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Case Study: Migrating Cox's IT VPN infrastructure

Summary

Over the past 7 years we have migrated our national IT VPN infrastructure several times to meet growing demands while also saving money.

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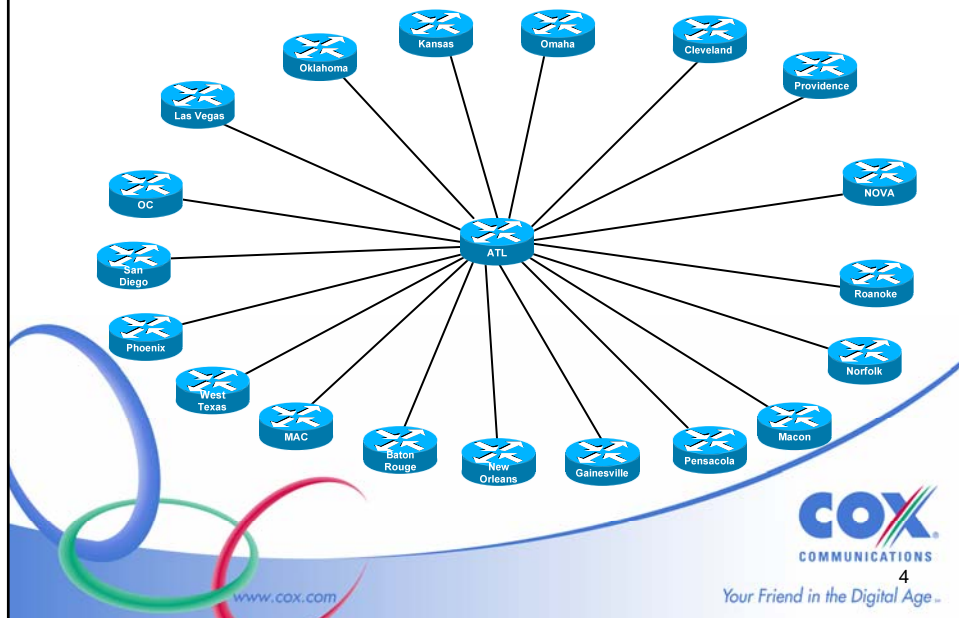
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IT VPN Background – Prior to 2001

- Backbone was @Home
- 19 Core IT sites
 - Several call centers and offices on each core site
- Originally connected by hub and spoke Frame Relay Circuits
- Limited traffic
- No internal VOIP

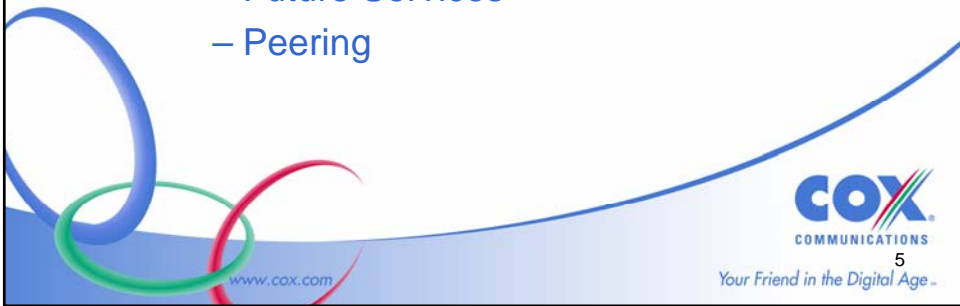


Original Frame Relay Topology

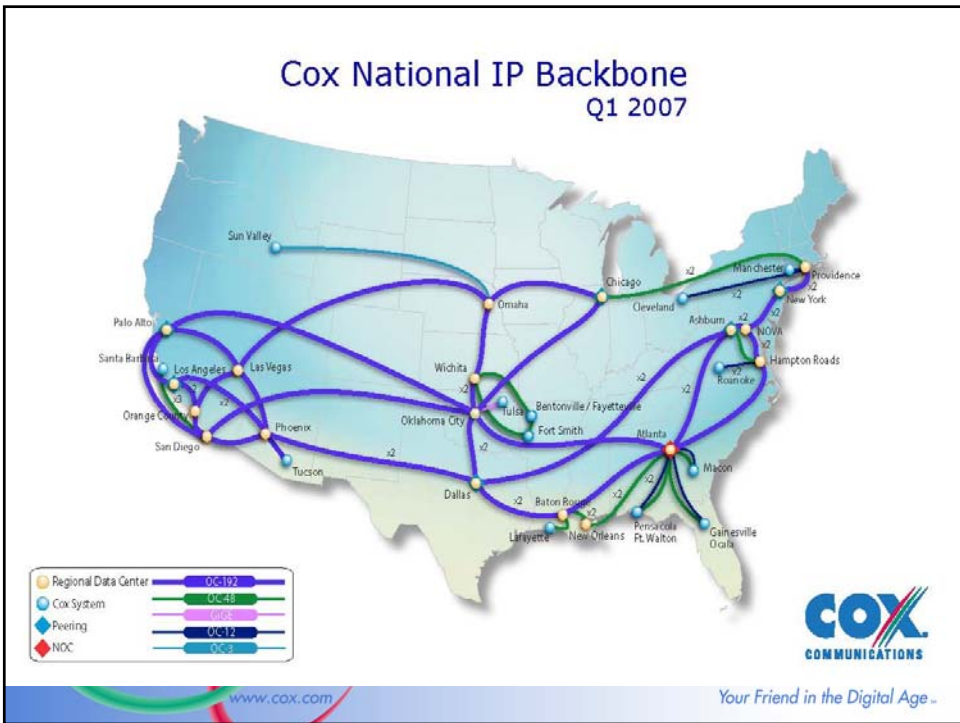


Self Reliance

- End of @Home
- Outsource or build own backbone?
 - HSI Subscriber growth
 - Future Services
 - Peering

