



PRESENTS

**NETWORLD INTEROP**

an INTEROP event

# The Evolving Edge

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September 11, 2001



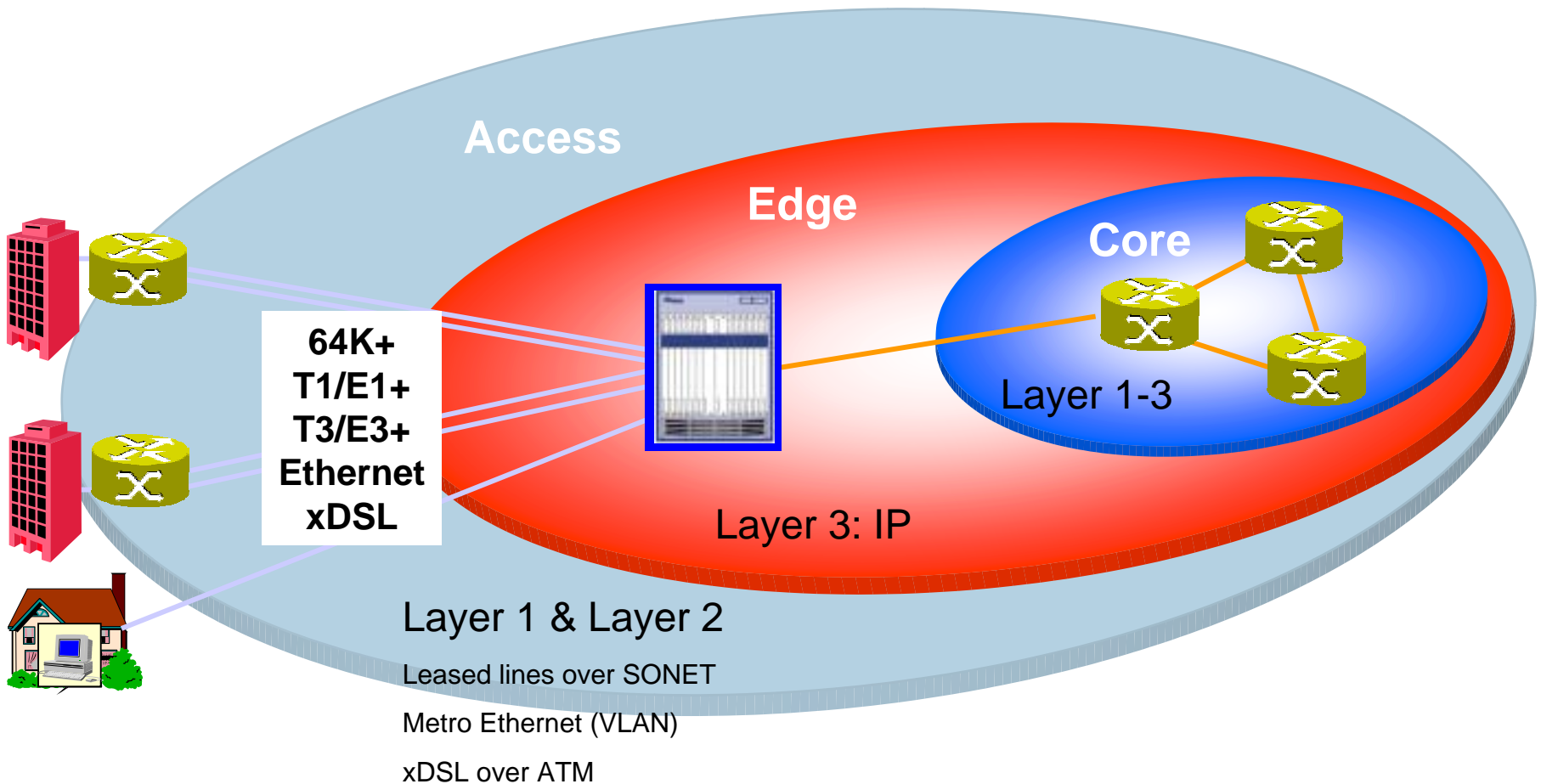
# The Evolving Edge Agenda

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- Quick definitions
- The phases of IP build out
- Example edge services offered today
- Future technology trends

