White Paper

Cisco Unified Border Element Case Studies: Simplify SIP Migration, Increase Availability, and Improve Interoperability

What You Will Learn

This white paper presents real-world case studies describing how three organizations benefitted from implementing Cisco® Unified Border Element (CUBE), a session border controller (SBC) deployed on Cisco Integrated Services Routers (ISRs):

- An IT service provider with 100 employees migrated to Session Initiation Protocol (SIP) at its own pace by deploying CUBE alongside a Cisco time-division multiplexing (TDM) gateway on the same Cisco router
- A healthcare provider with 150 sites implemented CUBE, increasing availability and capacity, blocking unwanted calls and faxes according to voice policy, and lowering costs by 10-15 percent
- A global commodities trader deployed CUBE to interoperate with service providers around the world that implement SIP in subtly different ways, and to support high-definition videoconferencing

EPL, Inc. Simplifies Migration from TDM to SIP

Challenge

A 100-person company located in Birmingham, Alabama, EPL provides data processing and turnkey IT services to credit unions. When relocating its voice system to a collocation facility, EPL wanted to keep the same phone numbers to avoid disruption for customers and unnecessary expenses such as reprinting business stationery. EPL also wanted to increase availability as part of its business continuity strategy. “Making sure customers can reach their support engineers is critical to our business,” says Doug Davidson, senior network engineer for EPL. “We wanted to be able to reroute calls to a secondary server in another location if one site experienced issues.”

About Cisco Unified Border Element

The Cisco session border controller (SBC) is called Cisco Unified Border Element (CUBE). It provides all required functions for SIP trunking, including session control, demarcation, interworking, and security. CUBE is available on Cisco Integrated Services Routers (ISRs) and Cisco Aggregation Services Routers (ASRs). Organizations that already have compatible routers can activate CUBE with a simple software upgrade. The Cisco ISR can support CUBE and TDM Gateway functionality at the same time, allowing a controlled migration. You can deploy CUBE in a centralized, distributed, or hybrid SIP environment.

EPL worked with two voice service providers, one for toll-free inbound calls from credit union members, and another for outbound calls and direct-inward-dial (DID) inbound calls. The IT team decided to migrate from TDM to SIP trunking, and looked for a session border controller that would support an orderly transition.

Solution and Results

EPL found its solution in CUBE, operating on a Cisco 3900 Series ISR. “If one of our two sites has a problem, our telephony service provider can quickly re-route calls to the other site,” says Davidson.

Cisco ISRs can simultaneously support a TDM Gateway and CUBE, which allowed EPL to make the transition to SIP at its own pace:

- First, EPL moved its inbound toll-free calls to SIP trunks, continuing to use the public switched telephone network (PSTN) TDM trunk for local and 1+ outbound calling.
- Six months later, EPL ported local and 1+ outbound calling to SIP. “The Cisco ISR supports both CUBE and a TDM Gateway, so we didn’t have to rush to port all numbers over a weekend,” says Davidson. Instead, Davidson first ported a few numbers used for testing, routing them through Cisco Unified Communications Manager to different people to make sure there were no issues. “When I was comfortable, I ported one block of numbers at a time over three weeks,” he says. When migration was complete, EPL cancelled the PSTN T1 lines.
- Even after retiring the TDM circuits, EPL continued to take advantage of the TDM Gateway on the Cisco ISR to support interactive voice response (IVR), avoiding the costs of a separate gateway. “With CUBE, we could keep control of the gateway rather than giving control to the service provider,” Davidson says.

EPL plans to increase the value of CUBE by creating a local presence in certain markets without having to establish physical offices. Customers will be able to call a local number provided by the SIP service provider, which will route the call over the SIP trunk to EPL’s central office.

Community Health Network Strengthened Availability and Voice-Policy Enforcement with Distributed CUBE Deployment

Challenge

Based in Indianapolis, Indiana, Community Health Network spans 150 sites, including four hospitals as well as professional office buildings and imaging centers. Approximately 14,000 Cisco Unified IP Phones connect to a centralized Cisco Unified Communications Manager cluster.

Community Health Network processes an average of 68,000 PSTN calls daily, and had 32 primary-rate interface (PRI) trunks. But healthcare providers need to make sure that callers can reach the hospital even after disasters, when call volume spikes. Therefore, the organization wanted to increase PSTN capacity to 900 simultaneous calls, but without increasing costs. “Many of my peers in healthcare agree that we should be somewhat overtrunked to prepare for situations that will impose a heavy load,” says Kevin Hartzburg, voice services manager for Community Health Network. “In addition, we had several projects in the pipeline that were going to increase call volumes.”

Solution and Results

Community Health Network increased availability and call capacity by implementing three Cisco 3925 ISRs with CUBE, in two locations. The distributed CUBE deployment meets multiple business needs:

- Availability: “As a healthcare provider, we look for five-nines availability,” says Vicki Plahitko, network telephony engineer for Community Health Network. “By deploying CUBE in a distributed rather than a centralized SIP trunking architecture, we are not dependent on one location or device, and we could lose one SIP trunk with minimal risk of call blocking.” The IT team set up a group that searches in turn for an available router: if one router is unavailable, the call is sent through the next available router.

