FROST & SULLIVAN

Frost Industry Quotient (IQ)

Australia Data Centre Service Providers, 2018

FROST
iQ

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1. Market Definition and Scope

1.1 Data Centre

A data centre is critical for enterprises operating in the today's borderless world. Whether private or public, data centre is essential for hosting mission-critical applications and help organisations streamline information while enabling easy access to users and customers anywhere around the globe.

A data centre stores computer systems and associated components including a raised floor, backup power supplies, redundant data communication connections, environmental controls (such as, for air conditioning and fire suppression), and security devices.

1.2 Data Centre Operating Models and Services

Data centres typically operate on two primary models. One is for an organisation to build, operate, and manage its own data centre for internal purposes, known as a captive data centre. The other is an outsourced model, where organisations lease space and hosting services from external data centre providers. These providers offer the security, power, and cooling needs of the data centre where customers can use the space to deploy their servers and other equipment. This report focuses on companies providing outsourced services.

The following exhibit illustrates the operating models for data centres.

Exhibit 1: Data Centre Operating Models

In an outsourced data centre model, data centre providers can offer a combination of solutions including:

- **Colocation Services**: These services refer to pure space rental, including floor space, cages or racks of different sizes. Essential infrastructure-level support such as power, cooling, and physical security measures as well as basic network connectivity, are provided. Customers pay a monthly or annual rental fee for the space and facilities, but they need to purchase and manage their own servers.

- **Managed Hosting Services**: These services include the provision of servers where customers do not need to purchase their own servers. Instead, they rent the servers from the data centre operator together with other specified equipment. Managed hosting involves either sharing the server with others or having a dedicated server. Customers can still access their servers whenever they want to without having to allocate their own IT resources at the data centres, as the data centre operator provides 24x7 system support such as monitoring and rebooting. This often includes operating system management and software security management.

Services available under the outsourced data centre business model are shown below.

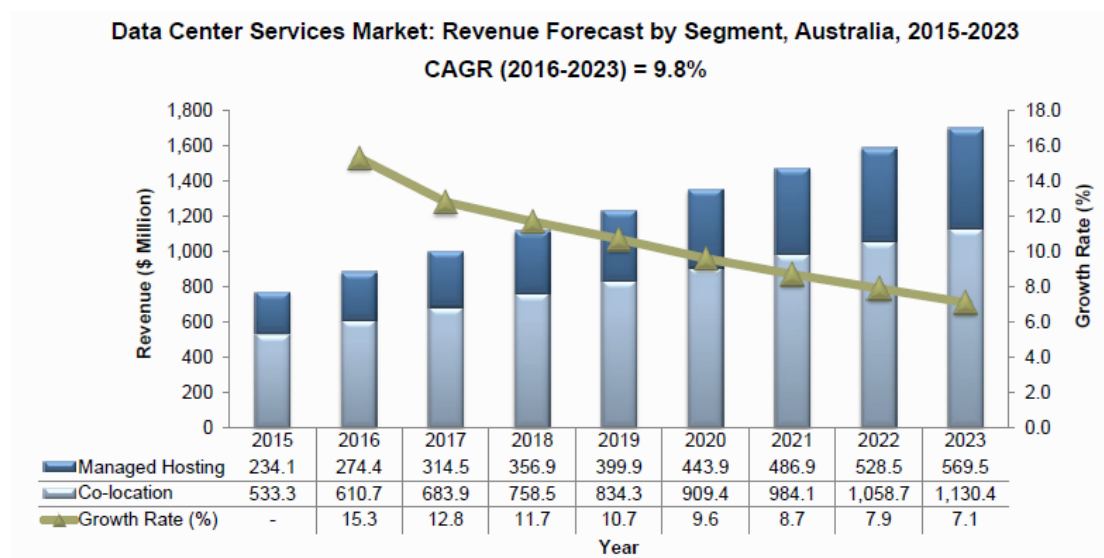## Exhibit 2: Data Centre Services – Market Definition
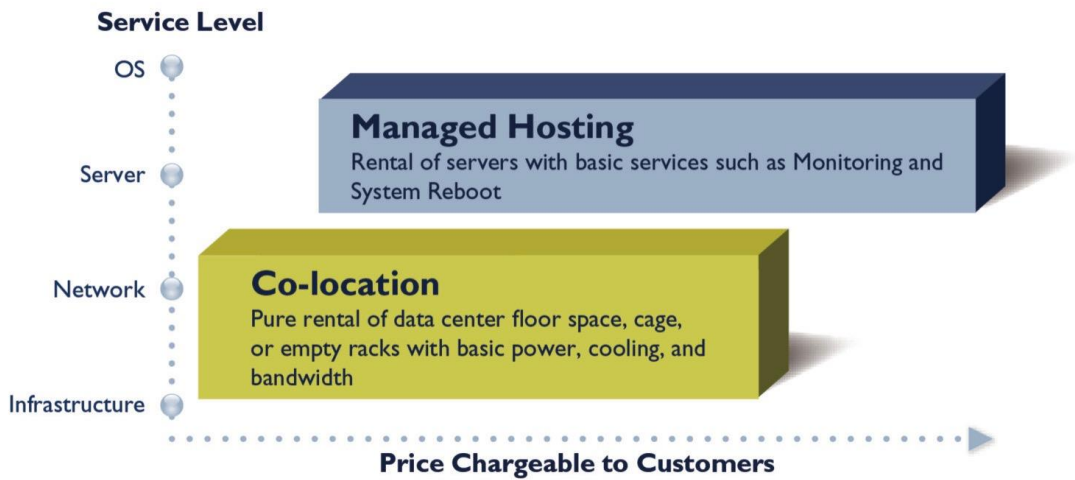
Source: Frost & Sullivan analysis

