Cisco Expo 2008

Network as a platform
NLB Tutunska banka

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AIS Manager

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NLB Tutunska banka- Highlights

- **Third largest bank by net assets, among leading by performances**
- **Strategic owner - NLB Group holding 87% of share capital**
  - 41 modern branches across the country
  - 666 employees
  - 308,000 customers
- **Among best banks in NLB Group**
- **Bank of the Year in Macedonia for 2003,2006,2007, 2008 by The Banker**
- **Best bank by Gross Profit 2002, 2003, 2004, 2006 by FCE**
- **„Company with good corporate governance'' Certificate, by Transparency No Corruption**
- **Best Investment Bank in Macedonia for 2008 by Euromoney**

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NLB Tutunska banka - Financial and operating results

Figures	December, 2007	07/06	September, 2008	08/07
Total assets	694.0 mil. EUR	44%	812.6 mil. EUR	17%
Capital and reserves	52.4 mil. EUR	32%	63.7 mil. EUR	4%
Deposits	445 mil. EUR	47%	540 mil. EUR	21%
Loans net	369 mil. EUR	45%	454 mil. EUR	23%
Trade Finance	113 mil. EUR	61%	124 mil. EUR	10%
Net profit	9.0 mil. EUR	36%	8.7 mil. EUR	/
ROE gross	23.3%		23.5%	
Cost/Income Ratio	48.48%		47.28%	

Market share	December, 2007	September, 2008	
Net assets	19.0%	19.6%	*as of 30.06.2008
Deposits	17.4%	18.4%	
Loans (gross)	19.8%	18.9%	
FX Market	25.1%	24.2%	
Cards	22.8%	23.6%	

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NLB Tutunska banka - Technical Goals

- Optimizing infrastructure
  - **Support for more users of additional services** – with the growth of the organization the infrastructure will need to support new applications and more users
  - **Increase network speed and performance** - To support growth, sophisticated applications will require more and more bandwidth
  - **Integrated "birds-eye view" of services health and status** – a single management platform can be utilized to monitor the infrastructure and provide summary and detailed information on services health
- Optimizing security
  - **Integrated view** of security events– with integration of all system events, security reaction will be faster and more efficient.

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NLB Tutunska banka - Business Goals

- Increasing efficiency
  - **Improved communication** - Employees access mission-critical resource and share information more quickly and efficiently
  - **Greater productivity** - Improved communications and better response times allow employees to work faster and more efficiently
  - **Unified infrastructure** - Maintaining one unified infrastructure
  - **Expert focus** – IT employees can focus on a unified set of technologies and deliver high quality support and faster experience gain
  - **Quality of service** – The enterprise solution provides controlled service quality for all critical applications
- Optimizing costs
  - **Reducing telephony costs** - Integration of Voice traffic through IP infrastructure
  - **Choice of alternative providers** – The infrastructure allows for a very flexible connectivity to alternative service providers and cost optimization
  - **Optimal education costs** - Employee training is focused on unified infrastructure, achieving faster adoption and lower training costs

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NLB Tutunska banka – The choice

- NLB Tutunska banka chose Cisco as the core network infrastructure provider
  - **Support for Users and Services** – The growth of the NLB Tutunska banka is strong, and with it's growth the infrastructure will need to support new applications and more users. The Cisco solution provides flexible and efficient capability for growth and expansion, both in the user and application context
  - **Quality of Service** – Every bank has a set of mission critical applications, which need to function with controllable quality. The Cisco solution provides service quality and priority for mission for all critical applications, and enables adding Voice traffic to the equation
  - **Reducing costs** – Through Integrating Voice traffic through IP infrastructure and flexible provider selection, the monthly telephony costs can be reduced by 50% - The cost of purchase can be compensated by savings within one year.

The cost becomes an investment

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Network as a platform

- Network architecture overview
  - Multiservice LAN
  - Integrated security
  - Advanced SAN
- The name of the game: convergence
  - Multiservice WAN
- Next steps: creating a competitive advantage
  - UC & Video and collaboration
  - WAN optimization and Network aware virtualization
  - Wireless as a business tool

The foundation

Multiservice LAN with Integrated security

Converged WAN & MAN

Advanced SAN

Unified Communication System

NETWORK ARCHITECTURE OVERVIEW

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NLB New Campus Design

-3-Tier Architecture

-Access Layer

-3560 10/100/100 PoE switches

-Voice VLAN and QoS

-2 GE uplinks with advanced L2 control and load balancing

-Distribution Layer

-4506E with Sup6

-10 GE uplinks with high performance routing for optimal path towards the core

-L2 control to the access layer

-Core

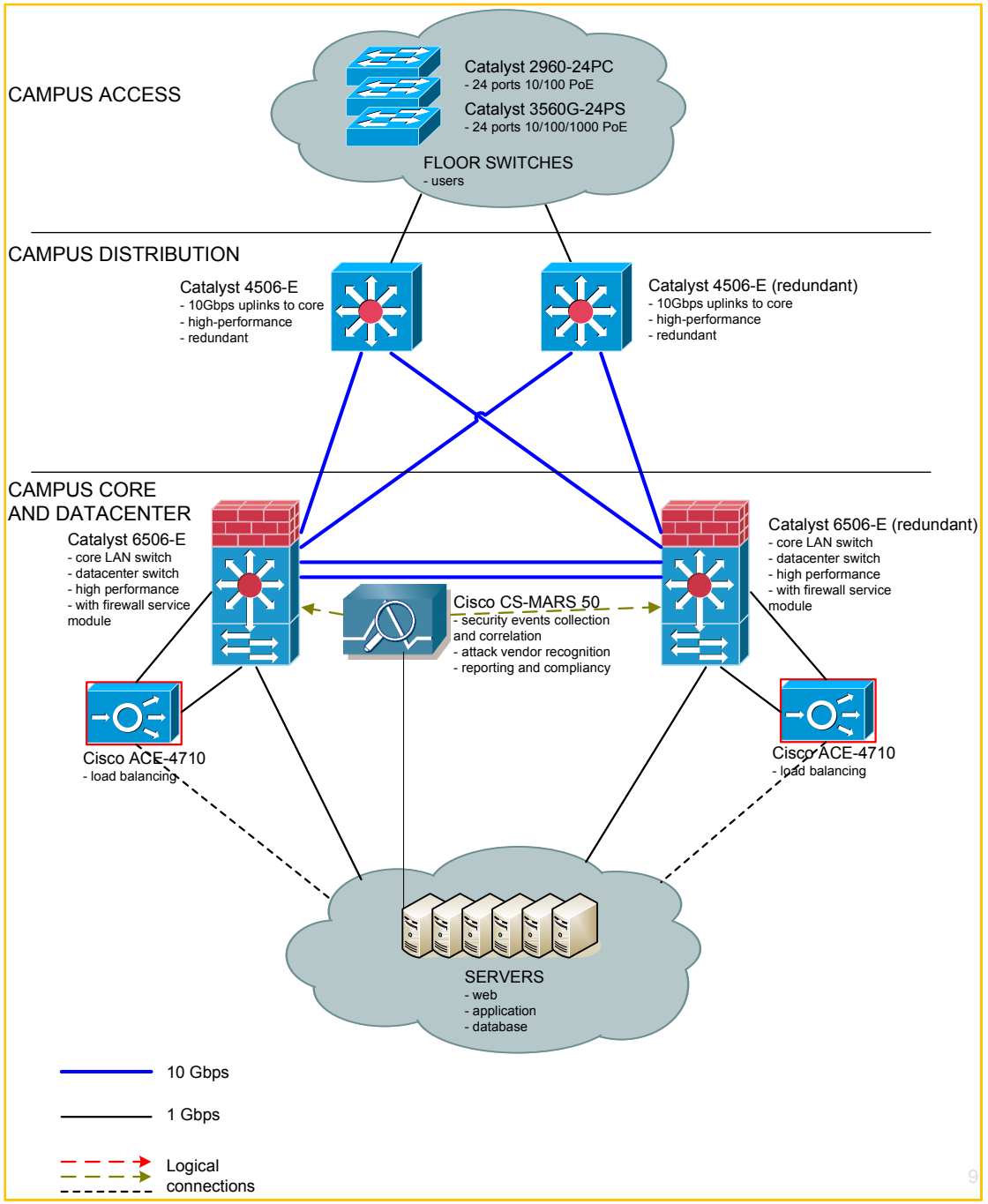
-6506-E with Sup720

-Integrated firewall for data center protection

-Connectivity with high capacity server farm separated to a number of security zones

-Datacenter security

-CS MARS for security event correlation, alarming, reporting and action on the whole infrastructure



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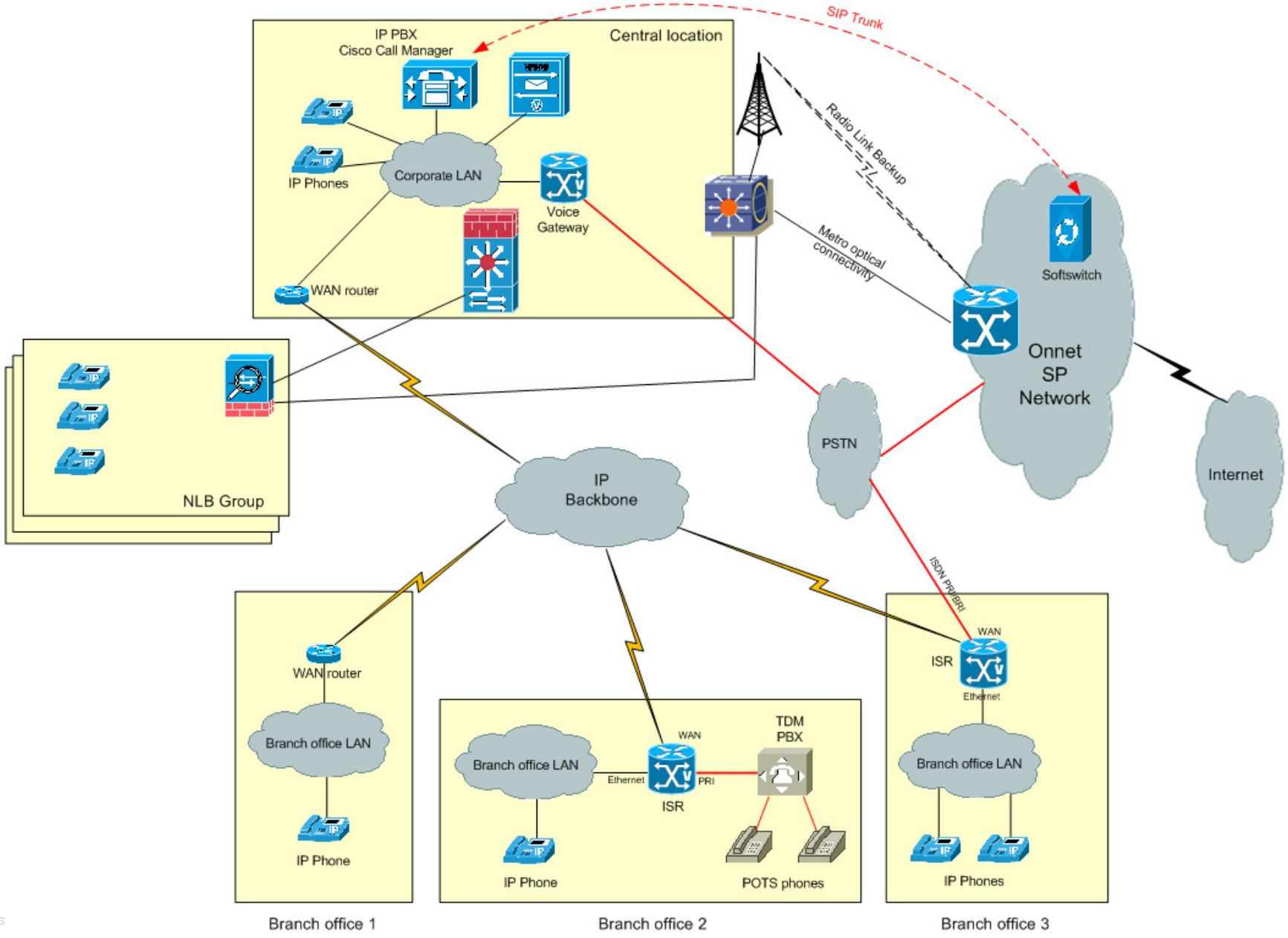
Multiservice WAN & MAN



Cisco CS-MARS

1. Centralized monitoring appliance that obtains detailed information about the network infrastructure, including switches, routers, firewalls, IDS appliances and host security software, through a variety of device logs and alerts, Netflow communications, and other means
2. End-to-end network topology awareness.
3. Sessionization™ and Session Based Active Correlation™.
4. Integrated dynamic host vulnerability analysis and Precision Tracking™
5. One Click Tuning™

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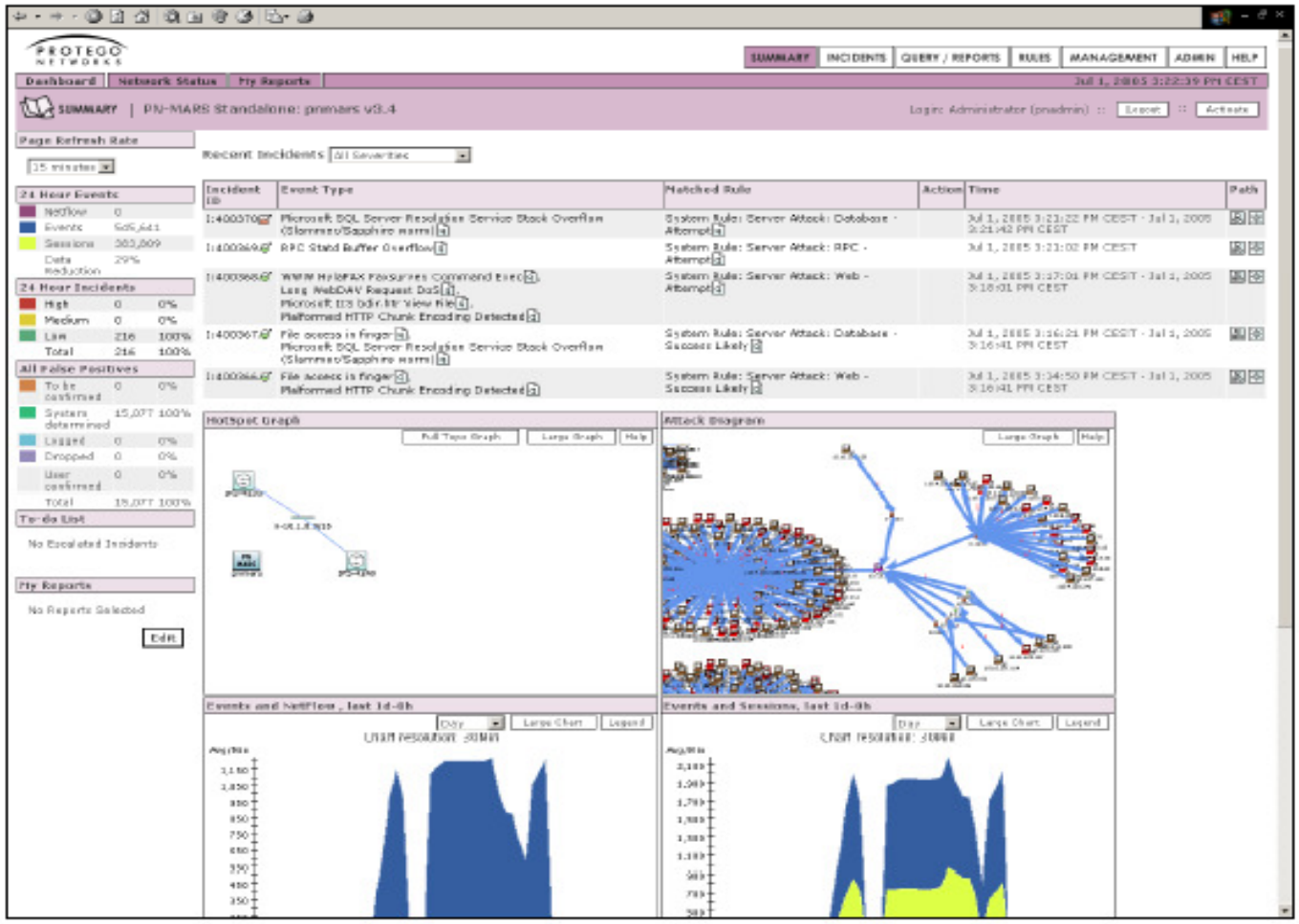
Cisco CS-MARS

With a single decision, users can classify false positives and quickly reduce the number of incidents reported as they use the MARS appliance



