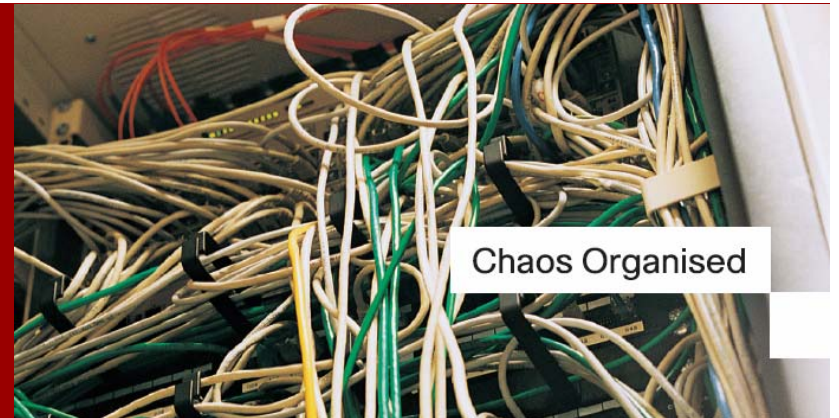




Cisco Data Center Day 2006

Prepare your Data Center for Business Continuance



Chaos Organised

Benny Chan
Product Marketing Manager – Data Center
Cisco Systems APAC

Agenda

- **Business Resilience Challenges and Trends**
- Solutions for the Resilient Business:
 - Data Resilience**
 - Application Resilience**
 - User Access Resilience**
- Summary

Quiz on Business Continuity.....

75

29

43

15

The Answer.....

- **75%** of **IT decision-makers** are altering Disaster Recovery/Business Continuance programs as a result of September 11
- Following a disaster **43%** of **directly affected businesses do not reopen** and **29%** fails with 24 months as a result
- Only **15%** of **Global 2000 enterprises** have a full-fledged business continuity plan.

What Would You Do If Your...

- **Headquarters and data center were destroyed?**
- **Network that supported 5000 desktops and servers was ruined?**
- **Corporate employees were displaced?**
- **PBX phone communications were disrupted?**
- **45 Branch offices were unable to access mission-critical applications?**



The Makings of a Resilient Business

Lehman Bros. Reopened for Business the Next Day

- **Recovering Applications and Data**

Synchronized data centers across a metro network ensured fast recovery of data and applications
- **Continuous Communications**

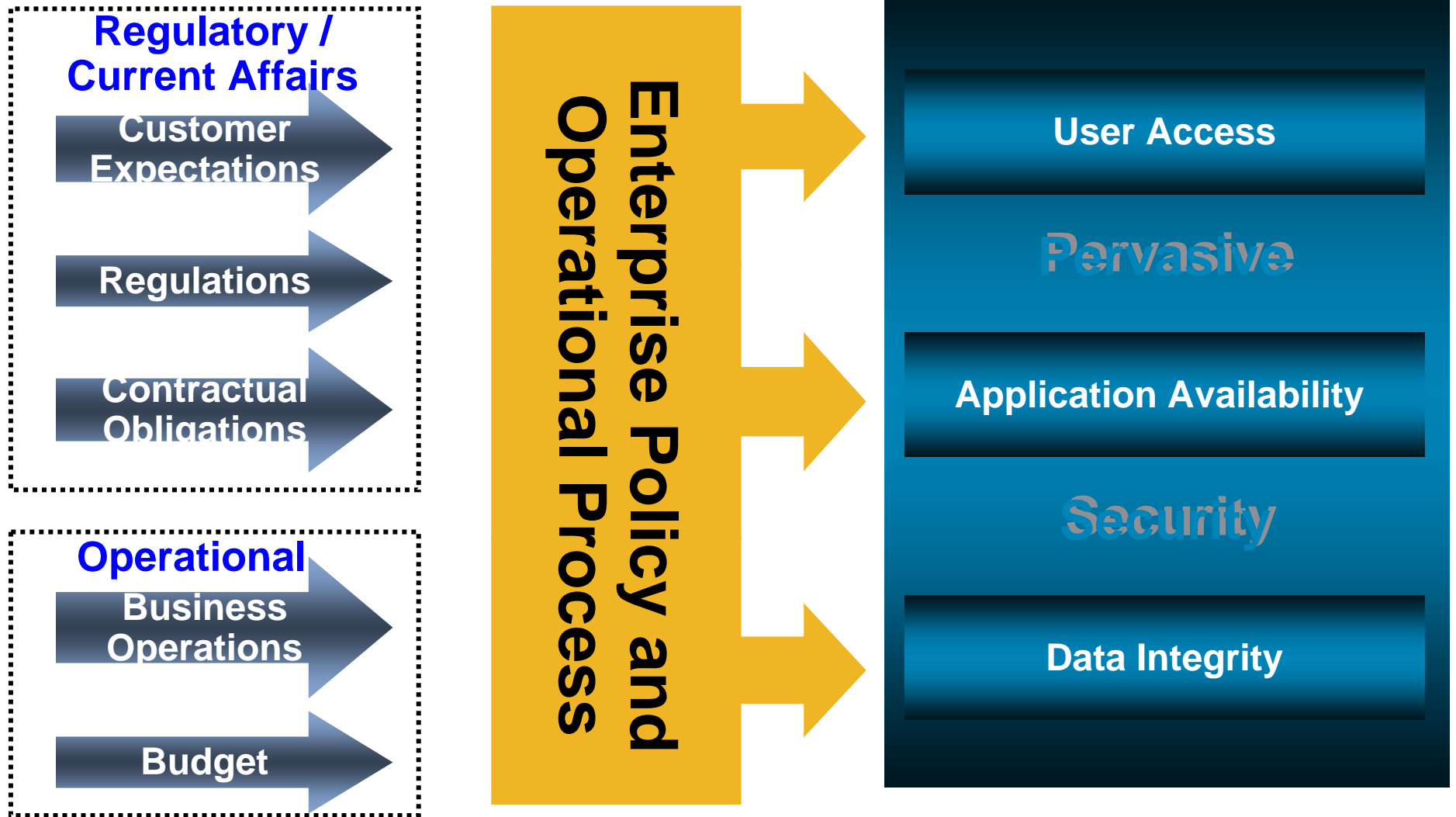
IP telephony network enabled continuous voice communications

Voice traffic rerouted over IP to alternate PSTN gateways in Europe, enabled communications with customers
- **Ensuring Continuous Access**

Data and communications secured over public networks using VPN technology provided continued access

Instant offices in hotel rooms, using wireless and VPN technologies allowed key personnel to get back to work

Business Resilience is a Business Strategy

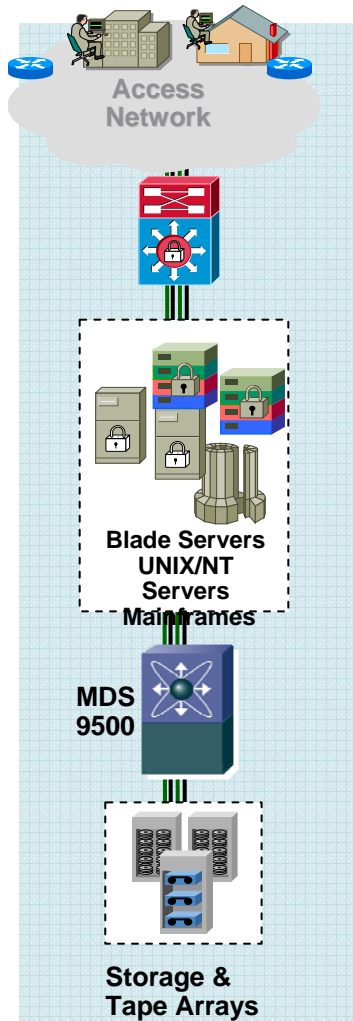


Agenda

- Business Resilience Challenges and Trends
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Business Continuance

Data Resilience



User Access Resilience

Application Resilience

Data Resilience

Business Need

Ensuring Uninterrupted Anywhere Access to Applications and Services

Ensuring Availability and Protection of Applications and Communications Services

Ensuring Data Protection, Accuracy, Availability and Integrity

Technology Enablers

VPN's; Mobility
Global Load Balancing;
Multi-channel Communications

Server Load Balancing; Infiniband Clusters; HA Clustering; Geo-Clustering

SAN Extension;
High Speed DC Inter-Connect;
Platform for Storage BC/DR Applications;
Virtualization

Key Data Resilience Technology Challenges

Designing Technology Solutions That Balance:

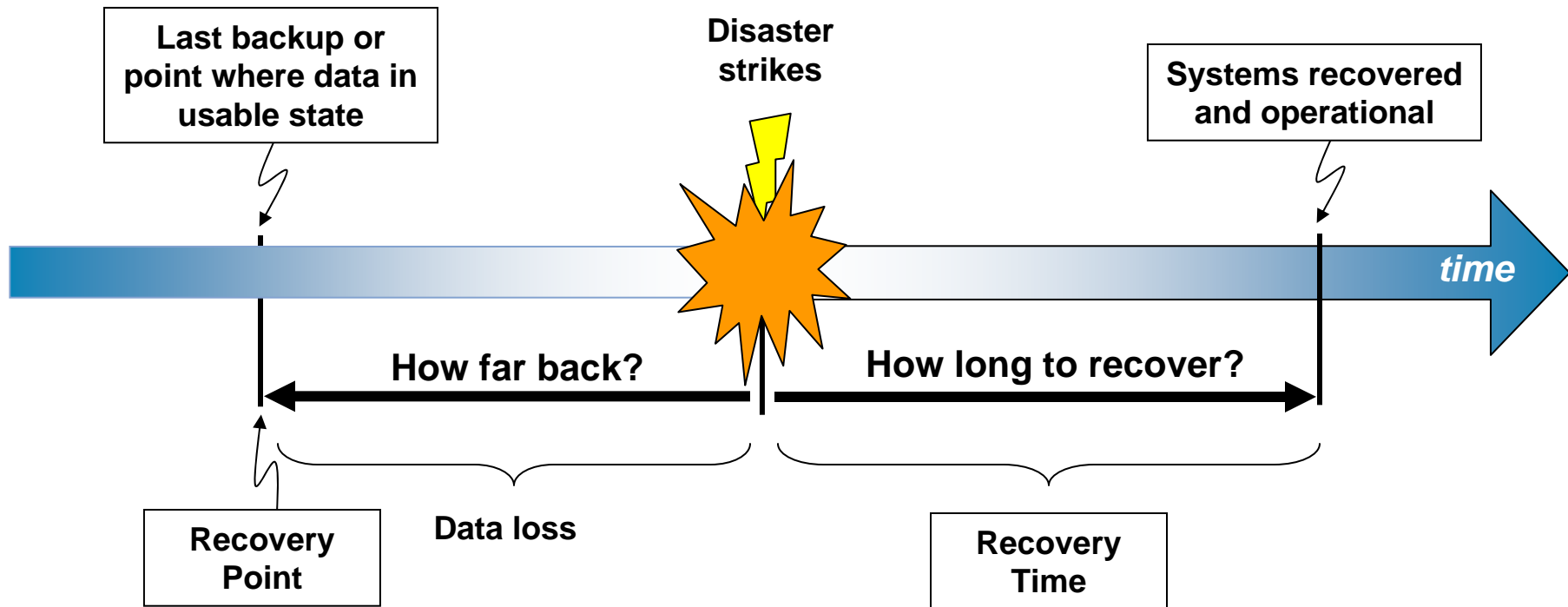
**Application / Process
Recovery Objectives
(RPO and RTO)**



**Distance
Storage Capacity
Application Performance
Risk
Cost**



Defining the Window of Unavailability



Recovery Point Objective (RPO)

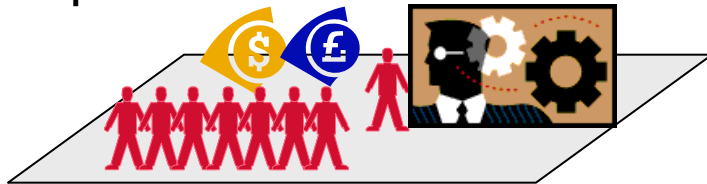
What is the cost and impact of data loss?
How much data loss is tolerable in event of disaster or failure

Recovery Time Objective (RTO)

What's the maximum tolerable outage?
When must operations resume after a disaster?

Identifying Requirements

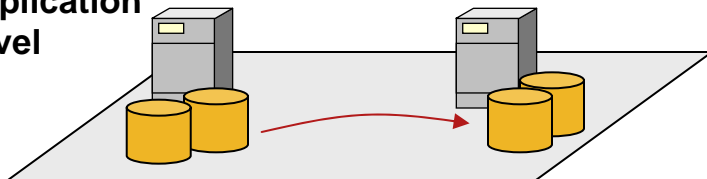
Enterprise Policy and Requirements



Value of the Data
Cost of Downtime
Risk

- Enterprise **RPO** and **RTO** policy

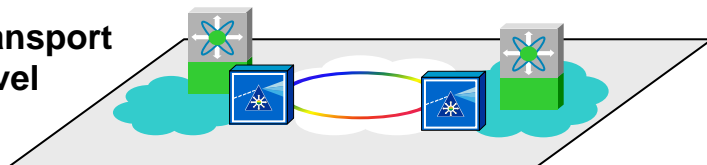
Application Level



Applications and Process to Meet Policy and Requirements

- Backup and archive process
- Cold/hot standby servers
- Cold/hot standby data centers
- Synchronous or asynchronous replication

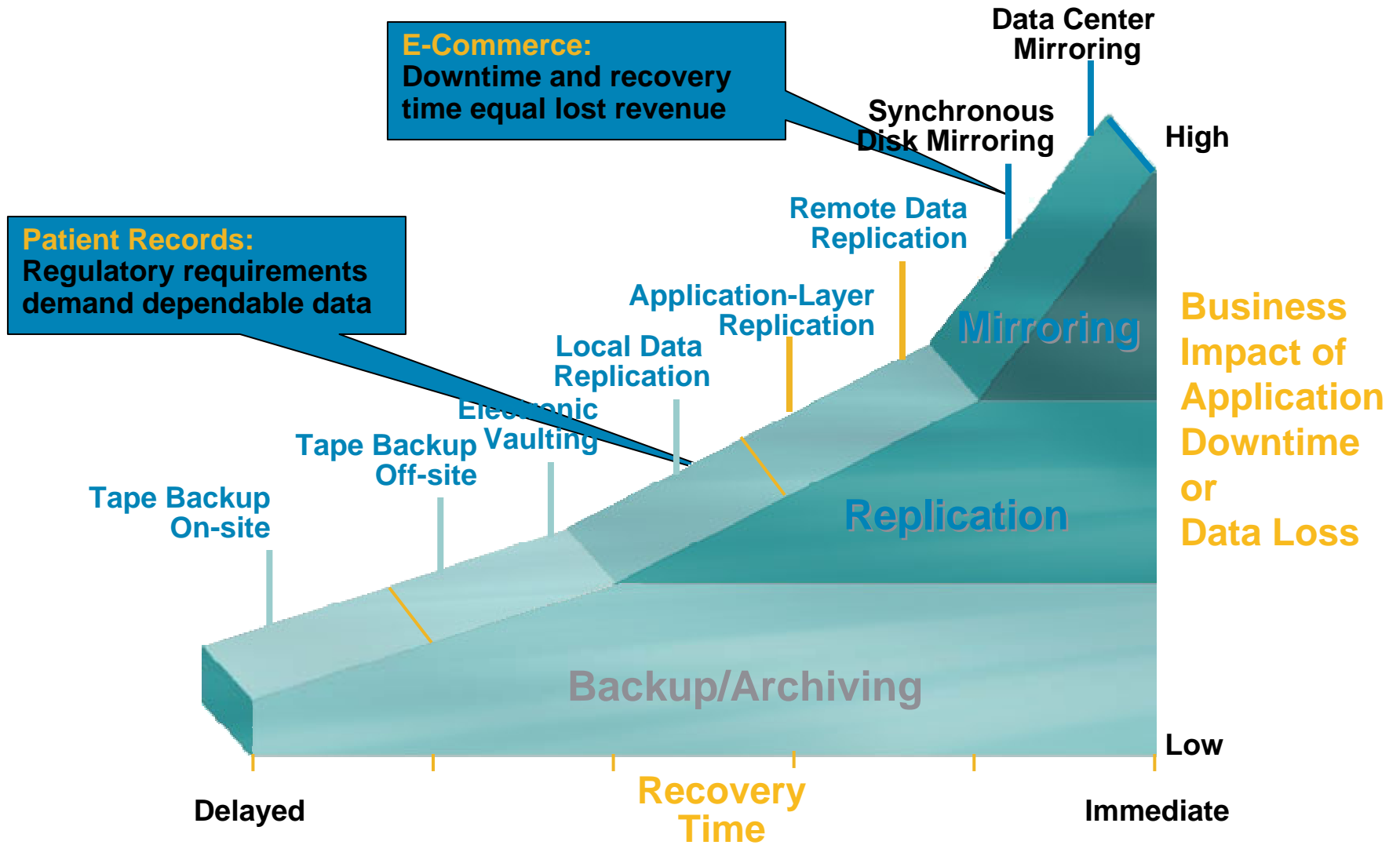
Transport Level



Transport to Meet Application Level Requirements

- Optical (DWDM, CWDM, SONET/SDH)
- IP (FCIP for Storage)
- Redundant paths for high availability

Strategies to Meet RPO and RTO Requirements



Cisco Advantage: Enhancing Data Resilience

**Meet Required
Application / Process
Recovery Objectives
(RPO and RTO)**



**Enhanced Distances, Storage
Capacity, Application
Performance**

Lower Cost and Risk

Broad Application Support

- Enhanced Asynch / Synch Replication, Backup, Point in Time Copy
- Multi-vendor Support: EMC, HP, HDS, IBM, Appliances
- 3rd Party Application Support: SANTap
- Network Accelerated Server-less Backup
- Enhanced Remote Backup

Cisco Technologies, Services

- **Unlimited Distance Interconnect:** FCIP, DWDM, SONET/SDH, Buffer Credits, TCP/IP Tuning
- **Improved Application Performance:** Write, local and Remote Tape Backup Acceleration
- **Lower Risk:** Tested and Validated Solutions and Services
- **Lower Cost:** Compression and WAN Consolidation

