

# GET THE MOST FROM YOUR HOST

BEST PRACTICES FOR MULTI TENANT  
DATA CENTER MIGRATION



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The purpose of this eBook is to help you gain an understanding of the physical infrastructure, design requirements and strategic considerations that must precede a successful multi tenant data center deployment. For all the advantages possible from a multi tenant data center migration, it's equally possible to realize negative results if these practices are not observed.

As a dedicated partner and trusted expert for networks all over the world, CommScope knows how to deploy multi tenant data center infrastructure right—and, unfortunately, we've seen more than once what can happen when it happens wrong. That's why we're putting this information in your hands right now—because your next multi tenant data center move is an important one.



For this reason, CommScope has teamed with data center industry expert Donough Roche from Datacentrs, Inc. and other industry leaders in our MTDC Advisory Board to offer this eBook, *Get the Most from Your Host*. This eBook addresses best practices in the eight stages of planning, designing, migration and Day Two operations of an enterprise's data center assets in an MTDC environment.

Explore the chapters below to learn more about best practices for each stage of developing a multi tenant data center.

1. Defining IT requirements
2. Understanding market availability
3. Internal Migration planning
4. Defining the scope and issuing the RFP



**BEST PRACTICE**

1

Understand and  
communicate IT requirements

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# 1 Understand and communicate IT requirements

## YOUR FIRST STAKEHOLDER DISCUSSION IS THE MOST CRITICAL

For a multi tenant data center (MTDC) migration to succeed, the first thing deployed isn't a server rack—it's a discussion about the enterprise's IT requirements. Depending on the kind of enterprise, this discussion may include any number of key stakeholders from within their own organization, including but not limited to the CIO, CTO, Data Privacy/Security office, data center manager, data center planner, data center engineers, facilities manager, IT manager, storage engineers or other roles connected to the daily operation and management of the enterprise's IT structure.

In addition to these internal stakeholders, successful execution of an MTDC migration must also include consultation with seasoned veterans in the MTDC space—often brought in from outside the enterprise since internal staff often lack up-to-date expertise in the opportunities and challenges that come with MTDC deployment. Together, they can complete a thorough and dependable profile of their IT requirements.

# 1 Understand and communicate IT requirements

## REQUIREMENTS TO CONSIDER

Here are some of the likely strategic and tactical considerations that should inform the enterprise's formulation of its IT requirements.

- **Current and future state of the data center.** This should include the current state of the data center—its load, scale, capabilities and cost structure—as well as the same values projected outward along a three- to five-year plan timeline. The future state should be estimated according to known and anticipated factors like organic growth in the business, the impacts of any M&A activity, consolidation efforts and so forth.
- **Network design requirements.** This includes how to physically integrate the enterprise's data center with the MTDC. Connectivity, bandwidth and latency requirements will often lead to a discussion of geographical location, which we explore in detail below.
- **Map to the MTDC's capabilities.** Based on the current and future state of the data center and its network design requirements, a request for information (RFI) should be issued to the MTDC under consideration and any capability or resource gaps between the two documents should be identified and addressed.

## The first mistake you can make

One of the earliest stumbling blocks—and one of the most easily avoided—is the failure to include one or more stakeholders in initial IT requirements decisions, forcing late-stage changes that add cost and delay to the migration.

Keep in mind that an MTDC migration is the beginning of a long relationship. It's a process that most enterprises will do only once, and few will do more than a couple of times.

Chances are your enterprise has never done it before and therefore requires specialized insight from a consultant who understands and works with the challenges of MTDC migration every day.



## REQUIREMENTS TO CONSIDER continued

- **Geographical location.** While physical distance continues to shrink as a limiting factor for offsite data center processing, it does still matter on several technical levels:
  - **Latency.** This is the “lag” time in response between remote servers. Lower latency means more responsive network connectivity, and many next-generation applications require low latency in order to run at optimal levels. Among other factors, physical distance is an important part of measured latency between the MTDC and outside connections and provides diversity of desired connections.
  - **Connectivity.** Most MTDCs provide connectivity to multiple carriers, but it’s important to know if the MTDC under consideration meets your particular carrier’s connectivity requirements, offers connectivity to them on premises.
  - **Access.** How your assets are stored and accessed impacts both management and security. Many enterprises will require a caged environment for their assets that prevents unauthorized access. At the same time, IT management staff must be able to access the racks when needed, which calls into play how far away the MTDC is from the enterprise’s location, as well as the hours of access offered by the MTDC. Some offer limited regular hours for access, while others may provide 24/7 availability but charge a premium. The right balance will be determined by these IT requirements.
  - **Data sovereignty.** This is a regulatory question that relates to how different countries govern the handling of certain kinds of digital data. For example, some countries require that any data including personal information about that country’s citizens must be stored on physical infrastructure located within that country.
- **Political stability.** A related issue is the political and regulatory variables that may exist in a particular jurisdiction. While this includes the stability of the country itself, it also includes less dramatic but equally important legal issues, such as energy or currency stability, among others.
- **Geophysical risk profile.** Determination must be made about the suitability (or potential unsuitability) of specific locations with regard to potential geophysical activity like earthquakes, volcanoes, flooding, extreme cold, extreme heat, tsunamis, etc.



