

ITXC Corporation—Global Wholesaler Uses Cisco VIA Solution to Deliver Tier-One Long-Distance Voice Services

Background

Established in 1997, ITXC is today one of the top ten carriers of international phone calls and a key supplier to both incumbent and newly competitive fixed-line and mobile carriers worldwide. ITXC's interconnected affiliates in over 175 countries include all major North American and European carriers as well as major carriers across Asia, Africa, Latin America, and Australia, such as China Telecom, Videsh Sanchar Nigam Limited (VSNL), Colt, Telia, PLDT, Sonatel, Telecom Columbia, and Telecom South Africa. ITXC is also a major supplier to retailers, including prepaid calling card service providers. By outsourcing some or all of their international calls to ITXC instead of building and operating their own global networks, carriers leverage ITXC's reach to increase revenues, reduce or eliminate network capital costs, reduce their operational costs, and dramatically accelerate time to market.

While traditional carriers use the Public Switched Telephone Network (PSTN) or expensive private networks, ITXC delivers tier-one international voice services over the Internet. Over the PSTN, making an international long-distance call requires transiting multiple switches and multiple point-to-point circuits across multiple carriers. This traditional model is complex and time-consuming to configure and deploy. Fixed costs are high and often burden companies with debt.

ITXC presents an alternative: carrying high quality calls using voice over IP (VoIP) over the Internet. With this approach, ITXC dramatically simplifies configuration and deployment complexity and per-call costs, and enables new commercial and service flexibility for carriers.

ITXC provides wholesale services to interconnect any combination of global PSTN time-division multiplexed (TDM) and VoIP networks, an important consideration for carriers planning their

future. ITXC's ITXC.net[®] network readily interconnects with the traditional PSTN TDM networks at any level of network hierarchy, including international gateway switch, transit switch, local exchange, or even customer premises equipment. It easily interconnects with both current and future public and enterprise VoIP networks.

Underpinning ITXC's success with VoIP over the Internet is its ability to deliver quality and reliability equal to—or better than—carriers relying solely on the PSTN. A key foundation to this technological feat is the Cisco Voice Infrastructure and Applications (VIA) solution, a time-tested field-proven infrastructure for VoIP. "Cisco has demonstrated exceptional leadership and dedication to VoIP and its evolution," says John Landau, Executive Vice President of Product Management for ITXC. "Their highly interoperable, high performance, and reliable VoIP products and strong global support have helped ITXC quickly expand its network and successfully serve its customer base."



Challenge: Service Quality and Reliability

When planning its network and business model, ITXC sought a way to deliver wholesale voice and fax services faster and at lower cost—without sacrificing the quality that phone customers expect. Instead of building yet another expensive and inflexible dedicated network, ITXC decided to take advantage of the infrastructure that was already in place: the Internet.

The Internet offers ITXC and its customers profound benefits over the traditional TDM networks and even over dedicated IP networks. One benefit is that a single local connection to the Internet backbone can quickly and reliably provide voice access to and from anywhere on the globe. ITXC is interconnected to over 175 countries without expensive and inflexible dedicated international circuits. Another key benefit is that quality, reliability, and scalability are assured by core Internet capability and patented ITXC technology. That is, the Internet provides multiple routing paths, no single points of failure, and huge amounts of global bandwidth, and ITXC adds powerful automated methods for network and voice service management.

The foundation for the ITXC.net[®] network is equipment that ensures efficient, reliable interconnections with telephone networks around the world. “The Cisco VIA Solution, with its leading voice quality technology, combined with our own patented applications, gives ITXC the ability to deliver voice quality over the Internet that’s comparable to voice quality over the PSTN—at much lower cost,” says Landau. In fact, ITXC technology and use of the Internet often delivers more consistent quality and reliability of service to many parts of the world than the traditional phone network, particularly where traditional PSTN international and national long distance capacity has been unable to keep pace with growth in demand.

