

# NETWORLD+INTEROP

NETWORK STORAGE DAY 2004



"SMART DISK" "SMART TAPE"

"INTELLIGENT FABRICS" "INTELLIGENT RAID"

## INVASION OF THE INTELLIGENT STORAGE DEVICES

PEER TO PEER  
OR  
JUST ANOTHER PANACEA?

N+I 2004

**Opening Remarks:**  
**Ed Chapman, Cisco Systems**



**Panel Discussion:**  
**Dean Morash, Moderator**

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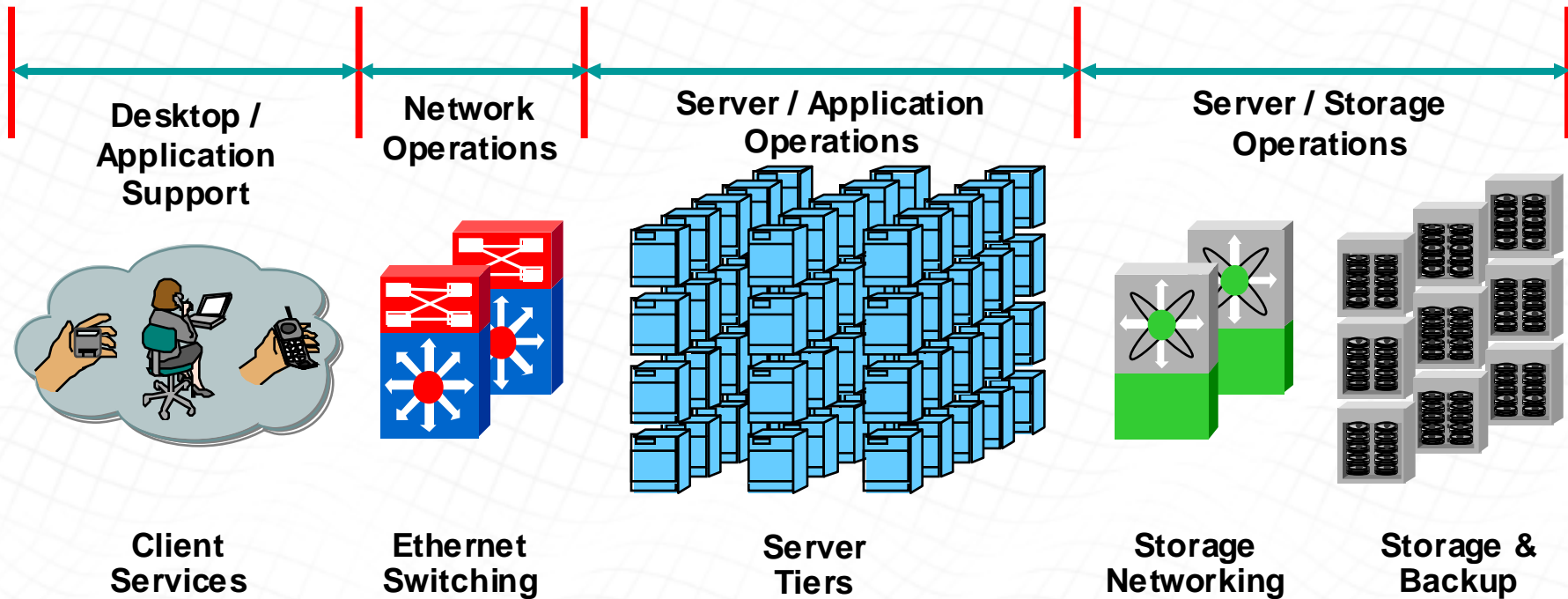


## Invasion of the Intelligent Storage Devices

Peer-to-Peer in the Offing or Just  
Another "Panacea" Promise?



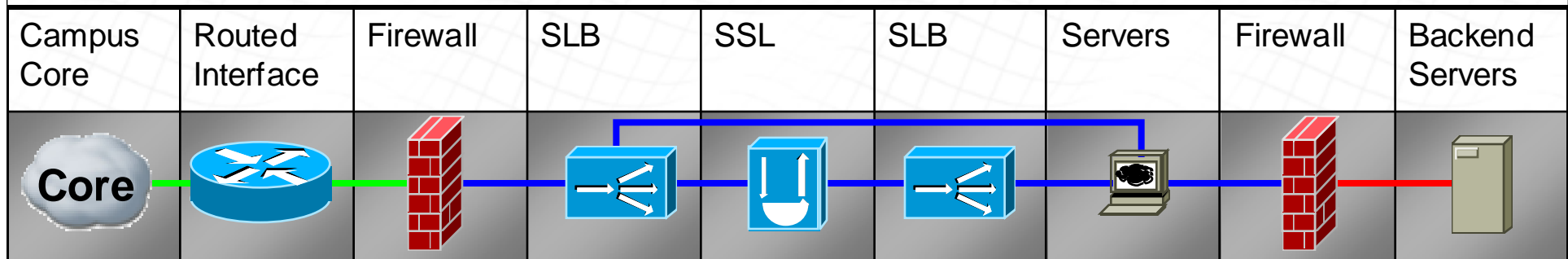
### Introduction-*Today's Data Center Defined*



