

A Light Reading Webinar

Service Quality: The Role of Session Management

Tuesday, April 29, 2008

Moderated by

H. Paris Burstyn

Senior Analyst, *Heavy Reading*

Sponsored by:



Agenda

- Introduction
- Guaranteeing SIP Service Delivery (Radware)
- Data Control & QoS in IP Networks (Data Connections)
- Session Management's Role in IMS Environments (Brix Networks)
- Summary
- Q&A

Speakers

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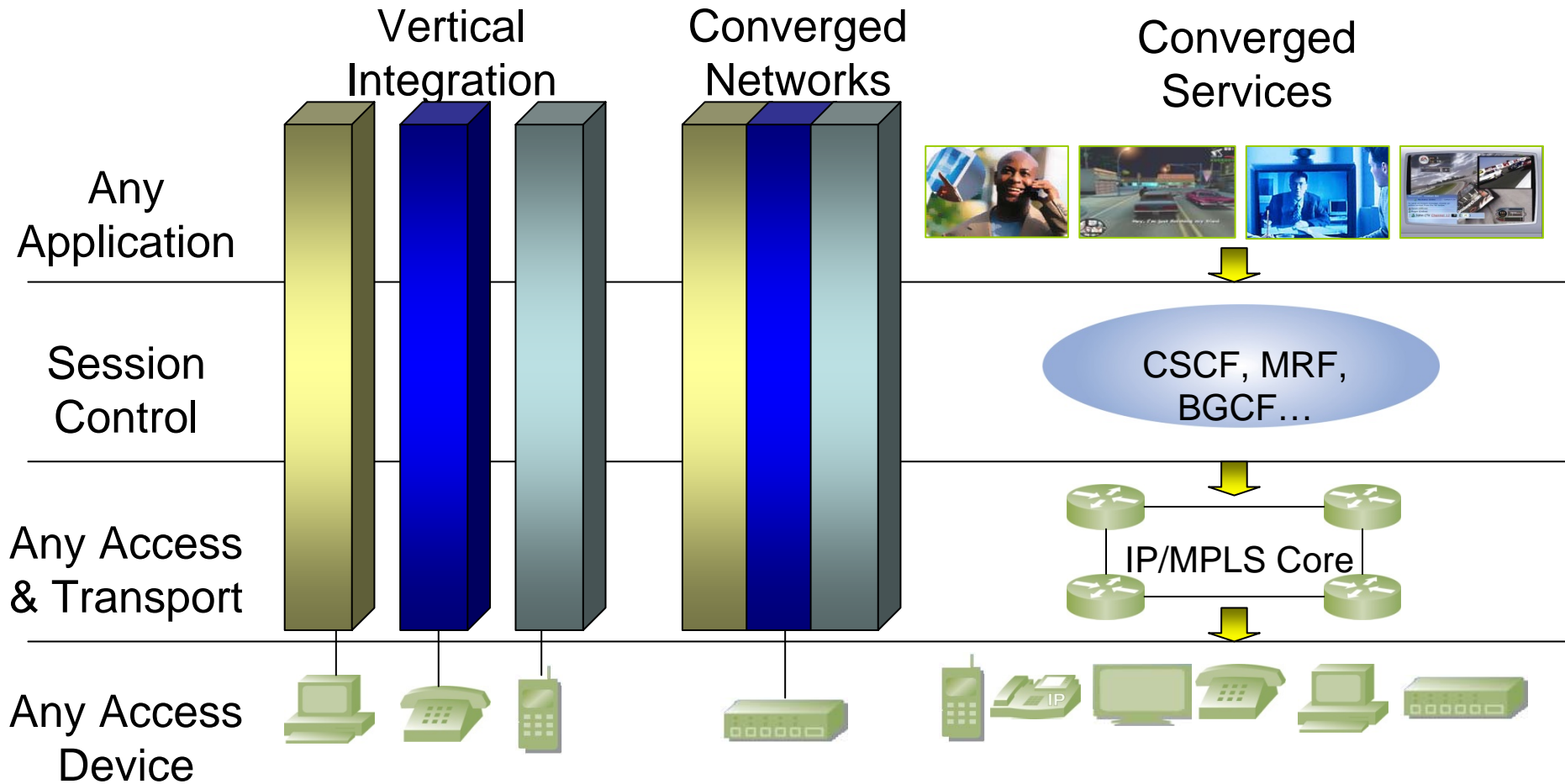
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IMS Philosophy



Radware

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Introducing Radware

- Application delivery vendor providing
 - Full availability
 - Maximum performance
 - Complete security
- Address mission-critical carrier & enterprise applications
- Leverage experience & technology to guarantee SIP service delivery
- Founded in 1997; public since '99; 600 employees

The Evolution of Traditional LBs

- In the mid 90s Web service availability solutions were part of the Web server/application logic
- Requirements and environment changed:
 - Traffic increased
 - Applications became mission-critical
 - New security threats introduced
- Result was factoring out of availability, scalability, and security solutions to an external LB component

