

All Meshed Up:

How P2P, VoIP, SOA & SaaS work with MPLS Architectures to Impact Management WAN Design and Architecture Strategies

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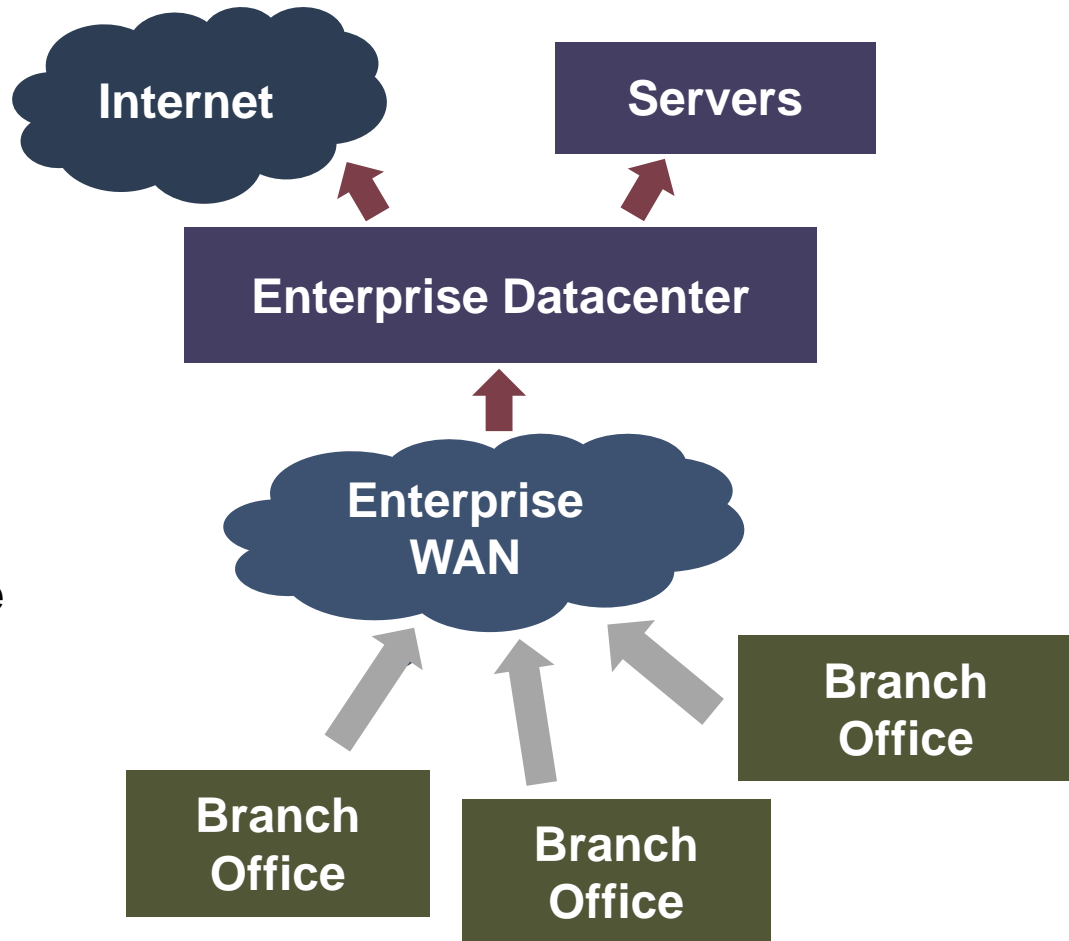
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- 1) Changes in application behaviors on the network**
- 2) Changes in IT organizational structure around how apps get onto the net**