This study does not take into consideration private/captive data centres. Companies profiled in the Frost Industry Quotient (Frost IQ) Matrix are market participants operating in Australia.

2. Market Assessment

2.1 Market Size and Forecast

Australia is one of the most mature data centre services markets in Asia-Pacific. Despite facing intensifying competition from countries in the region such as Singapore and Malaysia, the market in Australia continues to expand, recording a growth of 12.8% in 2017, to reach revenue of $998.4 million.

Data Center Services Market: Revenue Forecast by Segment, Australia, 2015-2023
CAGR (2016-2023) = 9.8%

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Managed Hosting	234.1	274.4	314.5	356.9	399.9	443.9	486.9	528.5	569.5
Co-location	533.3	610.7	683.9	758.5	834.3	909.4	984.1	1,058.7	1,130.4
Growth Rate (%)	-	15.3	12.8	11.7	10.7	9.6	8.7	7.9	7.1

Note: The base year is 2016 Source: Frost & Sullivan analysis

While managed hosting services are seeing greater adoption, colocation services continue to dominate data centre services revenue. As illustrated above, co-location services accounted for the bulk of market revenue at 68.5% in 2017. Growth has been driven mostly by hyperscale cloud vendors, large enterprises, and highly regulated verticals, such as Banking, Financial Services, and Insurance (BFSI), which require strict data confidentiality and complete management control of their operations.

Hyperscale public cloud service providers are stimulating demand for data centre services in Australia, particularly in cities such as Sydney and Melbourne. In fact, many global public cloud providers, namely Amazon Web Services (AWS) and Microsoft Azure, have increased their uptake of wholesale data centre capacities in Australia in recent years.

Frost & Sullivan estimates an increase in wholesale colocation revenue in Australia by close to 20% year-on-year in 2017, higher than the revenue growth reported in the retail co-location market. A wholesale colocation model uses a dedicated suite or cage space for a single customer. The single customer typically consumes more than 50 kW in power usage from a data centre service provider.

2.2 Competitive Landscape

A fundamental characteristic of Australia's data centre services market is its fragmented nature, with no individual provider contributing more than 15% to the overall data centre raised floor space in 2017. Major market participants by revenue in the Australian market include Equinix, Fujitsu, Global Switch, NextDC, and Telstra.

As demand for data centre services in Australia increases, operators are tapping into the growth trajectory by building new data centre facilities or expanding existing ones. One up and coming provider is AirTrunk, which, in 2017, announced plans to invest $919 million in Australia over the next four years.

