Data Centres: the concrete behind 'cloud computing'

Developed economies around the world have come to rely entirely on data and computing to function effectively. Everything from business to domestic life is in some way linked to or, dare one say it, dictated by digital technologies. Every tap of our keyboards and screens leaves a digital footprint stored on servers in data centres. The more activity we engage in, the greater the requirement for server storage and so, even with the compression of memory capacity into ever smaller chips, data centres are growing in scale and number worldwide. In terms of infrastructure, this market is vast and has taken massive investment from the largely unknown technology behemoths.

'Cloud computing' lies at the heart of this extraordinary explosion in data storage. But where and what is cloud computing?

The principal is relatively straightforward, for illustrative purposes: when phones are used to take a photo, the image can be stored on the phone or uploaded to a server in a data centre, referred to as the 'cloud'. As you would expect, the traffic and storage requirements are vast. In 2021, 3 trillion minutes (5 million years) of video content will cross the internet each month. That is 1 million minutes of video streamed or downloaded every second[1].
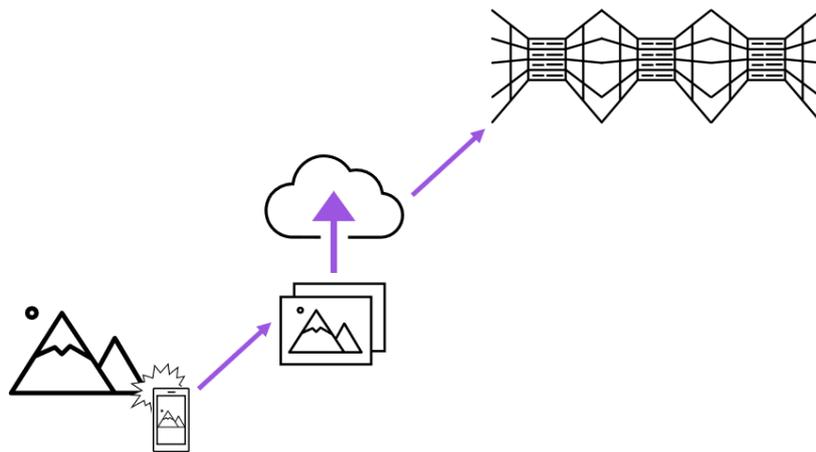
Growing demand from domestic users is snowballing, and when added to business activity and the 'Internet of Things' the rate of growth is extraordinary. The average internet user will generate 57 gigabytes of internet traffic per month in 2021, up 139% from 23.9 gigabytes per month in 2016, a CAGR of 19%[1].

Until recently, many companies stored their confidential information on their own servers, often tucked away in a room or cupboard on the premises. These were expensive and required constant maintenance and significant quantities of power. Nowadays, the space has been reclaimed and the data is sent to and stored on a server, housed in a building designed specifically for this purpose. In 2021 Statista forecast that globally, there will be demand for c.2,300,000,000,000 gigabytes of storage, or the equivalent of 575 billion movies or 130 million years of video.

The (relatively) modern data centre is a highly specialised single purpose building, with access to superfast fibre networks, designed to house the equipment necessary to store information. Data centres are power intensive, both in terms of operation and internal climate control. With an eye on environmental considerations, the power used by these buildings is substantial, but they are far more efficient than the thousands of individual servers housed in 'cupboards', that they replaced.

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[1] Cisco: Global – 2021 Forecast

Data Centre Market

The market can be broken into three, defined by client type and the proposition offered by each of the landlords: multi-tenant data centres, data centres with a small number of corporate customers and large single client data centres.

The first category of data centre provides a one-size fits all service to multiple tenants, with the pricing model dictated by the landlord. These are typically described as 'Colocation' data centres.

For the mid-market offering, termed 'Scale' data centres, a building typically houses a small number of tenants, each of whom owns their own equipment and negotiates their rent separately; the landlord may have a blend of rent rises and inflation protection built in.

Finally, 'Hyperscale' data centres are home to large tenants who typically have a direct relationship with their landlord. Rent is negotiated individually and often linked to a contractual escalator. Security is of paramount importance and these buildings are often supplied by at least two separate fibre-optic networks. It is not unusual to see buildings protected by concrete and steel bollards, with bomb proof exteriors.

	Colocation	Scale	Hyperscale
Customer types	Small to medium sized businesses	Large commercial enterprises e.g. cloud providers, higher education, and government agencies	Large commercial enterprises e.g. financial institutions, technology and digital media companies, cloud, IT and software providers
Lease terms	• Rent a number of racks, cabinets, or cage space • Leases include storage space, power, installation and cross-connects • Rent space as is, data centre optimised for multiple customers • Customer provides own server & IT equipment • Typical lease term 2-5 years	• Rent space by the Net Rentable Square Foot • Leases include rent, power and cooling costs • Space fully customisable with all equipment installed by the customer • Typical lease term 5-10 years	• Rent space by the Net Rentable Square Foot, from rooms, up to the entirety of data centre facilities • Leases include rent, power and cooling costs • Space fully customisable with all equipment installed and maintained by the customer. Staff employed by the customer • Typical lease term 10+ years
Typical size	Hundreds to thousands of individual customers and servers	Hundreds to up to 5,000 servers	Minimum of 5,000 servers, and 10,000 sq. ft in size

Owners, often multi-billion-dollar market cap Real Estate Investment Trusts (REITs), are well placed to take advantage of the ever-increasing demand for server space. For example, Equinix currently has a portfolio of more than 220 data centres located in 26 countries and can increase space when required.

The REIT owners and developers of these vast, specialist, data centres lease space to tenants for generally up to ten years, with many leases including contractual rent escalators of 2-5% per annum, lending a degree of dependability and predictability to the future income streams, as well as inflation protection. Additionally, they benefit from high tenant retention rates of around 70-90%.

The reliability of the income paid by these REITs is evident when looking at companies such as Digital Realty Trust, Equinix and Keppel. Digital Realty Trust, with customers including Facebook, IBM, LinkedIn and Comcast, currently offers a dividend yield of 3.3%, and has increased the payment for 16 consecutive years and Equinix has increased dividends steadily since 2017. In 2021, its dividend per share was up 8% year on year. Likewise, Keppel DC – a Singapore-listed REIT with a market cap of $2.4bn – currently offers a dividend yield of 3.7%. REITs owning and operating data centres are therefore not only poised to take advantage of the huge and growing appetite for data, but also offer predictable income streams.

Gravis

Historically data centre REITs have delivered returns of over 10% year-on-year for the last 6-7 years[2]. Looking to the future, the return profile achievable depends on data centre location, with Knight Frank suggesting that in Tier 1 markets (e.g. London, Singapore, Silicon Valley) there will be downward pressure on returns, where previously a 15% internal rate of return was sought, due to competition and limited power availability. Returns closer to these levels will however be achievable in Tier 2 markets (e.g. Berlin, Mumbai, Seattle), with less competition and cheaper land, power and labour resulting in higher and more secure returns.

The **VT Gravis Digital Infrastructure Income Fund** will have exposure to the accelerating growth in the data centre sector via investments in global, specialist REITs, such as Equinix, CyrusOne, Digital Realty Trust, NEXTDC, and Keppel DC, providing investors with the opportunity to access this rapidly expanding sector, whilst simultaneously receiving secure and dependable income.

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[2] Knight Frank

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