Business Continuance with Integrated SAN Extension

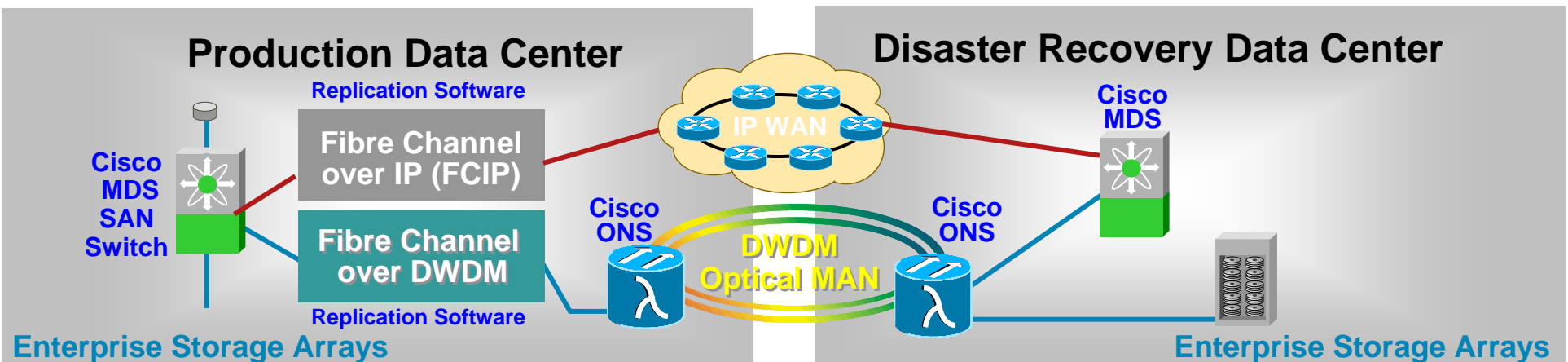
FCIP

Description

- Unlimited Distance between Data Centers
- Can utilize Cost Effective IP MAN/ WAN
- Supports Asynchronous Replication
- Supports Remote Tape Backup

Cisco Solution Benefits

- FCIP Integrated in MDS Switch
- Large Buffer Credits, Tuning for WAN Optimization
- Integrated Encryption and Compression
- Write and Tape Acceleration



DWDM

Description

- Distances 5-320 km
- Synch / Asynch Mirroring and Backup
- Higher b/w for Faster Tape Recovery
- Low Latency for Minimal App Impact

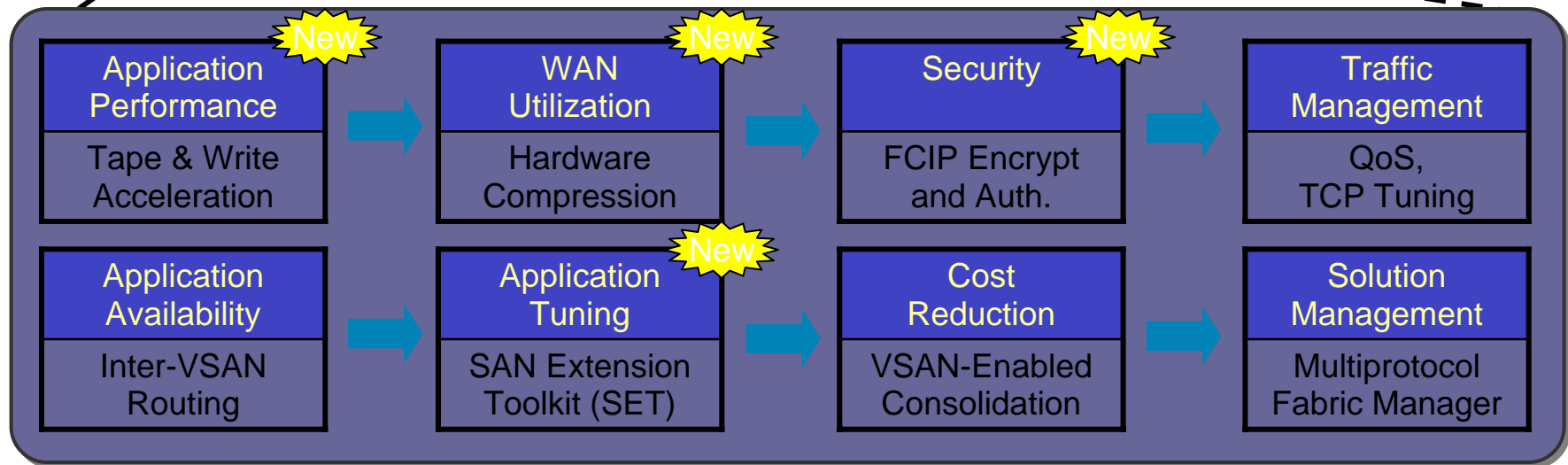
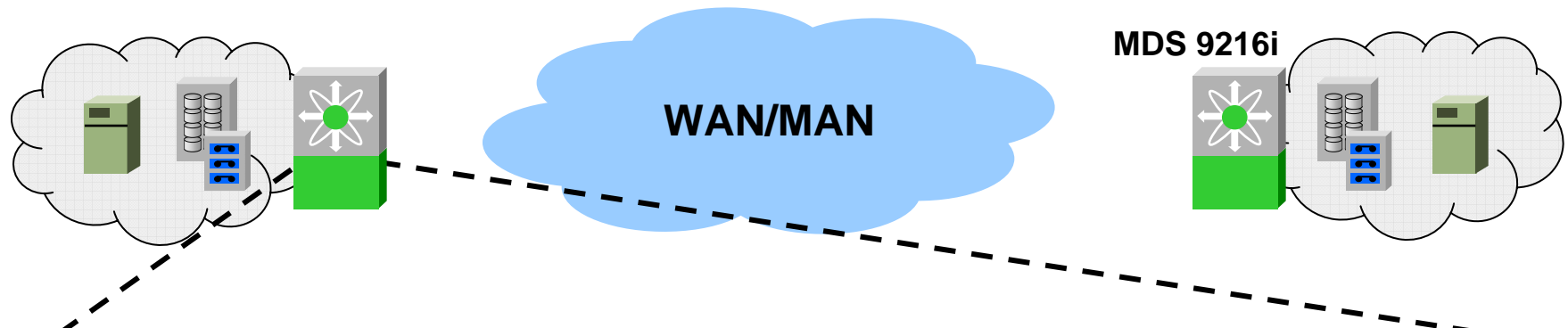
Cisco Solution Benefits

- Optical and SAN Platforms to Meet all Needs
- Integrated DWDM and SONET/SDH Platform
- High Density FC, GE, 10GE, FICON, ESCON
- Buffer Credit Management at the optical layer

Comprehensive SAN Extension Solution

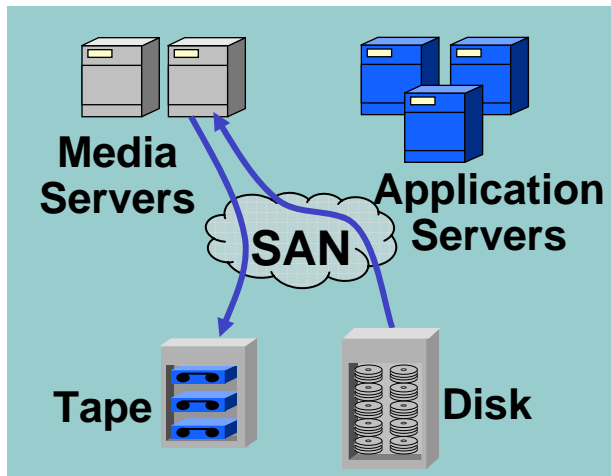
Primary Data Center

Backup Data Center

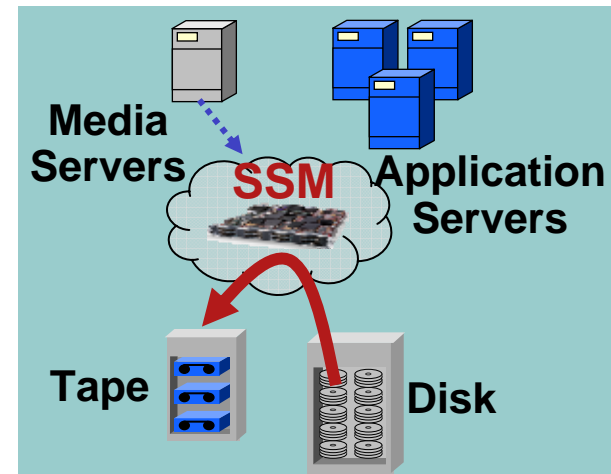


Cisco MDS Advantage: Network Accelerated Serverless Backup

SERVERLESS BACKUP TODAY



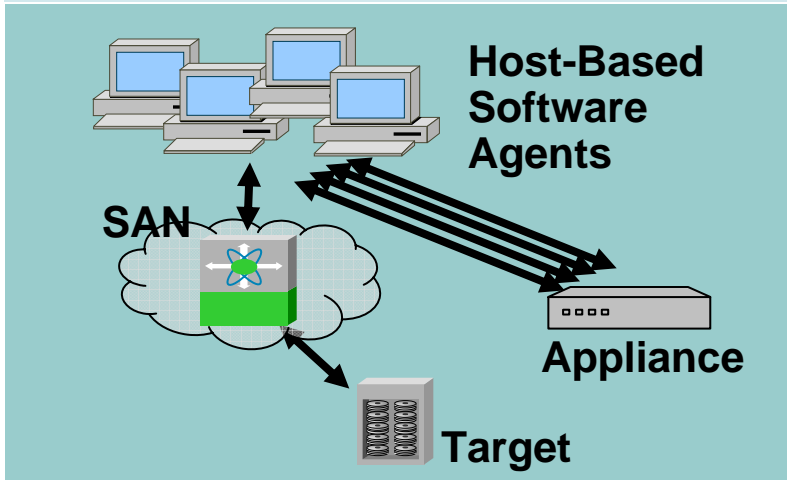
NETWORK ACCELERATED SERVERLESS BACK UP



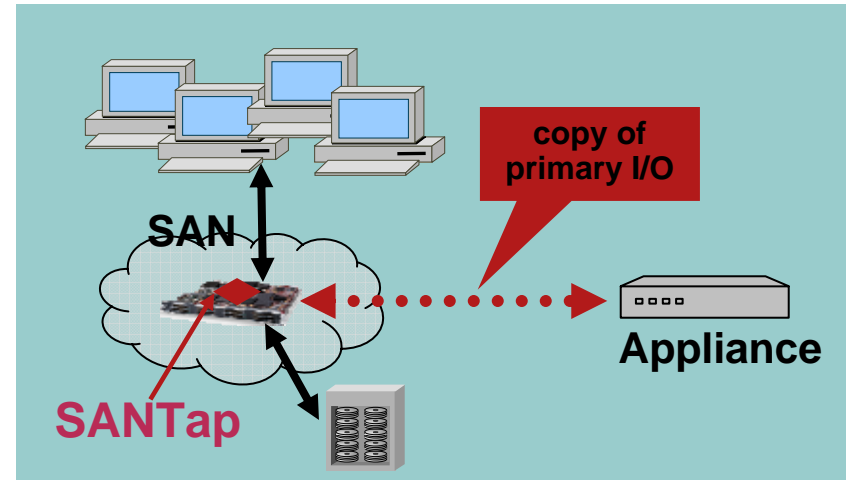
Customer Benefit	Proof Points
Lower TCO	<ul style="list-style-type: none"> Offload I/O & CPU work from Media Servers to SSM Reduce server administration & management tasks
Higher Performance & Reliability	<ul style="list-style-type: none"> Each SSM delivers up to 16 Gbps throughput SSM integrated into a high availability MDS platform
Investment Protection	<ul style="list-style-type: none"> No changes to existing backup environment SSM Data Movement can be enabled w/ software

