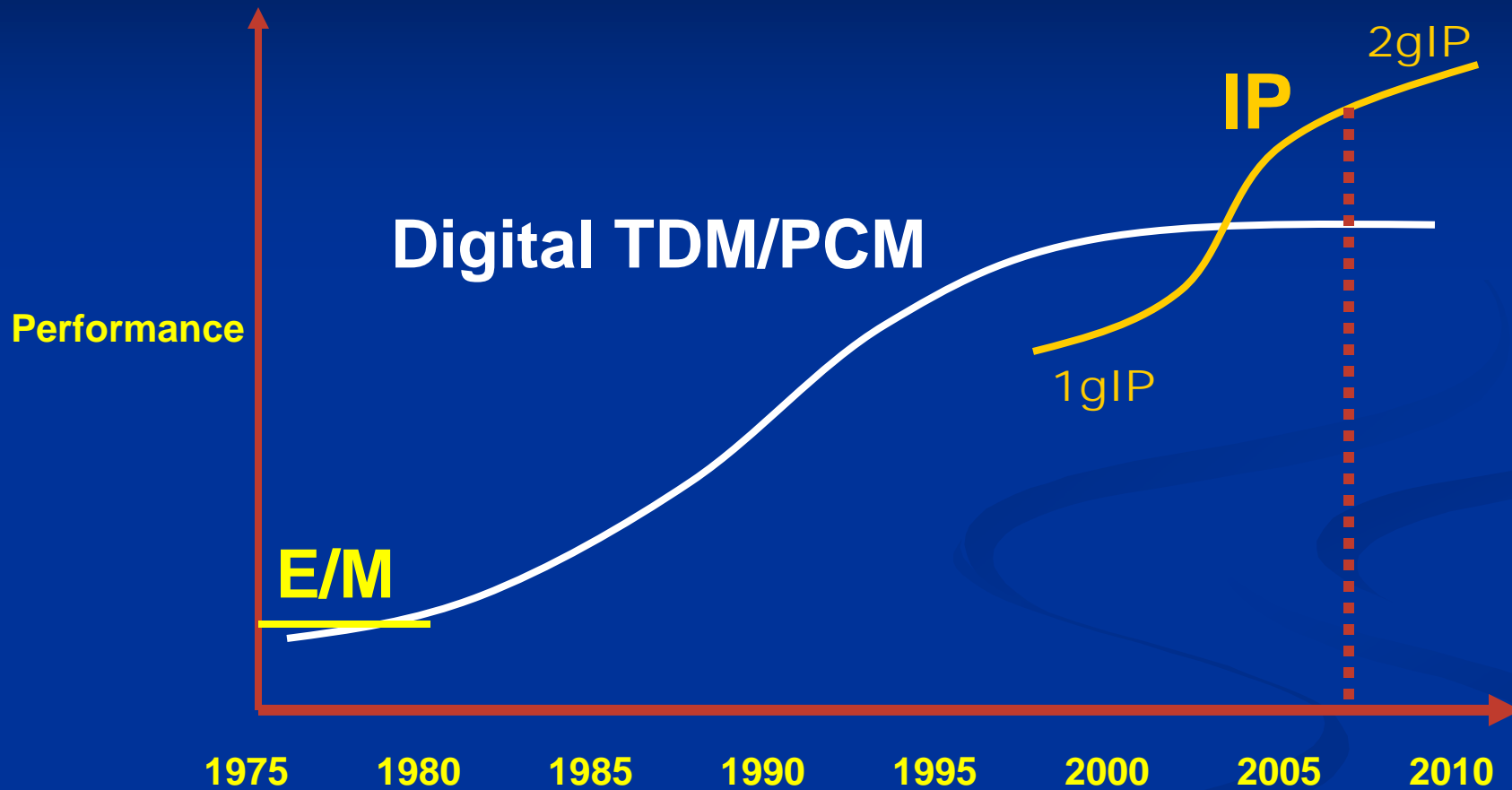


Architecture and Deployment Options for Enterprise Communications

Allan Sulkin
President, TEQConsult Group
www.teqconsult.com

Enterprise Communications System Life Cycles

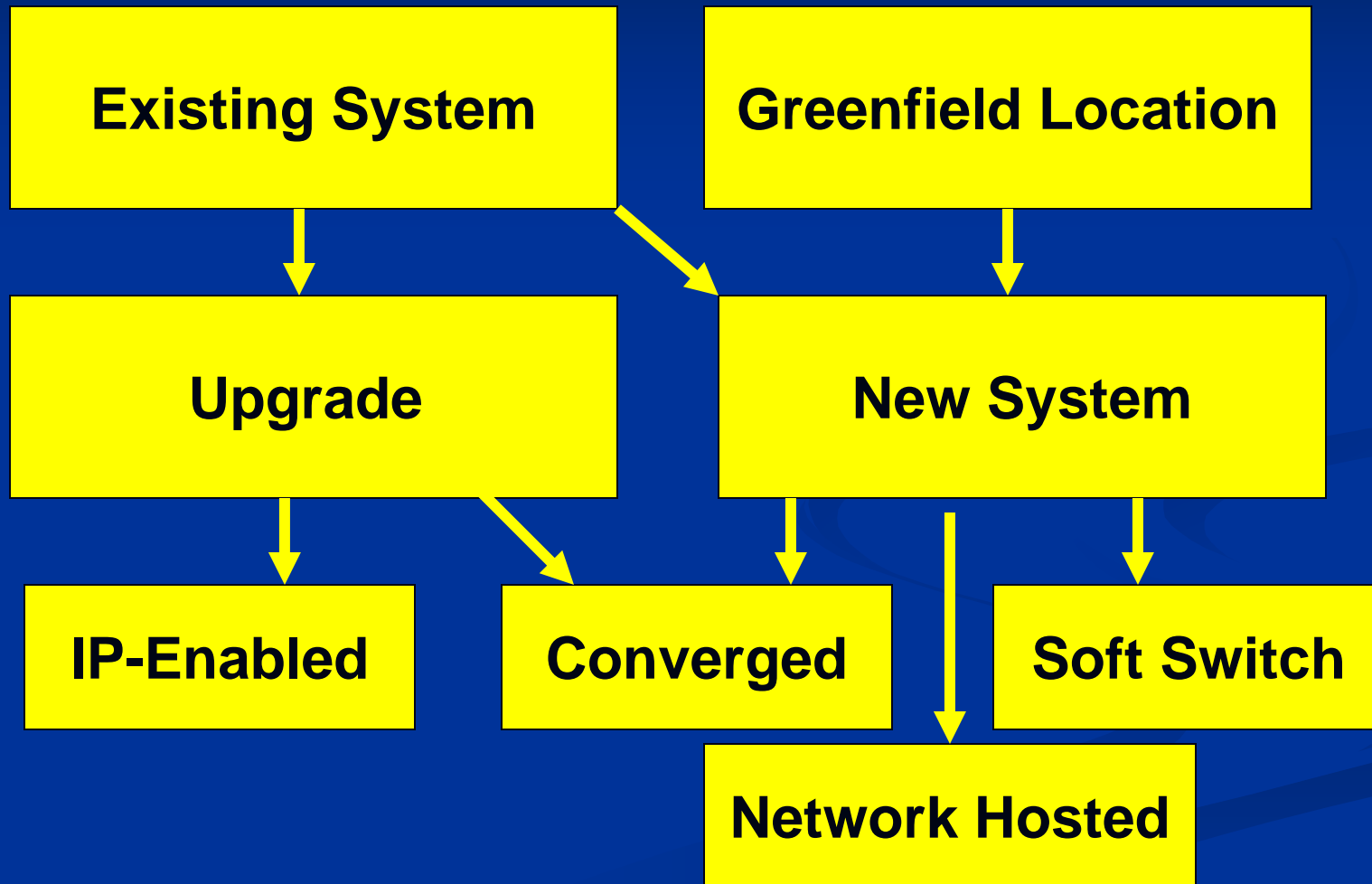


KEY
E/M: Electromechanical
TDM/PCM: Time Division Multiplexing/Pulse Code Modulation
IP: Internet Protocol

Why Customers are Migrating to an IPTS

- Financial savings
 - Capital expenditures, e.g., upfront and upgrade system costs
 - Operating expenses, e.g., system upkeep
 - Reduced network transmission service fees
- Enhanced system performance
 - Growth and network expansion
 - Increased redundancy and system survivability
- Productivity applications support
 - New functions/capabilities
 - Facilitates implementation of peripheral applications

IPTS Migration Scenarios



Customer Migration Options to an IPTS

#1: Installed System Upgrade

- Upgrade an installed digital system to an IPTS from same supplier
 - IP-enabled, Converged and/or Soft switch design options
 - Investment protection level will vary case-by-case
- Likely hardware upgrade requirements
 - Common control
 - Media gateway equipment (carriers/circuit boards)
 - Voice terminals (IP telephone instruments/soft clients)
 - LAN/WAN infrastructure (including PoE)
- Likely software upgrade requirements
 - Generic software
 - IP license fees

