VoIP-Enabling A Class 4/5 Switch Network

Integrated Media Gateway 1010

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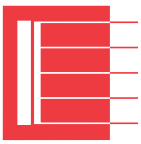

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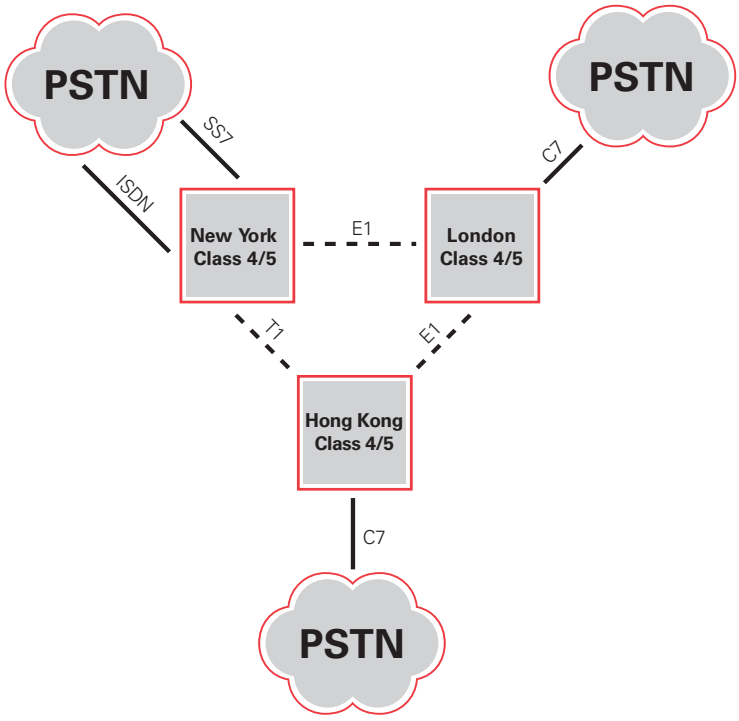
VoIP enabling a wholesale network: before VoIP

Before VoIP, wholesale carriers installed Class 4/5 Points Of Presence (POPs) to service a particular market or application. These switches are traditionally connected via expensive, dedicated long-haul TDM interconnections as depicted in Figure 1.