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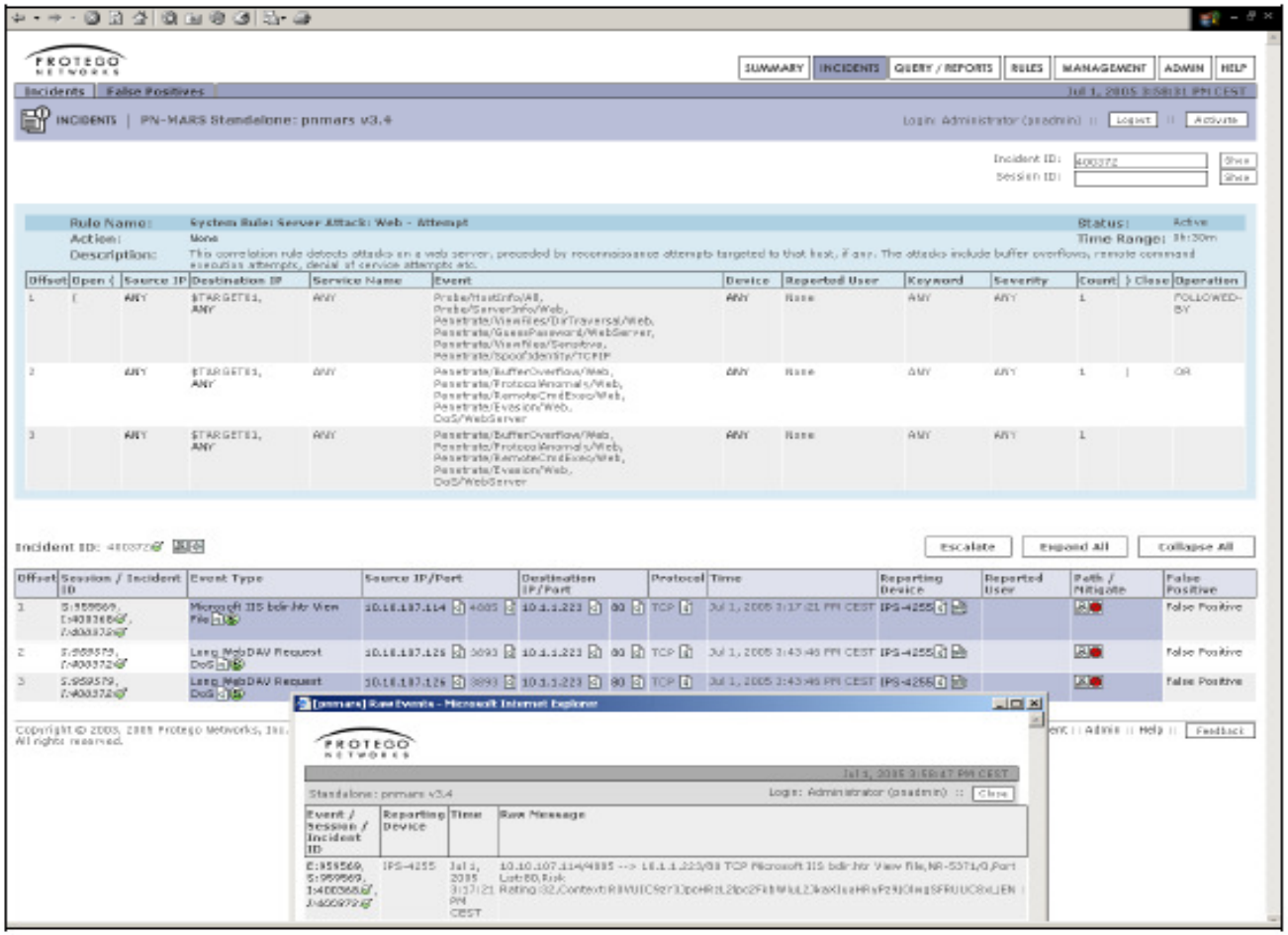
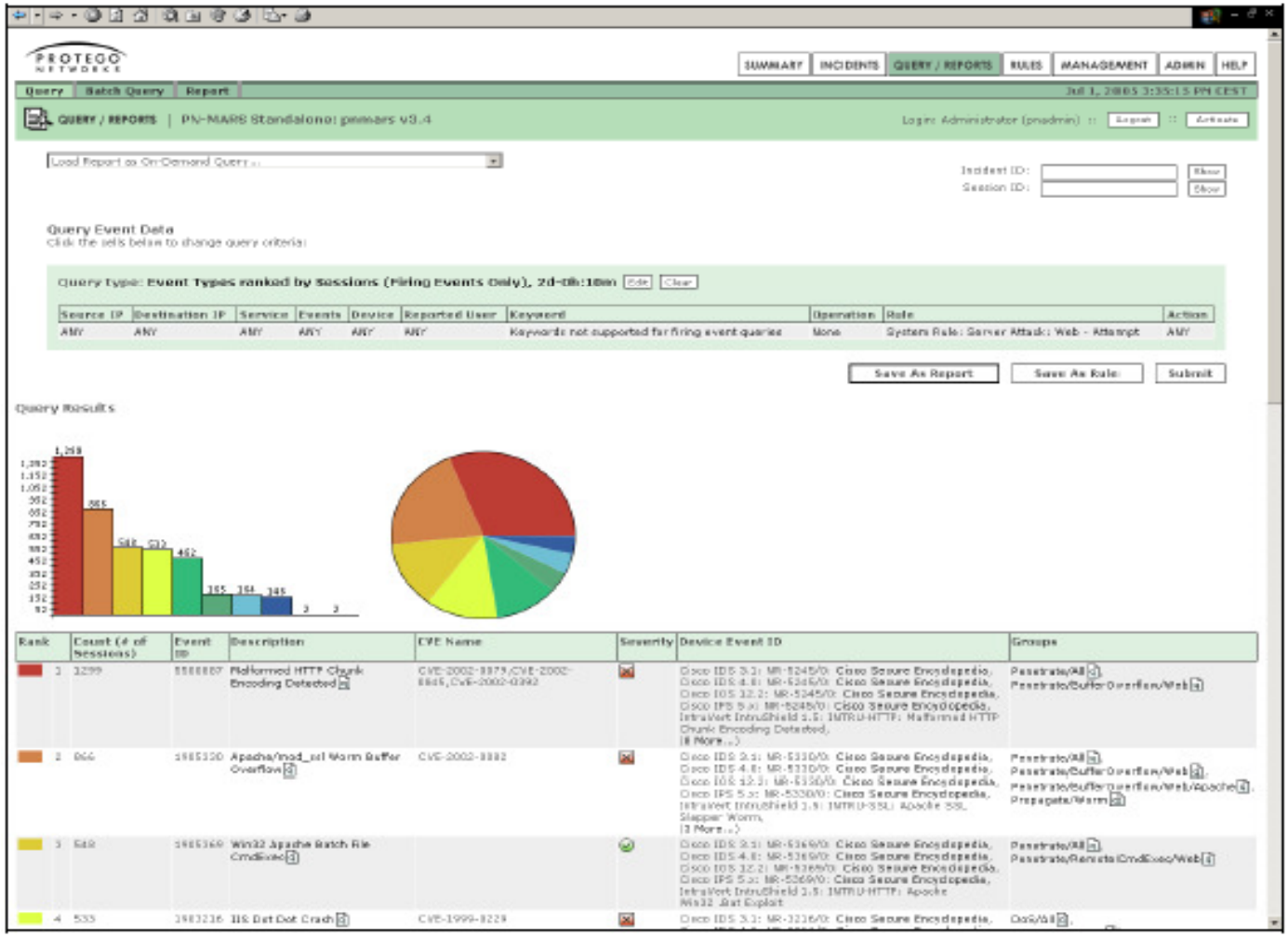
Cisco CS-MARS

Incidents are displayed in real-time in the *Incidents* display, with each entry in the display containing the incident name, the rule matched, the action taken, and the date and time



Cisco CS-MARS

designed to satisfy operational requirements and assist in regulatory compliance efforts including Sarbox, GLBA, HIPPA, FISMA, and Basel II.



ADVANCED SAN
- MIMIC THE LAN?

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Modern Data Center

Enterprise Data Center Demands

- High Performance, System Scalability, High level of redundancy and data protection
- Realization of *disaster recovery* solutions and data replication in a "cost-effective" way
- Storage Area Network readiness for virtualization

Cisco technologies as a part of a solution

- VSAN
- FCIP
- Cisco Storage Service Module (SSM) for virtualization
- Storage Vendor Independence
- SANTap and splitter function

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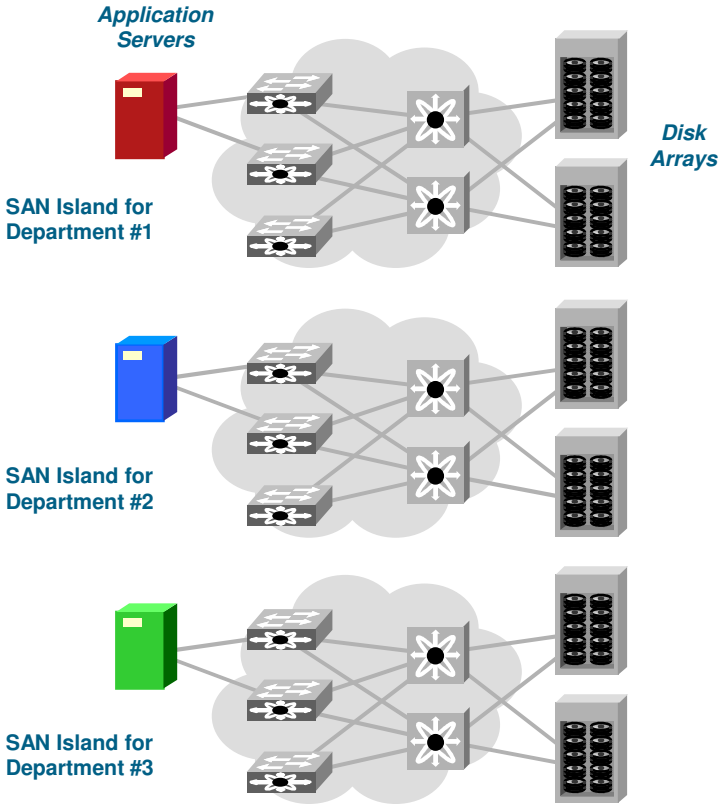
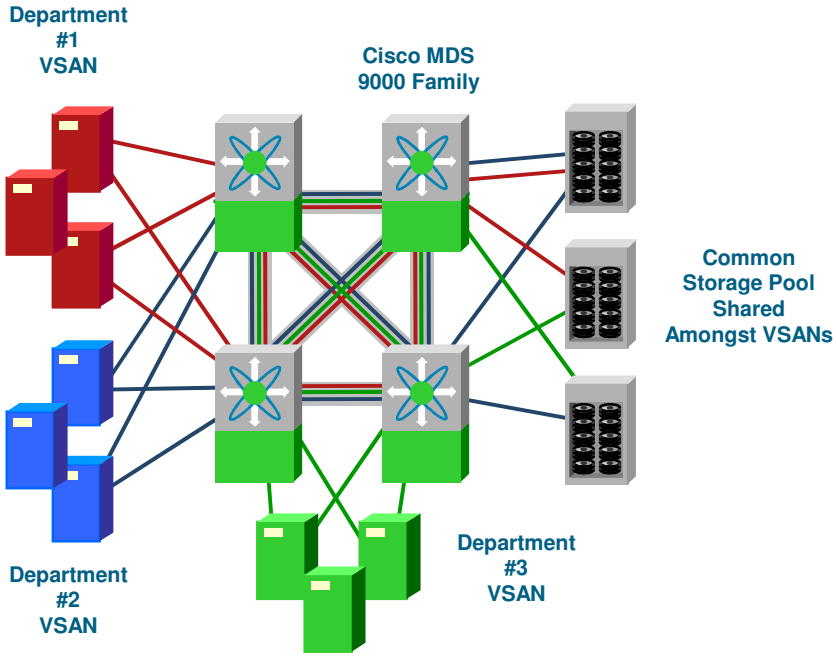
VSANs: SAN Networking Innovation

Application/Department -based SAN Island



- Separate physical fabrics
- Over-provisioning ports on each island
- High number of switches to manage



Collapsed Fabric with VSANs

- Common redundant physical infrastructure
- Less over-provisioning required – lower $$
- Fewer switches to manage
- Move unused ports non-disruptively
- Analogous to Ethernet VLANs

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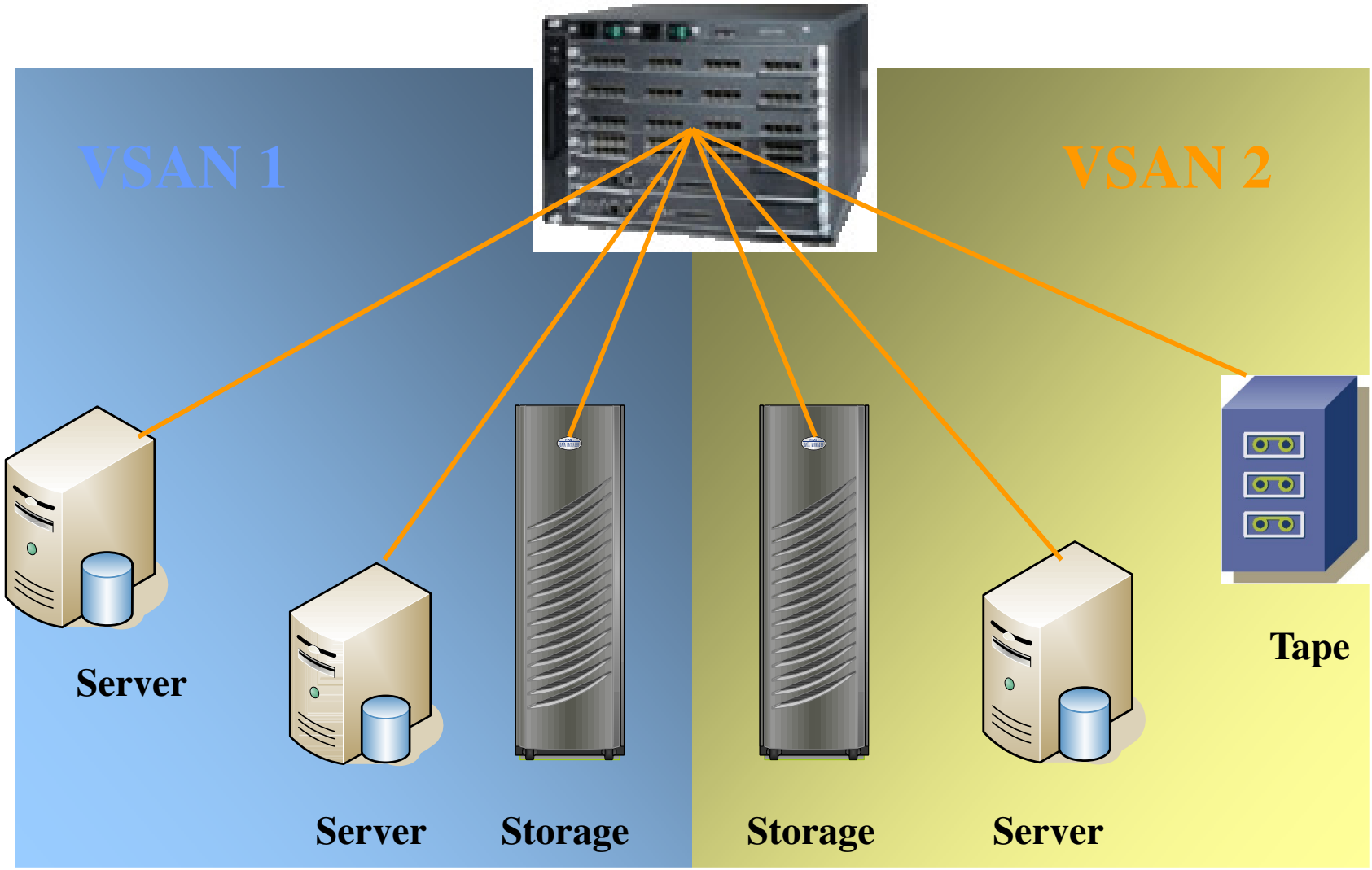
VSAN Topology