Customer Migration Options to an IPTS

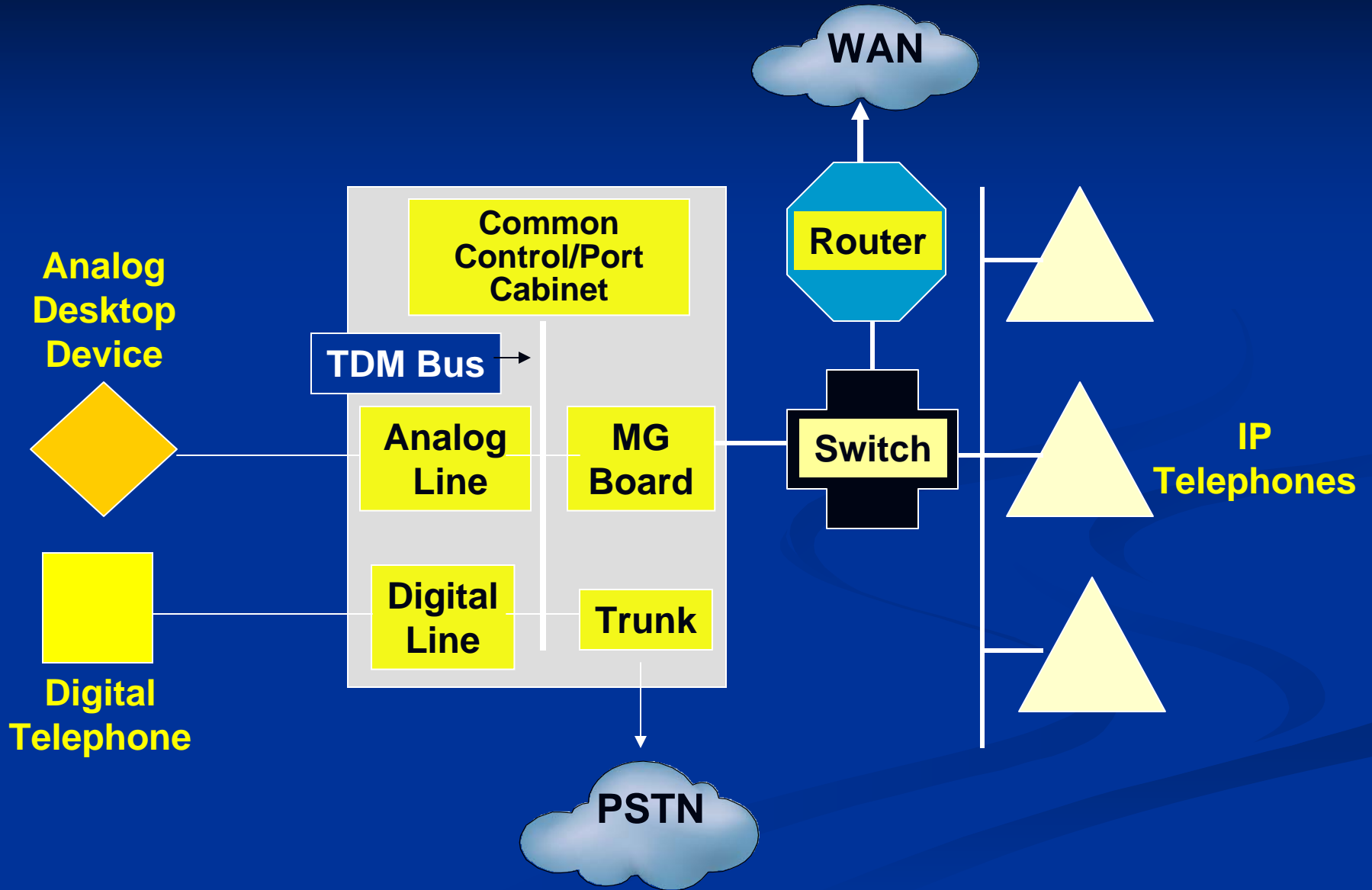
#2: Forklift to New IPTS Solution

- Replace existing digital system with an all-new IPTS from same or new system supplier
 - Customer-owned premises solution
 - Fully managed services solution (premises-based)
 - Services provider hosted solution (network-based)
- Minimal investment protection of core system hardware/software