SIP is today where HTTP was in the late 90s

SIP Load Balancing in Software

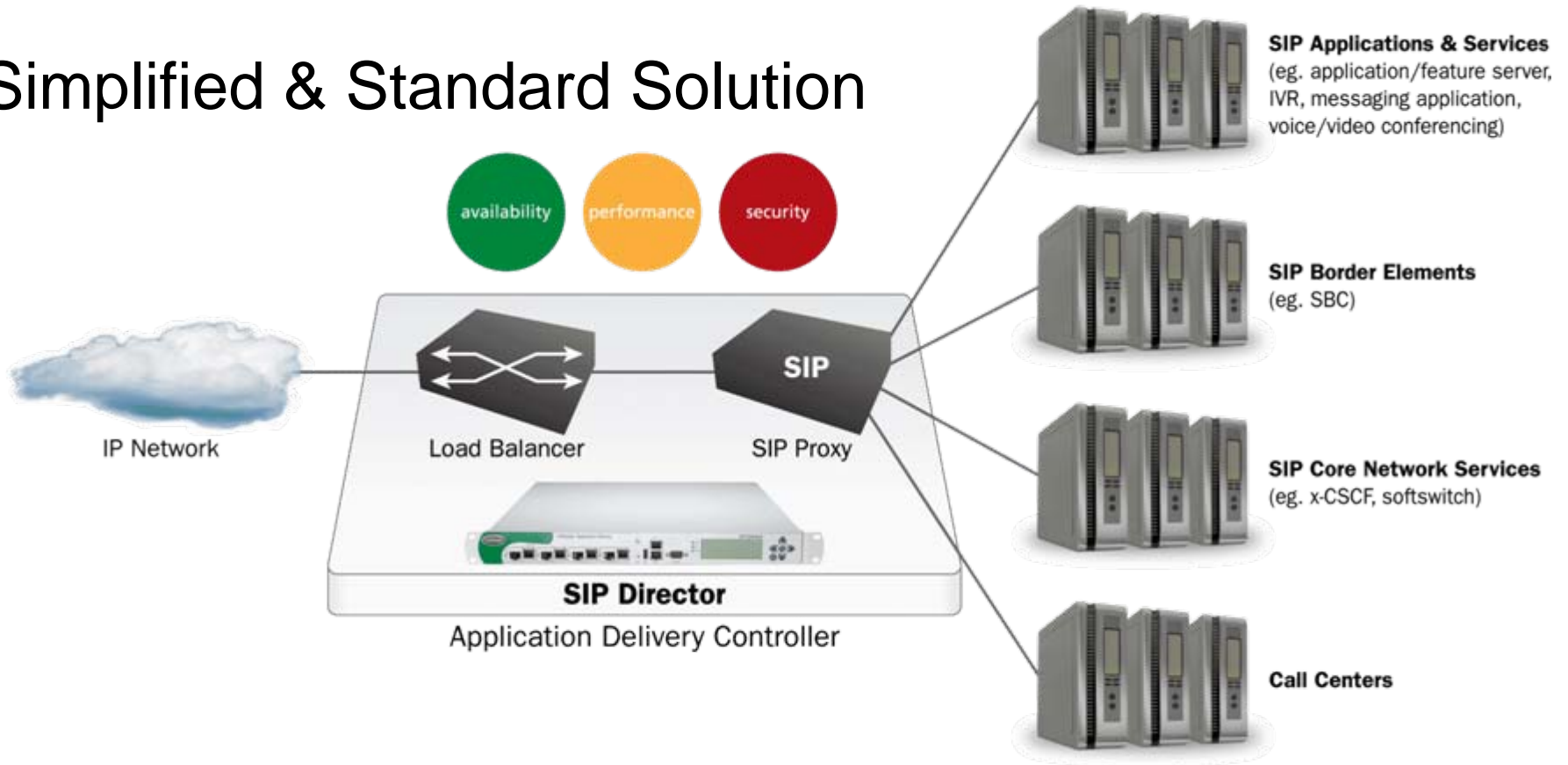
- Static traffic distribution – prefix, destination, service
 - Maintenance intensive, sub-cluster planned for peak
- Call dispatching – first message goes through dispatcher, following messages are direct
 - Complicated logic within dispatcher
 - No recovery from mid-call failures
- Traffic broadcasting
 - Broadcasting & hash-based decisions (MS-NLB)

More Challenges of Current Solutions

- Repetitive development work for each application
- Solutions are under application scope and not factored out
- Complex and inefficient HA model
- Global disaster recovery not addressed

ITU-OCAF 3-Tiered SIP Load-Balancing

Simplified & Standard Solution



OCAF – Open Communication Architecture Forum

CGOE – Carrier Grade Open Environment (Rec. Y.CG OE)

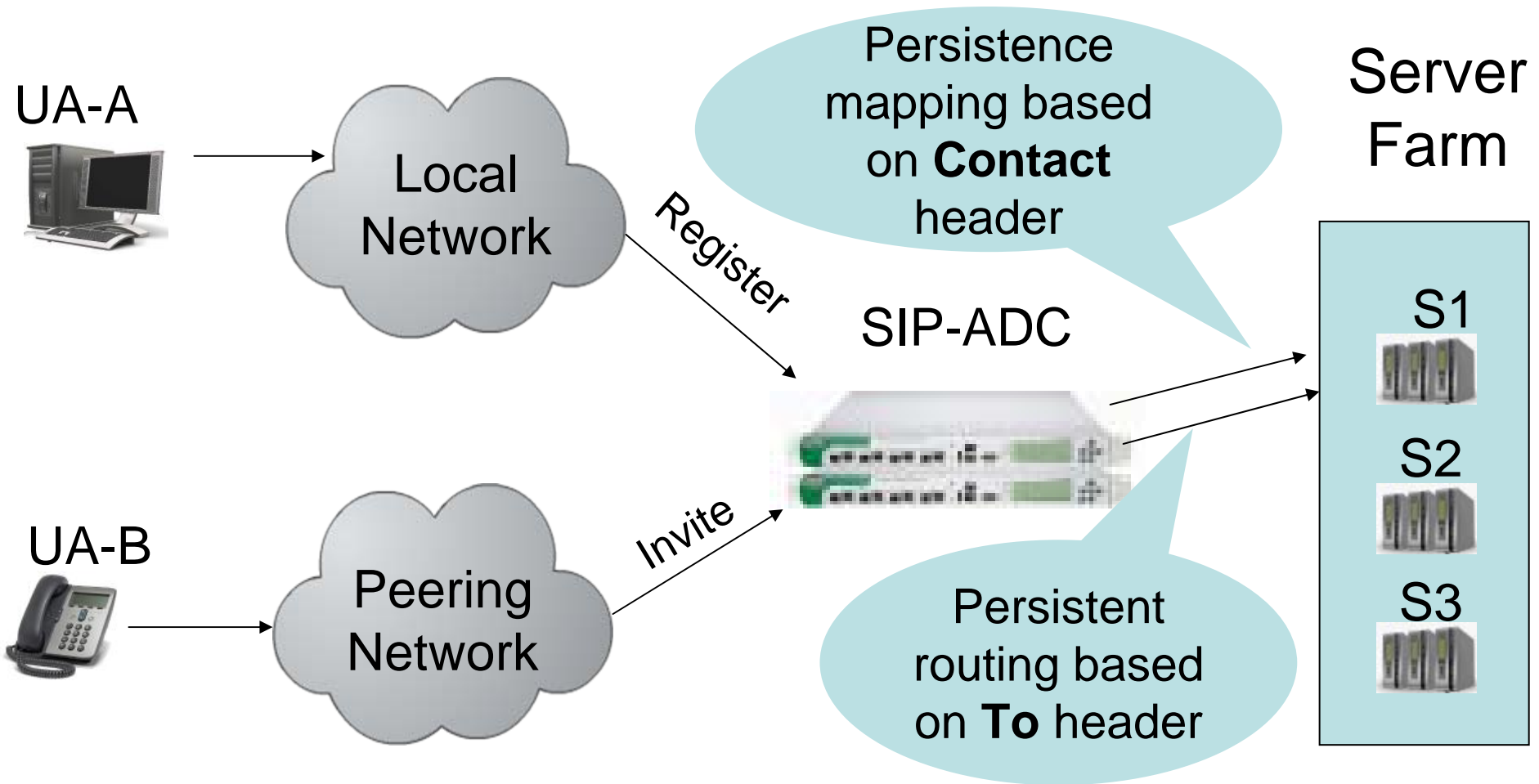
The Role of the Load-Balancer Component

- Health monitoring
- Local / global traffic distribution
- Active-active / active-backup server activation
- Global disaster recovery
- Built-in load-balancer redundancy (state synch)
- Service IP virtualization (DNS SRV)
- Security GW
- HTTP load-balancing for converged applications

