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How To Scope for Success

A well-executed colocation selection and procurement process — Part 1 of a six-part series
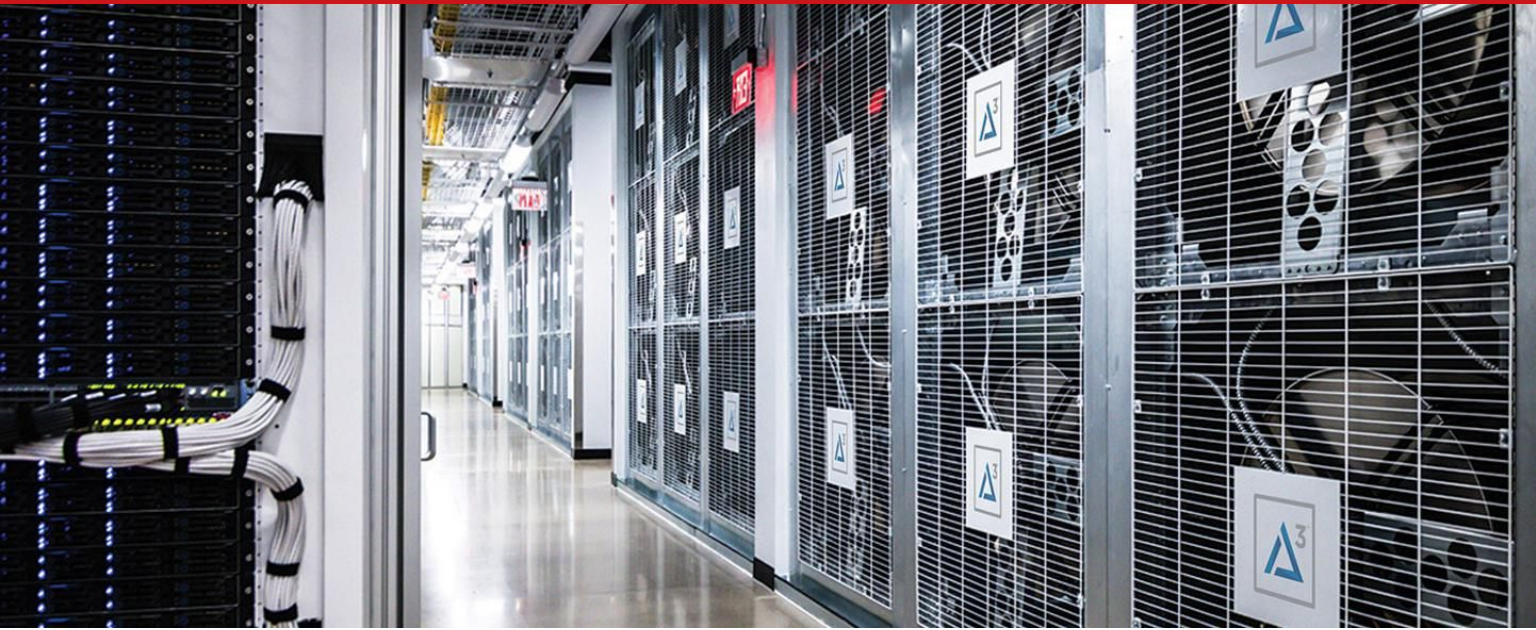
Baseball humorist Yogi Berra once said, "If you don't know where you are going, you'll end up someplace else." To his point, the same is true when it comes to planning for colocation data center projects. The scoping process is crucial in selecting the optimal location, minimizing costs, accelerating the process, and virtually every other aspect that affects where you "end up."

Using insights gained through dozens of colocation selection projects worldwide, this article discusses 17 points that should be evaluated during the scoping process in order to ensure success.

PROJECT TEAM

The first step for most enterprises is to form a project team, which usually includes represent-atives from IT architecture, data center operations, telecom, business continuity, real estate, and the C-suite. The team should become familiar with planned hardware and software changes that affect future facility needs, such as deployment of power-hungry, hyperconverged hardware clusters. To avoid unpleasant surprises later, the project team should collectively draft a plan summary, including project goals and a timeline — executive approval should be obtained before investing any time or money.

CONFIRMATION OF DELIVERY MODEL

A recent end-user survey determined that 71% of enterprises intend to maintain or increase colocation use in coming years. Because so many enterprises are now embracing the use of colocation plus cloud, the project team should

identify compute tasks best suited to remain in controlled environments (on-premises or colocation) and those which are good candidates for near-term migration to the cloud. For many businesses, some applications and data sets aren't yet ready for public cloud environments due to audit/compliance issues, software readiness, or budget constraints. Colocation, including private cloud, is also an excellent "bridge-to-cloud" delivery model when enterprises have uncertain cloud adoption plans.

