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Datacenter Infrastructure Management: Important Considerations beyond Power and Other Low-Hanging Fruit

October 2014

The ability to calculate power-usage efficiency (PUE), reduce spending on power and cooling, and eliminate inefficiencies and waste have been a key selling point of many datacenter infrastructure management (DCIM) solutions. However, the power-centric benefits are just the starting point of a number of advantages gained from a well-managed physical infrastructure. A successful DCIM deployment will reduce the overall cost of IT. DCIM can reduce spending on IT assets, the resources consumed to power and cool those assets, and the amount spent on maintenance. These savings can be shifted to projects that help the organization innovate and provide exceptional service to its customers. In addition, having a single and trusted version of the truth regarding datacenter assets is essential for audits, compliance, capacity planning, and strategic planning on decisions about where and how computing should be performed based on costs per workload. In selecting a DCIM solution, organizations should consider all aspects of the solution, from the fidelity of the representations of the gear, to the inner workings of the specific DCIM solution. This will include a number of architectural and less-apparent factors such as the database structure, method of integration with other management solutions, and the depth of workflow management.

Below are some common questions, posed by Nlyte Software, for those considering a DCIM deployment and/or purchase, which IDC Research Director Jennifer Koppy has taken the time to answer.

Q. Why should a customer consider moving from a spreadsheet-based datacenter management tool to a DCIM solution?

A. Many datacenters today are managed at the logical level from the operating system to the user's applications with Excel spreadsheets, or other flat-file database management systems to track the underlying gear. This made sense when datacenters were more static, versus today's dynamic collection of changing IT resources. In the past, datacenter management was largely at the personal and individual level. All of that has changed as the business economics of computing has forced the costing of IT to be paramount and cross-organizational. As Bill Gates, creator of Microsoft Excel, explained, "Excel is a terrific personal productivity tool. But as an organizational productivity tool, Excel does not have same characteristics that enable collaboration and information sharing, which object-oriented and relational database management architectures enable."

DCIM serves as an organizational tool, where information from multiple people and locations is collected in real time and made available to all those professionals with vested interests in

the business of delivering IT services. DCIM is a central consolidation engine and a repository for datacenter physical asset and connectivity data, analysis, and reporting.

Much like Excel is not used to manage an organization's general ledger (which is likely to be analyzing and reporting on millions of dollars expense and capital line items), Excel is no longer effective in managing an organization's millions of dollars in datacenter assets. DCIM considerations should focus on a given vendor's ability to affect the bottom line. IT is chartered to deliver the right IT services on time and at the right cost. DCIM is a critically important component of quantifying those costs and enabling the change management associated with today's datacenters.

Q. What are the business benefits of a successful implementation of DCIM, and the ramifications of not implementing DCIM?

A. The business benefits of DCIM really depend upon the degree to which each of the many users of DCIM incorporate it into their standard practices and metrics. Think of an ERP implementation with multiple modules: the more modules of ERP you deploy, the more departments are involved, the more benefits can be derived across that organization. For DCIM, the vested users include business leaders and decision makers, facilities managers, IT managers, the executive team and their corporate responsibility managers. Measurable benefits can be achieved by each of these business leaders' areas within the organization, such as a CFO calculating future capital expenditures based upon projected capacity needs (i.e., when do we need to build a new datacenter?), a facilities manager who needs spatially aware representation of current and planned datacenter resources to facilitate the daily operation of the datacenter critical facilities, and an IT analyst who needs to provide assurance that older, inefficient equipment is decommissioned and replaced on schedule in a manner that reduces computing costs for the company and its beneficial users.

The early benefits of DCIM have focused on energy efficiency by helping plan out the deployment of new resources and removing equipment that is consuming energy yet not contributing to the IT workload. Taking a "power-only" mentality regarding DCIM is easy to understand because these benefits are immediate and tangible. But when all factors are considered, the business value of DCIM will far exceed the savings seen with energy optimization alone. For example, changing the temperature of the datacenter will have less fiscal value to an organization than providing a new level of transparency, life-cycle management, and control over IT resources.

IT management should really be looking for their next opportunity to prove value, and to do this will require a solution that challenges their own knowledge of what is going on in the datacenter. The real business benefits of DCIM can be visible when the solution is used to proactively manage the needs analysis, deployment, maintenance, and decommissioning of all datacenter equipment — things to consider well beyond just power. DCIM facilitates staff working more effectively and efficiently while making fewer errors, thereby reducing the risk of downtime due to human error. The result is better service levels to customers both internal and external. Quantifying this in business terms can happen at a number of levels, starting with the utility bill and datacenter construction bill. But at least as important is also the benefits of improved customer satisfaction, and even more importantly, higher customer retention rates.