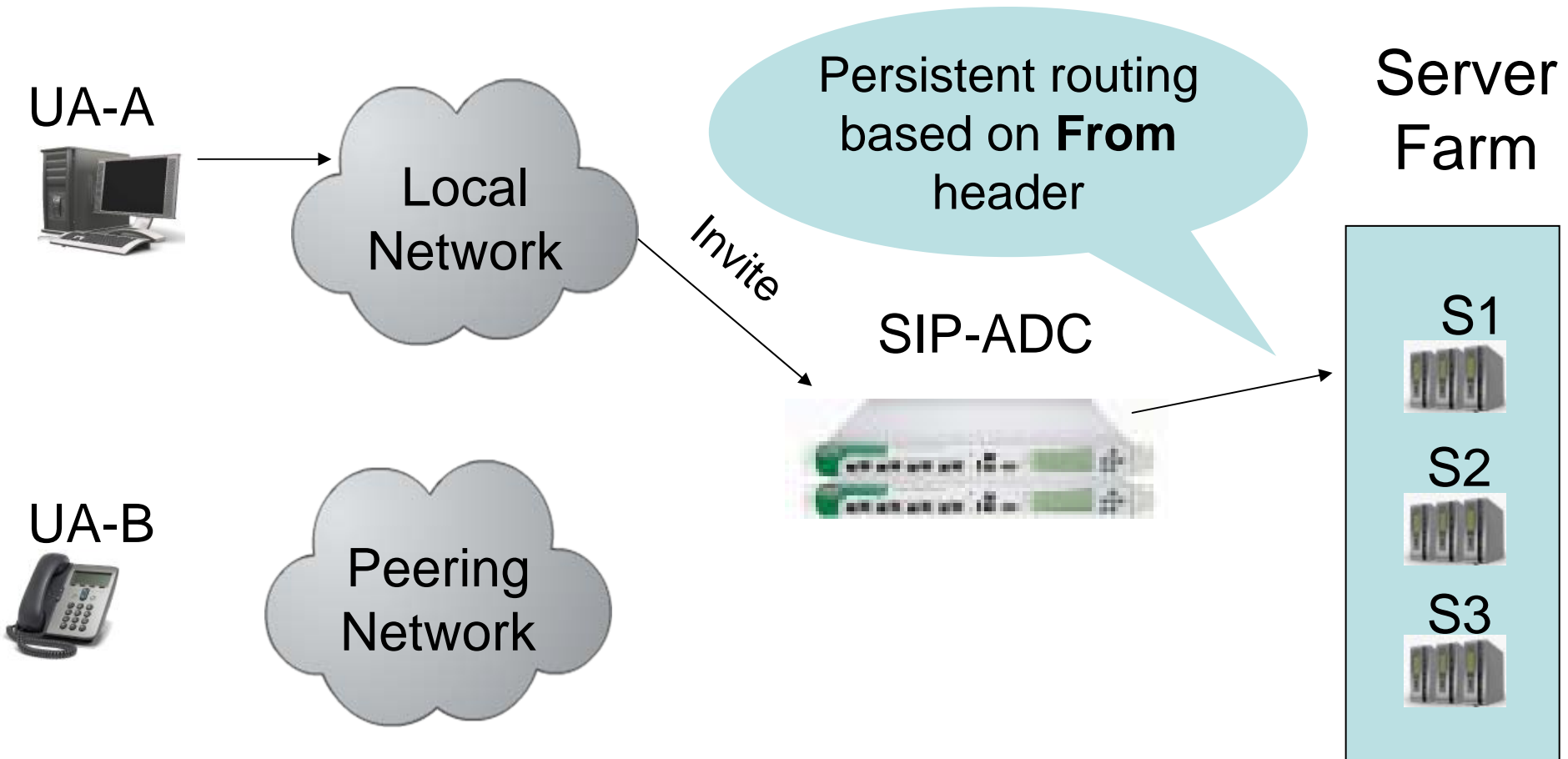
The Role of the SIP Proxy

- Simplifies application integration (outbound proxy vs. default GW)
- Rule-based SIP routing
- SIP application layer persistence
- Transport agnostic (UDP/TCP/TLS)
- Transport conversion and traffic acceleration

