Telecom Provider Boosts Network Performance in Remote Locations

Carrier to Carrier Telecom N.V. uses Network Capacity Expansion System to break through the satellite bandwidth limitation.

EXECUTIVE SUMMARY

CARRIER TO CARRIER TELECOM N.V.

- Industry: Telecommunications
- Location: Biddinghuizen, The Netherlands
- Number of Employees: 18 (fixed/VSAT Communication) + 14 at Evosat South Africa (Mobile Communications)

BUSINESS CHALLENGE

- Provide turnkey networks for customers in remote, hard-to-reach locations
- Optimize WAN performance over slow, bandwidth-constrained satellite links
- Improve reliability, manageability, and ease of deployment of customer networks

NETWORK SOLUTION

- Create standardized customer solutions using Cisco Integrated Services Routers with the Cisco Network Capacity Expansion System

BUSINESS RESULTS

- Boost network performance at customer sites using fewer network devices
- Cut deployment times in half
- Reduce capital costs, operational costs, support costs, and power consumption at remote customer locations

Business Challenge

Carrier to Carrier Telecom N.V. (C2C) is a full-service telecommunications provider delivering specialized terrestrial, wireless, and satellite solutions for customers throughout Africa and the Middle East. C2C does not own a large terrestrial or satellite infrastructure; rather, the company contracts with leading fiber optic providers, satellite operators, and network equipment vendors worldwide to build tailor-made, turnkey networks for its customers. Today, C2C is a vital partner for major business, military, and energy sector customers, serving some of the most remote, hard-to-reach locations in the world.

“We have many customers in oil and gas exploration, for example, who work in environments that are completely isolated,” says Kees Jan Mink, general manager and chief technology officer, C2C. “They might be at sea, in a desert, or in a jungle where it is very difficult to transport people and equipment. In these locations, network equipment must be highly reliable, because if it breaks down, it is extremely expensive to replace. At the same time, that link to the outside world is vital for these customers, so they require a high level of quality and support.”

The customer networks that C2C builds must provide solid performance for critical business applications. They must deliver all of the network capabilities, such as wireless, virtual private network (VPN), and voice support that any modern business office might require. Because the networks often support confidential military and business information, they must also provide the strongest security.

“Our customers have many requirements, but they also have limited budgets and, often, minimal on-site IT expertise,” says Mink. “They need solutions that are scalable and easy to deploy and maintain.”

Perhaps the biggest challenge C2C faces is providing acceptable WAN service over satellite links, which have a typical geostationary satellite roundtrip time of 500 – 600 milliseconds for IP communications. This delay can be disruptive to some customer applications, as well as wasting limited (and costly) satellite bandwidth. In the past, C2C relied on standalone WAN acceleration appliances to deal with this issue, but this model was very complex.

“We’ve tried several acceleration solutions on the market,” says Mink. “The major drawback has been that they all required a separate box or piece of software at the customer site. That’s a problem, because it makes those sites more complex and difficult to maintain. We have more platforms to deploy and manage, more devices to power, and more things that can go wrong.”

Network Solution

C2C has long used Cisco® routers and switches to support its customers, as well as its own core network. When Cisco approached C2C with a new acceleration technology that could be incorporated into the Cisco platforms that the company was already using, the telecommunications provider was very interested.

Given the need to use as little hardware as possible in remote deployments, C2C typically uses Cisco 2800 Series Integrated Services Routers (ISRs) as the foundation of their solution for small- and medium-size customer sites. The platforms allow C2C to integrate WAN connectivity, firewall, VPN, wireless, and other services into a single network device.

> **“With the Cisco solutions, now we can incorporate virtually anything our customers want into their remote networks, and provide a richer suite of services in a way that is easy to manage and support.”**
>
> **— Kees Jan Mink, general manager and chief technical officer, Carrier to Carrier Telecom**

“We try to find products for our customers that are affordable and easy to implement,” says Mink. “As much hardware and functionality as we can put into one box, that makes a big difference for our support staff and our customers. Having flexible products like the Cisco Integrated Services Routers is very important to us.”

The new solution, the Cisco Network Capacity Expansion (NCE) System, extends these capabilities by integrating a performance-enhancing proxy (PEP) acceleration module into the Cisco ISR platform. This arrangement allows C2C to provide the expanded link capacity that its customers demand, while eliminating the need to deploy separate acceleration appliances at remote sites.

For C2C, the ability to consolidate hardware at remote sites was the most attractive aspect of the Cisco NCE System, but the fact that the company would be able to base its WAN acceleration services on a Cisco technology was also compelling.

“Working with the industry leader in network technologies makes things a lot easier for us,” says Mink. “Most of our customers use Cisco, and their technicians, as well as our own, are very familiar with Cisco products. They’re the most widely used and well supported system we can deploy.”

Business Results

Today, C2C has standardized on Cisco ISRs with the Cisco NCE System for small- and medium-size remote deployments, and is beginning to implement the solution at customer sites across Africa and the Middle East. As more customer networks are outfitted with this solution, C2C expects to see a number of benefits, both for itself and its customers. The most immediate benefit will stem from the ability to eliminate standalone acceleration solutions in both the C2C data center and at the remote customer sites.

“The integrated Cisco NCE System will make it a lot easier for us to support our customers,” says Martin Moens, senior IP engineer, C2C. “It’s one less system we have to monitor and troubleshoot, and it will greatly simplify remote deployments. We expect our installation times to be cut in half.”

“By consolidating acceleration services into the Cisco ISRs, the complexity of the network goes down, the reliability goes up, and the scalability of the solution improves,” says Mink. “Configurations become simpler, management is easier, and we reduce power consumption at remote sites, which can be very important for locations relying on batteries and generators. Even for simple things like shipping to customers in challenging environments, this solution reduces our costs and paperwork.”