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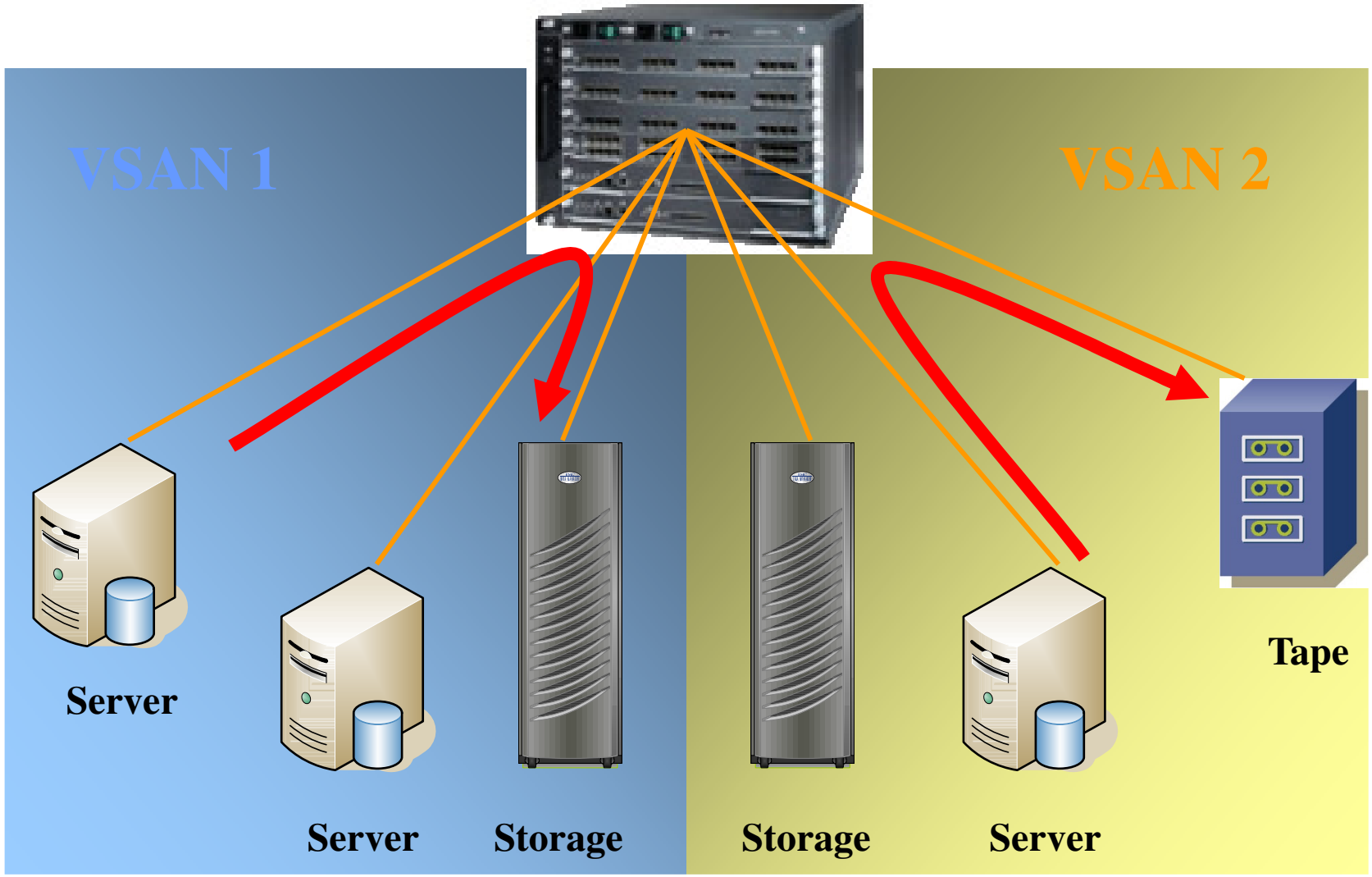
VSAN Topology (2)



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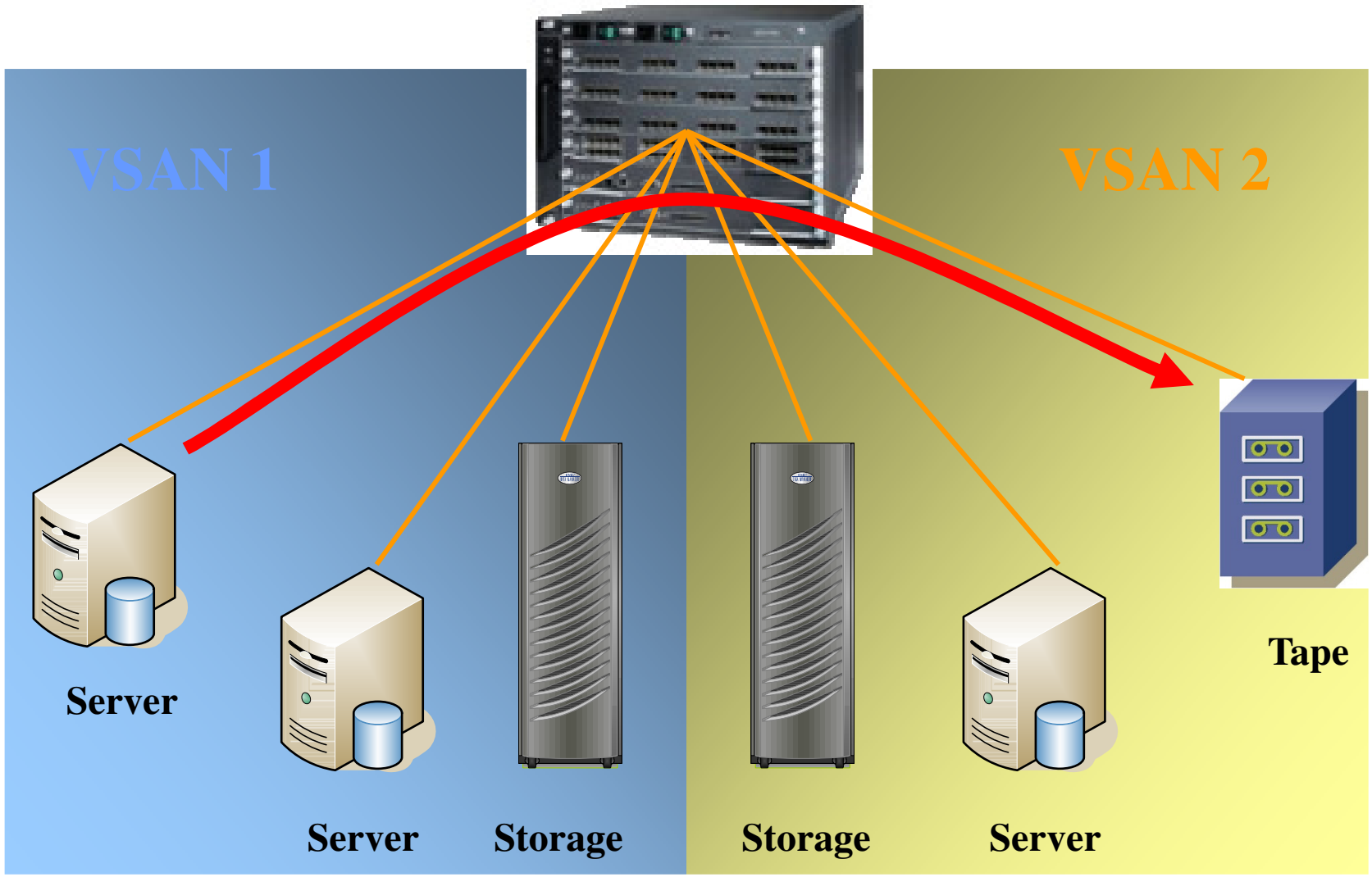
Inter-VSAN Routing (IVR)



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VSAN – Virtual Storage Area Network

VSAN functionality enables implementation of several isolated logical SAN topologies within the single physical SAN topology

Advantages of VSAN technology

VSANs enable SAN fabric isolation in separate islands that prevent error made in one VSAN to propagate into other VSANs (High Availability)

Complete hardware isolation between the VSANs (Security)

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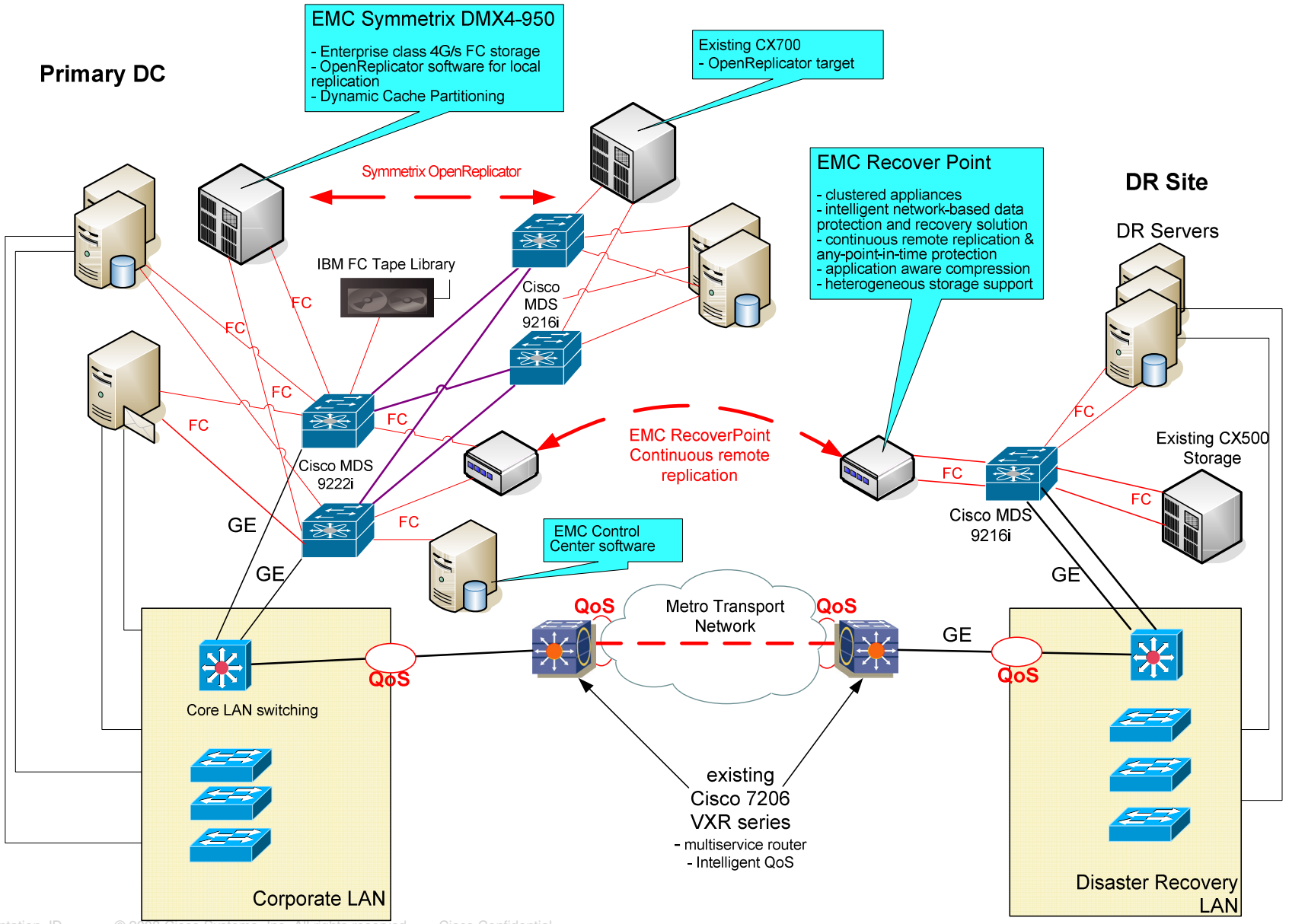
FC data path layout



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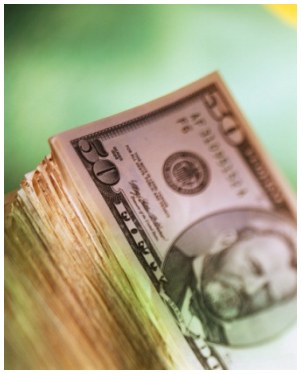

NEXT STEPS: CREATING A COMPETITIVE ADVANTAGE

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Cisco Catalyst 6500
-fill the slots with intelligence-

1. ACE – application level load distribution, SSL offload, firewall
2. IPS – integrated IPS sensor
3. Anomaly Guard and Detector – DDos attack detection and mitigation
4. NAM- Network Analysis Module
5. CMM – DSP farm and voice gateway
6. VPN termination
7. Wireless service module

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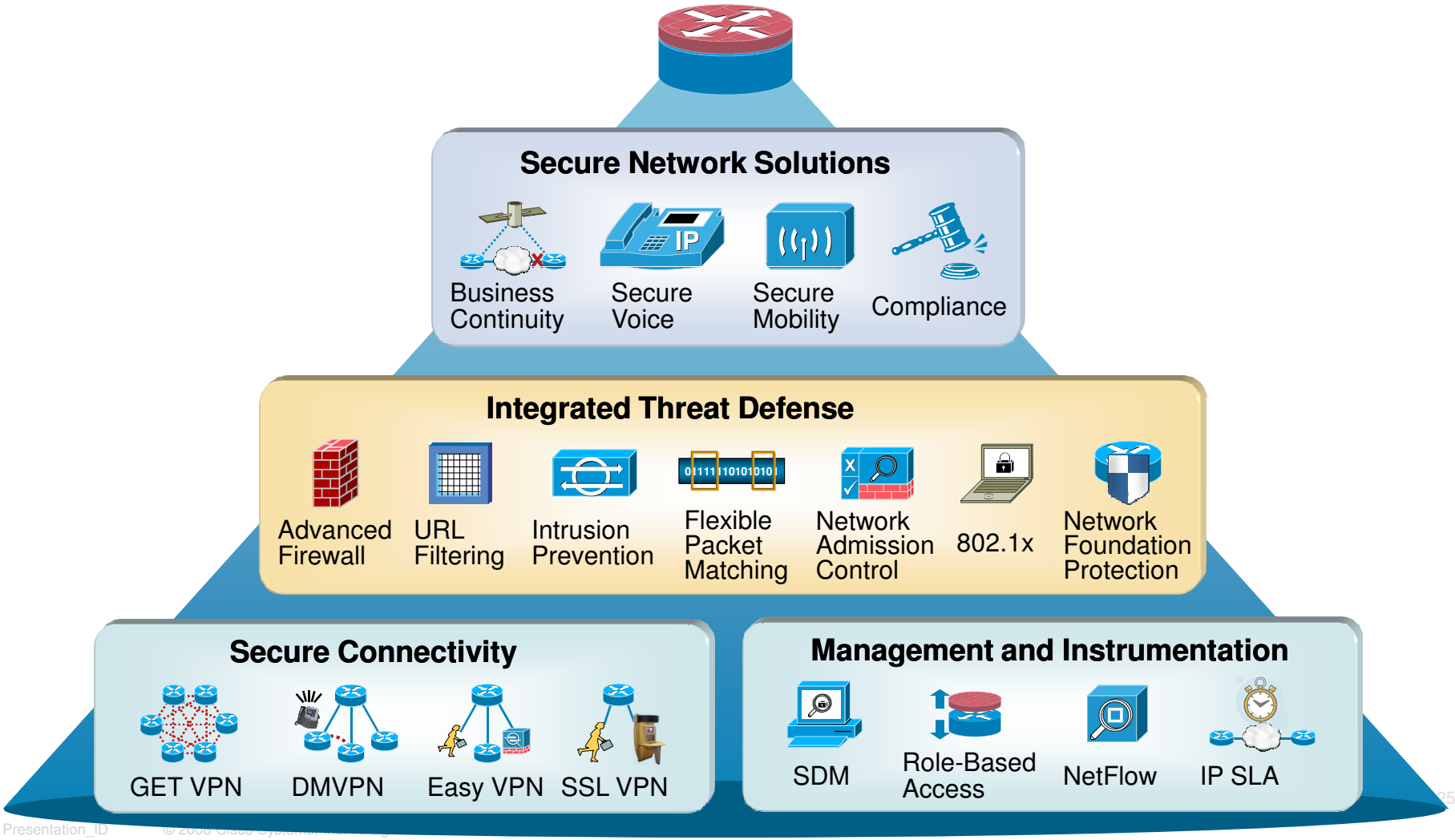
All-in-One Security for the WAN