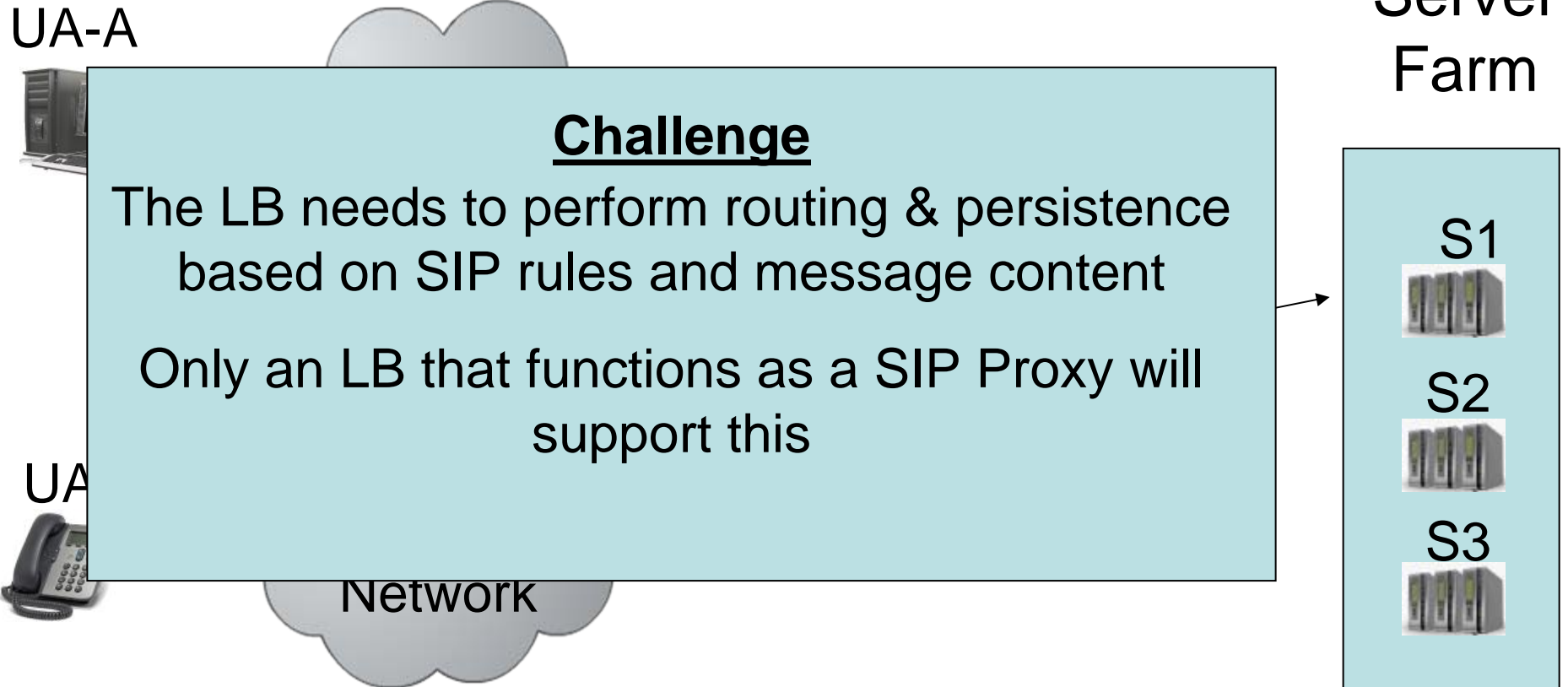
Complex Routing Scenario Example



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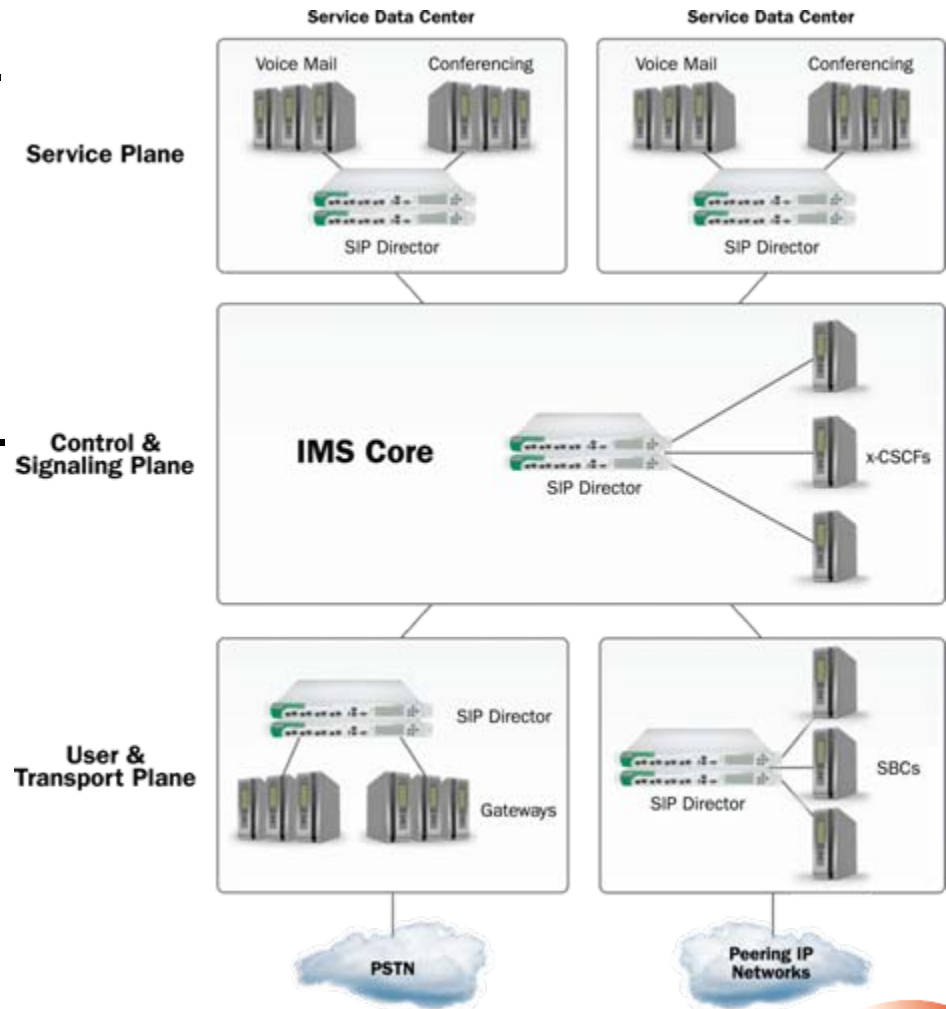


Complex Routing Scenario Example



SIP-ADC Target Applications

- **‘SIP Application Servers’** – voice mail, voice & video conf, IVR, ring-back tone, MS, presence/location services, call centers
- **‘Core Network Solutions’** – IMS x-CSCF and softswitches
- **‘SIP Border Elements’** – SBC clusters, media gateways, trunk gateways



Summary:

SIP-ADC Characteristics

- Ensures the reliable delivery of SIP services in carrier environment through simplified integration providing:
 - **High availability**
 - **Scalability & performance**
 - **Interoperability**
 - **Flexibility & simplicity**
 - **Security**
 - **Reduced time-to-market**
- Factors out operational, architectural & development capabilities

