

Cox Business SIP Trunking Deployments

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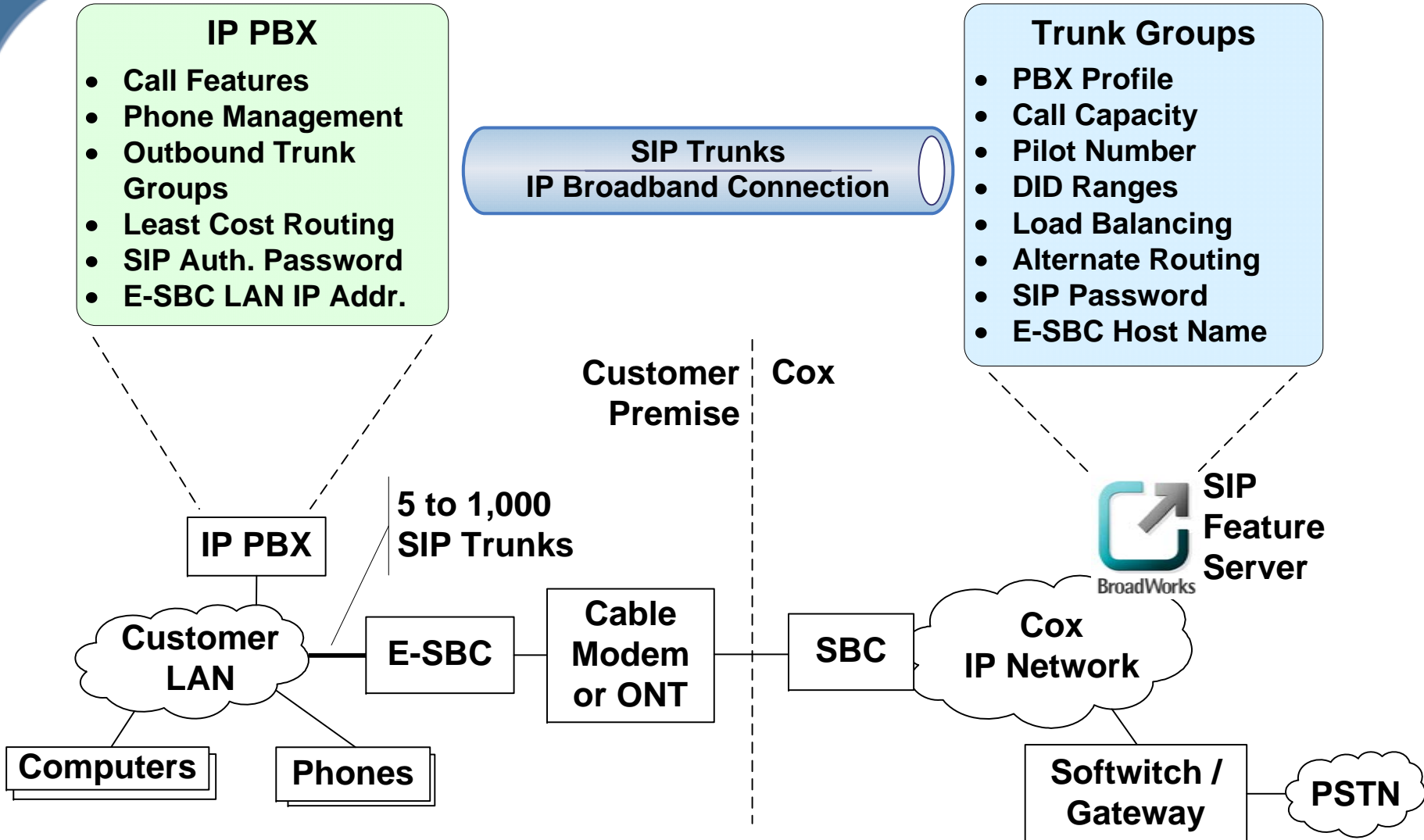
- **Large and Medium Enterprises are Early Movers**
 - Fortune 500, Hospitals, Universities, County School Systems
 - Driven by PBX upgrades, cost savings and business continuity features
- **Small Business (< 20 employees)**
 - Don't know what they need. Not technology savvy.
 - Decisions driven by features and pricing.
 - Cox and PBX Vendor must demonstrate the business benefits through solution selling.
 - Prefers one-stop shopping, total solution provider.

SIP Trunking – What's New?



