Transforming Application Performance with Cisco Application Control Engine

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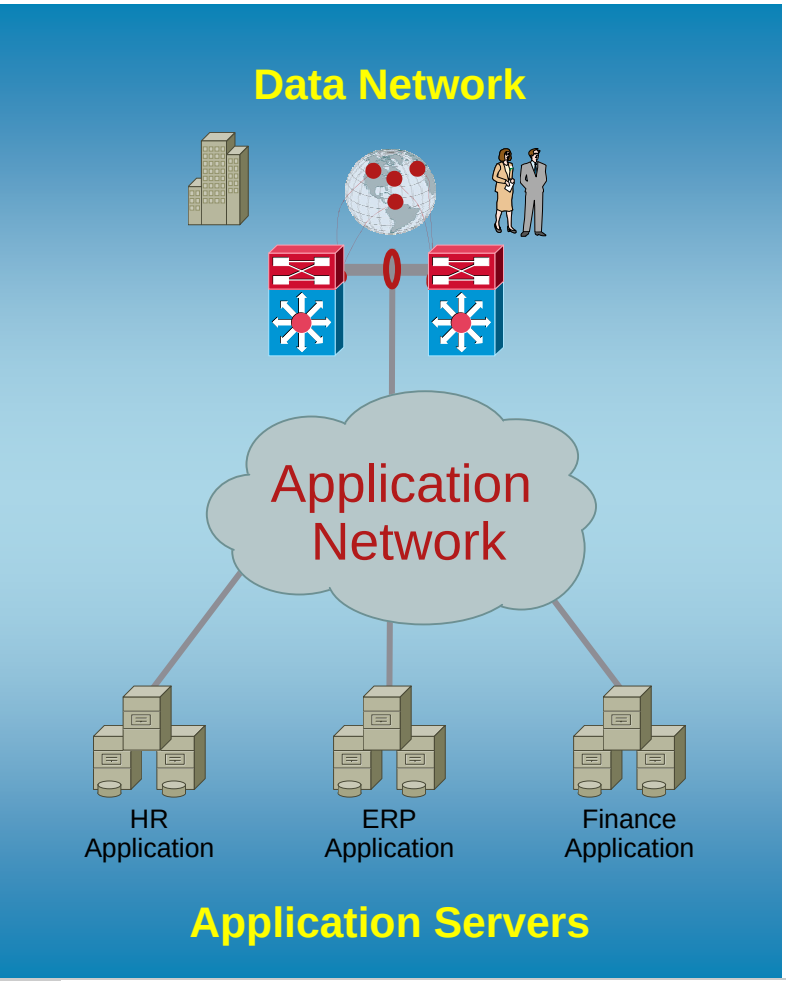
Agenda

- Application Challenges and Solution
- ACE Product Highlight
- Features and Benefits
- DCAP
- Global Server Load Balancing
- Summary
- Q&A

Today's Application Challenges—Delivering Applications



Performance

- Explosion in users, applications, WAN and recreational traffic—latency and bandwidth
- Device sprawl—power/cooling out of control

Operational Expenses

- Slow time to deployment
- Underutilized physical resources
- Too many products and vendors

Security

- Security threats come from L2-L7
- New attack types focusing on applications and payloads
- Day zero attacks and custom apps—no signatures available

Application-to-Application Communication

- Service-Oriented Architectures (SOA) and Web 2.0—security vulnerabilities and performance bottlenecks

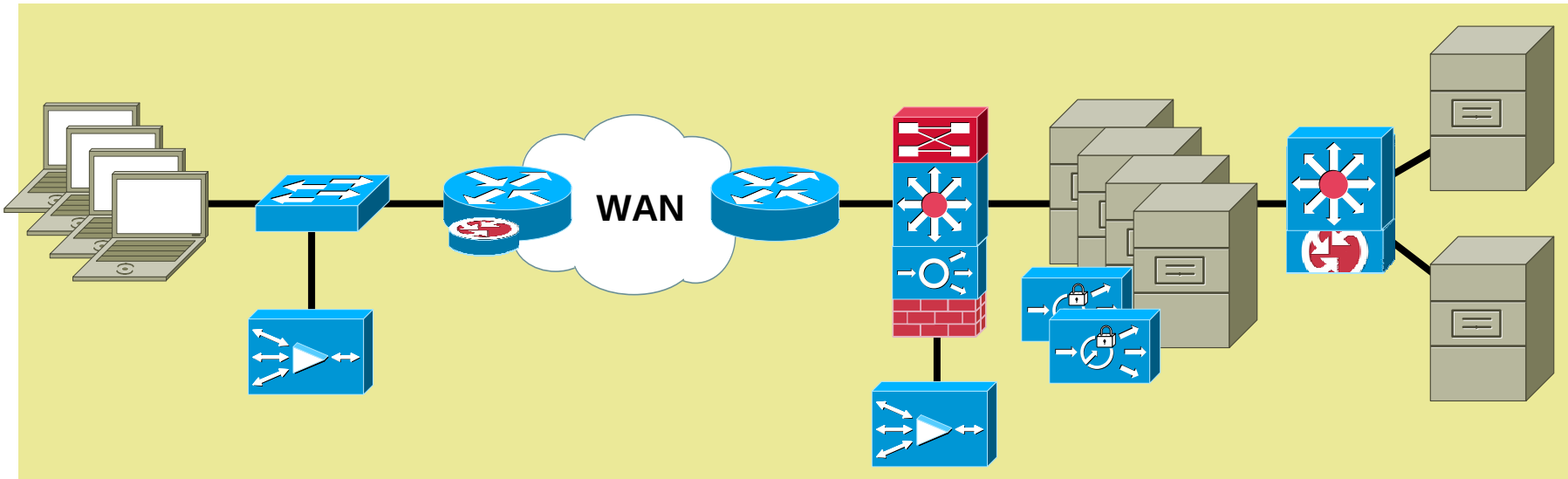
Application Networks Must Take The Next Step to Address Today's Application Challenges: Load Balancing and Much, Much More …

Application Optimization Infrastructure

Network Classification
- Quality of service
- Network-based app recognition
- Queuing, policing, shaping
- Visibility, monitoring, control

Application Scalability
- Server load-balancing
- Site selection
- SSL termination and offload
- Video delivery

Application Networking
- Message transformation
- Protocol transformation
- Message-based security
- Application visibility



Application Acceleration
- Latency mitigation
- Application data cache
- Meta data cache
- Local services

WAN Acceleration
- Data redundancy elimination
- Window scaling
- LZ compression
- Adaptive congestion avoidance

Application Optimization
- Delta encoding
- FlashForward optimization
- Application security
- Server offload