Only Cisco® Security Routers Deliver All of This



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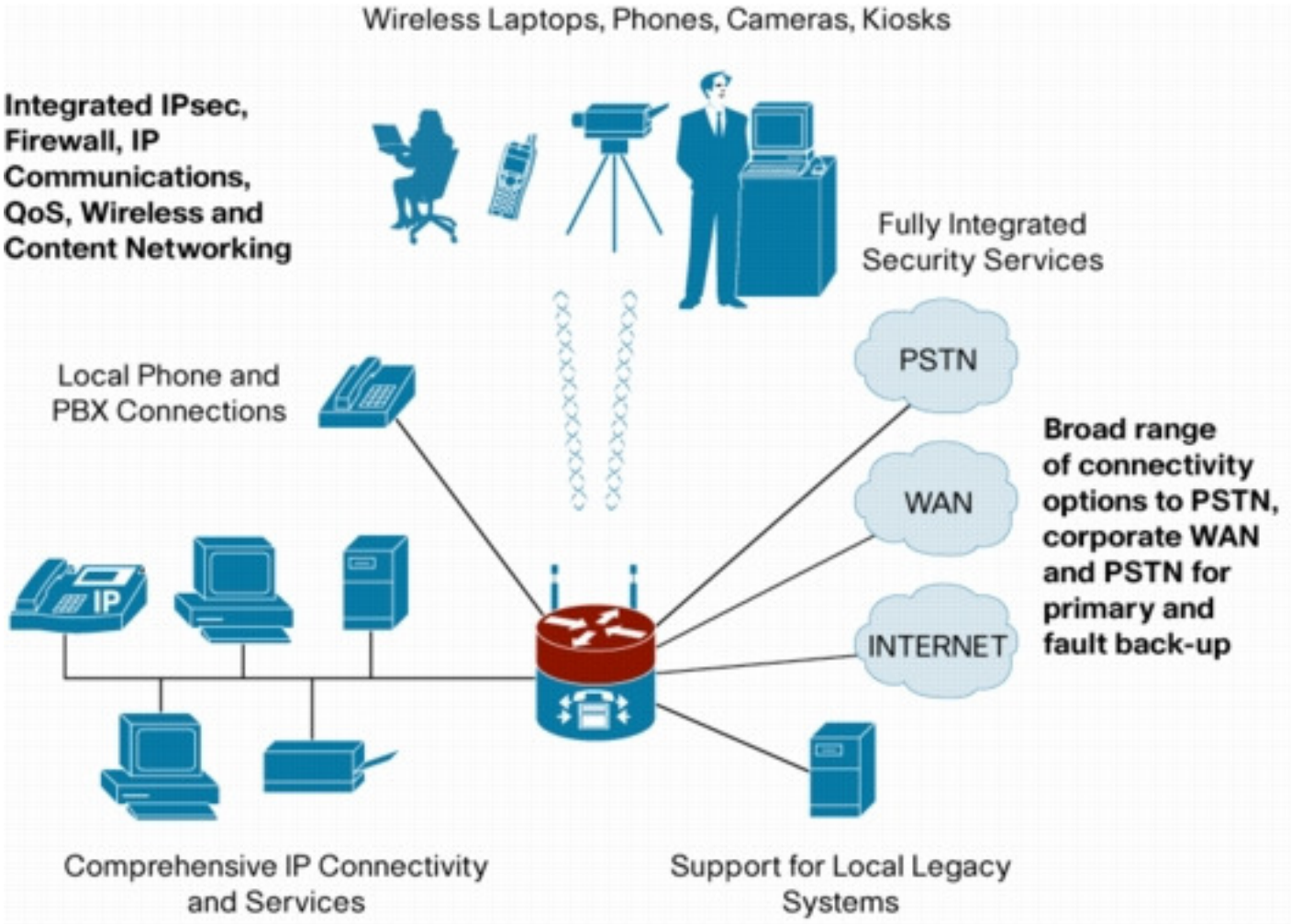
Cisco 2800/3800 multiservice branch office routers



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Cisco's Unified Communications Portfolio

Designed bottom up to leverage IP infrastructures

SMART, SIMPLE, SECURE SOLUTIONS FOR CUSTOMERS OF ALL SIZES

APPLICATIONS

Workplace Resources

Voicemail and UM

Emergency Responder

Customer Contact Solutions

Rich Media Conferencing

ENDPOINTS

Cisco IP Phone

Wireless IP Phones

IP Video Phone

IP Communicator

VT Advantage

CALL CONTROL

Hosted Call Control

Cisco CallManager

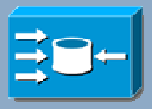
Cisco CallManager Express & Unity Express on Cisco ISR

INFRASTRUCTURE

Routing

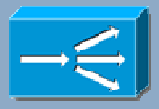
Switching

Availability


Management

QoS

Security


Administration

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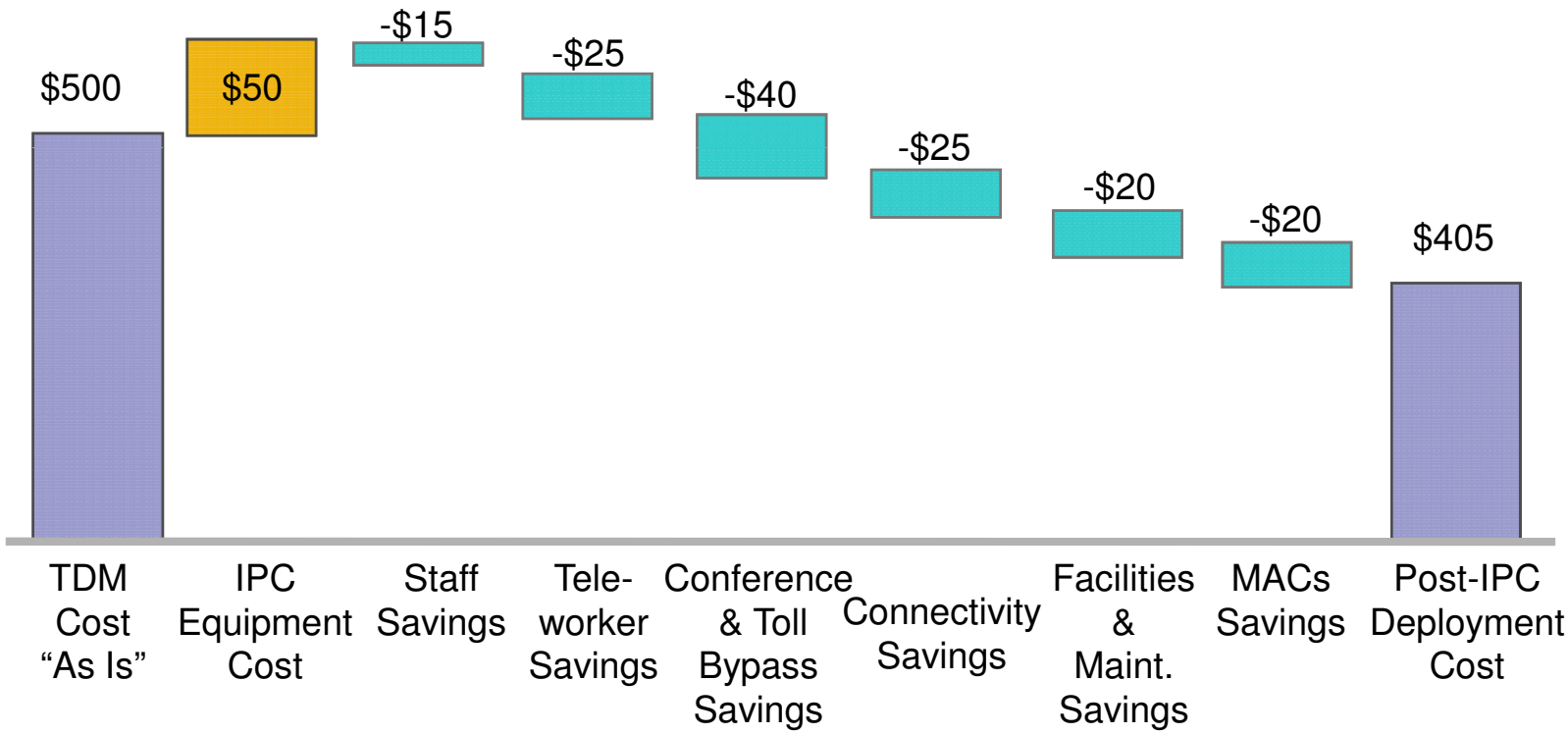
UC can drive 20-30% reduction in Voice Communication TCO

Illustrative Numbers



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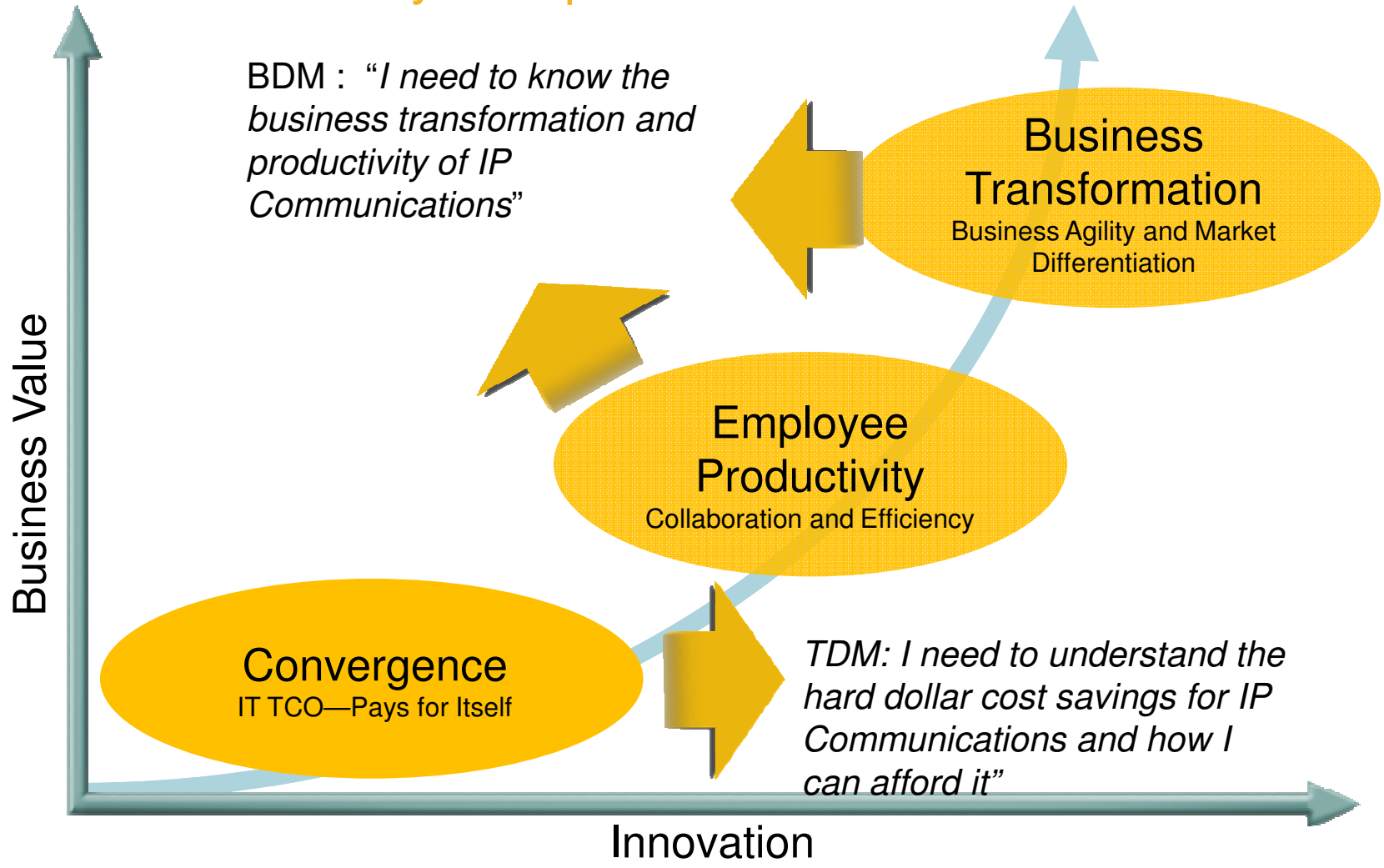
Driving Business Transformation

UC—Three Key Components



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Example: Productivity and business transformation opportunities by role using UC

Relationship Agent

Role: Deepen relationship with customers on service and cross-sell
Issue: Time spent on low value added tasks instead of sales efforts
Impact: Free up 30-45 minutes per week per agent

From	To	Solution
		Rich Media Conferencing Built in Outlook

Customer Service/Support Agent

Role: Resolve transactional issues that customer face
Issue: Too long cycle to respond to some customer issues
Impact: Reduce service cycle from 3 days to 25 min

From	To	Solution
		Click-to-Talk and Co-Browsing

Product Prospecting Agent

Role: Drive new product adoption
Issue: Small ticket product are not worth travel time to present to customers
Impact: Double exposure of products and 40% sales increase

From	To	Solution
		Web Enabled Rich Media Collaboration

Back Office Agent

Role: Ensure the proper paperwork is obtained and complete for a loan
Issue: 4-8 iterations between back office, relationship agent and customer
Impact: Reduce documentation lead time by half and improve customer sat

From	To	Solution
		Presence, IM, Video Collaboration

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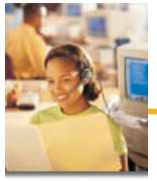
Use Case - Support Rep Resolves Online Transaction Issues via Web Collaboration

As is…

Case Closure time: 3 days to 1 week



Rep gets a blind customer call

Rep asks for user ID and issue

Rep has just a "web mockup"

Rep can't see actual screen or error

Customer has to send screenshot of actual page (fax/e-mail)

Rep. Gets screenshot and understands issue

10-45 minutes

Calls Research group

Opens and populates case

Insert of screenshot on case order

Researcher investigates issue in transaction and web history

User didn't complete final step when scheduling transaction

Rep calls customer

(1-3 days)

Customer gets an answer but doesn't learn to avoid issue

1-3 days to resolve
10-45 minutes of Representative time
Several hours of researcher

…With IP communications

Case Closure time: Same Call

Click to Talk

CTI

System Recognizes user and case is populated with customer info and likely case type

Co-browsing

Rep sees actual screen with issue

Identifies missing step and explains to customer

Customer acknowledges missing step and learns to avoid it

25 minutes to resolve
Resolution in the same call
Reduce future call volume

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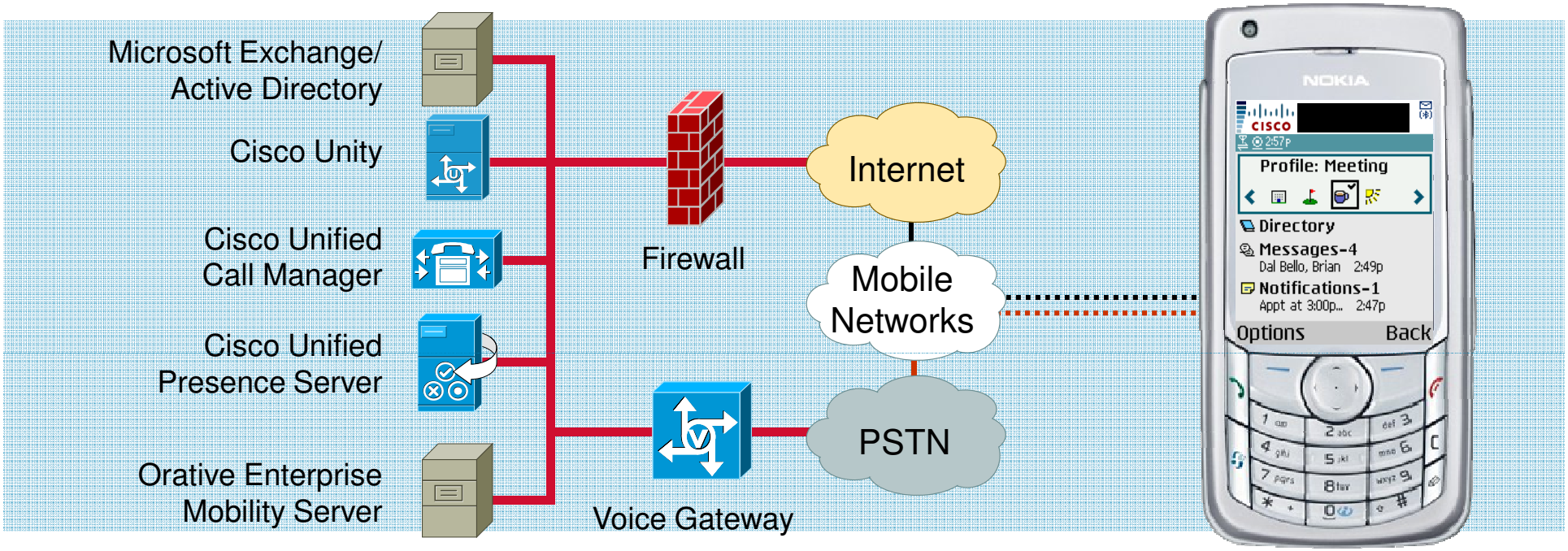
Cisco's Technology Group continues to innovate on it UC Platform – Example Orative acquisition

