IT Infrastructure to Support Operation Risk Management

-- Enables Enterprise Operation Excellence

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March 14th, 2006

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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

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Operational Risk Management
Cisco Response Review

Business Continuity	• Data Continuity • Voice Continuity • Facilities Mgmt • Crisis Mgmt	
Business Security	• IT Security • "IP" Physical Security	
Recording & Archiving	• Data Retention & Consolidation • Voice & Video Recording • Information Retrieval	
Knowledge Management	• e-learning • GAP Analysis • Policies and Processes Enforcement	

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Resilience IT Can Help You Achieve ORM

Networked Virtual Organizations are Agile

- Mobility and IP communications increase productivity
- Innovative IP applications enhance agility

- Storage Networking provides backup and recovery
- Networked security protects business information and assets

- Converged infrastructure enables IP telephony, telecommuting, and video for cost reduction
- Diversified IP communications reduce risk

- Distributed architecture provides resilience, not just availability
- Network intelligence ensures adaptability and flexibility, while reducing complexity

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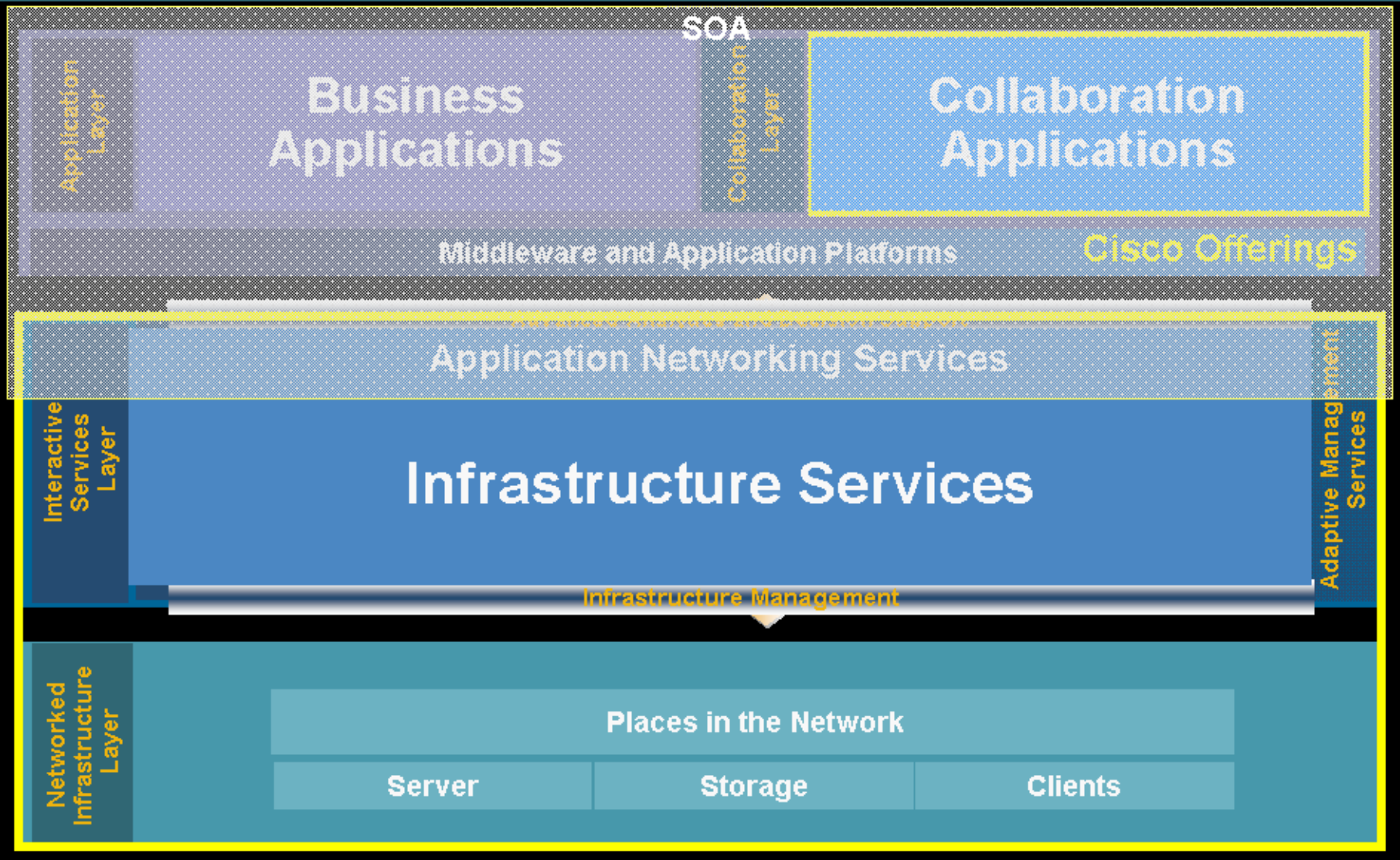
Cisco Service-Oriented Network Architecture (SONA) Will Be The Key



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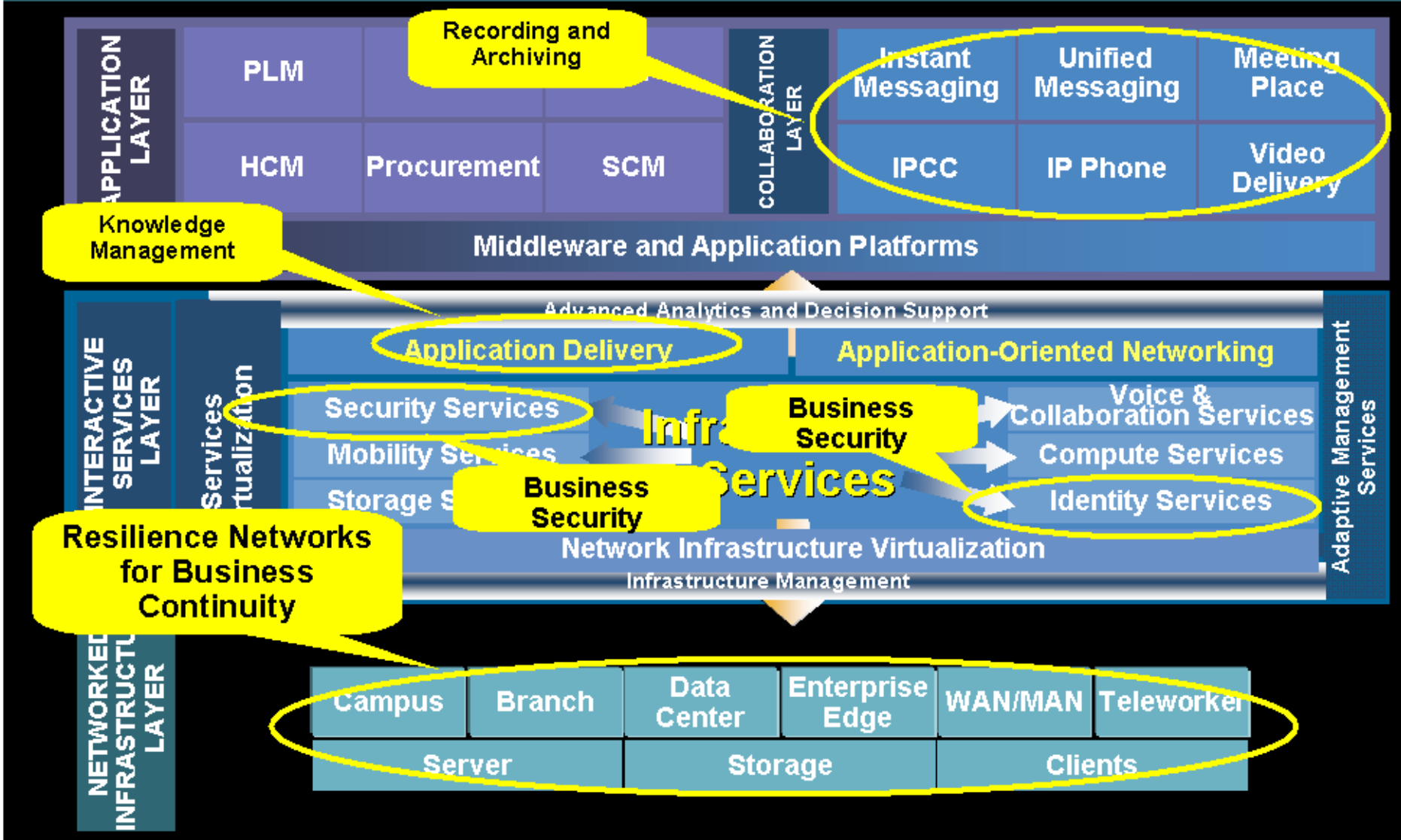
Cisco SONA Helps You Build the ORM Infrastructure