Application Traffic Flow Patterns



Data Flows: Classical Hub & Spoke

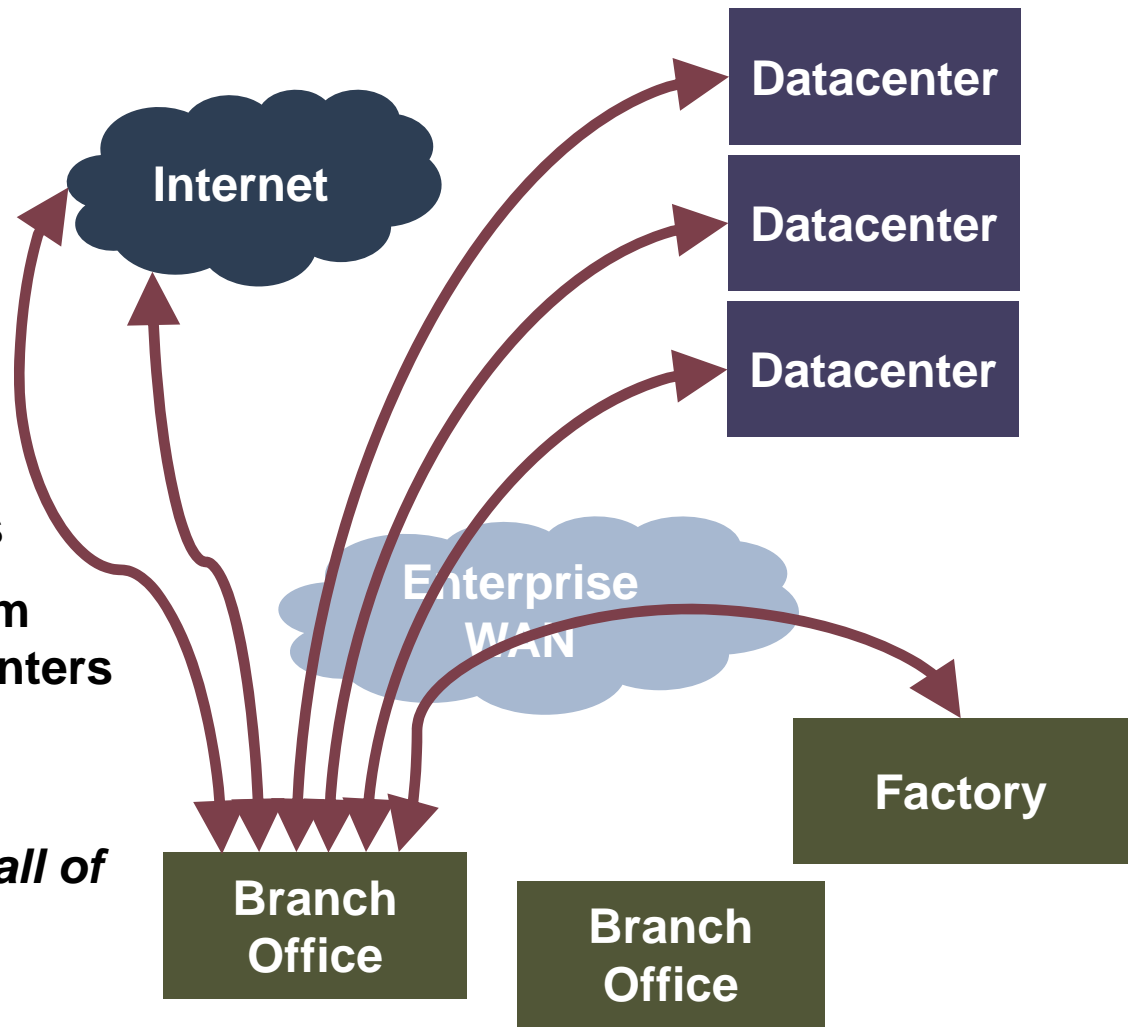


Single central points where all traffic can be seen for:

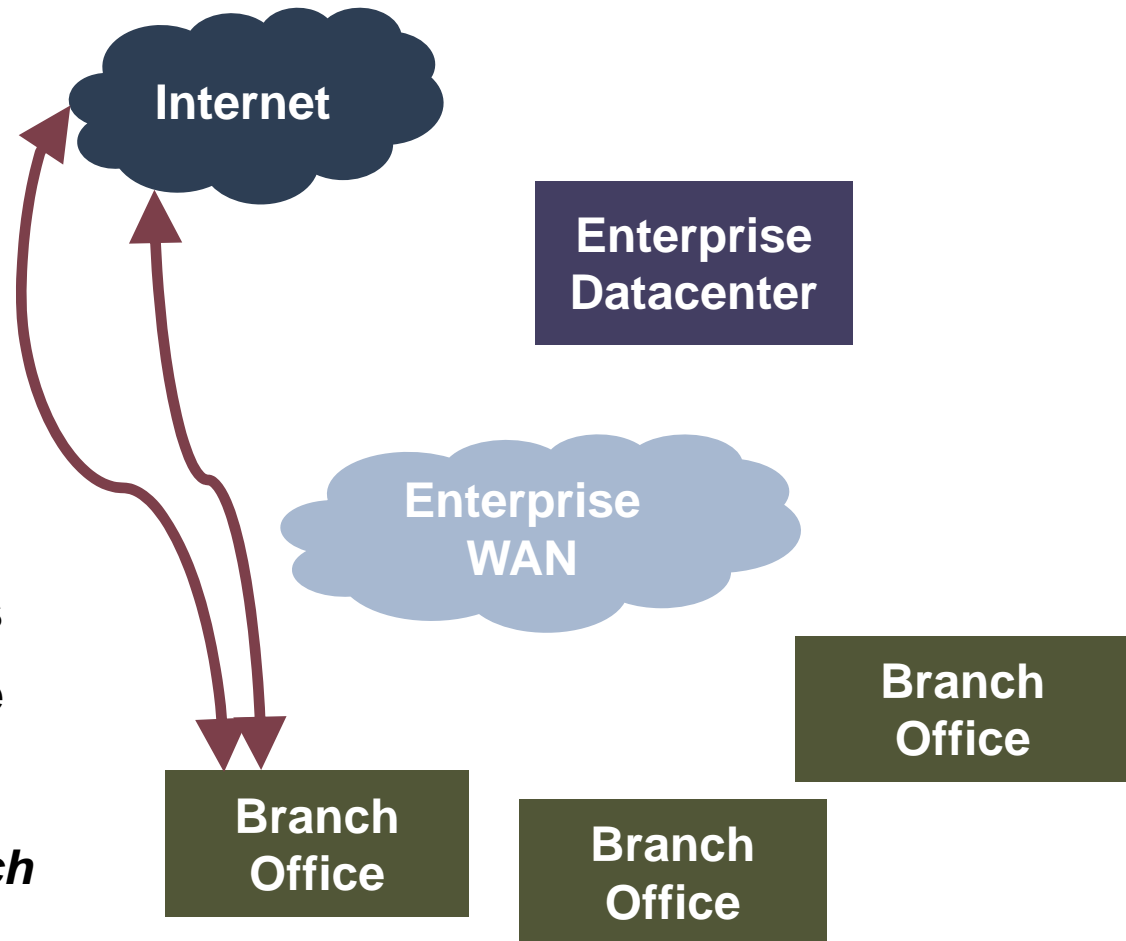
- Filtering & Tracking
- Auditing & Logging
- QoS & Monitoring

Data Flows: SOA / WebServices

- Mashups pull data from**
- Many Different Servers & Systems
 - Real-time Feeds from outside the Datacenters
 - Internet Services
- Only at the branch edge is all of the action visible*