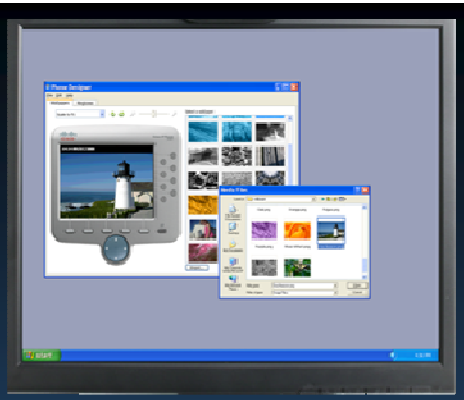


Business Value

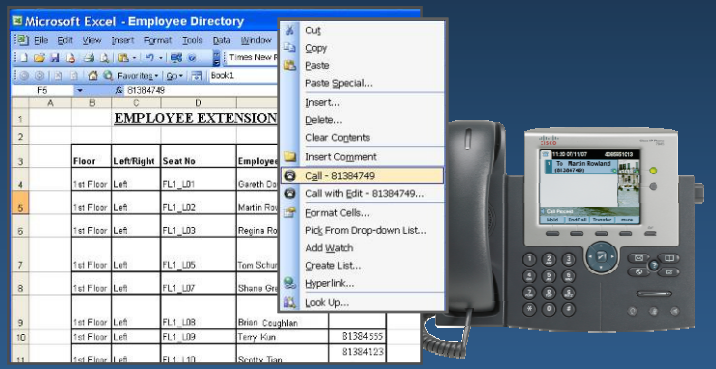
- Better collaboration reduces time & risk exposure
- Leverage existing voice & back office assets
- Increased productivity for mobile workers

Enhance User Experience In Every Workspace with Unified Communications Widgets

Personalize Business Communications with Phone Designer application



Streamline Business Communications with Click-to-Call application



Rich messaging experience on Cisco Unified IP Phone with Visual Voicemail application

Cisco Unified Videoconferencing

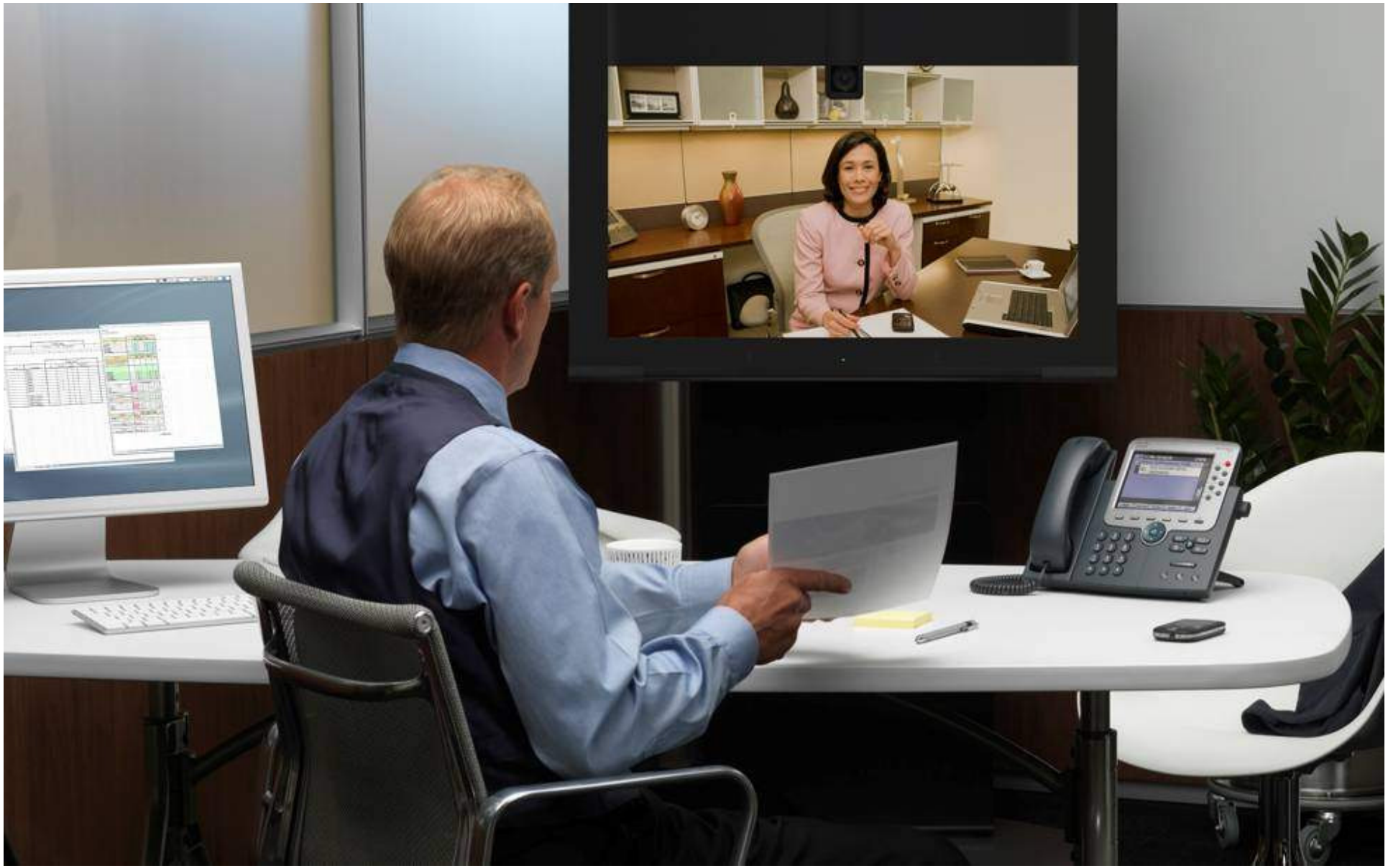
Complete Video Infrastructure for Cisco Unified Communications

1. Enhance collaboration with visual communications
2. Desktop to High Definition to TelePresence
   - Standards-based for broad interoperability
   - Multiparty Video Telephony
   - Video interoperability for Cisco TelePresence
3. Modular, distributed, intelligent solution
4. Unified Videoconferencing
   - Add embedded video to MOC and Sametime – display video from traditional endpoints and TelePresence

Cisco's Technology Group continues to innovate on it's UC Platform – Example Telepresence

Business Value

- Help Cisco cut 1B miles of annual air travel by 20%
- Reduce overall company carbon emissions by 10%
- Better customer service, improved quality of life



The Network is the Platform for Collaboration

WAN OPTIMIZATION

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The WAN is the Barrier to Branch Application Performance

1. Applications are designed to work well on LAN's

   High bandwidth

   Low latency

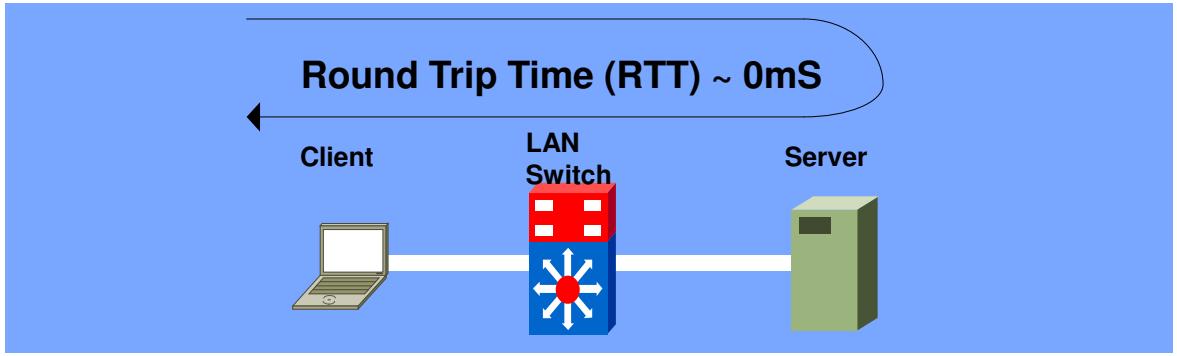
   Reliability

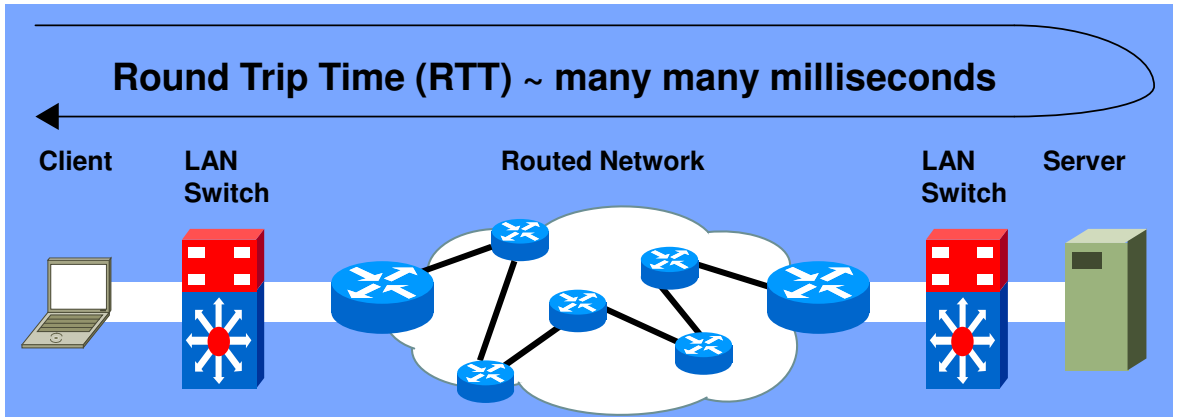
2. WANs have opposite characteristics

   Low bandwidth

   High latency

   Packet Loss





WAN Packet Loss and Latency =
Slow Application Performance =
Keep and manage servers in branch offices ($$$)

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WAAS Addresses WAN Performance Impact

Problem	Solution	Cisco IOS/WAAS Technology
Latency Mitigation	• Reduced roundtrips from chatty application protocols • Faster connection setup	• Intelligent Protocol Proxies • Transport Flow Optimizations (TFO)
Bandwidth Management	• Offload the WAN by preventing requests from going to the WAN • Improve application response time on congested links by reducing the amount of data sent across the WAN	• Caching • Data Redundancy Elimination (DRE) • Persistent Session-Based Compression • Content Distribution & Pre-positioning
Link Throughput Improvement	• Improve network throughput by reducing TCP-related errors	• Transport Flow Optimizations (TFO)
Traffic Prioritization	• Prioritize selected jitter-sensitive traffic (e.g. VoIP, Video) over the packet network	• Cisco IOS • QoS, NBAR, NetFlow
Local Services	• Replacement for services that branch office servers provide	• Centrally managed remote services interface • Local print services

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Windows server on WAAS

Local Branch IT Services

- Windows Server services
  - Microsoft Print Services
  - Microsoft Active Directory
  - DNS/DHCP
- No additional server needed
- Software-based deployment

Application Acceleration

- File Transfer (CIFS)
- Enterprise HTTP(S) apps
- Exchange 2000/2003/2007
- Microsoft SharePoint
- Thin client (RDP)
- SSL traffic
- Backup traffic
- Software Distribution
- Video Optimizations

Scalable DC IT Infrastructure

- Centralized IT infrastructure
- Centralized management
  - Microsoft SCCM
  - WAAS CM
- Cisco WAAS offloads servers for
  - Software Distribution
  - Video (Live and Recorded)
  - Storage

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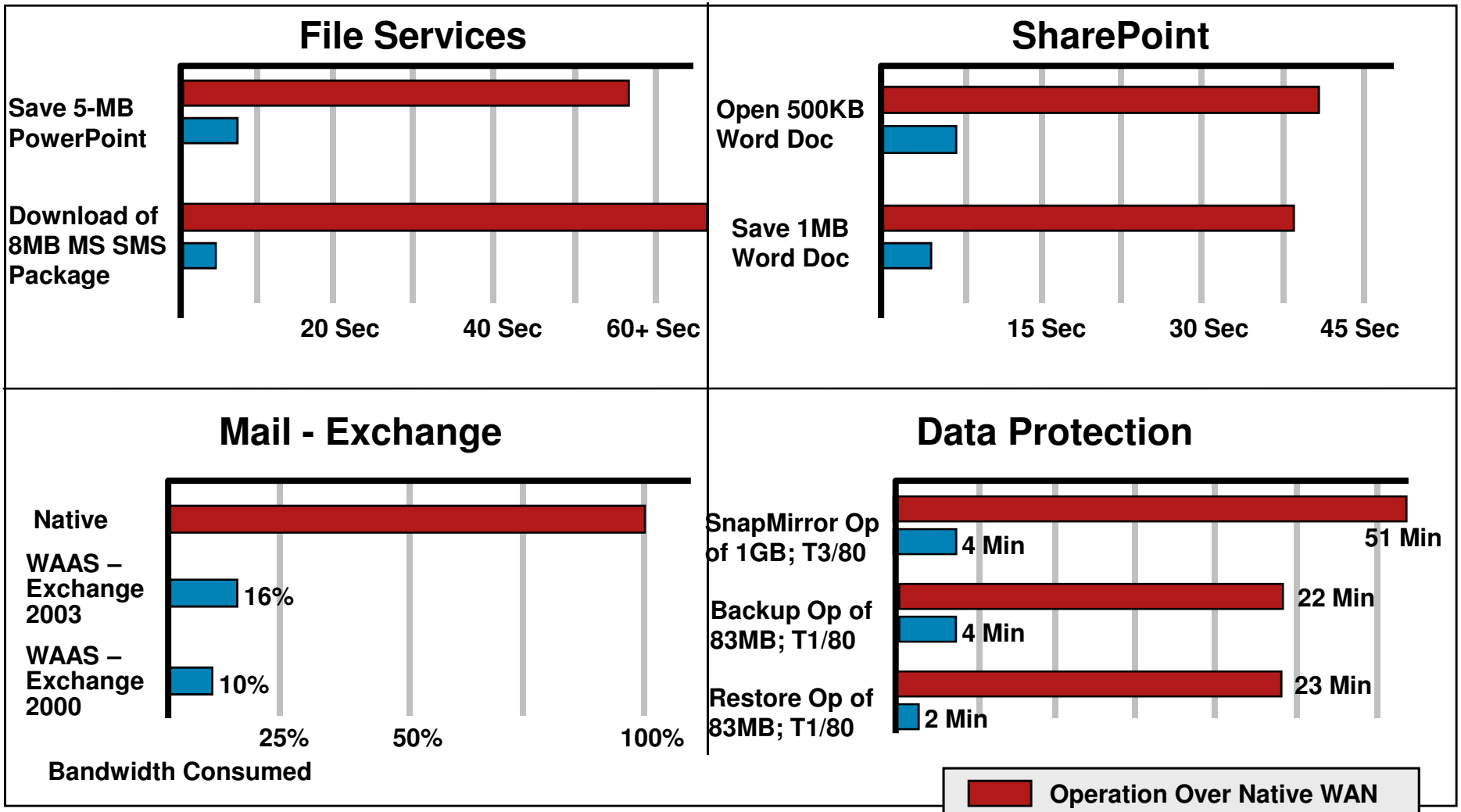
LAN-Like Access to Various Applications



[Network Link—T1, 80ms Latency]