Cisco MDS Advantage: SANTap

APPLIANCE-BASED APPLICATIONS



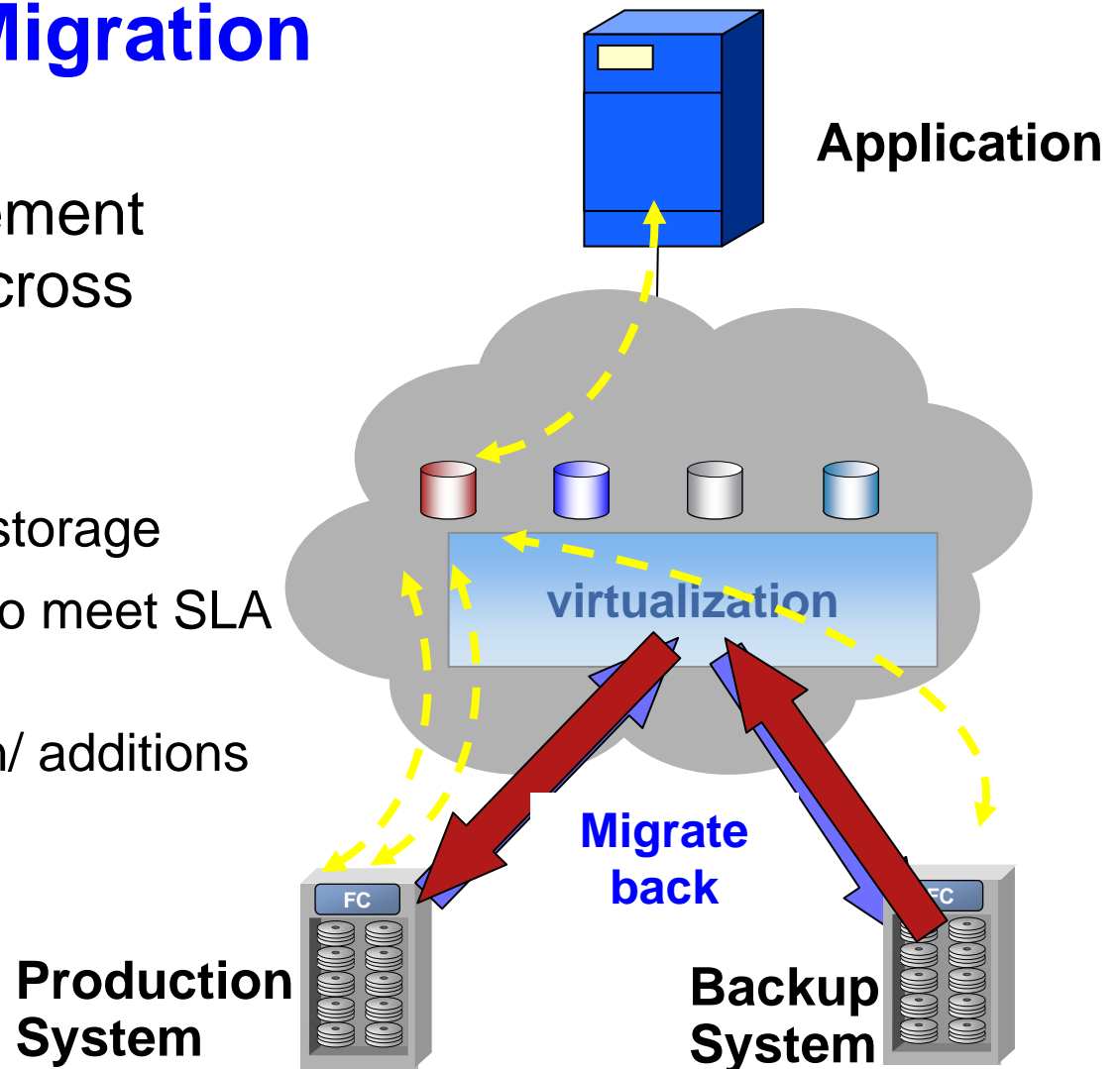
NETWORK-ASSISTED APPLICATIONS



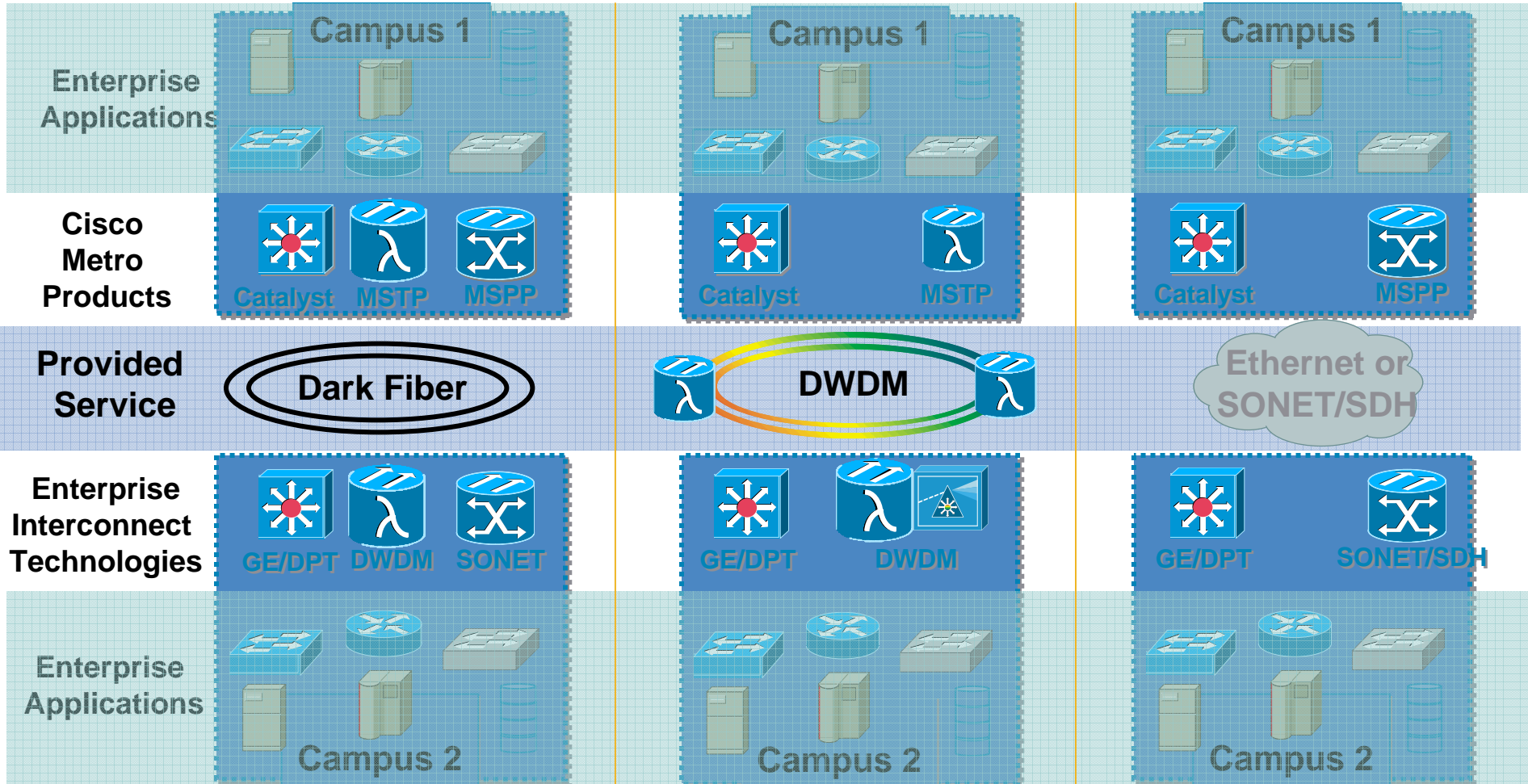
Customer Benefit	Proof Points
Increased Agility	<ul style="list-style-type: none"> Insert new appliance-based applications seamlessly Distributes workload to multiple appliances
High Availability Solution	<ul style="list-style-type: none"> Preserves integrity, availability and performance of primary I/O Allows appliance to move out of data path
Improved Business Continuance	<ul style="list-style-type: none"> Supports replication, point-in-time copy, and continuous data protection applications

Cisco MDS Advantage: Network-Hosted Storage Virtualization Dynamic Volume Migration