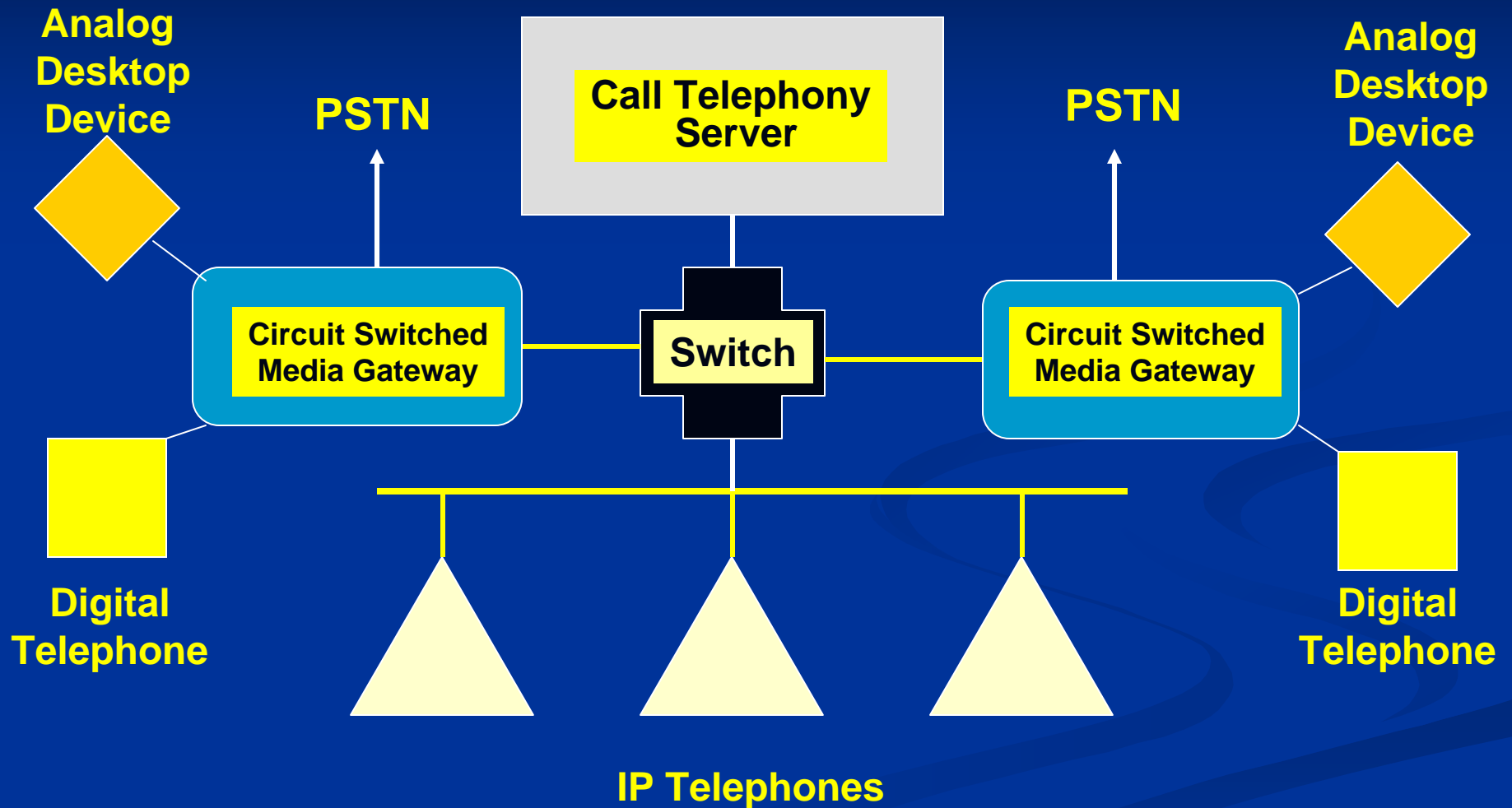
IPTS Design Options

- **IP-enabled:** circuit switched network design equipped with fully integrated media gateway port interface circuit cards to support IP stations and/or VoIP trunk circuits
- **Converged:** distributed circuit switched common equipment cabinets across LAN/WAN; IP endpoints supported using direct call signaling from primary call control processor or through media gateway/gatekeeper components
- **Soft Switch:** LAN-connected call telephony server with direct call control signaling to all IP endpoints; media gateway equipment supports non-IP endpoints