- Network provides connectivity between client and servers and servers and storage devices
- Server Tier is moving to 1Ru servers and BladeServers
- Such a topology results in distinct Storage, Server and Network resource domains



## Application of Services in the DataCenter



- IP Data Networking already provides key functionality within the networking layer to application servers
- Operating Systems, Applications (VMWare etc.) along with new server form factors (Bladeservers) are virtualizing the CPU/Server layer
- What about Storage?



## Storage Services Today

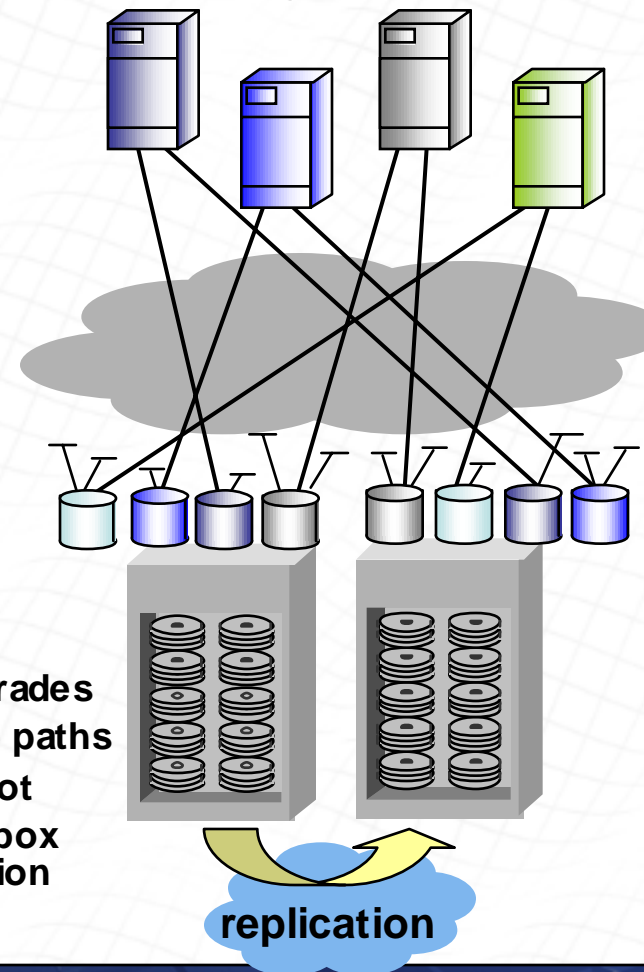
### Host

- Individually managed
- Mirroring, striping, concatenation coordinated with disk array groupings
- Rogue host Access

### Disk Array

- Individually managed
- Just-in-case provisioning
- Stranded capacity
- Snapshot within a disk array (same level storage)
- Array-to-Array replication

- Mirror, stripe, concat, slice
- Coordinated across hosts
- Application integration
- Multi-pathing



- RAID
- HA upgrades
- Multiple paths
- Snapshot
- Box-to-box replication



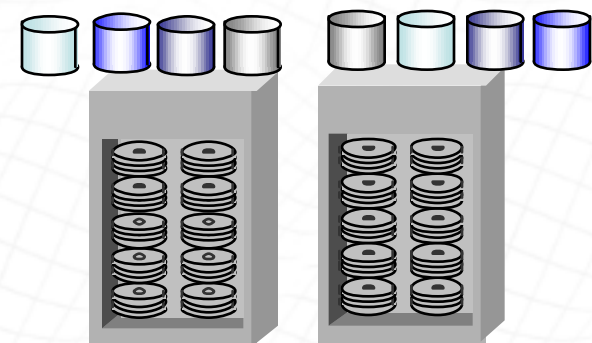
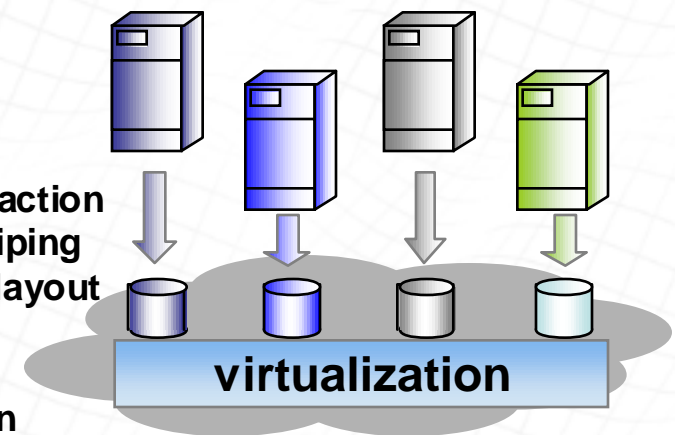
## Benefits of Network-Hosted Storage Intelligence