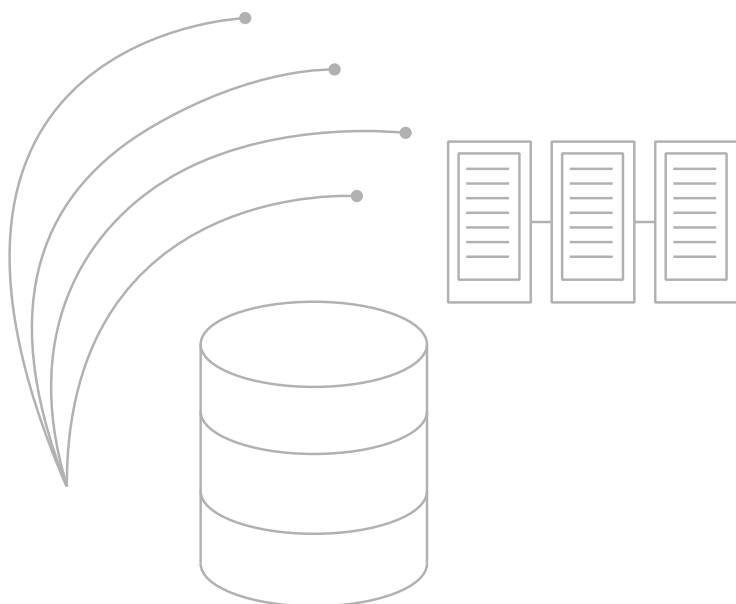
# 1 Understand and communicate IT requirements

## IT requirements are the first, crucial step

With the inclusion of all IT requirements across all key stakeholders, we can now move to the next step in the process.

It's important to remember that the first asset put into play during a successful MTDC migration is the insight and expertise of the people who will make it happen.

In the next chapter, we will take a closer look at the planning required to ensure the enterprise's expectations for speed, capacity and economy are met—in good times and bad.



## Dig into your IT requirements now—or you may end up digging into your real estate later

Knowing your IT requirements is important even if an MTDC migration isn't in your immediate future.

One enterprise that had moved into hosted space realized too late that they had seriously misjudged how much space they needed, and had no contiguous space to grow into. Additional space was available only in an adjacent hall, and they were strapped for fiber connectivity—and had no contiguous space to add it.

Worse, while the network core was in one building and their expansion in another, their existing physical connections were via buried conduit that had to be excavated and extended to reach the newly expanded area.

A better grasp of their initial IT requirements would have led them to pull a larger, higher-capacity cable when it was installed, which would have cost very little extra. As it was, however, the only recourse was to spend five weeks ripping up the parking lot to lay the new fiber.

