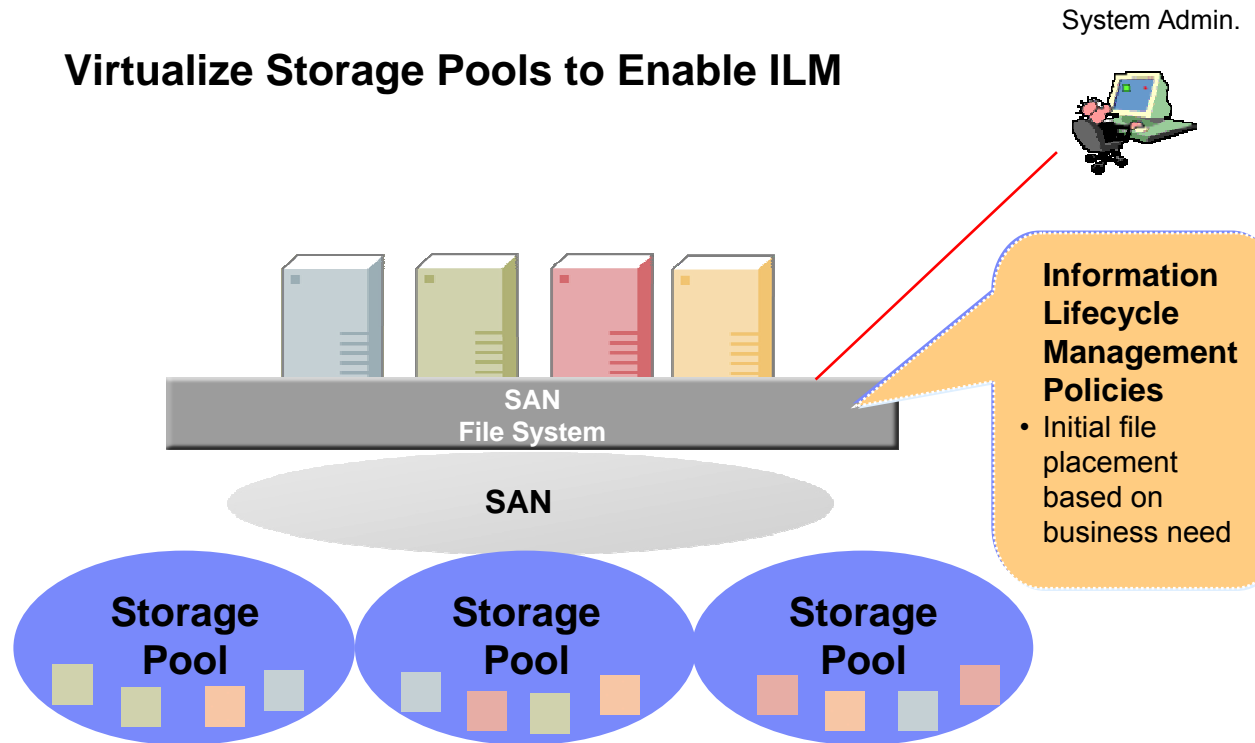- Flexibility and choice

Virtualize Disk

TotalStorage
Productivity Center

SAN

**SAN
Volume Controller**

A Virtualized, Well Managed Infrastructure is Key

Benefits:

- Free flow of information

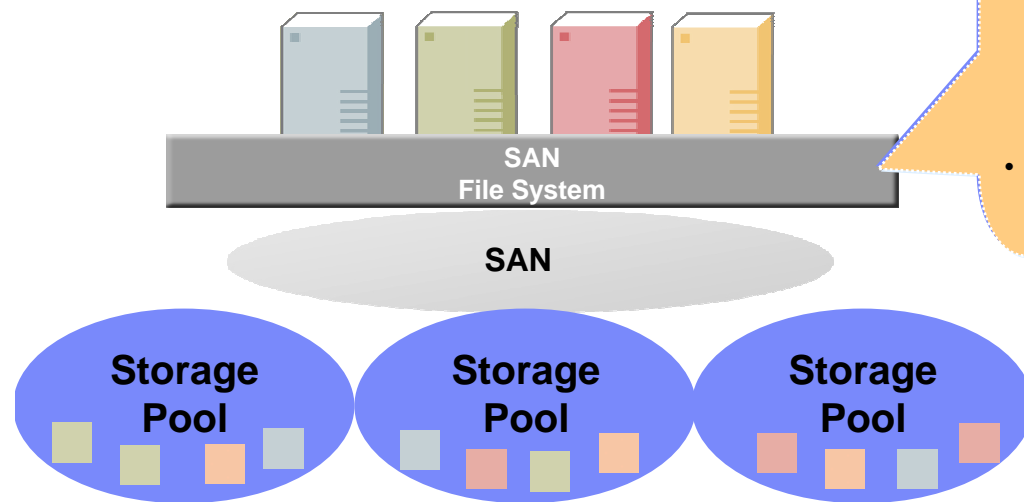- **Reduced cost and complexity**

- Flexibility and choice

Virtualize Storage Pools to Enable ILM

System Admin.