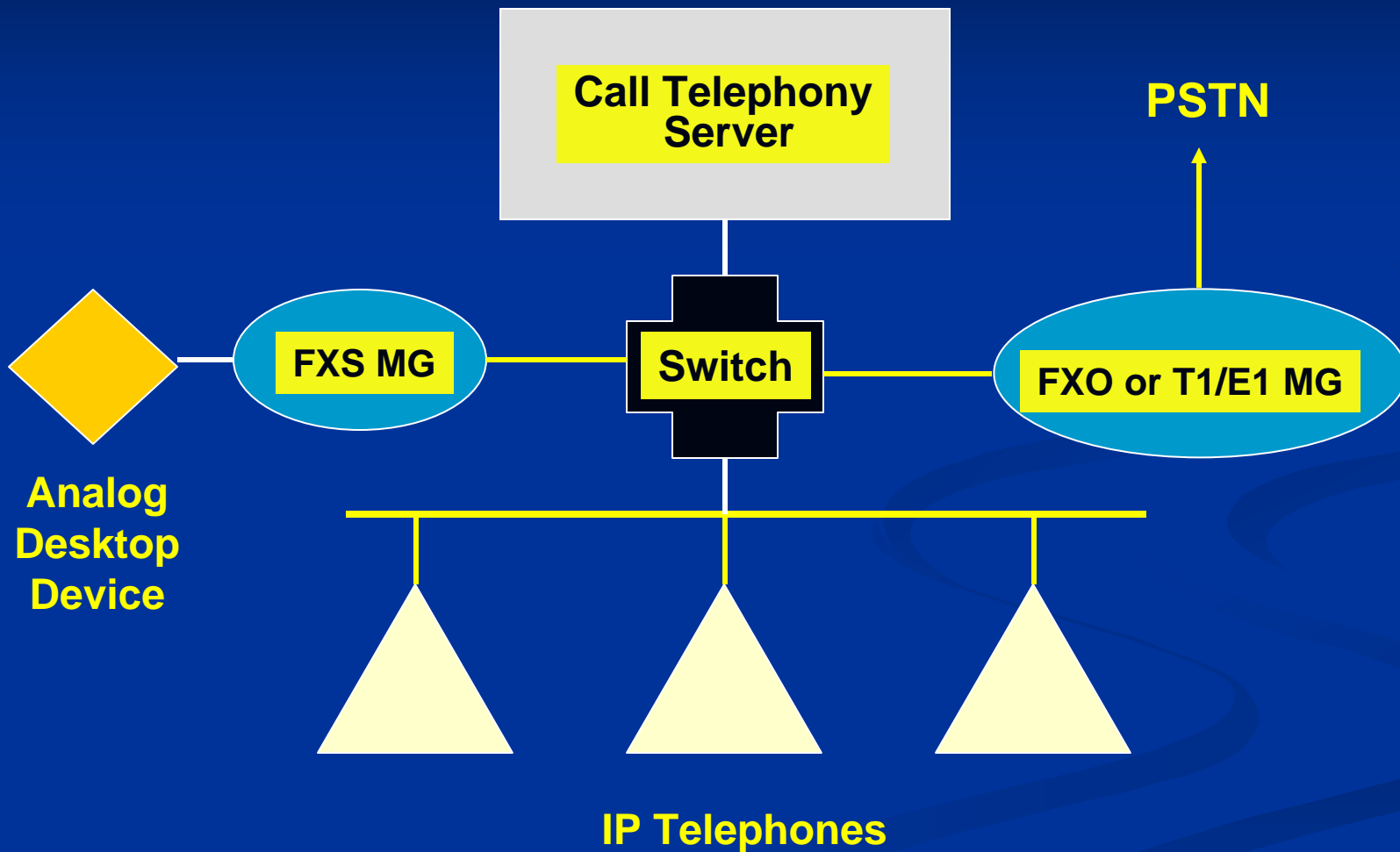
IP-enabled IPTS Design



Converged IPTS Design



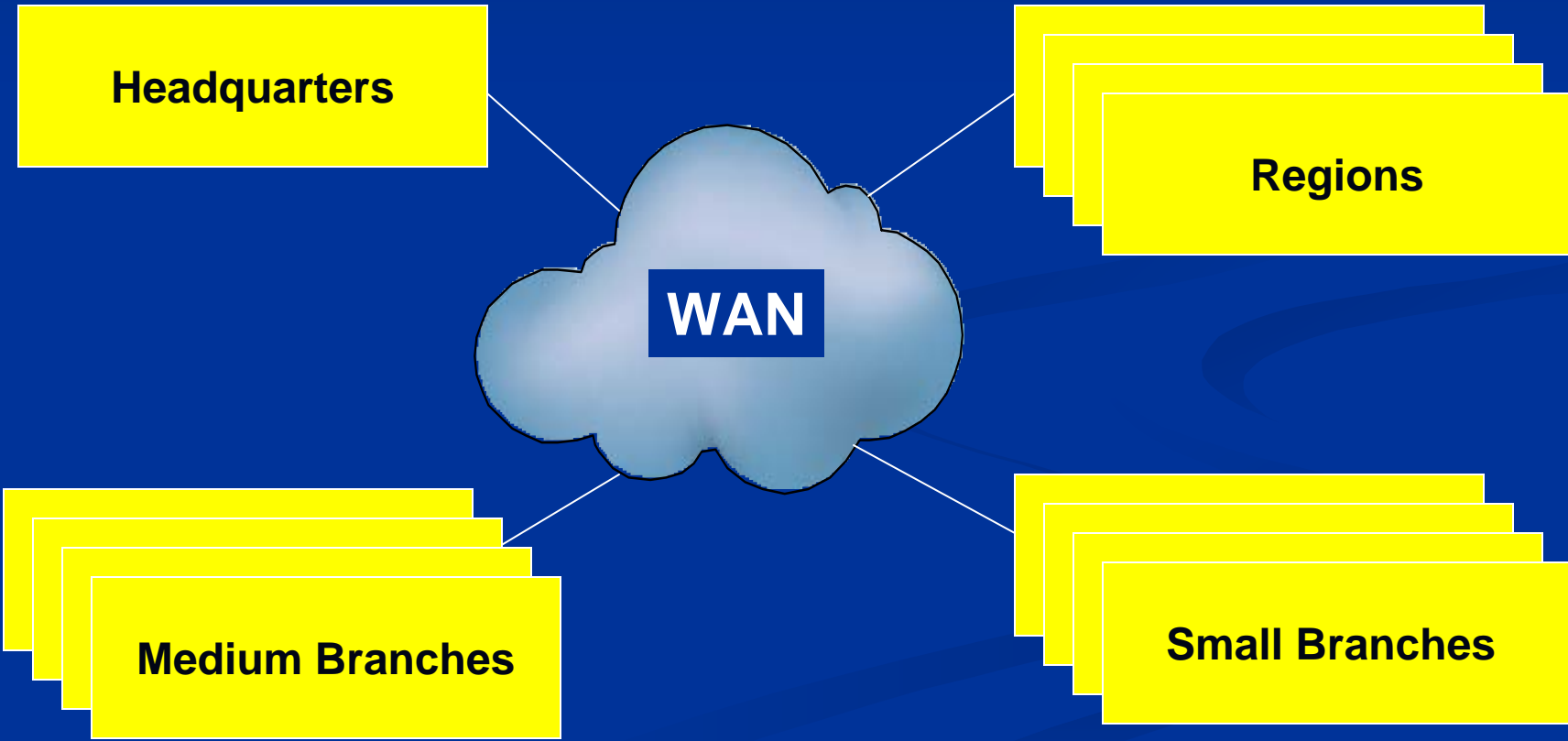
Client/Server IPTS Design



IPTS Configuration Options

1. Dedicated system (small, medium, or large) at each site networked via VoIP trunk connections
2. Multiple large system clusters networked via VoIP trunk connections; survivable IP remotes at all small/medium (<100 stations) sites
3. Single very large hosted system design installed at primary location with distributed survivable IP remotes at all outlying sites