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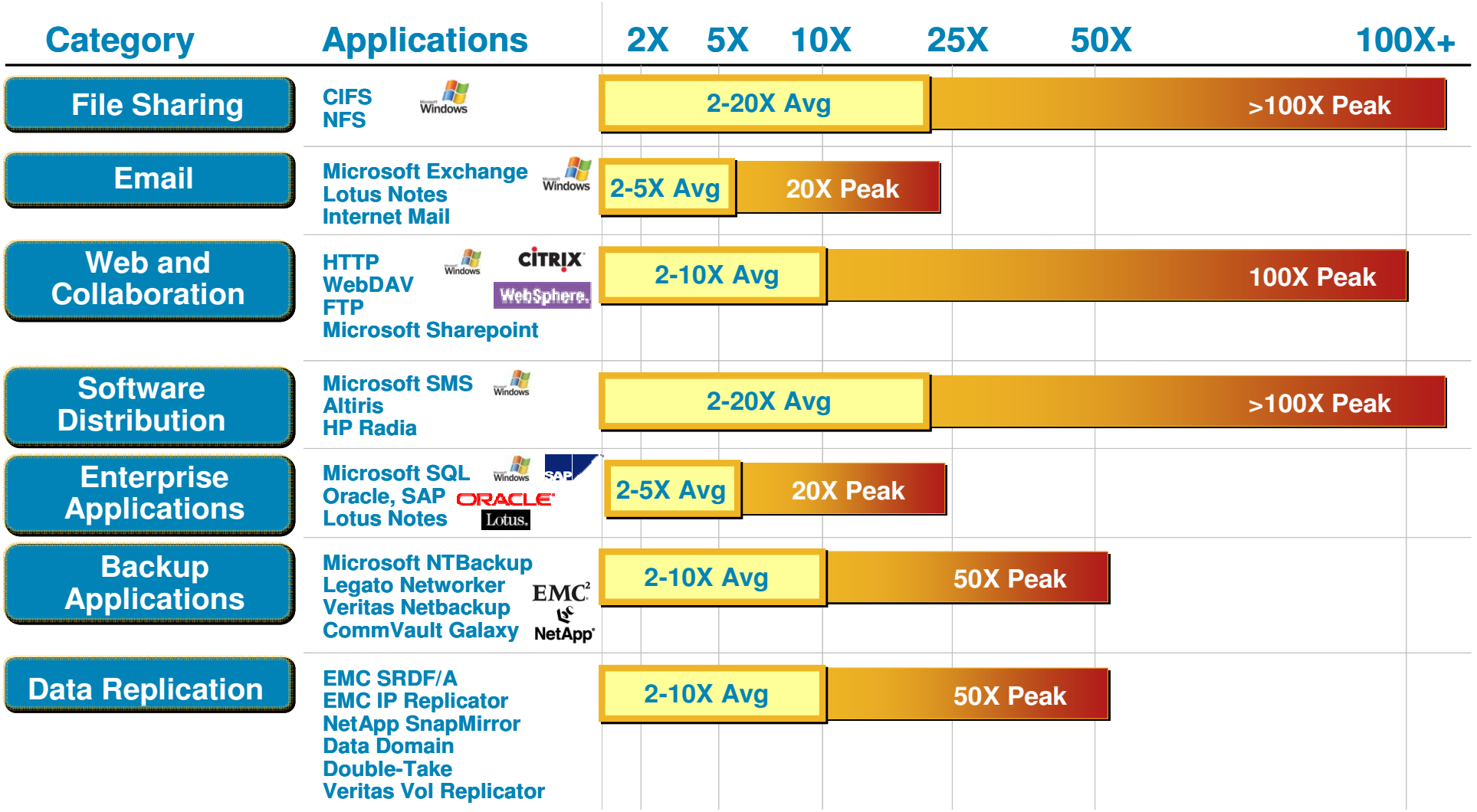
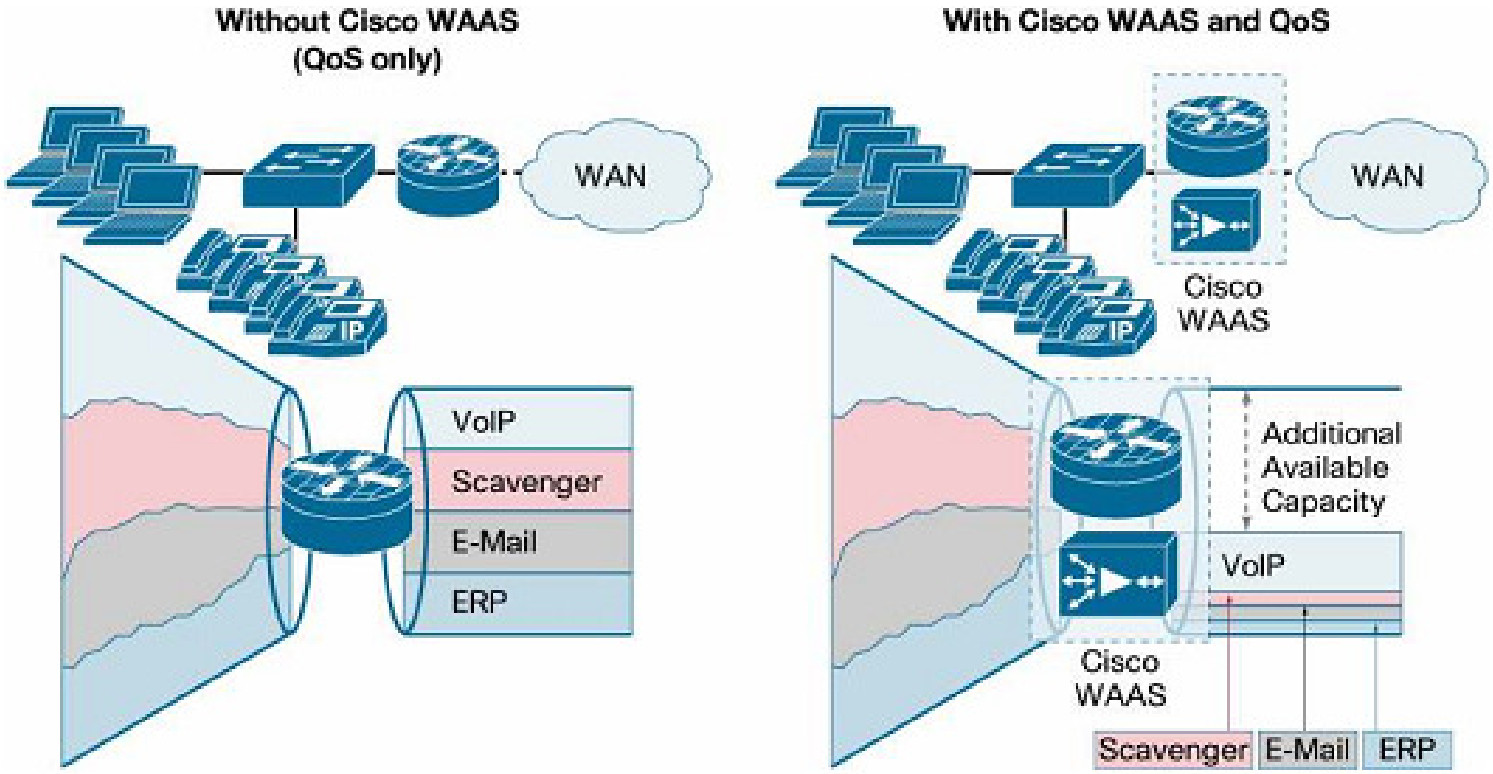
Application Acceleration



It’s a bandwidth game!



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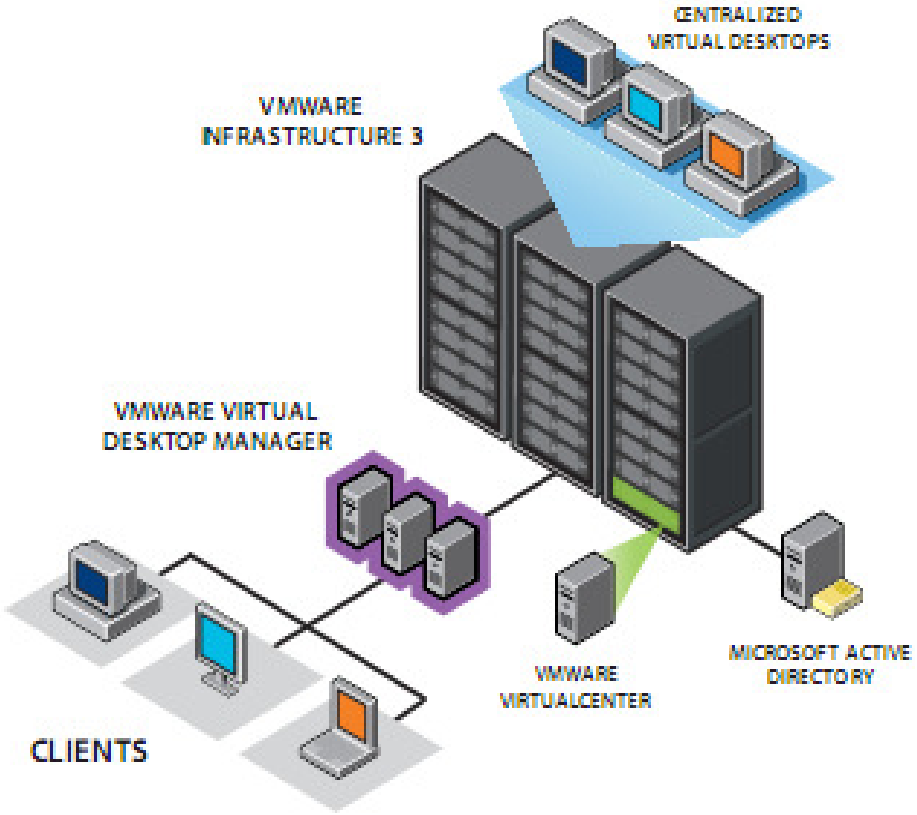
Network aware virtualization VMware VDI

1. Central administration of desktops from any location
2. Scalable management
3. Streamlined provisioning
4. Desktop isolation
5. Failure redundancy
6. Access to local devices
7. Consolidated backup
8. Dynamic load balancing
9. Reduce the total cost of ownership (TCO) for your desktop infrastructure
10. Ideal for delivering cost-effective desktop services to fixed-function workers at branch offices, call centers and other locations



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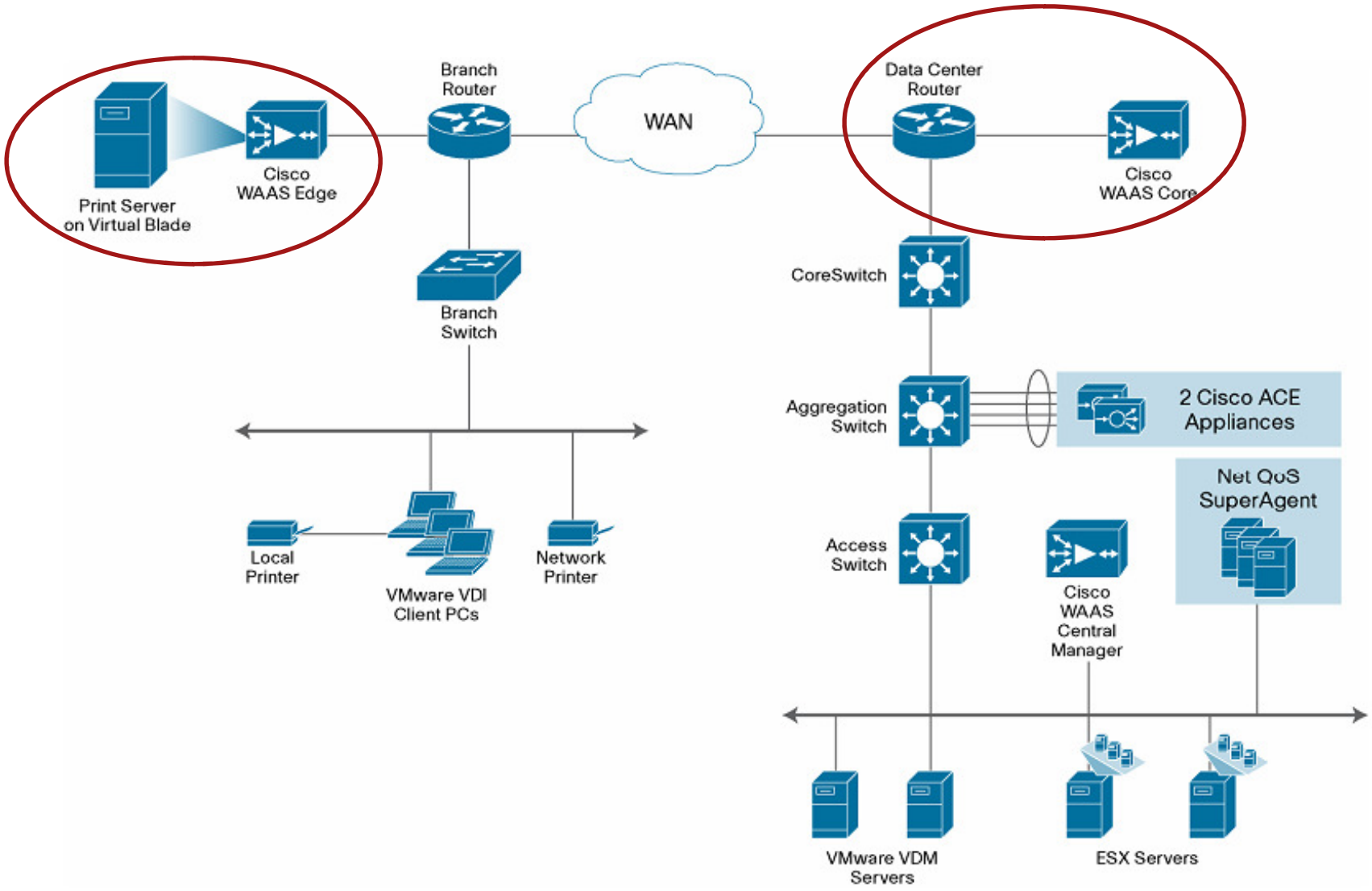
What Cisco has to do with it?



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Cisco WAAS contribution

1. WAN optimization
   - Transport Flow Optimization (TFO)
     - Selective acknowledgement (SACK) and extensions
     - Large initial windows
     - Virtual window scaling of TCP windows
     - Advanced congestion avoidance
2. Traffic compression
   - Data Redundancy Elimination (DRE)
   - Persistent Lempel-Ziv (LZ) compression
3. Object caching
4. Print optimization

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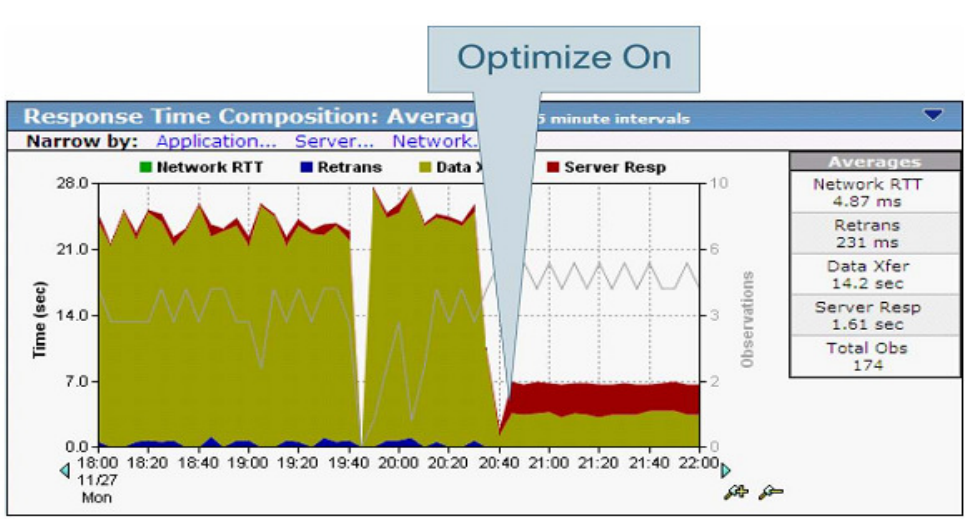
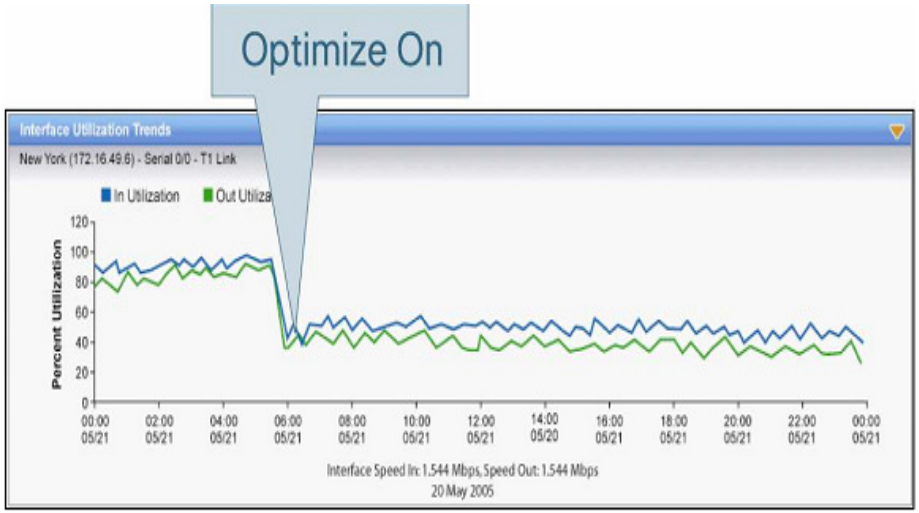
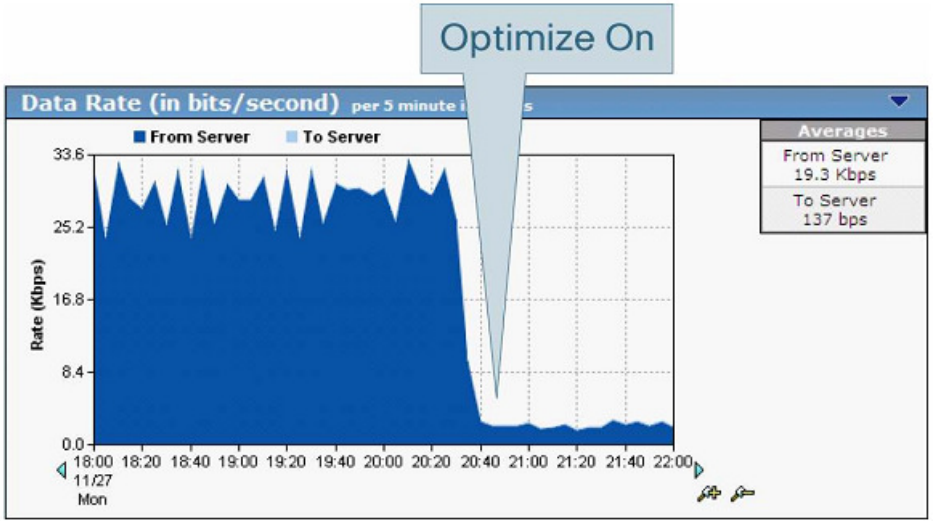
Application response time, data rate and link utilization







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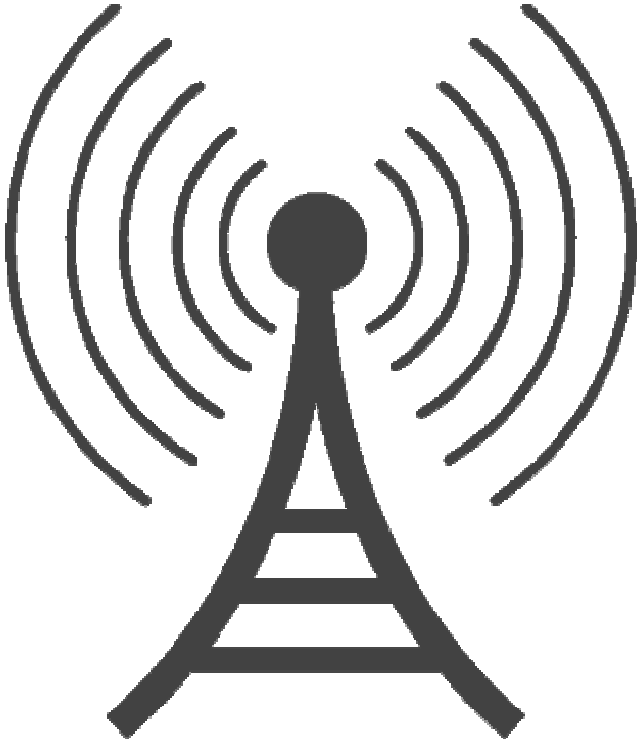
The Enterprise Hotspot, Guest Access

Enterprises are the most important hotspot destination for business partners in a connected world.