Data Connection

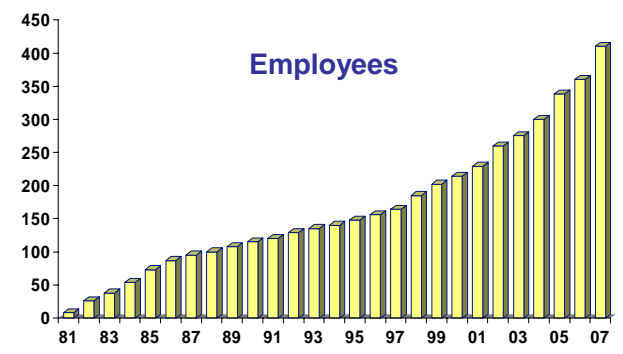
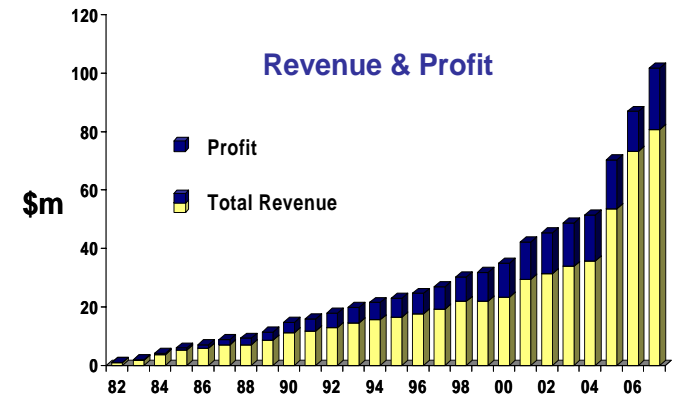
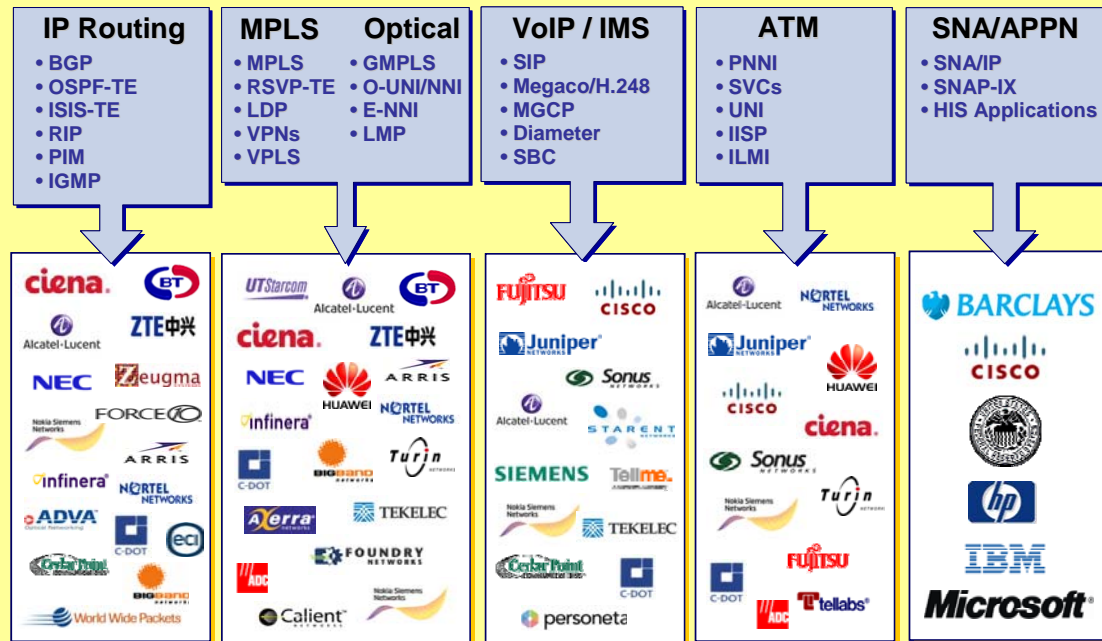
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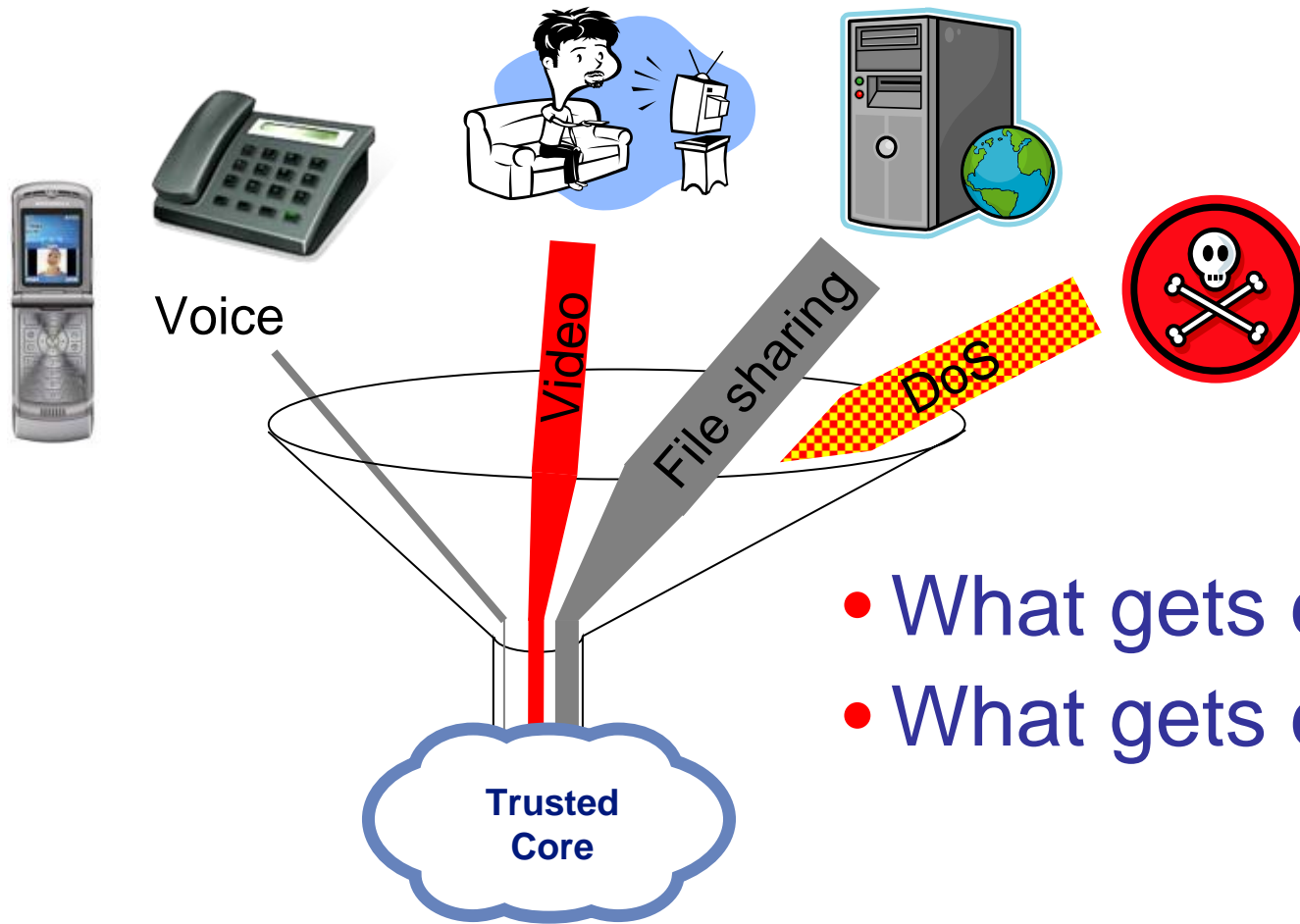
Data Connection (DCL)