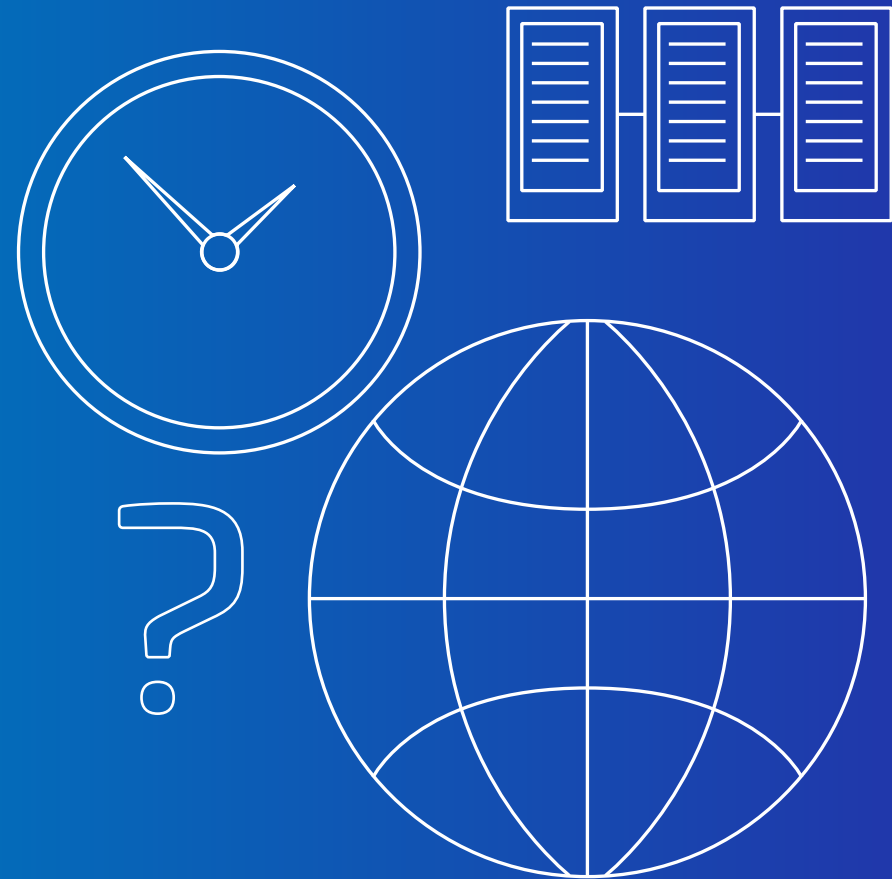


BEST PRACTICE

2

Knowing what to ask

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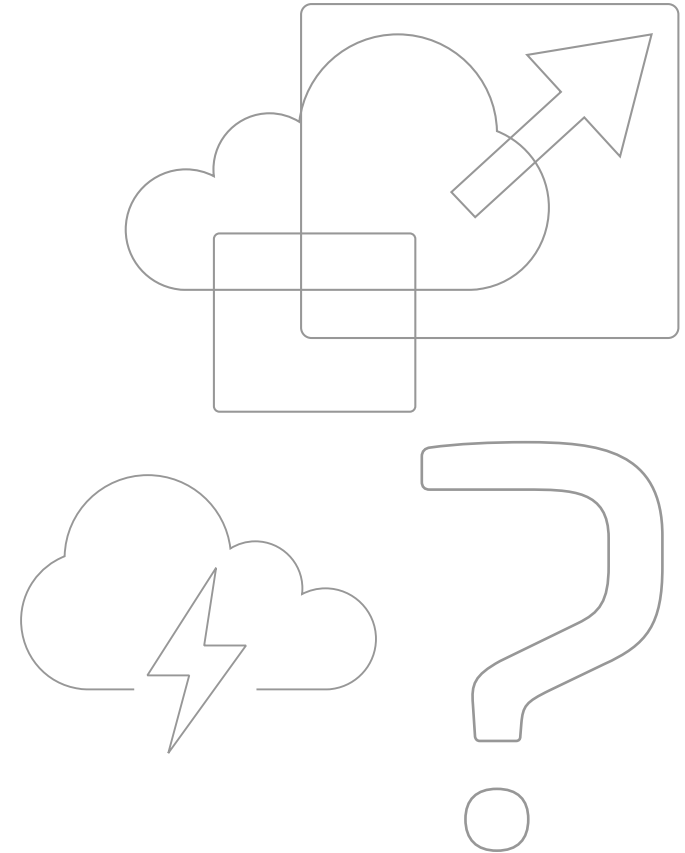
## YOU KNOW WHAT YOU NEED— NOW SEE HOW THE MTDC CAN PROVIDE IT

Beyond the strategic considerations of an enterprise's IT requirements, there are many business-critical tactical elements that come into play. Knowing your data center needs is the first step, but understanding how the multi tenant data center (MTDC) will meet those needs is just as important—and much more granular in its details. This discovery phase must involve the internal stakeholders as well as representatives from the MTDC under consideration, because it involves subjects that can have less-obvious but far-reaching impacts on every aspect of data center operations and the overall health of the enterprise.

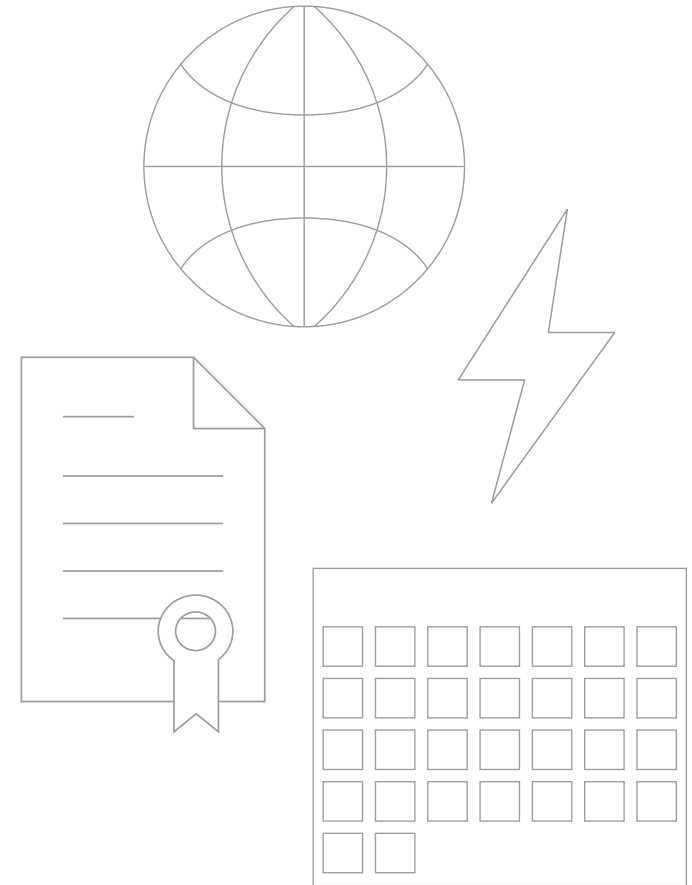
### THE QUESTIONS EVERY ENTERPRISE NEEDS TO ASK

In the planning phase, the enterprise's stakeholders need to know these particulars before moving ahead.

