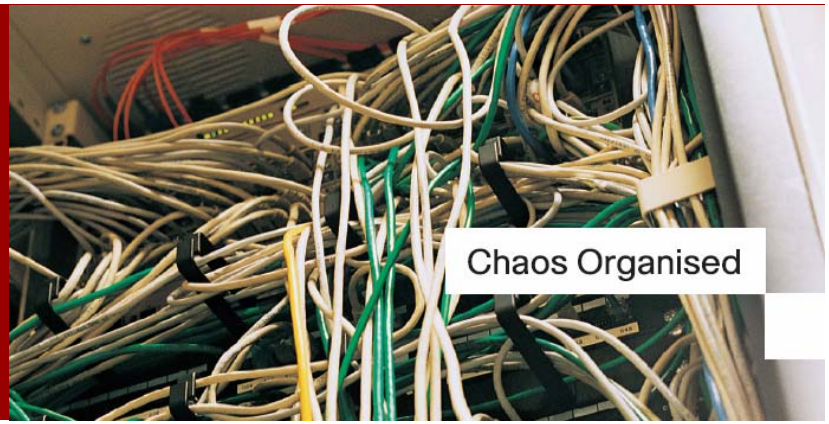
Cisco Data Center Day 2006

Network – The Strategic Platform in Data Center



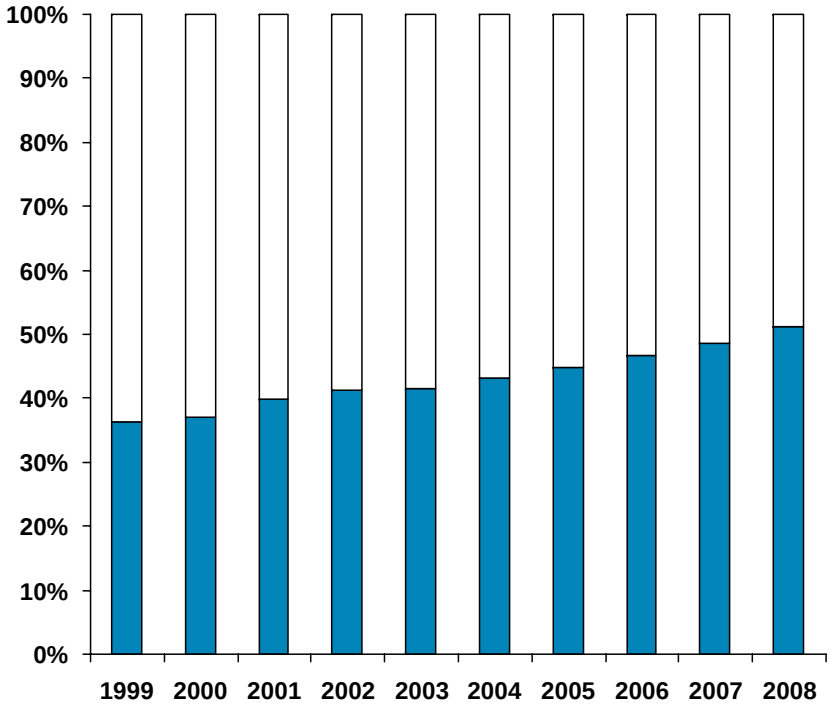
Sam Mak
Sr. Manager, Data Center Solutions Marketing
Cisco Systems APAC

Agenda

- The Challenge
- The Vision
- The Solutions

Percent of Total IT Budget Spent in the Data Center

Percentage Data Center Spend
Percent



Example IT spending allocations – Financial Services Customers

Customer A:

- Capex only
- 40% Storage
- 35% Networking
- 15% Servers
- 10% Applications

60-70% of IT CapEx budget in data center

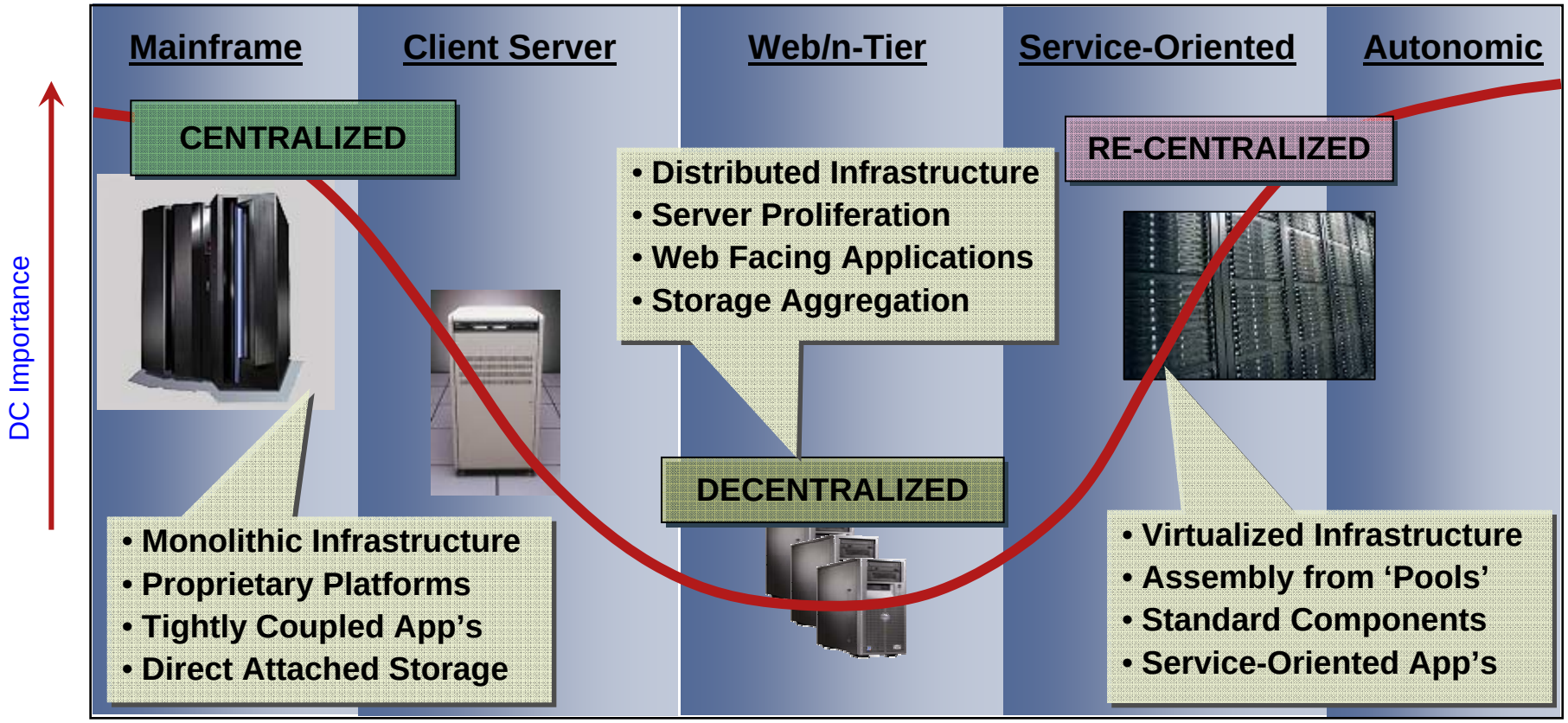
Significant amount of internal application development not included

Customer B:

- Capex and opex
- 55% Staff expense
- 45% Infrastructure spend
  - 10% Networking (hardware and bandwidth)
  - 8% Facilities
  - 27% Other infrastructure
    - Servers
    - Storage
    - Applications
    - Middleware

