## EXECUTIVE SUMMARY

**Customer Name**
State Information Technology Agency (SITA)

**Industry**
Service provider

**Location**
South Africa

**Number of Employees**
1,800

**Challenge**
- Legacy network had become unreliable and expensive to run
- System unable to guarantee quality of service and drive top-line growth
- Enterprise approach no longer sustainable

**Solution**
- Cisco® IP Next-Generation Network, connecting 3,100 sites and 500,000 users in government and public services to IT systems, applications, and communications

**Results**
- SLAs improved, with 99.99 percent availability
- New service management model has improved the end user experience
- Latency reduced by over 80 percent

# Improving IT Services for Government in South Africa

SITA takes customer experience to new levels and lays the foundations for Triple Play on the Move

## Challenge

The State Information Technology Agency (SITA) is the IT service provider for the largest employer and consumer of IT products and services in South Africa, the Government. It was established to consolidate and co-ordinate the state's technology resources in order to achieve cost savings, increase delivery capabilities, and enhance interoperability. SITA serves about 3100 sites, providing the wide area networked services that enable government (at national, provincial, and local levels) and public services, such as the emergency services, schools and colleges, and hospitals, to function.

Lewellyn Jones, former chief executive officer for SITA, says, "SITA is committed to leveraging IT as a strategic resource for government, managing the IT procurement and delivery process to help ensure value for money, and using IT to support the delivery of e-Government services to all citizens. But, like any self-funded commercial business, we also recognized the need to make our offering more attractive and to improve the service experience for our customers."

For the management team, this presented a formidable challenge. SITA had a legacy IP network, based on Asynchronous Transfer Mode technology, which, without Quality of Service (QoS) and the ability to prioritize traffic, was largely limited to supporting data services. This situation was further compounded by scalability issues as bandwidth capacity and spare ports became exhausted. Built using a classical star design, the network started to creak under the growing weight of traffic, and stability problems inevitably began to surface.

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**—Lewellyn Jones, Former Chief Executive Officer, SITA**

Pieter Coertze, head of infrastructure services at SITA, says, "We had arrived at a major crossroads. We were investing more and more time and money patching up the network. Also, our customers were increasingly requesting converged services like Voice over IP (VoIP) and videoconferencing, which were sales opportunities that were out of reach because we could not guarantee quality of service."

## Solution

Realizing that applying more infrastructure "first aid" was no longer a sustainable option, SITA's management team decided to take a step back. A wide-reaching review of the business reinforced the need to move away from a traditional enterprise approach towards a next-generation service provider model.

Key requirements for the new model included:

- Providing a reliable and scalable Multi Protocol Label Switching (MPLS) platform to deliver converged voice, data, and multimedia services with measurable service level agreements (SLAs) and new performance metrics
- Achieving greater efficiencies in operating and capital expenses to help increase profitability
- Offering new value-added services (far beyond connectivity) for top-line revenue growth, greater competitive differentiation, and increased customer loyalty.

The first step to building the new infrastructure was to find a partner who shared the same strategic vision. Cisco was well known to SITA. The two companies had worked together previously to successfully upgrade the core network with the deployment of Cisco® Catalyst® 6500 Series Routers.

Navin Singh, general manager, converged communications division at SITA, says, "Becoming a next-generation service provider requires a completely different mindset. Vendors are great at telling you that their box is faster or better than the next. We did not want a vendor; we wanted a partner. Someone we could trust. Someone who could help us elevate these technical discussions to a higher business level. Cisco understood this from day one and was the only company that did."

These initial discussions resonated strongly with Cisco's own vision of the IP Next-Generation Network (IP NGN) and how it puts operators firmly in control and optimizes the network experience for maximum end-user satisfaction. A series of focused workshops and executive briefing center events provided an opportunity to exchange ideas and crystallize thinking on a broad range of topics. The issues ranged from "day one" challenges, and how to get the foundations right in terms of network architectures and service control, to defining user experience and future service creation.

As Cisco learned more about SITA's requirements, it was able to place its global resources at the company's disposal, for example, to bring in experts and specialists from its business unit in San Jose. With such an ambitious project, a nationwide deployment across all nine provinces in South Africa, Cisco Customer Advocacy was engaged to produce the low-level design and provide SITA with a final checkpoint at each stage of the network deployment. This helped SITA to mitigate risk and fast-track progress by leveraging Cisco's expertise for deploying similar size networks across the globe.

## Results

The Cisco IP NGN touches all parts of government in South Africa. It will help government and public sector organizations respond to the constant challenge of doing more for less by harnessing technology to streamline traditional processes and to deliver more timely and efficient services. This includes government-to-government and e-government-to-citizen collaboration, as well as providing a platform to extend services to third-party entities, such as municipalities and non-governmental organizations.

For SITA, the IP NGN provides the reliable, QoS-enabled, carrier-grade infrastructure necessary to support "Triple Play on the Move" (Data, Voice, Video, Mobile). But the benefits go way beyond just a network upgrade and the newfound ability to segment traffic. The Cisco IP NGN has also given SITA a new network management "dashboard." This offers improved visibility and the critical control, end-to-end, across the network that service providers need in order to guarantee not only QoS, but also the overall quality of experience (QoE) for users.