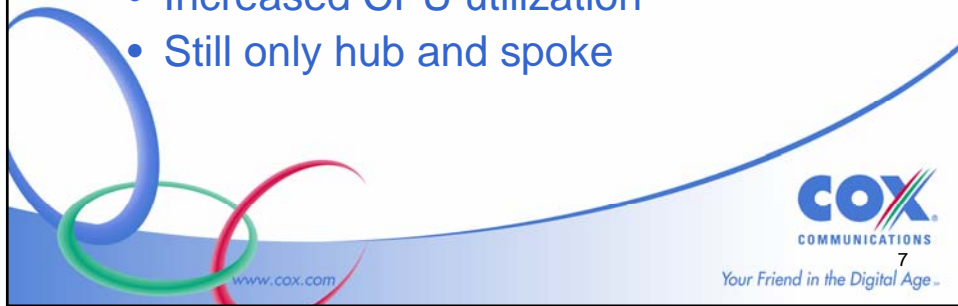


Cox National IP Backbone Q1 2007



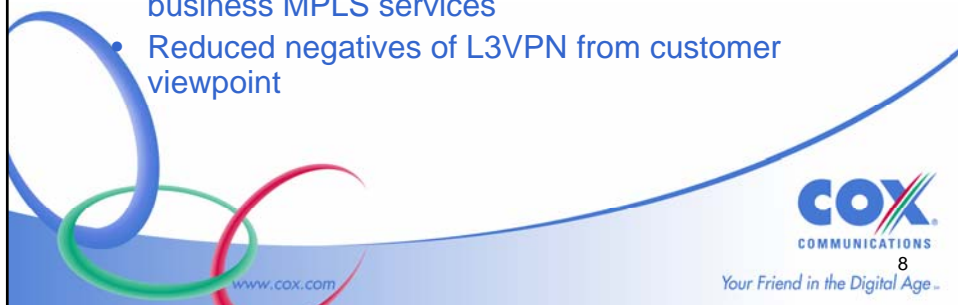
Next Step: IPSEC/GRE Tunnels

- Utilized our service provider backbone
- Increased bandwidth at a much lower cost
- All internal support
- Increased CPU utilization
- Still only hub and spoke



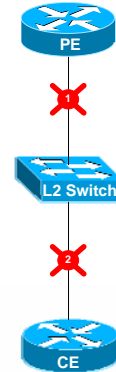
Drivers for MPLS based VPN

- Increased reliance on VPN for services such as internal voice, call center initiative, provisioning, and billing
- Any-to-any connectivity desired
- Increased redundancy
- Reduced load on CE router with removal of IPSEC
- Backbone already MPLS-TE enabled and offering business MPLS services
- Reduced negatives of L3VPN from customer viewpoint



Design Considerations

- Redundant PE-CE connections
- PE-CE BGP Convergence when connected through a L2 Switch
 - No support for BFD on CE yet
 - BGP Hold Timers
 - Core Site direct connection
- QOS
- Management VRF



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Non-Backbone site connectivity

- Several core IT sites not collocated with backbone regional data center
- Decided not to push L3VPN down
- Utilize existing Martini circuit business service offering
- IT CE router appears directly connected to PE router

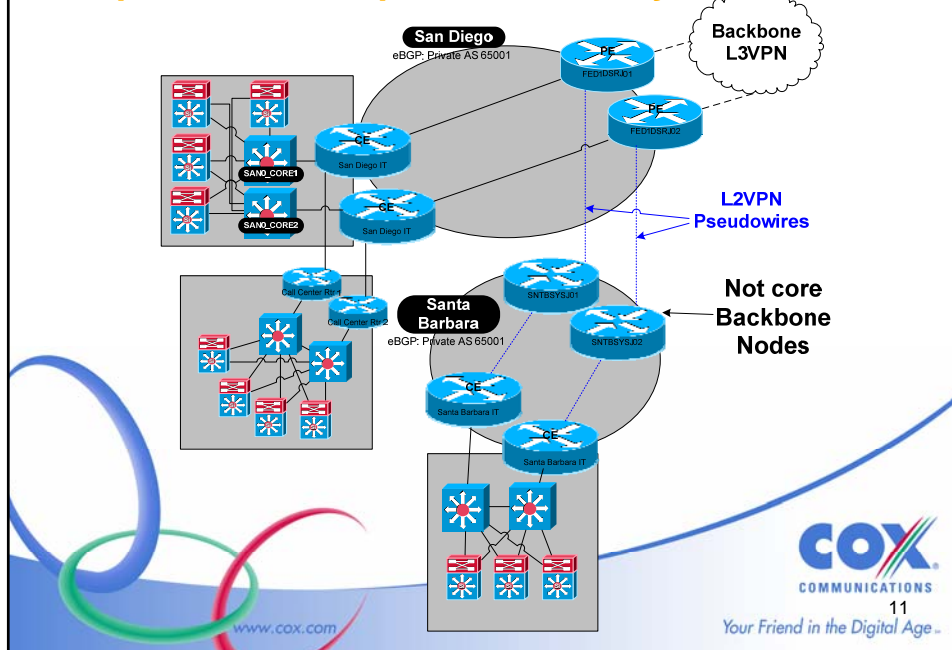
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Example Core and Spur Connectivity



Call Center Initiative

- Conversion from TDM to IP
- Increased integration between the 19 call centers to share centralized resources
- Centralized Interactive Voice Response (IVR) unit
- Enhanced Computer Telephony Integration (CTI)
- Real time performance monitoring
- Ability to better distribute load amongst 5000+ agents

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