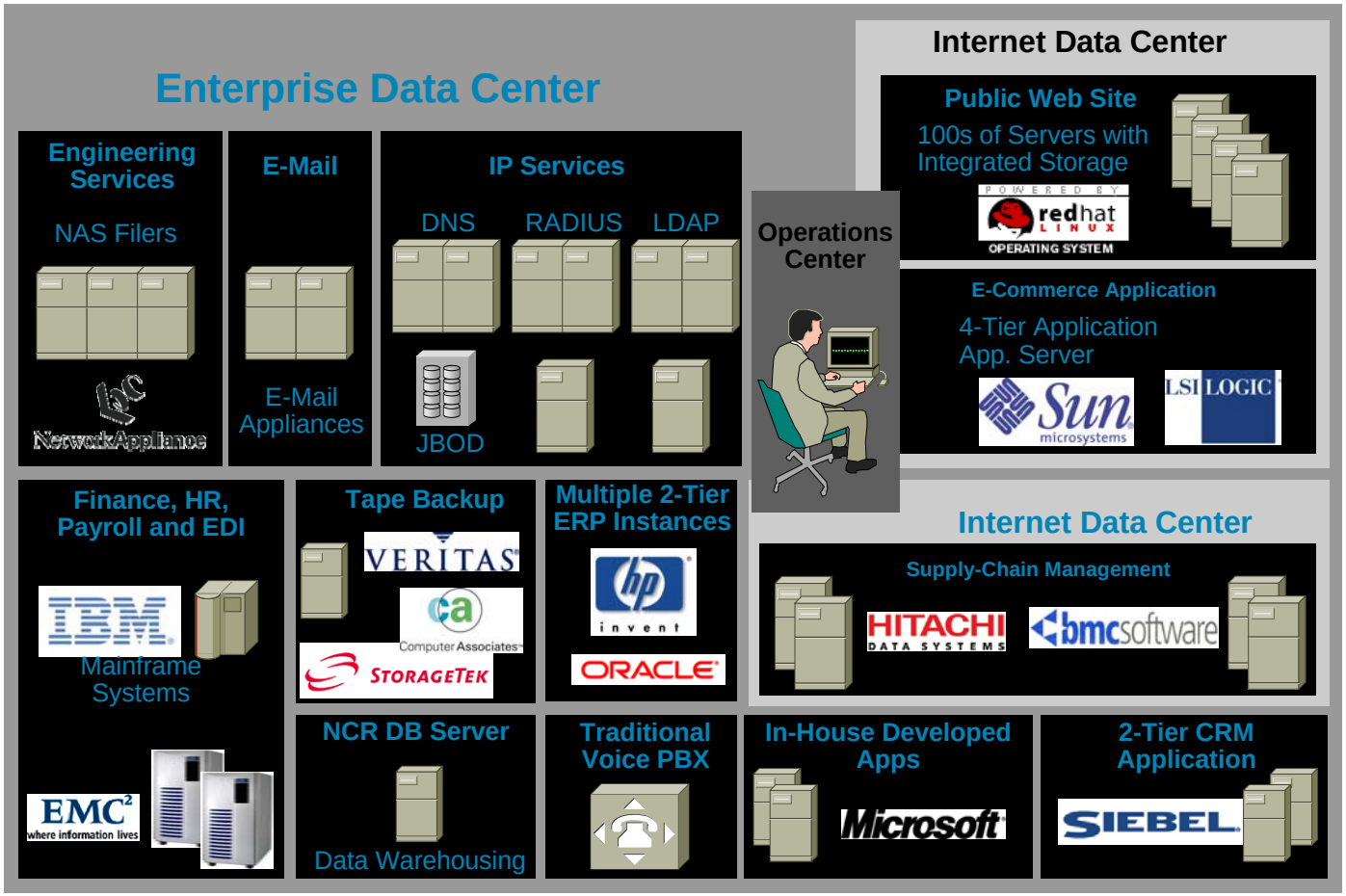
*** - IDC, Infonetics, Cisco Internal**

The Data Center is Evolving (again)



***Server*-Centric** → *New DC Infrastructure Requirements* → ***Service*-Centric**

The Typical Enterprise Data Center



Current Infrastructure

Lack of Agility

Isolated Application Silos

Rigid Infrastructure Silos

Low Resiliency

Inconsistent Security

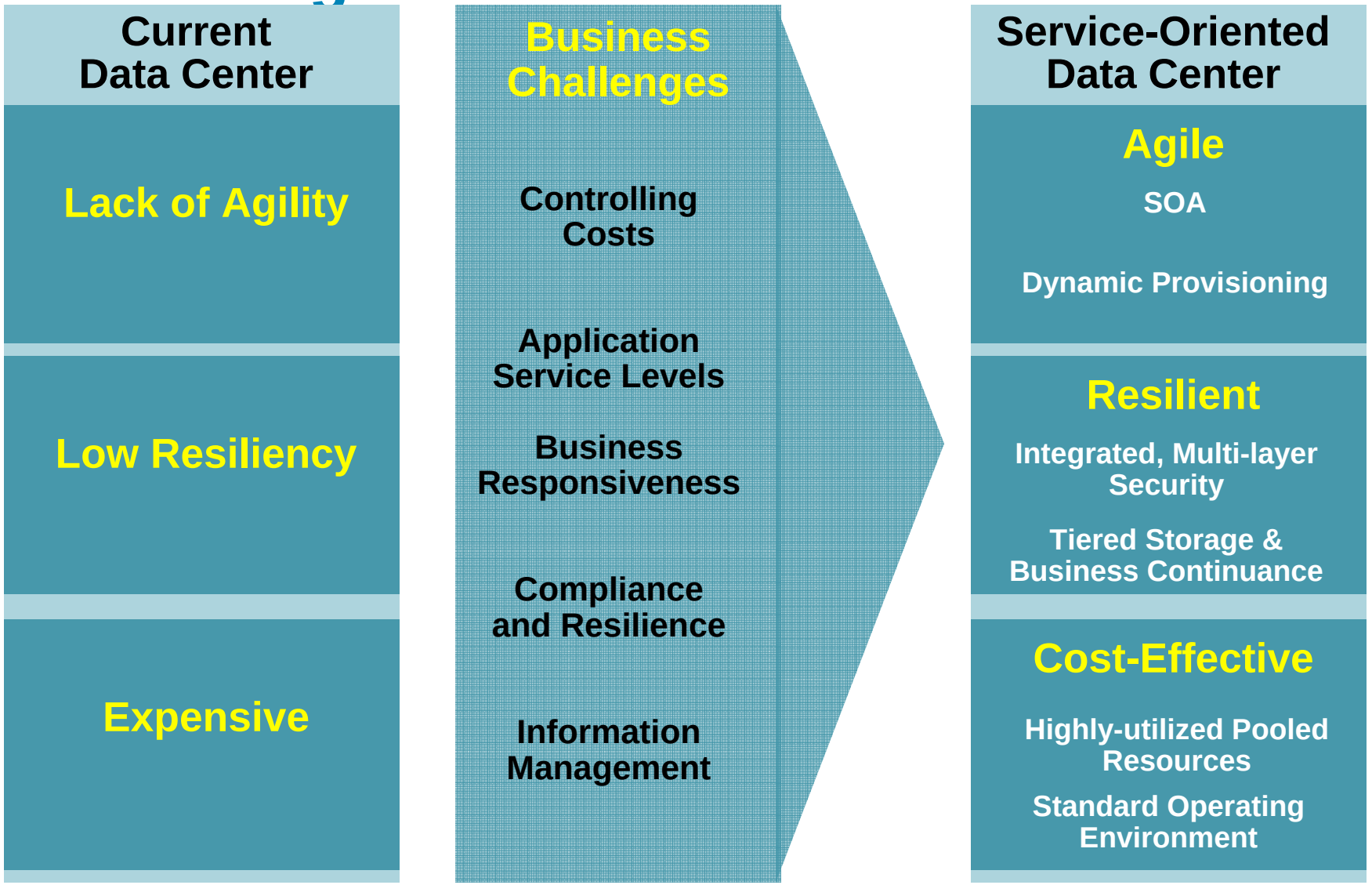
Inconsistent BC/DR

Expensive

Under-utilized Resources

Operational Complexity and Inefficiency

Key Data Center Infrastructure Challenges and Trends



What Role Does the Network Play?