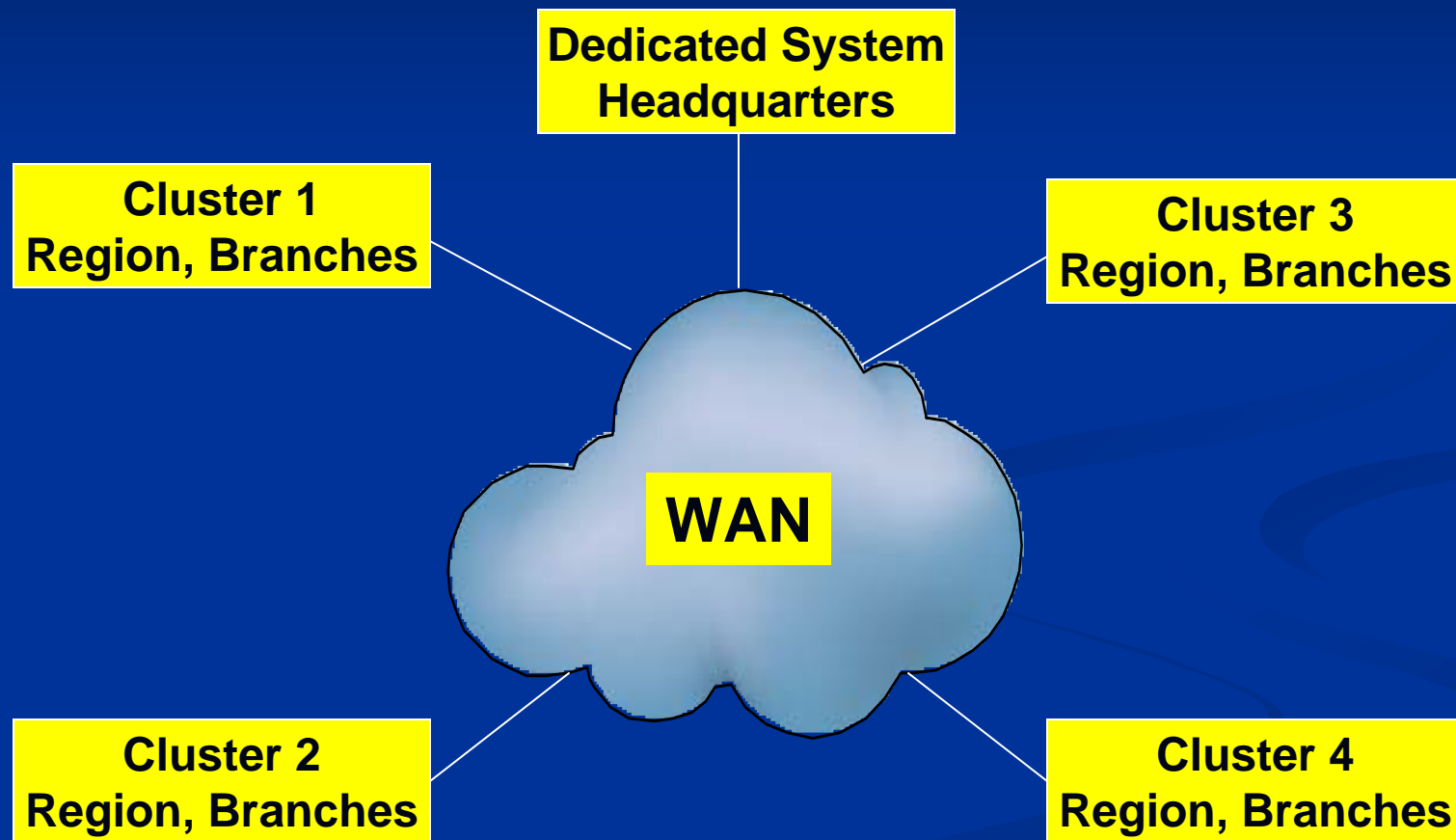
IPTS Option 1: Dedicated Systems Networked via VoIP



Option 1 Design Guidelines

- Dedicated IPTS (IP-enabled, converged, or client/server) at each location: very small, small, medium, large, or very large model
- Uniform generic software platform
- Intelligent networking via VoIP trunk circuits
 - Transparent feature/function operations
 - Single centralized management system
 - IP-based communications across locations
 - Peer-to-Peer (IP stations, only)
 - VoIP trunk connections (for non-IP stations)