Mink expects that these efficiencies will translate to real cost savings, both for C2C and its customers.

“Beyond the operational and reliability benefits of the Cisco NCE System, I think it also makes our solutions more affordable compared to the solutions we used before,” he says. “Those systems required a larger initial investment, as well as separate fees for licensing and managing the software at all the sites. We expect to be able to reduce upfront capital costs as well as recurring monthly charges for our customers using these solutions.”

Ultimately, by expanding the suite of services and capabilities that the company can offer to its customers, the Cisco ISR and Cisco NCE System solutions are helping C2C become a more competitive business.

“Before, our product offering was simpler and less efficient,” says Mink. “We had to limit what we were willing to offer our customers because we just didn’t have the management and control capabilities to deliver more complex wireless, security, and acceleration services. If we had to buy and support multiple products and work with a number of different partners to provide a new capability at a customer site, we were less likely to make that leap. With the Cisco solutions, now we can incorporate virtually anything our customers want into their remote networks, and provide a richer suite of services in a way that is easy to manage and support.”

Next Steps

In the coming months, C2C plans to expand its use of Cisco ISRs with the Cisco NCE System, deploying it in all new small- and medium-size customer sites. For larger sites and locations with the most demanding application and bandwidth requirements, C2C plans to offer larger-scale Cisco ISRs with Cisco Wide-Area Acceleration Services (WAAS) modules.

The Cisco WAAS solution provides enhanced acceleration services beyond the Cisco NCE System by delivering a variety of intelligent caching and application-specific acceleration techniques, as well as transport optimization and compression services. Through these capabilities, Cisco ISRs with Cisco WAAS modules provide dramatic improvements in data rates, application performance, and bandwidth utilization in remote networks.

PRODUCT LIST

Routing and Switching

- Cisco 2800 Series Integrated Services Router
- Cisco 3800 Series Integrated Services Router
- Cisco 7600 Series Router
- Cisco 7200 Series Router

Application Acceleration

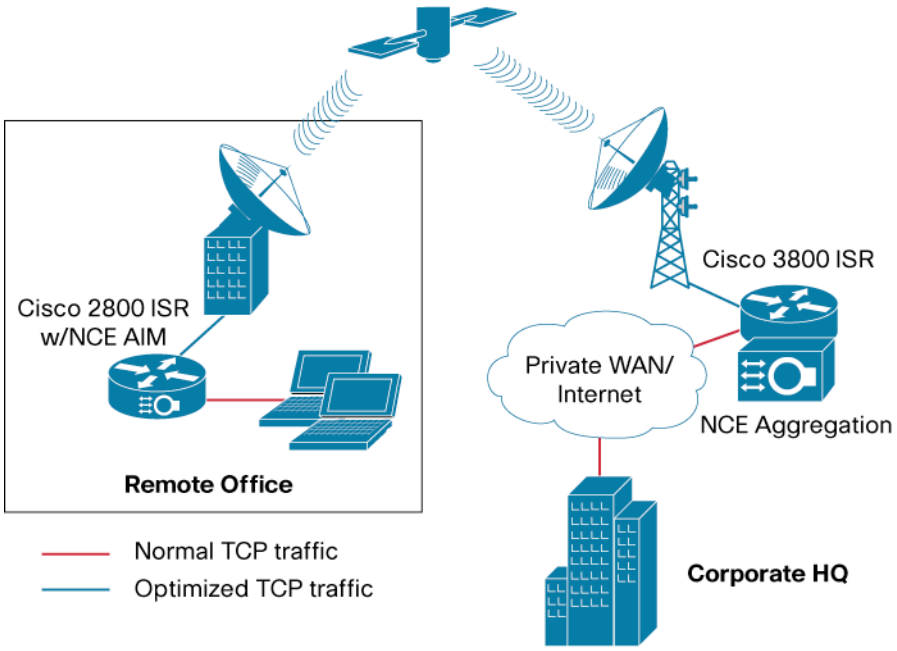
- Cisco Network Capacity Expansion System Advanced Integration Modules
- Cisco Wide-Area Application Services Network Modules

Technical Implementation

The Cisco NCE System provides a variety of compression and acceleration services to reduce latency and optimize application performance in bandwidth-constrained networks. The solution's packet flow control and transport-layer optimization services mitigate the inherent effects of latency that are associated with satellite links, boosting application performance and improving utilization of available bandwidth. At the same time, hardware compression and intelligent Cisco packet-bundling algorithms increase the effective bandwidth of the connection, expanding link capacity in customer networks.

In a typical scenario, C2C builds a custom solution for a customer using a Cisco 2800 Series ISR with integrated security and other services, as well as the Cisco NCE System Advanced Integration Module (AIM). Back at the C2C data center, Cisco 3800 Series ISRs aggregate the WAN links from the customer sites and bookend the Cisco NCE System acceleration services. The entire framework is linked with C2C's core network (composed of Cisco 7200 Series and Cisco 7600 Series routers), allowing C2C to support thousands of remote customer locations with just 18 data center employees. (Figure 1.)

Figure 1. Cisco NCE System Design for Satellite Networks



For More Information

- For more information about Carrier to Carrier Telecom NV, visit: http://www.carrier2carrier.com
- To find out more about the Cisco NCE System, visit: http://www.cisco.com/go/nce
- For more information on Cisco Wide-Area Application Services, visit: http://www.cisco.com/go/waas
- For more information about other Cisco solutions for telecommunications providers, visit: http://www.cisco.com/go/serviceprovider

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Printed in USA C36-486830-00 07/08