However, the Australia data centre services market is changing with a growing number of major providers looking to consolidate their data centre footprint. Equinix's recent acquisition of data centre provider Metronode in early 2018 reflects this trend toward consolidation. Driven by the rapid growth of hyperscale cloud vendors, data centre providers are increasingly focusing on attaining scale to provide network-rich, hyperscale-ready facilities to support the substantial computing requirements.

Frost & Sullivan considers pure-play public cloud providers such as AWS, Microsoft Azure, and Google as Infrastructure-as-a-Service (IaaS) service providers. Thus, these vendors are not evaluated in the competitive landscape for the purpose of this report.

3. Market Assessment

In this section, Frost & Sullivan examines the key trends shaping the data centre industry in Australia.

3.1 Hyperscale cloud vendors leading the adoption of outsourced data centre leasing capabilities

Hyperscale public cloud service providers are pivotal to boosting demand for data centre services in Australia, particularly in Sydney and Melbourne. Several global public cloud providers (for example, AWS, Microsoft Azure) have expanded their wholesale data centre capacities in recent years. For instance, leading Australia data centre operator, Global Switch, started construction on the final stages of its Sydney East data centre in 2016, following a pre-commitment from a leading hyperscale cloud provider in Australia.

3.2 Government data centre consolidation stimulating demand for third-party, multi-tenant data centres

The Australia Government Information Management Office (AGIMO) is leading the way in optimising data centre resources with the introduction of the Australia Government Data Centre Strategy 2010-2025 which adopts a whole-of-government approach to data centre requirements. The strategy represents a transition from using government-run data centres to third-party, multi-tenant data centres.

Under the data centre consolidation plan, a panel of data centre providers – AGIMO Data Centre Facilities Panel – are selected, providing government entities with a simplified and co-ordinated procurement process, better pricing, and pre-agreed lease terms for the procurement of data centre facilities.

The strategy has been crucial in bolstering demand for outsourced data centres since its implementation in 2010, as the government is one of the

major verticals spurring uptake of data centre services in Australia, alongside cloud providers and financial institutions.

3.3 Rollout of National Broadband Network (NBN) and the upcoming addition of subsea cables

Australia's NBN rollout, due for completion by 2020, is set to enhance connectivity across the country significantly, and drive demand for cloud computing and content delivery services. It aims to provide either a fibre-to-the-premise (FTTP) or fibre-to-the-node (FTTN) connection for 93% of premises and households, with expected broadband speeds of up to 1 Gigabit per second.

The addition of the international subsea cable INDIGO (formerly known as APX-West) between Perth, Australia, and Singapore, due for completion in 2018, is also poised to considerably improve connectivity across the country and boost demand for data centre services. INDIGO consists of two fibre pairs with a minimum design capacity of 10 TBPS for each pair, providing network redundancy and low latency from Australia to Southeast Asia.

3.4 Increasing demand for high-density data centres to support cloud computing and higher-performance computing applications

High-performance computing, including cloud computing, has led to an increase in the average power density requirements of data centres. Many end users now demand power densities of 8 kW to 20 kW per rack, with peak power requirements of about 50 kW per rack for higher-performance computing applications.

This has led to an emerging class of data centre providers in Australia that cater specifically to high-density data centre requirements. These could include data centre racks offering high-density compute of up to 60 kW per rack.

4. Frost IQ Matrix: Australia Data Centre Service Providers, 2018

Frost & Sullivan evaluated the top 10 vendors in the Australian data centre services market. Frost & Sullivan plotted the respective vendors on the Frost IQ Matrix. The key criteria evaluated in positioning companies on the matrix are:

- Revenue Market Share
- Product/Service Strategy
- People and Skills Strategy
- Ecosystem Strategy
- Business Strategy