# Where's the Edge?

- Outsourced enterprise service delivery



# Service Provider Network Build-out

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- Phase 1: Build the Core
- Phase 2: Build the IP Edge
- Phase 3: Add IP-based Services
- Phase 4: Consider Real-time control

# Service Provider Network Build-out

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- Phase 1: Build the Core
  - Three models: L2, L3, L1
  - Over-provision (no bottlenecks)
  - Re-routes for reliability
  - Wire-speed throughput
- Phase 2: Build the IP Edge
- Phase 3: Add IP-based Services
- Phase 4: Consider Real-time control

# Service Provider Network Build-out

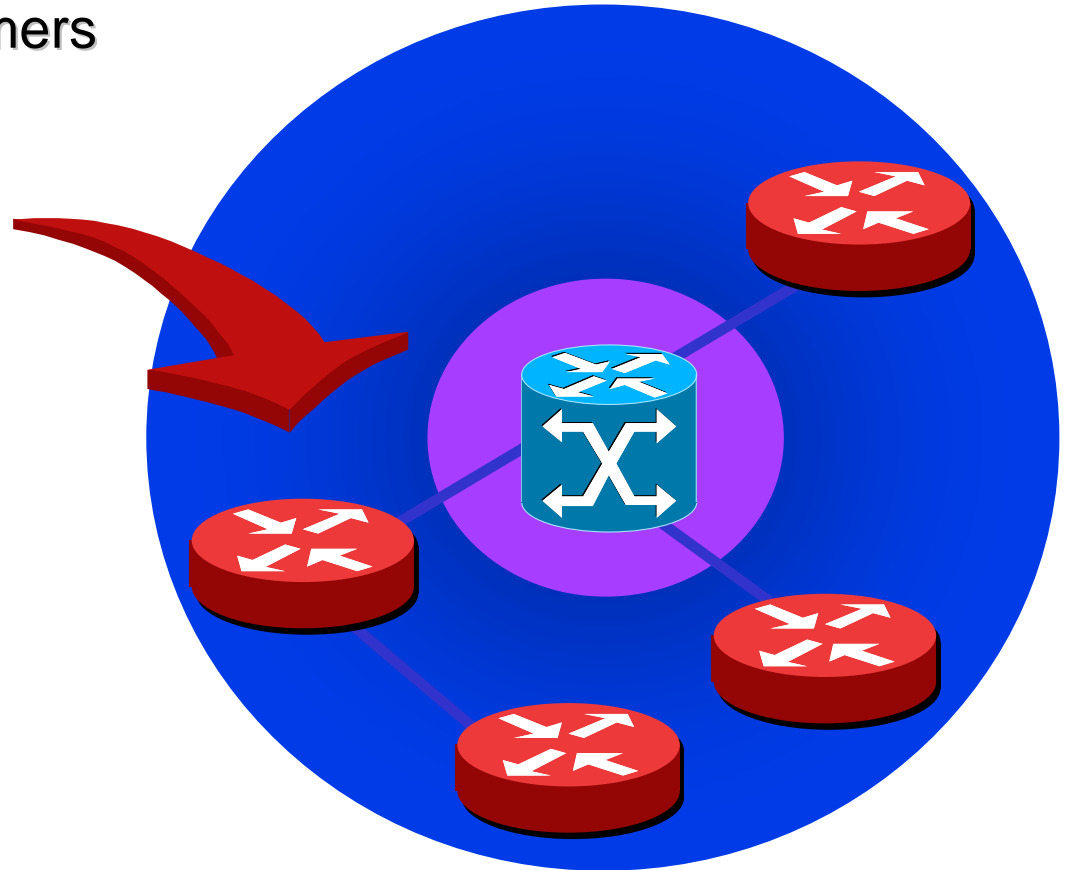
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- Phase 1: Build the IP Core
- Phase 2: Build the IP Edge
  - Wire-rate throughput
  - Oversubscription modeling
  - Flexible billing
  - SLA delivery (throughput, uptime)
  - Legacy protocol support
  - QoS modeling
- Phase 3: Add IP-based Services
- Phase 4: Consider real-time control

# The Service Provider Edge Requirements

- IP Edge: Where service providers “meet” their customers

- Service adaptation to IP
- Redundancy
- Reliability
- IP VPNs
- Statistics Harvesting
- Accounting
- IP Routing
- IP QoS
- Market-driven service creation
- Operational compatibility with installed base