- Non-disruptive movement of production data across storage
 - Lease Roll-over
 - Seamlessly upgrade storage
 - Reconfigure storage to meet SLA objectives
 - Data Center migration/ additions



Choosing the Appropriate Metro Technology



“Do-It-Yourself” Dark Fiber

Lease Wavelengths or Managed Services from a Provider

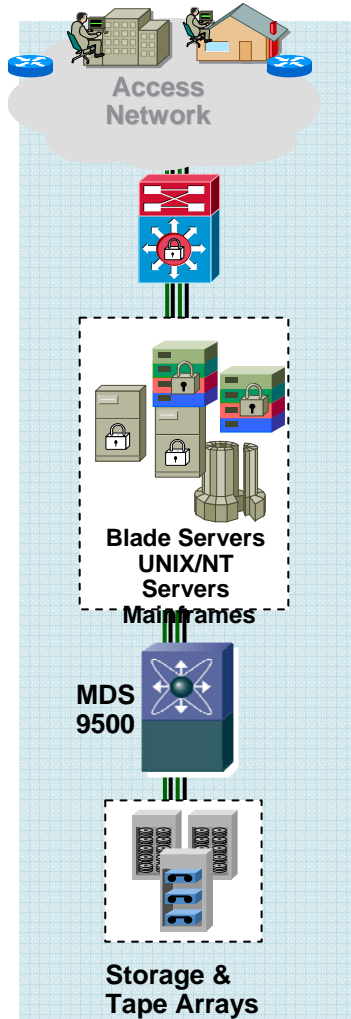
Purchase Services from a Provider

Business Continuance

Application Resilience

Business Need

Technology Enablers



User Access Resilience

Application Resilience

Data Resilience

Ensuring protection and Availability of Applications and Communications Services

Server Load Balancing; Infiniband Clusters; HA Clustering; Geo-Clustering



Key **Application Resilience** Technology Challenges

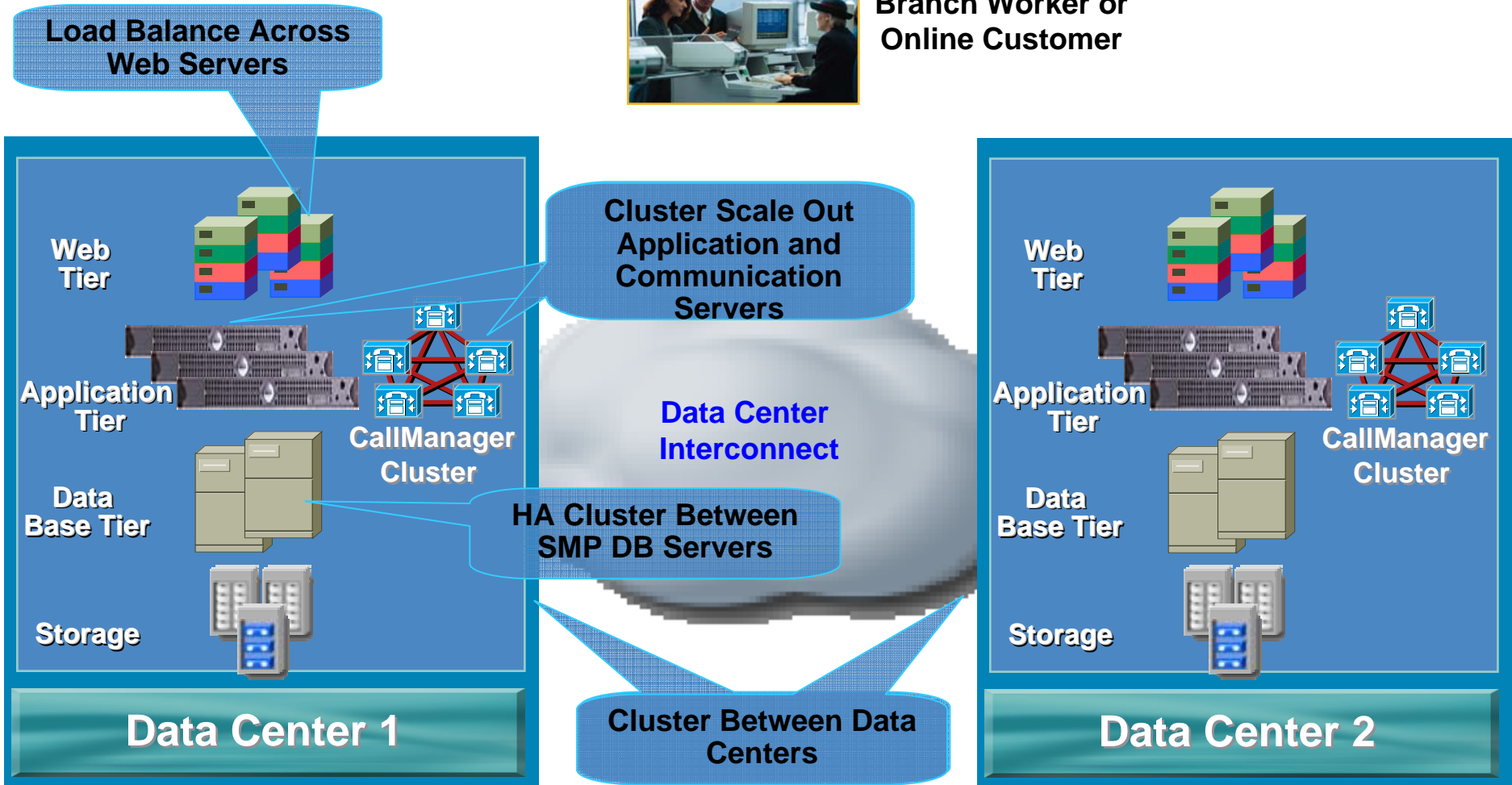
- **Reducing or Eliminating Points of Server Failure**
- **Support Server Scale Up and Scale Out Strategies**
- **Support for Web, Application, Database Tiers**
- **Ensure Resilience for Communications Applications**