- 1. What are the size, capacity, and expansion opportunities?** One of the main reasons enterprises migrate to MTDC environments is a lack of available onsite space and resources. Therefore, it's important to know about available square footage, power capacities, and the physical layout of the MTDC space the assets are to occupy. Is there room to expand? Does the MTDC allow for reconfiguration of halls or other parts of the structure to accommodate such expansion, if needed?
- 2. What's the disaster plan?** No place is immune to disasters of one kind or another. The enterprise must learn about the MTDC's disaster recovery plan and decide if it is aligned with the enterprise's needs. What will the MTDC do if grid power fails or carrier connectivity is interrupted? How do the MTDC's disaster plans mesh with the enterprise's disaster recovery and business continuity planning?



3. **Does the MTDC have, or plan to have, multiple locations?** Larger enterprises that may be undergoing simultaneous migration in multiple markets, states or countries would be well advised to look at MTDC providers that can offer continuity of service levels across multiple locations. This is also a consideration for enterprises anticipating entry into new markets.
4. **What about the ownership, capitalization and stability?** MTDCs are thriving, dynamic environments. Global MTDC capacity is growing fast, but this also means M&A activity is typically high. The enterprise should gauge the prospective MTDC's likelihood of being part of an acquisition—and how that might affect existing contracts. This is of particular interest when considering a smaller MTDC.
5. **How do operational cost factors measure up?** A large part of an enterprise's MTDC management budget is devoted to electrical power, which can be a highly variably priced commodity. There is also the question of connectivity costs to carriers, cloud providers, content delivery networks and so forth.
6. **How long is the lease?** Not long ago, 15-year lease terms were the norm in the MTDC space, which can be a daunting prospect for an enterprise undergoing its first migration. Fortunately, five-year (or shorter) leases are common now. When considering lease length, stakeholders should figure in their equipment refresh cycles and how they line up with the lease terms. It may provide a valuable option to move to another MTDC if the timing is right.
7. **Is the MTDC as reliable as your own data center should be?** The MTDC should be able to promise reliability and availability levels consistent with the enterprise's IT requirements—and provide documentation that proves it.



**8. What are the staffing levels?** The number and roles of those working onsite at an MTDC can vary widely. Depending on the IT requirements, an enterprise must find out if the MTDC under consideration offers sufficient staffing levels and appropriate functions, such as:

- **Operations staff:** Are they on duty 24/7?
- **Security:** Are there adequate staff, security measures and best practices in place to prevent unauthorized access of the enterprise's data center assets?
- **Remote hands:** Offsite help is to be expected, but what SLAs exist to guarantee remote hands' performance? Are they available for moves, adds and changes (MACs), as well as Day Two work, if needed?

## Q&A MEANS BETTER LONG-TERM QA

When an enterprise decides to migrate its data center assets to an MTDC, it's not like any other vendor relationship. The enterprise is trusting its most valuable infrastructure to a new partner—one that works in an industry with which most enterprises are not very familiar.

Getting the right MTDC—in the right place, with the right SLA and at the right cost—can be a complex process. But the fact is that nothing less rigorous will do. MTDCs comprise a dynamic, changing market that is chasing new technologies and new efficiencies, making yesterday's assumptions unreliable.

In the next chapter, we'll see how the relationship moves ahead as the discovery phase gives way to the migration planning itself.

## ASKING QUESTIONS NOW HELPS MAKE SURE YOU'RE NOT QUESTIONING YOUR DECISIONS LATER

Choosing an MTDC that can help manage power and rack space is critical.

Some enterprises continue to deploy standard 208/120V power distribution in the MTDC—which doesn't deliver enough power per receptacle to support higher power density environments like blade servers, cloud computing and virtualization. MTDCs that offer leading-edge solutions, like the option for 400/230V power distribution, can help their customers meet the challenges around higher power densities that exceed 10 kilowatts per rack.

Investing in a relationship that offers more flexibility in power distribution—even if that extra power isn't needed right away—can head off potentially expensive corrective measures.