# Network vs Application Services

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- Network Edge
  - Bandwidth
  - Security: DoS
  - Uptime
  - Traffic Policy
- Application Edge
  - Data center: e.g. hosting
  - Applications: e.g. f/walls
- May be same provider or different ones

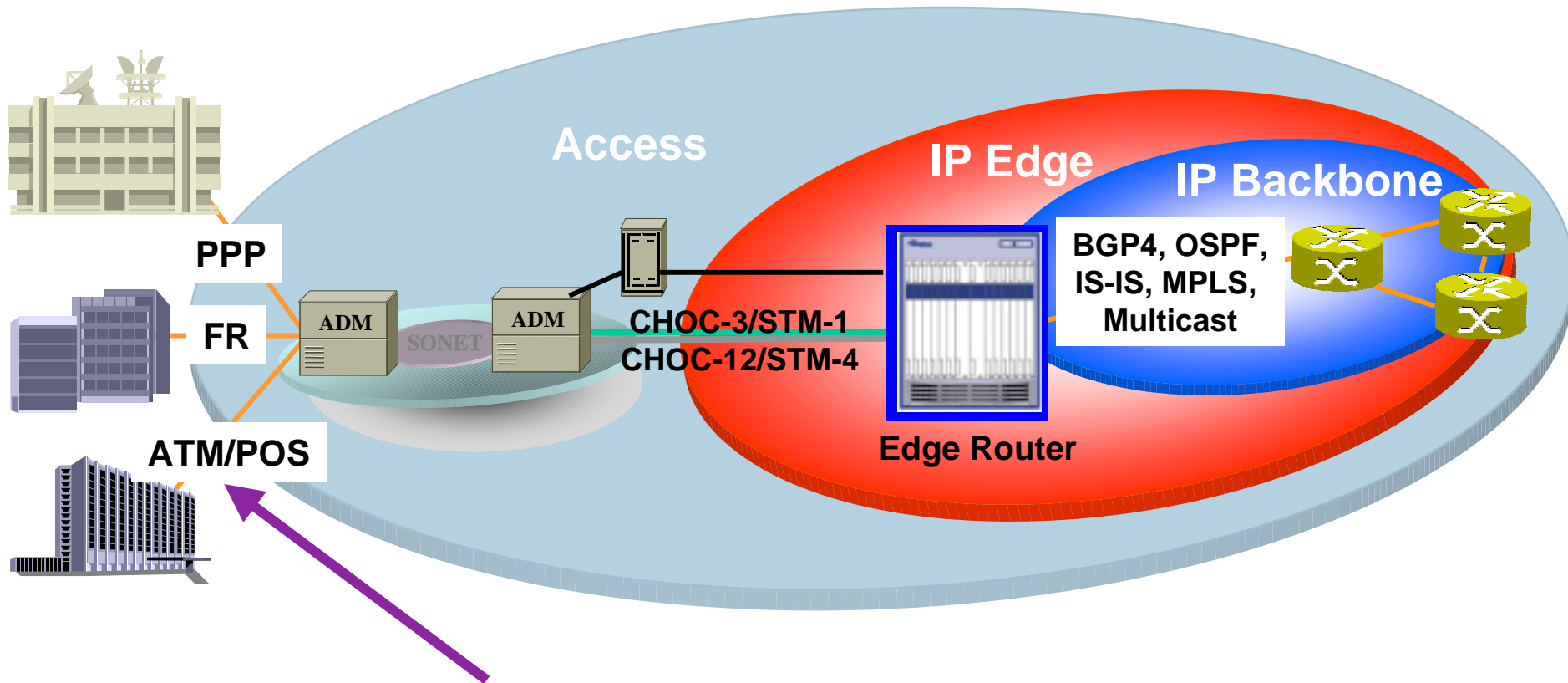