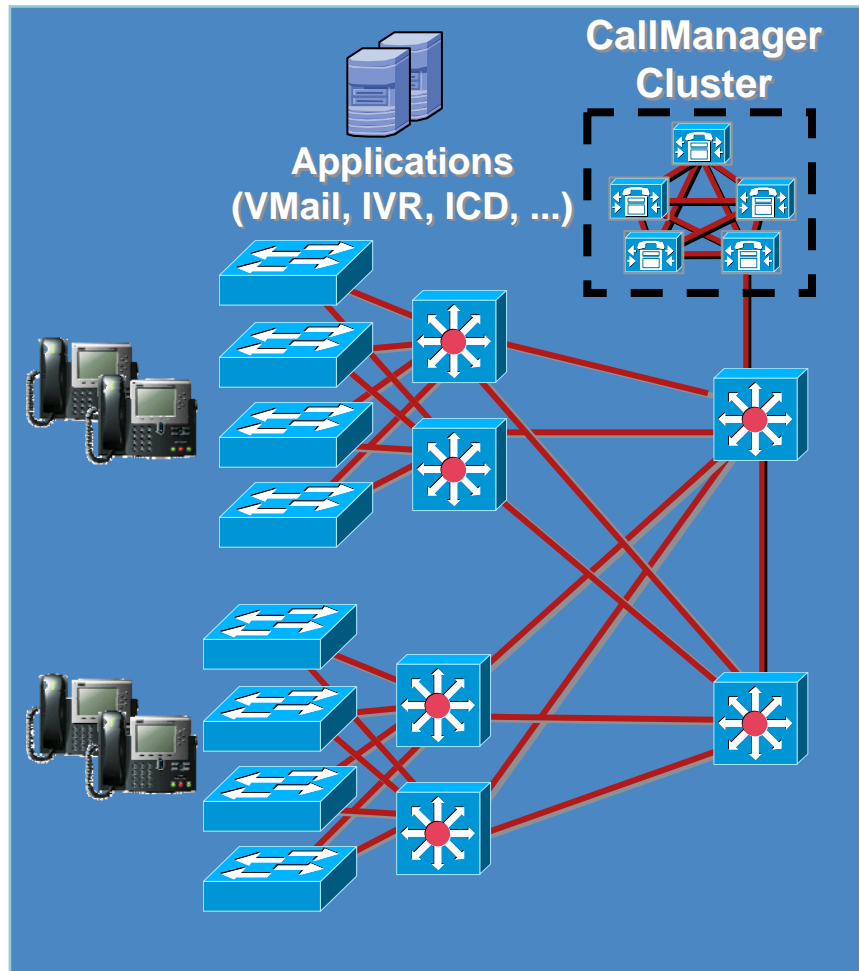
Removing Points of Failure At All Tiers



Branch Worker or Online Customer

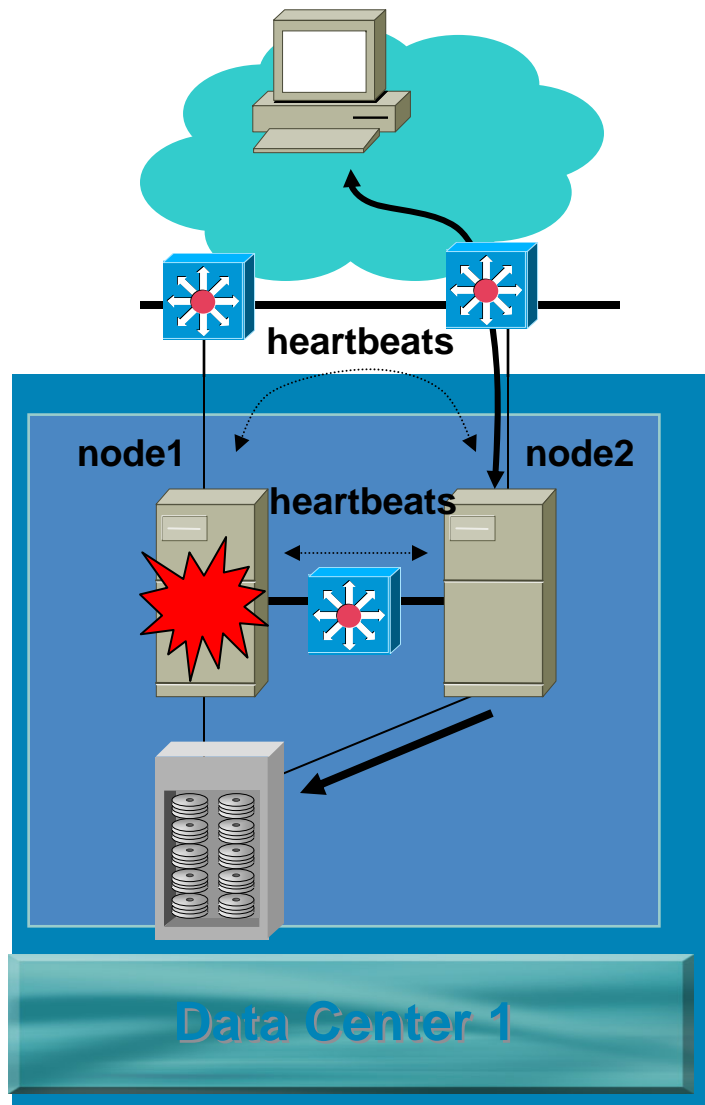


Communications Server Clustering for Availability and Scalability



- Enables call processing redundancy for fast failover
- Yields scalability up to 10,000 IP Phones per cluster
- Assures consistent device configuration and optimal call routing
- Local and distributed clusters

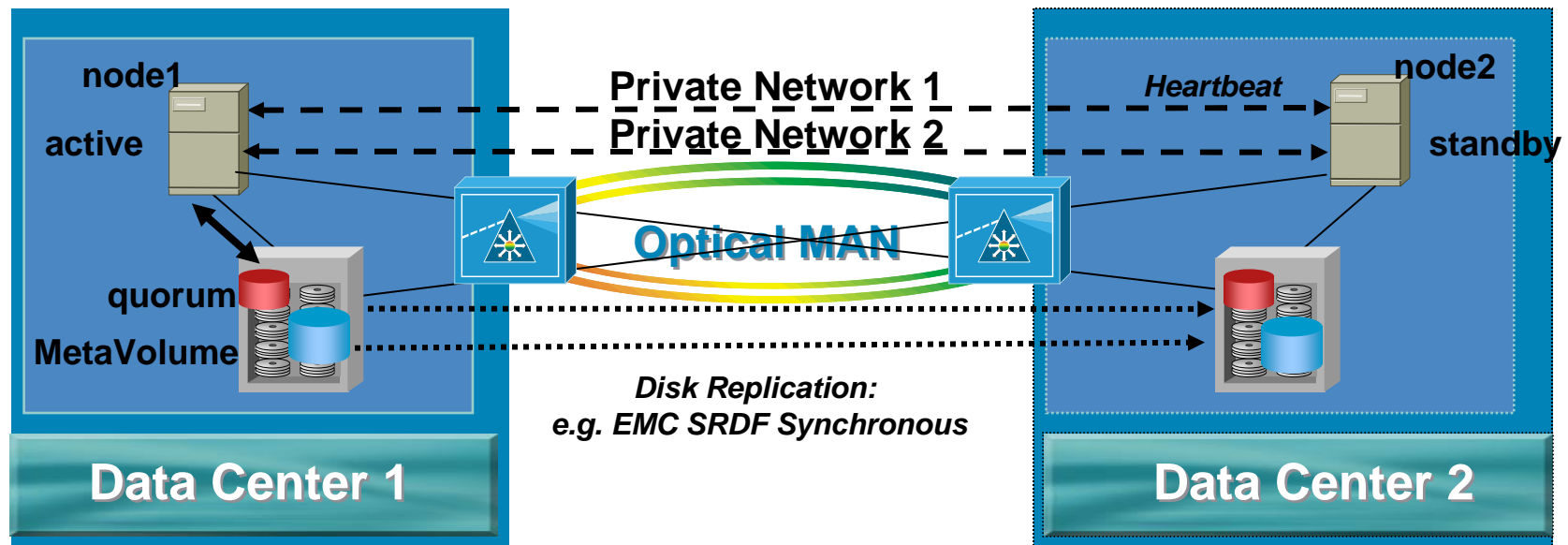
High Availability Clusters



- **Active – passive failover**
- **Heartbeats, status, control synchronized through private and public networks**
- **Client reconnection transparent - shared IP address**
- **Failure transfers ownership of storage**
- **Microsoft Cluster-aware applications include:**
 - MS SQL Server
 - MS Exchange

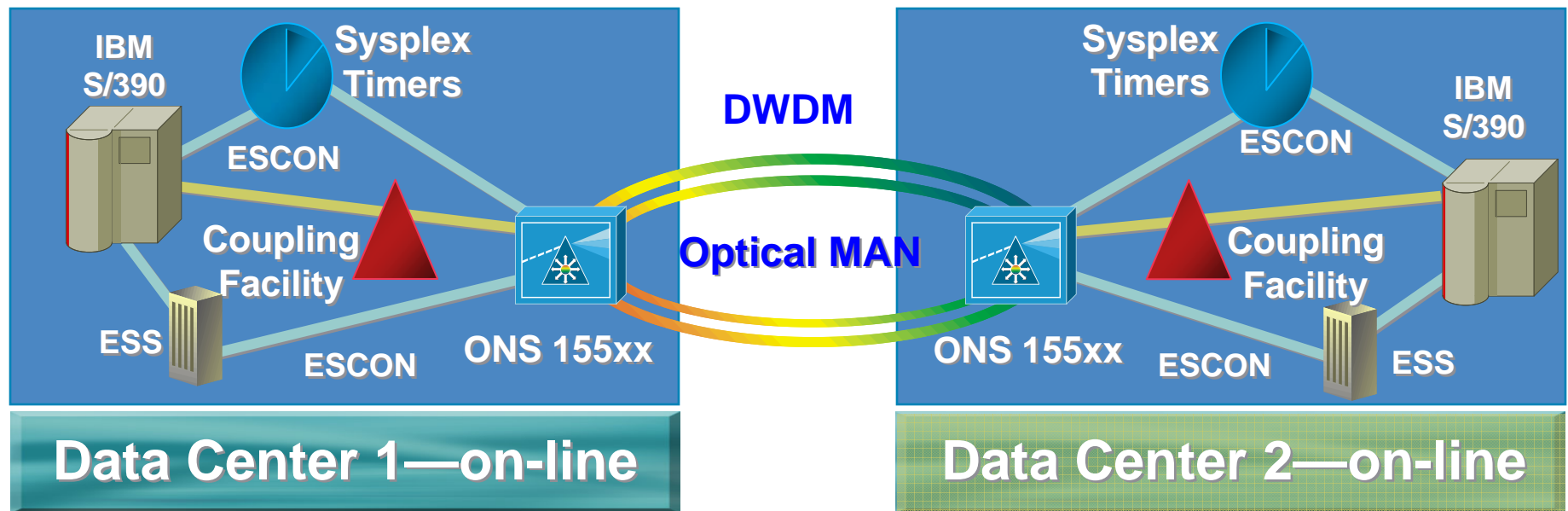
What is a GeoCluster ?

- Protect against even catastrophic site-level failures
- GeoCluster software enhances HA Clusters
 - e.g. Microsoft Cluster Server, HP ServiceGuard, and IBM HACMP
- Each node maintains its own storage with an independent, synchronized copy of the cluster data
- Requires multiple high-speed low latency interconnects