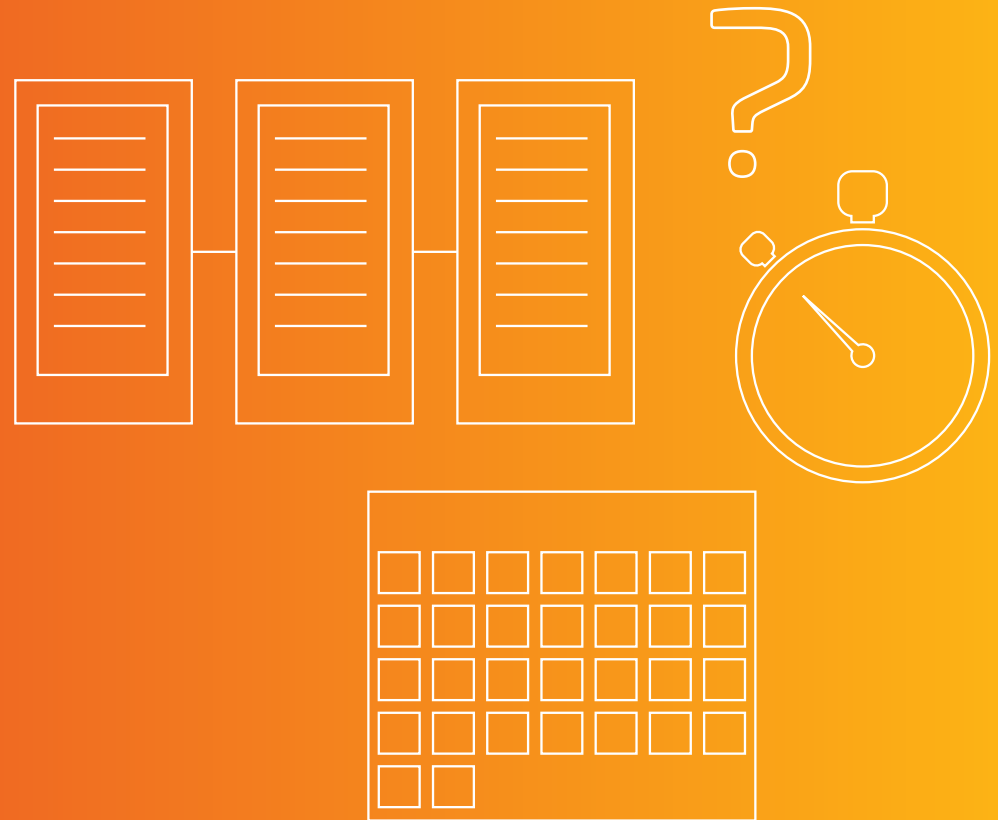


## BEST PRACTICE

## 3

Planning for a smooth transition

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## KNOW WHERE YOU'RE GOING BEFORE YOU START THE JOURNEY

Once key organizations and stakeholders have met to establish IT requirements—and basic research about the marketplace has been completed—it's time to move to the next phase of the process: migration planning. To create a smooth transition to a multi tenant data center (MTDC), investigating how the migration might take place is a critical step before sending out the actual request for proposal (RFP). It's important to know the scope of work and target completion dates before the project is started so as to anticipate any possible challenges before they occur.



## AN IN-DEPTH LOOK AT MAKING THE MOVE

To make a successful move to a multi tenant data center, it's important for every detail to be considered and understood, and any gaps in coverage identified. If your company doesn't have the proper resources to complete this step, it is strongly recommended to utilize a well established external consultant that fully understands and has gone through this process.

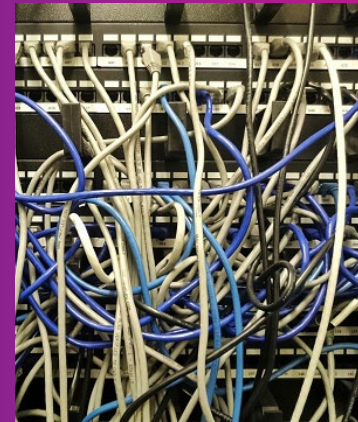
1. When must this migration be completed? Scheduling data center migrations requires coordination with ALL applications and lines of business stakeholders. Do you have a hard date as to when the migration must begin? Is there some critical event driving this date, such as the need to get out of a facility? Is there a contingency plan or rollback if the date is unachievable? Are there any upcoming IT freezes?
2. How long do you have to complete the migration? Some migrations can happen during a single planned event while others must be staggered over weeks. Are there firm dates for when the migration must be complete? Are existing service level agreements (SLAs) driving this?
3. What should move and what should be replaced? Just like moving your house, an inventory must be taken of what will move and what should be retired or scrapped. It may make more sense to replace equipment that is nearing the end of its life rather than move it to the multi tenant data center and then, have to replace it a few months later. While there are no hard-and-fast rules, hardware that is no longer under a service contract may be an ideal candidate for replacement.

## Tales from the Trenches

In the movies, if a hero cuts the wrong wire, the bomb explodes and the bad guys win. It's no different in the data center. After all the migrations in which CommScope has been involved, we understand that the lack of knowing which cable goes where can be the biggest challenge. A well-documented structured cable solution can be invaluable in these situations. Trace and tag where a network is down hard is the worst-case scenario. The good news is it is completely preventable and the technologies are as abundant as ever.

