

# SingHealth Brings World Class Healthcare to Patients with Cisco

Leading healthcare provider brings the speed and efficiency of teleradiology, enhances patient care with Cisco Unified Communications and Cisco Networking.

Executive Summary
<b>Singhealth</b> <ul style="list-style-type: none"> <li>Healthcare provider</li> <li>Singapore</li> </ul>
<b>Business Challenge</b> <ul style="list-style-type: none"> <li>To optimize scarce resources in the radiology department</li> <li>To create a world class, collaborative teleradiology facility</li> </ul>
<b>Network Solution</b> <ul style="list-style-type: none"> <li>Cisco Unified Communications solution</li> </ul>
<b>Business Value</b> <ul style="list-style-type: none"> <li>Ability to provide new services with tele-consultation</li> <li>Improved customer service levels with faster workflow</li> <li>Productivity efficiency from improved workflow</li> </ul>

## Company Description

SingHealth, the eastern cluster of public healthcare institutions in Singapore, is the largest healthcare group in Singapore. Consisting of three hospitals (Singapore General Hospital, KK Women's and Children's Hospital and Changi General Hospital), five National Specialty Centres (for cancer, heart, eye, neuroscience and dental) and a network of nine Polyclinics, SingHealth offers a complete range of multi-disciplinary and integrated medical care for over three million patients each year.



Living up to its motto of *Medical Excellence and Genuine Care*, SingHealth constantly evolves in order to stay at the leading edge of medicine.

## Business Challenge

The radiology landscape in Singapore has been tight because imaging procedures are growing faster than the growth of radiologists. Radiology is a very specialized vocation and radiologists are generally in short supply in Singapore. This is not a unique situation for SingHealth. Radiologists are physicians who specialize in radiology, and use medical imaging technologies to diagnose and treat diseases. "It was a challenge to effectively distribute the work load across the various institutions without compromising result turn-around time," said Mark Ang, Assistant Director of Infotech, SingHealth.

Furthermore, radiologists found it difficult to collaborate across departments and locations. As Ang indicated, it was a challenge for radiologists to consult with other radiologists, or with clinicians. "They needed to be physically present in the Operating Theatres (OT) for consult during operations. This really placed a time constraint on our already scarce resources."

As a healthcare provider committed to provide affordable and accessible healthcare to patients, SingHealth sought ways to overcome the shortage of resources by optimizing the resources they had on hand.

"We can expand our resources by distributing the workload across institutions by creating a virtual pool of radiologists, including those outside of SingHealth, through the use of teleradiology technology," said Ang.

SingHealth was looking to even further enhance patient care by improving productivity through enabling more collaboration between radiologists and clinicians. There is an increasing need for multi-specialty; multi-radiologist consults which requires healthcare providers to improve collaboration and communications among departments and locations.

This would mean that a faster turnaround time is needed in transferring information in the workflow.

With these requirements, SingHealth decided to embark on a project to incorporate teleradiology into their consult processes. Teleradiology is the electronic transmission of patient's radiological images, such as x-rays and computerised tomography (CTs) scans, from one location to another for purposes of consultation. "With teleradiology, we can improve productivity as radiologists do not actually have to be physically where the patient is. By electronically transmitting image studies to the radiologists, they can be available at all times, thereby significantly improving productivity."

### **Network Solution**

Three broad components were needed to set up a world class teleradiology center—an integrated Radiology Information Systems/Picture Archiving and Communications Systems (RIS/PACS), a medical-grade teleradiology network and a unified communications infrastructure. To create their teleradiology center, SingHealth looked to Cisco to provide the foundation support to expand their existing network and communications infrastructure.

For six weeks, Cisco consultants were on-site to understand more about SingHealth's radiology process flow and infrastructure, with many consultation sessions and discovery workshops conducted between the SingHealth and Cisco teams. The outcome of this was a comprehensive architecture blueprint which was produced and endorsed by the Teleradiology Steering Committee. Ang attributed the successful blueprint to the Cisco team, whom he found to be very committed, "The Cisco team was competent and professional."

Firstly, connectivity and accessibility within and beyond the SingHealth cluster was improved with an enhanced network infrastructure. "We needed to be able to send patient radiological images quickly to resources available to diagnose it. And with the Cisco network in place, we knew that the connectivity would be stable and the confidential information would be secure," explained Ang.