Geo Clustering For Mainframe Environments

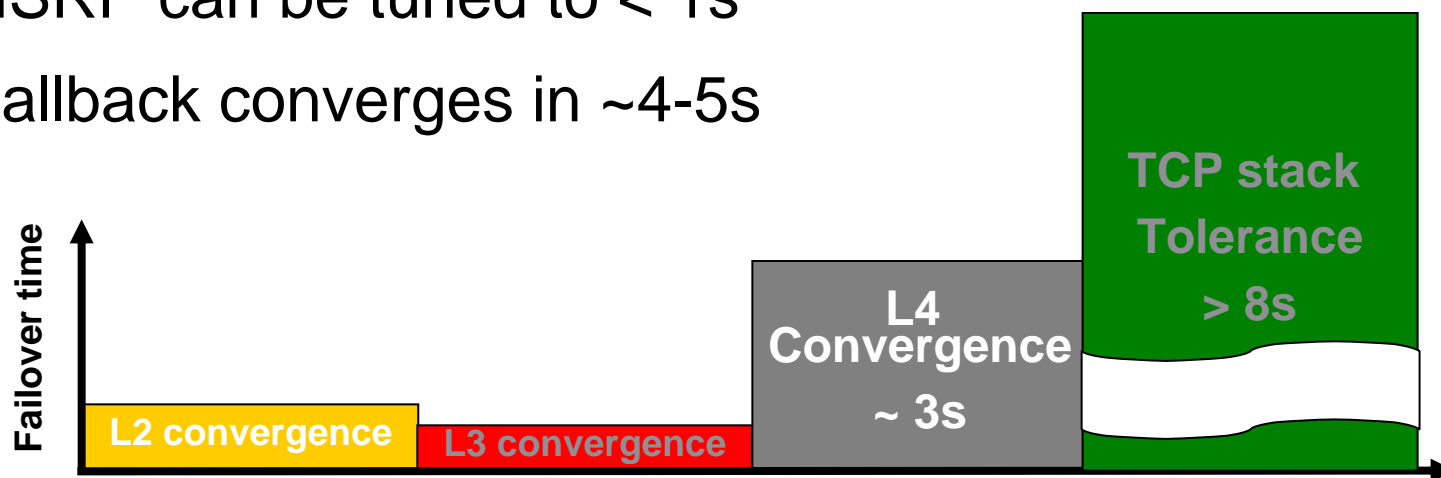
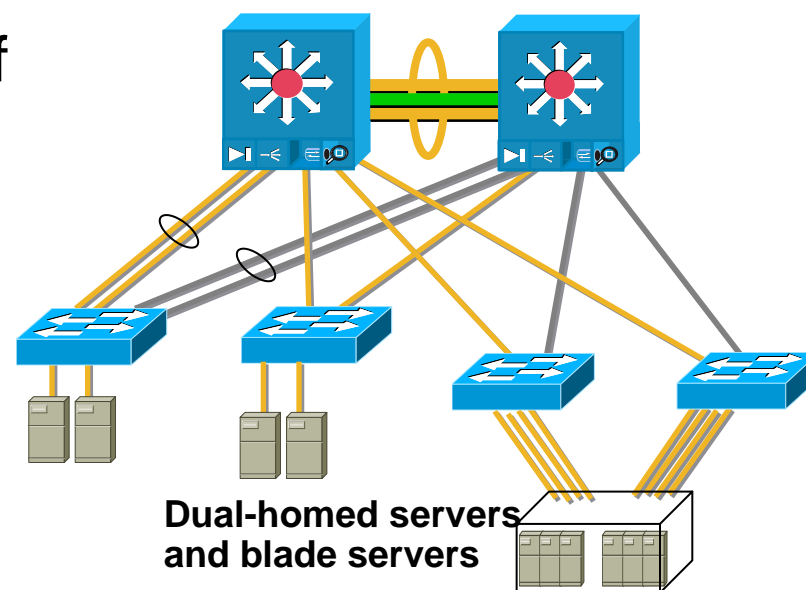
- IBM Geographically Dispersed Parallel Sysplex (GDPS) synchronizes mainframe computing resources
- Load balancing across computing resources and instantaneous failover to alternate site
- Requires high bandwidth, low latency, low jitter network



Server Farm Network Resiliency

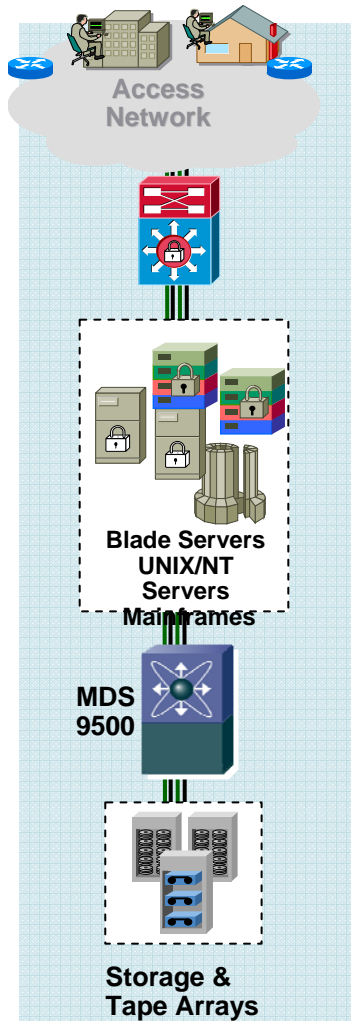
Design Goal – Application Transparency

- Failover time is the combination of convergence at L2, L3, L4
- Stateful Devices typically failover within 3s
- Etherchannels << 1s
- STP converges in <1s
- HSRP can be tuned to < 1s
- Fallback converges in ~4-5s



Business Continuance

User Access Resilience



User Access Resilience

Application Resilience

Data Resilience

Business Need
Ensuring
Uninterrupted
Anywhere Access
to Applications
and Services

Technology Enablers
VPNs, Mobility
Global Load Balancing,
Multi-channel
Communications



Key Access Resilience Technology Challenges

- Ensuring Continuous Access to Applications and Communications Services
- Ensuring Ability of Applications to be Served from Multiple Locations



Ensuring Continuous Access

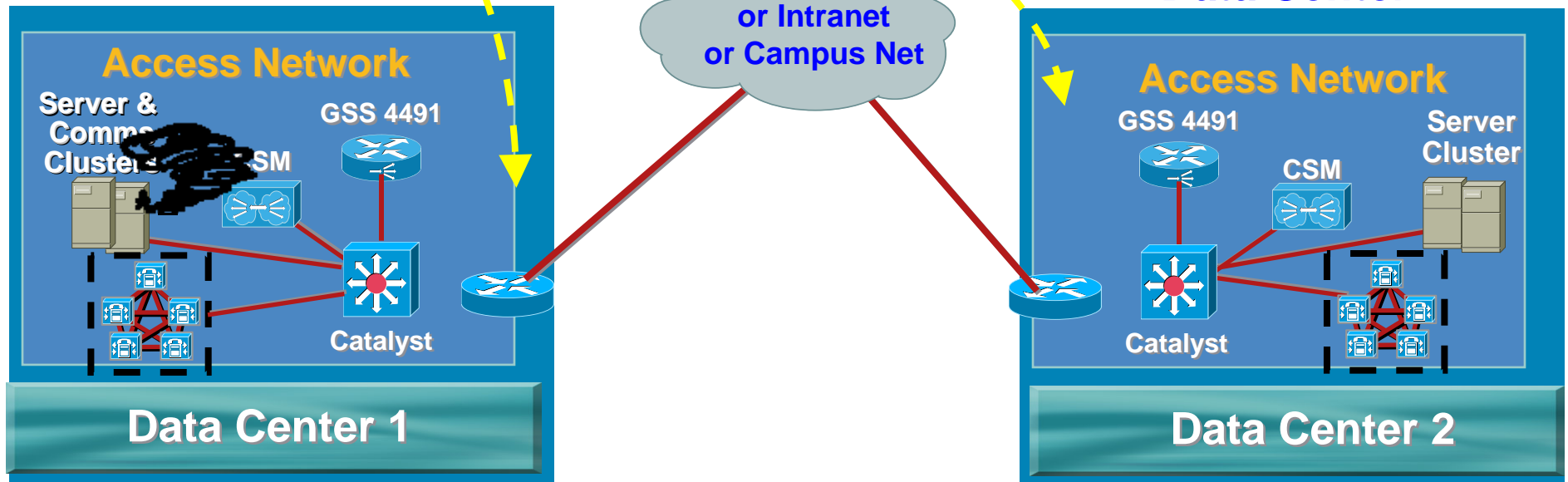
Global Site Selector – GSS 4491

Branch Worker or
Online Customer



- Load balance across multiple sites
- Redirects users to most available Site
- Unique proximity features