- Increased capacity: Each SIP trunk supports 300 simultaneous calls, for 900 total. “Increased capacity ensures callers can reach us when call volume is high, an important factor in patient safety and satisfaction,” says Hartzburg.
- Improved voice-policy enforcement: Community Health Network improved network control and voice-policy enforcement by deploying the SecureLogix application on the same Cisco ISR, alongside CUBE. One benefit is the ability to block calls and faxes from known spammers. “We block about 15,000 spam faxes monthly, resulting in significant savings on paper, toner, and staff time,” says Hartzburg. SecureLogix is deployed on a Cisco Services-Ready Engine (SRE) module in the router, saving space, power, cooling, and management costs compared to a standalone server. The application provides highly flexible monitoring, policy enforcement, and reporting because it has full access to signaling and media traversing the CUBE through the Cisco UC Gateway Services API.
- Faster troubleshooting: A Cisco Network Analysis Module (NAM) in the same Cisco ISR used for CUBE accelerates troubleshooting. “It’s often difficult to determine if a problem originates on our side or the service provider network,” says Plahitko. “With Cisco NAM, we can troubleshoot at the packet level to rule out issues on our network and provide the evidence to our service provider. Not having to drive to each location to capture packets saves an enormous amount of time.”
- Cost savings: Migrating to SIP lowered voice costs by about 10 percent because the SIP provider includes free long-distance minutes with the service.

Touton: Standardized on One Session Border Controller to Interoperate with Different Service Providers Around the World

Challenge

Located in the Bordeaux region of France, Touton is a 150-year old company that trades cocoa, green coffee, grains, vanilla, and spices. The company has 900 employees working from 15 offices in France, Asia, Australia, France, Africa, and the United States.

In 2011, Touton replaced six independent private branch exchange (PBX) systems with a centralized Cisco Unified Communications Manager cluster in France, distributed across two sites for business continuity. The centralized call control deployment lowered capital and operational costs, and traders can now work more efficiently using collaboration tools such as presence, instant messaging, click-to-call, and videoconferencing. Traders who travel internationally use a softphone on their laptop to avoid high roaming fees on mobile phones.

To further lower cost and increase availability, Touton wanted to migrate from TDM trunks to SIP trunks. Although the company had deployed a centralized Cisco call control architecture, Touton decided to use a distributed SIP trunk architecture to minimize latency between global offices. “High performance is very important in our business, because a two-minute delay in making a trade can lead to the loss of hundreds of thousands of dollars,” says Nicolas Horchower, group IT manager for Touton. The challenge was finding a single session border controller that could interoperate with all of the company’s service providers, each of which deploys the SIP standard slightly differently.

Solution and Results

Touton found the solution in CUBE, and has successfully migrated its offices in the United States, France, and Australia to SIP trunking. Each office has its own Cisco 2900 Series ISR with CUBE to terminate the SIP trunk. “Our original motivation for using CUBE was for demarcation, or keeping service providers out of our network,” says Horchower. “Later, CUBE enabled us to solve challenges relating to the different ways service providers implement the SIP standard, helping us retain the same functionality we had with TDM.” Examples include:

- The U.S. SIP provider was modifying SIP messages to suppress caller ID, and was not able to quickly meet Touton’s requirement show caller ID. “We were able to address the issue ourselves by configuring CUBE to show caller ID after we received the packet from the service provider,” Horchower says.
- The Australian service provider requires that its customers’ routers use the service provider’s proxy for external calls, but Touton wanted to keep internal calls off the service provider network. The company easily configured CUBE to use the proxy for external calls only.
- The centralized Cisco Unified Communications Manager cluster uses the G.711u standard, but Touton’s main European service provider supports G.711a only. CUBE provides transcoding for traffic between Cisco Unified Communications Manager and this service provider.

CUBE is also helping Touton’s traders work more efficiently by collaborating with high-definition video. They use Cisco Unified IP Phones 9951 and desktop videoconferencing systems. “With high-definition video, it’s almost like the other person is in the same room,” Horchower says. “We’ve noticed that meetings are more efficient because people who can see each other get right to the point instead of wasting time on pleasantries.” In conjunction with CUBE, Touton is planning to use the Packet Voice DSP Module 3 (PVDM3) on its Cisco ISR to provide video transcoding and support more video sessions without having to purchase a dedicated video bridge.

Conclusion

Organizations of all sizes are migrating from TDM trunks to SIP trunks to lower costs, increase security, and enhance collaboration using high-definition video. As these case studies demonstrate, using CUBE for session border control provides advantages not available from other SIP trunking solutions:

- Organizations can migrate from TDM to SIP at their own pace because the same Cisco ISR used for CUBE can simultaneously support a Cisco TDM gateway.
- CUBE provides interoperability by overcoming the differences in SIP implementations between the enterprise network and different service provider networks.
- Organizations can minimize device count by adding complementary modules in the same Cisco ISR used for CUBE, including SecureLogix for voice-policy enforcement, the Cisco Network Analysis Module, and the Cisco PVDM3 for high-density video encoding.
- Distributed deployment supports high-availability requirements in environments where an outage in one site could affect revenue, productivity, or customer satisfaction.

For More Information

To learn more about Cisco Unified Border Element, visit: http://www.cisco.com/go/cube.

To learn more about Unified Communications on Cisco ISR, visit: http://www.cisco.com/go/uconisr.

To learn more about Cisco Unified Communications Manager, visit: http://www.cisco.com/go/uc.

To learn more about Cisco UC Gateway Services API, visit: http://developer.cisco.com/web/gsapi.

To learn more about Cisco Services-Ready Engine (SRE), visit: http://www.cisco.com/go/sre.

To learn more about Cisco TDM Gateways, visit: http://www.cisco.com/go/tdmgateways.

To learn more about Cisco Network Analysis Module (NAM), visit: http://www.cisco.com/go/nam.

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

Printed in USA C11-717103-00 10/12