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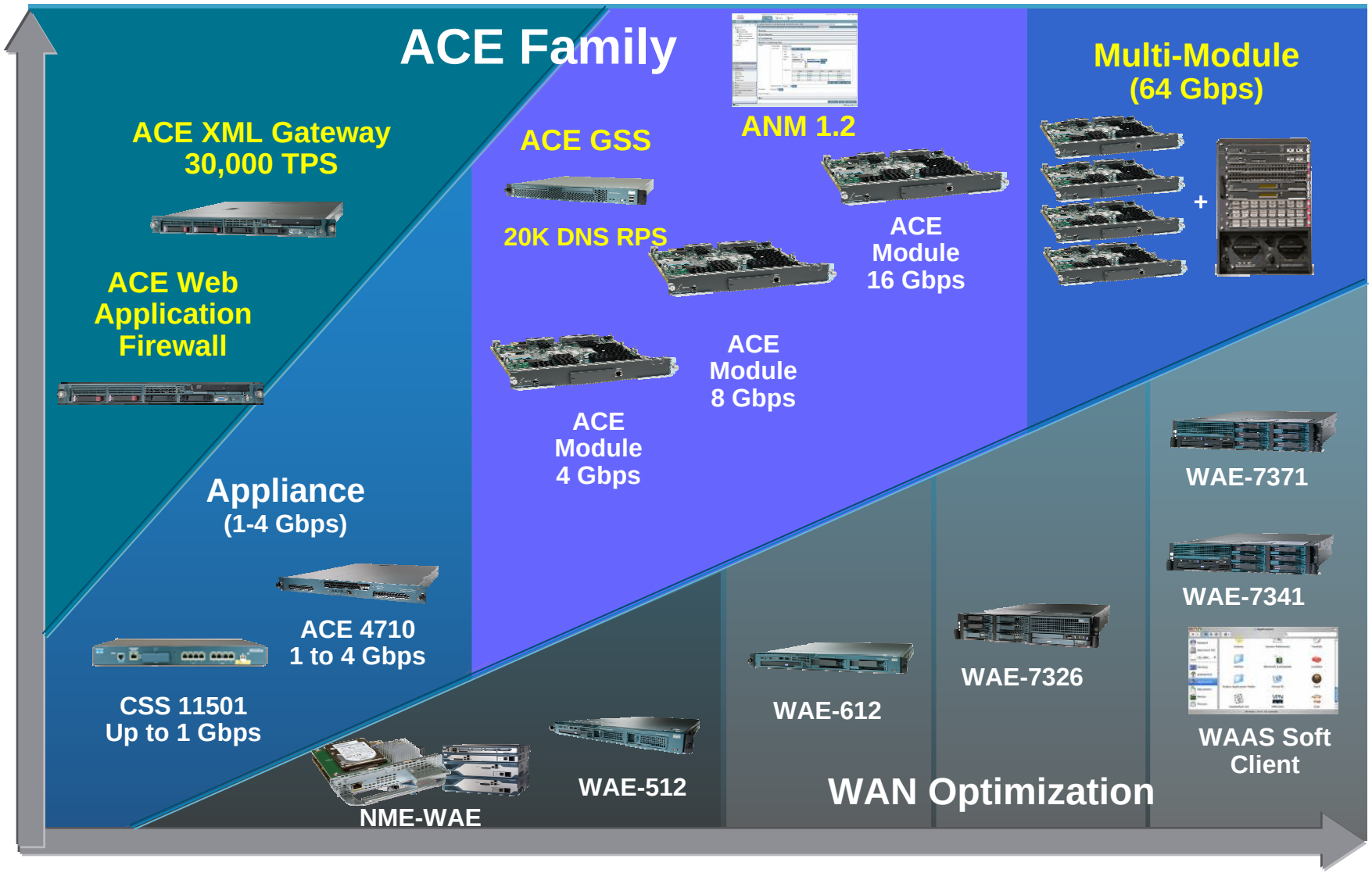
Application Networking:
ACE Family Extends A Winning Portfolio



ACE Key Technologies

Server Offload

on server
ing low-level
d SSL

Application Switching

ses intelligent load balancing to
alance Layer 4 traffic across
ervers in a data center

ontent Switching load balances
affic at Layer 7. It examines
acket information, such as
cookies and URL's, to identify,
balance and prioritize content

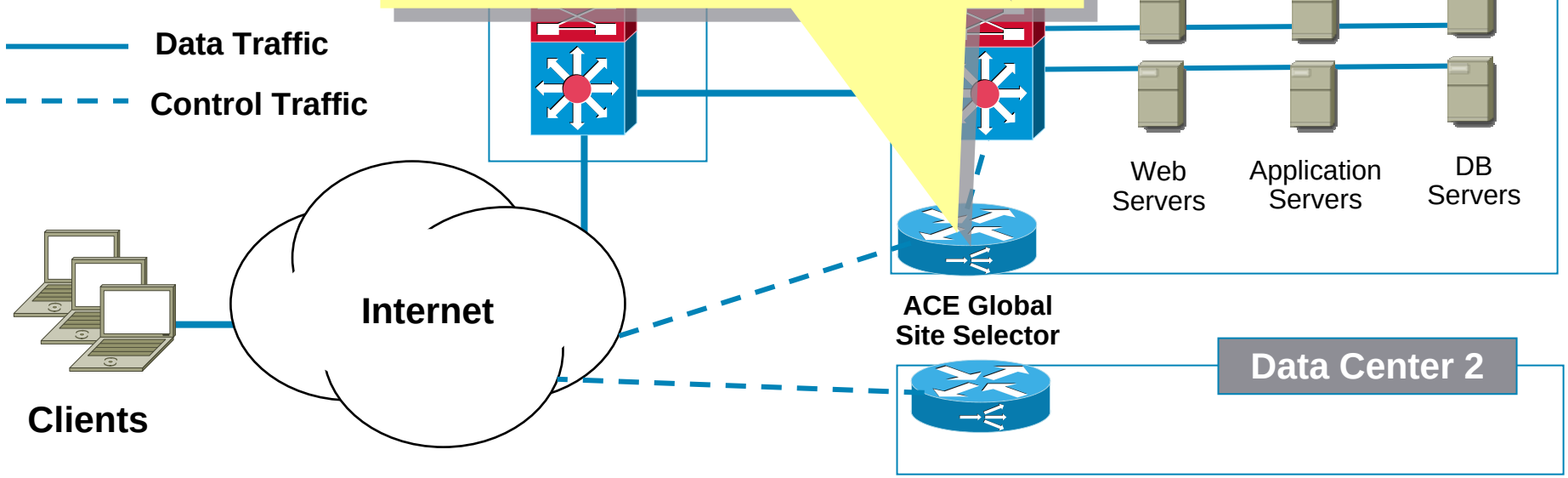
Web A

- Web App
  PCI Com

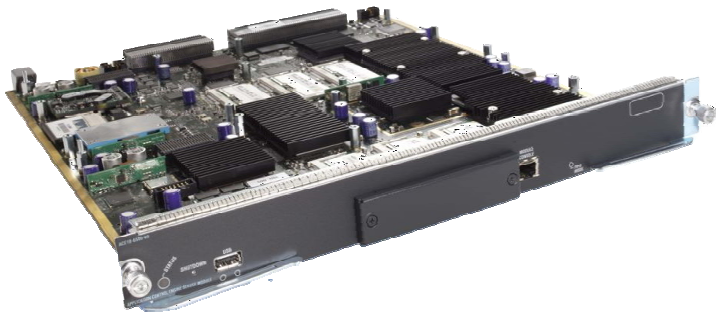
Virtualization

- One ACE acts as many
- Up to 250 virtual contexts per ACE
- Full resource control per context
- Power and cooling savings

attac such S and
unauthorized acces



Product Overview - ACE Module
Fast, Available, and Secure



- Integrates load balancing, application optimization & security
- Industry's highest performance: 4 – 64 Gbps
- Only guaranteed application resources and availability
- Most scalable security for data center applications
- Only product with forklift-free upgrades
- NEBS Certified
- Module for Catalyst 6500 Switch & 7600 Router

Industry's Only Virtualized Architecture - Faster App Rollouts, Green

Product Overview - ACE 4710 Appliance

App Availability: Virtualization Increases Application Resiliency, Roles-Based Control Minimizes Workload