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Resilience Networks for Business Continuity

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Resilience Network for Business Continuity:

	Business Need	Technology Enablers
User Access Resilience	Ensuring Uninterrupted Anywhere Access to Applications and Services	VPN's; Mobility Global Load Balancing; Multi-channel Communications
Application Resilience	Ensuring Availability and Protection of Applications and Communications Services	Server Load Balancing; Infiniband Clusters; HA Clustering; Geo-Clustering
Data Resilience	Ensuring Data Protection, Accuracy, Availability and Integrity	SAN Extension; High Speed DC Inter-Connect; Platform for Storage BC/DR Applications; Virtualization

SECURITY

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Removing Points of Failure At All Tiers - Application Resilience

Branch Worker or Online Customer

Load Balance Across Web Servers

Web Tier

Application Tier

CallManager Cluster

Data Base Tier

Storage

Cluster Scale Out Application and Communication Servers

Data Center Interconnect

HA Cluster Between SMP DB Servers

Cluster Between Data Centers

Data Center 1

Data Center 2

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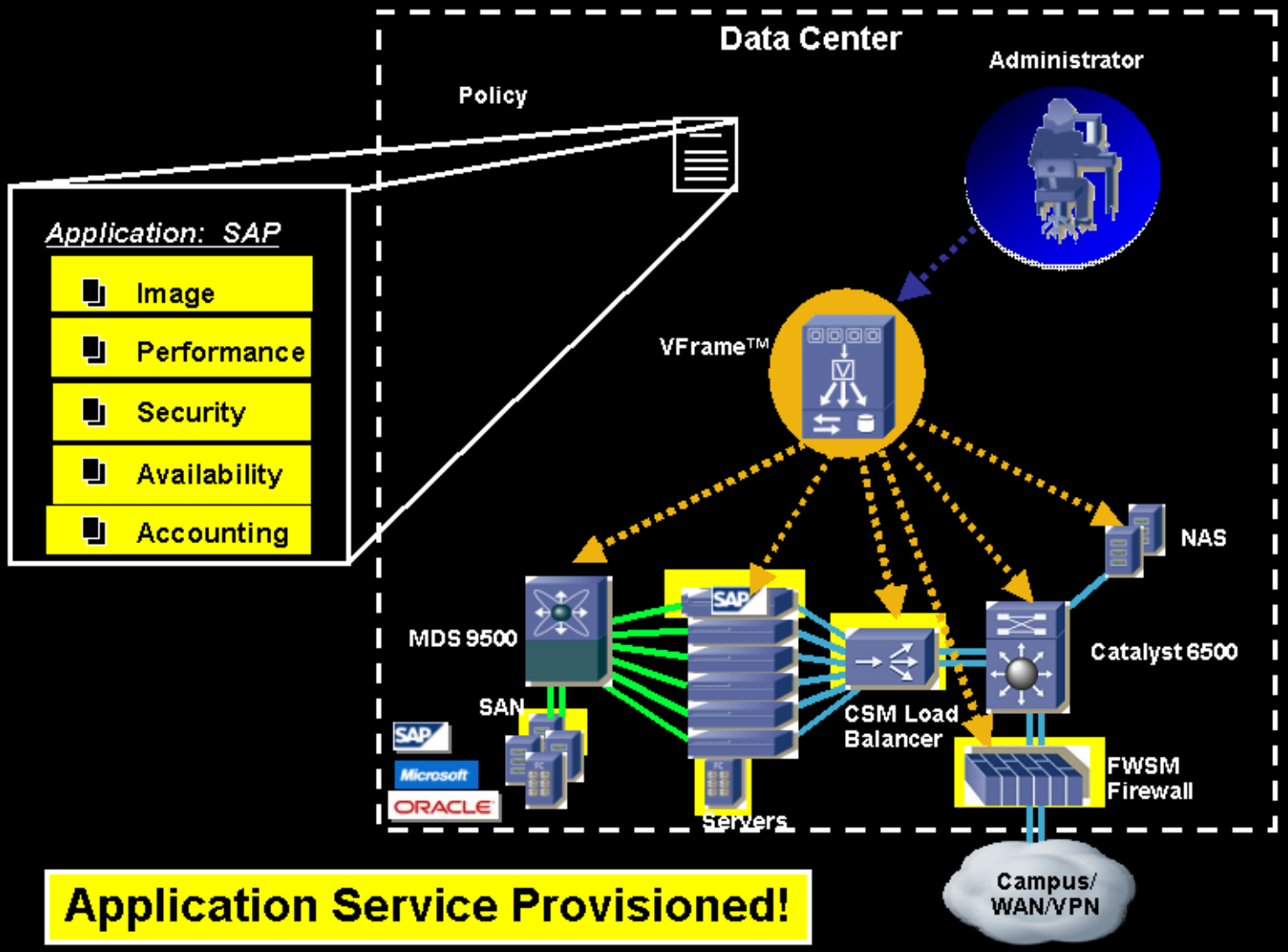
Dynamic Data Center Provisioning
Vframe Data Center 1.0



Define application services and pass policy to VFrame

VFrame translates policies to actions and passes to infrastructure

VFrame identifies right App / OS Image From storage

VFrame picks server with right criteria to run application and boots server

VFrame gives new server right VLAN and LUN info so it can find/be found by right clients and storage

VFrame provisions security policies to FWSM

VFrame provisions CSM to add new server to load balancing pool

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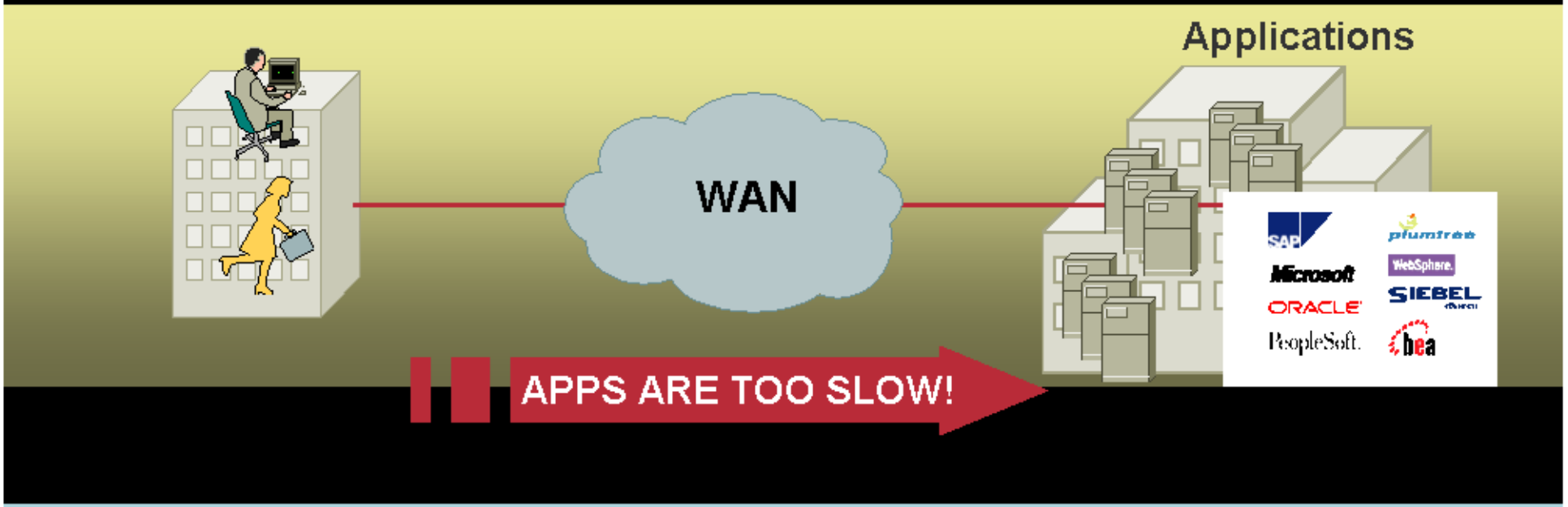
Business Applications Availability Challenges



