

# CW ASEAN

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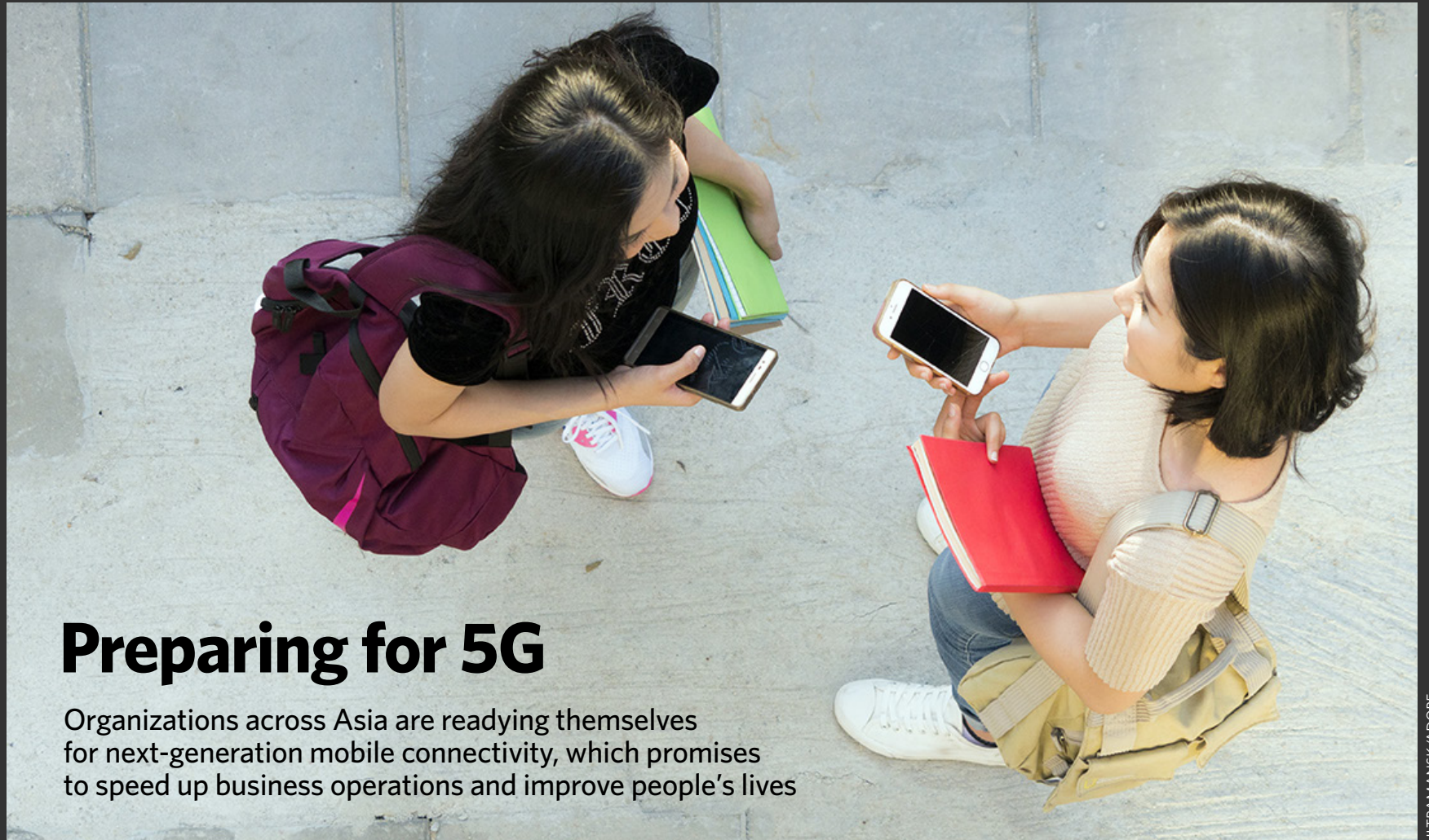
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Dedicated HPC infrastructure still rules despite cloud offerings, says Huawei

