



MULTI-TENANT DATA CENTERS CURE HEALTHCARE'S IT HEADACHES

After decades of building, staffing and managing complex in-house data centers, many enterprises have reached a tipping point. For a variety of business, technical and financial reasons, growing numbers of large organizations are now moving some or all of their IT operations from on-premises data centers and servers to off-site facilities.

From an information technology perspective, the healthcare industry is among the most diverse and demanding. This sector encompasses everything from hospitals and clinics to individual doctor's offices to home healthcare providers. Across the board, the industry has become heavily dependent on a computing and communications foundation. This healthcare infrastructure is called on to handle patients' electronic records, health monitoring and laboratory systems, plus standard business operations. Ensuring that all of these different systems can interoperate efficiently and effectively is one of this sector's most daunting challenges.

At the same time, compared with many other industries, healthcare systems often have extremely high requirements for security and privacy, as well as always-on availability. Most notably, the American Health Insurance Portability and Accountability Act (HIPAA) of 1996 set stringent compliance and security requirements for medical records, billing and patient accounts.

Faced with such demands — along with the life-and-death importance of some of their IT systems — many healthcare organizations

have found themselves searching for better ways to deploy, manage and secure their IT operations. This search is especially urgent at the many healthcare facilities whose data centers are aging and proving inadequate to meet current demands and complexities. Rather than housing their IT operations in their own facilities, growing numbers of organizations in this sector are turning to multi-tenant data centers (MTDCs).

Also known as colocation facilities, MTDCs can provide floor space, power, access to communications networks and physical security for everything from a single server to a full data center. Further, MTDC clients can benefit from their proximity to other companies, including cloud services providers, which are also part of the MTDC's "community."

A recent survey, in which IDG Research queried more than 130 IT executives and managers, finds that more than one-quarter (27 percent) of their companies are already using MTDCs for hosting some IT operations. An even greater percentage plans to use this type of facility in the coming year.

Companies considering a move to an MTDC need a well-thought-out and supported strategy to guide them through the process. First, they must have a clear understanding of their current IT operations as well as their evolving needs and goals. Only then can they take the next steps of identifying the best MTDC provider, planning a detailed IT migration or expansion project and, finally, executing against the plan.

This paper examines why growing numbers of enterprises are shifting to off-site MTDC solutions as they struggle with the costs and limitations of hosting IT operations in-house. It also explains the factors that companies should consider, and the steps they should take, when migrating data and operations off-site.

DRIVERS FOR CHANGE: THE LIMITS AND LIABILITIES OF IN-HOUSE IT

No one expects the traditional IT model — in which companies house and manage their IT hardware and software in their own buildings — to disappear anytime soon. Indeed, four-fifths of the IDG Research survey respondents say they still run at least some of their IT operations on premises.

Even so, there have been cracks appearing in the on-premises model for well over a decade, and the move to off-site solutions is accelerating. Although 81 percent of the IDG Research survey respondents say they are using on-premises data center solutions today, for example, just 39 percent say their organizations will be considering on-premises solutions in the coming 12 months.

Multi-tenant data centers (MTDCs) can provide floor space, power, access to communications networks and physical security for everything from a single server to a full data center.

While each organization has its own IT objectives and requirements, a number of common needs, or triggers, have pushed many companies to consider off-site solutions and, increasingly, to embrace them. Pressure to cut capital (CAPEX) and operational (OPEX) expenses is, of course, one of the most common and persistent catalysts driving enterprises to explore new IT solutions. MTDCs have been built specifically to accommodate the needs of the modern IT infrastructure. Because the facilities are equipped with a wide variety of high-bandwidth, competitively priced communications networks, and because they spread capital and operational costs across a large community of customers, MTDCs can typically help companies reduce their IT costs and budgets.

Among the other common triggers behind a move to an MTDC are:

- Space limitations that prevent a company's IT infrastructure from expanding or evolving along with the company's growth and its increasing IT demand. A related issue for some companies is a structural constraint: Some buildings simply weren't engineered to support the weight of compact, high-density servers and other modern IT infrastructure.
- Power and cooling challenges associated with in-house data centers. Unplanned electrical failures are a major motivator for many companies, in part because the data centers fail to meet a full N+1 or 2N redundancy on one or more of their electronic components. In some cases, corporate buildings simply do not have adequate power to meet all their IT demands. In terms of cooling, many in-house data centers lack the floor-to-ceiling heights required to support the demands of high-density servers. Many internal data centers rate poorly on the power usage effectiveness (PUE) scale to measure the energy efficiency of their IT operations.
- The need to upgrade IT infrastructure, applications or architecture, which may open the door to consideration of the MTDC deployment option. In many instances, companies deploy and test new IT equipment and software at an MTDC, while continuing to run their legacy IT in-house. Once the new IT solution is solid, they can shift operations to the MTDC and wind down or eliminate their in-house IT infrastructure.
- An inability to physically secure the IT infrastructure, 24 hours a day, seven days a week. With cyber-based threats forcing companies to beef up their electronic system and data protections, some organizations forget the need to also restrict and monitor the physical access to data centers and servers. Even those that recognize this need may not be able to address it adequately within their own corporate facilities.
- The necessity to establish off-site or redundant operations to meet backup, disaster recovery and business continuity requirements.
- The growth of uncoordinated and incompatible "shadow IT" projects (spending by non-IT business units). This prompts companies to look for a way to consolidate and rationalize IT to improve efficiencies, performance and costs.



- Mergers and acquisitions, which often result in a hodgepodge of data centers, hardware and software within an organization's various units. A company may turn to an MTDC to house the corporate-standard computing solution for the newly acquired units, or decide to shift the full organization's IT operations to one or more MTDC facilities.
- The need to leverage the Internet to expand the company's presence, accelerate growth and streamline costs. MTDCs can also provide a high-performance on-ramp to speed interactions with today's tech-savvy and mobile users.

MTDCs are already helping hundreds of enterprises tackle these and other IT challenges. These facilities have been purpose-built to host and power modern IT equipment and provide direct access to many types of communications networks. Further, they give corporations the ability to locate IT operations — including redundant operations for continuity purposes — in nearby as well as distant geographic markets.

ENTERPRISE AND MTDCS: USAGE SCENARIOS

For enterprises, there is no definitive model for how to best leverage MTDCs as part of their IT operations. Some corporations may move existing IT systems directly to an MTDC, and others may use an MTDC to build and test new hardware and software solutions prior to bringing them online. Still others may use MTDCs as off-site locations to serve in data backup and IT redundancy/business continuity

roles. IDG Research recently surveyed more than 50 IT executives and managers who are using or planning to use MTDCs. As shown in Figure 1, backup and redundancy is a popular usage scenario today.

STEPS INVOLVED IN SUCCESSFUL MTDC MIGRATIONS

Even if companies decide an MTDC makes sense for some or all of their computing and communications needs, IT and business managers often don't know how to begin — much less complete — the process of adding an MTDC to their IT universe. For simple moves, such as migrating one server from an on-premises location to an MTDC, a company may be able to get by with only minimal up-front planning.

But if a company's core business operations, regulatory requirements or customer loyalty depend on brief downtime windows for compute, network and storage systems, even such a seemingly simple move can be fraught with risk.

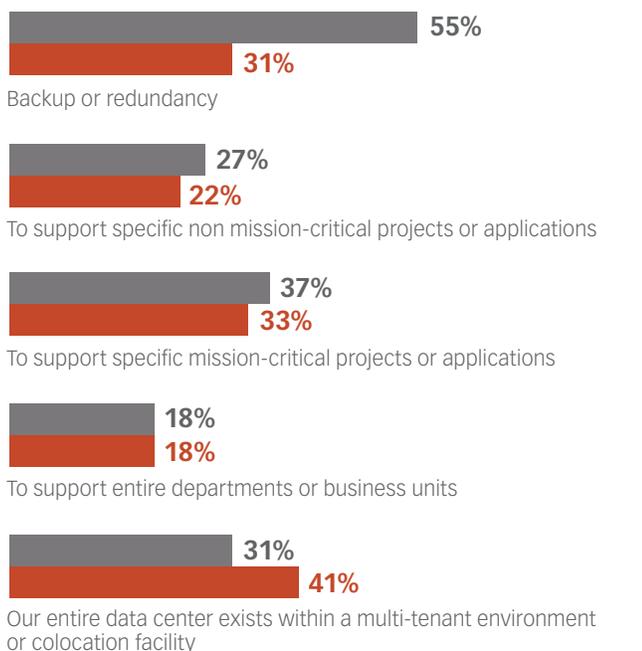
Large enterprises, of course, may have hundreds of applications and databases running on thousands of servers, switches and other equipment. These complex IT fabrics typically have many software and hardware interdependencies that may not be recognized by even the corporation's own IT staff.

Even if an enterprise just wants to move its entire IT infrastructure from an on-premises data center to an MTDC facility, it needs to first understand how to shut down and relaunch systems in an optimal sequence that takes these interdependencies into account. If the enterprise is using an MTDC to function as one element of a broader, virtual data center, the application and system linkages and dependencies can be even more critical — and difficult — to identify and accommodate.