- Single point of management
- Insulates servers from storage changes
  - » migration
  - » highly available storage upgrades
- Consolidation: Legacy investment protection
  - » Heterogeneous storage and servers
- Different class of storage for different purposes
- Capacity on-demand provides increased utilization
- Enabler for simplified data protection
  - Snapshots
  - Replication
  - Higher IO, lower overhead on both array and host

- Application integration
- Multi-pathing

- LUN abstraction
- Mirror, striping
- Online Relayout

- Snapshot
- Replication

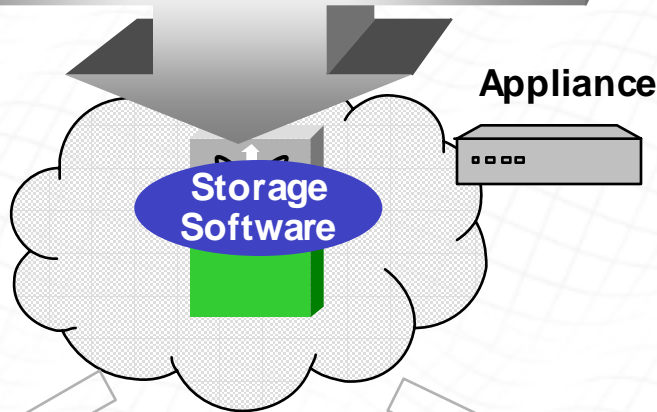
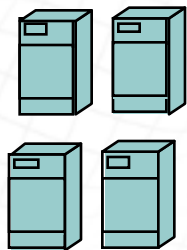


- RAID
- HA upgrades
- Multiple paths



### Network Functions

- Storage Virtualization
- Data Mobility
- Data Replication
- Path Optimization
- Service Differentiation