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## Preparing for 5G

Organizations across Asia are readying themselves for next-generation mobile connectivity, which promises to speed up business operations and improve people's lives

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# Dedicated HPC infrastructure still rules despite cloud offerings, says Huawei

*Huawei executive makes the case for dedicated high-performance computing infrastructure, despite the growth of public cloud services that have democratized access to HPC and AI capabilities. [Aaron Tan](#) reports*

**M**ajor cloud suppliers such as Google, Microsoft and Amazon may have made high-performance computing (HPC) and [artificial intelligence](#) (AI) more accessible to organizations, but dedicated HPC infrastructure still rules when crunching heavy workloads.

In an interview with Computer Weekly, Francis Lam, director of HPC product management at Huawei, said HPC still holds a lot of its business and operational value for organizations with consistently high computing demands and requirements. These include workloads such as molecular bonding and simulating drug interactions with micro-organisms and human cells.

“While lighter workloads can be processed on cloud-like architectures, organizations that run a higher workload will require something more extreme in scale, absolute performance and customizable hardware requirements,” he said.

Lam also pointed out that public cloud resources for AI projects are predominantly used in “bursting scenarios”, when workloads are inconsistent and resources are only needed for a relatively

short time and for needs above peak capacity. “Users with higher computing demands that are currently running dedicated HPC infrastructure will see little benefit in decommissioning their systems in favor of dedicated cloud resources as their workloads are vastly different,” he said.

Lam said many of these users also have private cloud resources, keeping their HPC data secure in private networks rather than relying on a public host for important data. “Hence there is still relevance for HPC, despite the continued growth of commoditized public infrastructure for such HPC applications,” he added.

## **CLOUD FOR HPC TO GROW**

Still, Lam acknowledged that [public cloud-based HPC](#) workloads, while representing a small portion of HPC consumption today, are expected to grow. “The increasing adoption of cloud for HPC in many cases comes not from replacing on-premise deployment, but in attracting new users who are not able to afford dedicated HPC infrastructure,” he said.

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HPC is a growing segment of enterprise computing, with more than \$35bn in worldwide spending in 2016, and it is forecast to grow to nearly \$44bn in 2021, according to market research firm Intersect360 Research.

## “FUTURE DECADES WILL PRESENT GREATER OPPORTUNITIES FOR THE HPC COMMUNITY WORLDWIDE”

FRANCIS LAM, HUAWEI

With [AI](#) expected to be a key driver of this growth, suppliers such as Huawei and Lenovo have intensified their efforts to bring products and services to market in recent years.

Huawei, for example, has built the Atlas platform targeted at AI and HPC workloads, while [Lenovo](#) has taken a more consultative stance, helping enterprises to identify the benefits of AI and HPC through testbed projects.

Although the US is still the leader in HPC, China – home to the two of the world’s most powerful supercomputers and widely expected to be the first country to field a supercomputer capable of crunching one quintillion calculations per second – is rapidly catching up.

“Chinese HPC companies have come a long way, and are now recognized as industry leaders in both providing HPC technologies, as well as for their noteworthy supercomputer and hyper-scale deployments,” said Lam.

“There are still many pressing scientific and commercial problems to be solved. Future decades will present greater opportunities for the HPC community worldwide.” ■

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# Ascend Money finds agility with OpenShift

*Besides implementing Red Hat's OpenShift application platform, Thailand-based payment technology firm Ascend Money adopted an open source governance model to keep IT teams aligned with business goals. [Aaron Tan](#) reports*

**W**hen Jason Jackson took over the reins as chief technology officer (CTO) of [Thailand's Ascend Money](#) a year ago, he was confronted with a hodgepodge of applications built by different IT teams in six countries across the region.

Although the company's business was booming – it served around 30 million customers and processed \$5bn worth of payments in 2017 – it had to grapple with issues like any fast-growing company.

“We had country teams making different technology selections in different implementations that did largely the same thing,” Jackson said. “Some weren't [operating in an agile way](#) or doing sprints, and nobody was developing products the same way.”

