

Success Story  
LANmark  
LANsense

## Nexans technology supports multiple applications at Asia's newest airport terminal



The new Terminal 3 opened at the Singapore Changi Airport on January 9<sup>th</sup> 2008. It allows the airport to handle 70 million passengers per year whilst maintaining its strong reputation for service excellence and enhancing its position as one of the leading aviation hubs in Asia. Nexans copper and optical fibre cabling solutions are deployed extensively inside and surrounding this facility, supporting a wide range of network services and users.

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## Executive Summary

**MAIN CUSTOMERS** • Civil Aviation Authority of Singapore, Singapore Airlines, Immigration Checkpoint Authority, Crowne Plaza Hotel

**PRIMARY LOCATION** • Terminal 3, Changi Airport Singapore

**REQUIREMENT/MAIN PROJECT** • Extensive cabling/LAN infrastructure supporting voice, data, broadband, video applications at new terminal

**REQUIREMENT/RELATED PROJECTS** • LAN cabling and infrastructure at Immigration Checkpoint, Singapore Airlines, Baggage Handling, Flight Information Displays, Crowne Plaza Hotel and Budget Airline Terminal

**EQUIPMENT** • A variety of copper/fibre LANmark cables, backbones, connectors, LANsense intelligent-ready patch panel

When the Civil Aviation Authority of Singapore (CAAS) wanted the latest network infrastructure for its new Terminal 3, Nexans LANmark-6 and LANsense solutions were proposed and selected for a complete, enterprisewide installation. Their choice led to other unique opportunities for Nexans Cabling Solutions.

Walk through Changi Airport's new Terminal 3 and be treated to soothing natural light, tropical sounds and a five storey "green wall" of lush rain forest foliage with four waterfalls. This is no ordinary airport terminal. Rather, an environment to soothe and calm the busy traveller navigating today's strident pace of air travel.

But behind the expansive concourse, convenient shops and expedient passenger service areas is a beehive of communications activity involving high-speed data, video and voice links all supported by an excellent network cabling infrastructure. These are the digital arteries that keep this 1.75 billion SGD (1.25 billion USD) facility capable of handling up to 22 million passengers annually. And whilst this island city-state is one of the smallest countries in Southeast Asia, it has one of the few regional airports specifically designed to efficiently handle the world's largest passenger aircraft: the new double decked A380 Superjumbo Airbus that, in certain configurations, can seat nearly 900 travellers.

### Future-ready policy

CAAS has long had a policy of building years ahead to avoid congestion problems common at most key airports in the world. Changi Airport's Terminal 1 and Terminal 2 were built and opened in 1981 and 1990 respectively. Planning started for Terminal 3 almost immediately then. Construction

of Terminal 3 commenced in early 2000 and it opened January 2008, making it one of Asia's newest.

The CAAS's overall emphasis on building for the future led its information technology (IT) professionals to embrace an Internet Protocol (IP) platform for the new terminal, made possible by expanded broadband access. As part of implementing a communications infrastructure for the 21<sup>st</sup> Century, the CAAS issued a public tender (Request for Proposal, or RFP) to regional telecommunications networking and cabling firms.

The project's primary goal was to build an inter/intra terminal network infrastructure to serve the IT needs of the airport as well as visitors. The RFP stipulated that infrastructure should be flexible for future expansion, and be technology and standards independent, allowing the CAAS the freedom to keep up with ever-changing technology due to the highly competitive nature of the aviation industry.

Additionally, the intra terminal infrastructure would be wholly owned by CAAS. The terminal's tenants and other service providers could use the valuable communications offerings and make them available amongst their staff and customers. The CAAS, however, would be the primary user of voice, data and video services throughout the terminal.





### One success leads to others

Nexans' Certified Systems Partner, Commercial Industrial Supplies & Services (CISS) Pte Ltd., won the CAAS tender in 2005 to provide an enterprisewide cabling and support-equipment infrastructure for Terminal 3.

Involving no less than 5000 nodes of LANmark-6 cabling systems, Nexans LANsense solutions and structural hardware were integrated in response to CAAS's stringent specifications to accommodate Intelligent Cabling Management Systems. More than 250km of 25-Pairs

Once the enterprisewide cabling infrastructure solutions from Nexans were selected by the CAAS, various other Terminal 3 cabling projects put to tender by commercial and government organisations were awarded to Nexans and its business partners.