### Network-Hosted

- Storage software resides on Network
- FAIS work in T.11

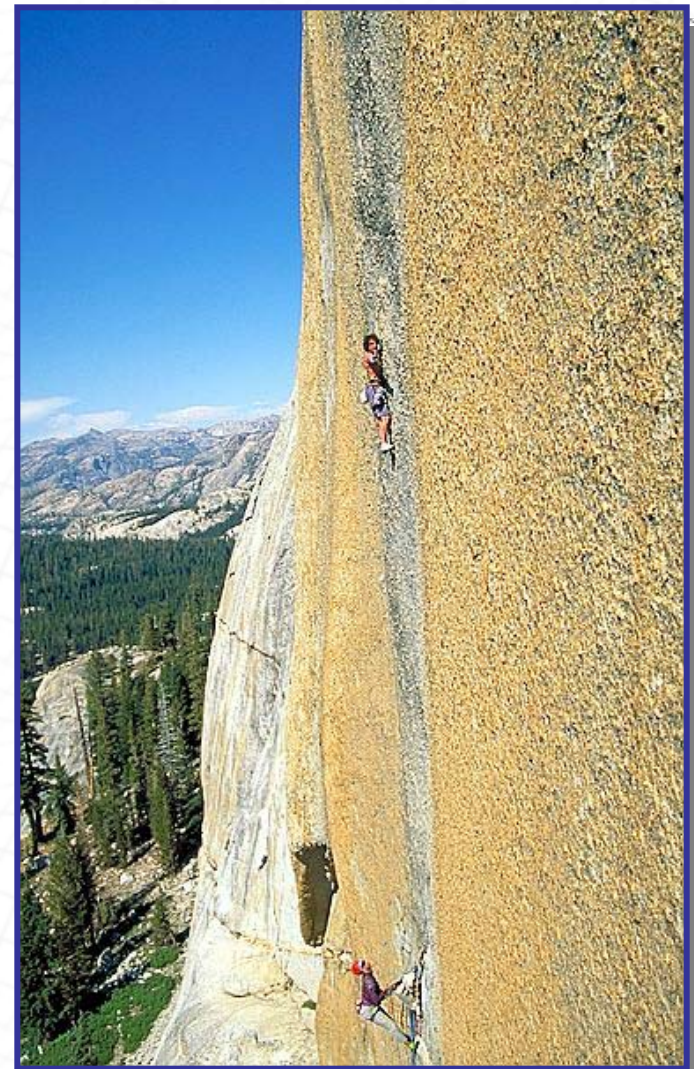
### Network-Assisted

- Storage software resides on external server or appliance
- Cisco SAN Tap



## Challenges in Network Hosted Storage Applications

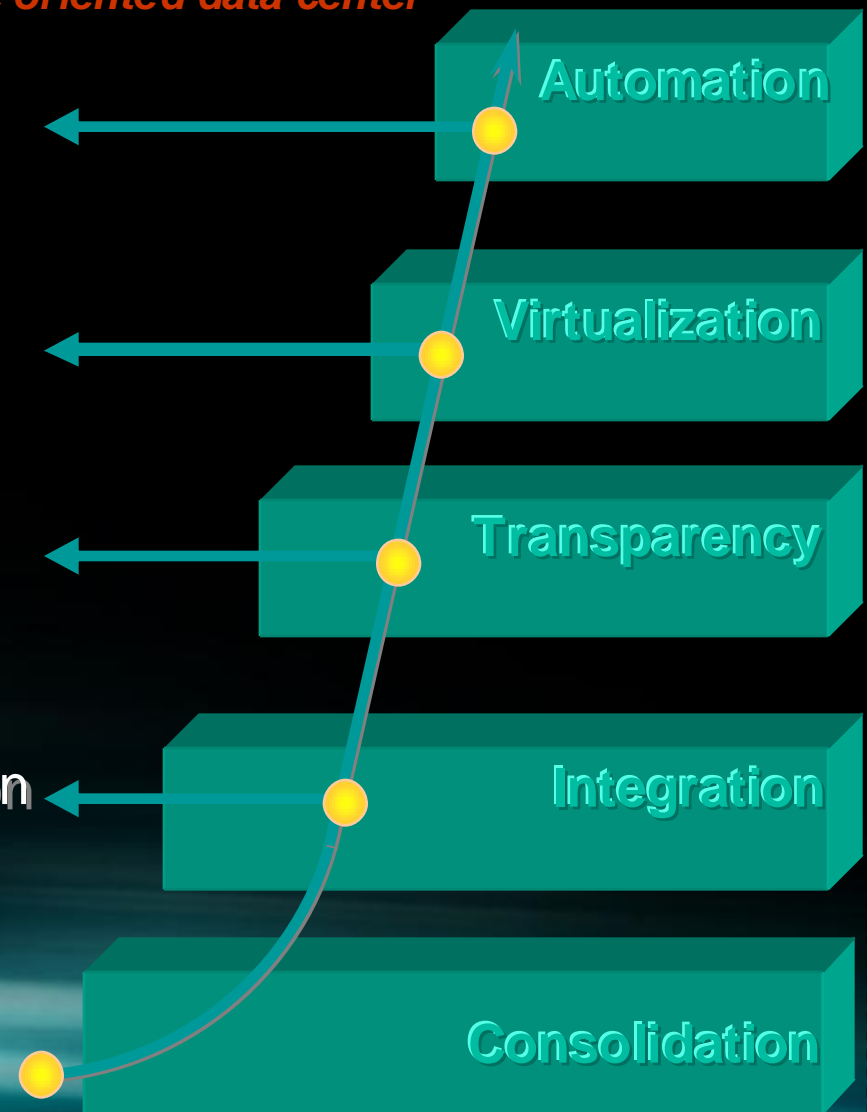
- Certification and Support
  - Ex. IBM SVC managing EMC Clarion
- Management
  - Locality of Data, Redundancy, Provisioning
  - Coordinating the IP Data layer, Application/CPU layer with the Storage Layer services
  - Organizational Changes





### The Direction of the Data Center- *The service oriented data center*

- Demand driven (dynamic provisioning) use of data center resources
- Virtual use of computing and storage resources
- Transparency use of network-based Services
- Integration of network-based services such as storage, security and application intelligence
- Centralization, and standardization of computing resources to lower costs, improve efficiency and uptime





# Intelligent Storage Devices

## Panel

- Moderator: Dean Morash  
Strategic Alliances, Quantum
- Panelists
  - Ed Chapman, Senior Director, Product Management,  
Storage Technology Group, Cisco Systems
  - Christopher C. Croteau, Director of Business  
Development, Storage Technology, INTEL
  - Hossein ZiaShakeri, Vice President, Advanced  
Engineering, Spectra Logic
  - Ravi A. Ravindranath, VP of Engineering, MaXXan
  - Rob Davis, VP, Advanced Technology, QLogic
  - Allen Light, Product Line Manager, Broadcom
  - Bob Rumer, Strategic Marketing – Storage, Vitesse  
Semiconductor
  - Mark Spowart, President, StoreAge Networking  
Technologies