Figure 1

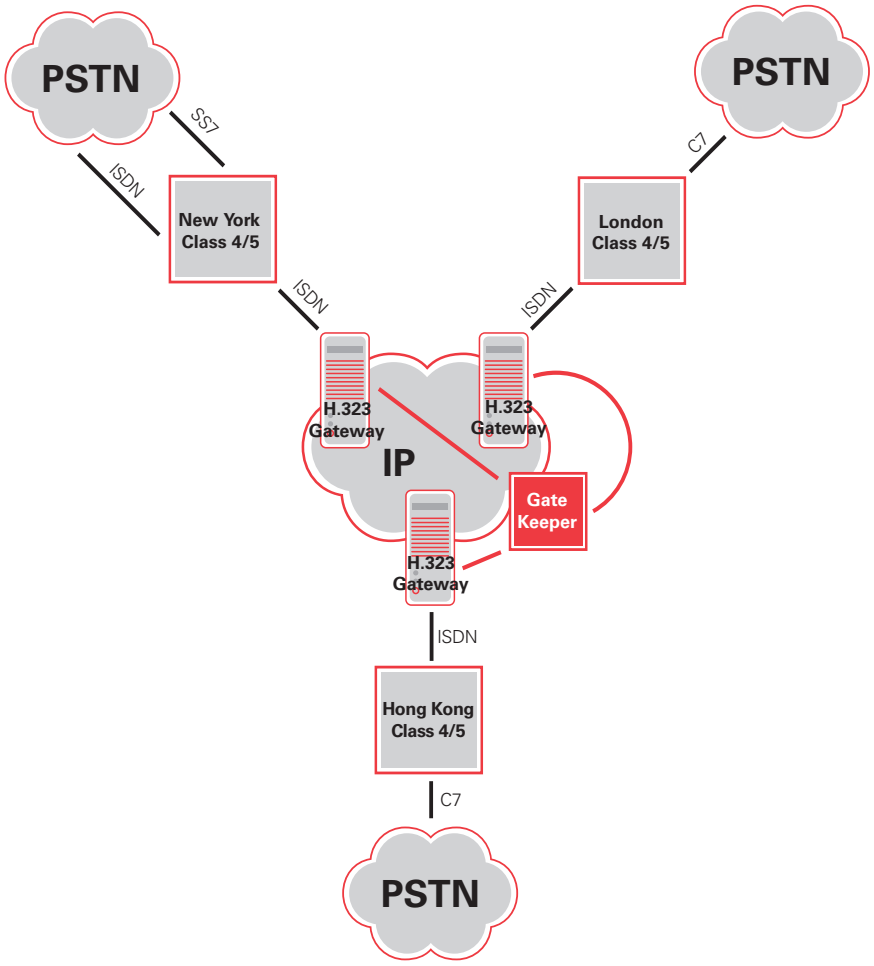


TDM capacity is fixed and provisioning additional circuits can take upwards of 4-6 months. In the architecture depicted in Figure 1, the Class 4/5 switches use dedicated TDM interconnections to hand-off traffic between the various POPs. With carrier rates changing daily, this architecture makes it difficult to quickly engineer network capacity and manage costs. As VoIP technology matures, it makes sense to move toward IP interconnection.

limitations of the first generation VoIP solution

To enable these networks with VoIP, wholesale carriers originally deployed either a Softswitch or discrete PRI to VoIP gateways. Figure 2 depicts a VoIP enablement with discrete VoIP gateways.

Figure 2



The advantage of this network design was the scalability and the dynamic nature of resource allocation. If more capacity were needed between particular cities, it could be allocated immediately without waiting for traditional TDM circuits to be provisioned. But several factors made this design less than ideal—Channel Associated Signaling (CAS) signaling, Post Dial Delay, and lack of call routing information on the TDM interface. Although ISDN alleviates the Post Dial Delay and call routing issues, ISDN ports on Class 4/5 switches are expensive. Most VoIP gateways are managed though a Command Line Interface (CLI) or third party Element Management System (EMS). A CLI is cumbersome and presents scaling problems when managing dozens to hundreds of gateways.

An alternative to discrete gateways is the Softswitch architecture. But Softswitch architectures also have disadvantages—a high cost of entry is one. Another is that a Softswitch architecture is composed of many "moving parts- the Softswitch, an SS7 Signaling Server, and Trunking Gateways. Multiple discrete components increase complexity and costs while posing issues due to vendor interworking.

Additionally, legacy Class 4/5 switch manufacturers are offering VoIP upgrades to their existing products. To date, they have high up front costs and consume large amounts of floor space.

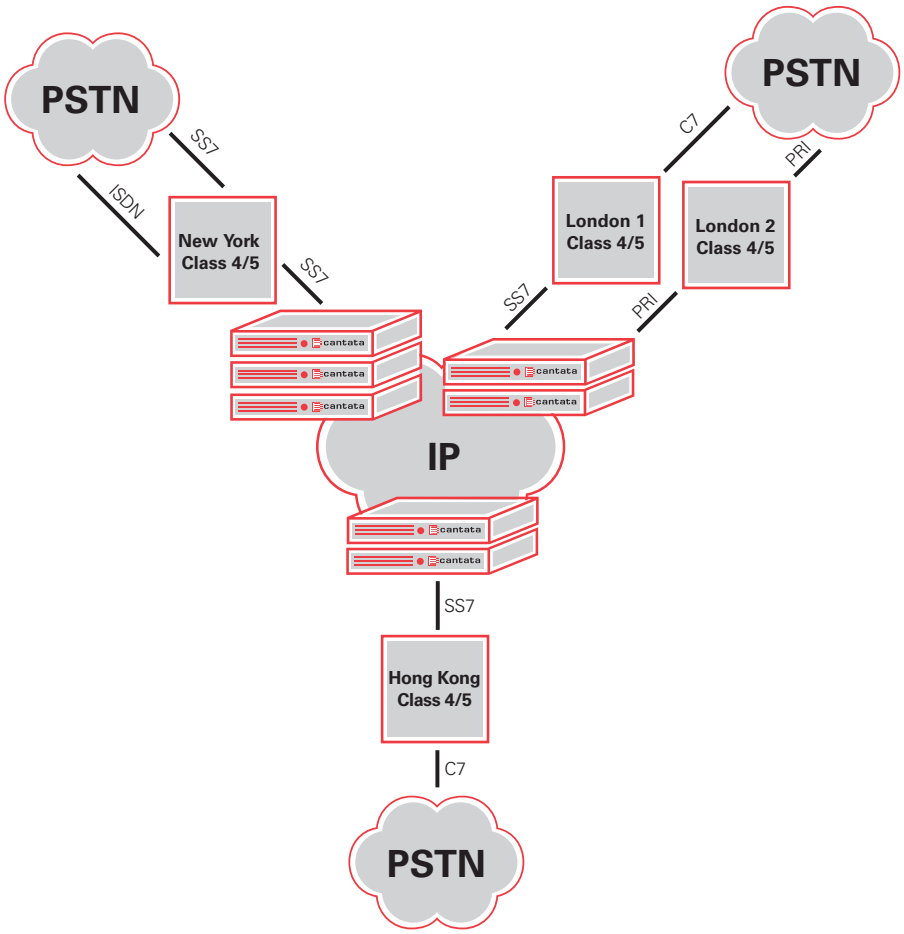
cantata solves first generation VoIP issues