For these reasons, enterprises will often require the expertise of third-party professional services firms skilled in the steps and processes involved with moves or expansions to MTDCs. Although every MTDC migration and deployment scenario is unique, most enterprises need to proceed through a series of critical steps, according to IT migration services company, Transitional Data Services (TDS). Those steps should include:

- **DISCOVERY PHASE.** At this initial stage, organizations need to thoroughly assess their existing IT operations to identify application and hardware interdependencies and requirements, service-level agreement (SLA) demands, power usage, communications requirements and a host of other operational and architectural factors.
- **DATA LOCATION AND SYNCHRONIZATION.** Often, one of the most challenging hurdles is determining where data resides, which applications it supports, how it is synchronized and — when multiple, overlapping data sets exist — which data should serve as the system of record. Successful MTDC deployments can help companies better manage and secure their data. Moreover, leveraging geographically dispersed MTDCs can allow data and content placement near the network "edge," enabling nearby customers to access it more rapidly. That said, ill-planned deployments can just add complexity to the data management landscape.

■ FIGURE 1.
HOW ORGANIZATIONS ARE LEVERAGING MTDCS



SOURCE: IDG Research Services 2015

■ **INTRACOMPANY PLANNING AND NEGOTIATION.** When companies plan to physically move in-house IT infrastructure to an MTDC, every business unit will typically be impacted at some point in the process. Planners must balance conflicting needs while weighing a number of variables. These variables include the migration budget, the potential business impact, technical requirements (including acceptable downtime during the move), scheduling and available IT resources.

■ **MTDC SITE PREPARATION.** Companies must ensure that any target MTDC building and location matches their needs as part of the MTDC selection process. Prior to an actual deployment, the companies must then work with the MTDC provider or a third-party services firm to ensure that all of the space, power, cooling, communications and security design elements required are in place to facilitate the rapid and smooth deployment of their IT solutions.

■ **ROADMAP/TASK LIST.** As part of the preparation for bringing an MTDC deployment online, companies need to devise a move-day master plan that precisely details minute-by-minute processes and personnel assignments. This roadmap also should — as best as possible — anticipate any potential glitches and establish fallback contingency plans should any of those glitches occur.

Although an organization may have considerable in-house IT expertise, even the largest enterprise may not have the skill sets needed to plan and execute an MTDC migration or expansion initiative. The MTDC provider itself can usually offer some level of support, especially as it relates to architecting and prepping its facility to accommodate a given customer's needs. Often, however, especially for sizable MTDC projects, companies will need to turn to migration and planning experts. Companies should check with potential MTDC providers to see if they partner with managed services providers and other types of professional services firms so that they can, together, deliver seamless and holistic MTDC solutions.

FINDING THE RIGHT MTDC SOLUTION: CONSIDERATIONS FOR EVALUATION

Well-designed MTDC facilities give enterprises a way to address all of the IT needs and triggers described above. As organizations evaluate their MTDC options, they should begin by considering several basic factors:

- Has the MTDC facility been designed and built (or retrofitted) specifically to accommodate the space, structural, power, cooling and security requirements of modern, high-availability, high-density IT infrastructure?
- Does the MTDC operator run facilities near the organization's headquarters for easy access, and also in different metropolitan areas that the organization could leverage for disaster recovery, business continuity and customer proximity purposes?
- Does the MTDC operator provide personnel who secure and monitor the facilities 24x7, and infrastructure to meet corporate and industry requirements?
- Does the provider have the flexibility to meet unique business requirements and scale over the long term?
- Does the provider have a reputation for hands-on and responsive customer service?
- Does the provider have a documented history of reliable operations and offer strong assurances or guarantees of meeting required service levels?

Organizations that focus only on the physical characteristics, capabilities and locations of MTDCs can miss one of the most valuable benefits these facilities offer. Many MTDCs host not just the IT infrastructure of end-user companies, but also that of cloud services providers, network carriers and other services firms. Organizations that place some or all of their IT operations in the same buildings as these service providers can directly connect to a variety of cloud and networking solutions that would otherwise require access via slower Internet links. These direct connections can significantly increase communications performance. Also, in many cases, the cloud and service providers offer steep discounts to co-residents within the MTDC.

■ FIGURE 2. ORGANIZATIONAL PRIORITIES THAT LEAD TO MTDC SOLUTIONS

	#1 Ranked Priority	#2 Ranked Priority	#3 Ranked Priority
Secure environment	33%	14%	14%
Improved performance/uptime	20%	14%	16%
Optimization of CAPEX/OPEX by sharing hardware, security, and facility maintenance costs	14%	14%	10%
Adherence to physical compliance requirements	10%	10%	10%
Improved agility to meet changing business needs	10%	14%	6%

SOURCE: IDG Research Services 2015

Beyond these high-level MTDC considerations, each company will have specific needs and requirements that the ideal MTDC must address. Some companies are also likely to have some concerns about the MTDC model.