Cisco Chosen for Field-Proven, Time-Tested VoIP Quality

ITXC has been deploying the Cisco VIA solution since 1999. “Cisco gateways provide the most feature-rich solution supporting fax and voice calls,” says Landau. “ITXC.net is a multivendor distributed network comprised of interoperable customer-owned and ITXC-owned equipment. A large majority of our new customers use either their own Cisco equipment or ITXC-owned and managed POPs (Points of Presence) based on Cisco equipment, because only with quality equipment on either end is it possible to deliver the highest quality VoIP over the Internet. The ability to seamlessly integrate the edge network into the ITXC network is what allows us to efficiently and reliably route voice over the Internet.”

ITXC decided to deploy the Cisco VIA solution in part because of its ability to deliver high quality over the Internet. Factors contributing to quality include:

- Adaptive jitter buffer algorithm packet loss concealment and echo cancellation in Cisco IOS[®] Software helps ITXC deliver voice quality that is on par with the traditional PSTN network, but over the public Internet.
- The adoption of open standards and compliance with national and international PSTN protocols by Cisco ensures quality and interoperability between both traditional PSTN carriers and IP carriers.
- The Cisco VIA solution offers the widest range of PSTN protocols that include analog (FXS/FXO), Basic Rate Interface (BRI), Primary Rate Interface (PRI), channel associated signaling (CAS), R2, and more than 90 Signaling System 7 (SS7) variances, as well as support for H.323, Session Initiation Protocol (SIP) and Media Gateway Control Protocol (MGCP).



- Cisco network management tools make it easy to configure, monitor, and operate globally distributed equipment from a central site.
- Cisco gateways provide ITXC with the detailed call information the carrier needs to monitor the quality of voice calls and automatically reroute the call if the quality drops below a certain threshold.

Solution: Managed ITXC POPs and Cisco VIA Solution

ITXC's customers originate and terminate carrier-grade VoIP calling minutes across the Internet worldwide using ITXC.net[®], an H.323-based voice services network that relies largely on the Cisco VIA solution. The Cisco VIA solution includes Cisco voice gateways, the Cisco PGW 2200 softswitch for signaling control in SS7 networks, and Cisco gatekeepers.

Over ITXC.net[®], the carrier manages both outsourced international long-distance services with a global footprint and outsourced national long-distance services within specific countries. Services are managed from a single 24x7 network operations center with a remote site operation for disaster recovery. Network edge equipment is deployed in ITXC.net[®] "superPOPs" for interconnection in major telecommunication centers, as well as small and medium POPs directly co-located on carrier premises around the world. The Cisco VIA solution is used in both SuperPOPs and premises POPs.

Many of these co-located carrier premises POPs are ITXC SNARC[®] POPs, which are ITXC-owned, remotely managed network edge assemblies that reside at the carrier's location. Each Cisco-based SNARC[®] POP is an integrated assembly of Cisco AS5300, 5350, or 5400 gateways, network and service monitoring equipment and software, power supply, and cabling. "The port density, termination capacity, small footprint, and stability of Cisco AS5000 Series gateways for SNARC[®] POPs reduce co-location costs," Landau explains. "In addition, the ability to deploy fewer gateways with higher capacity speeds deployment, simplifies management, and increases quality and reliability."

Once the SNARC[®] POP is deployed, ITXC carrier customers achieve instant global access without capital investment—usually within one to a few weeks. "The SNARC[®] POP enables carriers that want to exchange traffic to get onto our network quickly, with no capital expense and almost no management expense," says Landau. "The same SNARC[®] POP allows them to gain new revenue from receiving and sending calls over ITXC's global network."

Results: High Voice Quality, Rapid Deployment, Financial Success

NASDAQ-listed ITXC is among the most successful VoIP carriers in the world. The company was recently named the largest VoIP services provider by TeleGeography, with approximately 20 percent of world market share, and was named the fastest growing technology company in North America on the 2002 Deloitte & Touche Technology Fast 500. Other key accomplishments include:

- Major customers in over 175 countries worldwide (November 2002)
- Five billion international minutes carried on the network (September 2002)
- Fully funded business plan; no net debt

Because ITXC uses the Internet to deliver services, its carrier customers everywhere gain immediate access to ITXC.net[®] without incurring capital cost. As a result, ITXC has become the essential offnet carrier to customers who need new routes but can't spend capital to build them. Both new and incumbent carriers in today's turbulent economy find that obtaining a worldwide footprint and traffic through ITXC leaves them free to spend their limited capital