- **Ethernet Handoff for Voice**
 - eMTA=analog, IAD=PRI/T1, **SIP Trunk=Ethernet**
- **New Service**
 - SIP-based IP Trunking
 - Highly scalable 1 to 1000+ call sessions
- **New Network**
 - Session Border Controller (Network Core)
 - Enterprise Session Border Controller (CPE)
- **New Concepts / Architecture**
 - Enterprise core SIP Trunking, Multi-site Shared Capacity, Blurring of Boundaries, etc.

SIP Trunk Network

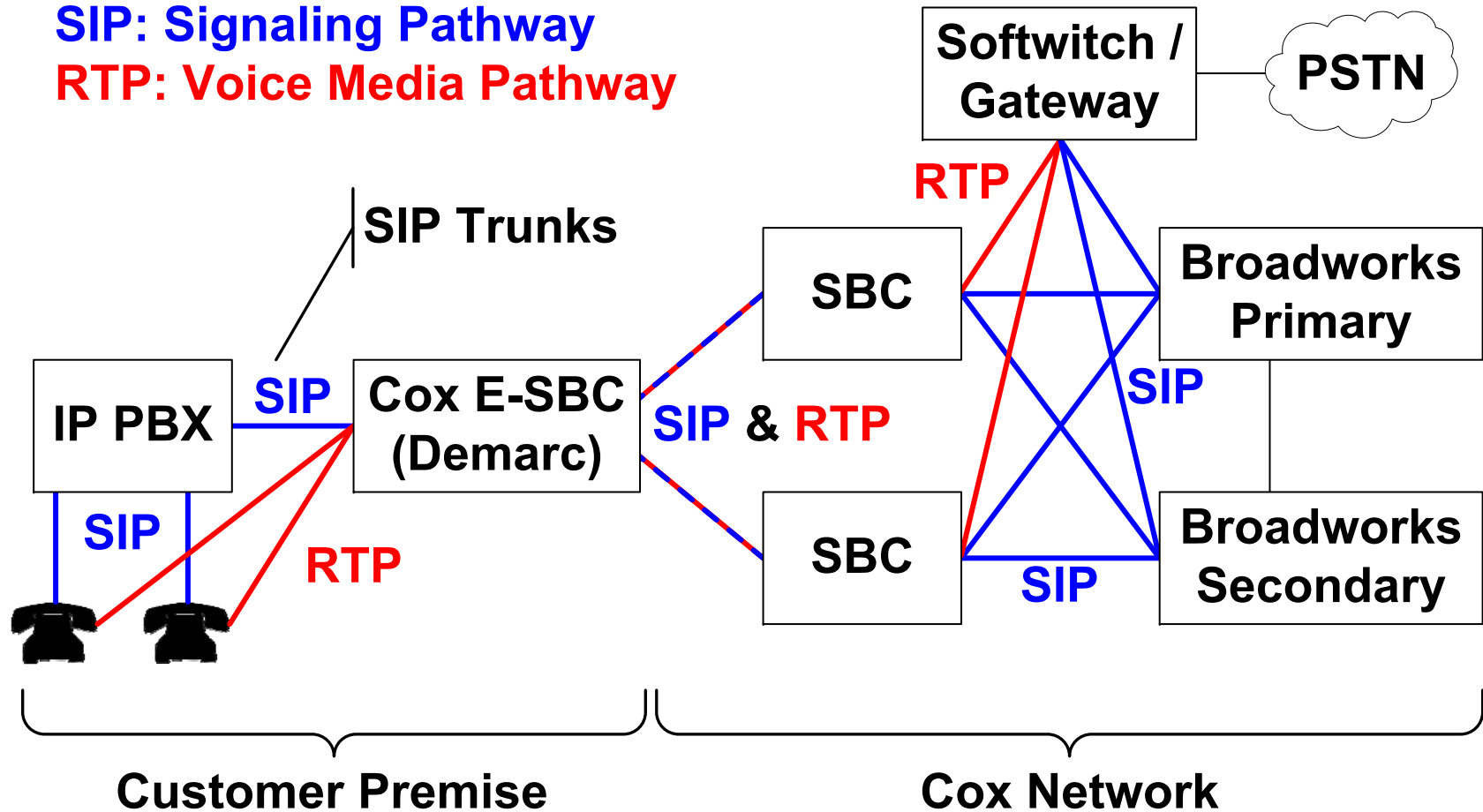


SIP Trunk Network Design

