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Addressing colocation data center construction complexities

Is There a Better Way?

BY DOUGLAS RYAN

What if there was a way to cut costs and reduce time to market for colocation data centers without compromising efficiency or quality? A valid question, it's one that many colocation providers and general contractors may have already asked themselves or attempted to address, given the current scenarios and challenges they face.



One such challenge relates to vast market-growth forecasts, which already increase the pressure on colocation data centers to more quickly deliver space and infrastructure to tenants. This situation, in turn, adds pressure on general contractors to build faster. Project planning, which encompasses multiple phases, could take anywhere from six months to a year or more. And that estimate doesn't even account for the multiple steps that constitute commissioning alone—a process that currently differs from job to job and that typically falls at the end of a construction timeline, risking lost revenue, unforeseen costs and other project issues. And we have not even begun to talk about such factors as bad weather, which can wreak havoc on the construction phase, and workflow interdependencies among all parties involved in the project, from consultants to designers to general contractors and subcontractors to owners. In fact, some of those interdependencies at colocation data centers may affect enterprise IT workloads.¹

Despite recognizing some of the above challenges, one problem remains the same: although the colocation data center market is growing and changing, the construction process evolving too slowly to meet these needs. If unaddressed, related challenges can cascade to current tenants, costing them business, hampering their operations and possibly even leading them to switch colocation providers.

By looking at past and current market states, we can identify ways that current colocation data center providers can address their capital and time-scale needs, helping to better secure their tenants and at the same time improve processes for general contractors.

FROM PAST TO PRESENT

To address the time-to-market challenges, cash flow and capital expense (capex), scalability, construction planning/cycles, and more, one must first understand how current processes came to be. That issue begs the question, Why have construction processes not changed drastically to meet growing colocation demand?

One reason may be that colocation data centers have maintained a steady tenant base for the past few years, not warranting new construction or infrastructure retrofits. But that process is about to change as long-standing leases from 2007 hit their expiration date and tenants either look to renegotiate their terms or shop around.

With that decades-long wave of initial tenants in mind, colocation data centers may also have chosen to cater to their customers' needs first, having to move quickly to secure those tenant contracts. The old adage "If it ain't broke, don't fix it" may also be relevant, as the recession of 2008 had businesses in all markets—not just data centers—struggling to stay afloat rather than changing business structures or construction processes at a time when construction overall took a major economic hit.

But that all must change for several reasons.

- **Colocation data center demand.** The exponential growth of the data center colocation market only means a more competitive space and more ways that providers will want to differentiate in order to attract and secure top tenants. Re-evaluating their construction and project-planning processes may just be one of those differentiation possibilities.
- **The rapid onset of digitalization driven by consumerization.** The cloud, increasing mobile and video use, and the Internet of Things (IoT) all demand more space for data. As applications emerge, change, evolve and become more powerful, data centers must also be flexible to respond to consumer needs. Although digitalization is not the sole reason a business would choose to lease rather than own a data center, the space necessary to manage that data is a contributing factor when considering the total cost of occupancy. Such factors include building and operating costs, power usage effectiveness (PUE), personnel and workflow processes to maintain uptime, capital cost, rent, and more.
- **Need to keep capex low.** The marketplace judges colocation data centers by their capital expenditure. As such, speedy delivery while maintaining scalability and low costs is of utmost importance. Inefficient construction processes that pose a risk of delays can equate to high capex and even higher operational expense (opex) for colocation providers.
- **Inefficient construction and planning processes do nothing to improve cash flow.** The overall approach to colocation data center construction has not changed. Providers generate no revenue until their space is secure with tenants. What has changed is the "pre-leasing" approach, where some data center companies are leasing facilities before they are even built.² For example, a select number of wholesale colocation providers have tenant commitments for more than

half of their planned expansion space.³ But most of the colocation market still comprises retail space to secure tenants.

- **Preventing lost revenue.** The mentality is reciprocal. A colocation data center provider cannot afford to lose tenants because of construction or commissioning delays just as much as a tenant cannot afford to lose business or data because its colocation infrastructure wasn't in place to support its needs. And it also boils down to the general contractor's ability to ensure that communications protocols function properly to meet overall project deadlines.

So what has been done so far to improve some of these issues? Let's consider a few scenarios.

When project timelines are disrupted, colocation data centers may consider paying extra to expedite the schedule, but doing so can drive up construction costs. Market research from the Uptime Institute shows that project-timeline delays can be attributed to poor integration of complex systems, lack of thorough commissioning or compressed commissioning schedules, design changes, and material/product substitution.⁴

Another approach is to meet all requirements through the Tier Certification of Constructed Facility process,⁵ which works to ensure that a facility is built to its intended performance capacity, effectiveness and reliability. The challenge here is that the majority of those data centers, colocation included, that have Tier Certification of Constructed Facility ranking are based outside of the North American

market.

In some cases, penalties for delays are incorporated into the construction contract as a means to maintain schedules. Nevertheless, what's evident is that past and current approaches to addressing issues that arise during construction, factory-witness testing or commissioning—which all impact cost, schedule or operations—are not working.

A NEW WAY

Think about the last time you attended a concert that had an opening act or two before your favorite musician appeared. Did the sound crew (tasked with setting up the equipment—microphones, signal processors, amplifiers, loudspeakers, instruments and so on) or sound engineer (who controls and mixes all of the sounds coming from the stage) follow a new or different process in stage setup or sound testing before every live event? Probably not. Instead, to save time and cost and to increase their efficiency, they take a standard approach to their equipment, site wiring and stage setup and consider where technology can be streamlined to simplify future setup.

Now imagine taking a similarly standard approach to colocation data center timelines or project planning. What if there was a way to decrease time to market while also reducing engineering time, ordering time and cost?

Other considerations related to colocation data center construction are those that directly affect the general contractors or subcontractors assigned to the project. What if

instead of relying on those design, construction, testing, integration and commissioning processes to occur in sequential order, they could get those technologies from solution providers working in sync with the construction process? By shifting specific processes of factory-witness testing—such as graphics, the application programming, alarm setup and the modular order—or commissioning (both of which fall toward the end of a construction cycle) earlier in the project, providers can



The majority of data center providers with a Tier Certification of Constructed Facility ranking reside outside of North America. Image courtesy of Uptime Institute.

compress the overall construction timeline.

As you look at your current processes and weigh what could be done differently—whether you're a colocation data center provider that needs to reach the market quickly and have good scalability, a general contractor looking to reduce errors and risk, or an end user demanding more reliability to keep focus on your business goals—remember that you have a valuable role to play early on.

As an Uptime Institute report said, "All such issues in relation to data center failures, delays, or cost overruns can be addressed in the earliest phases of the capital project, when design objectives, budgets, and schedules are developed, RFPs and RFIs issued, and the construction team assembled."⁶

The benefits of early involvement can be manifold. Providing pre-engineered systems in standard hardware configurations that can be completely tested off site compresses the schedule in the construction cycle, thereby increasing reliability and reducing cost while decreasing the time to market for the finished space. ■

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BY THE NUMBERS

- **North America ranks as the continent with the most mature market; each of the top 10 metro areas in North America is home to more than 20 multitenant data centers (MTDCs).**⁷ (Jones Lang LaSalle IP)
- **Latin America will witness the fastest, expected MTDC market growth at a CAGR of 19.7% by 2018.**⁸ (Jones Lang LaSalle IP)
- **Nearly 70 percent of early equipment failures can be traced to design, installation or upstart deficiencies.**⁹ (7x24 Exchange International)

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