On top of that, SingHealth wanted to bring teleradiology one step further to differentiate their services. In providing high quality care to patients with teleradiology, SingHealth incorporated an advanced unified communications infrastructure which rides on the secure network. More than just transferring patient images and data, this network can be used to give caregivers the power to collaborate and connect effortlessly.

To build up a unified communications infrastructure which is powerful enough to enhance collaboration between departments and location, SingHealth chose the Cisco Unified Communications solution. The Cisco Unified Communications solution was implemented to facilitate tele-consultation. Components of the Cisco Unified Communications solution include Cisco Unified Communications Manager 6.0, Cisco Unity Connection voicemail server, Cisco Unified Presence Server, Cisco Unified Mobility, Cisco Unified IP Phones 7961G, Cisco Unified Personal Communicator, Cisco Unified MeetingPlace Express 2.0 and Cisco Unified Application Environment.

### **Business Value**

Response to the new system has been encouraging, as the solution meets the immediate needs of SingHealth. "There has been a positive change in our workflow which enhanced our processes. We see teleradiology as the first step to evolving into a connected health infrastructure where all stakeholders, both internal and external, will be able to connect and collaborate to share timely and accurate information, independent of location."

With the teleradiology and network infrastructure in place, radiologists are now able to carry out tele-consultation. Ang indicated that they are now able to provide better service for their patients. “It improves efficiency and saves time for radiologists, as they do not need to rush from OT to OT. This allows us to effectively use our scarce resources, translating into better patient care.”

The Cisco Unified Communications solution also allowed SingHealth to carry out cross-location consultation. The integrated Cisco Unified Communications tools with the RIS/PACS provided the radiologists with key collaboration capabilities directly from their RIS/PACS UI. They are able to utilize the appropriate collaboration tool based on the urgency and acuity of care. Presence enables radiologists to determine caregivers available and their preferred method of communications. Moreover, the integration with the RIS/PACS enables initiating communications directly from the image study and sharing the image study to remote physicians without starting a new application.

“I have successfully conducted a teleradiology conference with doctors in Penang using MeetingPlace. We discussed a patient who had a scan done in our hospital and subsequently a follow up scan in Penang. The speed is acceptable. We were able to make treatment decisions swiftly.”

—Dr. Thng Choon Hua, National Cancer Centre, SingHealth

“We can now carry out tele-consultation of complex cases between our institutions and even overseas, using the collaboration tools.” For instance, NCC specialists who used Cisco MeetingPlace Express Desktop Sharing tools to consult each other remotely found it very useful and functional to their work, because they can discuss the radiological images in real time instead of waiting for scans to arrive.

“We wanted to build a teleradiology infrastructure that was different from the typical run of the mill teleradiology setup. With an enhanced unified communication and collaborative environment from the Cisco Unified Communication infrastructure, we are now better poised to compete with radiology providers globally.”

—Mark Ang, Assistant Director of Infotech, SingHealth

Overall this helps radiologists manage interruptions, reduce the time spent finding physicians and colleagues, and spend more time collaborating on consults and performing study interpretations.

“It was a good and satisfying experience working with Cisco.” said Ang.

Furthermore, SingHealth felt now that it was more prepared to take on competition internationally with their world-class teleradiology infrastructure. SingHealth has the potential to go global with the ability to outsource and in-source radiology services among a virtual pool of skilled radiologists. “We aspired to build a teleradiology infrastructure that is different from the typical run-of-the-mill teleradiology setup. With an enhanced unified communication and collaborative environment from the Cisco Unified Communication solution, we are now better poised to compete with radiology providers globally.”

#### Product List

- Cisco Unified Communications Manager 6.0
- Cisco Unity Connection
- Cisco Unified Presence Server
- Cisco Unified Mobility (Single Number Reach)
- Cisco Unified IP Phone 7961G
- Cisco Unified Personal Communicator
- Cisco Unified MeetingPlace Express 2.0
- Cisco Unified Application Environment
- Cisco Unified Videoconferencing

#### Future Plans

SingHealth has further plans to develop their current teleradiology to perform alert notification of clinician to critical abnormal results. “Currently, the most used feature is the Desktop Sharing. We want to expand the usage of the collaboration tools so that our users are more familiar to IP hard and soft phone and videoconferencing.”

#### For More Information

To find out more about Cisco Unified Communications, go to: <http://www.cisco.com/go/uc>

To find out more about SingHealth, go to: [www.singhealth.com.sg](http://www.singhealth.com.sg)



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