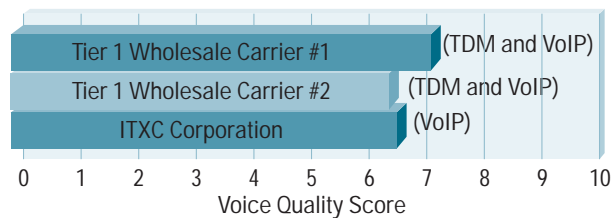


and operating budgets on developing local markets and local infrastructure. Some local carriers and resellers outsource provisioning of their entire long distance service to ITXC; others use ITXC to supplement their existing route structure.

Factors contributing to ITXC's success include:

- Rapid time to market—The Cisco VIA solution helps ITXC rapidly extend its network reach because it supports a wide range of protocols to interconnect PSTNs around the world across the Internet. Acquiring local Internet access is quite simple and typically takes only a few weeks. Provisioning a TDM long haul connection, in contrast, is complex and typically takes several months. To provision a TDM line from Chicago to certain African countries, for example, might require going through more than a dozen countries and take six or more months.
- High Quality of Service (QoS)—In 2002, Atlantic ACM surveyed customers of wholesale providers on quality of service (QoS). ITXC's voice quality is on par with, or better than, some of the largest TDM voice providers (see Figure 1). In fact, ITXC technology and use of the Internet often delivers better consistent quality than the traditional phone network.

Figure 1
Voice Quality Comparison Between Wholesale Voice Carriers (Source: Atlantic ACM, 2002)



- Simple scalability—Cisco AS5000 Series Gateways provide highly manageable incremental ports with high density. This enables ITXC to meet increasing capacity demands as the business grows. The scalability of the Cisco VIA solution has enabled ITXC.net[®] to increase the level of traffic it carries ten-fold—compared with levels before 1999, when ITXC first began working with Cisco—without complete equipment upgrades.
- Business appeal to carrier customers—Most ITXC customers already have an existing TDM network, but have entered into a relationship with ITXC for VoIP to immediately increase network breadth, reduce transport costs, and increase market share by taking advantage of ITXC's relationships with carriers in other countries. Many customers are also attracted by the flexible capability of ITXC.net[®] to interconnect with both traditional PSTN and modern VoIP networks, which eases their transition into the future. Finally, customers benefit from flexible, competitive, commercial arrangements that are less binding and burdensome than most traditional agreements. According to Mr. S.K. Gupta, Managing Director of VSNL, India's premier provider of international telecommunications, "Together [with ITXC] we look forward to delivering competitive, high quality voice services and growing call termination volume as we interconnect in this new way to carriers around the world."

Other benefits of ITXC to its carrier customers include:

- *Instant revenue stream*—Service can be activated in as little as one to two weeks.
- *Increased efficiency*—ITXC offers one connection to the world, eliminating the need for carriers to staff major international departments and negotiate dozens of bilateral agreements.
- *No capital costs*—If desired by the customer, ITXC will supply the VoIP equipment needed for access to ITXC's global network.
- *Reduced operating costs*—Global interconnection via ITXC.net[®] over the Internet provides significant ongoing savings in interconnection and operations costs.
- *Seamless network and business integration*—ITXC provides a turnkey solution based on the Cisco VIA solution, which integrates into the carrier's network without requiring changes. This allows carriers to focus on their core competencies and customers.

“With the Cisco VIA solution, we reduce costs, increase efficiency, and maximize both our own and our customers' profitability,” concludes Landau. “At the same time, the Cisco VIA solution is key to helping us make our customers more capable, competitive, and ready for the future.”

Find Out More

The Cisco VIA solution delivers the quality that service providers need to deliver VoIP services. To find out more about the Cisco VIA solution, visit:

<http://www.cisco.com/go/via>



Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
Capital Tower
168 Robinson Road
#22-01 to #29-01
Singapore 068912
www.cisco.com
Tel: +65 317 7777
Fax: +65 317 7799

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