- **Geo-Redundant, High-Availability Network**

SIP: Signaling Pathway

RTP: Voice Media Pathway

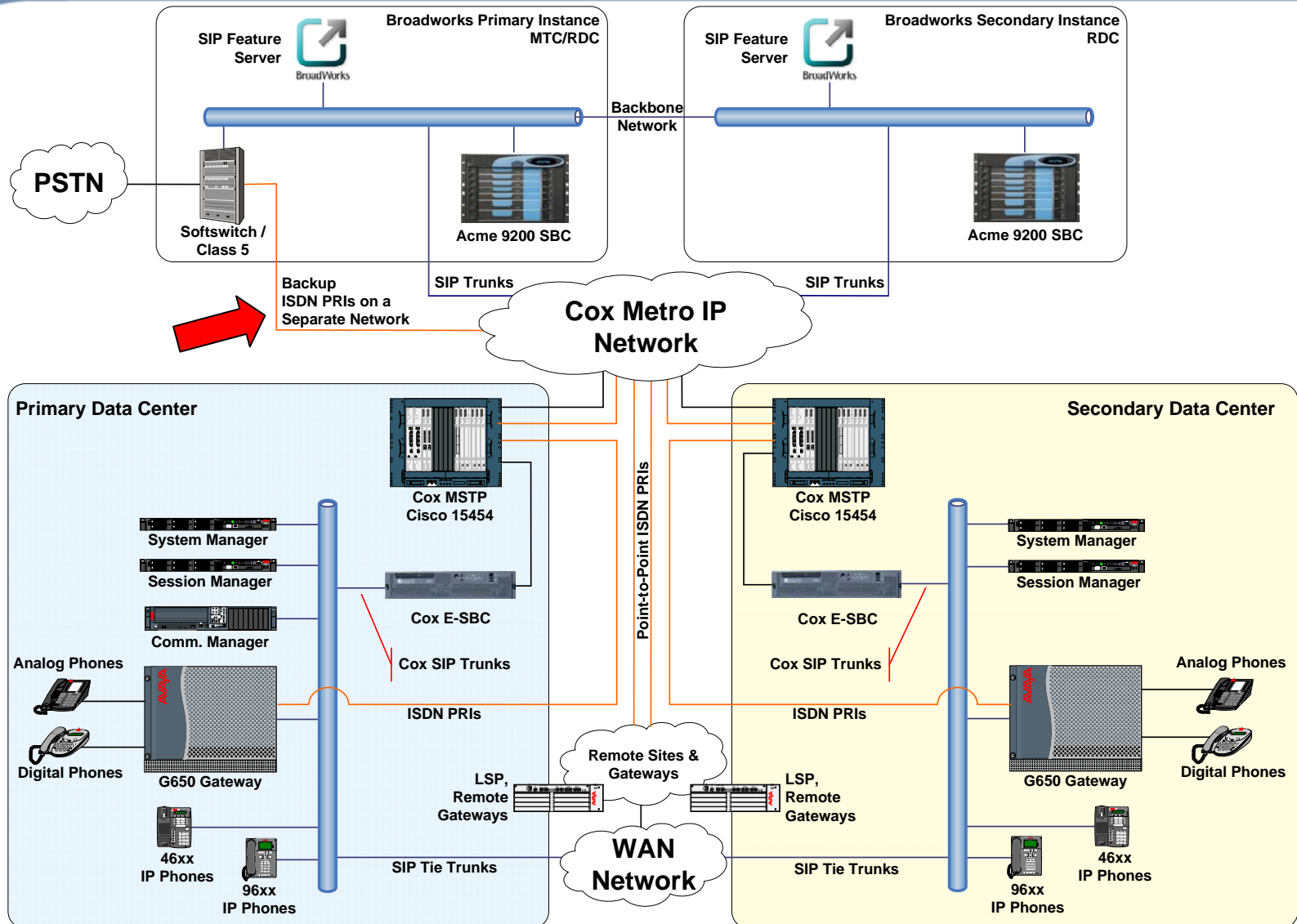


SMB standard configuration is:

- **One Install Location, One Trunk Group**
- **Fiber or DOCSIS/HFC serviceable**
- **Maximum 70 Trunks (concurrent calls)**
- **Inbound, Outbound, 2-way Trunks and Burstable Trunks**
- **1,000 DIDs or less**
- **Trunk Group Business Continuity:**
 - **Call Forward Always, Unreachable Destination**