- DCL provides portable protocol software for system vendors

Products & Customers

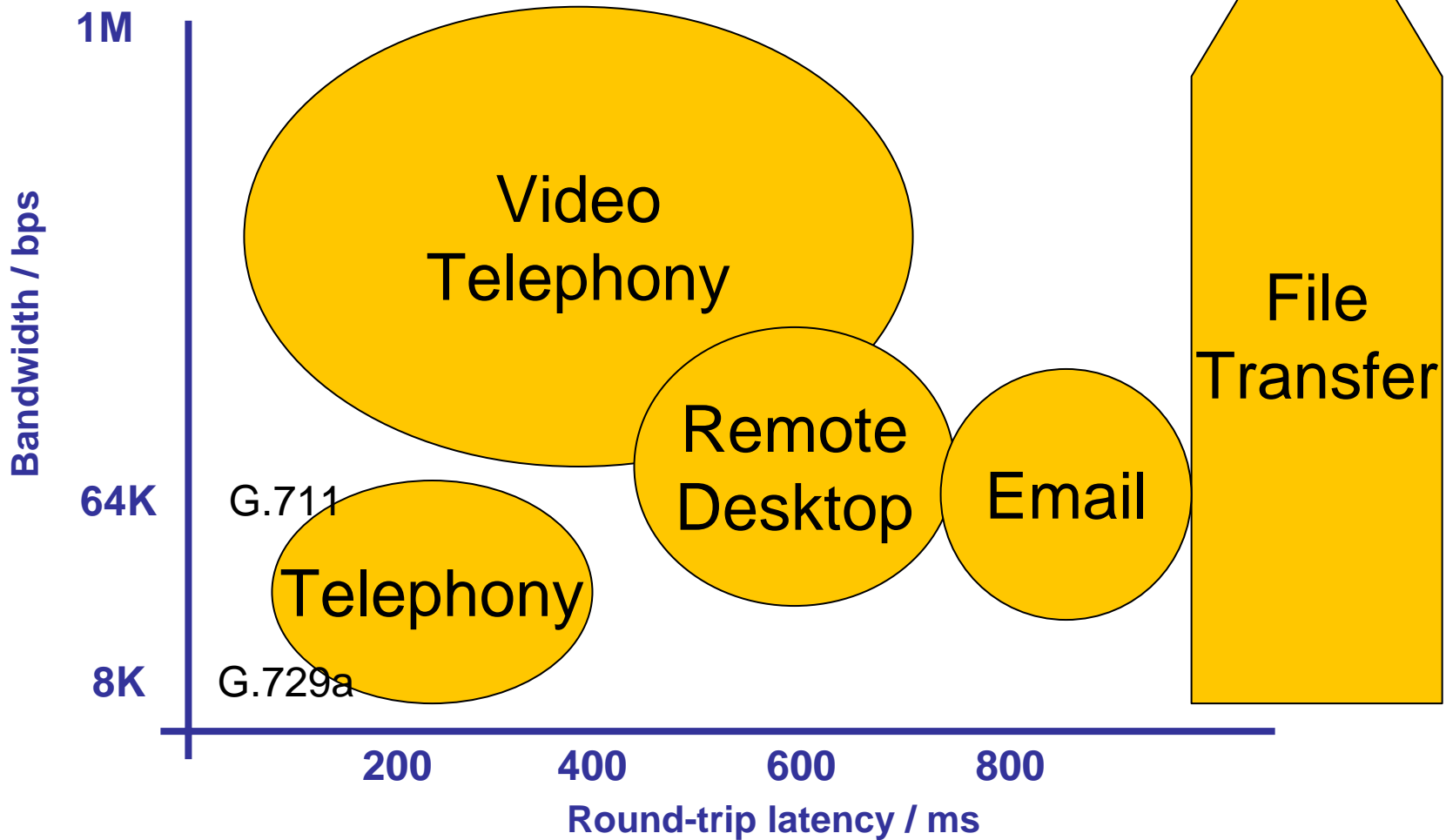


The Need for Session Control

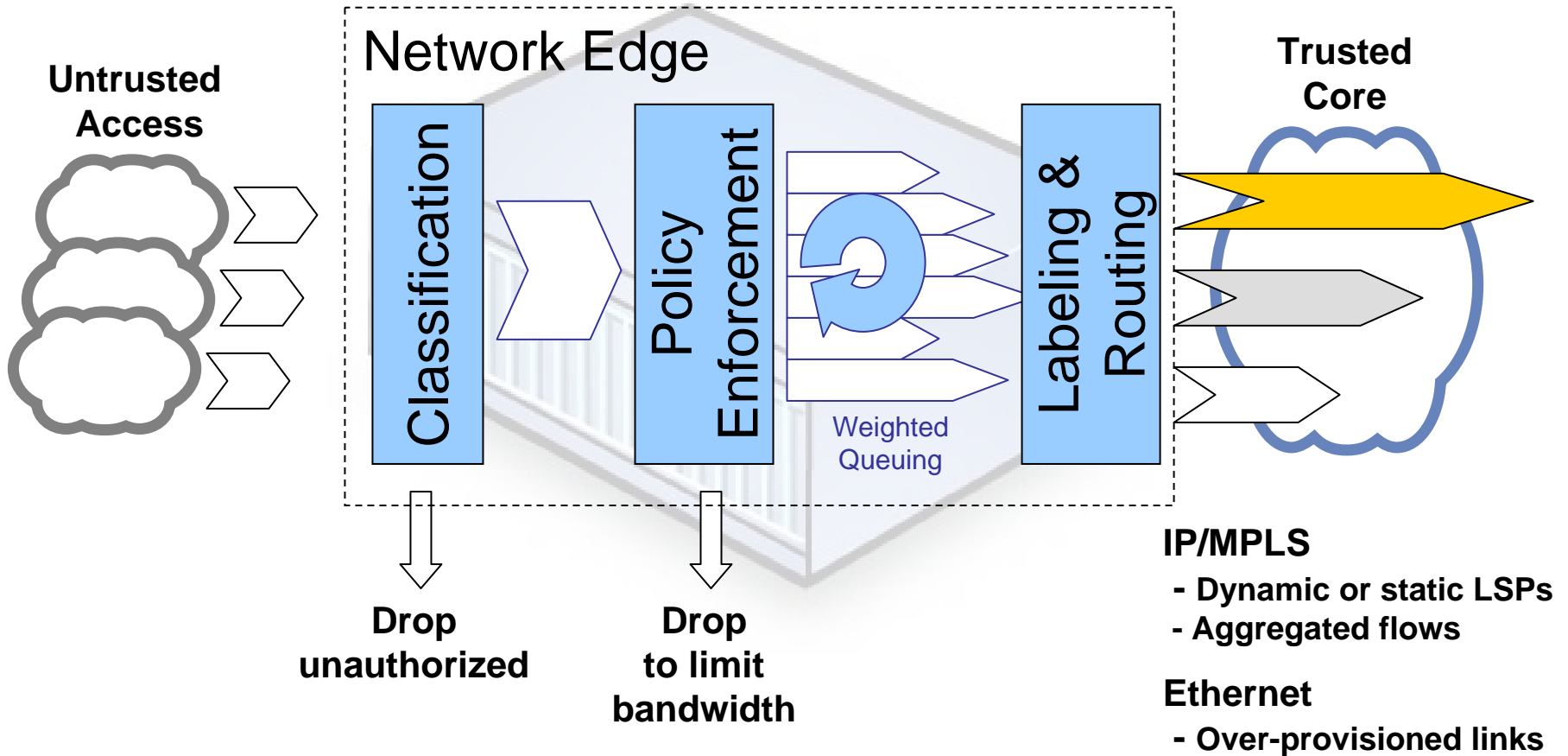


- What gets dropped?
- What gets delayed?