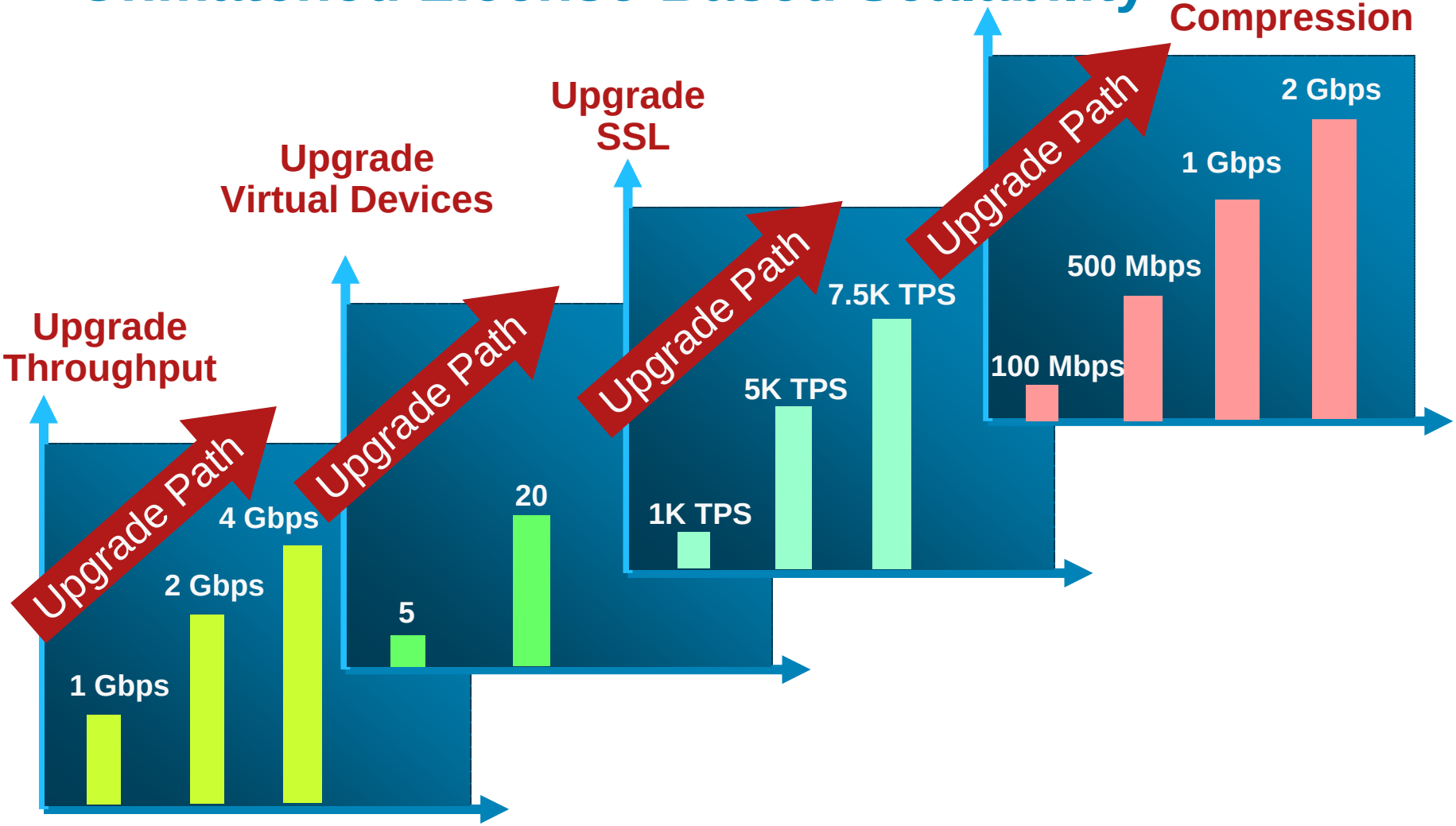
App Performance: Patented Asymmetric Acceleration + Real-World Architecture

IT Agility: Software-Based Upgrades, Faster App Roll-Outs through Virtual Devices

Lower TCO: Less Power via Virtual Devices, Significantly Less CapEx

Industry's Best Price/Performance

Unmatched License-Based Scalability



Investment Protection and Pay-As-You-Grow

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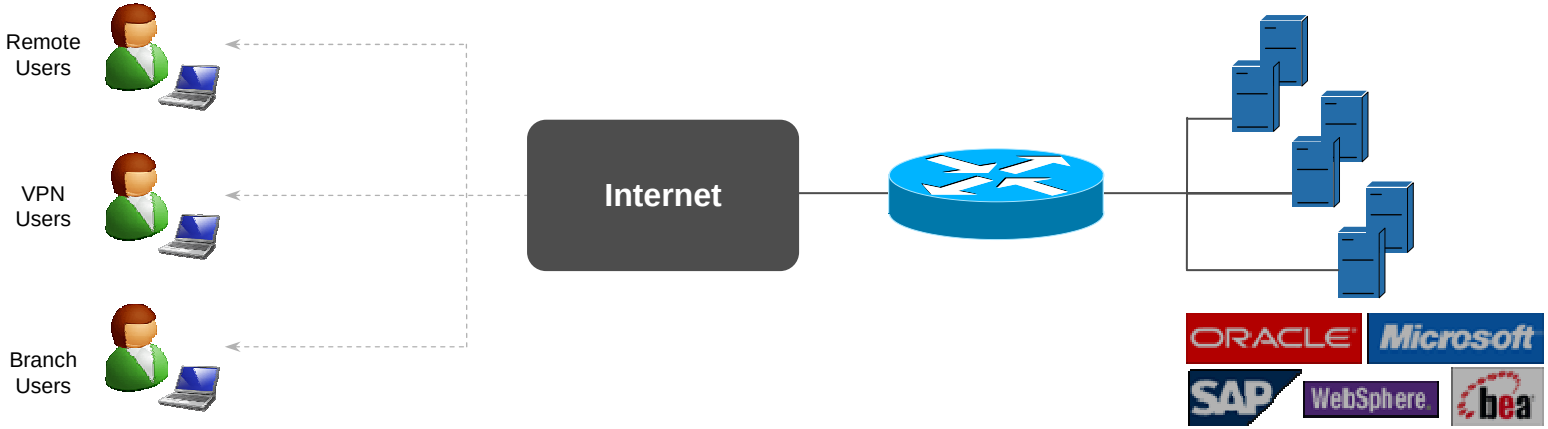
Customer Problem: Application Response Times Too Slow

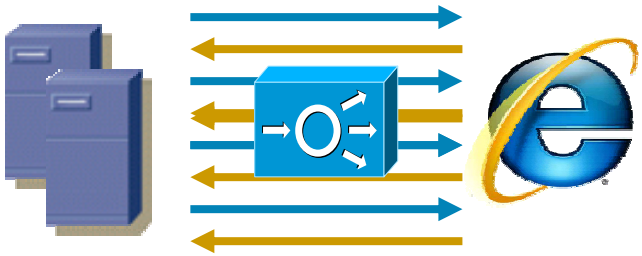


- High network latency
- Low bandwidth to remote users / offices
- Long back-end delays
- SSL processing overhead

Poor performance for web-based applications

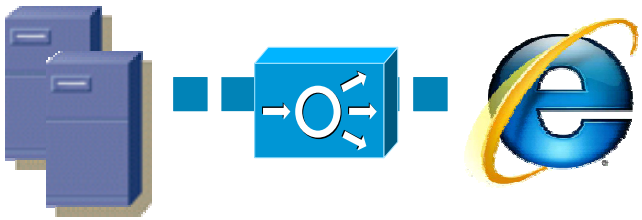
Solution: ACE Application Acceleration More Speed, Less Traffic

Latency Reduction



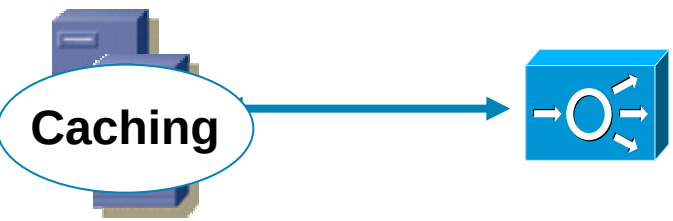
- Patented FlashForwarding for fewer roundtrips for faster page downloads
- Efficient connections management