POWER

In modern colocation data centers, critical power is the most significant usage metric, not the amount of occupied data center space. Critical power is the power backed up by UPSs and generators available for customer IT equipment use, which excludes cooling and ancillary loads. In most enterprise-class colo facilities, users pay contract costs based upon critical power available for the user's IT equipment, not rent for the occupied physical space. Accordingly, the project team should determine the critical power needed during the occupancy period, even though predicting required power more than three to five years into the future is difficult.

PLANNING FOR GROWTH

A recent report from International Data Corp. (IDC) indicates the amount of data created over the next three years will exceed the data created over the past 30 years, and data will continue growing at a compound annual growth rate of 26% through 2024 with much of that coming from sensors and metadata.

The proliferation of 5G, self-driving cars, and real-time videos will exacerbate the explosion in data growth. However, each new generation of modern hardware can process more compute while using less power and moving

applications and data sets to the cloud partially offsets internally hosted computing growth, so IT pros are challenged when trying to accurately forecast true power needs.

Acknowledging that negotiating flexibility to increase (or decrease) critical power at a colo is the most precise way to match the user's long-term requirements, the project team should prepare ranges for power and space requirements over the contract term under multiple usage assumptions. Many colo facilities can increase or decrease the power and cooling delivered to a customer suite over the contract period. Users should prepare a "most-likely scenario" power model with projected year-by-year critical power loads for the next 10 years, then apply common sense and industry knowledge to also create similar low- and high-growth models. The resulting range will guide the colo procurement process by forecasting the optimal combination of critical power by year in the base contract with supplemental expansion and contraction rights to reduce costs and accommodate future needs.

SPACE

While colo providers catering to large enterprises rarely charge them rent for occupied space, users should determine how much physical space will be required for cabinets and racks. Since wider, 30-inch cabinets are often specified to accommodate denser hardware placement and complex cable connections, users should calculate the space required, allotting 30 square feet per planned cabinet. To enhance flexibility in hardware deployment and provide "flex space" for hardware refresh cycles, add approximately 15% swing space for new cabinets as older cabinets are retired.

While most enterprises anticipate meeting compute growth needs by placing denser hardware into current cabinet footprints,

Most modern colocation facilities provide finished data center suites or secure cages with a raised-floor or slab whitespace — customers just need to install their cabinets and IT equipment.

requirements for additional future cabinets should be identified during scoping. For example, enterprises forecasting a 50% increase in cabinet count over the next five years should seek that growth space in the initial contract, as extra space is usually available at minimal cost when the contract is initially negotiated but may be difficult to obtain later once the colo provider leases adjacent suites.

REQUIRED COOLING

Users can realize networking equipment savings by consolidating hardware into smaller footprints, requiring more concentrated cooling. A recent Uptime Institute user survey indicated average rack densities increased 50% over a four-year period, from 5.6 kW in 2017 to 8.4 kW in 2020. Many modern colocation facilities can cool up to 20 kW per cabinet, with some facilities accommodating far higher, without stranding millions in cooling system costs that won't be needed for many years.

"In today's data center environment of accelerated digital transformation, unpredictable usage and growth models are table stakes," said Billie Haggard, senior vice president of operations at Aligned. "No one has a

crystal ball that can predict exactly what lies ahead in five, 10, or even 15 years. The beauty of Aligned's cooling technology is its versatility and modularity. Our customers can initiate at one density profile and scale vertically up to 50 kW per rack at their own pace without exotic cooling solutions or a large number of moving parts to maintain. We give them future-proof, right-sized infrastructure when they need it."

Enterprises should project cabinet density ranges by year for the next 10 years using a base case plus high-density and low-density alternative cases. This will help guide the down-selection of prospective colo facilities later during the provider candidate selection process.

GEOGRAPHIC LOCATION

Most enterprises choose preferred locations for a new colocation placement as a function of business continuity, telecom latency, proximity to IT staff or existing data centers, or cost control (some locations are cheaper than others). Location selection is the focus of Part 2 in this series, and it will be discussed in much more detail later. However, identification of preferred locations should be a component of scoping along with internal notes on the criteria for selection of the location options.

CONDITION AT DELIVERY

Most modern colocation facilities provide finished data center suites or secure cages with a raised-floor or slab whitespace — customers just need to install their cabinets and IT equipment. Users should plan the electrical distribution circuit delivery to provide sufficient power per cabinet for both initial and future hardware deployment. This might mean installing A+B 50-A, three-phase circuits to each cabinet for future densification even though 30-A circuits could handle the initial load. During scoping, prepare cabinet placement and circuit plans

Many colo facilities can increase or decrease the power and cooling delivered to a customer suite over the contract period.

under each power growth model to maximize flexibility in suite layout; the deployment plan will later guide the preparation of build-out plans and budgets.

AVAILABILITY/TIMING

In a perfect world, all enterprises would begin planning data center acquisitions and migrations several years before the new facility is needed, getting an ample budget and clear direction from the C-suite.