Cantata addresses all these issues with its Integrated Media Gateway (IMG) 1010.

The IMG 1010 integrates SS7 and C7 ISUP signaling with VoIP Signaling, reducing interconnection costs considerably. It can control up to 32 DS3s of voice circuits through a single pair of signaling links. The GateControl EMS integrates routing, configuration, translation, and management into a single, scalable, flexible GUI, simplifying operations and reducing costs. Cantata supports the "pay as you grow" philosophy, significantly lowering the high initial costs of deploying SS7.

The IMG 1010 not only scales cost-effectively, but evolves as Service Provider requirements evolve. Because the IMG 1010 can simultaneously support multiple TDM and IP signaling protocols, service providers can interface to many different types of gateways and carriers. Because the IMG 1010's patented Programmable Protocol Language (PPL) enables providers to simultaneously interoperate with many proprietary SIP extensions, costs are reduced dramatically. And because the IMG 1010 supports fixed and mobile second and third generation protocols, users enjoy the ultimate flexibility and investment protection.

Figure 3



why IMG 1010?

The IMG 1010 integrates SS7 signaling, VoIP, and routing into a single 1u chassis, replacing three network elements: the SS7 Signaling Server, the Trunking Gateway, and the Gatekeeper. The IMG 1010 combines the functionality of both an SS7 Signaling Server and a Trunking Gateway into a single intelligent gateway. And with Cantata's built in routing technology, a separate VoIP Gatekeeper becomes optional. Each IMG 1010 supports 20 route tables with 10,000 entries each. Each IMG 1010 can control SS7 Voice Circuits (CICs) on 31 other IMG 1010s.

long term investment protection

The IMG 1010 evolves as networks evolve. Beginning with IP-to-IP transcoding and TDM hairpins in the 10.1 release, upcoming releases will include advanced media resources such as conferencing and integrated support for converged fixed and mobile networks such as IMS/3GPP. You can be sure that, as networks evolve with more and more advanced technologies, the IMG 1010 will always be able to keep pace.

detailed benefits of the IMG 1010

The IMG 1010 Phase 1 is a stand-alone, turnkey VoIP Gateway with the following benefits:

- Signaling and bearer capabilities, integrated in the same 1u chassis:
  - SS7 ISUP (ANSI, ITU, and ETSI base variants)
  - H.323 v2
- H.246 ISUP to H.323 interworking
  - Deployable around the world, with access to SS7 country-specific variants
  - Flexibility, with ability to perform TDM and IP hairpins
  - High Density
    - Industry-leading densities of 28 T1s or 21 E1s in a 1u box
    - Ability to control over 20,000 CICs from a single IMG 1010 SS7 stack (support for A-links and F-Links)
    - 378 sessions of transcoding natively supported
- 756 VoIP resources any codec (G.711. G.723, G.726, and G.729)
  - T.38 fax support
  - GUI-driven Element Management System based on Redhat Linux

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