To keep pace with the business and become a more nimble IT shop, Ascend Money, one of Southeast Asia's largest payment technology firms, had to turn its legacy [WebSphere applications](#) into more manageable containerized applications that run on a common platform.

“There was a huge need to standardize on technology selection and give people a center point that they could all align towards,” said Jackson.

Jackson, who was previously Pivotal's Asia-Pacific CTO, began by identifying applications that were still useful, but had to be migrated out of WebSphere. Their source codes were then embedded into [Spring Boot applications](#) that would run in Docker containers on its application platform powered by [Red Hat OpenShift](#).

## **BUILDING UP APPLICATION ARCHITECTURE**

While Jackson's team is still rolling out OpenShift in production environments in datacenters in Thailand, his developers have been running Minishift – a local copy of OpenShift – on their laptops to ensure the Spring Boot applications will work as promised when deployed.

The next step, Jackson said, was to identify Spring Boot applications that could be decomposed into [microservices](#). “The primary driver for that is to have a better application architecture around shared services, so we don't have common functionality in 10 different applications,” he said, adding that services are owned by service teams responsible for the lifecycle of each service.

But it was not just about the technology alone; there was also need to instill some discipline into development processes. “Some

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people were writing specifications while others were having big meetings to talk about what they wanted to do, which somehow made it into the source codes," said Jackson.

Engineering teams were restructured, and expectations of what product development should look like were set. Security, operational and quality assurance processes were also put through a [continuous integration/continuous development](#) (CI/CD) pipeline for the first time.

### COLLABORATING THROUGH OPEN SOURCE MODEL

Comparing Ascend Money's application platform to a [core banking platform](#) that sits on top of OpenShift, Jackson said IT teams in each of the six countries can submit a feature or functionality blueprint to a centralized team in Bangkok.

"We're starting to run the platform like an internal open source project," he said. "If something makes sense for all countries, the centralized team will approve the blueprint. Any of the countries will then be able to write and submit the source codes which will be reviewed and accepted into projects."

Jackson said such an [open source governance model](#) that enables IT teams to contribute to the company's desired outcomes would have been very difficult to implement without common processes and a common technology platform such as OpenShift.

"OpenShift has enabled us to support legacy workloads without requiring us to rewrite them into cloud-native, stateless microservices. It has helped us to run monolithic apps, which we have done almost nothing to, in containers. But if we need

to decompose them, we can use the platform and CI/CD processes to do it faster," he said.

On his choice of OpenShift over rival application platform [Cloud Foundry](#), Jackson said he would turn to the latter if he had a team building [greenfield](#), cloud-native applications.

"As a piece of technology, Cloud Foundry is great. But I'm incentivized by successful outcomes, so looking at the use cases in front of me, OpenShift was the best option," he said.

Even before the deployment is completed, Ascend Money is already reaping early returns from its application platform. "We're better able to develop and support functions across a number of products, with a noticeable increase in the speed at

**“THE MORALE OF THE ENGINEERING TEAMS HAS IMPROVED, AS THEY APPRECIATE SEEING THEIR CODE GET INTO STAGING AND PRODUCTION ENVIRONMENTS WITHOUT DELAYS”**

**JASON JACKSON, ASCEND MONEY**

which applications are deployed into production. The morale of the engineering teams has improved, as they appreciate seeing their code get into staging and production environments without delays," said Jackson. ■

› DevOps has revolutionized IT, but security best practices are being skimmed

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# The rise and rise of ST Telemedia Global Data Centres in APAC and the world

*A blended strategy of building and acquiring datacenters, as well as forming local partnerships, has contributed to the rapid rise of one of Asia's fastest-growing datacenter providers, writes [Aaron Tan](#)*

**A**s one of the world's fastest-growing datacenter providers, ST Telemedia Global Data Centres (STT GDC) has been making itself known in the market in recent years for its aggressive expansion plans, particularly in the Asia-Pacific region.

On its home turf in [Singapore](#), the company claims to have grown more quickly than any other provider in the market over the past two years, building and operating its [own facilities](#) to meet customer demand, according to group CEO Bruno Lopez.