It's 4 p.m. The conference bridge has 13 people on it. The call started at 10a.m. this morning. The network operations center, network engineering, sales engineering, provisioning and the end user—everyone is angry. Everyone is confused. And everyone is asking questions.

The poor IT guy on site tags and traces yet another cable. Why? Because there wasn't a structured cabling plan in place. There was no documentation. And the cage looks like the back of a dorm room Xbox hookup. You can spend a little time on the front planning and documenting a cable plant or you can spend as much time and money on the outages as it costs on the back end.



## AN IN-DEPTH LOOK AT MAKING THE MOVE continued

4. What steps will be taken to ensure zero downtime during the migration? Often times network and system designs have built-in high-availability and redundant connections to stay online with enough bandwidth to “bridge the gap.” Sometimes, failover is inevitable. Will there be parallel operations in place to ensure zero downtime with failover capability during the migration? Are business continuity plans in place for extended downtime or slower-than-expected throughput during the migration? Is there a rollback plan that includes coordination of hardware and software systems?
5. Is there a network set-up and testing plan to ensure that the migration will be successful? Has a test environment been set up—and is there a contingency and remediation plan in place in case difficulties are encountered? Specific issues such as connector contamination can sometimes derail an otherwise flawlessly executed migration. Do you have access to ALL test reports from the installation on hand to reference if troubleshooting is required?
6. Where will the new facility be in relation to the current data center? Depending on where the multi tenant data center will be located, making last-minute arrangements to visit the facility can be costly. Travel and shipping/logistics could involve anything from walking across the road to requiring air travel and freight. If the new facility is located far from the current data center, have the logistics of sending staff on-site been accounted for? Could the provider deliver on-site management if needed?
7. Who will perform the actual migration? There are companies dedicated to the highly-specialized tasks of moving servers and storage. For complex and mission-critical moves, hiring a professional company that is familiar with the multi tenant data center is highly recommended.

### Creating a blueprint for success

Giving serious thought to how the migration should be implemented—along with contingency plans on what to do if something goes awry—can be the difference between a successful move and a complete disaster.

In the next chapter, we will explore some of the details enterprises should consider before signing with a new multi tenant data center.



**BEST PRACTICE****4**

Defining the scope and  
issuing a request for proposal

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## DIVE INTO THE NITTY-GRITTY IN ORDER TO QUALIFY POTENTIAL MULTI TENANT DATA CENTERS

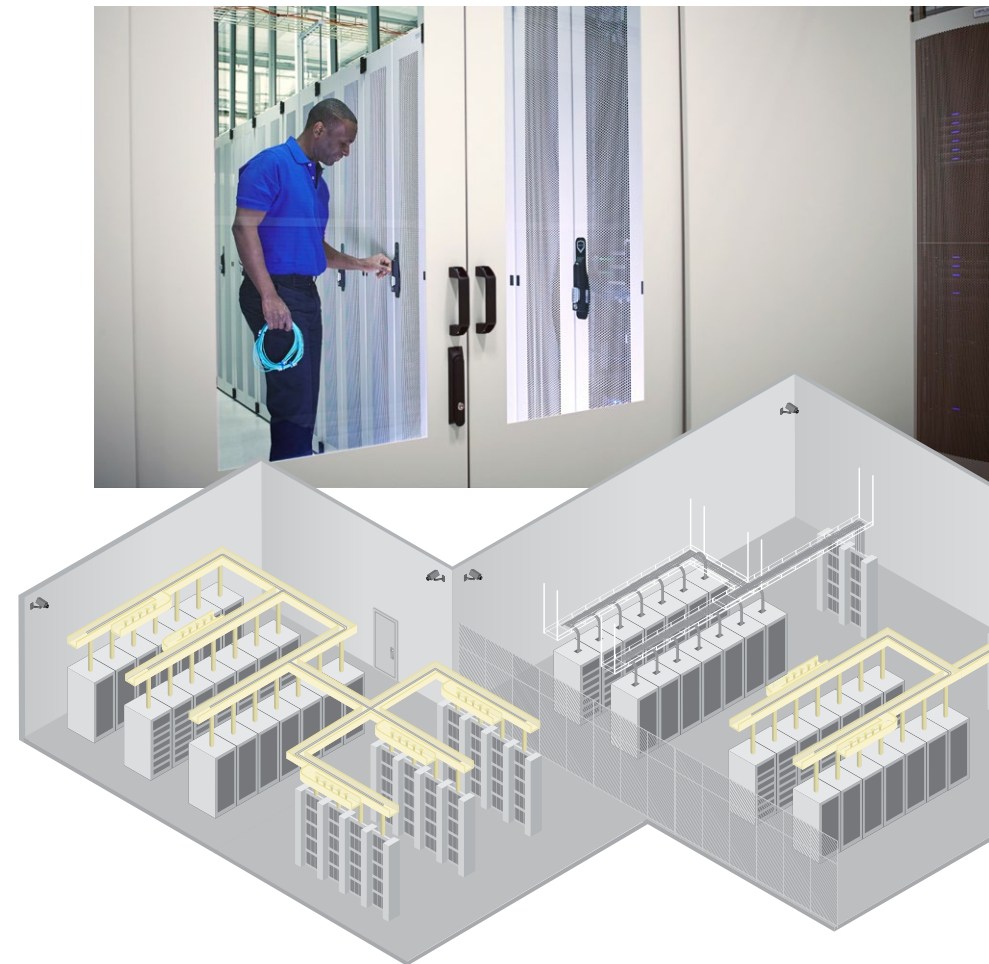
Once the scope and objectives of the migration planning have been defined, the next step is developing a request for proposal (RFP) to be submitted to the potential multi tenant data centers (MTDCs). While the financial terms of the contract are obviously very important, there are many other essential factors that must be taken into account. Based on the complexity and critical nature the following is a list of objectives that should be considered when developing an RFP to ensure that the needs of the new data center can be met today and in the future.