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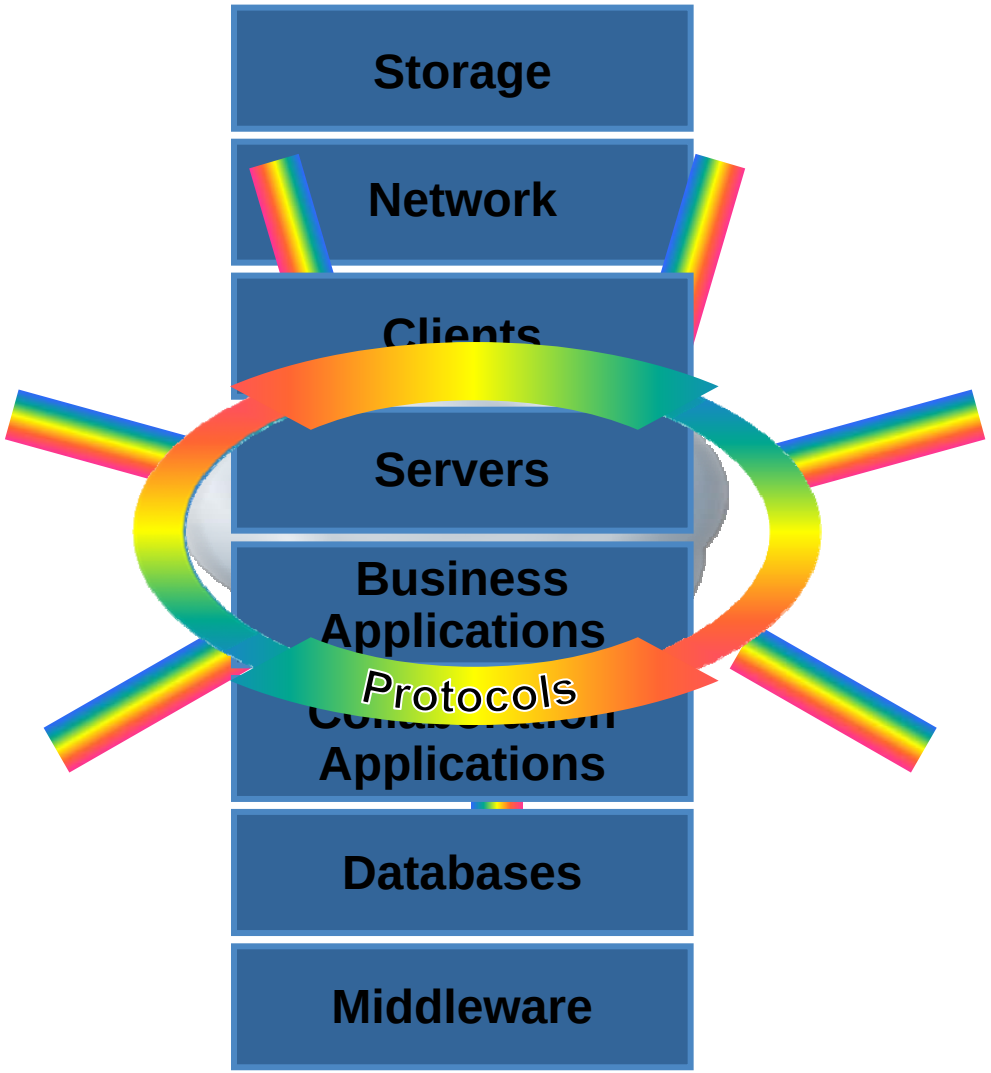


Why the Network?
Intelligence Migration Is Part of a Natural Evolution

The Network:

Pervasive

Transparent

Scaleable

Promote Standards

Protect Investment

APPLICATIONS

Firewall | SBC | Caching | Email | ERP | Voice Mail | WAAS

Anti-SPAM | Encryption | Patch Backup Updates | Database Replication | Mobile Multicast Email | CRM | Wireless AV Mgmt

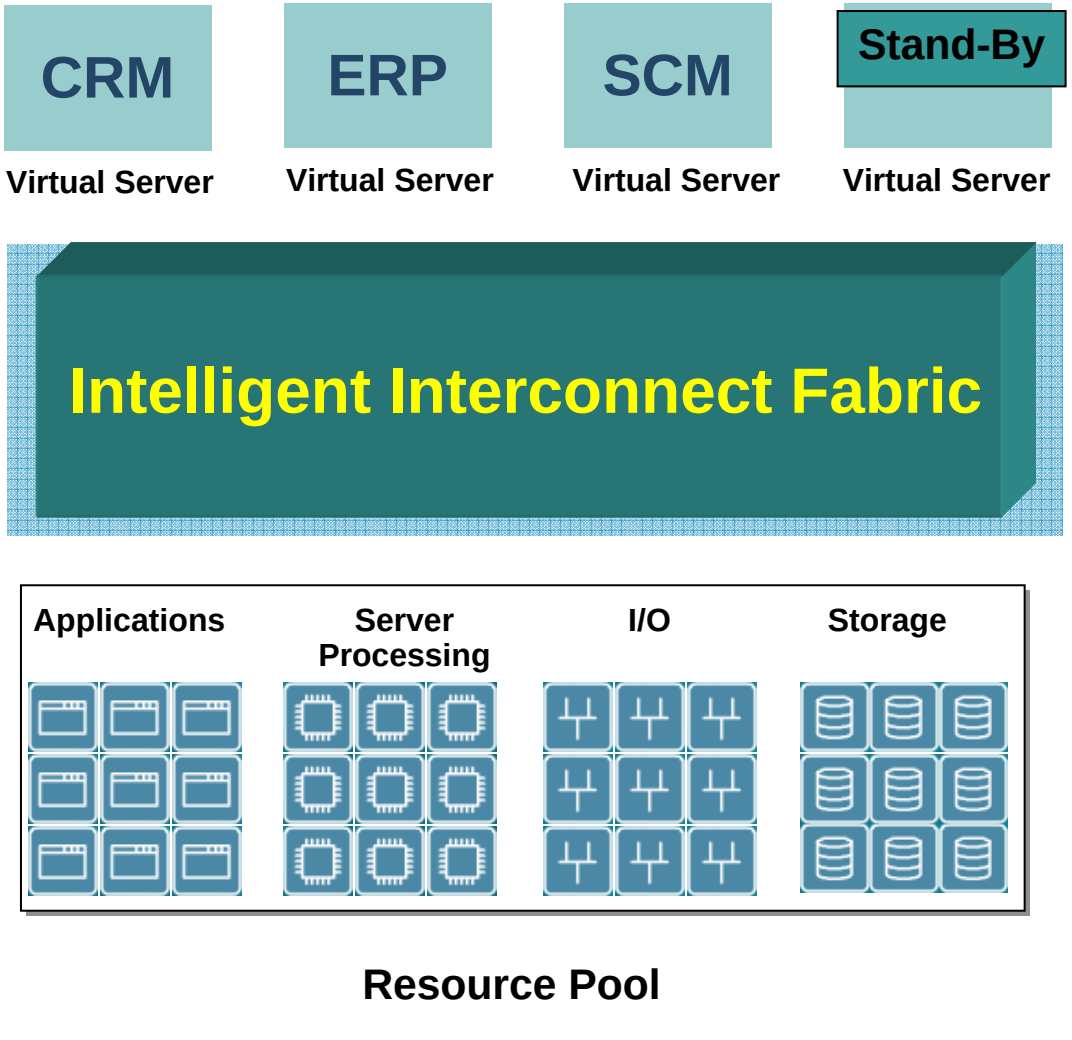
OS AND MIDDLEWARE

Disk Management | I/O Scheduling | File Virtualization

Aligning Virtual Compute Resources to Business Application

- Massive proliferation of server resources

- Server manager configures pools of compute, storage and I/O
- Based on application, process, or business objectives