Bandwidth Reduction



- Patented Delta Encoding sends changed data only, reducing number of bytes transmitted
- Compression for all data types

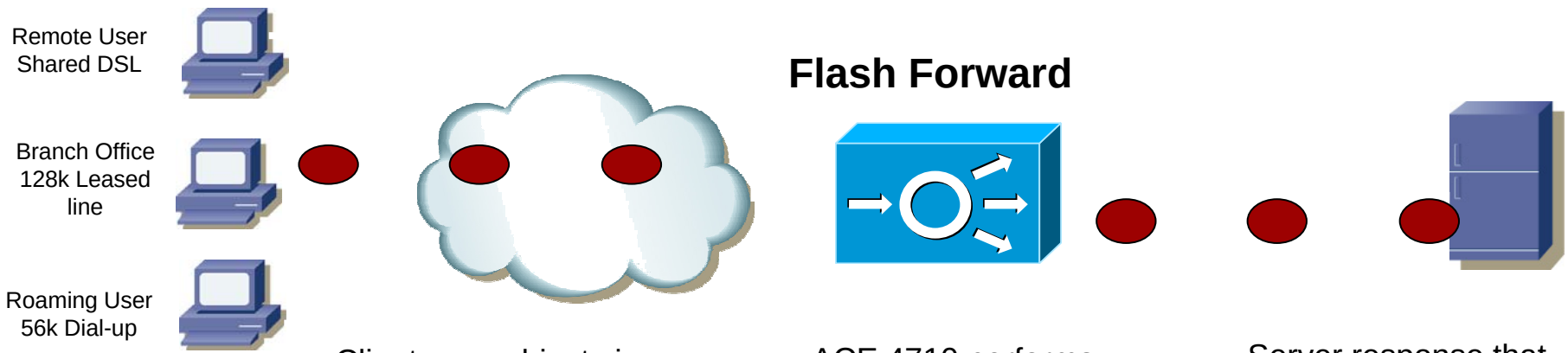
Server Offload



- Increase server capacity by offloading:
  - SSL termination
  - TCP connection management
  - Static and Dynamic Caching

Cisco ACE 4710 Flash Forward

- Extends the ACE 4710 appliance's bandwidth usage reduction and download acceleration benefits to objects that are embedded within HTML pages.
- Eliminates the network delays associated with embedded web objects such as images, style sheets, and JavaScript files
- Guarantees clients request the most up-to-date content.
- Significantly accelerates page downloads and reduces both upstream and downstream traffic that is associated with object validation requests.

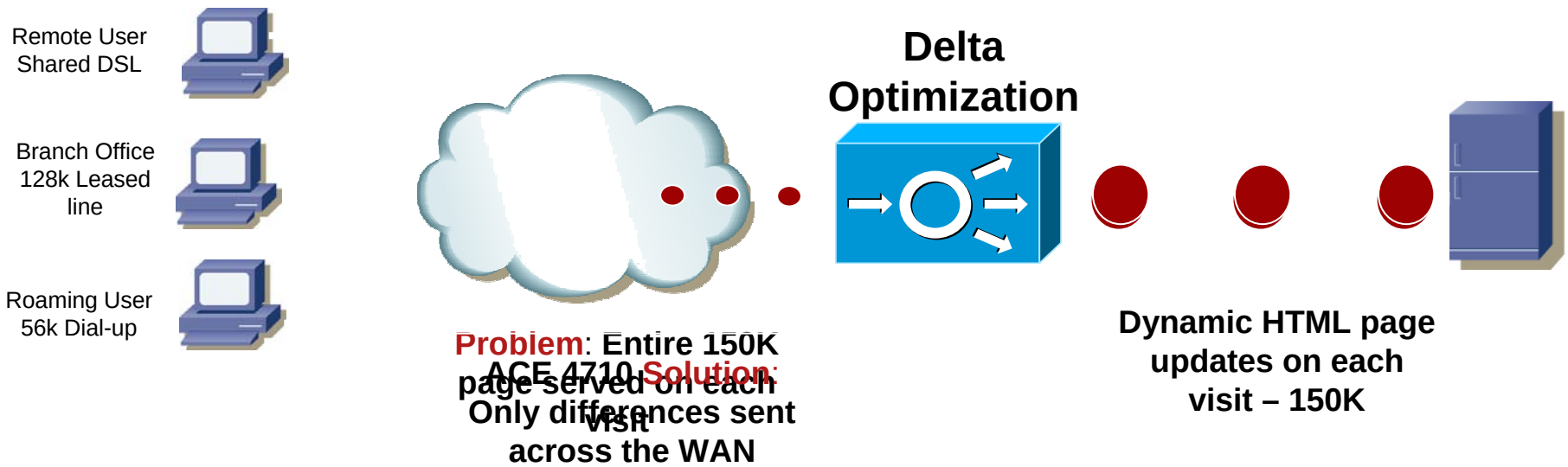


Cisco ACE 4710 Delta Optimization

- ACE delta optimization applied to dynamic web applications such as

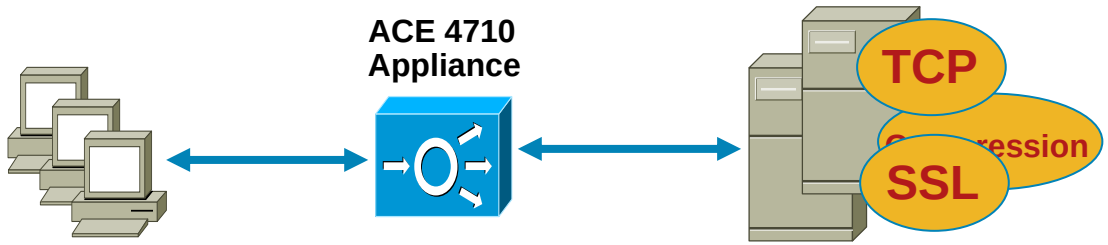
  .Net J2EE SAP Oracle Siebel Lotus

- Enables dynamic update of client browser caches with content differences or deltas
- Observes and modifies HTML content that flows through it to achieve bandwidth savings and user download performance.
- Results in bandwidth savings and improved end-user experience