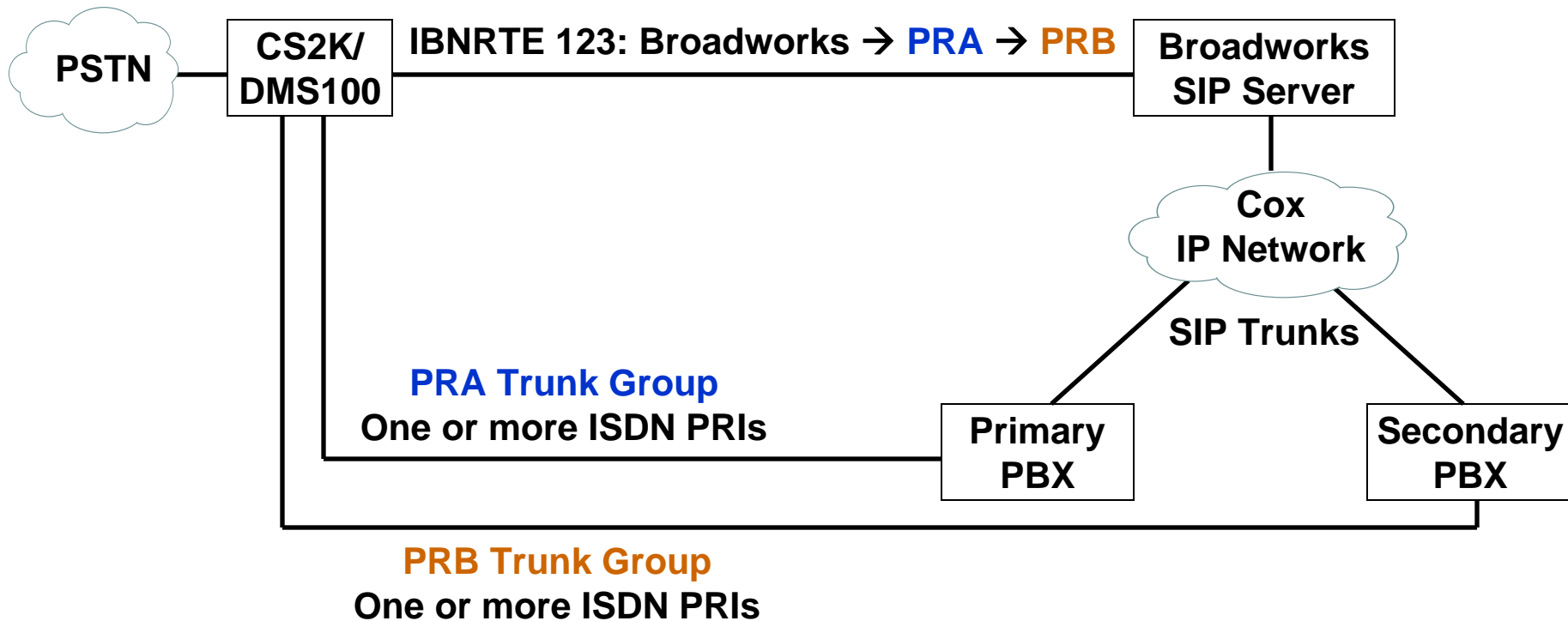
- **Custom Design and Engineering**
 - Cox is very responsive to our customers, local presence, high touch sales force.
 - We'll design just about anything with reason.
- **Zero-tolerance for Outages**
- **Geo-redundant Data Centers are Standard**
- **E-SBC Default LAN Gateway required for call routing**
 - For customer security and immunity to LAN IP network changes.
- **SIP Trunk to ISDN PRI failover**

Large Enterprise SIP Trunking



SIP Trunk to ISDN PRI Failover

- CLASS 5 PRI's in case of total SIP failure
- Preserves DID dialed number for PBX routing
- Dedicated IBN Route to Manage the Traffic



- **PBX interoperability testing.**
 - Many PBX behavioral nuances and maturing configurations.
 - Wide variety of PBX architectures and routing.
 - Customer's may choose not to deploy the vendor recommended SIP proxies.
 - CLID for spoofed and forwarded calls.
 - Call transfer methods, hairpinning versus trunk release.
- **Solution: Outsource PBX interop testing to the E-SBC vendors.**