Cisco Data Center Product Families

Data Center Switching

Catalyst 6500 Series

Catalyst 4948 Top-of-Rack

Catalyst Blade Server Switches

Storage

MDS 9500 Storage Directors

MDS 91xx/90xx Fabric Switches

Storage Service Modules

Data Center Security

Firewall Services Module

Intrusion Detection Module

CSA Server Security Agent

Compute Clustering

SFS 7000 High-Density Infiniband Compute Fabric Switch

SFS 3000 Infiniband Gateway

Application Network Services

ACE Application Control Services Module

Wide-Area Application Services

SSL Termination

GSS Global Server Balancing

Data Center Provisioning

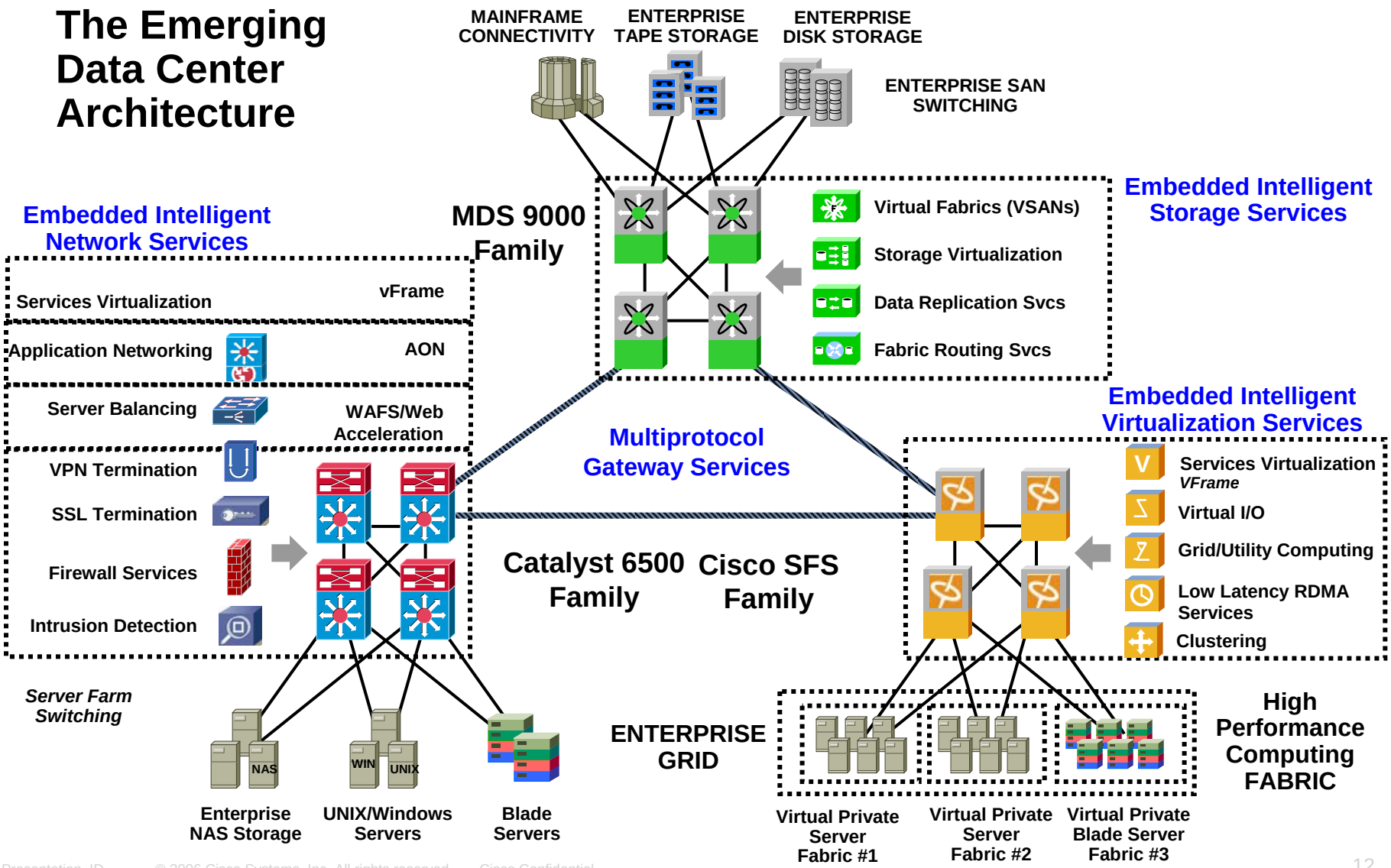
VFrame Server/Service Provisioning System

Data Center Management

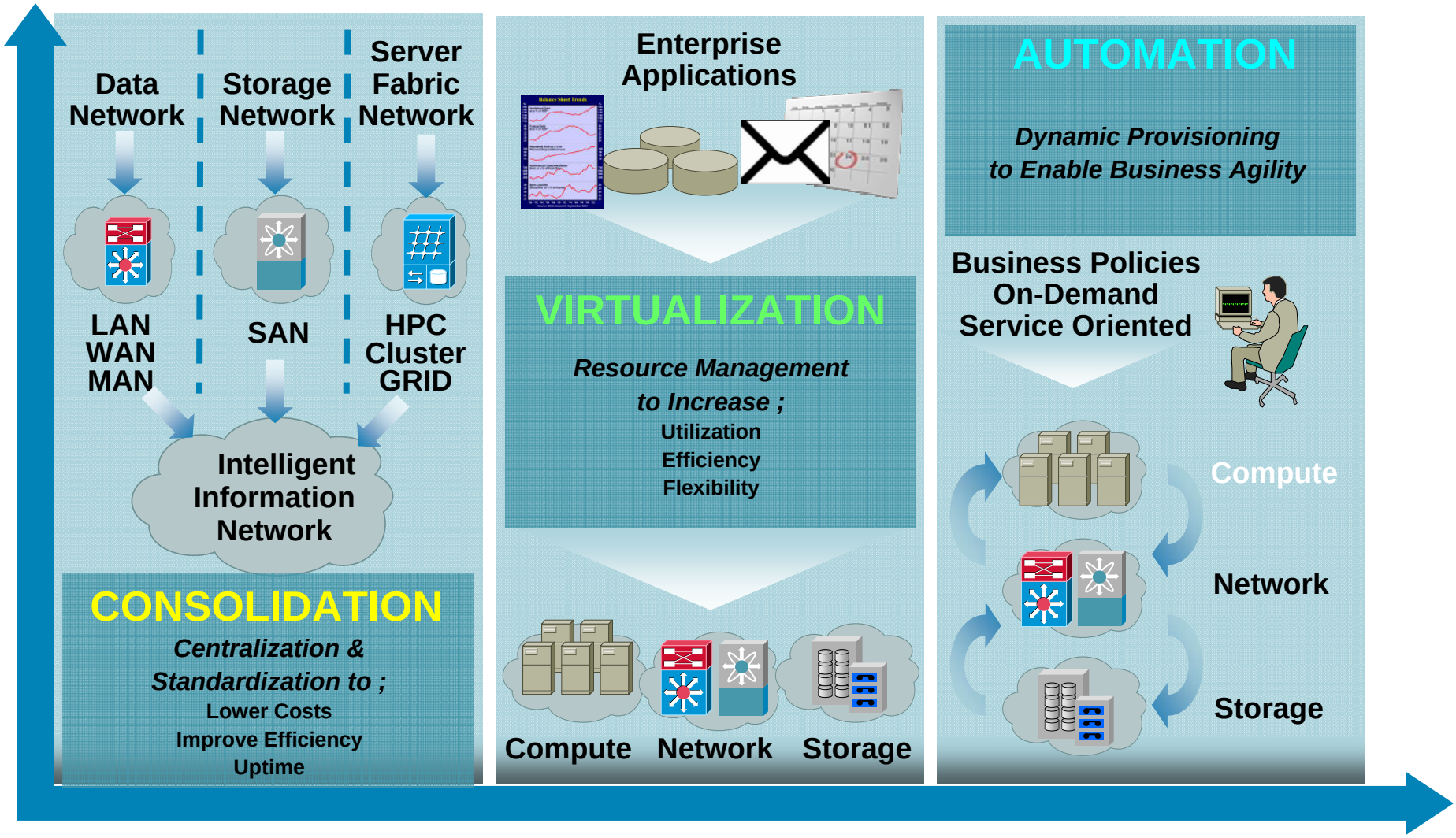
Fabric Manager – Topology Discovery/ Visualization and Transport Provisioning