Cisco ACE 4710 Server Offload – More Efficient Servers

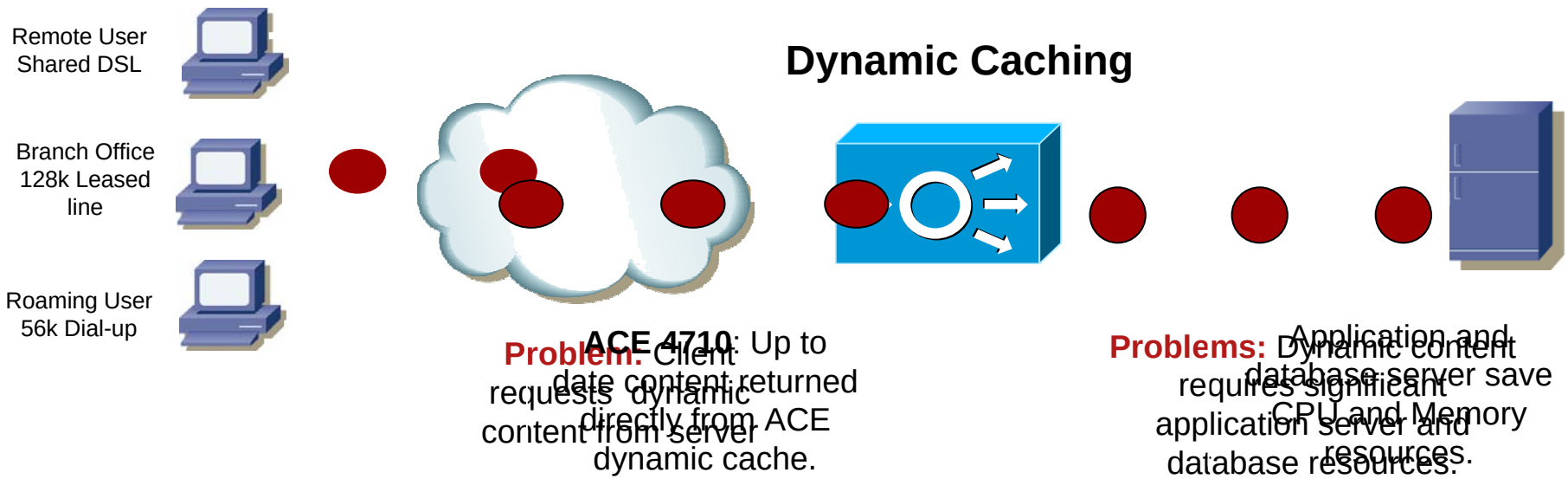
- **Challenges:** Server resource contention forces customers to deploy large number of web and application servers.
- **Solution**: Cisco ACE 4710 can offload many functions from servers and allow more efficient use of operating system resources for applications
  - **TCP Reuse:** Reduces number of established TCP connections to the server farm
  - **SSL Acceleration:** Offloads web server from SSL connection handling
  - **HTTP Compression:** Compresses web content on behalf of the web server
  - **Dynamic Caching:** Reduces application and database load by increasing cache TTL based on application server load



- **Benefits**:
  - Reduced size of application server farms
  - Improved application response for dynamic content for all users even at peak load

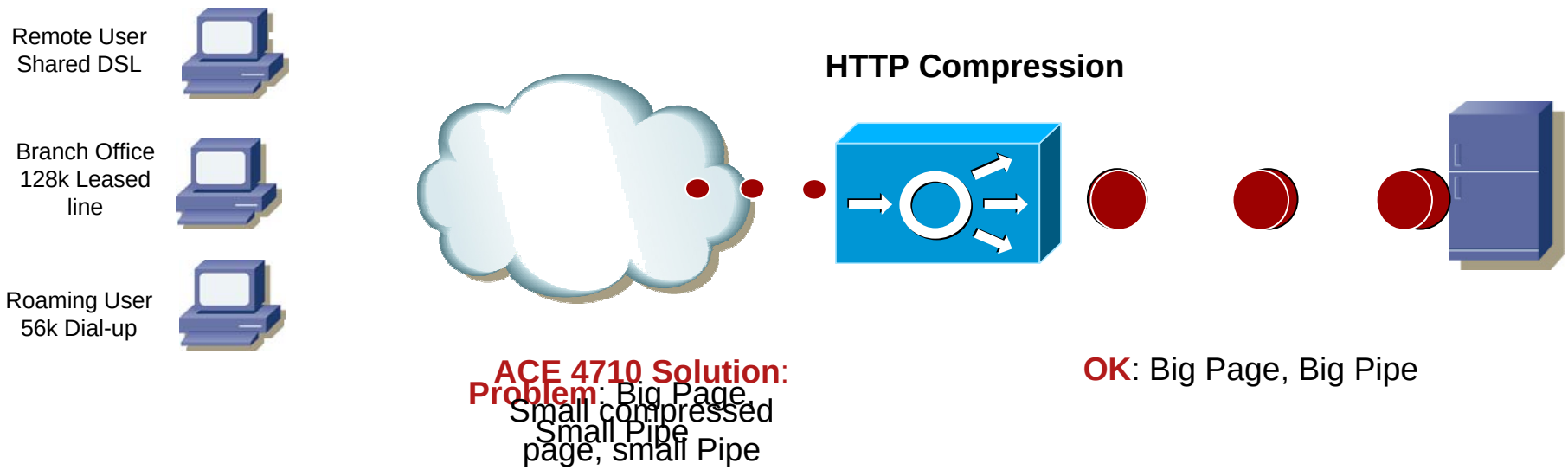
Cisco ACE 4710 Server Offload - Dynamic Caching

- Enables the Cisco ACE 4710 to fulfill requests for dynamic or personalized information
- Offloads application servers and databases
- Significantly improves application response time, reduces the server load, and enables more concurrent users to be served.
- Improved scalability and lower ongoing server upgrade costs.



Cisco ACE 4710 HTTP Compression

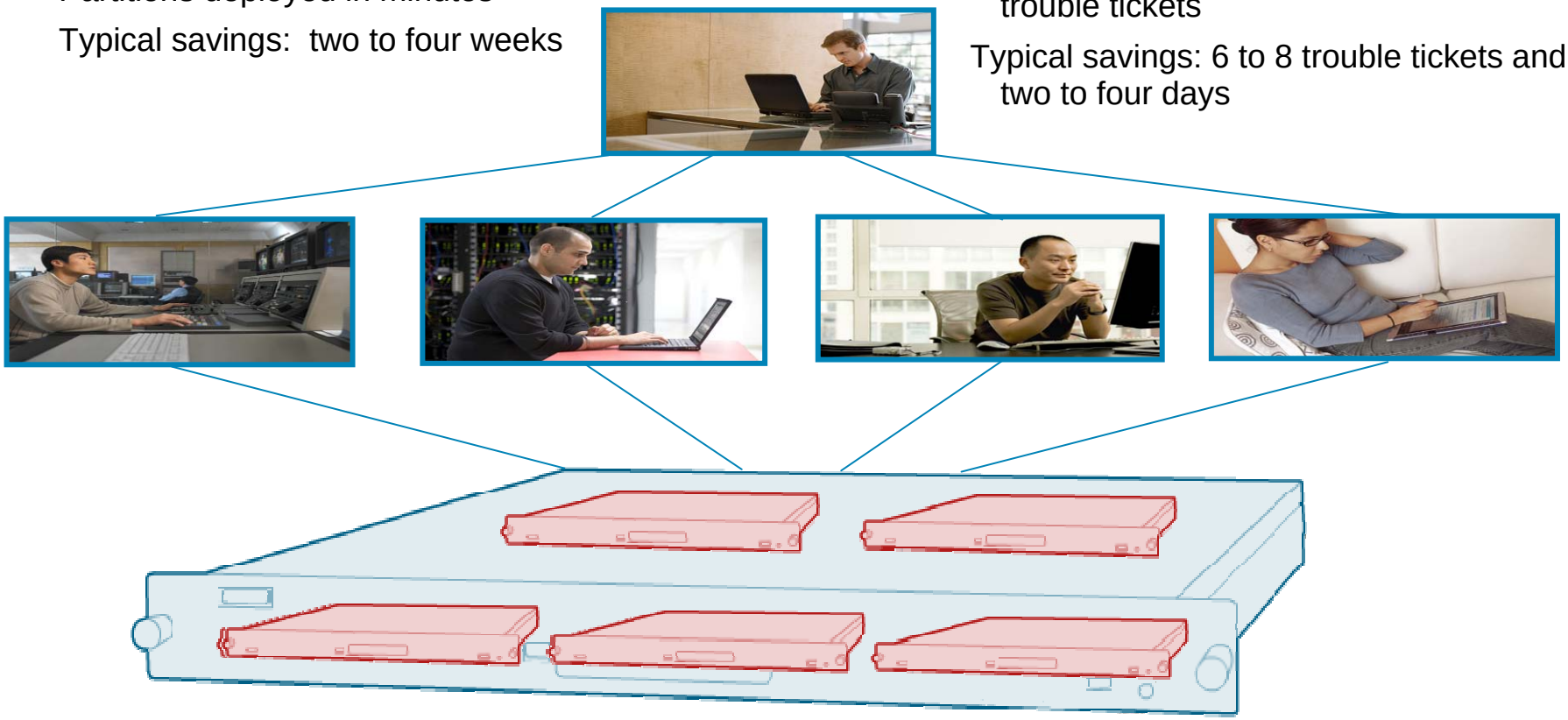
- Reduces HTTP traffic using GZIP and Deflate compression algorithms which are supported in today's Web browsers.
- Compression is completely transparent to the end user, requiring no downloads or agents.
- Up to 90% reduction in size of web objects such as static and dynamic HTML, Flash, PDFs, Text files, XML
- Optimizes delivery of content for last-mile bandwidth bottlenecks.
- Accelerates end-user experience.



