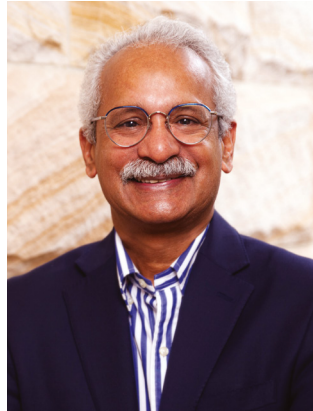


KEYNOTE INTERVIEW

Building Asia's digital assets



*Asia needs substantial investment in fiber networks and core and edge data centers to keep pace with the demands of the cloud and 5G, says FLOW Digital Infrastructure chairman **Kris Kumar***

Asia has lagged behind Europe and North America in building infrastructure for the digital economy, but that presents a significant opportunity for companies that can meet the growing needs of cloud computing and the burgeoning 5G rollout. To address these kinds of opportunities, FLOW Digital Infrastructure was launched last year by investment manager PAG Real Assets and FLOW chairman Kris Kumar – a pioneer in the sector with 30 years' experience.

PAG currently has \$2 billion in investments in the sector and plans to invest \$10 billion over the next five to seven years. Kumar explains what is driving the digital infrastructure opportunity in Asia and the best ways to address its challenges and leverage its opportunities.

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Q What is the current state of play in the Asia data center market and how is it evolving?

Data is the new oil, and it is fueling new digital business models all over the world. Government services, e-commerce, fintech and streaming have created an insatiable appetite for cloud services, which in turn has driven demand for data centers, subsea cables and terrestrial fiber networks to transport, analyze and store this data.

Asian markets are underserved for digital infrastructure, particularly in the hyperscale end of the industry, and

there are markets with poor fiber networks because telecom companies have not been upgrading to keep pace. This presents a broad opportunity to invest in digital infrastructure, particularly in supporting the large hyperscale clients that provide cloud computing and internet services such as content and streaming.

Q What is data sovereignty and how is that driving the market?

Governments have come to realize that the financial services sector and its customer data is critical to an economy, similar to national infrastructure. If the data centers and networks that support this infrastructure fail for any reason, it would have a huge impact on the economy.

There is a significant amount of data, belonging to individuals, companies and governments, traversing multiple markets, which is a security risk. So, a few years ago governments began to impose data sovereignty laws which require the data to be hosted on their soil.

This has happened in Singapore, Australia, Indonesia and other markets. Governments have also created their own cloud services to store citizens' data, which also needs to be held domestically. This means that every market will need its own data centers.

Q How will the rollout of 5G across Asia affect the digital infrastructure market?

Singapore, South Korea, Australia and most of the developed economies in Asia are well underway with 5G roll-outs and some countries will probably leapfrog older technologies and go straight to 5G. Technologies such as the Internet of Things and autonomous vehicles – which could be farming equipment, not just driverless cars – rely on 5G, which will further drive demand in future.

It is important to realize that 5G is a different technology – it is millimeter-wave-based, not microwave – so the distances the data can travel are much shorter, which means you need much denser pole coverage, rather than mobile towers a few kilometers away from each other. This means demand will also grow for smaller and more modular edge data centers which are closer to the users, in order to compute, analyze and store data.

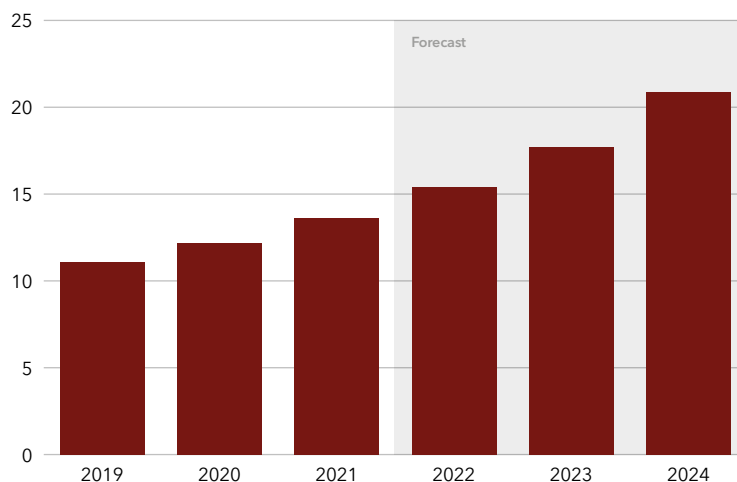
Q The Asian data center sector seems to come with plenty of challenges and opportunities. What is the challenge with power?

Power is a really big consideration today, given climate change, and governments are starting to realize that data centers are a significant drain on energy grids. Thus, we have seen moratoriums

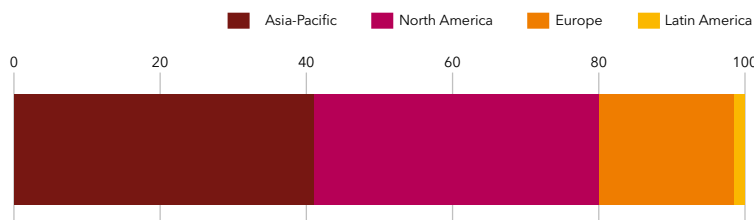
APAC's data center tailwinds

Asia-Pacific's data center sector has shown great resilience during the pandemic, with steady growth across the region. The sector is expected to grow at a CAGR of 9 percent by 2025, while APAC retains a global market share of more than 40 percent.

