

# 5G-IOT NETWORKS FLOURISH ON EFFICIENT STRUCTURED CABLING

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In the digitally transforming economies of Asia Pacific, enterprises have to be mindful that deploying individual networks for the myriad of Internet of Things (IoT) and cloud services not only adds both complexity and cost but also may end up impacting network performance and even precious real estate.

Faced with the impact of [emerging IoT and 5G applications](#), IT network managers must consider infrastructural efficiency seriously. Key challenges include network densification for more usable floor space; cabling system performance to meet future bandwidth demands; and important connectivity drivers such as Wi-Fi; [Power over Ethernet \(PoE\)](#)-enabled devices; and [in-building wireless](#) (IBW) systems.

## UCG, CCA OPTIMIZATION ACCOMMODATES NETWORK DENSIFICATION

The relatively high cost of real estate across many of the large metro cities in Asia Pacific is driving renewed focus on [cabling for efficiency and performance](#), especially as the enterprise network supports more IoT and 5G devices as well as applications and use cases.

One space optimiser is the [Universal Connectivity Grid](#) (UCG), which divides building floor space into evenly sized areas called "cells". By deploying consolidation points in the ceiling of each cell, connections to the core network and access to wired and wireless technologies are made easy.

Indeed, more connected devices are being deployed in the ceilings with facilities and IT networks converging onto IP/Ethernet. The [Ceiling Connector Assembly](#) (CCA) high-quality cable interconnection, which is available as a standalone unit or preterminated to an RJ45 plug, simplifies installation of these devices.

## STRUCTURED CABLING PERFORMANCE FIT FOR 5G, WI-FI 6

The 5G networks of the future herald sophisticated connectivity to a myriad of smart and efficient edge IoT devices. These networks feature high-speed wired and wireless networks to meet bandwidth, efficiency and latency requirements of more machine-to-machine connections.

Category 6A cabling delivers high bandwidth and remote power to support a common



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connectivity platform for wired LAN and wireless technologies, occupancy sensors, intelligent lighting, audiovisual services, building automation, and access control to enable the IoT.

Meanwhile, early implementations of 400G fibre uplinks and backbones may happen in 2020 even as migration to 100/200G from 40G ramps up.

Building backbones have traditionally been designed to exceed the horizontal requirements by a factor of 10. With upcoming Wi-Fi 6 or 802.11ax APs offering theoretical speeds of up to 10 Gbps and working better with multiple devices, any new or retrofitted backbone infrastructure should be specified to support backhaul bandwidth of 100 Gbps.

The [fibre-optic infrastructure](#) capable of this speed is OM5 wideband multimode fibre. CommScope's SYSTIMAX structured cabling, featuring singlemode, multimode and OM5 wideband multimode fibre, is certified to meet or exceed industry standards.

As the number of switches and assets to support 5G-IoT requirements grows, CommScope's structured cabling approach ensures scalability and standardises implementations of complex networks in intelligent buildings, campuses and data centres. This approach, which adheres to established standards for deploying cabling

within a building or a group of buildings, delivers very low latencies and improves overall network efficiency to reduce CapEx and OpEx in the long run.

## IOT CONNECTIVITY DRIVERS

CommScope's [structured cabling](#) is also designed to power connected IoT devices and sensor-driven technologies.

With the advent of the IoT, managing PoE-enabled links has become increasingly difficult. The latest IEEE 802.3bt [PoE standard](#), also referred to as 4PPoE, enables the remote powering of a broader range of connected devices.

To this end, CommScope is contributing to [new cabling standards](#) based on bundle size recommendations and building physical cable bundles subject to a variety of power and environmental conditions. CommScope also offers a [powered fibre cable system \(PFCS\)](#) to connect and power devices that are located more than 100 meters from the PoE switch.

To help manage CommScope's SYSTIMAX structured cabling portfolio of UCGs, fibre optic backbones and PoE solutions, the imVision [automated infrastructure management](#) system provides network administrators with a holistic view of the network from which to optimise the allocation and use of resources.



SUCCESS STORY: [TENCENT](#), CHINA

# TENCENT HQ FUTURE-PROOFED WITH SMART, STABLE CONNECTIVITY

Located in Shenzhen, the Tencent Binhai Building (TBB) covers an area of 18,650 square metres and a floor area of about 350,000 square metres. Serving as Tencent's global headquarters and R&D base for animated games and mobile internet, the TBB is a 50-storey tower in the south, a 41-storey tower in the north, and three "links" that offer indoor shared amenities between the towers. The building's structure reflects Tencent's vision of becoming a connector, as proposed by the company's CEO, Ma Huateng.

CommScope was tasked to complete the building's network and cabling while showing the "connector" concept of the design. Put simply, the TBB becomes an extension of the IoT. All wired and wireless digital devices connect to each other in the TBB. Key challenges were the development of the connectivity technology and the growth of bandwidth.

## SOLUTION

CommScope's smart building solutions deliver the wireless or wired network connectivity needed in closed-circuit television, IP video surveillance, alarms and sensors, access control, HVAC, communications, energy, fire safety, elevators and lighting. For example,



digital devices requiring power must use PoE wired connectivity instead of wireless connectivity, while heat and higher levels of fire-retardant standards were considered for twisted-pair cables that transmit PoE. Further, according to TIA162-A and ISO24704 standards, the wireless connectivity coverage is within a radius of 12 to 18 metres.

Ubiquitous network connectivity consists of 2.54-million metres of category 6 copper



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cables, 80,000 metres of singlemode fiber-optic cables, and 35,000 information outlets.

## BENEFITS

CommScope recommended UCG best practices that facilitate simple and efficient moves, adds and changes of connection points to minimise disruption. CommScope's OFNP OS2 singlemode fibre-optic cables offer the highest fire-retardant rating in the building shaft and meet network transmission bandwidth of 10G/40G/100G. As the OFNP high-flame-retardant sheath satisfies the latest fire-retardant requirements for skyscrapers, the PoE twisted-pair cables remain safe and fire and flame-resistant even when heated.

As an interconnected and smart building, the LEED Gold-certified TBB features smart elevators that can be called out via cell phones; face recognition security system; personnel precise positioning system; smart car location and navigation system; and holographic projection guide.

Smart network cabling enables modern smart buildings like the TBB to flourish and keep pace with the times. The reason is that PoE, UCG, smart lighting, indoor wireless coverage and the like rely on high-quality wired networks to support an ultra-high density of nearly 400 wired network information outlets per floor in the TBB.

The connectivity of wired and wireless digital devices in the TBB was planned and designed with future technological development and bandwidth growth in mind. CommScope not only met Tencent's current digital connectivity needs but also planned for seamless upgrades and expansions.