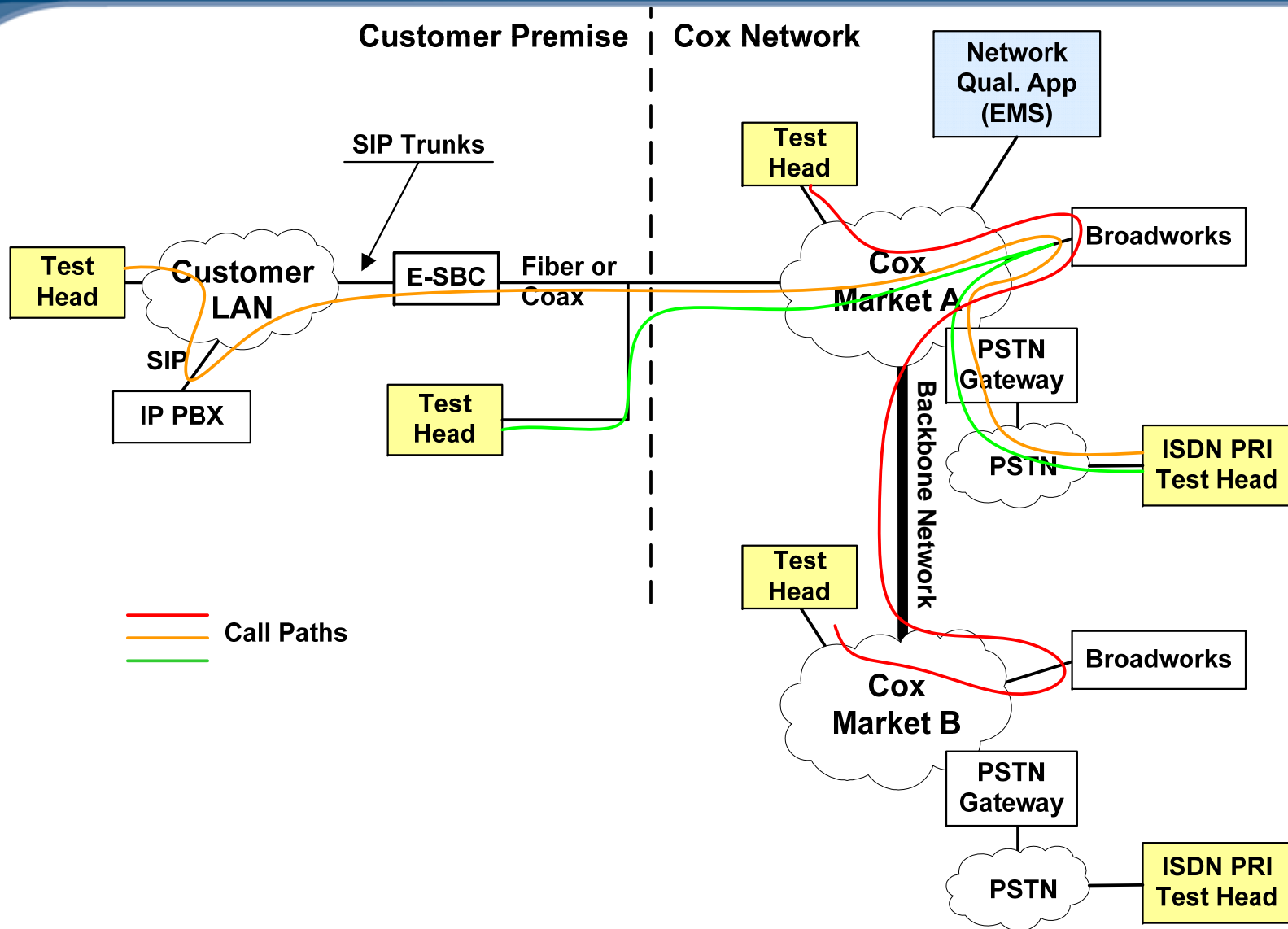
- **Full Back-to-Back User Agent (B2BUA) required in E-SBC.**
 - SIP Application Layer Gateway (ALG) is insufficient as it only solves routing / NAT.
- **Normalization / regeneration of SIP messages.**
- **SIP Header Manipulation Rules**
- **Surrogate registration for all PBX types – Registering and Non-Registering.**
 - Registration greatly simplifies DOCSIS/HFC deployments with dynamic IP support (DHCP).

- **Cox is preparing a SIP Specification for the E-SBC vendors.**
 - Details the SIP implementation and operational requirements to normalize the Cox-to-ESBC SIP Trunk interface.
 - A step beyond the baseline SIPconnect and CableLabs P-ESG specs.
 - Network integration with device vendors is expensive, this should streamline the process.
 - Cox will integrate once with the E-SBC.