Among those survey respondents not currently using an MTDC, for example, two commonly cited concerns are the physical security and cost of this off-site IT option. Based on the responses of IT managers using or planning to use an MTDC, however, the security and cost worries may be misplaced. As shown in Figure 2, the secure environment MTDCs provide, along with their ability to optimize CAPEX and OPEX costs, are two of the top three reasons why many organizations have gone the MTDC route. An MTDC's ability to deliver improved performance and uptime rounds out the top reasons for leveraging an MTDC.

Not every MTDC provider offers the same scope or quality of services, so organizations exploring this off-site option must also do their due diligence to find the best MTDC facility for their specific needs. Among the IT managers surveyed, the top three vendor selection criteria — as shown in Figure 3 — are the responsiveness of the MTDC provider's customer support, the uptime/SLA guarantees they offer and the physical security they provide.

CONCLUSION

MTDC buildings can provide floor space, power, access to communications networks and physical security for housing everything from a hospital's full data center to a single server in a doctor's office. By comparison, floor space may be at a premium within healthcare providers' own facilities, and providing enough power and cooling for modern IT equipment can prove challenging. In addition, it may be difficult or impossible to limit the physical access to servers and other hardware systems.

Given the sensitive nature of healthcare data and the criticality of some healthcare systems, organizations in this sector must be especially careful when evaluating and executing the incorporation of an MTDC in their IT operations. In many cases, such an initiative will require the involvement of professional service providers that understand both the process of planning an MTDC deployment, as well as the specific operational and regulatory demands of the healthcare organization itself.

Among the critical stages of any MTDC project are the initial mapping of existing IT operations and system interdependencies, the development of rigorous plans to limit system downtime during any MTDC transition, and the architecting of an MTDC-based infrastructure deployment to deliver optimal — as well as cost-effective — performance and security. A move to an MTDC can also serve as a vehicle to improve (or establish) the required interoperability among the many different systems in a typical healthcare data center.

■ FIGURE 3.
**EVALUATING MTDC PROVIDERS —
KEY DIFFERENTIATORS**

	#1 Ranked Priority	#2 Ranked Priority	#3 Ranked Priority
Responsiveness of customer support (e.g. data center assessment, relocation and implementation)	22%	16%	12%
Uptime/SLAs (99.9999%)	22%	10%	10%
Ability to meet physical security requirements	12%	16%	14%
Connection to leading cloud providers and robust interconnection services	6%	12%	22%
Location of data center facility / facilities	16%	14%	10%
Flexibility/spectrum of product solutions	16%	14%	4%

SOURCE: IDG Research Services 2015

Also critical is the selection of a proven MTDC facility and operator. Part of this evaluation process involves assessing core building and infrastructure parameters. These parameters can include everything from the MTDC's geographic location to its ability to meet current and future floor-space, power and cooling requirements.

Equally important for many healthcare organizations is the ecosystem of cloud services providers and network carriers that also house their operations in the same MTDC facility. Often, an MTDC's customers can directly link into the services of their MTDC service-provider neighbors, increasing performance levels and also reducing networking costs.

CORESITE — A LEADING U.S. MTDC PROVIDER

Enterprises considering an MTDC solution need to find a provider that meets their specific requirements, and one that is also able to help guide them through the process of the MTDC transition. CoreSite has established itself as one of the nation's top MTDC providers due to its ability to meet these demands.

CoreSite operates 17 data centers spread across eight major metropolitan areas in the U.S. It offers a variety of colocation options that range from cabinets for individual servers to private suites and build-to-suit for full data center deployments. CoreSite counts more than 800 individual companies, cloud providers, network carriers and supporting service providers among its customers. Collectively, the CoreSite MTDCs provide the facilities and the ecosystem that companies require to scale, connect and increase the performance of their core operations and services.

In addition to a 100 percent uptime guarantee, CoreSite has a historical portfolio performance of six 9s (99.9999%) uptime, an in-house security team and a customer satisfaction score more than twice the industry average. Furthermore, CoreSite can help customers with the physical installation and movement of equipment within its facilities. The company partners with TDS and other professional services firms to address the needs of customers who require assistance in the assessment, planning, architecting and deployment of MTDC-based solutions.

For more information about CoreSite's facilities and services, see www.coresite.com.



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