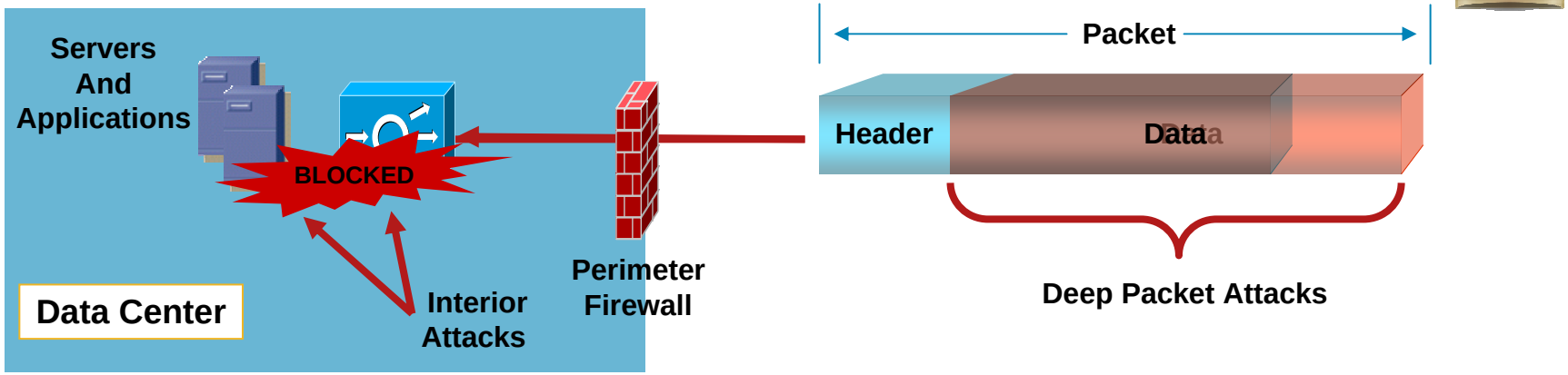
Virtualization For Faster Application Rollouts: From Weeks To Minutes

- **Deploy a virtual device, not a physical device**
  - Eliminates purchase cycle
  - No device install or setup
  - Partitions deployed in minutes
  - Typical savings: two to four weeks

- **Role-Based Administration**
  - Delegate customizable administrative rights to each IT department
  - Eliminates coordination choke points and trouble tickets
  - Typical savings: 6 to 8 trouble tickets and two to four days



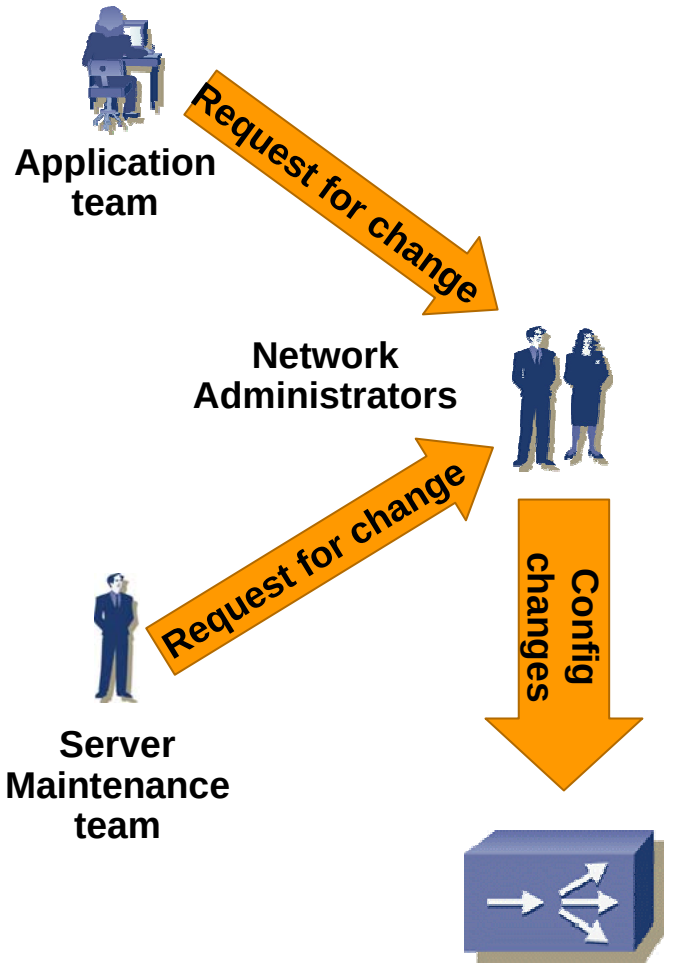
Preventing Payload Attacks: The Last Line Of Server Defense



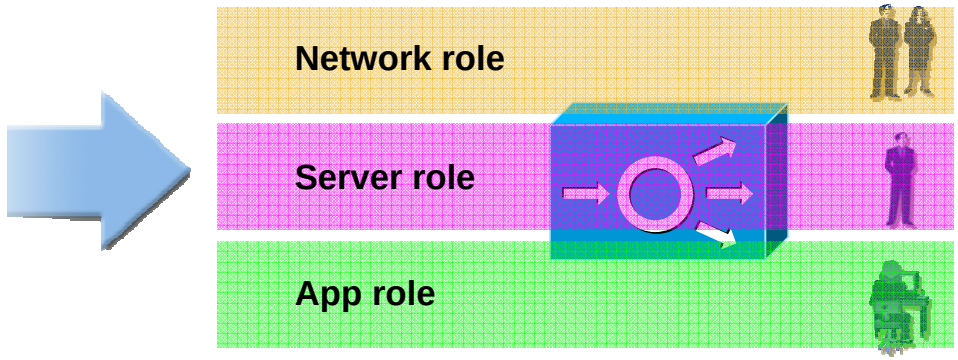
- Deep Packet Attacks
  - Firewall solutions without ACE can't adequately protect application data
  - ACE performs deep packet inspection and blocks app attacks
  - Generic Protocol Parsing extends this protection to any protocol
- Interior Attacks: Leverage ACE's position in front/between servers
  - Protects against DDOS, protocol attacks, and unauthorized access

ACE Role Based Administration (RBA)