ANM– Advanced L4-7 Services Module Management

The Big Picture—The Enterprise Data Center

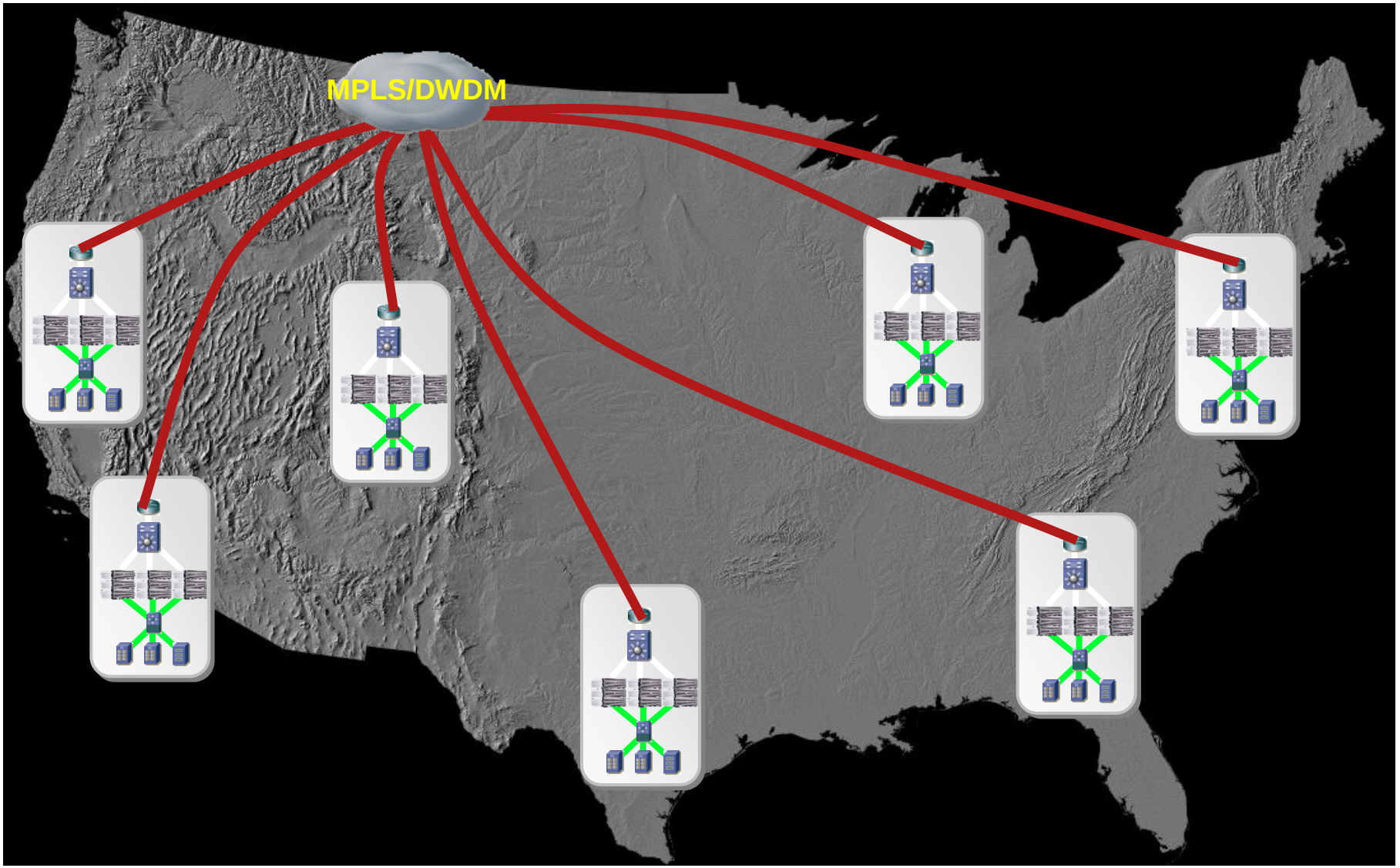


Data Center Networking Trend

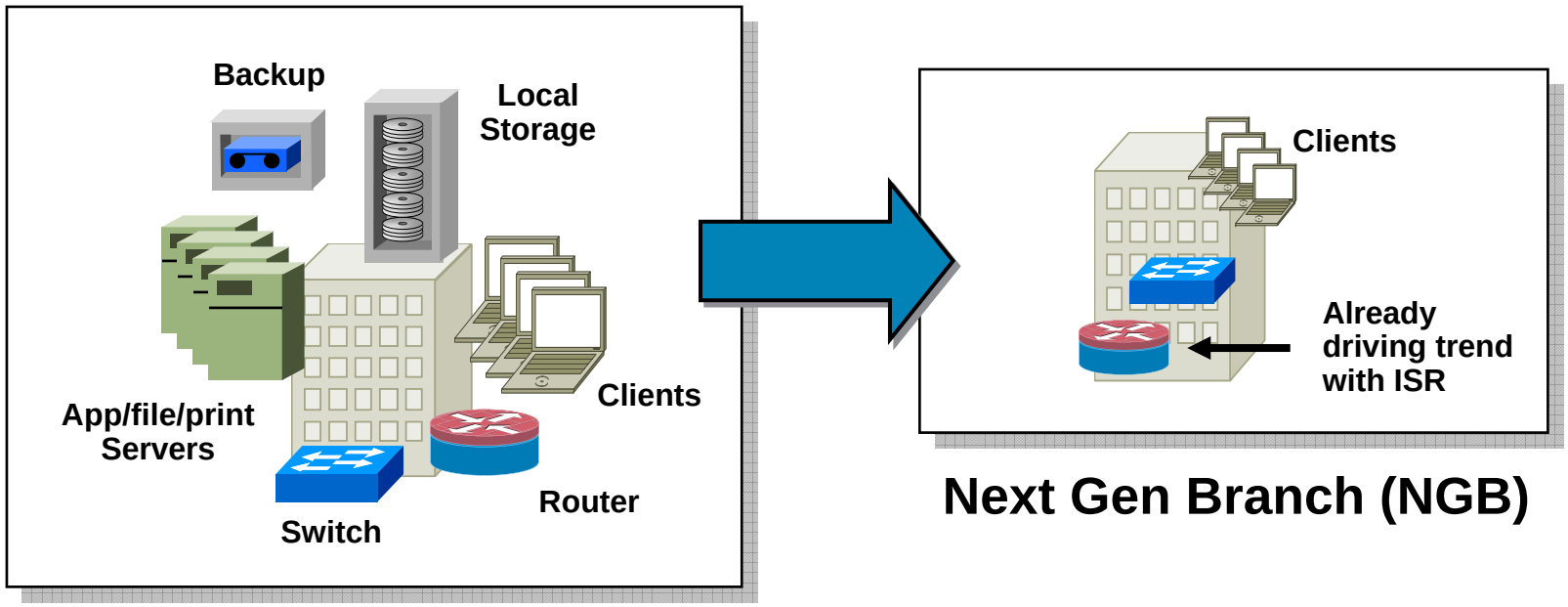


Data Center Architectural Trend

Data Center Consolidation



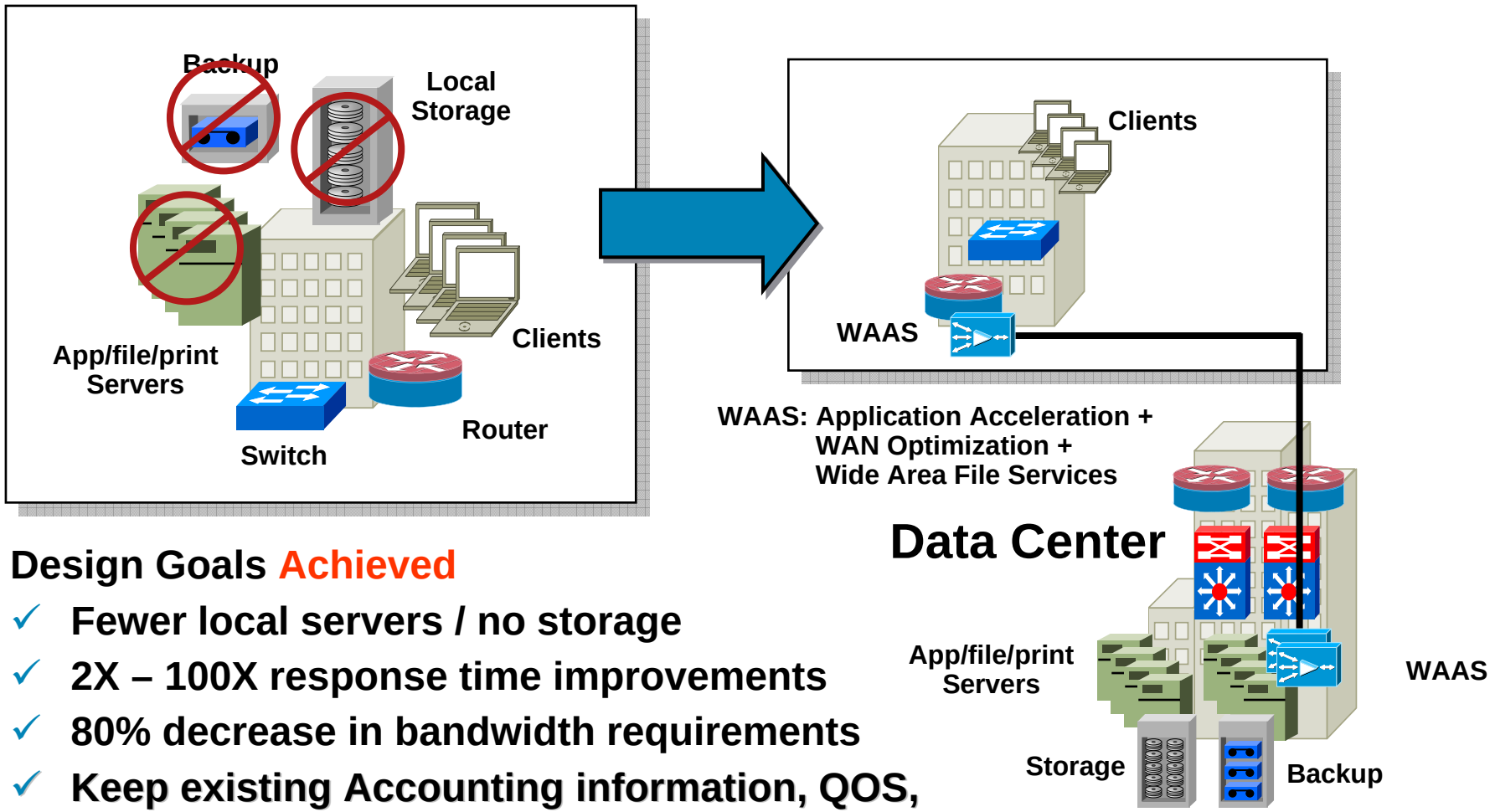
Branch Consolidation & Application Acceleration