Frost IQ: Australia Data Centre Provider Market, 2018
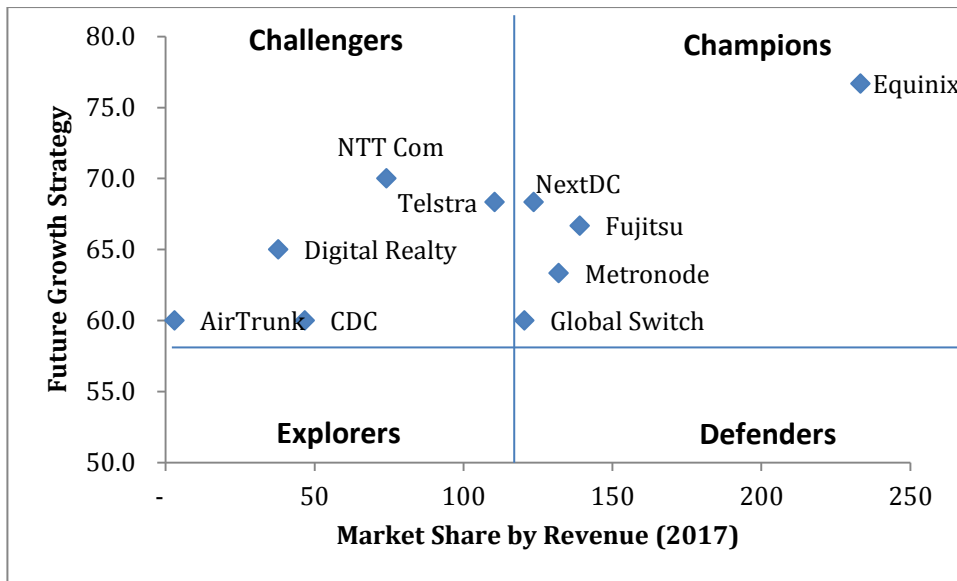
Source: Frost & Sullivan analysis

Note: As the period of the report is December 2017, Equinix and Metronode are treated as separate entities in the report as Equinix's acquisition of Metronode only completed in 2018.

Ten major data centre service providers in Australia are represented on the Frost IQ Matrix. Equinix, Fujitsu, Metronode, NextDC, and Global Switch feature in the Champions' Quadrant. Equinix leads the industry with the highest revenue market share as well as growth strategy in Australia, notably for its continual investments in colocation and interconnectivity platforms as well as its aggressive expansion plans in Australia.

Telstra, NTT Communications, Canberra Data Centres, Digital Realty, and Air Trunk are in the Challengers' Quadrant. Of the group, NTT Communications emerges with the most robust future growth strategy, driven by its integrated data centre portfolio bundled with value-added services and all-in-one service offerings to clients.

5. Profiles of Major Data Centre Service Providers

The respective profiles of the data centre service providers benchmarked in the Frost IQ Matrix are detailed below. The analyst strategy score represents the service providers' growth strategy, out of a 100-point scale. Details of the strategy score can be found in *Frost IQ Methodology – Growth Strategy.*

5.1 Equinix

Headquartered in the United States, Equinix is a leading global interconnection and data centre company, with 200 data centres in 52 cities globally. The company provides a dynamic environment where networks (1,700+) and cloud and IT service providers (2,900+) interconnect across multiple cross connects (283,000+).

Analyst
Strategy
Score

77

Equinix announced its acquisition of leading data centre provider Metronode in April 2018. The acquisition is expected to complement the growth strategy of Equinix in Australia by adding 2 data centres in Melbourne, 3 in greater Sydney (including one in Illawarra), 2 in Perth, and one each in Canberra, Adelaide, and Brisbane.

Strengths

- Solid ecosystem strategy from investments worth billions of dollars in the past two decades to create Platform Equinix, a colocation and interconnection platform that connects more than 9,800 customers in 24 countries.
- In December 2017, Equinix announced the next phase in the evolution of its global platform through the direct physical and virtual connections to its International Business Exchange (IBX) data centres worldwide, enabling customers to connect on-demand to other customers from any Equinix location.

- Concrete plans targeting fast-growing hyperscale cloud vendors in Australia with Equinix's acquisition of Metronode's data centre assets. The acquisition provides additional capacity to capture the benefits of scale and adds approximately 20,000 square meters of gross colocation space to Equinix's footprint in Australia.

- Ability to leverage Metronode's hyperscale-ready data centres to enable its fast-growing hyperscale cloud service providers to gain access to network-rich, redundant data centre alternatives in Australia.