### These include:

#### Immigration Checkpoint Authority (ICA)

The Singapore government controls immigration and customs at a special facility inside Terminal 3. The tender issued by IDA (Info-com Development Authority of Singapore) in 2006 was awarded to

## Nexans solutions support a wide range of uses at Singapore's Changi Airport newest terminal.

Category 5E (Cat.5E) cabling were installed, forming the backbone highway to support the enormous amount of voice communications in this terminal.

For public health and safety considerations, all copper and fibre optic cables supplied by this contract were jacketed with low-smoke, halogen-free, flame-retardant (LSHF-FR) sheaths – a strong manufacturing feature of Nexans. Other technical components of the solution include Nexans ability to offer a comprehensive suite of Intelligent-Ready patch panels, high performance Cat.6 cables and components, and multi-pair Cat.5E voice trunk cables.

IBM Singapore to provide structured cabling systems to support ICA's local area network and facility at Terminal 3. Complete Nexans Cabling Solutions were proposed and selected due to the company's strong and reliable offering in shielded Cat.6 FTP cabling systems, backed by good reputations and many impressive government references. Nexans' Certified Systems Partner, Pericomp Solutions, undertook the installation that involved massive LANmark-6 horizontal cabling and LANmark-OFsm UC LSZH fibre optic cabling networks.

#### Singapore Airlines (SIA)

Singapore's flag airline, SIA, is the first to open for business and begin flights from the

## Challenges

- Multiple network applications requiring state-of-art solutions
- Critical terminal functions heavily rely on reliable, fast communications
- Must meet rigid government specifications
- Ability to coordinate multiple design and installation projects at same time

## Solutions

Numerous Nexans products including copper, fibre, backbones, panels, networking:

- LANmark-6 UTP 5000 nodes
- LANmark-6 FTP 3000 nodes
- LANmark-OF2 UC-LSZH 147 km (4 to 24 cores)
- LANmark-OFsm UC-LSZH 121 km (12 and 24 cores)
- LANsense 250 set of intelligent patch panel
- Essential 5E 4300 nodes
- Multipairs 25-Pair Cat.5E 280 km



new Terminal 3. The tender for SIA's IT Infrastructure at Terminal 3 was awarded in early 2007 to telecom powerhouse SingTel (Singapore Telecommunications Limited). The work involves complete network infrastructure support for SIA at Terminal3, including 20 regular aircraft gates and 8 for Superjumbo A380s. Designed and commissioned by Nexans' key distribution business partner, NCS Communications Engineering, the structured cabling networks for SIA involve close to 100km of LANmark-OF UC LSZH fibre optic cabling (4 to 24 cores), complete with LANmark-OF zone fibre distribution solutions to each critical area such

Superjumbos arrive offloading up to 800 passengers at a time. Inter-roller was awarded the CAAS contract to build the state-of-the-art baggage handling system in Terminal 3. Running behind this 121 million SGD baggage handling system is a network of copper and fibre optic cabling that carries the digital commands and controls of this crucial system. Nexans' Certified Systems Partner, Lantrovision, was contracted to provide and install the cabling systems that involve more than 40km of LANmark-OF LSZH (4 and 8 cores SM & MM50) and a few hundreds of nodes of LANmark-6 FTP solutions over and within Terminal 3's extensive

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Mr. Chia Kim Seah, Managing Director and Country Manager for Nexans' South East Asia Region

as the aerobridges. Close to one thousand nodes of horizontal cablings were added to run to service counters and workstations throughout the terminal, connecting SIA staffs to their networks. SIA, one of the most successful airlines in the region, is first in the world to fly commercial flights using Airbus Superjumbo A380 aircraft. SIA now operates from both Terminal 3 and Terminal 2 at Singapore Changi Airport.

### CAAS – Terminal 3 Baggage Handling System

A reliable baggage handling system is crucial to the efficiency of busy airports, especially when

baggage handling facility built to handle huge passenger volumes.