## A THOROUGH REQUEST FOR PROPOSAL (RFP) CAN HELP YOU FIND THE MULTI TENANT DATA CENTER THAT BEST FITS WITH YOUR ENTERPRISE

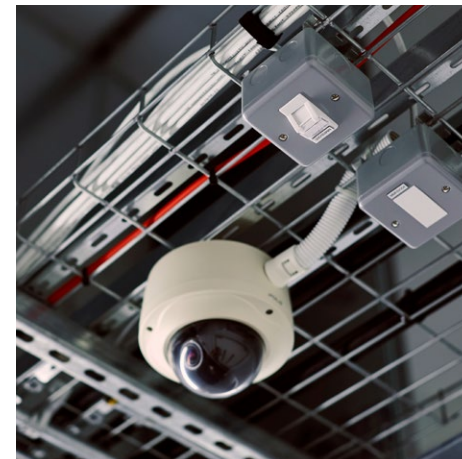
The old saying that “there’s no such thing as a stupid question” applies here. Be sure to include even the most basic or obvious questions to assure that any potential multi tenant data center can accommodate your needs such as:

1. **Capacity.** Can your future multi tenant data center comfortably provide adequate power and space for your existing data center? Based on your desired rack density, and your kW/ rack requirements, can the MTDC support it? Do they have a minimum load per rack? How about a maximum load, and does this fit with your requirements?
2. **Scalability.** While it's important to know if your future multi tenant data center can handle your current size and capacity, it's also essential to know if it can provide additional space and power if needed. How easy is it to add capacity as your needs grow? What is the increment for growth or moving if applications are offloaded to the cloud? Can you be guaranteed contiguous space? If not, where will the new cabinets be located?
3. **Network connectivity.** Does the multi tenant data center have enough network capacity, and requested cloud and carrier connections?



## A THOROUGH REQUEST FOR PROPOSAL (RFP) CAN HELP YOU FIND THE MULTI TENANT DATA CENTER THAT BEST FITS WITH YOUR ENTERPRISE continued

4. **Services.** What types of services are available? Do you have access to remote hands? If not, is it possible to bring in your own Remote Hands service provider? Are there multiple providers allowed to do business in the building or are you restricted to the MTDC provider's services? Can you get test and validation services to ensure applications will run properly before migration? It is also important to identify which services are available to ensure future moves, adds and changes (MAC) can be properly implemented. What can be done by internal IT staff? What must be done by contractors or your company's IT personnel?
5. **Physical mechanical, electrical and plumbing (MEP) designs and reliability.** How are the power feeds and back-up generators configured? Does the facility have a redundancy scheme, such as (N, N+1, 2N, 2[N+1]), which are in line with your availability/uptime requirements? What is their typical planned and unplanned downtime? Are there restrictions or conditions on how you run your equipment? Is the facility truly dual-corded to the rack?
6. **Access to space.** Can you visit the facility 24/7 if needed? If not, how quickly can a site visit be scheduled?



## A THOROUGH REQUEST FOR PROPOSAL (RFP) CAN HELP YOU FIND THE MULTI TENANT DATA CENTER THAT BEST FITS WITH YOUR ENTERPRISE continued

7. **Response time.** What is the maximum response time in your service level agreement (SLA)? Does it meet your minimum requirements? Are the response times reasonable and acceptable?
8. **Operations capabilities.** Do the available multi tenant data center services match your needs?
9. **Builds.** Does the multi tenant data center offer services for moves, adds and changes (MAC) to your network? If not, consider how to provide them. Should contractors be used? Will that cause problems or delays? Is there an additional management fee charged if you bring in your own MAC team?
10. **Meet-me rooms.** How is access to the meet-me room handled? What is the setup on primary versus secondary? Is there a third? Is the meet-me room “managed” or passive?
11. **Fiber connectivity.** How are these configured? Are redundant facilities and connections available in the event of a fiber cable cut?