It recently announced the expansion of its STT Defu 1 datacenter with STT Defu 2, a new facility that provides additional capacity in the Defu Industrial Estate in northeastern Singapore.

But building its own datacenters is just part of its expansion playbook, which also includes acquiring datacenters and teaming up with local players when entering new markets.

In 2014, STT GDC acquired a 42% stake in [GDS](#), a major datacenter provider in China. "We supported its explosive growth, helping to prepare for its listing on the [Nasdaq](#) in November 2016,"

said Lopez. "We continue to maintain our position in GDS as the largest shareholder after the listing, demonstrating our commitment as a long-term strategic investor in GDS."

In India, the firm bought a 74% stake in Tata Communications Data Centres, with Tata Communications remaining as the other shareholder of its datacenter business in India and Singapore. The Indian datacenter business has been rebranded STT GDC India, and is now India's leading datacenter operator.

## STRATEGIC PARTNERSHIP

Elsewhere in Southeast Asia, STT GDC recently formed a strategic partnership with Ticon, which is majority owned by Frasers Property and TCC Group, to build its first datacenter facility in a strategic location in Bangkok.

Beyond Asian shores, STT GDC acquired a 49% stake in the UK's Virtus in 2015, and bought out majority private equity partner Brockton Capital fully in 2017. "When venturing into new markets, we look for strong local partners with an impeccable track



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record and one that shares our all-important customer service ethos,” said Lopez.

The rise of STT GDC, which boasts more than 60 datacenters globally, mirrors that of the datacenter industry.

According to Frost and Sullivan, the APAC datacenter services market raked in revenue of \$14.1bn in 2016, representing growth of 15.3% over 2015. The market is expected to grow at a compound annual rate of 14.7% from 2015 to 2022 to reach nearly \$32bn at the end of 2022.

Lopez attributed that growth to [digital transformation](#) initiatives by both enterprises and governments across the region.

“Governments and businesses are leveraging digital technologies to provide services and applications and increase operational efficiency,” he said. “As they embrace digital transformation initiatives, they are demanding more datacenter capacity, storage

and compute capability, transforming their IT deployment into an agile, modern datacenter.”

Adding to the demand for datacenter services are [hyperscale cloud suppliers](#) as more enterprises turn to [cloud computing](#) to reduce costs and improve operational efficiency.

### **HYPERSCALE DATACENTERS**

Citing research by Cisco, Lopez said hyperscale datacenters will house 47% of servers globally by 2020. About 70 hyperscale datacenters are also being planned for deployment across APAC over the next three years.

The move from [4G to 5G](#) mobile infrastructure will also enable users to consume digital content, especially video, at much faster speeds. Lopez said this requires additional infrastructure and capacity, further fueling demand for datacenter services.

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Finally, changes in the regulatory environment are also driving growth, he said, noting that many governments are calling for stricter [privacy rights](#) and [data sovereignty](#) requirements, which translates into increased demand for local datacenter facilities.

“While this has been fairly common practice in some customer verticals such as finance for many years, it is now becoming more commonplace in consumer applications,” said Lopez.

### GREEN DATACENTERS

But STT GDC’s growth strategy is not one of growing at all costs, including the impact on the environment. Research already suggests that datacenters could become one of the planet’s biggest energy consumers, using as much as 20% of all available electricity in the world by 2025.

“Energy efficiency is a big concern for us at STT GDC,” said Lopez. “We view the challenge through a number of different lenses, right from construction of the datacenter through to operational processes and their impact on power usage.”

For example, during the construction phase, the company looks at construction methods, system components and operational procedures, among other things, for ways to reduce energy usage while maintaining high levels of reliability and availability.

“When selecting equipment to be used across our facilities, we choose equipment that uses power in a highly efficient way, such as low-loss transformers or implementing a modular uninterruptible power system to achieve scalability,” said Lopez. “We also ensure regular upkeep of mechanical and electrical equipment so we are always operating at our maximum potential.”