Web-based Applications are Not Optimized for WAN

- Performance degrades as network latency increases
- Applications make multiple calls to render a single page
- Limited bandwidth compounds the performance problems

- Web-based vulnerabilities
- Performance mgmt capabilities:
  - Why is an app running slow?
  - Where is the bottleneck?

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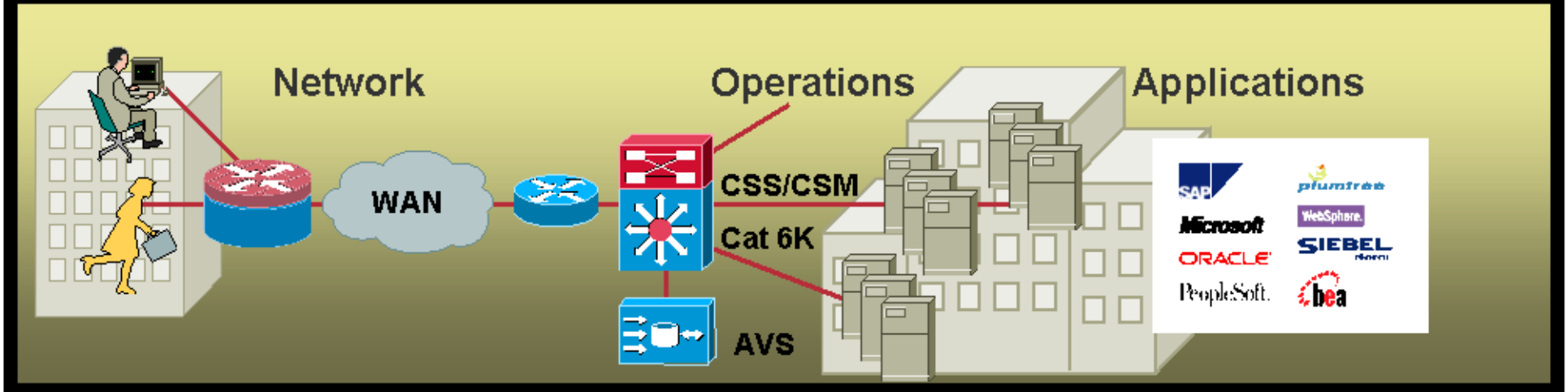
Application Velocity System (AVS):
Optimization of Web-based Business Apps over the WAN:

- Accelerate and optimize all web-based applications across the extended enterprise
- Deliver, monitor, and secure application service to all users
- Dynamically caches, transforms content, compresses content, and secures the web with full-proxy functionality

- Only data center appliance to control and optimize at Layer-7
  - ➢2X–response time improvements
  - ➢80% decrease in bandwidth requirements
  - ➢80% fewer server cycles



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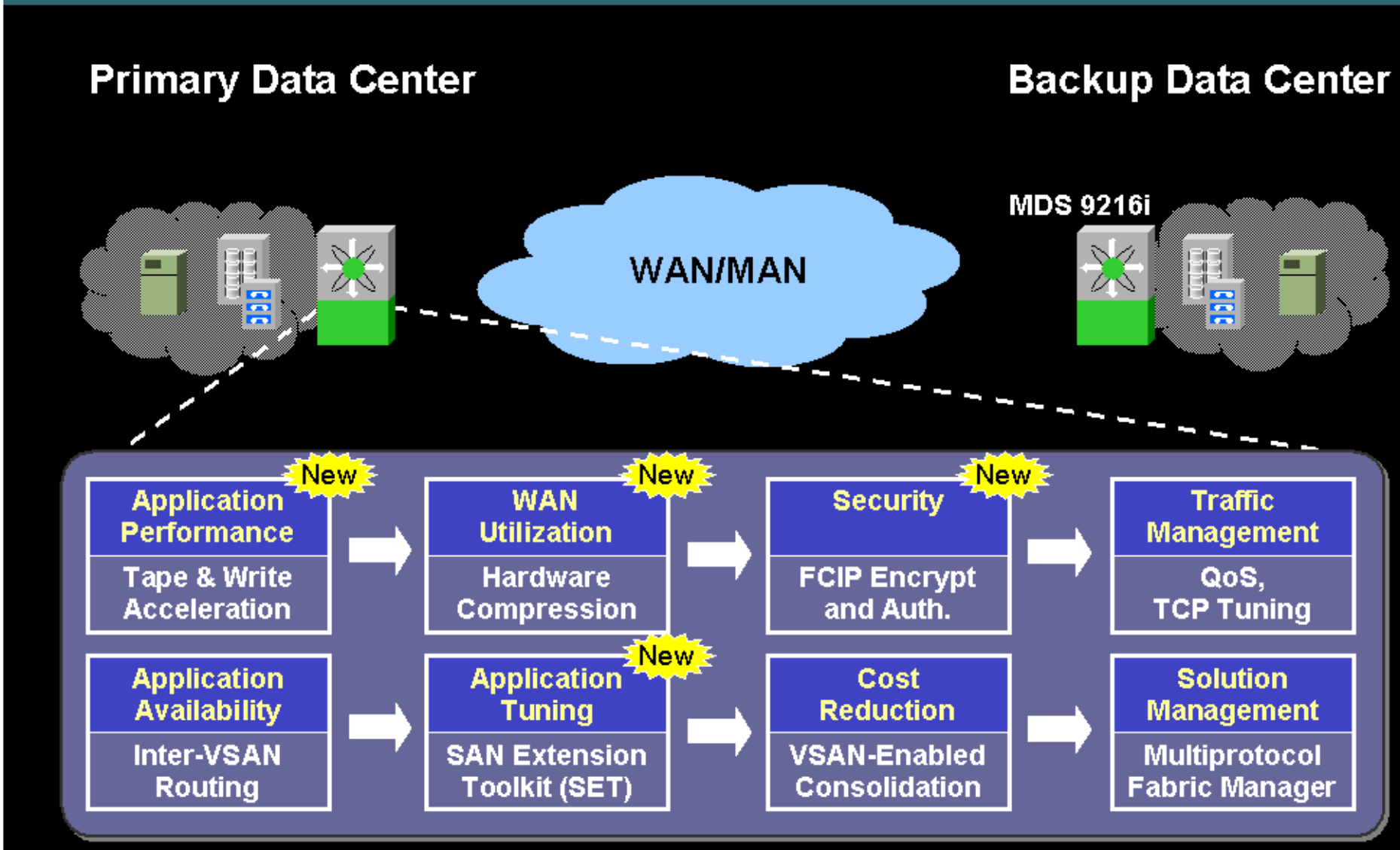
Comprehensive SAN Extension Solution