1. Provide network access to visitors
2. Presents a professional and secure access to employees and visitors
3. Enable improved productivity from vendors and contractors
4. Strengthen collaboration between employees and partners



Provide Guest Access in a seamless, secure manner
Minimize the Internal IT involvement!

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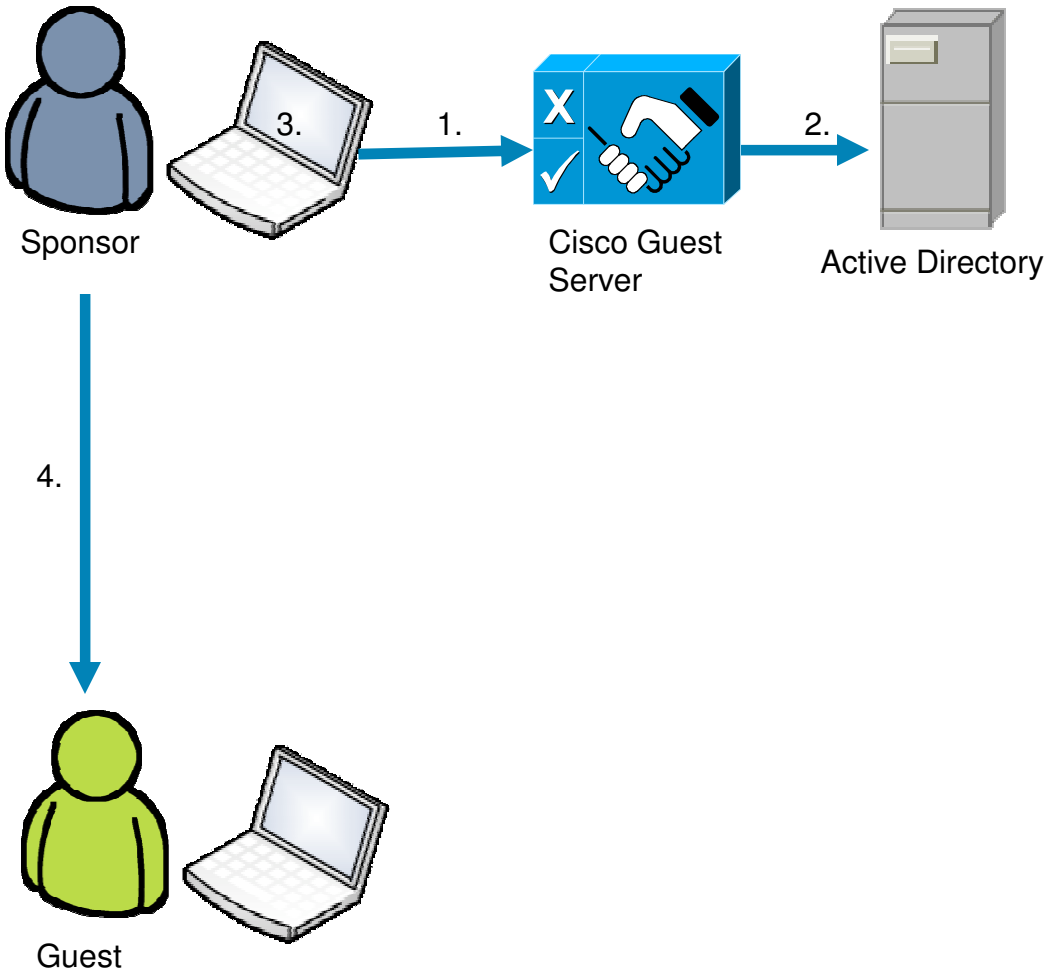
Guest Access Walkthrough - Sponsor



1. Sponsor accesses Cisco Guest Server, such as http://guests.yourcompany.com
2. Sponsor authenticates using corporate credentials
3. Sponsor Creates Account on the Cisco Guest Server
4. Sponsor gives guest account details (email/print/sms)

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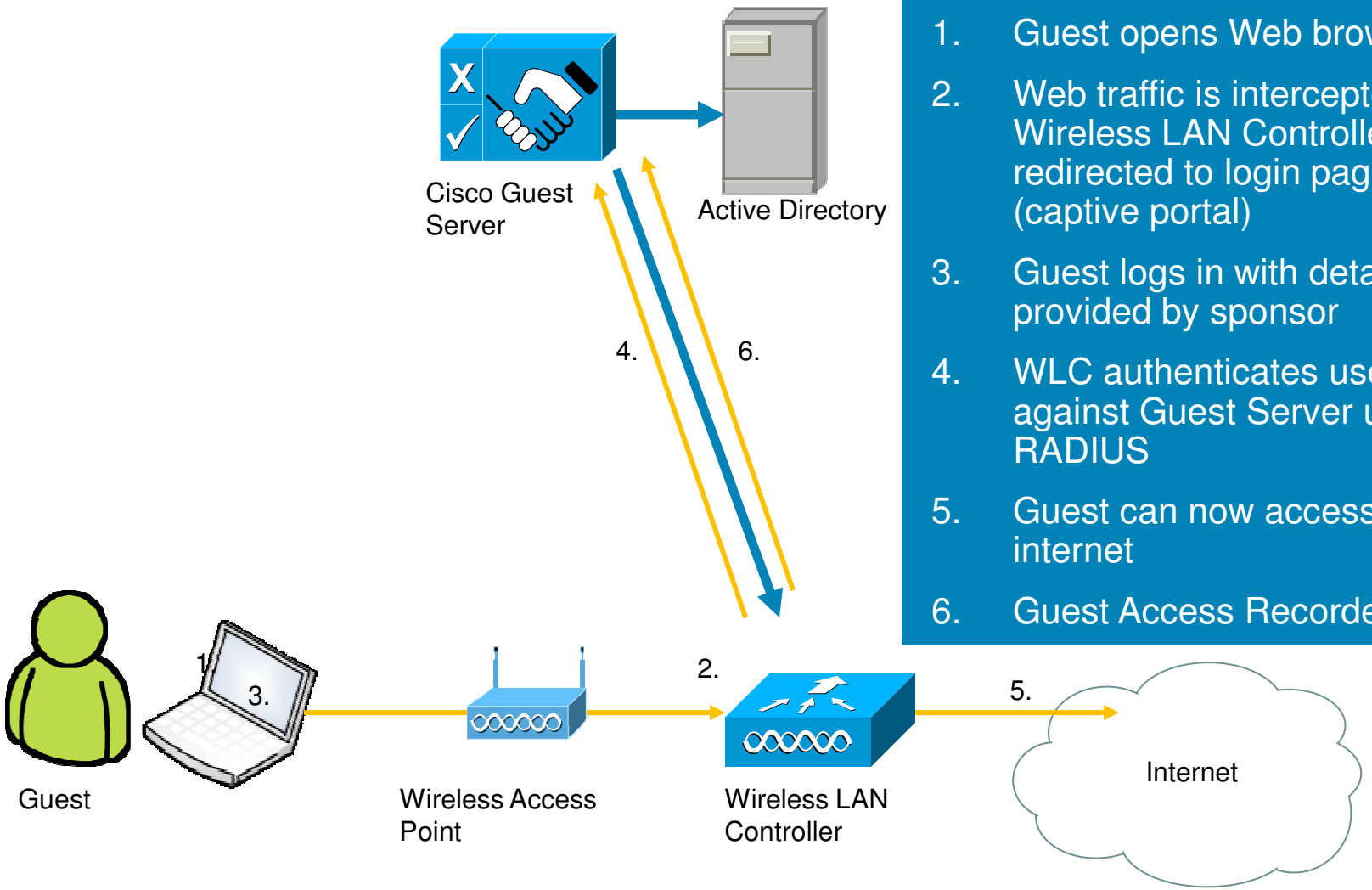
Guest Access Walkthrough - Guest



1. Guest opens Web browser
2. Web traffic is intercepted by Wireless LAN Controller and redirected to login page (captive portal)
3. Guest logs in with details provided by sponsor
4. WLC authenticates user against Guest Server using RADIUS
5. Guest can now access the internet
6. Guest Access Recorded

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CISCO

Desktop security integration

1. CSA
2. The integration of ClamAV into Cisco Security Agent provides an ideal complement
3. of security capabilities to provide a complete endpoint security solution:
4. Identification and protection from known and day-zero threats
5. On-demand scanning
6. Identification of rootkits
7. Malware quarantining and deletion
8. Centralized management, reporting, and policy controls

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Agents report to a central management server, the Management Center for Cisco Security Agents. The Management Center provides the administrative interface, allowing security configuration changes, event analysis, granular policy creation, and report generation

As a core component of the Cisco Self-Defending Network, Cisco Security Agent also links endpoint security to network security:
Intrusion prevention system (IPS) and firewall collaboration enhances detection and containment of threats.
Endpoint enforcement for Network Admission Control enhances security assurance.
Per-application quality-of-service bandwidth prioritization increases availability of point-of-sale applications.

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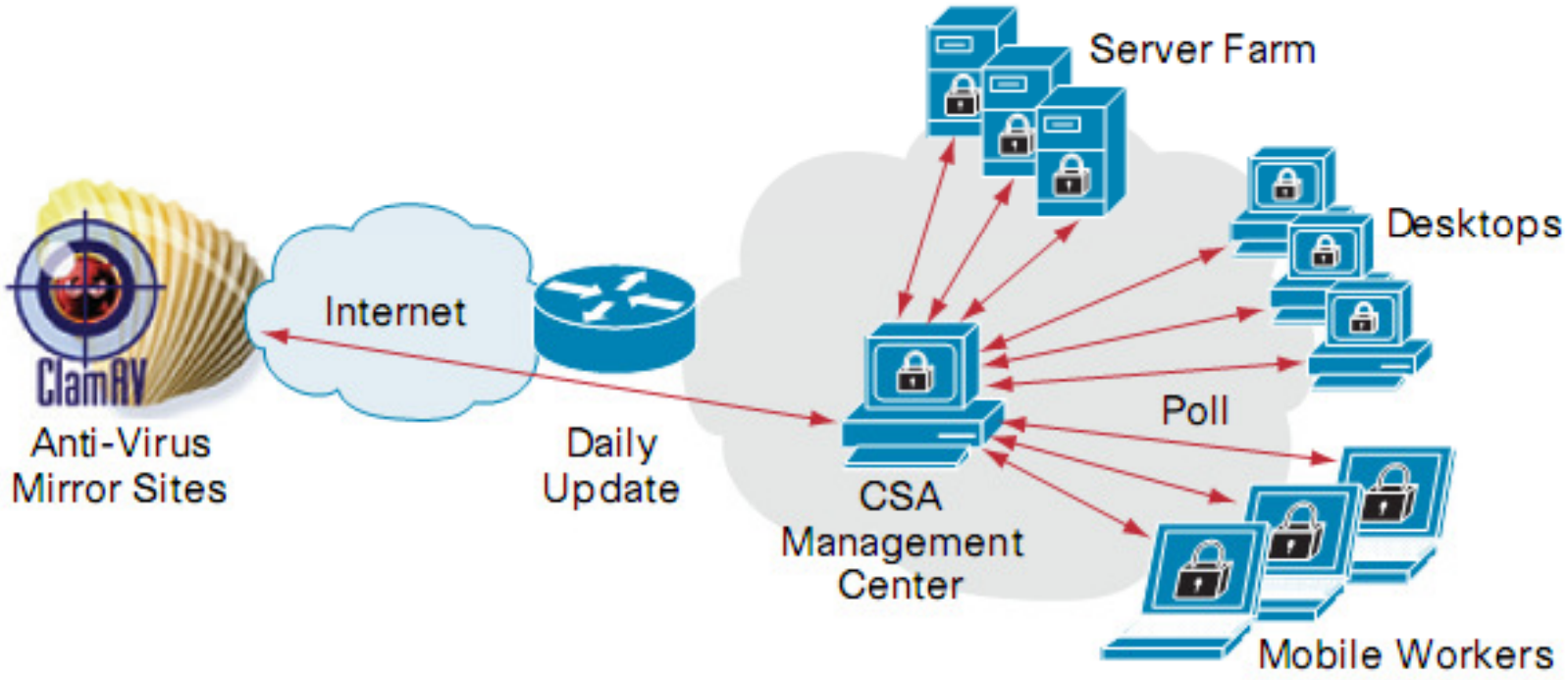

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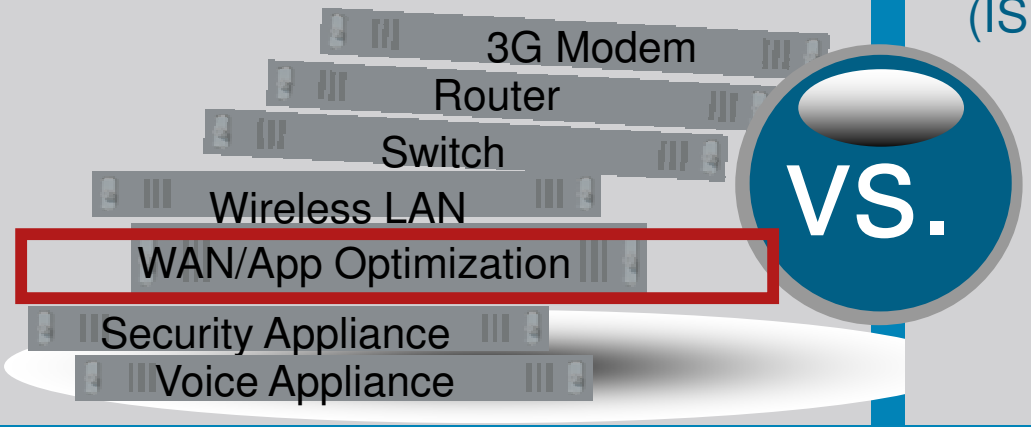
Branch IT Consolidation Technologies

Overlay Appliances



Integrated Services Router (ISR)