Data Flows: Software-as-a-Service

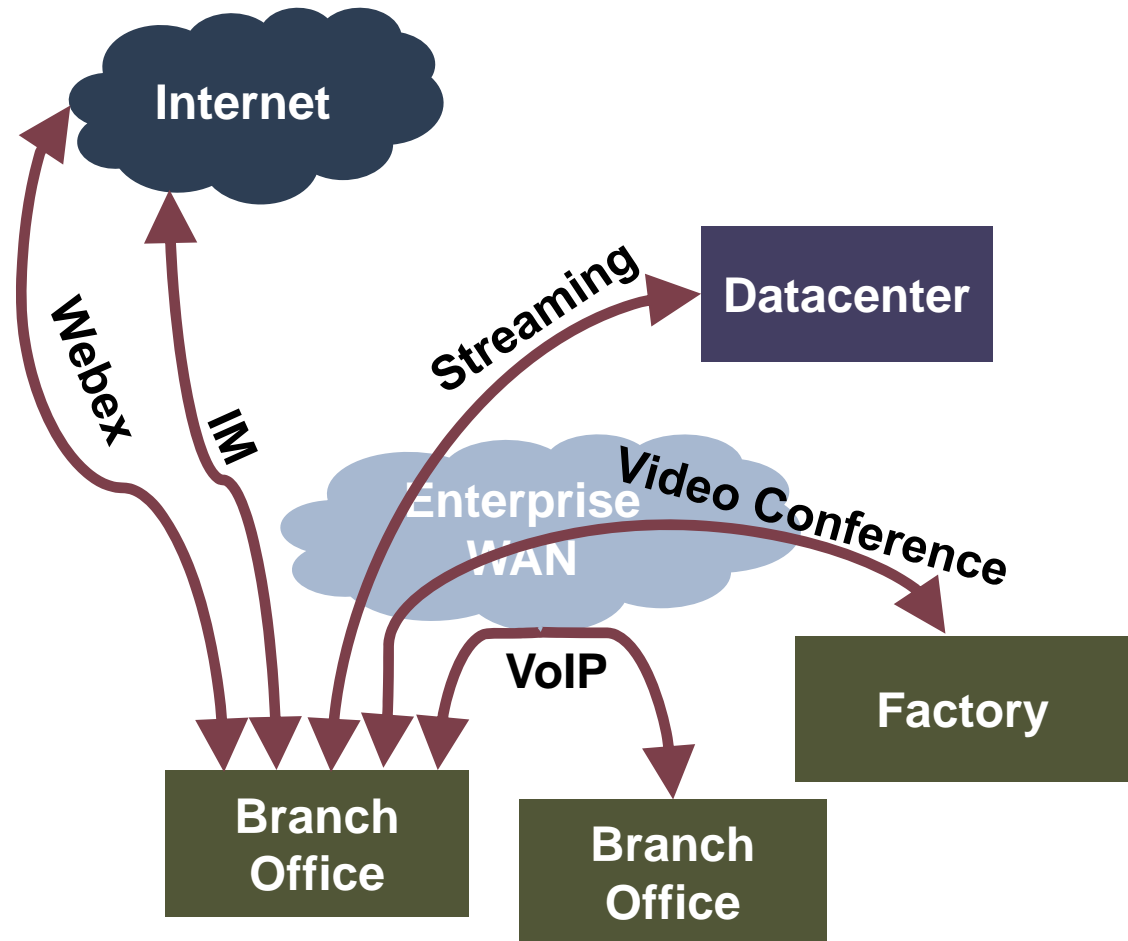


Users expect the apps to behave the same as any other enterprise app, but:

- Enterprise doesn't control the servers
- All traffic is over the Internet

But it is visible at the branch edge...