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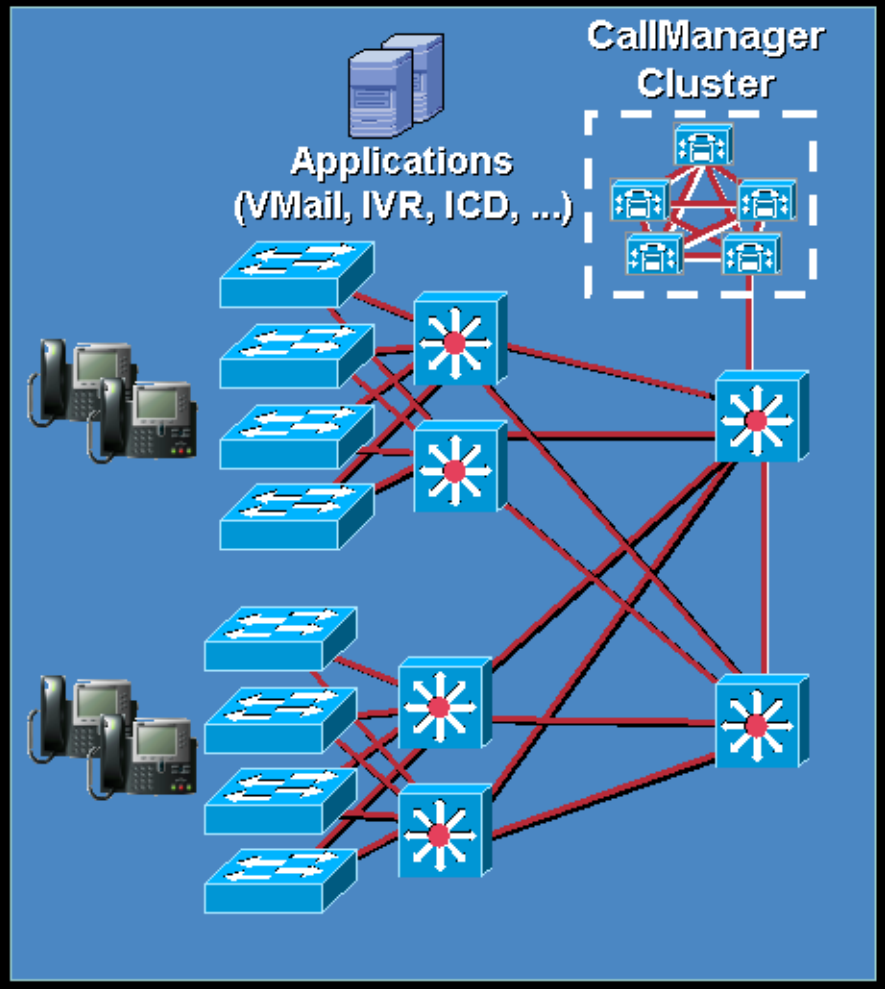
Communications Server Clustering for Availability and Scalability



- 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

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Ensuring Continuous Access

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

Branch Worker or Online Customer

Application Servers Fail

Redirect to Secondary Data Center

Internet or Intranet or Campus Net

Access Network

Server & Comm Clusters

CSM

GSS 4491

Catalyst

Data Center 1

Access Network

GSS 4491

CSM

Server Cluster

Catalyst

Data Center 2

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Ensuring Continuous Access
Rapid Deployment of Emergency Branches/SOHO

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

Branch or Campus Disrupted

Internet-based VPN

Server & Comms Clusters

Catalyst

Data Center 1

Deploy Mobile Offices

Temporary Branch

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IT for Business Security

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Security Operation Center (SOC)

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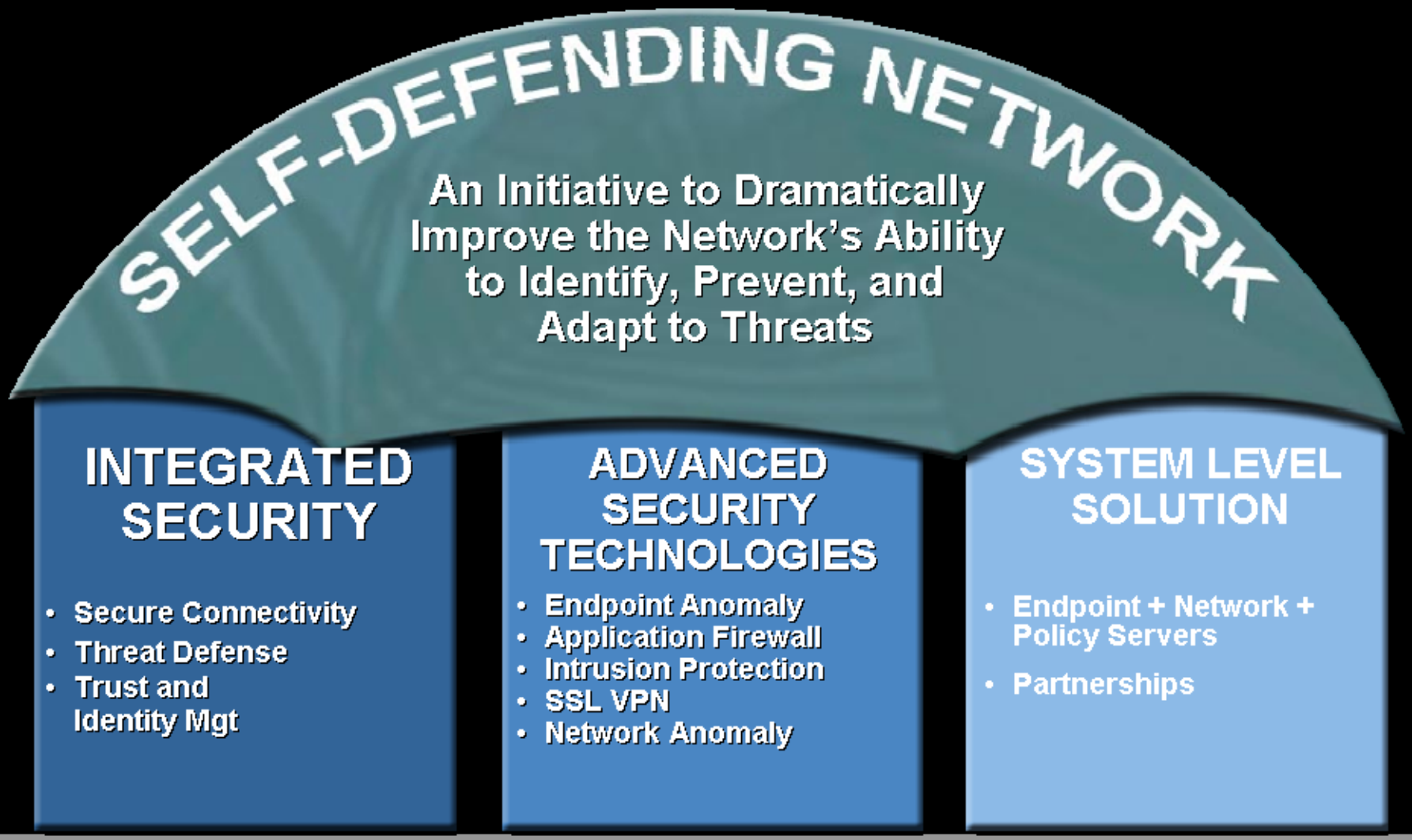
IT Security
Cisco Strategy