Design Goals:

- ✓ Fewer local servers / no storage + backup
- ✓ Continued LAN-level performance
- ✓ Preserve services of existing network
- ✓ Fully “business-enable” branch employees

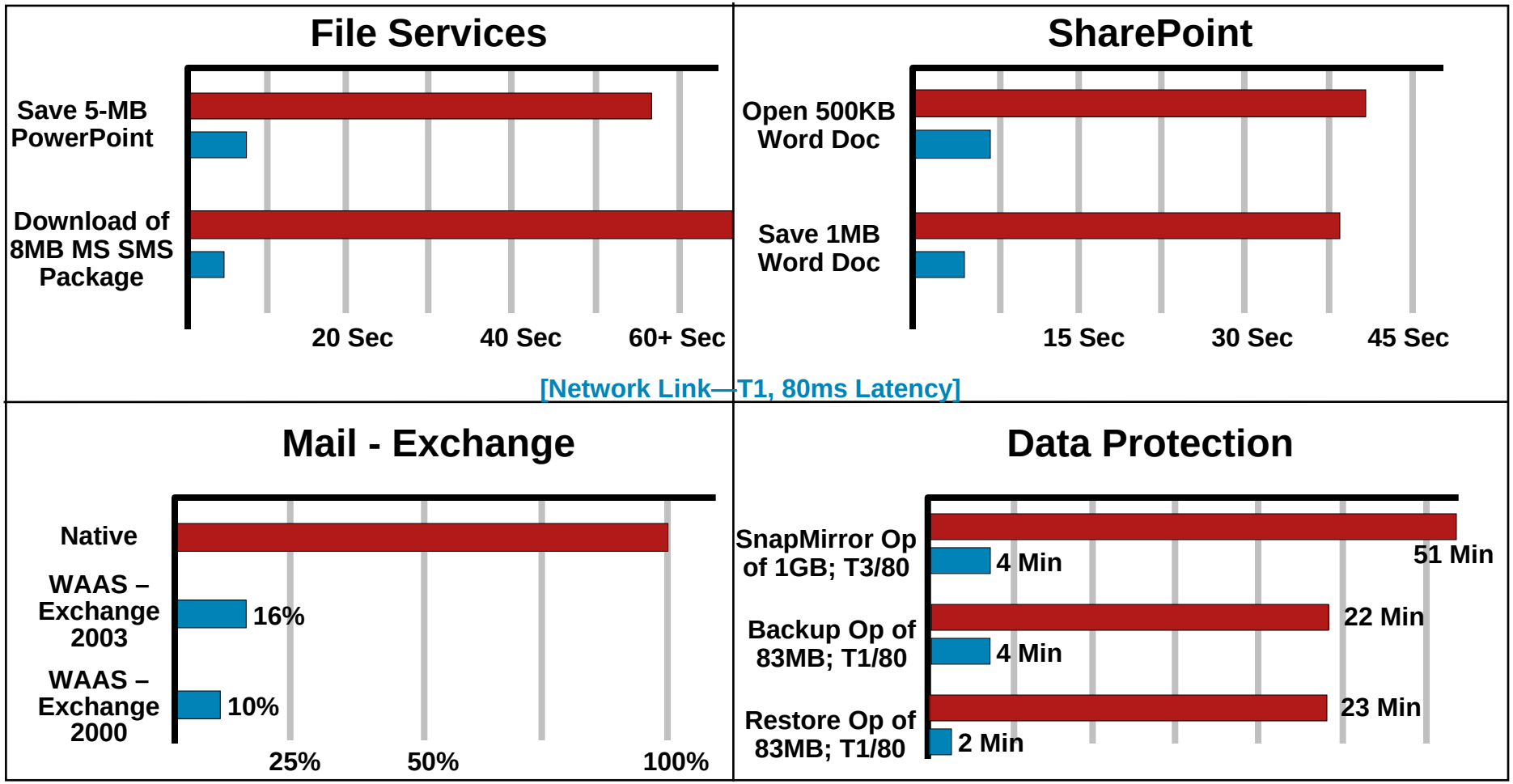
Branch Consolidation & Application Acceleration (WAAS)



Design Goals Achieved

- ✓ Fewer local servers / no storage
- ✓ 2X – 100X response time improvements
- ✓ 80% decrease in bandwidth requirements
- ✓ Keep existing Accounting information, QOS, monitoring and security policy

LAN-Like Access to Various Applications



Production Customer:
Sabre, RS&H

Case Study: Caisse D'Epargne

Problem:

Consolidate data from five locations into a centralized data center without significant cost incurred to upgrade WAN bandwidth

Project:

Build centralized file and data-access system based on Cisco WAFS solution. Leverage virtualized SAN environment to provide centralized data archiving and backup

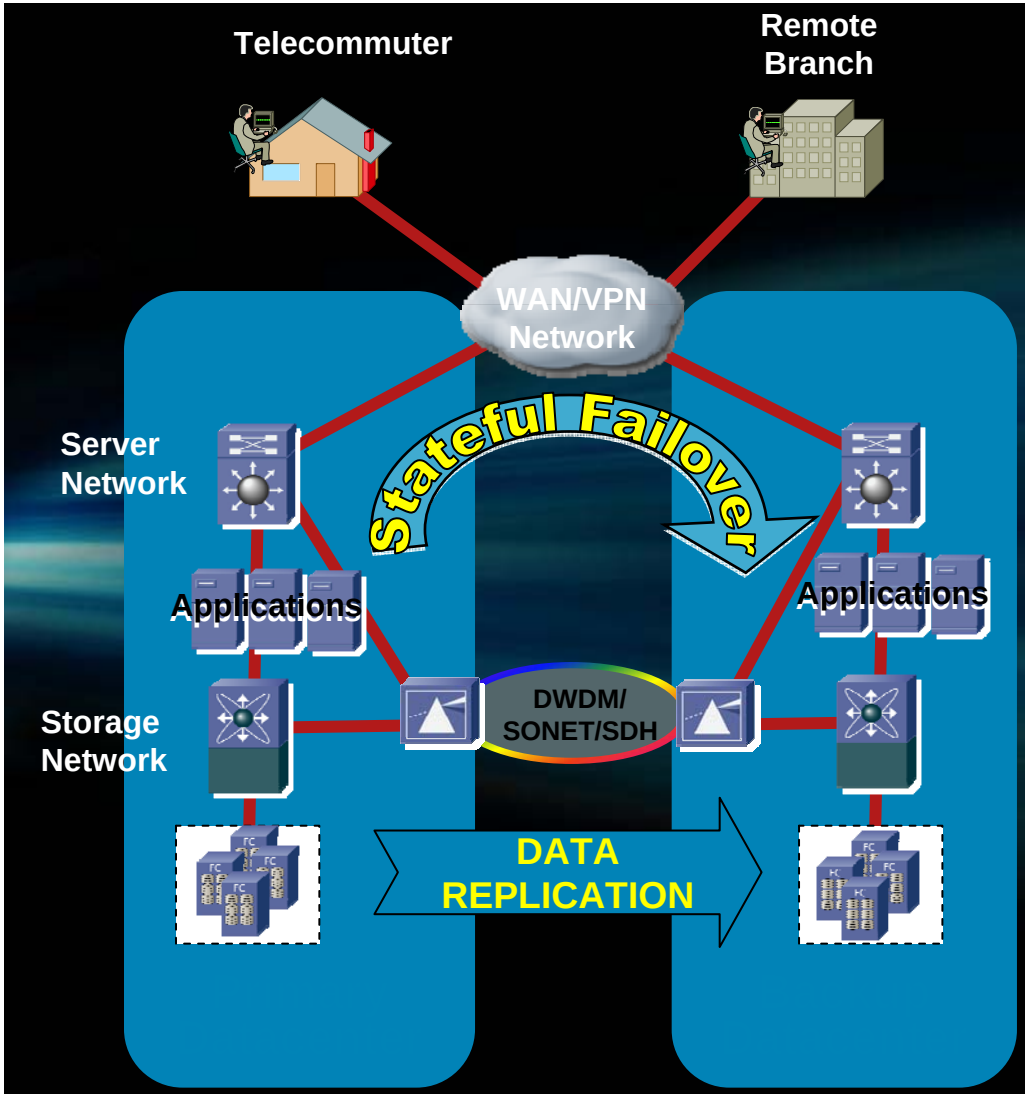
Results:

- **50% cost saving on WAN infrastructure**
- **Improves data-access across several locations built on flexible and reliable WAN**
- **Centralized management of files and data with consistent security and backup policy**

"The Cisco technology and architecture means that we have all the lower cost and data management efficiency benefits of centralized data control"

David Gosselin, Tech Director

Business Continuance / Disaster Recovery



Products Used	
MDS 9500	Synchronous Mirroring & Asynchronous Replication
Catalyst 6500	High Performance xWDM and 10Gb Ethernet
ONS	High performance SAN Extension between data centers
Global Site Selector	Continuous Access with Automatic Site Selection

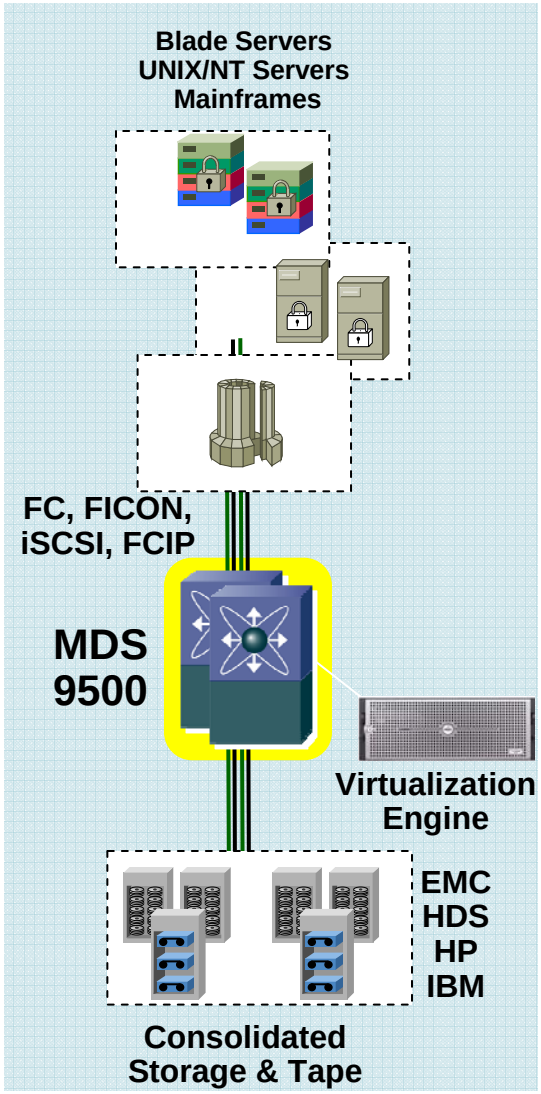
Reference Customers

ExxonMobil, State Farm, BCBS of Florida, Medtronic, Shell Oil, Kimberly-Clark, Nissan, Washington Mutual, Microsoft, USAA

Cisco IT

Cisco synchronously replicates between data centers within San Jose, and asynchronously between San Jose & RTP for true fault-tolerant disaster recovery.

Data Center Networking Trend
SAN Consolidation and Virtualization



Exponential data volume growth

Storage Consolidation & Virtualization benefits

- **Easier to manage**
- **Better data sharing**
- **Reduce data management**
- **Facilitate backup & restoration**

Drive Storage ultilization from 40% to 70%

Reduce Storage infrastructure TCO and increase data availability !

Case Study: Cisco on Cisco

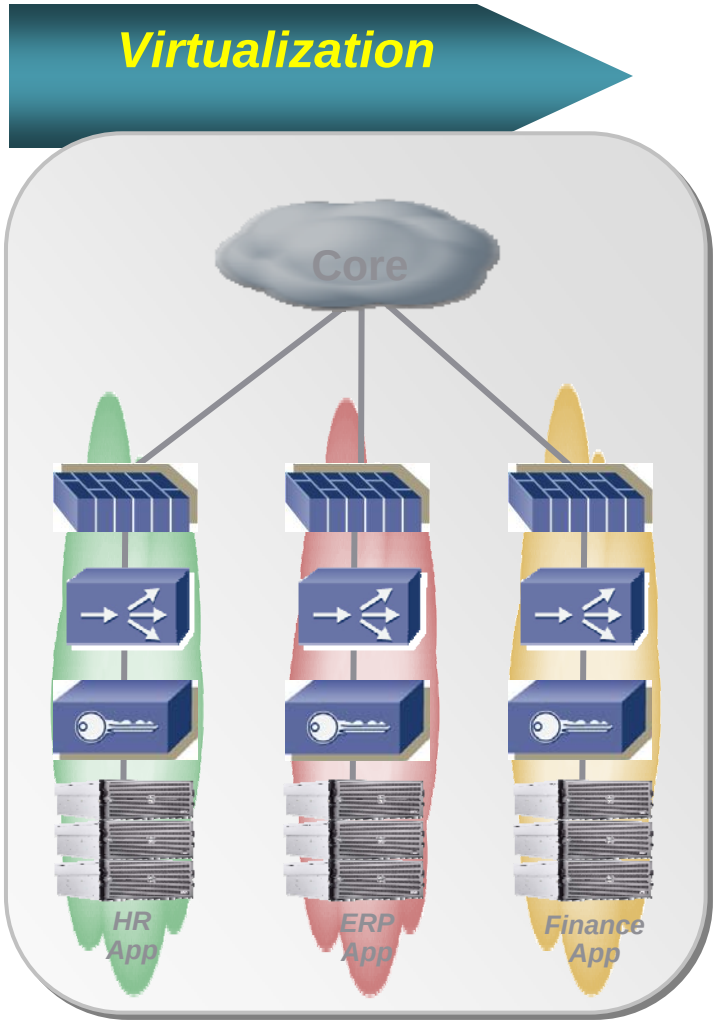
Problem: Explosive growth in data storage requirements

Project: Consolidate storage networking infrastructure in data centers worldwide

Results: **Payback Period for Investment: Roughly One Year**

	Financials				
	2002	2003	2004	2005	Total (Current USD)
Tangible Benefits (NPV)		$3.886M	$3.470M	$3.098M	$10.454M
Intangible Benefits (NPV)		$4.645M	$4.147M	$3.703M	$12.495M
Tangible Costs	($8.369M)				($8.369M)
Intangible Costs					
Overall Benefit		$8.531M	$7.617M	$6.801M	$14.580M

