opinion piece

Data Centre Relocation
Not just two guys and a truck
The Dimension Data Data Centre Solution business in North America has had the opportunity of scoping and executing more than 130 data centre relocations. During this time, Dimension Data has participated in every facet of the relocation lifecycle, including application and business process discovery, application bundling, scheduling, logistical planning, physical move execution, and vendor recertification. Regardless of where an organisation is within this lifecycle, hidden and often unforeseen gremlins lay waiting for the opportunity to sabotage your move. Ok, well maybe it’s not that dramatic, but the result of these gremlins may be equally as fatal to the success of your move. Understanding the risks of any data centre relocation event, anticipating them, and ultimately planning for contingencies are the best complements to even the most well-planned relocation event.

Planning relocation: Everyone is a stakeholder

More often than not, organisations are reluctant when it comes to investing in a proper planning regimen before physically executing a move. Across the last 100+ relocations Dimension Data has managed, no less than 60-70 percent of the total relocation cost was attributed to planning. Physical logistics involves both art and science; planning is all science. You must know the implication of removing any cable, network device, server, storage volume, database, application, service, or person within your core business during your move.

Planning a data centre move often begins within the IT or facilities departments. In recent years, IT growth and the significant increase in power and heat compaction have stressed data centres to the point of exhaustion when it comes to power and cooling. Many data centres have yet to reach physical capacity before the supporting environmental systems reach maximum capacity. This reality is usually the basis for a facilities-driven need to relocate and often to the surprise of the IT department. Because of the delicate nature of the service provider relationship that IT has with both the facilities department and the business, a successful relocation project must have stakeholder representation from each of these three areas within the organisation.

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Logic, then physics

Relocations can be done in a number of ways and often employ a combination of approaches.
• The simplest, the “lift and shift,” involves taking a verified successful backup of a system, powering it down, moving it, and powering it back up.

• Another more complex method is the “swing move.” This method entails setting up temporary systems at the target site and replicating data to those systems in order to shift an application or service to the target site quickly – and then powering down and relocating the equipment from the source site. The temporary equipment is retired once the service or application is again running on its original equipment. This method is commonly used when the time it takes to physically relocate a system exceeds the organisation’s tolerance for downtime of the application or service.

• Another method that is gaining widespread popularity is the “logical move,” which does not involve physically relocating any assets. Logical moves are used for existing virtual machines or as an opportunity to migrate physical systems to virtual platforms. Many organisations find that a data centre relocation creates opportunities to gain increased efficiencies, such that those that come from consolidating physical systems. Moves of this type involve setting up platforms to host virtual machines at the target data centre, performing physical-to-virtual (P2V) migrations at the source site, and transferring those virtual instances to the target site over high-speed links. The virtual machines are then started at the target site, and users are pointed to the applications and services running at the target site.

Regardless of the method employed, an organisation must always go through the exercise of defining the logical components of each service and application – and mapping those components back to physical devices. This process, commonly referred to as application bundling, allows the relocation planners to develop a picture and logical sequence of events that must take place in order to move an application or service. It also helps to flesh out the logical and physical dependencies that applications and services have on one another.

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Prepare the target site

Many organisations will find that some portion of existing assets are not worth moving. This may be because the assets have reached end-of-life, are being virtualised, or are otherwise decommissioned. Regardless of the reason, any change in the number or type of assets that will reside in the target site will have an effect on the physical and environmental requirements of the target site. The bundling exercise will indicate what needs to move and what doesn’t, and what accommodations may need to be made for swing equipment. From this, a physical space plan can be derived, and the necessary calculations for space, power, and cooling can be performed.

Since most equipment racks are designed to be stationary, the systems must be removed from the racks prior to physically relocating them. As previously mentioned, a bundle may be composed of systems from multiple racks at the source data centre, which means that there may not be a free rack available to move with the systems of a given bundle. For this and other reasons, most relocations will require some new racks to be pre-deployed at the target site in order to receive incoming systems from the source.