Business Security



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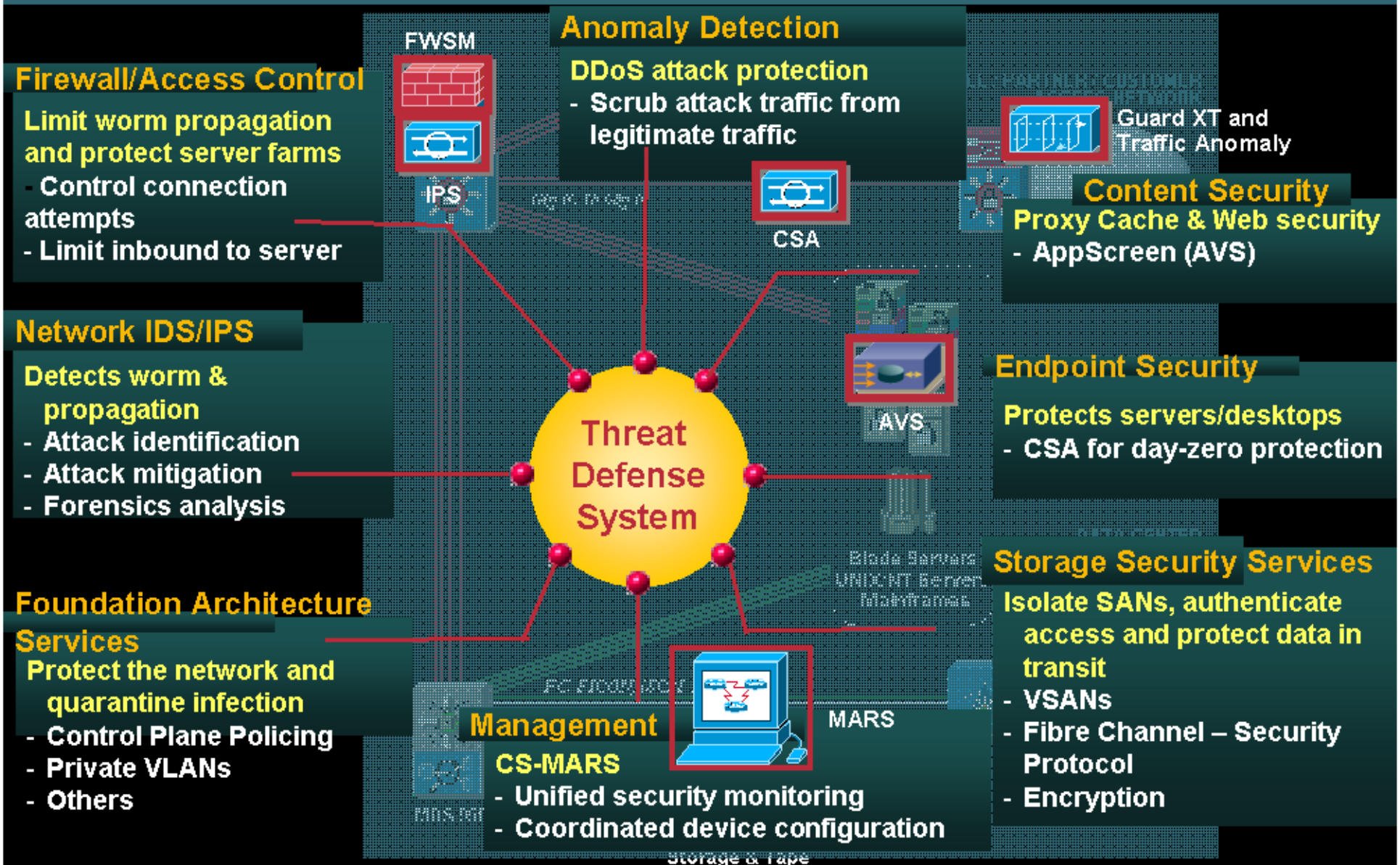
Cisco Threat Defense System for the Data Center
Defense in Depth



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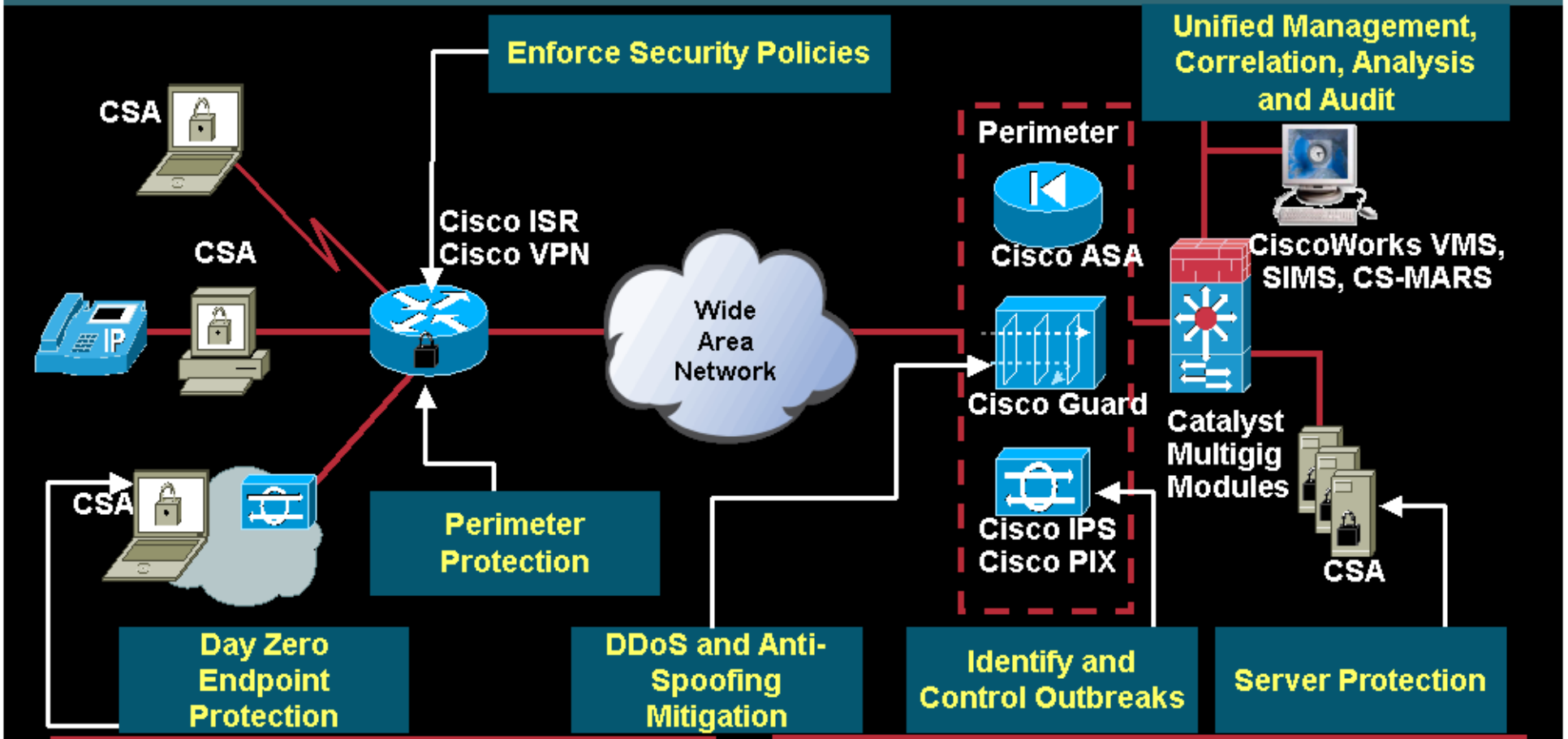
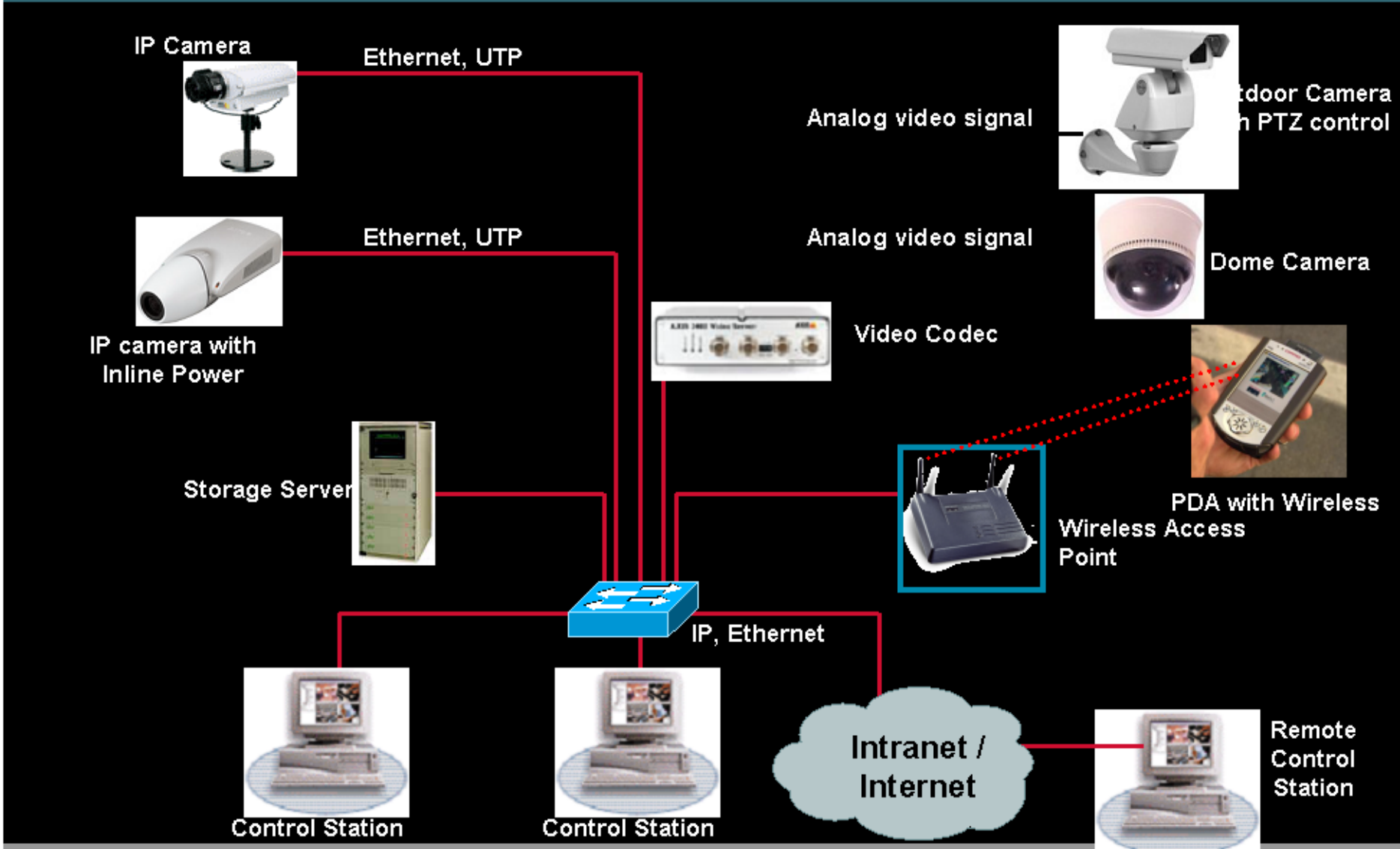
IT Security in the Places of Network