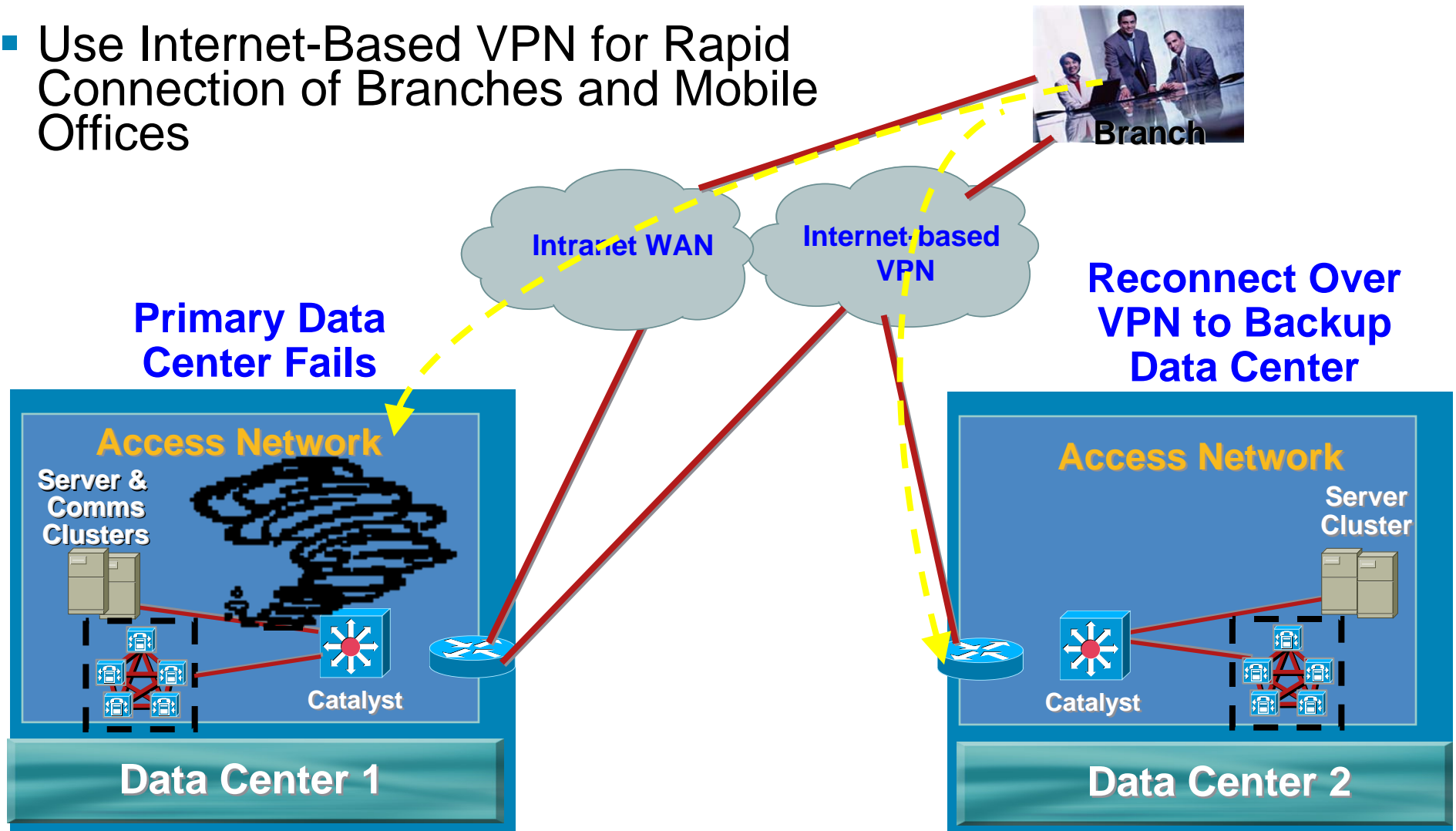
Application
Servers Fail



Ensuring Continuous Access

Reconnect Branches with VPNs

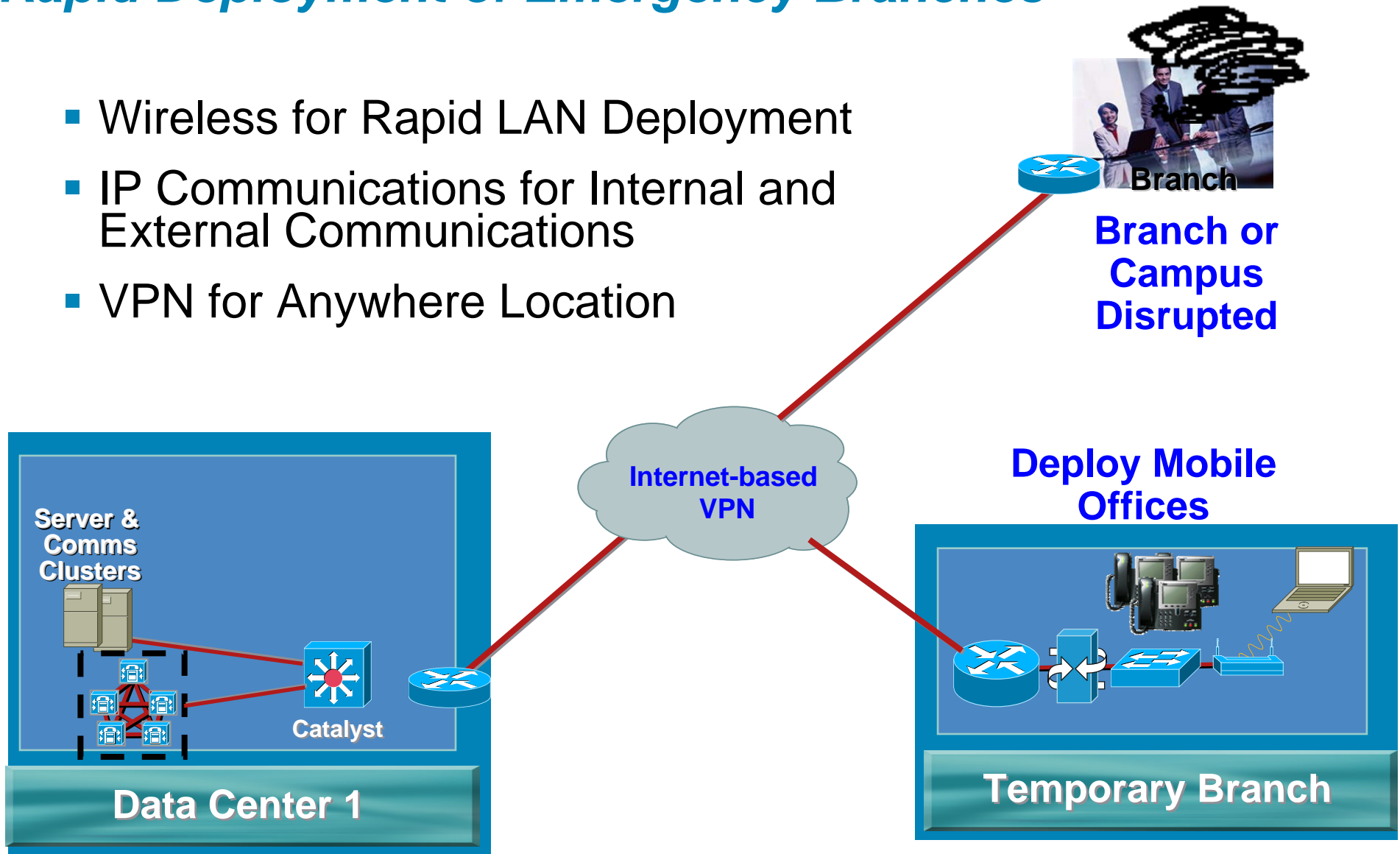
- Use Internet-Based VPN for Rapid Connection of Branches and Mobile Offices



Ensuring Continuous Access

Rapid Deployment of Emergency Branches

- Wireless for Rapid LAN Deployment
- IP Communications for Internal and External Communications
- VPN for Anywhere Location



Agenda

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- Solutions for the Resilient Business:
 - Data Resilience**
 - Application Resilience**
 - User Access Resilience**
- **Summary**

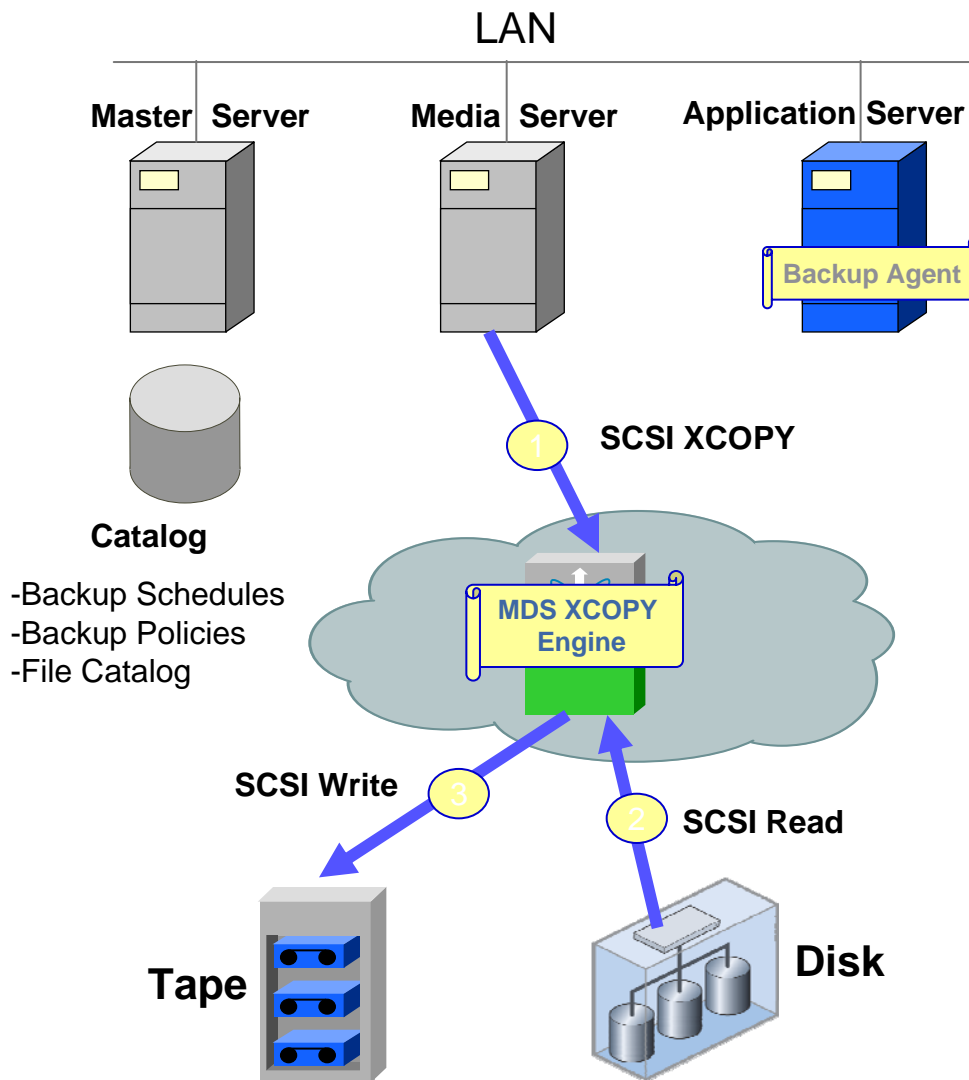
Business Continuity Action Plan

- 1. Carry out a business impact assessment on all enterprise applications**
- 2. Develop a business continuity and security plan between business, IT and network stake-holders**
- 3. Engage with Cisco and partners to deploy appropriate business continuity and security solutions:**
 - Data Resilience**
 - Application Resilience**
 - User Access Resilience**
- 4. Continue to revise and test plans/solutions to meet changing needs**





Overview of Network-Accelerated Serverless Backup (NASB)



- **No changes to the existing backup environment**
 - Continue to use Backup Agents on Application Servers, Master/Media Servers and Catalogs
- **Offloads I/O and CPU work from expensive Media Servers**
 - Reduces the backup window if Media Servers are a bottleneck
 - Reduces the number of high-end expensive Media Servers
- **Increased reliability, low maintenance**
 - XCOPY Engine integrated in Highly-Available (HA) MDS platform
 - Reduces the server administration/management tasks
- **Investment protection**
 - Standards based API based on SCSI Extended Copy Command