Also, hundreds of wireless temperature and static pressure sensors are installed at STT GDC’s facilities to monitor temperature fluctuations in the rack, and to deliver cooling – which can account for up to 49% of a typical datacenter’s [operating expenditure](#) – to where it is needed.

“Our chilled water plant has been designed to allow for scalable cooling capacity, allowing chillers to be added in phases to meet the cooling loads,” said Lopez. “These chillers are carefully selected to operate efficiently at partial loads, rather than the traditional method of selecting chillers based on full-load efficiency.”

### ROOM TO GROW

Although some industry observers have claimed that the days of [massive datacenters](#) are over, with edge datacenters expected to handle more data processing at the edge of the network to support applications such as the [internet of things](#), Lopez believes datacenter demand will continue to grow in tandem with edge and large datacenter requirements.

“[Edge computing](#) will definitely drive additional demand for modern datacenter capacity across many more markets, given that applications that are deployed on the edge require significant compute and storage infrastructure,” he said. “For example, [industry 4.0](#), autonomous vehicles and 5G services all require robust datacenter facilities to store and compute data gathered.

“This is in line with the trend we are seeing across all our markets, that larger datacenters are being required to accommodate the demand growth brought on by the rise of cloud services, digital content and enterprises undergoing digital transformation.” ■

› *Colt lays the groundwork to build datacenters in India and Singapore*



# PREPARING FOR THE LEAP TO 5G

*From Singapore to Tokyo, enterprises and mobile operators across Asia have been readying themselves for the next big leap in mobile connectivity that promises to speed up business operations and improve lives. Aaron Tan reports*



**W**hen the cauldron lights up at the 2020 Tokyo Olympics, the athletes won't be the only ones getting attention. The [5G network](#) expected to be deployed at the global sporting event will also be in the spotlight.

The world has seen similar upgrades in mobile connectivity, each time sparking new applications, from video calling to [over-the-top media streaming](#). This time, the transition from 4G to 5G will not only improve the performance of existing applications, but will also pave the way for new ones, such as the [internet of things](#) (IoT) and virtual reality.

"Expect 360-degree, 8K video streams that may showcase real-time action across high-resolution devices at Olympic venues," says Aicha Evans, senior vice-president and chief strategy officer at Intel, which is working with NTT Docomo to provide 5G technologies at the Tokyo Games.

"Instead of watching surfing from the beach, for example, viewers will feel like they're riding the waves with the athletes. Fans may be able to take in the action using virtual reality from their TV, headset or wireless device, provided through rights-holding broadcasters, running on transformed 5G networks capable of delivering massive amounts of data at multi-gigabit speeds."

But [where 5G really shines is in the enterprise](#), says Chong Siew Loong, chief technology officer at StarHub, a Singapore telco that started 5G trials in 2016. Thanks to its ability to offer access speeds of up to 20Gbps, and very low latencies of around 1ms (millisecond), 5G would be the catalyst for the next wave of industrial digitization and automation, says Chong.

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Take emergency response, for example. With 5G, as paramedics race to the hospital, they will be able to transmit patient information to waiting doctors. Meanwhile, other agencies will be able to deploy remote “eyes in the sky” to assess the situation in real time and in high definition.

In China, [Ericsson is already working with AstraZeneca](#) on 5G-enabled medical devices that support [predictive maintenance](#). The next step for the healthcare industry, says Ericsson’s Asia-Pacific chief technology officer, Magnus Ewerbring, could be to offer remote surgery, enabling people to engage the best surgeons from around the world.

## LIVING UP TO 5G’S POTENTIAL

Asia presents a unique setting for 5G – a populous region with fast-growing, increasingly digital economies that have a desire for speed and connectivity.

“By 2022, there will be 280 million 5G subscriptions in Asia-Pacific, with 5G service revenues reaching \$4.5bn,” says Quah Mei Lee, industry principal for ICT practice at Frost & Sullivan Asia-Pacific.

Countries such as China, South Korea and Japan are expected to be the forerunners in rolling out 5G. But successful 5G implementation across Asia is still an open question, particularly in developing countries where demand for 5G services is likely to be muted.