- Cisco ISR/VPN
- Cisco Secure Agent
- Cisco ASA Adaptive Security Appliance

- Cisco CS-MARS, SIMS, VMS, CSM, SDM
- Security Service modules on Catalyst 6500
- Cisco ASA Adapter Security Appliance
- Cisco Intrusion Protection/ Detection
- Cisco Service Guard

Cisco Physical Security Solution



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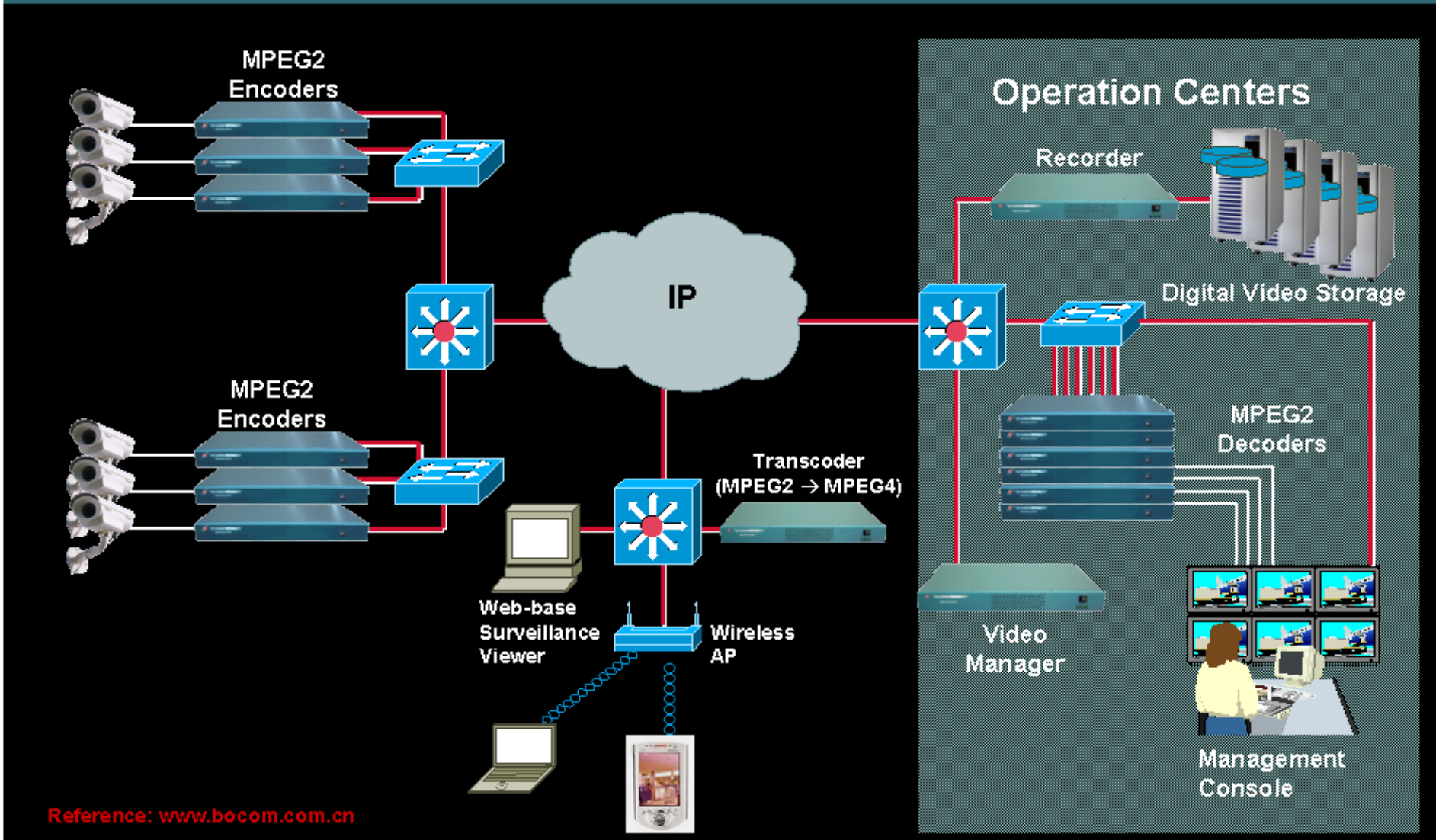
High Definition Digital CCTV (with IP MPEG2 Codec)