- In 2017, Equinix completed its $42 million investment on SY4 IBX data centre expansion in Sydney, bringing the total capacity to 3,000 cabinets.

- Investment of $10 million in its ME1 IBX data centre expansion in Melbourne, adding 375 new cabinets to the facility, bringing its total capacity to 1,500 cabinets.

Challenges:

- Australia's highly-fragmented data centre market could pose intensifying competition to Equinix, mainly from global data centre providers such as Global Switch, Telstra, and NTT Communications, that have well-established integrated data centre portfolios bundled with connectivity and extensive software-defined network (SDN) capabilities.

5.2 NTT Communications

Japanese telecommunications company, NTT Communications, provides consultancy, architecture, security and cloud services. The offerings are backed by the company's worldwide infrastructure, including Tier 1 Internet Protocol (IP) network, the Arcstar Universal One VPN network reaching 190 countries/regions, and more than 400,000 m^2 of the world's most advanced data centre facilities.

In Australia, NTT Communications has three data centres located in Melbourne and Sydney

Analyst Strategy Score

70

Strengths

- Ability to offer comprehensive value-added services alongside colocation and managed hosting services to customers in Australia sets NTT Communications apart from the competition.
- Launched Software-Defined Exchange Service (SD-Exchange) in March 2017 that provides globally seamless, high-speed and secure connectivity between NTT Communication's Enterprise Cloud and Nexcentre colocation as well as multiple cloud services including AWS.

Challenges

- With over 60% of its Asia-Pacific revenue originating from Japan, NTT Communications has a weaker presence and reach among enterprises and end-user accounts in Australia compared to its competitors.

5.3 NextDC

NextDC is an ASX 200-listed company offering Data Centre-as-a-Service (DCaaS), wholesale colocation data centre space, connectivity services, and infrastructure management software in Australia. The company operates data centres in Brisbane, Canberra, Melbourne, Perth, and Sydney, across a vast ecosystem of service providers (450+) and carriers (60+) in the region.

Analyst
Strategy
Score

68

Strengths

- NextDC is undertaking a massive expansion of its data centre capacity in Australia. The company launched two new data centres, B2 Brisbane and M2 Melbourne, with 32,292 sqft and 107,639 sqft of technical space, respectively, with a third underway in Sydney.

- In October 2017, NextDC's B2 Brisbane data centre become the first data centre in Australia, and first co-location data centre in the region, to receive the Tier IV constructed facility certification from the Uptime Institute, demonstrating the company's operational excellence, assurance to customers, and technical innovation in the area.

Challenges

- Despite high demand for wholesale colocation capacity in Australia owing to the rapid growth of hyperscale cloud vendors, NextDC continues to face stiff competition in this segment.

5.4 Telstra

Telstra operates 58 global data centres in 12 countries, of which more than 20 are located in Australia. With significant investments in its data centre and network capabilities in Asia-Pacific in recent years, the vendor has access to more than 2,000 Points-of-Presence (PoPs) in more than 200 countries and territories globally.

Analyst Strategy Score

68

Strengths

- Consistent efforts in boosting its end-to-end ICT outsourcing portfolio with substantial investments in connectivity as a value-added service to complement its data centre solutions.

- Active focus on deployment of the Telstra Programmable Network in the past two years, which provides near real-time elastic connectivity to an array of public cloud services with Layer 2 (Ethernet) and Layer 3 (MPLS) options, among others.

Challenges

- Despite its dominance as a connectivity and multi-cloud orchestration vendor, awareness of Telstra's data centre offerings is lower, potentially limiting its growth prospects in the segment.

5.5 Fujitsu

Japanese multinational, Fujitsu, is a leading systems integrator and provider of IT services globally. The vendor focuses on data centre services as part of its bundling strategy to manage a greater share of enterprise ICT infrastructure, and provides end-to-end IT consulting and outsourcing solutions.

Analyst Strategy Score

67

In Australia, Fujitsu operates data centres in Queensland, New South Wales, Victoria, and Western Australia.