## ASIA PRESENTS A UNIQUE SETTING FOR 5G – A POPULOUS REGION WITH FAST-GROWING, INCREASINGLY DIGITAL ECONOMIES THAT HAVE A DESIRE FOR SPEED AND CONNECTIVITY

“Though it is possible for developing nations to jump to 5G, a key question to consider is the need for 5G within and beyond government-driven initiatives,” says Quah. “Cost remains a limiting factor and mobile operators are assessing the capabilities of 4G before deciding to invest in 5G to supplement it.”

The biggest challenge for most operators would be the co-existence of legacy 3G, 4G and new 5G networks for different use cases, leading operators to prioritize their investments, says Konesh Kochhal, director of industry ecosystem engagements at Huawei Southern Pacific.

Business and pricing models will also need to be redefined, and 5G monetization will depend on how well 5G services and applications are received after the networks have been launched, says Kochhal.

Quah says that to monetize their 5G investments, operators will need to understand local needs and demand for the use cases they plan to serve, noting that commercial success will vary from country to country. “The early trials of 5G should help with this and are a necessary step towards 5G monetization.”

## 5G STANDARDS READY, TRIALS UNDER WAY

Like previous mobile access technologies, 5G is expected to be deployed first in dense urban areas with enhanced mobile

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broadband (eMBB) and fixed wireless access as the earliest commercial use cases. This is already being demonstrated in a number of 5G trials across Asia.

In May 2017, Malaysian telco Celcom and Ericsson conducted Malaysia's first 5G trial, which achieved a peak throughput of up to 18Gbps and latency as low as 3ms. It also demonstrated use cases such as robotic control, IoT applications and 4K video streaming over 5G - from video capture at the server end to playback on 5G prototype devices.

More recently, one of Singapore's major telcos, [M1](#), began [using 5G to transmit virtual reality content](#) at its headquarters to test the technology's eMBB capabilities, which are part of new 5G standards ratified by global mobile industry standards body 3GPP. M1 and Huawei also plan to carry out the first 3.5GHz with non-standalone standard compliance field trial in Southeast Asia by the end of 2018, and the first 28GHz and 3.5GHz with standalone standard compliance field trial in Southeast Asia by mid-2019.

The 5G non-standalone standard, completed in December 2017, uses both 5G and 4G networks to speed up data transmission, but continues to rely on existing 4G

› Adoption of 5G across APAC will be led by China, South Korea and Japan, but telcos will need to price it right to compete with IoT connectivity upstarts.

networks for back-end functions such as communicating with cell towers.

The standalone standard, on the other hand, was finalized only in June 2018 and enables mobile operators to provide 5G coverage in places without existing 4G infrastructures. Standalone 5G networks will also pave the way for ultra-reliable low-latency communications that are required by

mission-critical IoT applications.

Frost & Sullivan's Quah expects most early 5G deployments to be non-standalone, pointing out that mobile operators that plan to launch standalone 5G networks will still need to test the technology using non-standalone deployments.

## PRIVATE 5G NETWORKS

Across the region, Thailand and South Korea have already deployed private [Long-Term Evolution](#) (LTE) networks for public safety, along with smaller-scale [private networks](#) in Australia's mining industry.

For the most part, however, adoption of such networks is still in its infancy. Huawei's Kochhal says this could be due to the lack of dedicated spectrum to support private cellular networks, as well as high capital and operating costs.

**STANDALONE 5G NETWORKS  
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StarHub's Chong says that could well change with 5G's [network slicing capabilities](#), which will allow telcos to offer critical service providers their own private 5G networks for secure and real-time connectivity to the cloud, helping to meet their ever-evolving infrastructure needs and improve operational efficiency.

Network slicing will also enable operators to carve out segments of their 5G infrastructure for customers with differing

quality-of-service (QoS) requirements. For example, they could offer a "hospital slice" with the bandwidth and QoS needed to conduct remote surgeries and charge more for it, says Ericsson's Ewerbring.

"They could also offer an 'electricity meter' slice that transmits measurements every two minutes. That slice would be more affordable because the QoS requirements are less strict." ■