Some organisations may opt to leave all racks behind at the source and deploy a uniform system of new racks at the target. This offers many advantages that may outweigh the costs, such as standardisation, the ability to easily integrate environmental sensors or rack-level security, and a uniform aesthetic in the target site.

When specifying the requirements for the target site, it is important to keep in mind the opportunity for improvements and ability to correct shortcomings that developed over time to sustain growth in the source site. One area in particular is the cable plant (OSI Layer 1); data centre relocation gives an organisation the option to hit the reset button on how they deploy and manage Layer 1. Companies must pay special attention to pre-patching each rack with the proper colour coding and labelling scheme prior to relocating systems to the target. Having each rack pre-patched will save a considerable amount of time and minimise troubleshooting headaches on move days, when time is precious.

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Execution: scheduling and logistics

Compared to planning, move execution can be surprisingly less painful, especially with the right logistics partner. While it is possible for an organisation to perform the necessary discovery, arrive at a solid set of move bundles, and develop a timeline, few organisations specialise in the complexities of scheduling, managing, and coordinating the logistics of a data centre relocation. Scheduling requires tight coordination with business units and application owners. The schedule must be governed by the organisation’s tolerance for downtime of the application or service that is moving. Downtime begins when the application or database is taken offline and includes the time necessary to relocate assets, perform and verify a backup, replicate data (when required), power down the system, pack and transport, re-rack, and reinitialise. Within this timeline, a rollback plan must also be factored.

Some platform vendors may require you to have vendor assistance with powering down and reinitialising a system. This fee-for-service arrangement – often referred to as re-certification – is required so that there is no lapse in warranty and maintenance. Many equipment vendors will offer relocation services, which include the recertification service; however, it behoves an organisation to compare the costs of an original equipment manufacturer (OEM) move versus a non-OEM move with recertification services taking place after the fact. When using a proven relocation partner in conjunction with an OEM for re-certification, risk is appropriately mitigated, and the costs are commonly reduced.

Insured and secure transportation of assets is also critical to risk mitigation. Data centre assets differ from furniture in the way they must be handled, packed, secured, and shielded from electrostatic and electromagnetic damage. As such, only qualified personnel and the appropriate packing materials should be used when transporting data centre equipment. Any party transporting data centre assets must provide full replacement value insurance for theft, damage, or loss, and this insurance must be applied to each conveyance (i.e., each vehicle or vessel transporting equipment) – as opposed to tying the insurance to the event itself, which may be comprised of multiple conveyances. The industry average default insurance is approximately $.60 per pound of cargo, which won’t cover the loss of any data centre asset. Ensure that your carrier or relocation partner can provide conveyance-based insurance equal to or greater than the value of the conveyed assets.
Conclusion

Over the past two years, we have seen a dramatic spike in the frequency of data centre relocations. This is expected to continue for at least the next few years because the convergence of increased physical compaction of IT systems and the mean age of a typical data centre will continue to force many data centres into early obsolescence. More than half of the data centres Dimension Data has relocated in the past two years are facilities that are 7-10 years old. The typical planning horizon for a commercial building is 20 years, and 7-10 years ago, today’s equipment power densities were not considered. These power densities continue to be on the rise with some analysts predicting >40KW per rack and beyond. Unless your data centre could easily handle that density today, chances are you, too, will be moving sometime in the next few years.

Data centre relocations are an exceptionally high-risk concept. The level of effort put into the planning phase by those who specialise in orchestrating these migrations is directly proportionate to the amount of risk mitigated. It is an exercise that requires collaboration with areas of the business one might not normally interface with. Keep in mind that everyone is a stakeholder, and approach the discovery exercise with patience and an open mind. These two guiding principles are critical to uncovering all of the information needed to accurately identify dependencies and understand the sequence of events required to move your assets. Chances are you’ll probably need to assemble a team comprised of more than two guys and a truck.

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About the author

Kris Domich, principal consultant, Dimension Data Americas, is a globally recognised thought leader on data centre migration, consolidation, and design. Domich’s data centre migration clients include many Fortune 100 companies as well as federal, state, and local agencies.
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