CO-LOCATION
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WHEN IT COMES TO THE DATA CENTER, IT SEEMS THERE ARE ONLY THREE THINGS ON EVERYONE'S MINDS THESE DAYS.

One of four Equinix co-lo facilities in Sydney.

FUTURE TRENDS TO ATTRACT ENTERPRISE USERS

By Kirk Killian

The three most popular delivery models for placement of corporate (enterprise) compute workloads are on-premises (self-operated non-shared data centers), colocation suites and cloud. When choosing where to put enterprise workloads among these options, most enterprises today are migrating some workloads away from on-premises and toward colocation and cloud. Then, they essentially decide which workloads go where and when.

Modern Colo Trends

Corporate users are flocking to colocation facilities to take advantage of 12 trends in colocation that have evolved over the last five years, reducing costs and improving reliability of data center delivery. Several of these improvements are linked to the much larger scale of modern colocation data centers and campuses that were built just a few years ago.

Lower Construction Costs. As colocation facilities are being built much larger today than five years ago, colo operators are taking advantage of industrialized scale to reduce construction costs. A colocation provider can construct a 50-mW data center much cheaper (in $/mW) than a 2-mW data center, passing those savings along to occupants in lower rent. This scale cost advantage is magnified on the mega-campuses that now include buildings up to 100-mW, or multiple 20-50 mW buildings on one site.

Lower Operating Costs. It is more economical to operate a larger data center than a smaller one. That's especially true for facility management staffing and third-party services contracts. Spreading the cost over 50 mW instead of 2 mW is much more efficient, and vendor support contracts (UPS battery maintenance, for example) are cheaper over a much larger installed base. While operating costs are not directly passed through to customers in most colo contracts, lower operating costs have enabled providers to reduce rents. Rent reductions due to scale are enjoyed by customers across the contract-size continuum, so now even 100 kW contract customers benefit from construction and operation cost reductions.

Accelerated Deployment. For enterprise customers seeking private suites with non-shared infrastructure, where the delivery solution is more complex than a portion of a multi-customer data hall, colo providers have shrunk their data hall construction schedules. Over the last decade, from 7-9 months to about four months, finished suites are closer to "plug and play" than previously available. CyrusOne, one of the largest colo providers, released a video showing its construction from the ground up of an entire 30-mW data center in just 180

days. Reduced construction duration also allows more efficient return on invested capital, and the providers pass those savings to customers.

Improved Facility Management. Large-scale facility development, coupled with a willingness to hire seasoned corporate data center managers away from their prior employers, has improved the quality of colo-facility management. Experienced senior managers now supervise on-site staff on a 24/7 basis, compared with many smaller corporate data centers that have only security crews during overnight shifts. Colo providers have also spent generously on DCIM and other tools to improve critical systems management. National colo providers link their real-time monitoring tools to faraway sites, spreading senior facility management oversight across multiple campuses.

Improved Design Reliability. Most new colocation facilities feature critical systems incorporating design principles required to obtain a Tier 3 certification from The Uptime Institute. Concurrent

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maintainability is the modern colo standard for electrical and cooling systems, while many older colo data centers were built to Tier 1 or Tier 2 standards. Many corporate data centers that are 15-25 years old were built to Tier 2 design standards, so migrating to a colo data center incorporating concurrent maintainability improves overall reliability, absent other operational differences.

Higher-Density and More Efficient Cooling. Most new colocation data centers are designed to accommodate cooling between 20 to 30 kW/cabinet (some up to 50 kW) across an entire suite, although hot-aisle or cold-aisle containment is recommended for deployments above 15 kW/cabinet. This provides reassurance to enterprise users that they won't suffer thermal failure even if 1-2 cooling system components are down for maintenance. New colocation facilities typically have much more sophisticated environmental monitoring throughout the data halls than older colos, enabling facility managers to more quickly identify and address any hotspot issues before inlet temperatures exceed the ASHRAE targeted operating range. Also, many new colos have adopted cutting-edge cooling technologies to significantly reduce PUEs, reducing customers' electricity costs.

Improved Telecom Connectivity. Many modern colocation facilities are "on net" with 5-8 last mile (Tier 1) providers' lit telecom circuits, plus many shared network options, compared with the typical enterprise data center scenario

where only 2-4 lit carrier options are available to the property. Many colos also have at least one telecom provider willing to sell dark fiber to enterprise customers to customize and light their own network circuits. This combination enables shrewd enterprise telecom buyers to improve network diversity and proactively shop the carriers against each other to improve commercial terms.

Cloud "On-Ramps". Many new colocation data centers, especially the largest campuses in the major data center markets, have adopted various "cloud on-ramp" strategies to enable enterprise customers to more easily transition compute load into public cloud. Chief among these is installation of large pipe "direct connect" circuits to the nearest public cloud availability zones. Many large colocation campuses are located adjacent to the public cloud buildings or feature public cloud hardware in dedicated suites within the colo building. This enables nearby or campus cross-connects between the enterprise operated colo suite and public cloud. Some large colo providers have teams that can be engaged (for a fee) to assist in cloud migrations.

Capacity Flexibility. Because the newest colocation data centers (and campuses) are huge, with some aggregating more than 1 million square feet of building area and more than 100 mW of total critical power, the providers can now offer much more flexible potential growth over the life of a colo contract. For example, rather than committing to 800 kW total load over a five-year term, when only 600 kW is needed in the first year, a customer could contract for 600 kW flat for five years. That's coupled with expansion options that add up to 200 kW more at the customer's option discretion, plus perhaps get rights to shrink the capacity by 100 kW or so if load decreases.

Flex-Spend Contracts. Some colo

providers now offer flex-spend contracts. This is where the enterprise customer may shift colo spending among different facilities in the provider's portfolio as the customer's needs change (e.g. move 100 kW inside a 400-kW contract from Chicago to Phoenix) and move spend among different services buckets. For example, a colo contract might include 400 kW of colo, but allow up to 25 percent of that to be shifted geographically or into private cloud services offered by that colo provider. The most experienced colo providers offering managed services and private cloud have been leaders in flex-spend more than the wholesale colo providers.

Provider Financial Strength. Several well-funded large colo providers are publicly traded, and many others are much stronger financially than they were a decade ago. This offers better financial assurance of continuity of operations and contract counter-party financial strength. The five largest publicly traded data providers now have a combined market capitalization exceeding $80 billion, more than twice their combined value five years ago. Improved financial strength has also allowed them to take advantage of lower-priced capital for new data center project development, decreasing development costs, which translates into lower rents.

More Certifications. Most major colo providers now have many third-party facility and operational certifications (SSAE18, ISO27701, HIPAA, FISMA, TRUSTe, PCI, FedRamp, etc.) that give the user comfort in competent provider

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selection and greatly assist in the audit and compliance process required by the enterprise's internal teams. These certifications are expensive to obtain and maintain, and the providers spread these costs over many large facilities. Some large colo providers also have specialized audit compliance staff that can be engaged (for a fee) for additional compliance services related to the enterprise's use of the data center.

To be fair, many of these attractive trends at modern colos (such as more robust systemic redundancies, higher densities, more telecom providers, and cloud "on ramps") are certainly also available to corporate users in their on-premises facilities, if those enterprises invest robustly to modernize. Some are also available from the public cloud providers, but public cloud can introduce additional control, audit, and compliance concerns.

Many corporate enterprises are electing instead to migrate into modern colocation facilities, and this trend (along with migrating specific workloads into public cloud) is likely to continue well into the future.

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