SAN File System

SAN

Storage Pool

Storage Pool

Storage Pool

Information Lifecycle Management Policies
- Initial file placement based on business need

A Virtualized, Well Managed Infrastructure is Key

Virtualize Storage Pools to Enable ILM

Benefits:

- Free flow of information
- **Reduced cost and complexity**
- Flexibility and choice

SAN File System

SAN

Storage Pool

Storage Pool

Storage Pool

Information Lifecycle Management Policies
- Disk-to-disk HSM (Transparent file movement between storage pools)
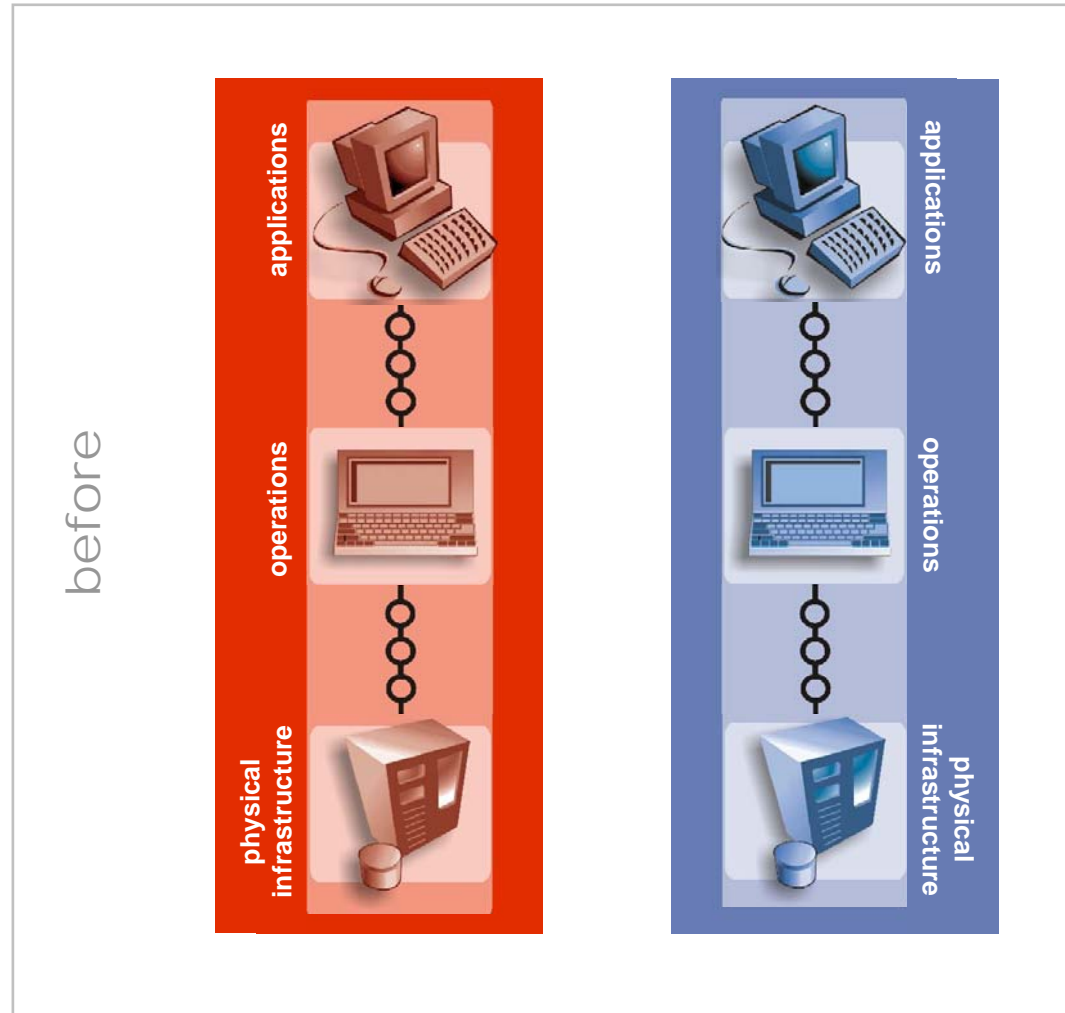- File Expiration / deletion

A Virtualized, Well Managed Infrastructure is Key

Untethering Applications and Data

Benefits:

- Free flow of information
- Reduced cost and complexity
- **Flexibility and choice**

before

applications / operations / physical infrastructure

applications / operations / physical infrastructure

A Virtualized, Well Managed Infrastructure is Key

Benefits:

- Free flow of information
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- **Flexibility and choice**

after

virtualization

Supported by total thinking

IBM delivers sweeping technology innovations that complement its ability to provide unparalleled customer service and support.

total
thinking

- Broad range of solutions and services through IBM Business Partners and IBM Global Services

- Common IBM support across a broad range of offerings

- Comprehensive end-to-end resource management facilities

- Deep consultative expertise gained from systems vendor and service leadership

And now to continue,

- **The roles of:**
  - ► The role of IBM System z in Infrastructure Simplification
  - ► The role of IBM Software in managing the infrastructure
  - ► **Executive Summary, Proof Points, and team introduction**
  - ► **Lunch**
  - ► **Optional Break Out sessions**