In reality, project teams typically plod through a series of planning iterations, including business case development and multiple levels of corporate approvals. Far too often, by the time the "new data center plan" is fully approved, there is limited time to choose the best colo facility, complete approvals and contract negotiations, and construct the suite for occupancy. Fortunately, several colo providers are accustomed to accelerated schedules and provide rapid deployment options, including pre-built, customizable "spec suites."

Teams should designate procurement milestone dates for the completion of scoping, identification of candidate locations and facilities, RFP issuance, proposal evaluations, business terms negotiations, contract execution, build-outs, and commissioning of the colo suite. Resulting timelines are especially effective as planning tools when the project team breaks out broad project phases into subtasks and assigns targeted dates and staff responsibilities for each.

DEDICATED INFRASTRUCTURE

Many enterprises seek private colocation suites with dedicated critical systems infrastructure not shared with other building occupants. For example, some colo data centers can provide a private suite for 250 cabinets and 1.5 MW of critical power without sharing generators, UPSs, or PDUs with other users, which can streamline audit and compliance tasks. Colos also offer dedicated chilled water piping and CRACs to larger suites, supporting

customization of airflow and temperature set points to efficiently meet the hardware cooling needs across the density spectrum.

Dedicated infrastructure is most frequently offered to colocation suite customers contracting for at least 1 MW of critical power, but some elements of critical systems, such as UPS modules and downstream electrical distribution, can be provided to cage customers with contracts of only 225 kW. Some colocation facilities also provide dedicated building entrances for large customers and private office suites for on-site IT staff. Project teams should determine the required (or preferred) non-shared spaces and critical systems components during scoping.

TELECOM CONNECTIVITY

Most large colocation facilities offer at least four redundant. lit, local loop fiber providers (some facilities far more) plus dark fiber options. Dark fiber can enable rapid provisioning of inexpensive additional carrier connections for enterprises seeking dedicated circuits back to the nearest carrier hotel or another corporate data center. Some enterprises also seek seamless participation in peering exchanges (like DE-CIX or AMS-IX), which are now installed into many large colocation data centers.

Redundancy is important, so project teams should determine, during scoping, the number of required redundant lit fiber providers. Scoping should also identify any preferred or required carriers and peering participants, especially if they are existing vendors or control key network circuits for data transport to other company data centers.

DIRECT-CONNECT INTERFACES

Leading colo facilities are now providing "direct-connect," low-latency telecom circuits into major public cloud nodes or multi-cloud interfaces, like Megaport — both recent trends providing significant value to enterprises planning public cloud adoption. Direct-connect circuits can accelerate installations, reduce circuit costs for moving data between colos and public cloud, and (in some cases) reduce latencies between sites. Enterprises should determine which direct-connect circuits are most likely to provide future value and incorporate them into scoping specifications.

PUBLIC CLOUD PROXIMITY

The largest public clouds have not placed nodes uniformly across the fruited plain but have recently built buildings near (or leased space from) some of the largest colocation data centers, especially in northern Virginia, the Bay Area, and metro Chicago. Colo occupants who desire placement near public cloud availability zones for low-latency interconnection with them should include those proximities in geographic requirements. Numerous websites list public cloud locations.

CERTIFICATIONS AND AUDIT/ COMPLIANCE TOOLS

Leading colocation providers have obtained major industry certifications, including SSAE18, HiTrust, PCI DSS, FISMA, HIPAA, ISO 27001, TRUSTe, FedRAMP, and more. Major colocation providers have also onboarded dozens of experienced staff to assist in enterprise customer audit and compliance processes, including security monitoring and maintenance processes, on a customized, ala carte fee basis.

Because the colo delivery model with secured physical control of IT equipment offers audit and compliance advantages over public cloud for many businesses, they should determine the desired certifications and services during the scoping process.

MANAGED SERVICES

Colo providers have excelled for many years at economically providing smart hands for server builds, drive and tape swaps, reboots, cabling, and backup procedures. Further up the services stack, many colo providers now offer private cloud, welcomed by enterprises seeking cloud-like flexibility without losing physical control of hardware. Enterprises should determine at the project outset which managed services are most likely to improve the overall solution value.

ABOUT THE PROVIDER

Colo providers vary in size, experience, corporate culture, and financial strength, ranging from local businesses with a few data centers in a single metro area to larger publicly traded providers with millions of square feet of capacity worldwide. Enterprises should determine their specific counterparty requirements, recognizing there can be advantages to providers across the size spectrum. Many enterprises determine a minimum financial strength or operational size for colo provider consideration.

ADVISOR ROLE IN SCOPING

Many enterprises engage third-party advisors to help prepare scoping documents for colocation selection projects, and those advisors also assist with executing the procurement plan. In addition to accelerating the planning process, experienced advisors can provide scoping templates, example project task timelines, and expert commentary helpful in obtaining internal concept and budget approvals. ■

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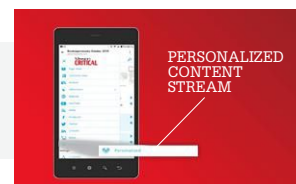
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