# Service Provider Network Build-out

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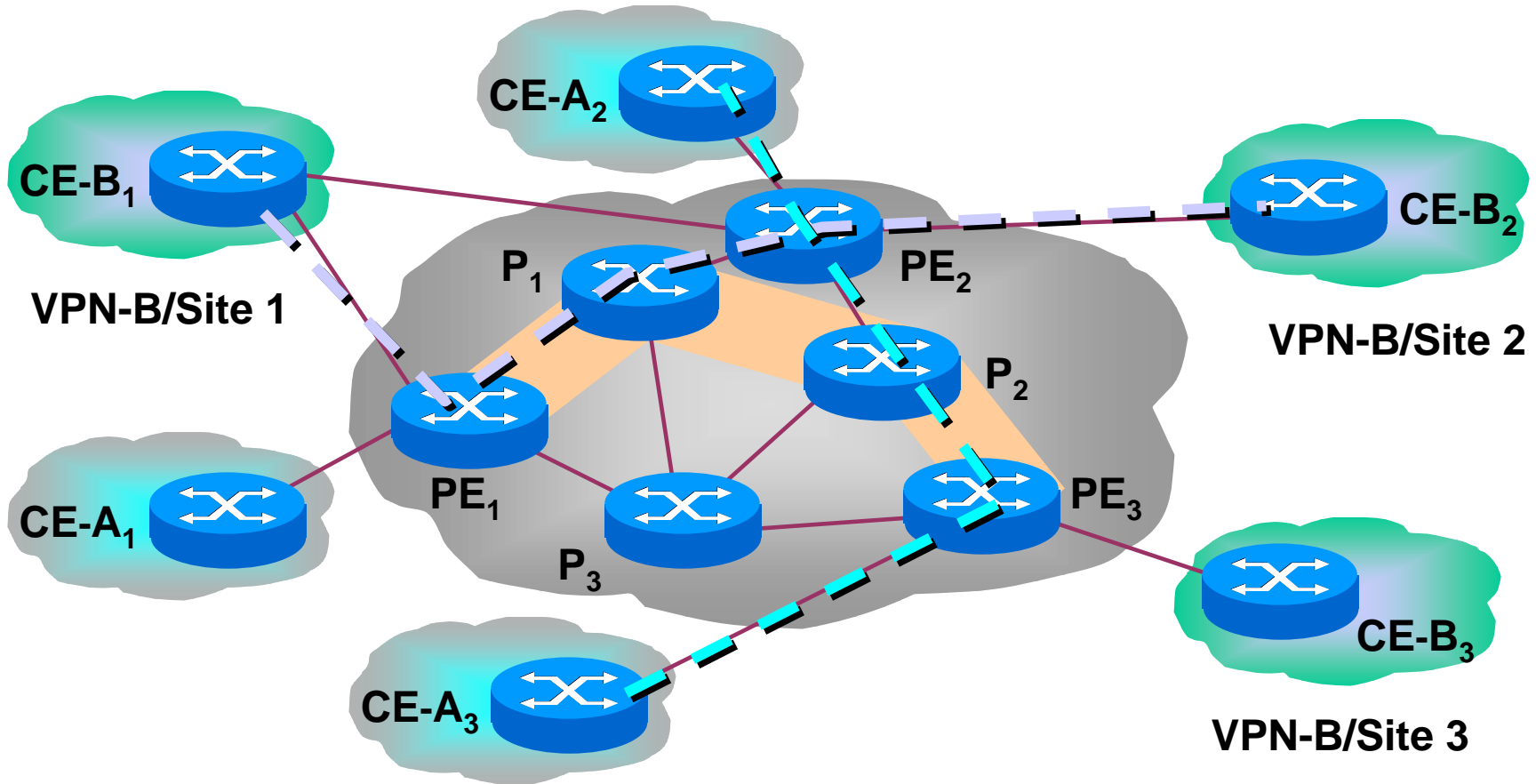
- Phase 1: Build the IP Core
- Phase 2: Build the IP Edge
- Phase 3: Add IP-based Services
  - Three examples: flexible bandwidth & IP VPNs & VoIP
- Phase 4: Consider Real-time control