QoS Requirements

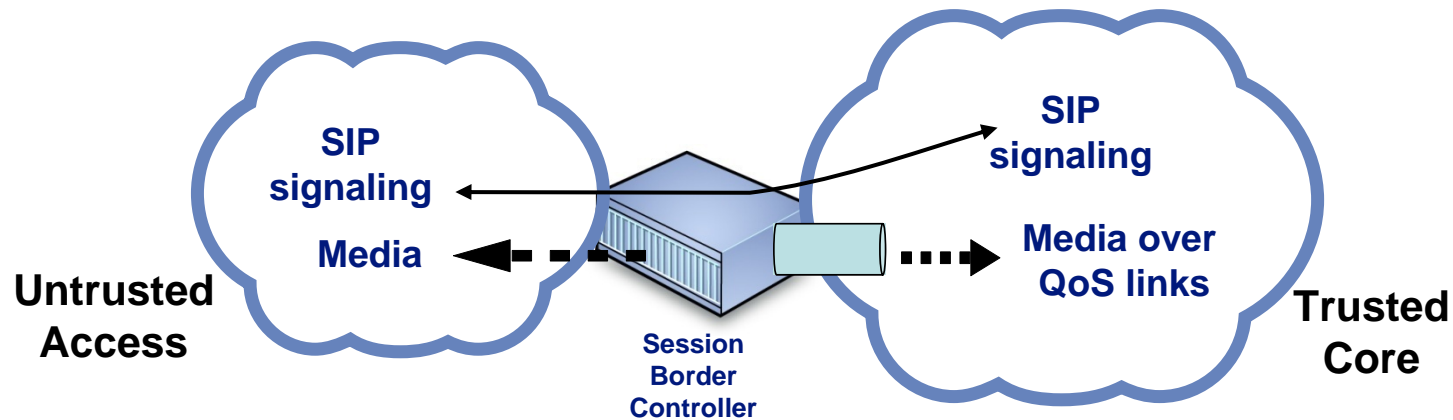


Implementing Access Control

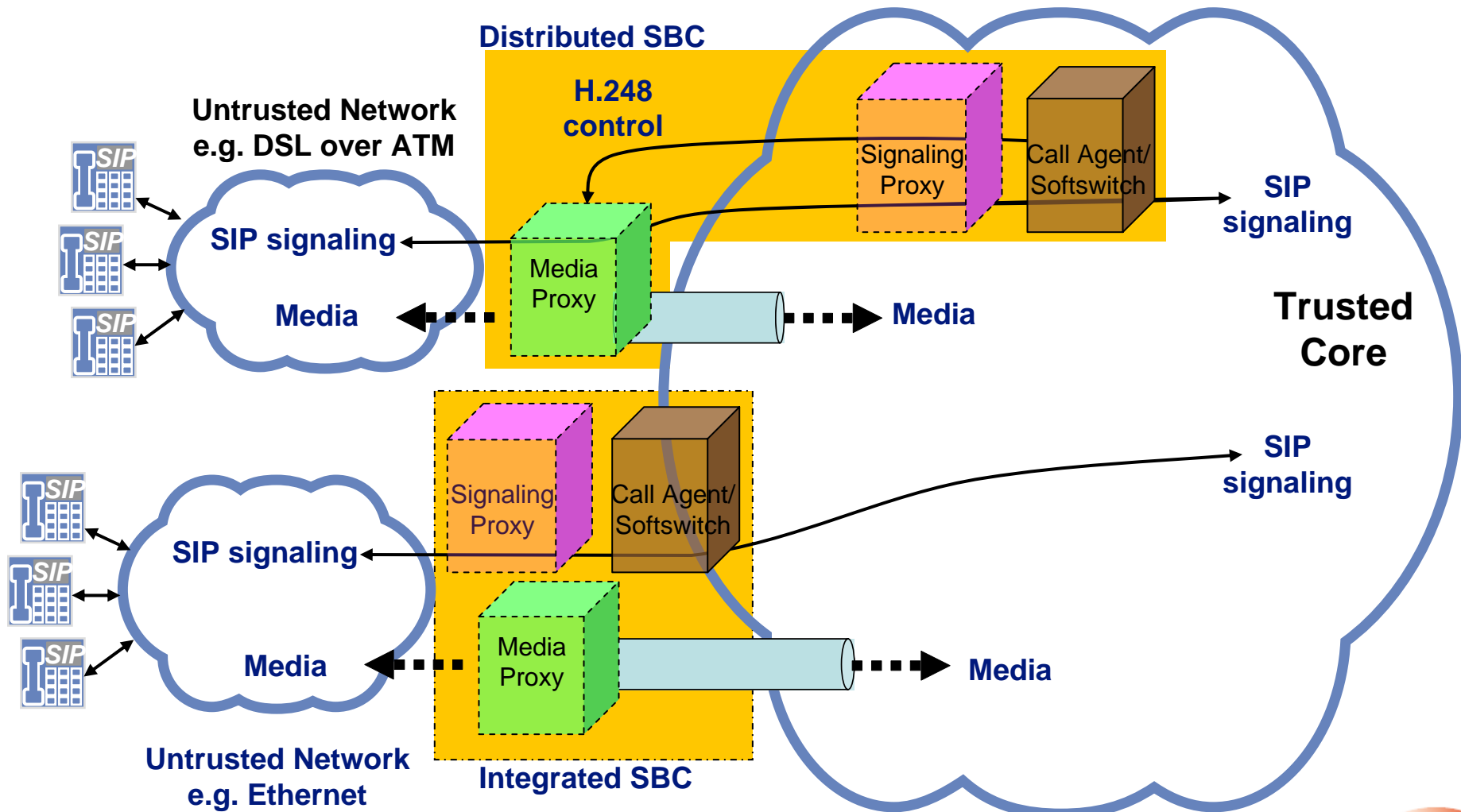


QoS for Media Sessions

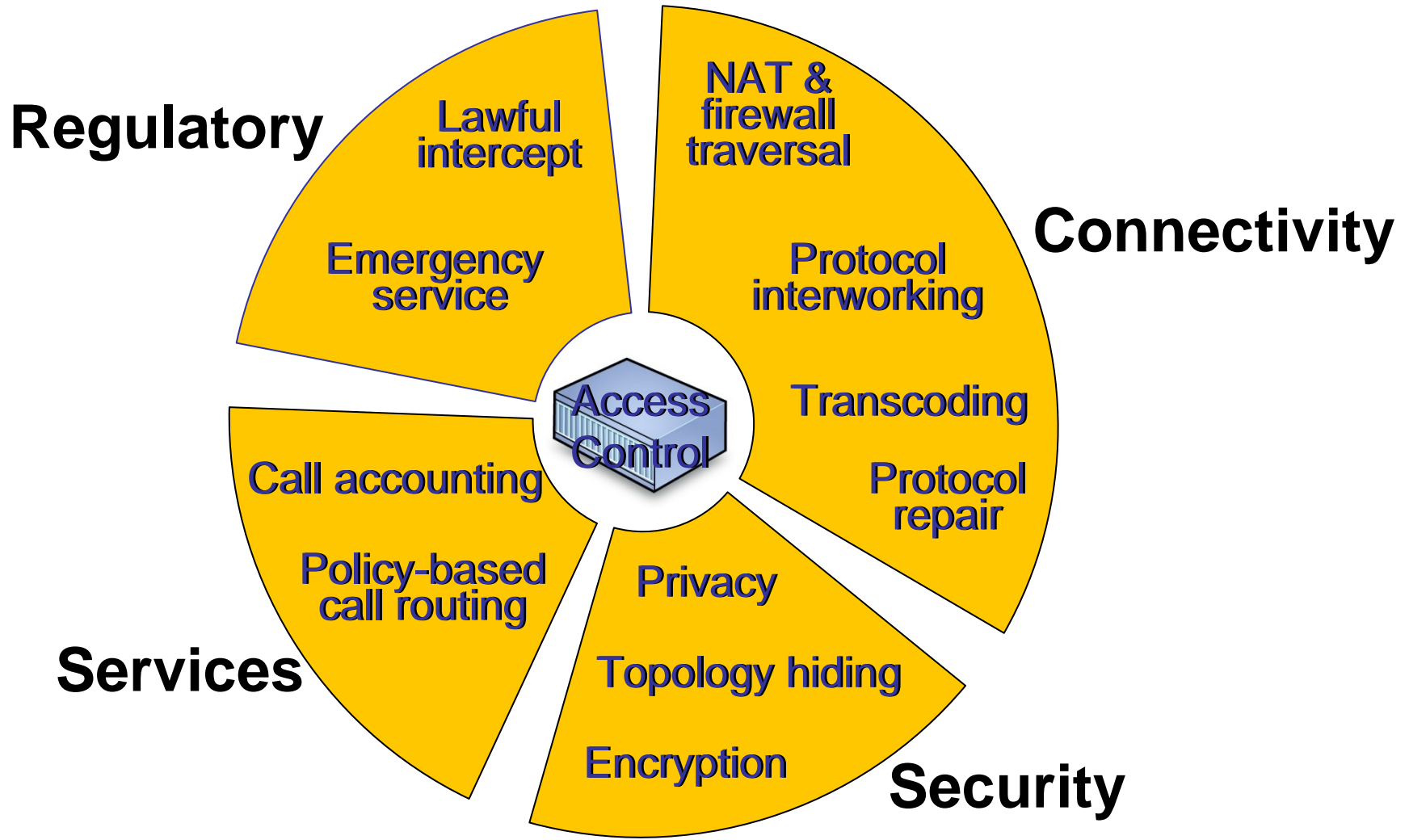
- Identification of authorized media flows
 - Media separate from signaling
- Authorization based on bandwidth
 - Monitoring of actual bandwidth use
- SBC identifies and controls session-based traffic to enable network prioritization and prevent congestion