Cisco ISR 3845

With Voice, Wireless, Video, WAN Optimization, Switch

Network Modules for the ISR

- Running full version WAAS
- Dedicated hardware

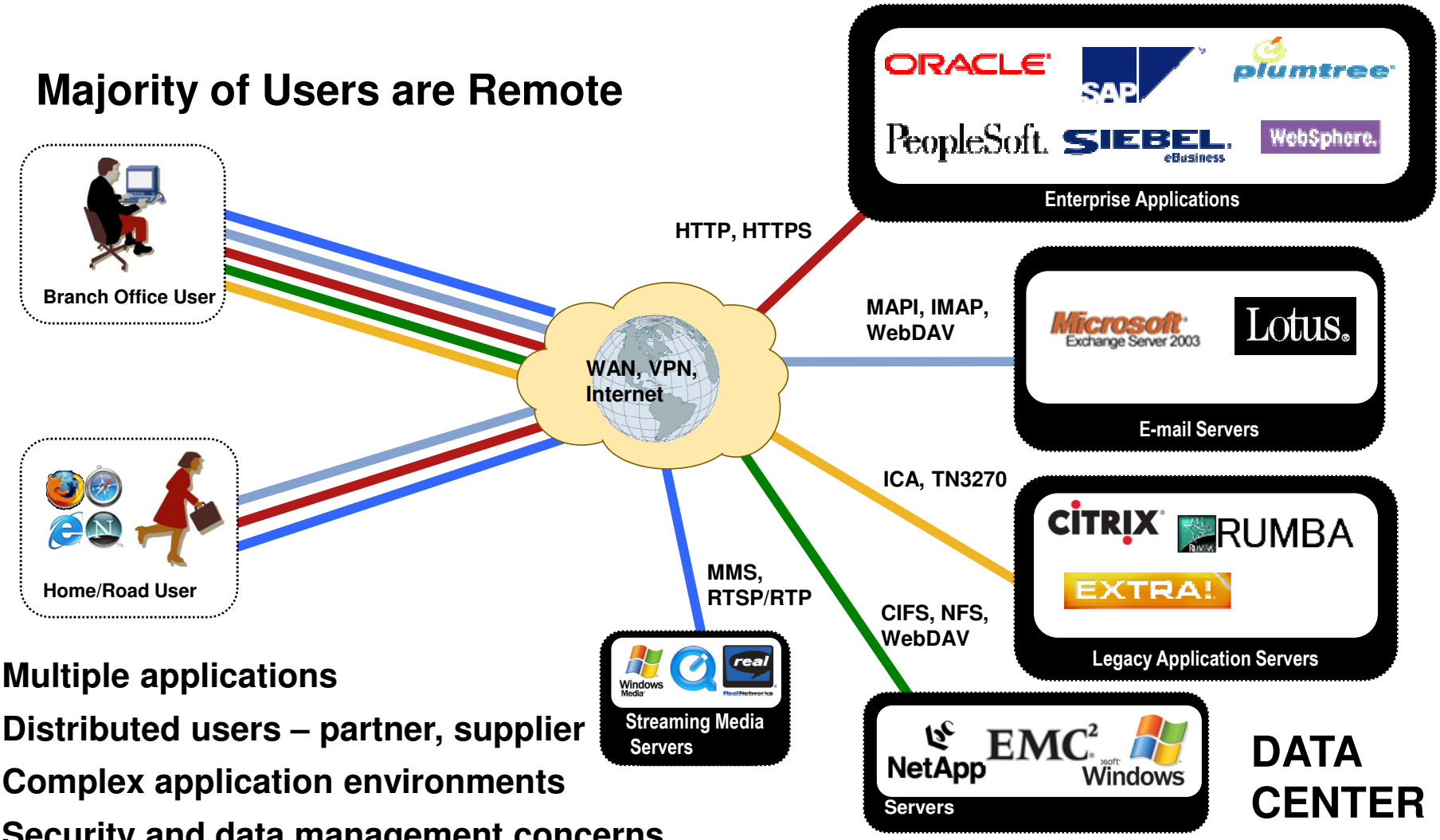
Integrated QoS and WAN Optimization

- Bandwidth prioritization
- Unified QoS

Integrated Performance Routing

- Best routes for specific applications
- Higher security
- Lower latency

Typical Application Environment Today



- Multiple applications
- Distributed users – partner, supplier
- Complex application environments
- Security and data management concerns

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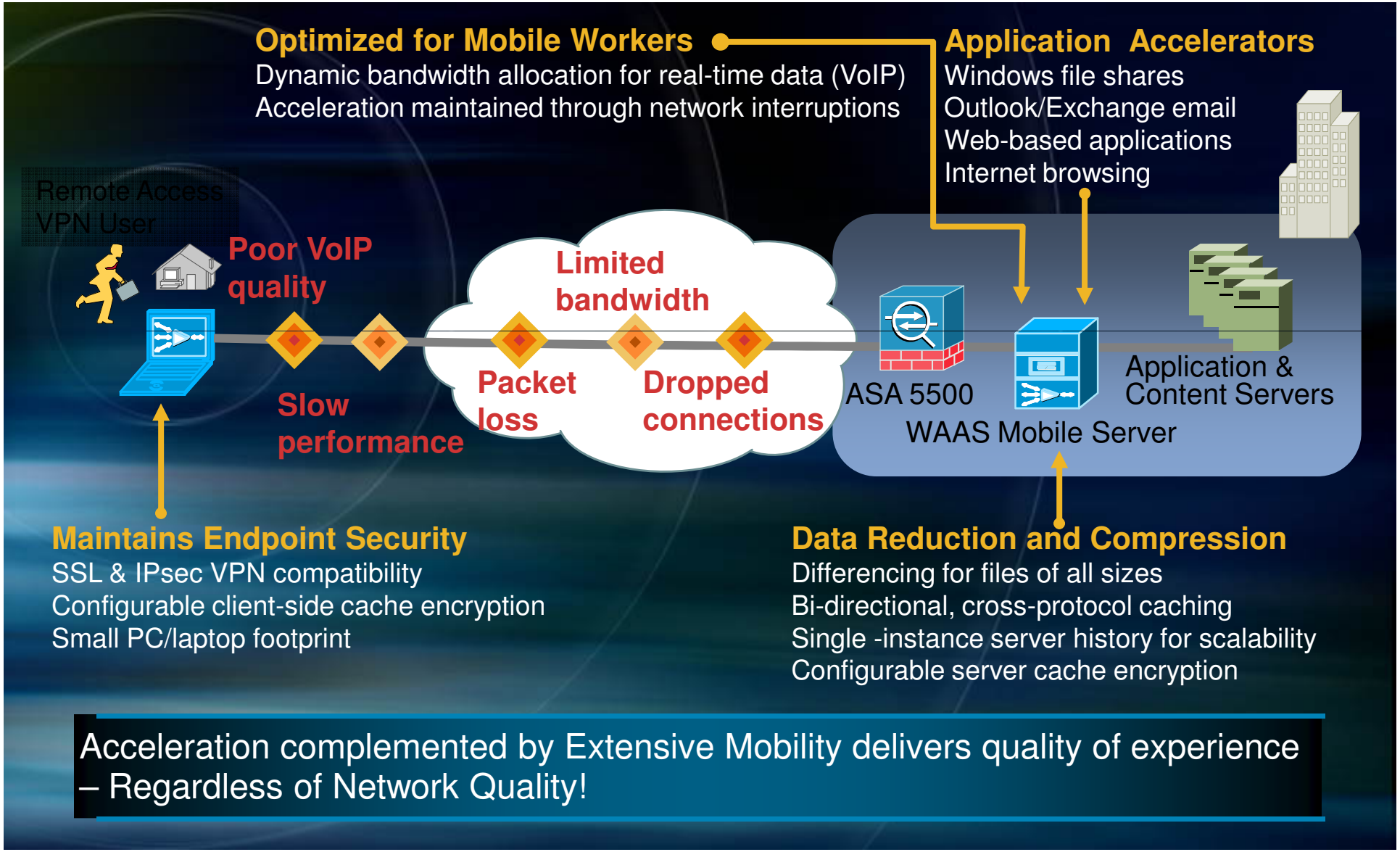
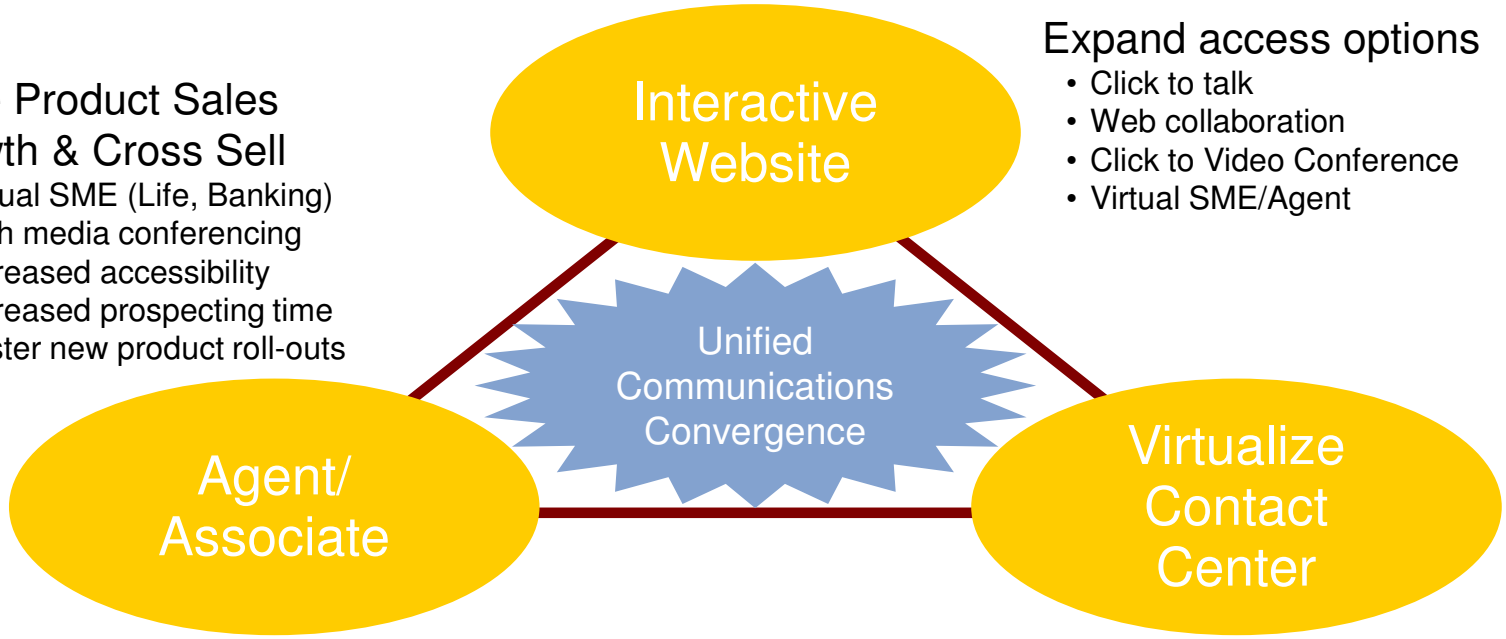
Accelerated VPN Services

Overcoming Mobile and Home Network Challenges



Acceleration complemented by Extensive Mobility delivers quality of experience – Regardless of Network Quality!

Example UC Capabilities That Could Be Applied to Deliver On Business Objectives



Drive Product Sales Growth & Cross Sell

- Virtual SME (Life, Banking)
- Rich media conferencing
- Increased accessibility
- Increased prospecting time
- Faster new product roll-outs

Expand access options

- Click to talk
- Web collaboration
- Click to Video Conference
- Virtual SME/Agent

Productivity

- Outlook integrated e/vmail/conferencing
- Rich media conferencing
- Single voice mail box
- Single number reach
- Click to talk (intranet)
- Presence

Training/Knowledge

- VODs/webcast
- Virtual SME
- Video Conferencing/ Best practice sharing
- Real-time leadership communications
- Vlog/Blog

Enhance Customer Service and Contact Center Productivity

- Single 800# to improve service while preserving local customer intimacy via routing
- Increased agent virtualization cross LOB
- Home/Offshore call center reps

Cater to specific segments

- Use caller ID to route calls to language/age specific call center associates

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Improve Banker Productivity and Customer Service Responsiveness

	From…	…To
Off-Hours/On-The-Road Availability	Managing multiples devices, voice-mails and phone numbers (e.g., cell, home office, office, home number)	Receiving calls from multiple devices to a single extension, single voice mail, and ringing multiple devices
Personal productivity	Email and voice-mail separate, impossible to forward voice-mail to internal/external recipients	Integration: (1) listen to voice mail from Outlook; (2) forward voice-mail through email; (3) listen to email on the phone (e.g., in transit) and (4) reply to email with a voice attachment (e.g., in transit)
Remote Interactions With Customers	Majority of the interactions requiring document reviews completed by Personal Bankers with their customers are in-person	Part of follow-up interactions completed by Personal Bankers with their customers are in-person, part over web collaboration for tech-friendly customers (voice, data and video) at the place of their choosing

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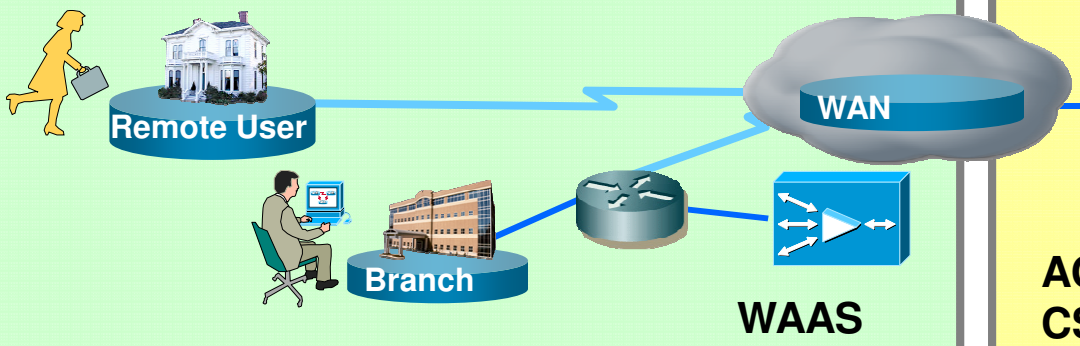
Cisco Application Networking Services:
Powerful Solution for Your Application Challenges

Branch/WAN Services

Wide Area Application Services

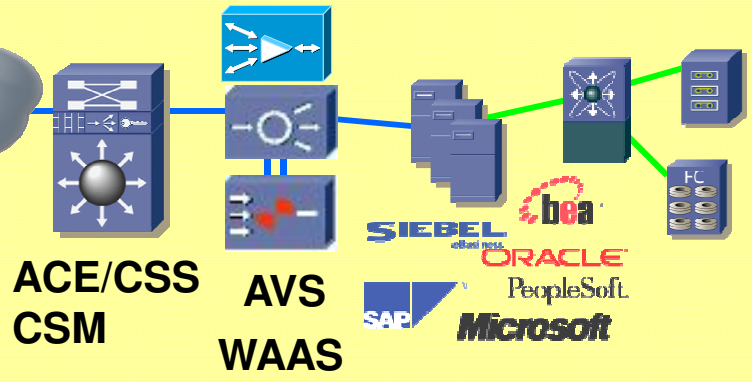
- Complete WAN optimization, application acceleration and WAFS
- Deployed in branch + data center
- Enables branch server, storage and backup consolidation



Data Center

Application Delivery

- Highly scalable server switching and load balancing
- Data center-based application acceleration
- Maximum application availability and time-to-service



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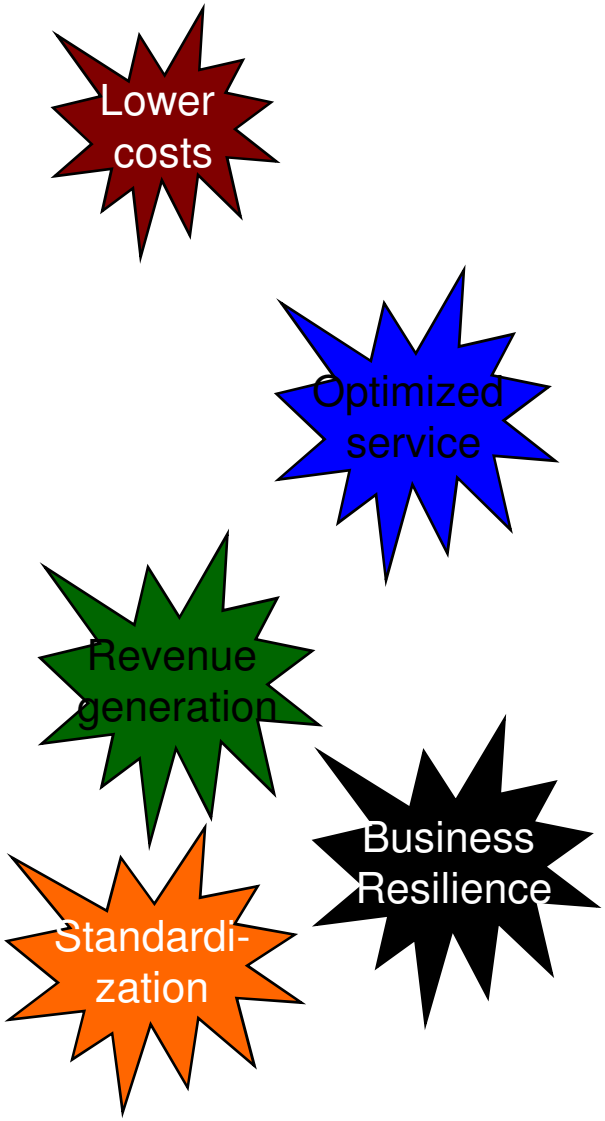
Key Customer Interaction business drivers
Illustrative top of mind issues



"How can I get more calls handled by self-service?"

"How can I reduce telecommunications costs?"

"How do I provide service choices for my customers?"

"How do I offer consistent services/experience across all channels and countries?"

"How do I ensure that the most skilled person is addressing the customer's inquiry?"

"I need to get more wallet share of my customers"

"How do I cross-sell/ up-sell more effectively?"

"How do I ensure business continuity in times of disaster?"

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