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IT for Knowledge Management

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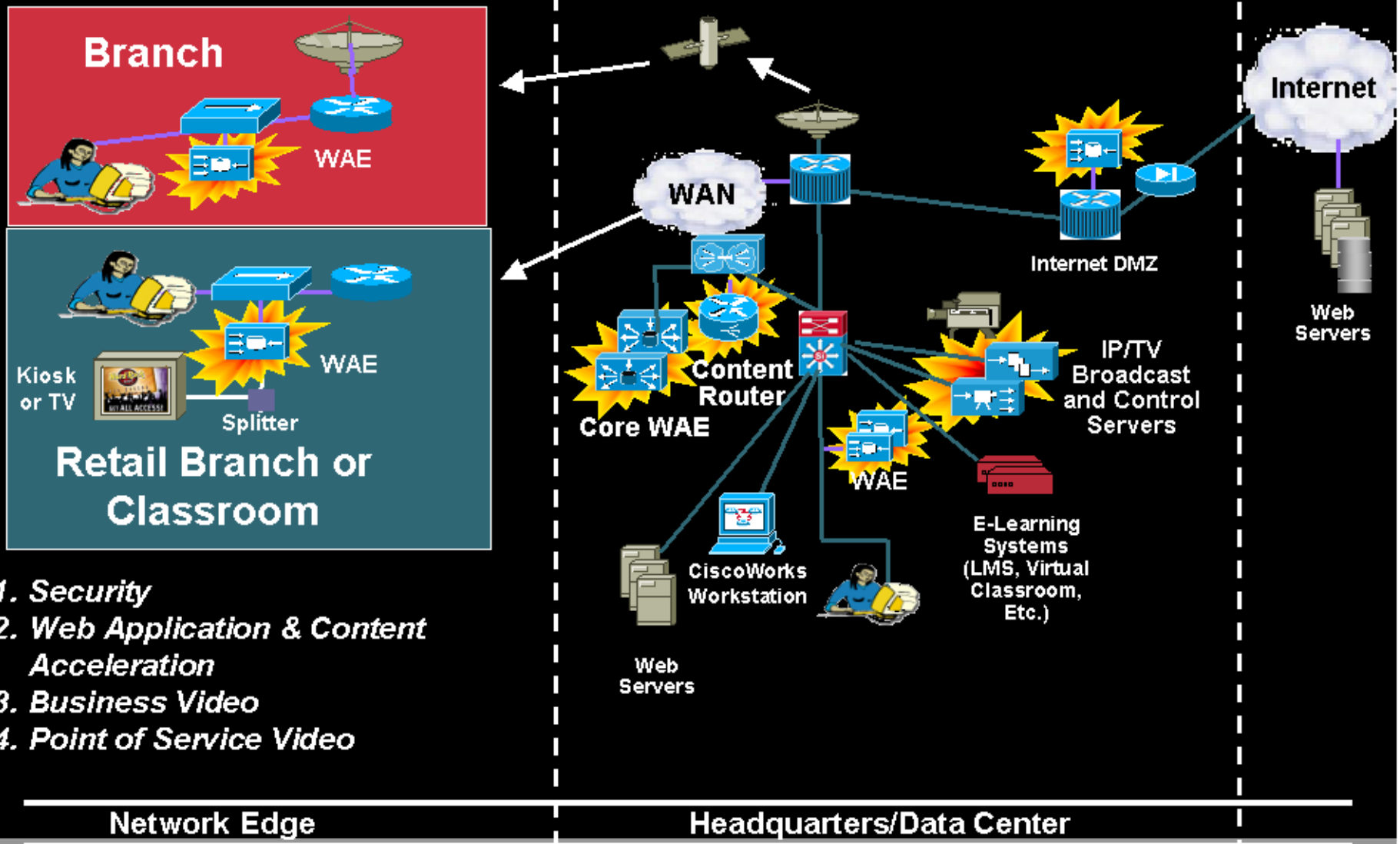
Content Delivery and Management



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IT for Recording and Archiving

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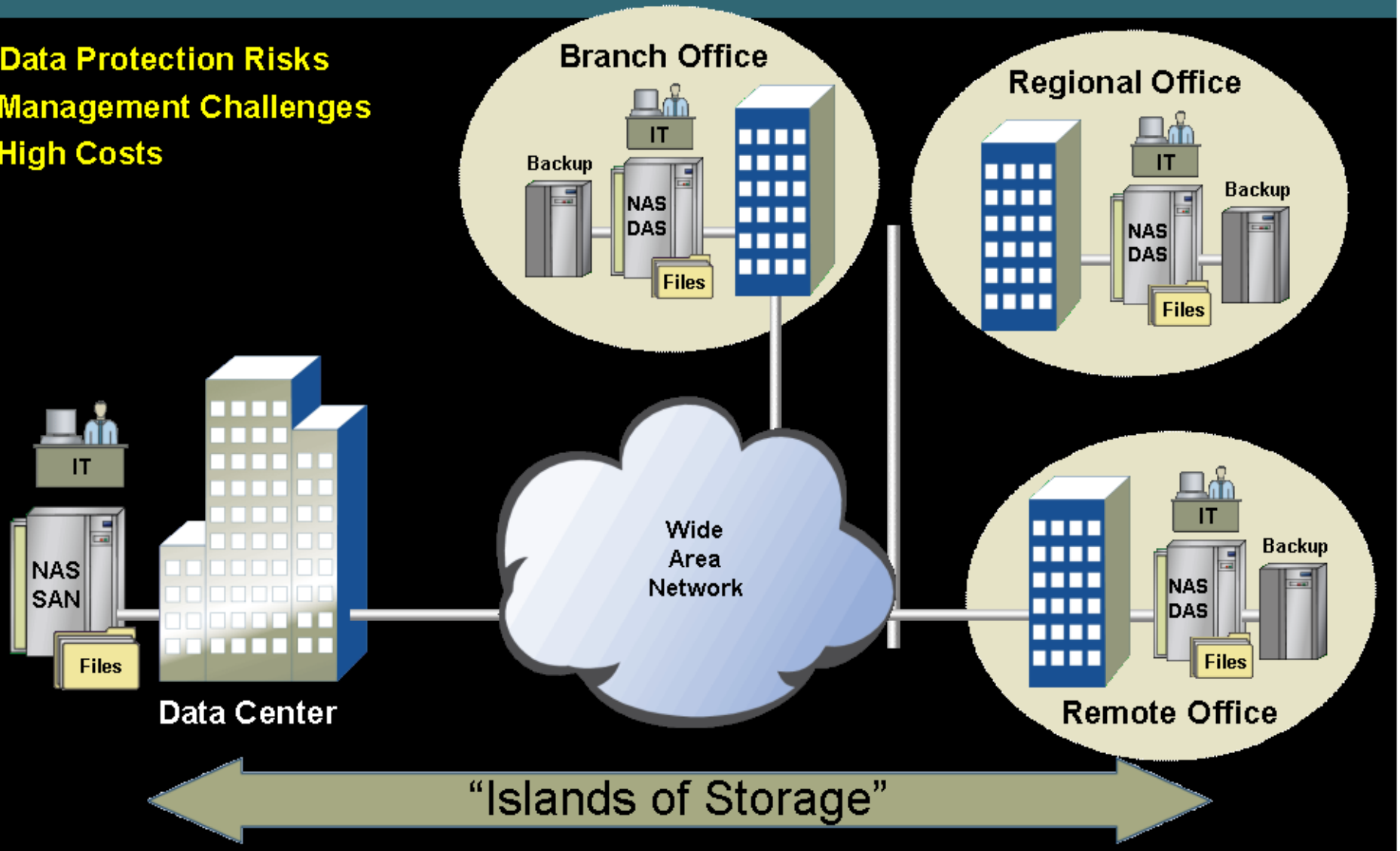
Data Archiving: Branch File Server Consolidation