Q. What should prospective customers be looking for in a DCIM solution, architecture-wise?

A. In evaluating a DCIM solution (and the unique ways that the solution is architected and approaches datacenter management challenges), it's important to take stock of the scope

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and changing nature of your datacenter. Given the higher costs of any enterprise-level management solution, it makes sense to look at not only current needs but those over the next few years to get the most out of your investment for the longer run. Forces impacting datacenters over the next few years will require solutions to provide insight and management over growing numbers of devices, spanning across multiple locations and types of computing (on premise, co-located, and in a private or public cloud) and from multiple types of users. Datacenters no longer sit as an island managed and protected by one diligent group in the organization. Many people have deep vested interests in the success of the datacenter.

With this in mind, database architecture and performance becomes critical, as does the ability of the solution to communicate with other management tools. DCIM solutions that can be accessed from any location via a browser (versus running locally) are a priority when the desired solution is managing thousands of racks over multiple sites. Standalone desktop-based applications, installed locally on each client that remotely open the asset database, will not scale well and performance will be highly (and negatively) impacted by this type of architecture.

The performance of the DCIM vendor's chosen backend database is another important consideration. Backend database performance is often better with commercially available solutions versus open source database tools. Database performance will become increasingly apparent as the volume of datacenter assets increase, e.g. from hundreds of devices to thousands, from thousands to tens of thousands, and so forth. Subsequently, this performance then affects the interactive nature of the included business intelligence reporting functionality.

In addition, the chosen DCIM solution must be able to be easily integrated with the other management frameworks already in existence in the data center. Look for solutions that come with out-of-the-box, ready-to-go integrations to other change management and CMDB systems. While it is true that any two systems can be connected using an ad-hoc engineering project, an important consideration for DCIM should be each vendor's portfolio of pre-built connectors, which provide instant value to the overall datacenter management challenge.

Furthermore, any integration, whether pre-built or ad-hoc engineered should have the flexibility necessary to accommodate software changes from either the DCIM or other management system software. Such flexibility should have simple configuration edits, and thus avoid the need for re-testing. Overall, pre-built connectors are significantly more supportable and will provide a dramatically lower cost to combine these solutions over time.

Q. What are the benefits versus the costs of integrating DCIM with other enterprise management tools?

A. When data from DCIM is integrated into other enterprise system management tools, the benefits become strategic versus tactical. DCIM on its own is useful, but a limited type of useful that focuses on problems you already knew you had. When connected to the outside world (connected to any source of knowledge makes the amount of leverage possible higher and thus more strategic), DCIM can get the company to that point of truly connecting total IT spend with the business value received from the investment.

Using an out-of-the-box DCIM solution that integrates with other IT management solutions and does not rely on hard-wired codes for connections is a better long-term solution – one that will ensure that the DCIM user does not become an orphan of their own technology by not being able to keep up with updates and changes. These connections allow a single source of truth to be created, which is more valuable than any one of these systems alone. Asset detail and its physical resources combine with device levels metrics, all in the context

of virtualized work handling and applications. It is this combination of details that form the big picture and can be instrumental in defining the costs to provide IT services, and the opportunities to reduce those costs.

Q. When a DCIM vendor says they support workflow, what does that mean?

A. Workflow in the datacenter is still in its infancy. Whereas the ability to define best practices has become the mantra for a number of years, the details associated with change have been left largely to the individuals making those changes (and thus that knowledge is only resident inside the individual's head versus codified as part of a software solution). Workflow is the means to define the specific set of steps that are most effective which then manage all changes to those specific steps. Workflow enables all changes, including moves, adds, installs, or decommissions, to be actively managed. IDC has observed that DCIM providers approach workflow very differently, and we see a wide variety of workflow capabilities in the DCIM marketplace. Workflow should not be considered a checkbox item, but in fact should become the core kernel of optimization in the datacenter and standardization across multiple data center sites.

The depth, completeness, and approach to integrating a DCIM vendor's workflow with the outside world are critical to the fiscal responsibility of any modern datacenter. IT organizations should seek out a DCIM solution that supports and ensures their desired process controls and the required documented procedures. Instead of reactively collecting data about changes in the datacenter after those changes have occurred, a strategic DCIM solution with effective workflow functionality will proactively drive those changes, prescribing each step, and will reduce the likelihood of human errors and delays that are rampant in datacenters.

It's important that the entire organization adopt these procedures — not just the operations and datacenter personnel. All departments that are associated with the datacenter — including accounting, administration, sales/marketing, executives, and vendors — need to treat this combined datacenter model as the single source of truth to ensure the value of the data is realized. Using the right DCIM solution, operations and life cycle management will become visible, defendable, and supportable, and a solution that promotes the associated attention to detail and ownership at every level of the organization will drive the effectiveness of the entire DCIM initiative.

ABOUT THIS ANALYST

Jennifer Koppy is a research director for IDC's Datacenter Trends and Strategies team, which explores the development and adoption of solutions for the datacenter, including IT infrastructure and resource management. She covers the worldwide market for datacenter infrastructure management (DCIM) and follows the trends, technology changes, and market forces that impact both enterprise and service provider datacenters.

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