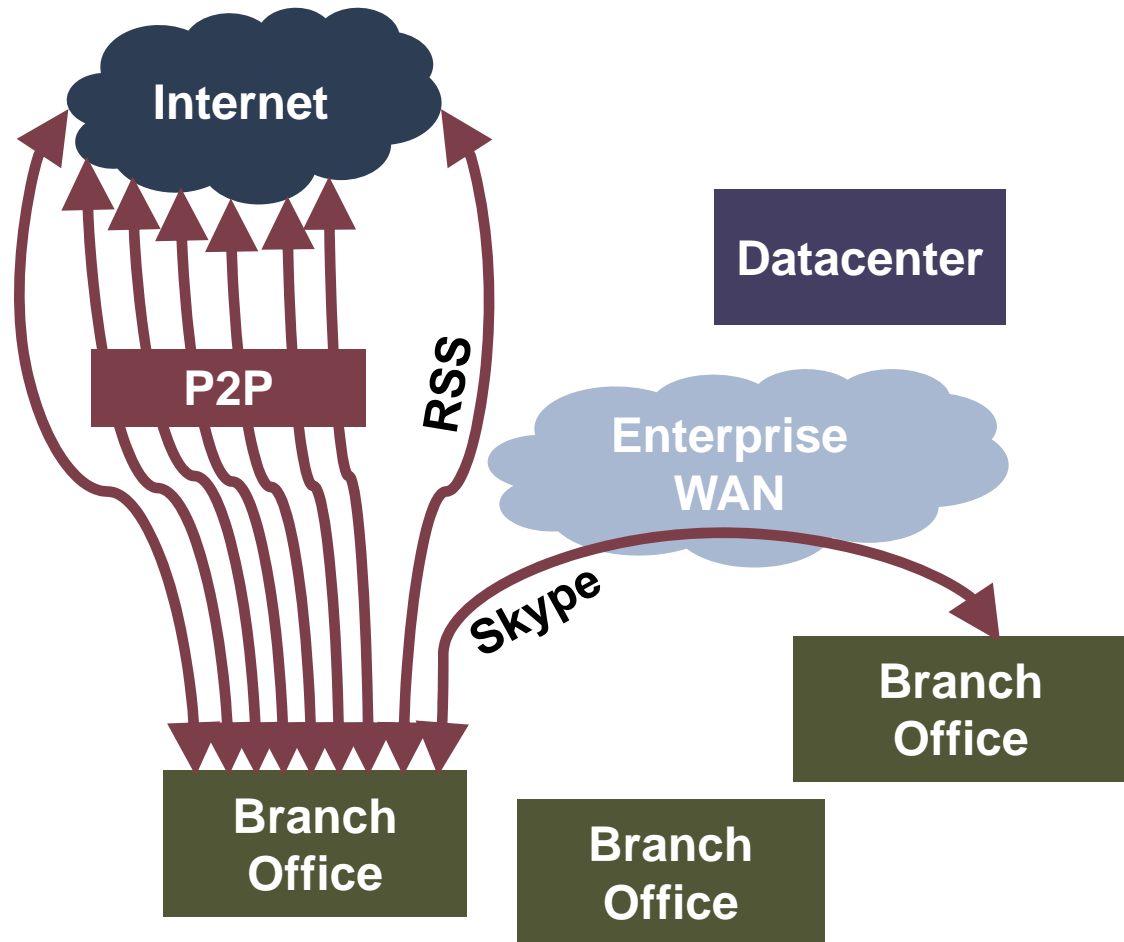
Data Flows: Live Communications



VoIP calls used to all terminate on one PBX or Softswitch where it was easily managed and measured.

Now we have many different types of IP communication traffic from many different places...

Data Flows: P2P



P2P & Recreational Traffic sneak onto the network and compete with important traffic, creating challenges

New features of the latest browsers & OSs, like RSS & iChat bring P2P-like behaviors inside the enterprise