# Flexible Bandwidth Creation



- Multilink or rate limited service
- Eases enterprise bandwidth increases

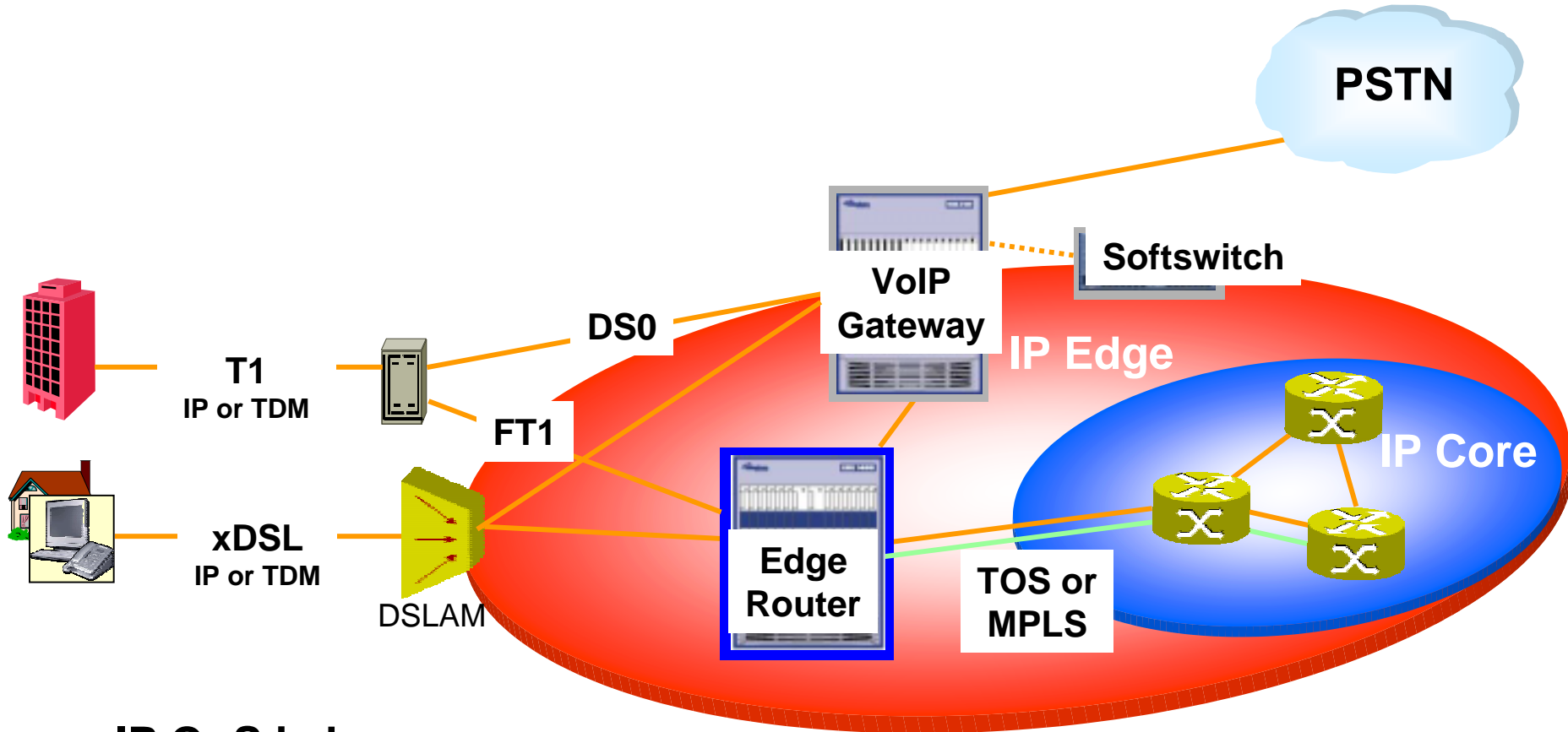
# IP-Based VPN



CE – Customer Edge  
PE – Provider Edge  
P – Provider (Core)

- MPLS VPN service
- Migration from FR to IP
- Easier(cheaper) to connect new sites