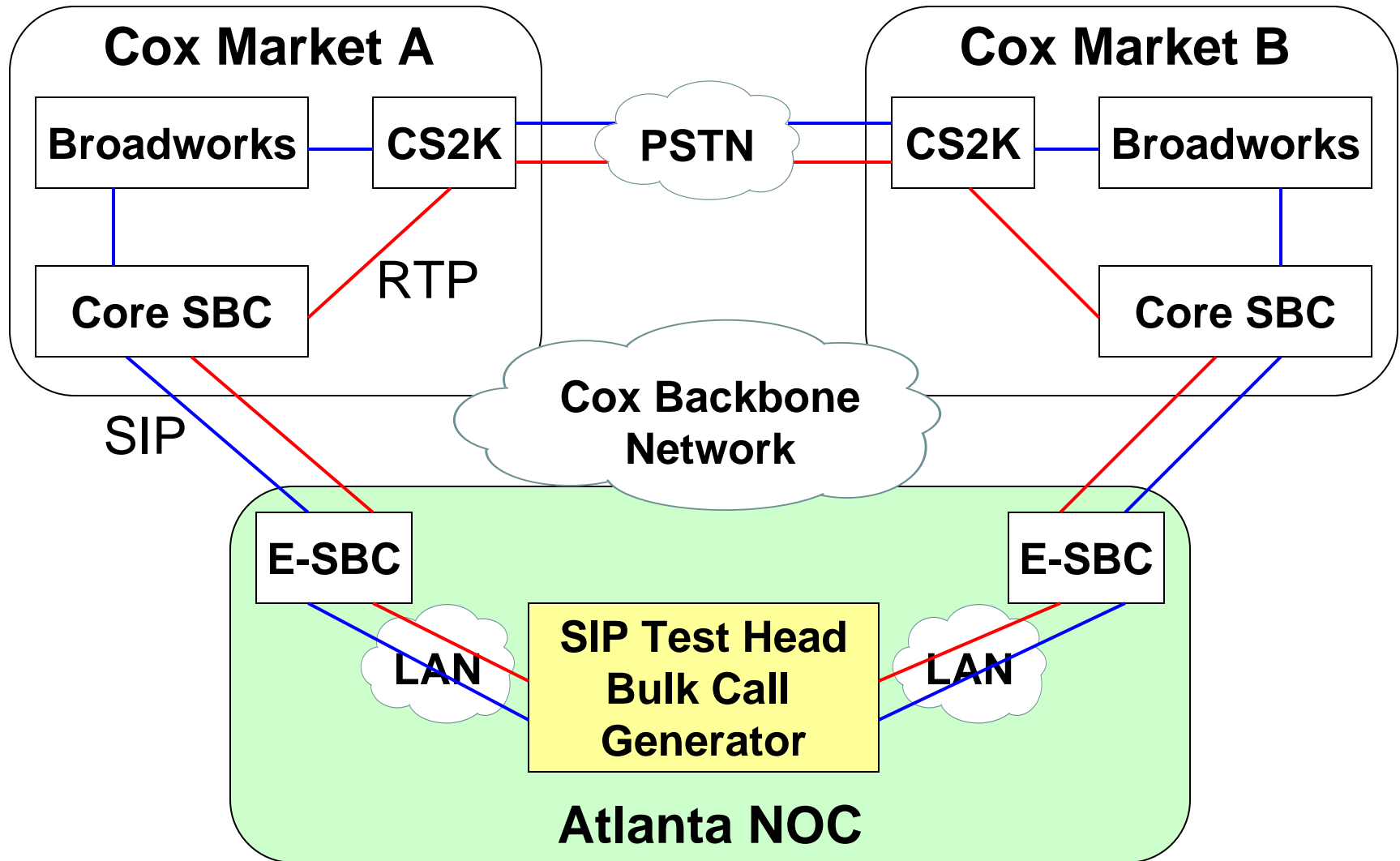
- **Call-Trough Testing to Validate Service Availability and Reliability.**
 - Prior to Market Launch
 - After Network Maintenance
- **Instrument the Network at Key Locations with a Small Number of Test Heads (Probes)**
- **Test Heads simulate PBX and PSTN Endpoints**
- **Highly Customizable Through Scripts and EMS Configuration**
- **Detailed Reports for Call Dispositions and Call Quality**

- **Automated Testing with Bulk Call Generators is Highly Controversial**
 - **This is NOT Stress Testing**
 - **“Runaway Train” Network Outage a Major Concern**
- **Testing Products are Designed for the Lab Environment**
 - **Lack Security / AAA Features of Production Network Elements**
 - **Can’t be Deployed in the Wild**

Network Test Concept



Network Test Actual Config



Questions?