### CAAS – Terminal 3 Flight Information Display System (FIDS)

While SIA is the primary tenant at Terminal 3, many other airlines use the facility as well including China Eastern Airlines, Jet Airways, Qatar Airways and United Airlines. The FIDS at Terminal 3 provides timely and continuous details on departures and arrivals of all carriers, amongst other information. Nexans LANmark-OF UC LSZH fibre optic cables were also deployed throughout this system that

## Benefits

- Reliable, fast communications infrastructure at key locations
- Future-ready with extra bandwidth to move data quickly
- Helps keep Terminal 3 running efficiently — departures, arrivals, baggage, customs, security, flight information, even hotel accommodations



is spread across the terminal, connecting nearly 200 plasma display screens.

### Crowne Plaza Airport Hotel

Part of Changi Airport's development included a new hotel built next to Terminal 3. The architectural design of the Crowne Plaza Airport Hotel matches the design of the main terminal building, creating a seamless visual continuum between the two structures. Attached to Terminal 3, this 9 storey hotel features 320 guest rooms, 27 suites and a host of restaurants and business conference facilities, all requiring up to date broadband and telecommunications amenities expected by world-travelling guests. In yet another success, Nexans' Certified Systems Partner, Netflow Integrated, secured the contract to install approximately 2,500 nodes of Essential Cat.5E solutions, supported by LANmark-OF2 and 25-pair Cat.5E backbones to further boost the hotel's conference, broadband and administrative facilities.

### The Budget Terminal

Catering to the emerging trend of low-cost carriers (LCC) in Asia, the CAAS decided to build a customised airport terminal offering a low-cost operating environment that suits the LCC business model. Named the 'Budget Terminal', it opened in March 2006 and is conveniently located near the main terminals at Changi Airport.

The Budget Terminal was designed and built by Sanchoon Builders, an area construction company. Nexans' Certified Systems Partner, Century Technology, was contracted to design, supply and install a complete Nexans Essential Cat.5E cabling system for areas used by CAAS.

In another separate RFP issued by IDA in 2005, NCS Communications Pte Ltd won the bid to supply and install the network cabling systems for ICA (Immigration and Checkpoint Authority) at the Budget Terminal. Like Terminal 3, Nexans LANmark-6 FTP and LANmark-OFsm were installed for the ICA facility at the Budget Terminal. Installation was performed by Nexans' Certified Systems Partner, EMS Wirings.

### A strong communications network for Changi Airport Singapore

"Terminal 3 adheres to our planning policy of adding airport capacity in time to avoid congestion," says Mr. KOH Ming Sue, Deputy Director (Engineering & Real Estate Development), CAAS. "From an IT networking standpoint, this means selecting an optimal infrastructure that not only meets today's needs, but eliminates future communication bottlenecks so that Changi Airport can remain competitive and continue to provide the latest infrastructure to support our business partner and passenger needs in a growing aviation market." Mr. Andy Chin, Engineer, Specialized Airport Systems, CAAS, adds: "In all, this region's newest air terminal has a very strong, flexible and future-ready communications infrastructure put in place by Nexans and the various contractors."

Finally, Mr. Chia Kim Seah, Managing Director and Country Manager for Nexans' South East Asia Region, concludes: "Nexans is a worldwide leader and supplier of LAN cables and cabling systems. Together with our pro-active sales team and our established network of Channel Partners and Certified Systems Integrators, this synergy enables us to provide our high-end cabling solutions and quality services to help our important customers at Changi Airport."



With energy as the basis of its development, Nexans, the worldwide leader in the cable industry, offers an extensive range of cables and cabling systems. The Group is a global player in the infrastructure, industry, building and Local Area Networks markets. Nexans addresses a series of market segments from energy, transport and telecom networks to shipbuilding, oil and gas, nuclear power, automotive, electronics, aeronautics, handling and automation.

With an industrial presence in more than 30 countries and commercial activities worldwide, Nexans employs 22,000 people and had sales in 2007 of 7.4 billion euros.

In the field of LAN Cabling Systems, Nexans Cabling Solutions offer a complete range of products and value added services providing improved reliability and reduced cost of ownership for Network Managers, together with faster installation times for installers.

In addition to LANmark physical infrastructure cabling systems, Nexans also specialises in the development Intelligent Infrastructure Management (IIM) products under the LANsense brand, including environmental monitoring and control (EMAC) devices and solutions for fully converged IP environments.

Nexans offers an unrivalled choice of LAN infrastructure solutions to a global customer base through an extensive network of regional offices and Key Account Management team.



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