SBC Deployment Models



QoS Is One of Many SBC Roles



Session Management's Role In IMS Environments

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About Brix Networks

- Global provider of open and extensible converged service assurance solutions
 - Allow the world's largest service providers and enterprises to offer reliable and high-quality experiences in voice, video, data, and mobile services
- Proven heritage of IP expertise unique to the service assurance marketplace
- Integrated software and hardware products that assure the delivery of any IP-based service, over any network, to any endpoint
- Recently acquired by EXFO

OSS in Today's Networks

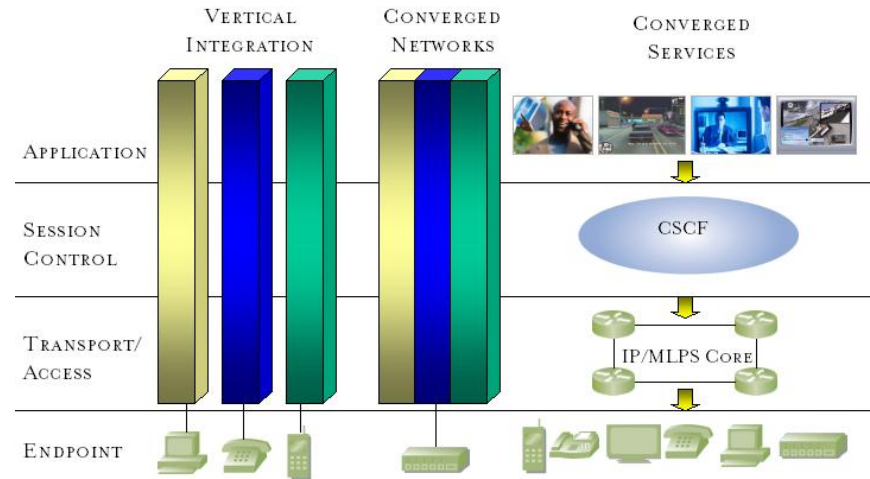
- Traditional network
 - CDR generation in “call” context
 - Call length in minutes
 - Features available to the subscriber
 - Voice mail, call forwarding, call waiting
 - Data transfer in kbit/s
 - Session defined by amount of data transferred
 - Reporting completed by network elements
 - SS7 network elements, softswitches
 - Reporting validated by signal monitoring systems
 - CDRs fed to OSS/BSS systems

OSS in the IMS Transition

- CDR metrics continue to be required for network management
 - Call & data plans continue to be sold on minutes & bytes downloaded as network transitions
- Additional metrics must be reported and validated
 - Sessions may include multiple instances of today's services
 - Additional information will come from new architecture
 - SCIM, CSCF, SBC, media server, app server
 - New protocols will standardize delivery of billing data
 - Diameter protocol eliminates OSS system connectors

Looking Beyond Signaling For Billing & Mediation

- Merging of voice, video & data traffic requires reporting of new metrics
- Signaling information continues to be valuable, but only part of the service delivery puzzle
- Media quality information is essential
 - Introduces the concept of an end-user service-level agreement (SLA) as a billing methodology
 - Guaranteed quality of the service being delivered based on measurements of the actual media traversing the network



Media Quality Challenges

- Media routing is dynamic
 - SBCs provide a single point of network access
 - Gateways provide network transitions
 - Media servers provide in-network resources
- Appropriate measurements are still in definition
 - Mean Opinion Score (MOS) for voice
 - Media Delivery Index (MDI), Media Quality Index (MQI), Video Quality Index (VQI) for video
 - Latency, loss, jitter for data
- Delivery method for these measurements leverages existing standards
 - RFC 3611 RTCP-XR
 - SNMP
 - SIP & Diameter transport mechanisms



Assuring the Service

- Quality-of-service metrics are key in the IMS architecture
 - Overall user experience must be measured for all services used
 - Correlated view of signaling & media is required to capture the quality of the session
 - Network elements must report standard metrics for mediation
 - Endpoints will be leveraged for future service validation
 - Mobile phones, converged devices, ATAs, STBs
 - Common algorithms must be used to calculate defined QoS metrics

Service Assurance Challenges In the IMS transition

- Customer “place shifting”
 - Devices will be entering through various connection methods & access points
 - ATA taken on the road
 - Services are expected across all devices
 - VOIP services through mobile Web interfaces
- Feedback from quality assurance system must be used to adjust service delivery to an endpoint
 - Carrier network should leverage IMS network elements to adjust bandwidth & QoS levels for highest quality & SLA management
 - User expectations must be managed as new billing systems & customer SLAs are initiated

Additional Considerations

- Service assurance in IMS goes beyond fault management & availability
 - Passive monitoring of the network allows a view of service quality
 - Feedback mechanisms between systems will allow adjustments of network treatment on a per-session basis
 - Customer expectations based on new SLAs will challenge traditional billing methods
 - Customer lifecycle management is key to effective service delivery

Service Assurance

- Executive-level reporting
 - IMS pilots are being tracked closely at executive level and need consolidated views of network health and quality
- SLAs will range from carriers to end users
 - Core-to-edge service guarantees and proof of service availability and quality are vital
 - Individual QoS will be tracked and guaranteed
- Network operations and network engineering
 - Many points of access will need to be monitored
 - Applications running for a user may not be in the same network as the user
 - Network sizing and requirements for new service launch must be validated, monitored, and fixed
 - Devices will be enabled through standards to report on quality

Audience Poll

Which session management device(s) do you plan to integrate/deploy in the next 12 months?

- SIP load balancer
- Session border controller
- Session/service monitor
- All of the above
- Two of the three
- None of the above

Q&A