Strengths

- Core strengths in systems integration and end-to-end ICT outsourcing capabilities.
- Provides customised offerings encompassing data centre operations, ICT infrastructure management, and global delivery networks, among others.

Challenges

- Perceived mainly as an IT services management vendor in software, networking and business solutions domains, and less known for its core data centre offerings.
- Increasing competition in Australia from traditional wholesale colocation providers.

5.6 Digital Realty

Headquartered in the United States, Digital Realty is a global wholesale colocation provider that provides data centre, colocation, and interconnection solutions to customers. In Australia, the company currently operates a network of four data centres across Melbourne and Sydney.

Analyst Strategy Score

65

Strengths

- Concrete growth expansion plans in Australia to serve its growing customer base in the country.

- In 2017, Digital Realty announced the construction of a new data centre in Western Sydney, slated for completion by the end of 2018. Once fully operational, the data centre will be able to supply 14 MW in power and span 16,360 square metres.

Challenges

- Stiff competition from global providers such as Equinix and NTT Communications, which target similar profiles of global customers looking to expand their business operations into Australia.

5.7 Metronode

Metronode is data centre specialist in Australia with a footprint of 10 data centres spanning Sydney, Melbourne, Perth, Canberra, Brisbane, and Adelaide. In April 2018, Equinix completed its acquisition of Metronode.

Analyst
Strategy
Score

63

Strengths

- Has demonstrated a strong commitment to growth in Australia, having increased its IT load capacity significantly in the past few years.
- Invested more than $110 million in infrastructure projects in 2017, with the construction of new facilities in Derrimut, Melbourne; Silverwater, Sydney; and Unanderra, Wollongong.

Challenges

- Metronode's core focus as a pure-play colocation provider that offers highly accredited and certified premium data centre facilities could hinder the company's ability to provide more compelling end-to-end service capabilities (for example, connectivity, managed services) to meet potential demand from clients. However, Equinix's acquisition of Metronode could enable Metronode customers to access and benefit from Equinix's global platform.

5.8 Global Switch

Headquartered in the United Kingdom, Global Switch targets the large-scale/wholesale data centre services market in Australia and Europe. One of the major colocation services providers in Australia, occupying two data centres located in Sydney West and Sydney East.

Analyst
Strategy
Score

60

Strengths

- Demonstrates aggressive expansion plans in Australia, with the completion of the second and third phases of its Sydney East data centre in 2017, adding 19,000 sqm in floor space to the facility.

Challenges

- Given the high cost of operating in an expensive city such as Sydney, Global Switch could face difficulties reining in data centre operating expenses in the face of mounting industrial electricity tariffs and wage levels. Conversely, data centre operators with a more diversified data centre footprint in lower-cost areas in Australia such as Perth (for example, Metronode, NextDC) have an advantage due to lower overhead cost pressures on their profit margins.

5.9 Canberra Data Centre

Established in 2007, Canberra Data Centre (CDC) is wholly Australian owned and one of the largest data centre operators in the country with an IT load capacity of more than 50 MW. The company currently operates four data centres – Fyshwick 1, and Hume 1, 2, and 3. Construction of CDC's fifth data centre facility, Fyshwick 2, is underway, with expected completion in September 2018.

Analyst
Strategy
Score

60

Strengths

- Solid presence in the government, defence, national critical infrastructure, and national utilities sectors due to its core value proposition offering physical and process-based security specific solutions for these segments.
- The only commercial data centre facility In Australia to be accredited as "secret buildings" by Australian Department of Defence.

Challenges

- CDS' niche offerings in the government and defence sectors may limit its potential to target other industries. The company should consider formulating an effective go-to-market market strategy to secure wins in high-growth segments (for example, hyperscale cloud vendors), as part of its future expansion strategy.

5.10 AirTrunk

AirTrunk is a start-up seeking to enter the wholesale colocation market in Asia-Pacific, investing close to $700 million in Australia over the next few years. The company has two data centres in Sydney and Melbourne. The facilities are among the largest in Asia-Pacific, at 20,000 sqm and 15,000 sqm of technical space, respectively. The Sydney facility has 70 MW IT load capacity, while the Melbourne facility supplies 50 MW.