Lack of delegated management



Improved workflow with Role Based Access Control



Customizable and Granular Role Based Administration on ACE

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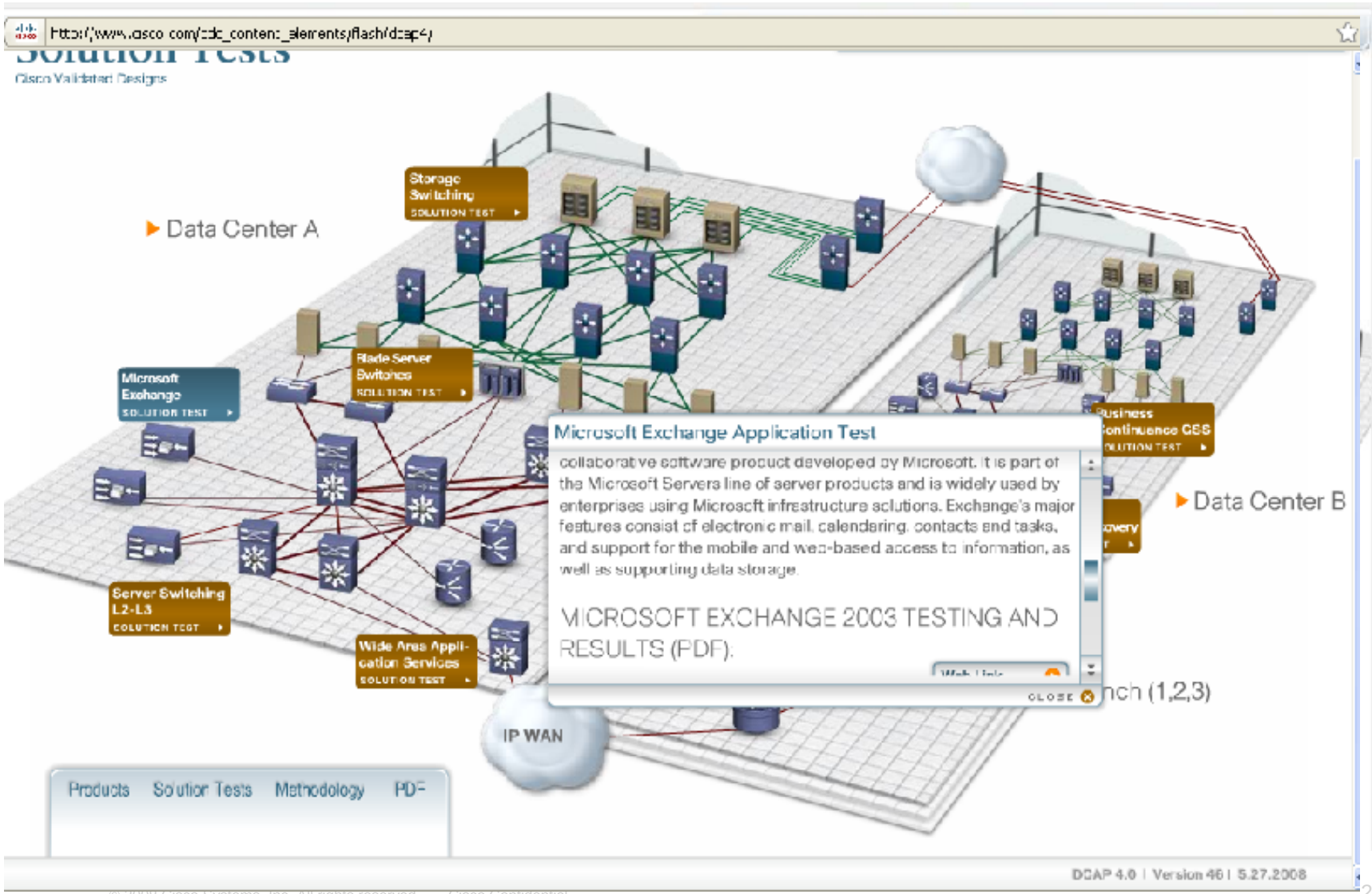
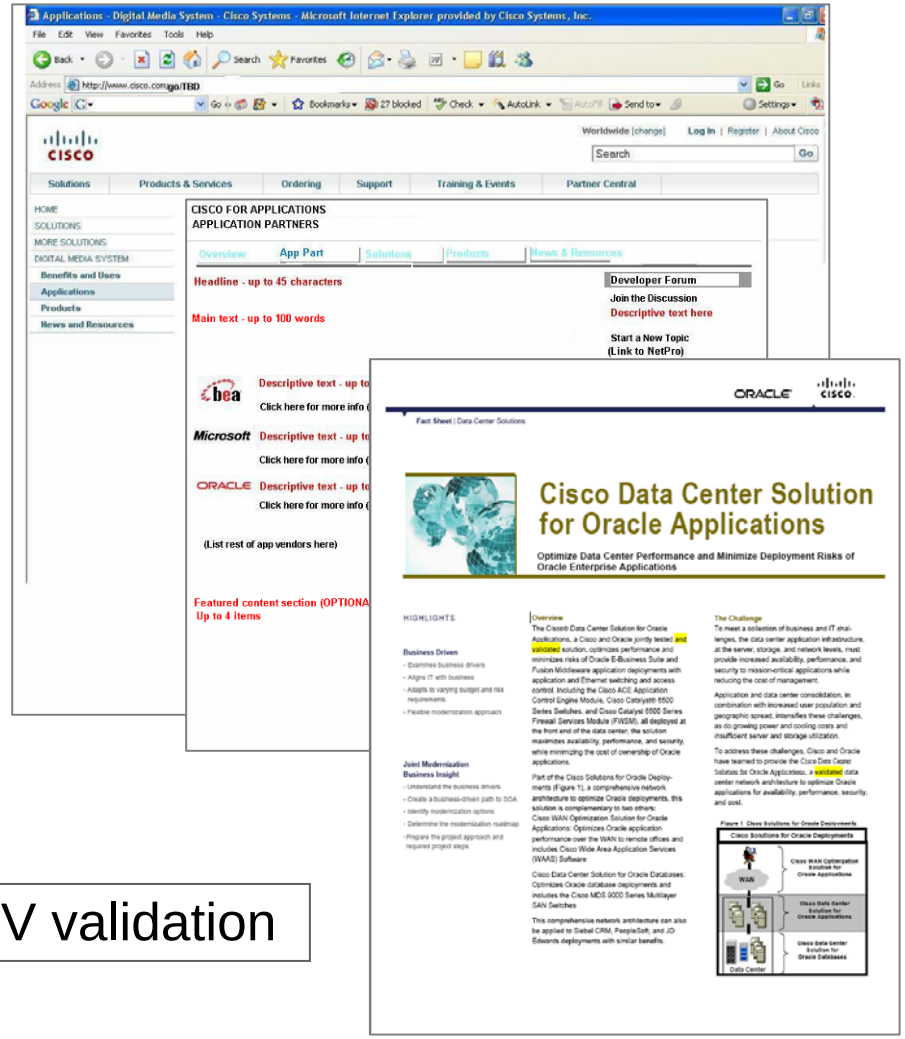
Cisco Data Center Assurance Program



