On-premise, co-location, or the cloud:

What should you choose?

Choosing the right IT infrastructure to suit your expansion needs

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Why the data centre landscape is rapidly evolving

If 2020 was best remembered for the unprecedented changes arising from a worldwide pandemic, then 2021 will be defined by businesses that can adapt and survive amidst these tumultuous changes. These trends, from a severe downturn that saw businesses in many industries slashing their budgets and resources, to an almost overnight transition towards work-from-home and telework arrangements, has driven many to accelerate their shift towards digital. In the throes of a shake-up, organisations had hastily expanded their IT environments to meet these increased demands, but have found themselves needing to reassess—and address—potential shortcomings and gaps in their infrastructure.

Even though data centre infrastructure spending has temporarily waned in 2020 due to pandemic-related disruptions—Gartner reported a 10.3% decline last year[1]—this is forecasted to increase in 2021, as more organisations come to rely on cloud-centric infrastructures.

Gartner predicted that end-user spending on global data centre infrastructure will touch $200 billion in 2021, a growth of 6% over 2020[2].

In Australia, the data centre market is poised to grow exponentially over the next few years, with the market seeing a compound annual growth rate (CAGR) of 4.5%[3].

1 Gartner, "Gartner Says Worldwide Data Center Infrastructure Spending to Grow 6% in 2021", https://www.gartner.com/en/newsroom/press-releases/2020-10-07-gartner-says-worldwide-data-center-infrastructure-spending-to-grow-6-percent-in-2021

2 Market Watch, "Australia Data Center Market to Grow with a High CAGR- Industry Analysis, Key Manufacturers, Trends, Size, and 2025 Forecasts", https://www.marketwatch.com/press-release/australia-data-center-market-to-grow-with-a-high-cagr—industry-analysis-key-manufacturers-trends-size-and-2025-forecasts-2021-02-01

3 Globe News Wire, "Data Center Colocation Market to Grow with 14.8% CAGR in Coming Years: P&S Intelligence", https://www.globenewswire.com/news-release/2020/05/25/2037962/0/en/Data-Center-Colocation-Market-to-Grow-with-14-8-CAGR-in-Coming-Years-P-S-Intelligence.html

Nonetheless, many business leaders are confronted with a stark new reality: to relook their business model, deploy business continuity planning measures, and brace themselves for the evolving digital needs of the company beyond the pandemic. But aside from looking to the cloud or building your own data centre facilities, there are other options to consider, such as colocation data centre services. In particular, this offering, in which organisations rent physical space for their computing hardware at a third-party data centre facility, is estimated to see a 14.8% CAGR between 2020 and 2030 globally[4].

But the road ahead won't be easy. One instance is how digital transformation has led to the increased demand on IT infrastructures to handle more workloads than before. This has created massive challenges, especially for legacy, purpose-built data centres. When the cost to upgrade older facilities with power and cooling infrastructure can be steep, there is a growing interest in alternative data centre services. Business leaders should consider their priorities, and decide on a model that will be most beneficial for long-term strategic planning.

Choosing the data centre model that works for your business

Be it the few hardware stored at the basement of a burgeoning start-up, or the sprawling data centre with thousands of servers by an established enterprise, the IT infrastructure is the backbone to the performance of any business. The right architecture can seamlessly deliver technology services like data storage, networking capabilities, and crucial applications that facilitate business growth.

That is why as workloads increase and customer demands evolve, finding the optimal data centre or cloud model to support their operations is often a headache for many enterprises. As they outgrow their IT infrastructure, organisations have to consider how to expand, versus the amount of resources and expertise they have at their disposal. Some prefer predictable and accurate ways to govern their infrastructure technology spending. Others want to retain more control over their IT and minimise complexity. Then there is also a multitude of other factors to consider: cost, security, reliability uptime, ease of implementation and even project timelines.

Choosing the right infrastructure option will have long-term implications, greatly reducing capital and operating expenses. Conversely, a poor fit can wreak havoc on even the most well-laid plans. Here is a quick overview on a few data centre and cloud models that companies can consider.

4 Globe News Wire, "Data Center Colocation Market to Grow with 14.8% CAGR in Coming Years: P&S Intelligence", https://www.globenewswire.com/news-release/2020/05/25/2037962/0/en/Data-Center-Colocation-Market-to-Grow-with-14-8-CAGR-in-Coming-Years-P-S-Intelligence.html

Public Cloud

From Microsoft OneDrive to Google Drive, these are some examples of a public cloud offering

The most common type of cloud deployment, it is an IT service in which a third-party provider delivers computing resources via the internet. Here is where businesses can host their systems virtually as a fully cloud-based architecture. Cloud providers maintain the hardware and infrastructure, such as servers, storage, and high-bandwidth networks, with the latter offering businesses rapid access to applications and data. Organisations will then run workloads on these hardware, which are usually shared with other companies.