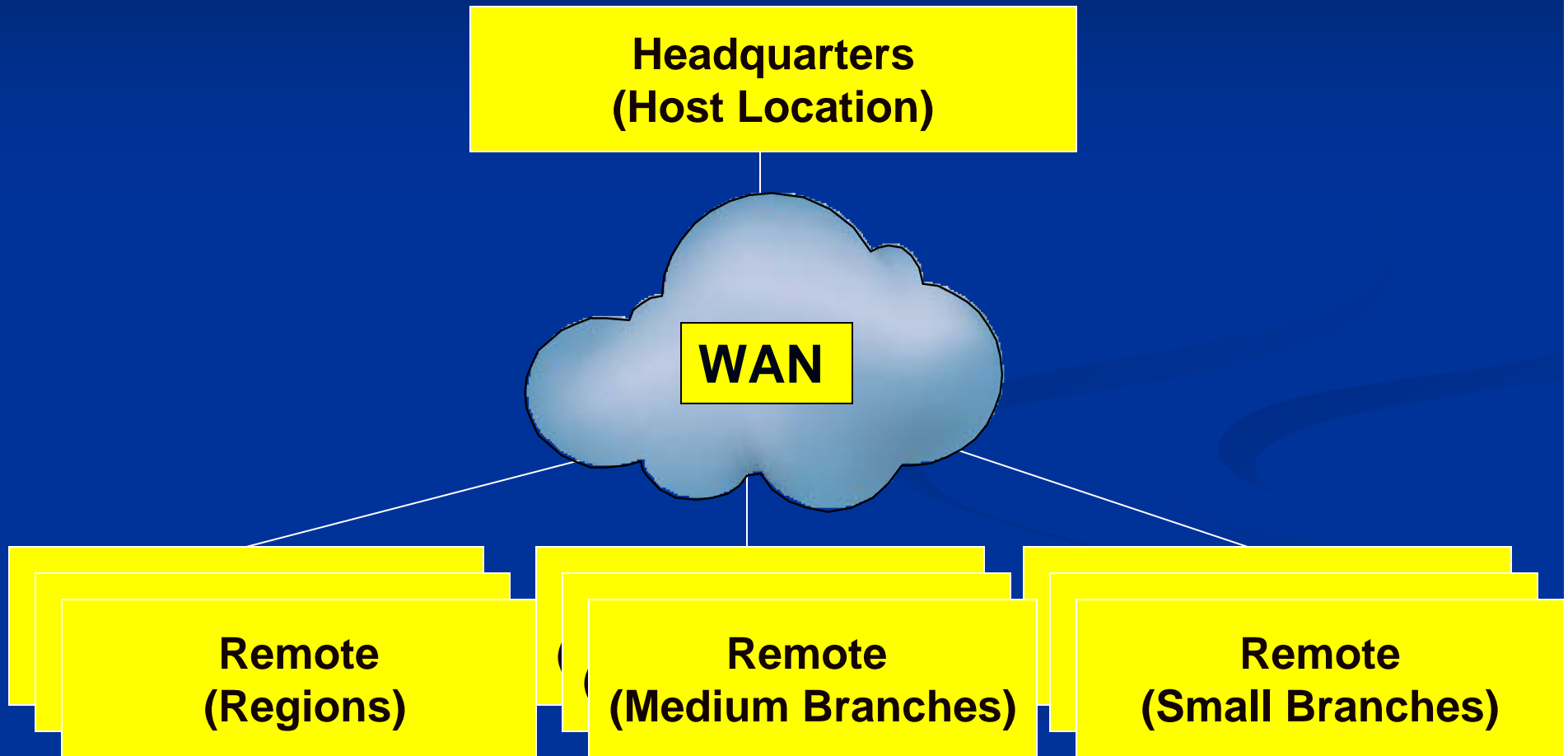
IPTS Option 2: Multiple Clusters Networked via VoIP



Option 2 Design Guidelines

- Multiple IPTS (converged or client/server) large/very large system clusters with survivable IP remotes (with local trunking)
- Uniform generic software platform
- Intelligent networking via VoIP trunk circuits
 - Transparent feature/function operations
 - Single centralized management system
 - IP-based communications across locations
 - Peer-to-Peer (IP stations, only)
 - VoIP trunk connections (for non-IP stations)

IPTS Option 3: Single Very Large System with Survivable Remotes



Option 3 Design Guidelines

- Single very large HQ-hosted IPTS (converged or client/server) with survivable IP remotes (with local trunking) at all remote locations
- 100% transparent operations across all locations
 - Features/functions
 - Systems management
 - Applications
- IP-based communications across locations
 - Peer-to-Peer (IP stations, only)
 - VoIP trunk connections (for non-IP stations)