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**—Navin Singh, General Manager, Converged Communications Division, SITA**

These capabilities have already enabled SITA to improve:

- Service Levels: A simplified design and architecture (moving from a star to a fully meshed topology) have improved network reliability and reduced downtime from 99.5 percent availability. SITA is now able to offer a far superior SLA with 99.99 percent network availability to its customers.
- Responsiveness: SITA no longer has to issue external requests for extra bandwidth (in many cases waiting several weeks) and can now adjust bandwidth itself, usually within 48 hours, to support the rapid deployment of multimedia-based customer applications.
- Speed: Network latency before was in excess of 150 m/s. This has now been engineered down to 20/25 m/s, significantly improving the end user experience.
- Security: The ability to run multiple services using Virtual Local Area Network techniques (at the edge) allows various government departments to traverse the same network while remaining within an encrypted, fully managed, and threat-isolated environment.
- Adaptability: Customers can move around physically yet still maintain their functional ties, via the VLAN, without the need for network reconfiguration. Although it is still early days, simplified network management is expected to deliver significant cost savings to SITA.

Asokan Moodley puts this all into perspective: “The real benefits will only be realised when we (the government and all its various departments) take the NGN for granted. We need to fully take on the bevy of services that government requires, namely, the video, conferencing, interactive, and mobile services, to leverage the NGN’s presence, performance, and resiliency.”

To this end, SITA is currently helping various government departments to leverage economies of scale and drive down costs using the NGN as a common platform to deliver shared services across an end-to-end secure and resilient network.

The NGN has opened up many other exciting possibilities. For citizens, its national footprint allows potential expansion of services for the first time to hard-to-reach areas, via wireless provisioning. In addition, SITA is now able to increase connectivity to schools, colleges, hospitals, clinics, and so on, helping to take education and medicine to the next level by providing shared knowledge and e-services into these areas.

## Next Steps

With telephony charges in South Africa forming a major business expense, particularly for government, SITA has its sights firmly set on developing a cost-effective VoIP proposition for the entire government of South Africa. The company is also using the IP NGN to pilot videoconferencing between its three major centers in Centurion, Cape Town, and Pietermaritzburg, with a view to making the service available to customers shortly.

**"We were able to smoothly transition 500,000 users across to the Cisco IP NGN within a couple of hours over one weekend. The project, completed in just nine months, was delivered on time and within budget. This achievement, a first for public sector ICT projects in South Africa, was formally recognized by the Minister of the Department of Public Service and Administration."**

**—Asokan Moodley, Senior Manager, Network Architecture, SITA**

## Technical Implementation

Phase one of the project saw the implementation of 35 Cisco GSR12410 Series and 15 Cisco 7600 Series Routers, which form the core of the SITA IP NGN. The Gigabit Ethernet backbone connects together the 25 existing points of presence (POPs) in a mesh configuration, increasing network resiliency. Phase two was completed in June 2008 and saw the deployment of another 20 Cisco GSR12410 Series Routers to provide the meshed network with dual redundancy in all the major POPs. Cisco's Carrier Ethernet design also incorporates the highest levels of encryption and security services to protect sensitive information flowing over the IP NGN.

Asokan Moodley, senior manager, network architecture at SITA, explains the "big bang" approach to migration: "We were able to smoothly transition 500,000 users across to the Cisco IP NGN within a couple of hours over one weekend. The project, completed in just nine months, was delivered on time and within budget. This achievement, a first for public sector ICT projects in South Africa, was formally recognized by the Minister of the Department of Public Service and Administration."

The Cisco IP Next-Generation Network architecture enables service providers to deploy new services, achieve greater efficiencies, and gain better control of their network. The IP NGN is divided into a hierarchy of elements that include:

- Access: Provides access to customers over DSL, fiber, cable, or wireless
- Aggregation: Aggregates the access network across a Carrier Ethernet network and providing interconnectivity to the IP/MPLS edge and IP/MPLS core
- Intelligent edge: Interfaces services with the IP/MPLS core
- Multiservice core: Provides scalable IP/MPLS routing in the core network
- Policy/Service layer: Provides broadband policy management to control service delivery, a key component of the Service Exchange Framework.

At the network layer, management is enhanced by in-built intelligence that identifies individual services (be they voice (TDM or VoIP), IPTV and video, MPLS VPN (Layer 2/3), or mobile) and matches the appropriate service levels, using class-of-service functionality.

Taking this architectural design, Cisco has provided SITA with a fully meshed network with dual redundancy, using a pair of Cisco GSR12410 Series Routers (at the larger POPs) and a GSR12410 and Cisco 7600 Series Router combination (at the smaller POPs).

## For More Information

To find out more about the Cisco IP Next-Generation Network, **click here**

## Product List

### Routing and Switching

- Cisco GSR12410 Series Routers
- Cisco 7600 Series Routers

### Network Management

- Cisco IP Solution Center

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

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

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