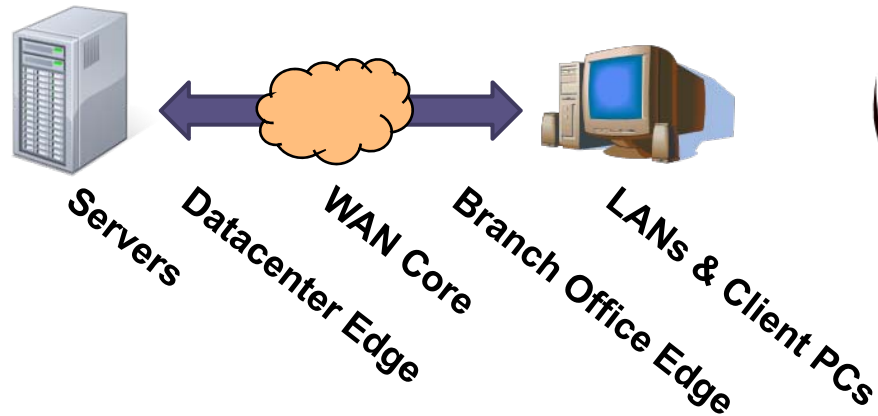
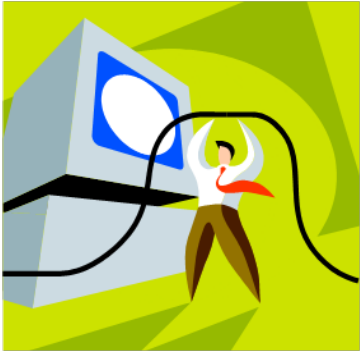
Observations

- Important Business Functions Using the Internet
- Lots of Apps Competing for Both Public & Private WAN Access
- Primary Business Applications have Compound Behaviors, Look a lot like web & chat traffic
- Management Information (Audit Logs, etc.) moves from core to edge
- Service Delivery Overlay Layer can be

IT Management of Network Application Delivery



The Real World of IT



Data
Providers
(applications)

Stuff-In-Between

Data
Consumers
(users)

Logical Layers of Network Edge Infrastructure

Content Management Infrastructure

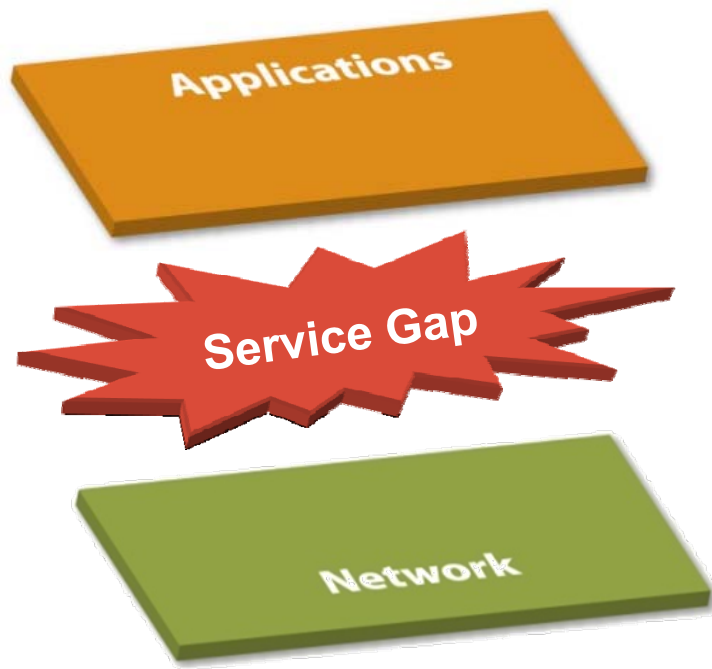
**Application/Service
Delivery Infrastructure**

Security Infrastructure

Connectivity Infrastructure



What Defines Application Service Delivery Infrastructure?