Data Center Networking Trend
Services Virtualization



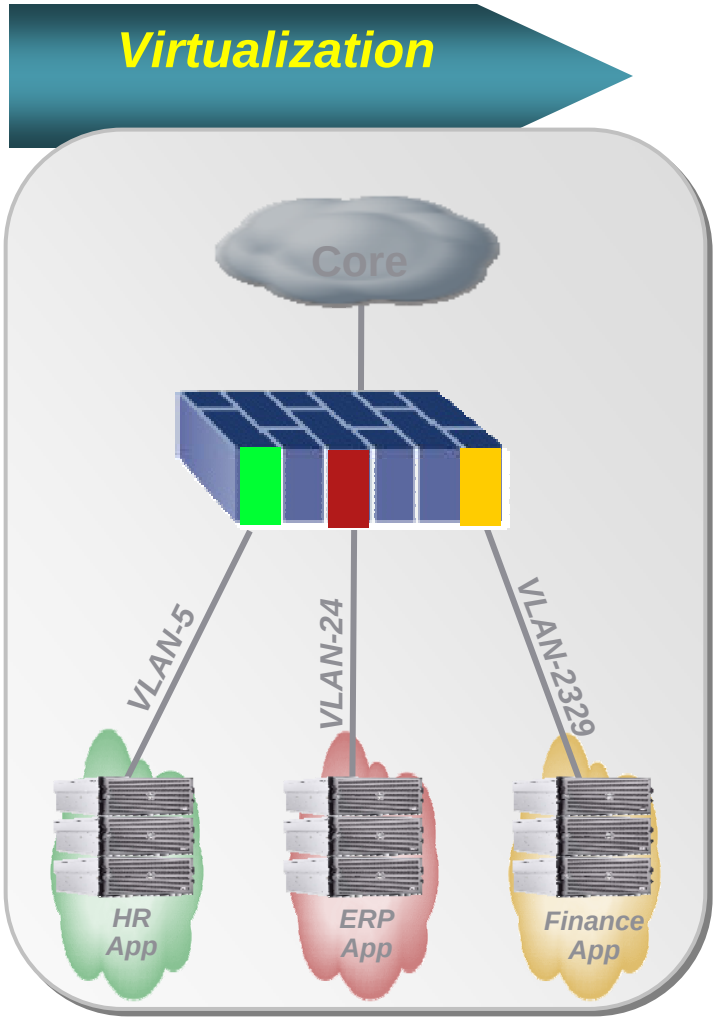
Application ‘stovepipes’ per department

Separate Firewalls

Separate Load balancers

Separate Application Offload

Data Center Networking Trend
Services Virtualization



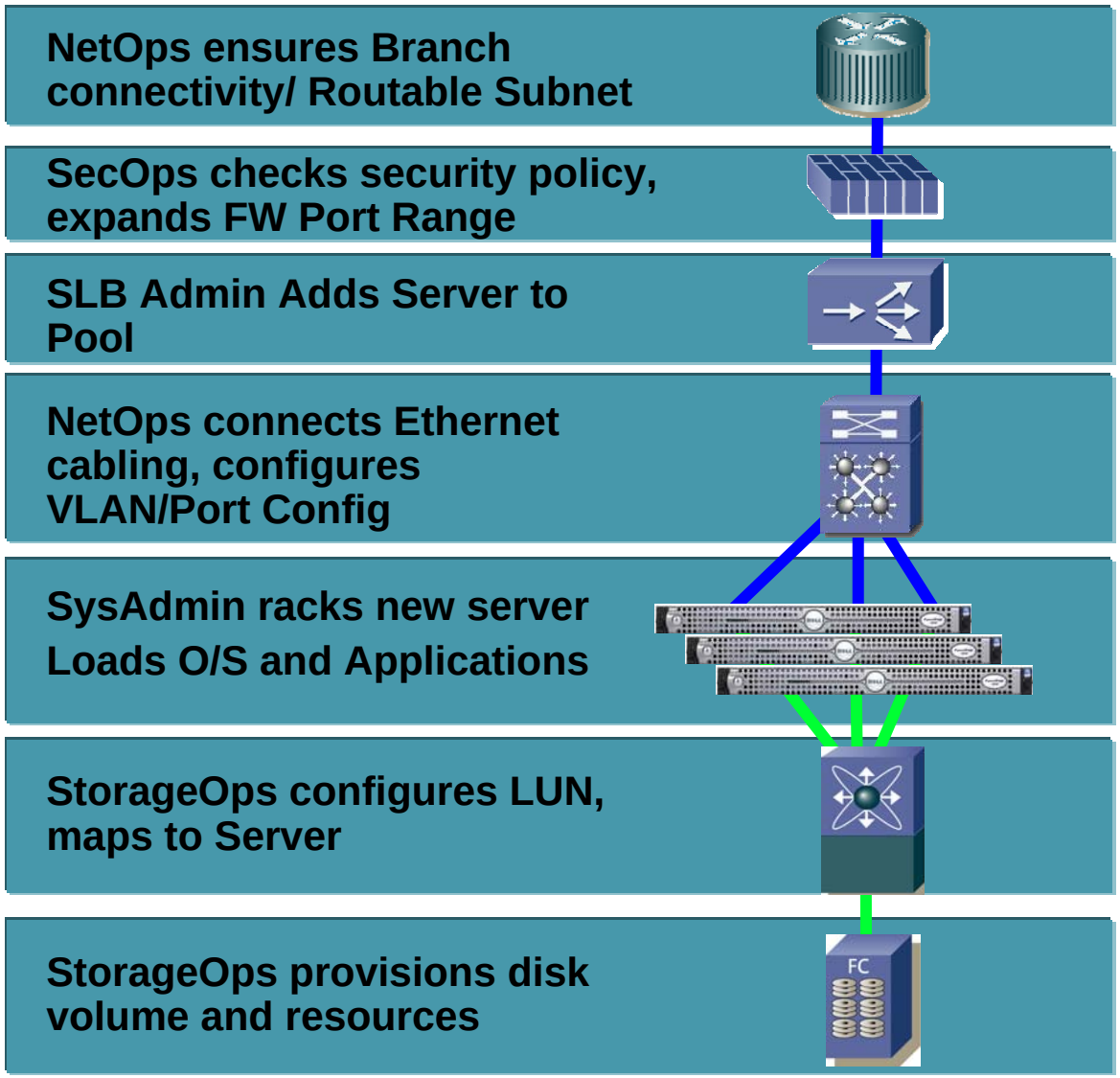
Cisco Data Center module provides industry leading throughput

Unique Application Virtualisation of up to 250 customer contexts

Resource Reservation per Context

Rapid Provisioning

Today's Enterprise Service Provisioning
A Scale-Out Automation Example

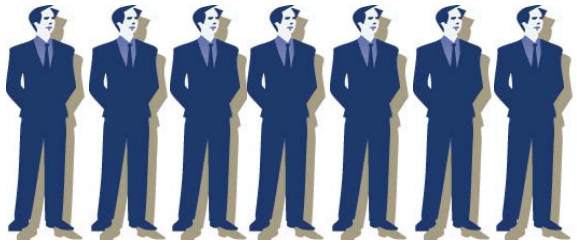


Assume you just want to add one server to a web-farm…

Co-ordination Delay. Scale Out Computing takes enterprises 90 days.

New service turn-ups, after the application has been developed, often take 180+ days.

VFrame eliminate these delays and automate the service provisioning



VFrame Enabling Provisioning Automation

VFrame Provisions Routable Subnet

VFrame configures Virtual FW Instance on FWSM

VFrame adds server to SLB Pool

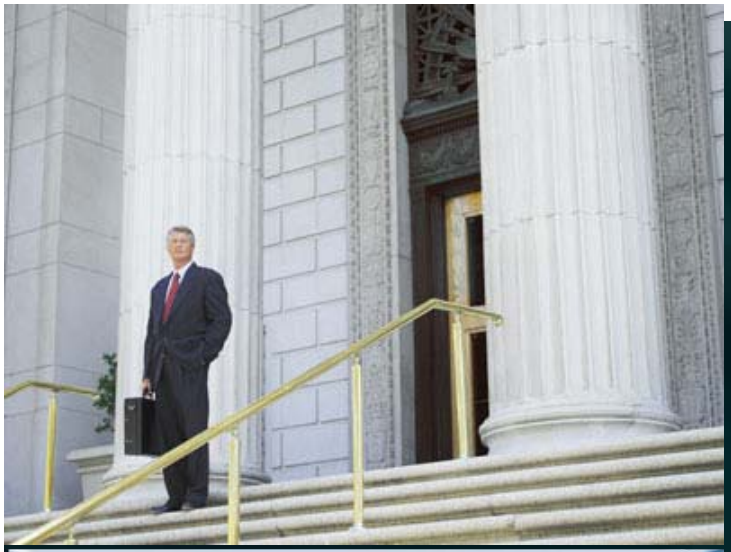
VFrame configures port, VLAN, and switch policy

VFrame net-boots the server to an appropriate LUN/Image

VFrame provisions LUN and WWN

VFrame provisions storage volume and boot-image

Cisco Value Proposition



- Business Continuance
- Agility
- Resiliency
- Cost Effective

"Cisco Takes 80% Modular Switching Marketshare"

"Fastest Growing Director Class SAN Switches"

Cisco #1 in Carrier and Enterprise Routing"

"Cisco #1 in Infiniband and Server Fabric Switches"

"Cisco #1 in Data Center Firewalls and Security"

"Cisco is the ONLY Company that can service and support an end-to-end data center"

Summary: Next Generation Datacenters