Resources For New App Rollouts



Powerful testing, design guides, ISV validation

http://www.cisco.com/go/optimizemyapp

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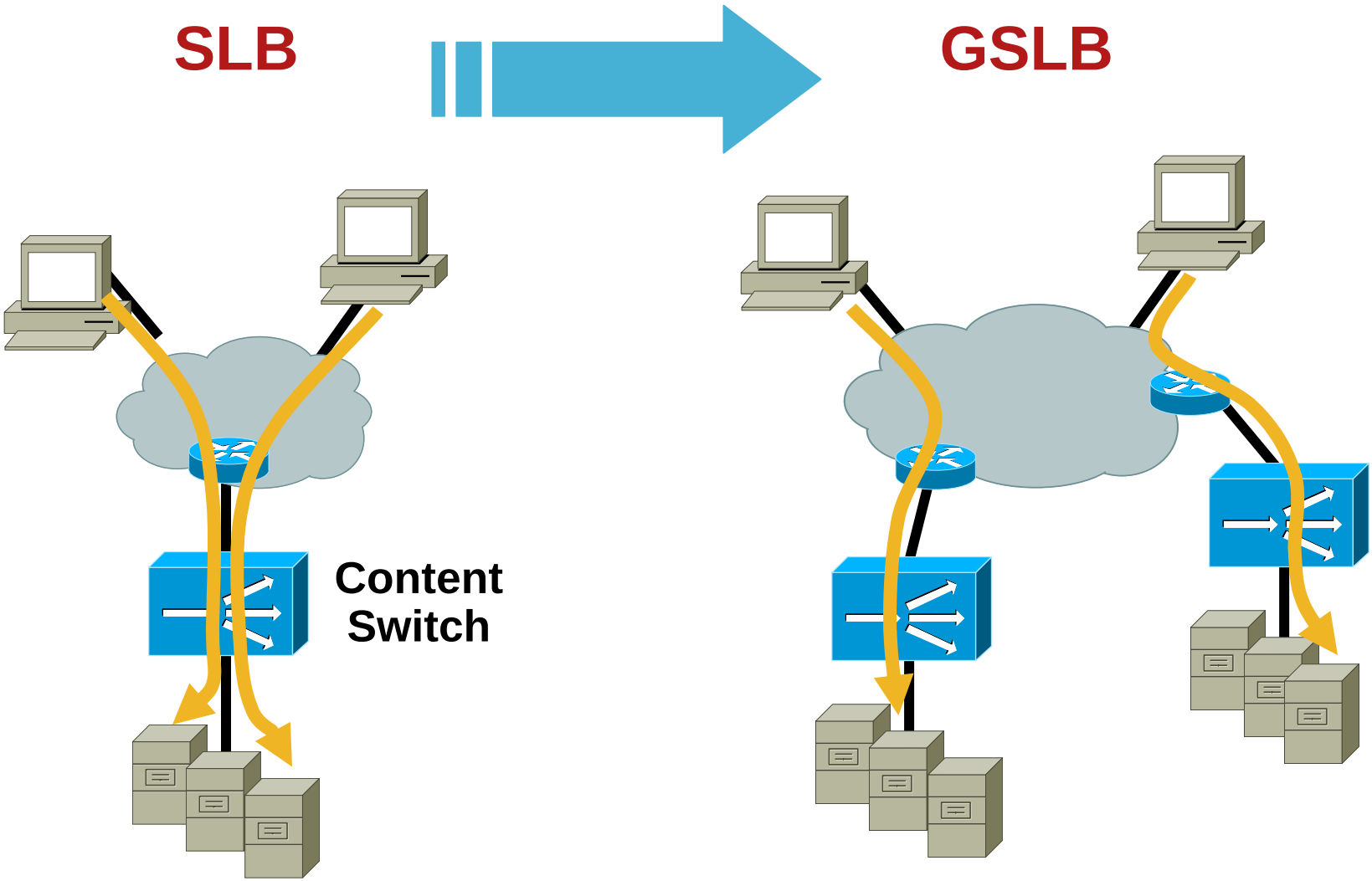
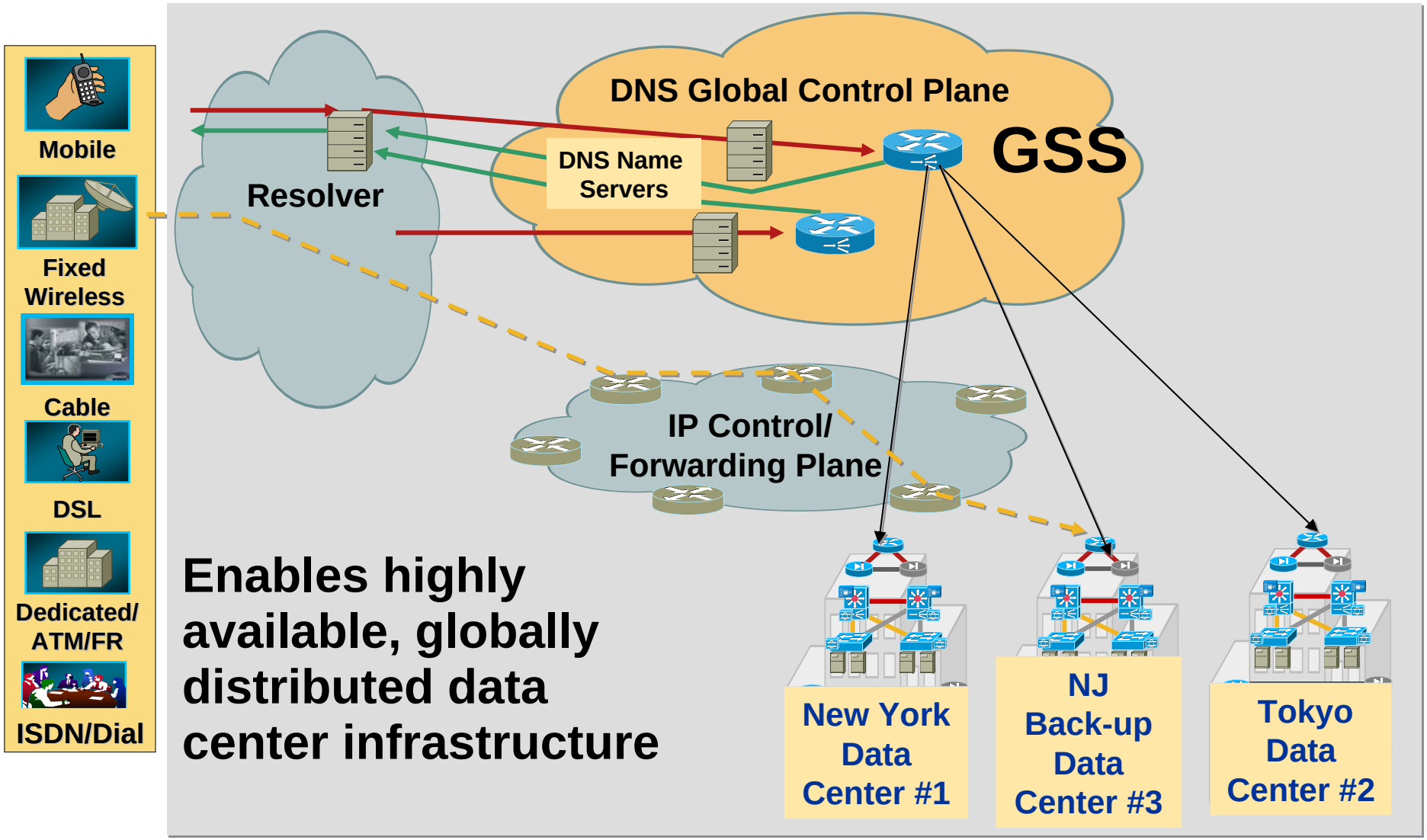
Geographic Server Load Balancing

- Techniques used to distribute client traffic to servers across remote locations
- Very often deployed in conjunction with local load balancing (content switching)
- Often associated to DNS-based deployments
- DNS is not the only solution (and has specific limitations!)
- Can rely on dedicated products or leverage content switches functions

Geographic Server Load Balancing



Global Site Selector
Dedicated DNS Optimization Appliance



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Cisco ACE Solutions and Benefits

Application Availability

- Minimize impact of application, device or site failure
- Maximize availability through highly scalable (1~64 Gbps) load balancing and content switching

Application Acceleration

- Improve end user productivity with up to 500% faster applications
- Improve server performance by offloading SSL, TCP, XML processing

Application Security

- Comprehensive security for network, applications, XML and Web Services
- Provides last line of defense for servers
- Protects against day zero attacks

Optimal TCO with Virtualized Architecture

- Provides up to 400% reduction in power & cooling expenses
- Reduces CAPEX
  - Up to 65% fewer devices by cutting down sprawl & complexity
  - Up to 90% improved server CPU performance
- Provides up to 75% faster application deployments and build-outs
- Increases IT productivity
  - Save 2 to 4 weeks, deploy virtual devices, not physical devices
  - Save 6 to 8 trouble tickets & 2 to 4 days with Role Based Admin