Data & Voice Archiving

- Data Protection Risks
- Management Challenges
- High Costs



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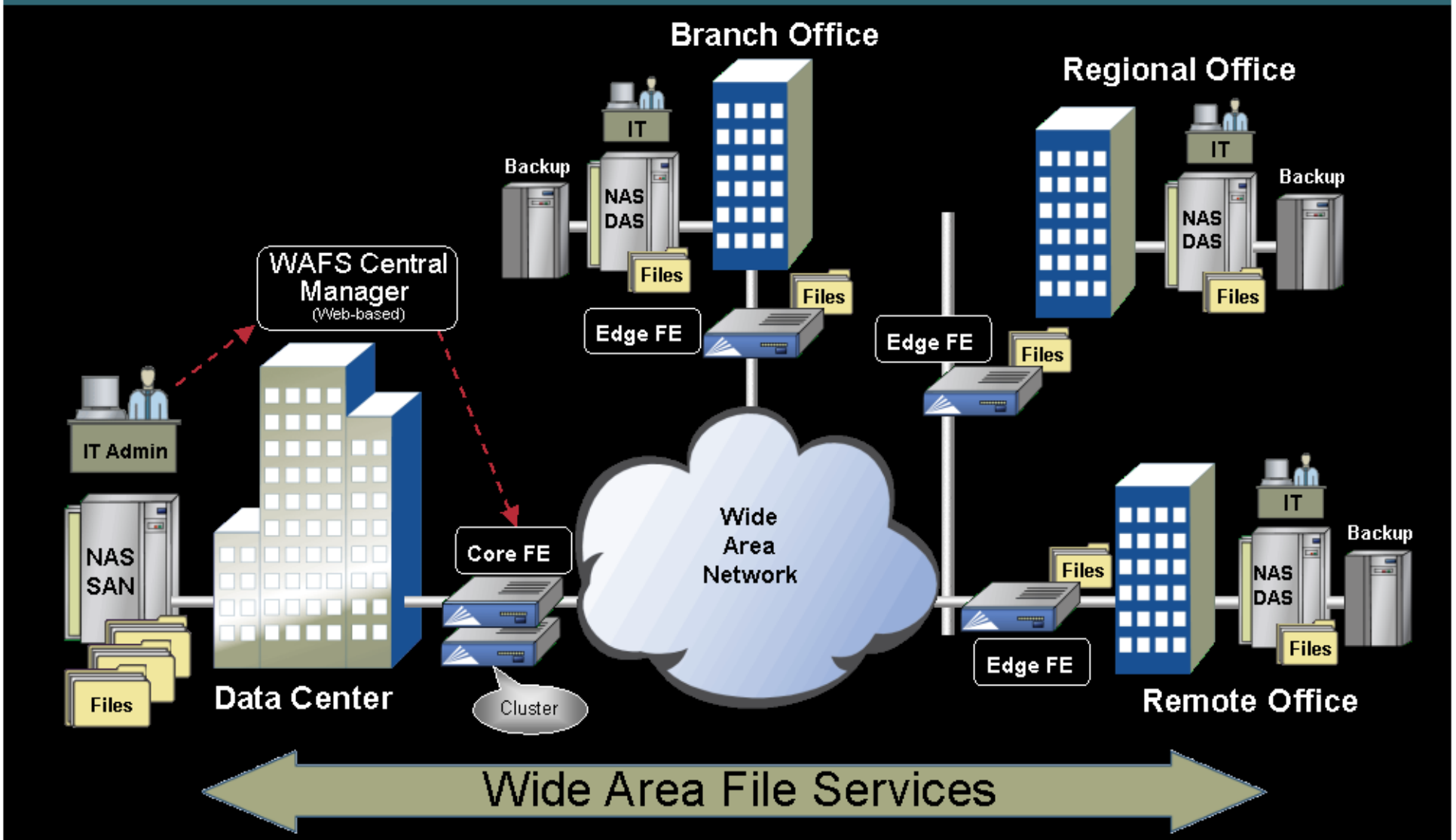
Data Archiving: Cisco WAFS Solution

Data & Voice Archiving



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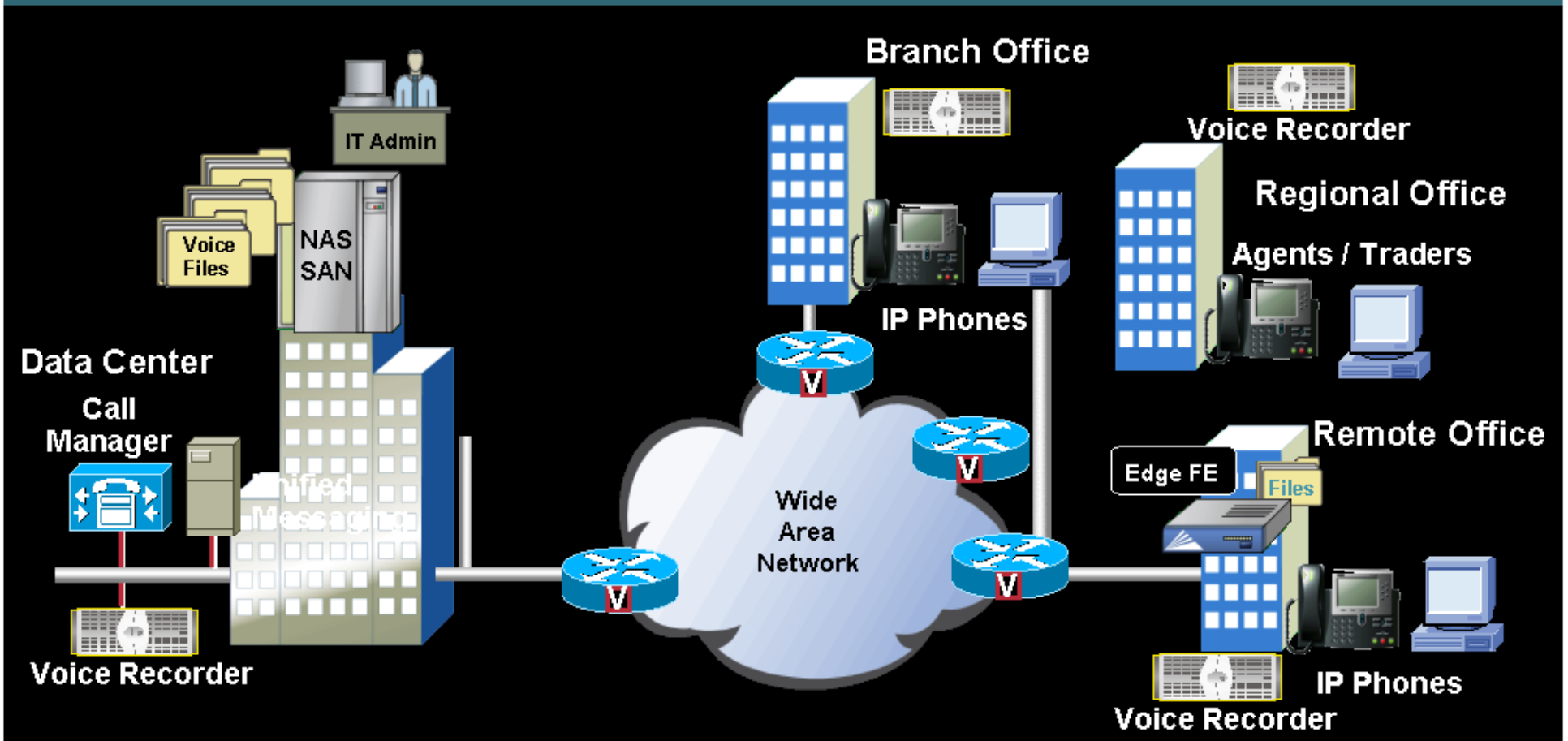
Voice Recording
- with partner solutions



Voice files centrally stored, retrieved and managed:
- Cisco SAN storage

Voice:
- Cisco Call Manager
- Cisco Unified Messaging
- 3-party Voice Recorder

- 3-party Voice Recorder

Summary

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Cisco Helps You Achieve Operational Excellence

- Cisco helps you build a resilience network for Business Continuity
- Cisco helps you secure access, and protect your data for Loss Prevention
- Cisco provides network solutions that streamline your Knowledge Management process
- Cisco's file archiving and voice recording solutions helps you keeping ahead of your auditors and government regulators; that meet your compliance needs

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