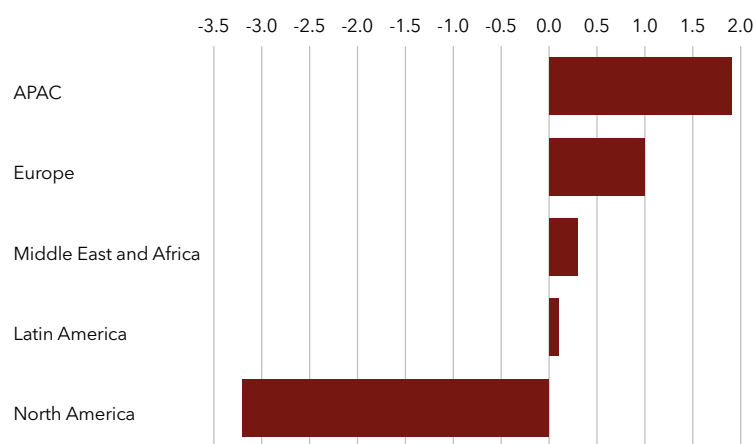
Asia-Pacific's forecast market size, with a CAGR of 13.4% from 2019-24 (\$bn)



As of 2020, APAC had a leading share of the global data center market, at 41% (%)



APAC is expected to gain the largest percent of global market share from 2019-24 (%)



Source: Industry research, "Green Data Center Market Forecast and Analysis 2020-2024" by Technavio

like in Singapore, which came after data centers grew from accounting for 3 percent of power consumption from the grid to 7 percent in a matter of 10 years. I believe that more studies need to be done to quantify the emissions of data centers compared with the alternatives: people flying more and traveling to face to face meetings, or e-commerce vs old-economy commerce.

Given the size of data centers, even if they are as efficient as possible, they use a lot of power. Most operators are either buying renewable energy from the grid, if that is available, or buying carbon credits. This is helping drive huge demand for renewables, which is another area PAG is investing in. Pushing workloads to edge data centers also provides an opportunity to make the sector less reliant on grid power.

Q How can investors exploit the inadequacies of fiber networks?

Fiber investment has not kept pace with technology changes over the years, partly due to telcos' larger investments in mobile networks. Existing fiber won't meet the demands of future cloud computing so there's going to be a huge need for investment across the region, even in developed economies like Australia, Japan and Korea.

That need is being filled by players such as Google, Microsoft and Meta, which have decided to take this issue into their own hands by investing in new subsea cables. We find there is a big gap between the large telcos that have invested in fiber networks and the companies in the next layer down that do not have the capital.

We see ourselves investing in the latter across the region, providing them with capital and the management capability to scale up and work directly with the hyperscalers. That is not a 'tomorrow' thing; this is something for us to work on over a decade. But the region needs it, the customers need it and the users need it.

“There are multiple facets to this business: real estate, technology, telecoms and finance, just to name a few”

Q A lot of operators in this sector report skills shortages. How can this be addressed?

This industry has grown probably 4x or 5x in the last 10 years, but it has never really had a formal education program. There are multiple facets to this business: real estate, technology, telecoms and finance, just to name a few, and many employees learn on the job, which can be dangerous when you are talking about mission-critical infrastructure.

Some companies deal with this by poaching staff from each other. But what you really need is a concerted training program in a business where decisions at all levels can affect hundreds of billions in investment. This skill shortage exists in the US today, it exists in Europe, but it is acute in Asia-Pacific.

I can't give too much detail but FLOW is looking at ways to address the skills shortage by repurposing workers from other industries and investing in training facilities and programs to upskill workers and create a pool of resources within our platform.

Q Where around the region do you see the best opportunities?

There are different sorts of opportunities in different markets around the region. There are developed markets such as Japan and Korea where there is

strong growth in cloud computing and a shortage of supply. There are also good opportunities in emerging markets such as Malaysia, Vietnam and the Philippines. Those can be challenging markets for our customers because of ownership restrictions, permitting processes or supply chain issues; the opportunity is there to help them get rid of that pain.

There is also a dual opportunity in core and edge centers. There are opportunities to acquire core assets, perhaps from telecoms companies that own these assets but aren't suited to doing so, and to build new core assets across the region.

However, as the 5G rollout continues there will also be substantial demand for smaller centers which are closer to the customer. These edge centers need less land, less power and can be up and running quickly. This is new for Asia and I would like us to be at the forefront of that.

Q How do you expect the Asian digital infrastructure business to develop over the next five years?

I expect to see a gigawatt of capacity being added in the region each year for the next three to five years as we catch up with Europe and the US. The region is getting better connected, as we have a lot of submarine cables being laid at the moment.

It could take a little bit longer for terrestrial networks to be deployed, but I think we will have much higher growth than Europe and the US for the next seven to 10 years. There will be a huge focus on renewables because of both sustainability and energy security demands. I also believe we need to focus more on the operational side of the business: I always say it is easier to build a data center than to operate it, and operational capability and sound training programs are going to be cornerstones of our business as we move forward. ■