# VoIP



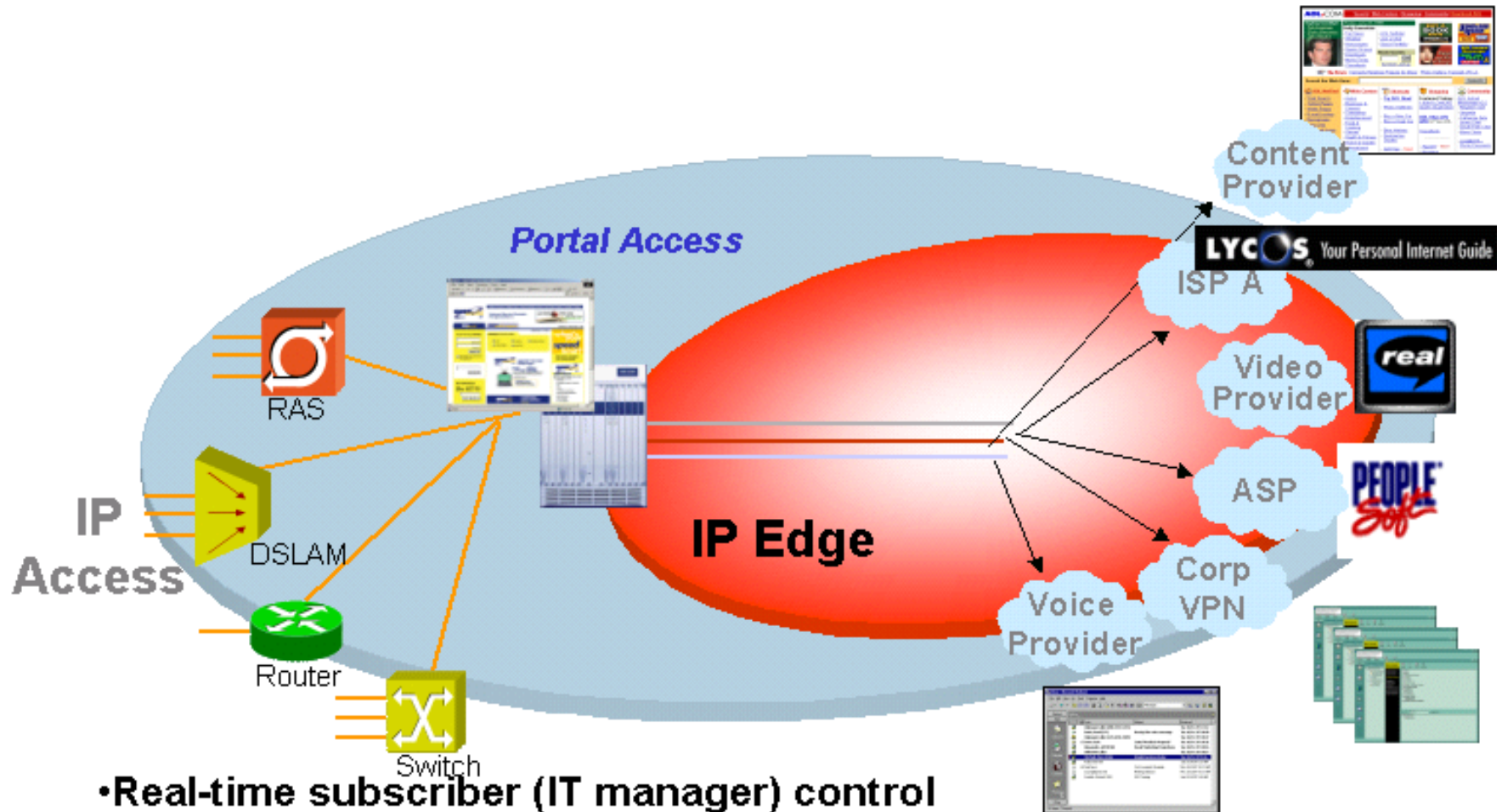
- IP QoS is key
- Support for TDM and IP
- Migration
- The voice network will never die

# Service Provider Network Build-out

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- Phase 1: Build the IP Core
- Phase 2: Build the IP Edge
- Phase 3: Add IP-based Services
- Phase 4: Consider real-time control
  - Subscriber-based service provisioning control

# Coming Soon.....?



- Real-time subscriber (IT manager) control
- Services on demand
- Billing based on service selection

# The Evolving Edge Summary

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- As enterprises look to save money (and service providers offer the right services), outsourcing models continue
- Leading service providers today are offering enterprise-tailored services: IP VPNs, Flexible bandwidth, VoIP transport
- Look for strong IP network expertise, even if you have a mix of traffic types
- Ask about future real-time service activation control

**THANK YOU**



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