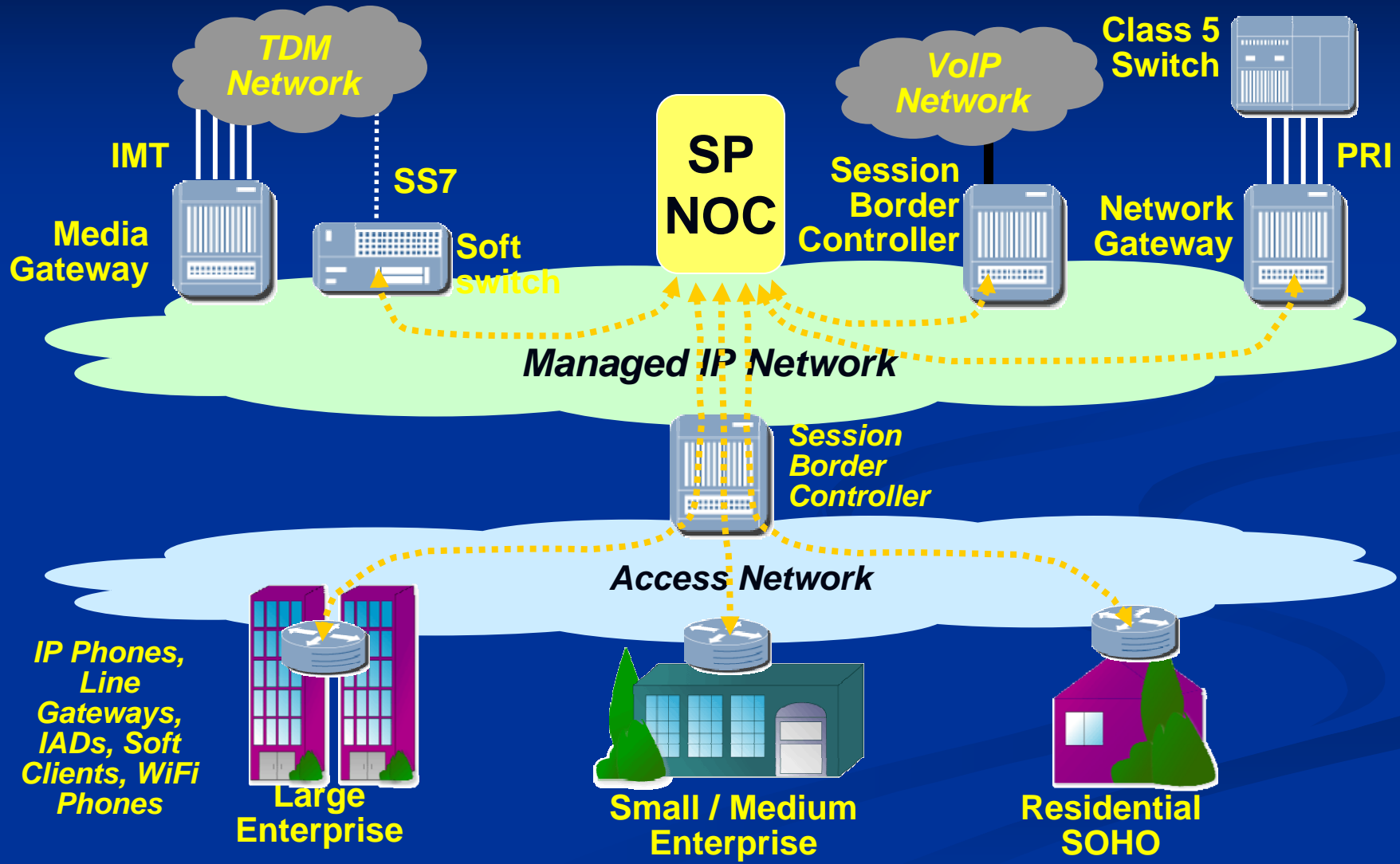
Open Source Alternative

- **Open Source IPTS characteristics include:**
 - Designed and configured using open source generic software, such as Digium's Asterisk
 - Industry standard communications protocol (SIP)
 - COTS call servers typically based on Linux O/S
 - 3rd party media gateways and voice clients (SIP telephones)
 - Some bundled applications, such as messaging and CTI
- **Open Source IPTS concerns include:**
 - Interoperability of features & applications with peripheral communications systems
 - Availability of post-installation services and support, including maintenance & system upgrades

Service Provider Hosted Solution

- Hosted IPTS offerings are typically based on a soft switch design using mix of third party components (software, server, media gateways, telephone instruments)
 - Traditional IPTS-based solution
 - ISV solution
 - Open source software
- Bundled solution includes managed services, but:
 - Premises equipment may or may not be included
 - Network transmission services may or may not be included

SP Hosted IPTS Network Architecture



Source: Broadsoft

Comparing Premises vs. Hosted Solutions

| Solution Attribute | Premises | Hosted |
|-----------------------------|---|---|
| Common Control | Locally Centralized or Distributed | Remotely Centralized |
| Redundant Control | Moderate-High | High |
| Media Gateways | Mostly Proprietary | Mostly 3 rd Party |
| Voice Clients | Proprietary Digital, IP (SIP) | Mostly 3 rd Party SIP |
| Feature/Function Package | High Performance, Fully Integrated Applications | Good Performance, Mixed Party Applications |
| Network Services | Not Available | Usually Bundled |

And Now its Time for Our Panel Discussion