## A THOROUGH REQUEST FOR PROPOSAL (RFP) CAN HELP YOU FIND THE MULTI TENANT DATA CENTER THAT BEST FITS WITH YOUR ENTERPRISE continued

12. **Compliance certifications.** What certifications have been obtained by the multi tenant data center? Do they meet your corporate requirements?
13. **Staffing qualifications.** What is the certification process and training for IT and facilities staff? Is this adequate?
14. **Security procedures and staffing.** What are the access procedures and processes? What certification process and training are required for the security staff?
15. **Connectivity.** There are a number of connectivity considerations that should be examined. This range of external and internal communications include:
  - **Carriers** – Which carriers are co-located in the multi tenant data center?
  - **Cloud** – Which cloud providers are co-located in the multi tenant data center?
  - **WiFi** – Is this available from the cage?
  - **Cellular** – Is this available from the cage? Does the multi tenant data center have an in-building wireless (IBW) system in place to ensure mobile/cellular connectivity to all providers?
  - **Meet-me-room** – How is connectivity provided? Do they offer path diversity?
  - **Diversity** – Are diverse paths available throughout the facility from each carrier?
  - **Exchange availability** – Can connectivity be made available to a co-located global exchange if required?



## A THOROUGH REQUEST FOR PROPOSAL (RFP) CAN HELP YOU FIND THE MULTI TENANT DATA CENTER THAT BEST FITS WITH YOUR ENTERPRISE continued

- **Finance/ads/peering** – How are connections made?
- **Pathways and access spaces** – Are these pathways secure or open? Are there adequate pathways in place to support cabling infrastructure? Does the facility have available conduits for cage-to-cage connectivity if required? Are dedicated pathways available for your network or are they shared amongst others?

**16. Electrical distribution method and voltage.** Are all voltage options available (e.g. 480/208/120V in North America and/or 400/230V outside of North America)? How is power distributed to the cage?

**17. Access to cage.** What are the current rules/guidelines for who has access to the cage? Do you agree with them? Do third-party contractors need to be on an approved list before being granted access? Are there any labor/union considerations?

**18. Metrics/reporting/remote views.** How are the activity, performance metrics and service level agreements (SLAs) reported? Can such reports be produced on demand?

**19. Service charges.** Are there additional charges for project management/ supervision/ access to cage when staff or contractors are on site? What activities trigger additional charges?

### Spending more time prior to making a move can save valuable time down the road

The more questions asked before making a move can help substantially in a data center's long-term success.

When one enterprise needed additional space for its data center, it moved its expansion into an adjacent building and connected the two cages using fiber cable. Unfortunately, the enterprise didn't consider what it would do if it needed to expand later on. By not planning for additional expansion, it wasn't long before the enterprise was out of capacity and needed more fiber connectivity.

To fix the issue, the company needed to tear up the parking lot between the two buildings and bury a new conduit system at a substantial cost, which also included a five-week delay for construction. Had the enterprise simply asked itself "what if" and had pulled a larger cable during the construction, it would have had sufficient fiber connectivity and a trouble-free data center expansion.



## A THOROUGH REQUEST FOR PROPOSAL (RFP) CAN HELP YOU FIND THE MULTI TENANT DATA CENTER THAT BEST FITS WITH YOUR ENTERPRISE continued

- 20. Sustainability.** Are the multi tenant data center's sustainability objectives, commitments and metrics in line with your company's?
- 21. Efficiency.** What metrics are used for power usage effectiveness (PUE), water usage efficiency (WUE) and other formal programs? How are these reported? What mechanisms are in place if these objectives are not met? Does the MTDC offer a PUE cap that limits your energy bill liability in the event the MTDC operates their facility inefficiently?
- 22: Service level agreements (SLAs)** What Service Level Agreements do you expect? Know what your equipment needs to operate and ensure that the SLAs being offered match your requirements, especially with respect to HVAC temperature/humidity fluctuation durations. Ensure that SLAs still apply during facility maintenance activities. Understand if your dual-corded equipment will be required to operate on a single cord during electrical maintenance. How many times per year? Is this acceptable to your operations?
- 23: Energy Costs:** how is energy provided? Is it billed separately metered or is usage included in the rent amount? Typically retail colocation providers (smaller footprints) will charge an all-in price for rent that includes energy usage and any efficiency calculations. Larger wholesale MTDC are more likely to support the metered approach so that your energy bill is separate and based on actual usage plus measured PUE.



### GET READY TO TAKE ACTION

Once the request for proposals (RFP) is complete, it's time to move to the next stages of the process, which we'll cover in the next chapters.



For more information  
on enhancing your data  
center, reach out to one  
of our experts now.



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