Analyst Strategy Score

60

Strengths

- Aggressive expansion strategy targeting high-growth hyperscale vendors – AirTrunk has already emerged as a data centre operator with the largest IT load capacity in Australia despite being a relative newcomer to the market.

- Effective marketing strategy aimed at hyperscale cloud vendors complements the high-growth potential of this sector in driving the growth of the data centre industry.

Challenges

- AirTrunk's focus as a pure-play wholesale colocation provider may restrict the company's ability to offer end-to-end service capabilities (such as connectivity, managed services) to address potential client demand.

6. Other Data Centre Service Providers to Watch

While the following data centre service providers did not meet the selection criteria to be benchmarked for the current year of study, they are key vendors to watch:

Vendor	Profile and Competitive Advantages
ASX Australia	ASX's Australian Liquidity Centre (ALC) is the country's only purpose-built finance data centre. ALC is built to meet the demands of the finance sector by providing connections to liquidity venues and financial markets. Currently, it has a network of 100 customers and 200 financial market specialists.
Data Exchange Network	A modular data centre operator and manufacturer. Provision of colocation rack facilities and the sale of manufactured data centre modules to third-party operators make up its primary revenue components. Construction of two colocation data centres in Homebush, Sydney, and Port Melbourne using its IPO funds is underway and aim to commence operations by the first quarter of 2019.
Frontier DC	A hybrid data centre operator and modular data centre products reseller operating in Australia's major metropolitan areas. Frontier DC has exclusive rights to modular data centre technology from Cannon Technologies. It also offers Data Centre-as-a-Service (DCaaS) to channel partners. The company's range of products includes Modular Data Centre, Mini Data Centre, and Ruggedised Data Centre. Moving forward, Frontier DC plans to build 10 data centre parks in Australia as demand grows for edge and regional data centres.

7. Analyst Word

Massive demand from hyperscale cloud vendors in Australia is likely to spur an increase in high-density power racks of more than 30 kW per rack in the next three to five years. The need to control mounting electricity tariffs in Australia could also necessitate the adoption of more innovative green technologies and liquid cooling systems.

Data centre modernisation is projected to emerge as the number one priority for end-users in Australia. Data Centre Management-as-a-Service (DCMaaS) where data monitoring of an enterprise's data centre operations is sent to the service provider's cloud is projected to become commonplace and offered on an on-demand basis.

Edge computing is also expected to become mainstream given the ever-increasing requirements for higher bandwidth and faster speeds. Demand is anticipated to come from enterprises requiring micro data centres located closer to end users for data collection, processing, and storage.

8. Frost IQ Methodology – Growth Strategy

Frost IQ is designed to provide a balanced assessment of an industry that Frost & Sullivan analysts have tracked over a period. Data collected, for instance, vendors' revenue, is scrutinised and forms part of the input for the Frost IQ Matrix. Additional information is collected from various sources including interviews with market participants.

The approach covers a mix of quantitative and qualitative assessments. The Frost IQ Matrix has two major axes: revenue market share and future growth strategy.

1. **Revenue Market Share**
   o Market share information is derived from Frost & Sullivan research and includes market trackers and syndicated research reports. Using research conducted at quarterly, semi-annual or annual intervals, Frost & Sullivan analysts build a revenue database for vendors in the market.
   o The X-axis of the Frost IQ Matrix measures the relative market share of industry participants on a percentage scale. The mid-point of the axis on the matrix is set at 50% of the market share of the leading participant in that market.

2. **Growth Strategy**
   o Frost & Sullivan considers four main components in the growth strategy, the Y-axis of the Frost IQ Matrix. The guiding principle is that these components and their subcomponents should follow the Mutually Exclusive and Comprehensively Exhaustive (MECE) test. The components are as follows:
     ▪ Product/Service Strategy
     ▪ People and Skills Strategy
     ▪ Ecosystem Strategy
     ▪ Business Strategy

There is an equal weightage for all the components, with measurement on a 100-point scale. The dividing line is at the mid-point, i.e., a weighted score of 50 on a 100-point scale. Analysts make assessments of the industry participants' strategy for the above parameters.

Details of the subcomponents are available, if required.

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