Suitable for businesses looking for:

- **Cost effectiveness:** Eliminate the need to maintain their own servers or other hardware, which results in significant cost-savings; service providers tend to offer consumption-based pricing as well
- **Accessibility:** Gain acces s to data and applications easily and remotely, which is a crucial advantage for the realities of telework today
- **Scalability:** Scale to the growth and demands of business efficiently, with capacity being added automatically as and when usage increases
- **Flexibility:** Manage and adapt to peak loads by quickly adding or deleting resources, and reduce the complexity of testing and deploying new applications
- Disaster recovery: Get disaster recovery services without the need for a secondary infrastructure

Potential disadvantages

- **Poorer security:** While public cloud security can be robust, poor cyber security practices from companies themselves can result in weak security. This is compounded by how misuse of the infrastructure by another company—and on a shared physical server—can put the business's data at risk. Plus, third-party access may compromise any confidential information, particular for industries, such as financial services, that manage highly sensitive data. As public cloud utilises shared hardware in the provider's data centre, this can result in potential security and compliance risks
- **Fluctuating cost:** Monthly cloud billing can fluctuate if there are changes to service rates, or if cloud-bursting services are necessary
- **Lack of support and customisation:** Poor quality of service may arise, as customer support is typically in a separate contract, while the multi-tenancy nature of public cloud can limit customisation—a undesirable feature for businesses with a complex network architecture
- **Slower performance:** Network-induced latency can slow down performance
- **Challenges with compliance regulations:** Some providers do not let businesses tweak system or security configurations

Hybrid Cloud

A combination of public and private cloud services, hybrid cloud models offer businesses the flexibility to store their information and workloads freely between these models, while reaping both their benefits.

They can leverage the features of public and private clouds, with private clouds offering the security and privacy to keep sensitive information on their own cloud, rather than share resources with other tenants on a public model. This means that businesses own and control the hardware, or receive cloud services to a cloud provider, complete with dedicated access.

Suitable for businesses looking for:

- **Control over data:** Offer businesses multiple options to choose the environment that can best suit their needs, such as by housing mission-critical workloads and sensitive data in-house, while tapping on the public cloud's scalability to run highly dynamic workloads—without forfeiting control to a third party
- **Unprecedented flexibility:** With the benefits of both private and public cloud, businesses can leverage the flexibility of the public cloud, which allows them to redirect resources to the private cloud. They can also integrate confidential information from private clouds, while leveraging the public cloud's resources and storage
- **Agility:** Highly adaptable to changing business requirements, and agile enough to meet the evolving needs of their clients
- **High levels of customisation:** Hybrid clouds are designed around business needs, such as the need to minimise latency

Potential disadvantages

- **Compatibility issues:** Inherit the problems of the public and private cloud, such as issues in compatibility between files, tools and processes in the private and public cloud
- **High costs and maintenance needs:** The costs of installation and maintenance are steep, while experienced cloud architects and IT professionals are needed to manage and maintain the hybrid cloud
- **Difficulty in implementation:** Setting up a private cloud can be challenging, due to the difficulty in building your own local infrastructure, and the need to
- **Weak security:** Hybrid clouds tend to be rife with security vulnerabilities, due to their inherent complexity
- **Poor visibility:** Maintaining visibility across a sprawling hybrid cloud can complicate network monitoring, which impedes agility and cross-team collaboration

On-premise Data Centres

Used by companies to keep their data and servers in-house, on-premise data centres are completely implemented and maintained by businesses themselves, which includes all the servers and computing equipment, right down to the power needed to run the network. In other words, businesses assume ownership of the entire operation, with zero third-party involvement. While some enterprises have a facility to host their hardware, this also refers to small businesses with a dedicated room, or even a small closet, to house their servers in their office.

Suitable for businesses looking for:

- **Physical control over data:** Retain full control over data, and oversee access to their systems, with IT able to purchase, configure and tweak hardware as necessary according to the demands of their applications. Hardware malfunctions can also be troubleshooted quickly
- **Security:** Secure valuable, proprietary assets, or sensitive customer information for adhering to strict compliance regulations, with companies able to closely watch over their compliance status continuously
- **Compatibility with legacy systems:** Eliminate the need to rehaul entire systems for organisations with legacy infrastructures, particularly with complex hardware and network requirements, while minimising the risk of migrating legacy applications and endangering business operations

Potential disadvantages

- **Expansive floor space:** Take up significant physical and floor space, which some businesses may not be able to afford

  Steep cost of ownership: Require significant capital investment, as well as time and labour, to maintain a data centre, while power and cooling costs can increase as equipment ages
- **Lack of scalability:** Ability to increase capacity may be limited by the physical footprint of the data centre, as well as incur significant expenditure
- **Resource-intensive:** Heavy administrative burden, as most data centres are not managed via a central console that offers centralised visibility, as an on-premise data centre is an environment made up of multiple vendors, server types and configurations. There is also high cost of labour, as a IT team is needed to manage and secure the on-premise data centre
- **Data loss and poor disaster recovery:** Greater susceptibility to data loss during disaster situations, as data is being stored in-house. Unlike data centre services by third-party providers, there is also no uptime guarantees; if downtime occurs, data and system recovery may be lengthy

Co-location Facilities

Co-location data centre services are becoming an increasingly viable option for businesses today.