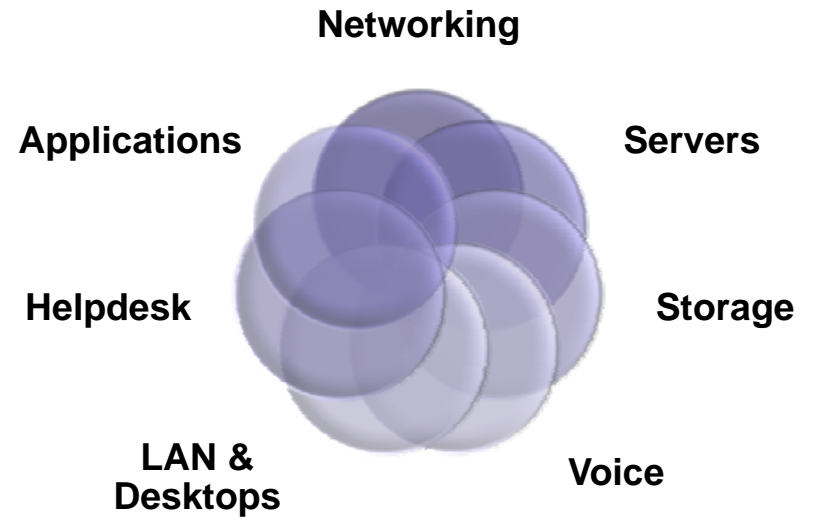
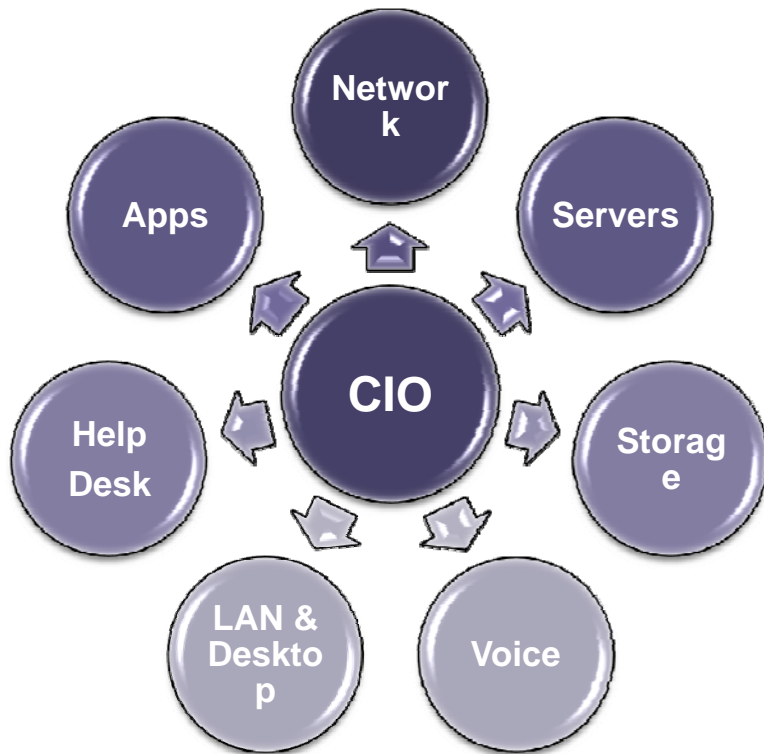
IT Objectives

- Application **Availability** across the Network
- Application **Performance** across the Network
- Application **Scalability** across the Network
- Application **Cost Efficiency** across the Network
- Application **Security** across the Network
- Application **Manageability** across the Network

IT Initiatives

- WAN Migration (MPLS)**
- Network Security**
- Web Services, SOAs, & Distributed Apps**
- Datacenter Virtualization**
- Workplace Virtualization**
(Remote Users, Mobile Users, Multiple Offices)
- Live Communications**
(Convergence of IM, VoIP, Video, P2P, Broadcast)
- Outsourcing**
- Service Delivery & ITIL**

IT Silos & Application Delivery



Needs

What I Need to Achieve:

- Application **Availability** across the Network
- Application **Performance** across the Network
- Application **Scalability** across the Network
- Application **Cost Efficiency** across the Network
- Application **Security** across the Network
- Application **Manageability** across the Network

Tools I Need to Accomplish That:

- Visibility** into Application Traffic across the Network
- Control** of Application Traffic across the Network
- Optimization** for Application Performance across the Network