A co-location arrangement allows them to rent space in a third-party data centre environment, so they can place their privately-owned servers, computing hardware and other network equipment—and outsource a portion of their IT needs. The third-party provider delivers facility maintenance handles all power, bandwidth and cooling requirements, while providing physical security, such as installing fences or biometric authorisation. In this data centre model, companies just need to provide or purchase their own hardware, as they still retain control over their software settings. They can also quickly upgrade or reduce bandwidth and rackspace according to their business needs.

Suitable for businesses looking for:

- **Additional space:** Businesses that already possess the hardware they need can augment their existing data centre with additional space in a facility
- **More control over data:** Choose and retain ownership and control over their servers and storage hardware Improved security: Deliver physical security through physical fences, multiple security checkpoints, CCTV monitoring, as well as cybersecurity, such as next-generation firewalls and managed backup services, that protects your data against cyberattacks. In essence, businesses can also get a better roadmap for disaster recovery
- **Simplified operating expenses:** Save more on costs as leasing a space is typically less expensive than expanding a data centre
- **Better uptime reliability:** Get high availability and reliability, as providers have to meet service-level agreements (SLAs) and deliver data backup and recovery. Colocation facilities also offer protection from power outages due to numerous backups in place, as well as low-latency networking options
- **Scalability:** Accommodate to growth, and expand quickly and seamlessly without additional capital expenditure
- **Technical support:** Perform hardware maintenance and installation through remote hands and experienced professionals
- **Improved connectivity:** Get a broad range of connectivity options for colocation customers—from internet service providers to network services
- **High optimisation:** Build the network infrastructure for their specific needs, and optimise workloads for improved speed and functionality with an ecosystem of partners within the same facility—such as multiple internet service providers, network services and cloud platforms

Potential disadvantages

- **Increased upfront costs:** Upfront hardware costs due to initial setup fees may be steep, as businesses need to purchase their own equipment and upgrades. In addition, the complexity of the IT environment can also determine--and increase—the costs of co-location
- **High maintenance cost:** As equipment sometimes needs to be manually handled, distance from the data centre for engineers can translate to increased travel costs. This also impact the cost of monthly costs, which is determined by the distance between the data centre and the type of service rendered
  Restricted access to data centre: Lack of visibility and limited access to the data centre may hinder efforts to anticipate or identify potential problems before they occur
- **Cost-effectiveness of lift-and-shift:** "Lift-and-shift" migration allows businesses to migrate their

application or workloads to the cloud without redesigning the application or architecture, which may make it a more affordable alternative to co-location

- **Inflexible service-level agreements:** Lack of transparency in service-level agreements, such as hidden charges, by some service providers, may incur additional rates or get in the way of renegotiation

How to get started

While understanding the differences between each data centre model is crucial, what is just as important is drafting a clear definition of your business and expansion goals. For instance, renting hardware and infrastructure may be more cost-effective initially, but buying your own server hardware will also be more economical in the long run, depending on the stage of your business growth, as well as your priorities. To start, develop and adopt a long-term plan based on needs and pain points you've identified, and come up with a list of priorities with which your service provider can provide the right answer to. After selecting the most suitable model for your IT infrastructure, establish a timeframe to consistently review its impact, and then reevaluate its results in the future.

Consider the following questions before making your decision:

- What business problems or issues are you trying to solve?
- What are your computing, storage and network needs?
- What is the trajectory of your data and business growth?
- What are your data centre or cloud requirements?
- Does your business put a higher premium on delivery or data security?
- Do you require full control or prefer convenience?
- Does your business have mission-critical needs, and is reducing latency a priority?
- What are the service level agreements (SLAs) for your cloud or colocation provider?
- Do you have the expertise or dedicated staff who can minimise outages and protect your critical data?
- Do you want to manage your hardware and software yourself, or outsource their management?

The new reality that the pandemic has forged is a whole new ball game for many businesses, forcing them to take a closer look at their infrastructure and its shortcomings. Choosing the right data centre solution that will help yield the most value, especially amid the immense pressure to constantly innovate, will be a complex endeavor. Yet, for those that can outthink the disruption, they can eventually overcome these threats and seize unforeseen opportunities ahead of the competition.

Discover the best fit for your IT infrastructure with **DC Alliance**

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