Technologies Converge

Several Delivery Forms

Caching

- Object Caching
- Packet Caching
- WAFS
- Compression



Probe

- Layer 7 Classification & DPI
- Flow Records
- Transaction Time & SLA Measurements
- Application Discovery



QoS

- Queuing & Priorities
- Bandwidth Reservations & Guarantees
- MPLS & Classes of Service
- Tunnels, VLANs, & Marking



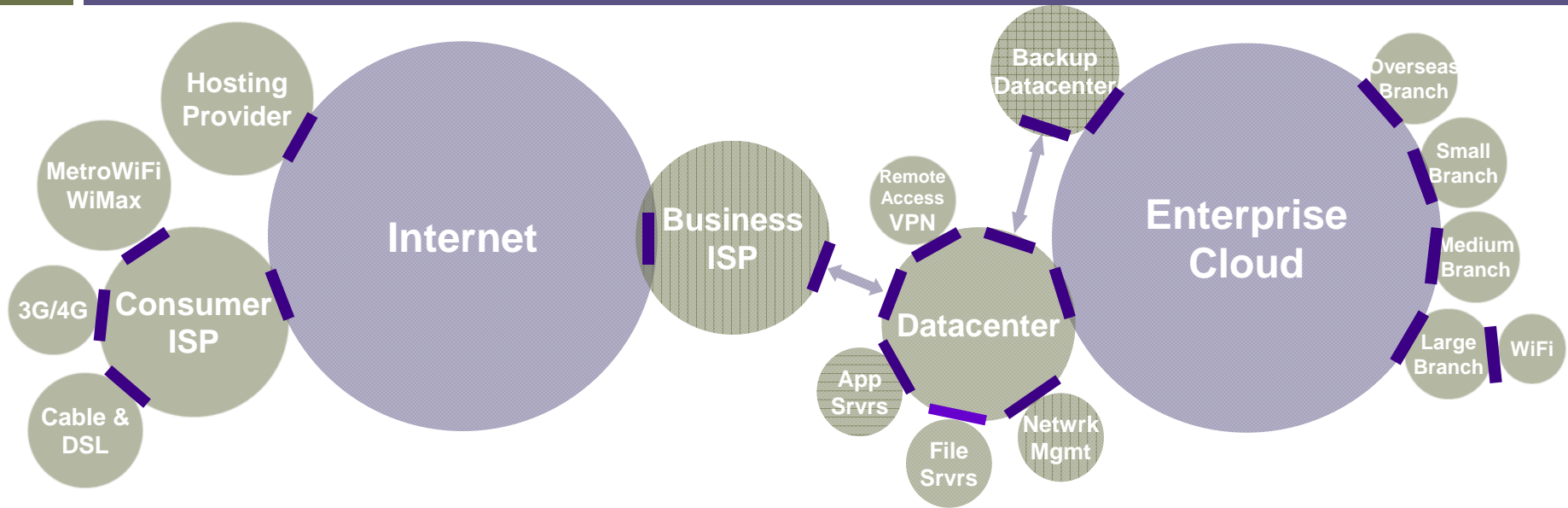
WAN Opt

- Network Protocol Optimization
- Application Protocol Optimization
- Route Optimization
- Latency Mitigation
- Packet Loss Mitigation

...

- Disaster Recovery / Disconnected Operations
- Mobility Accommodation

Where does this Service Delivery Infrastructure sit?



Demarcs occur everywhere traffic passes from one domain of ownership to another:

- Core-to-Edge
- Organization-to-Organization

- Wifi ↔ LAN ↔ WAN ↔ Datacenter ↔ Applications
- DSL ↔ ISP ↔ Backbone ↔ Provider ↔ Datacenter

Observations

- Service Delivery Overlay Layer can be sourced from carrier, non-carrier, or done in-house
- Application Service Delivery equipment segment consolidating functions
- ITIL-type thinking starting to influence network planning