

# GETTING STARTED WITH DATA CENTER INFRASTRUCTURE MANAGEMENT (DCIM)

MOVING BEYOND SPREADSHEETS AND DIAGRAMS



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## INTRODUCTION

Data centers are far more complex and difficult to manage than ever before. Most data center managers try to manage these dynamic and complex environments with little more than spreadsheets and a few CAD diagrams. Managing today's IT infrastructure has its challenges:

- Utilization, despite technology advances, is still very low
- Increasing demand for IT to meet changing business needs
- Power and cooling accounts for 40% of the total budget
- Over 50% of existing data centers will be out of space within 3 years

All of this leads to decreased data center efficiency and spiraling costs.

Limitations of space and power, along with the enormous complexity of managing a large data center, have given rise to a new category of solutions with integrated processes – Data Center Infrastructure Management (DCIM).

A comprehensive DCIM solution provides data center professionals with the visibility of all data center assets along with their connectivity and relationships. DCIM solutions provide data center professionals with the ability to discover, visualize, model, control, report, predict and manage all physical data center assets including the ability to simply deploy new assets and plan capacity for future growth. DCIM solutions can also help control energy costs, reduce risks and increase operational efficiency. Gartner predicts that DCIM tools will soon become the mainstream in data centers, growing from 1% penetration in 2010 to 60% in 2014.

## WHY DCIM?

In the past, most data centers were relatively small so local, dedicated IT and facilities staff could manage almost everything with manual processes and tools such as spreadsheets and diagrams. But, as data centers have grown in size and complexity, managing this way has become increasingly difficult. As the rate and volume of change in the data center has increased, the accuracy of spreadsheets has decreased. And since 75%<sup>1</sup> of downtime results from human error, lack of accurate information leads to an increased chance of error and downtime.

To fix this problem, IT and facilities professionals need solutions and processes designed specifically to effectively manage the huge inventory of physical assets and to optimize

the use of power, cooling and space of the modern data center infrastructure. This transition from generic tools to purpose built software is where data center infrastructure management (DCIM) software begins.

## WHAT IS DCIM?

A comprehensive DCIM solution directly addresses the major issues of asset management, asset deployment, space and resource utilization and future capacity planning. It also provides an effective bridge to support the operational responsibilities and dependencies between IT and facilities personnel that help eliminate potential organizational silos.

Basic DCIM components include:

- Automatic discovery of IT assets
- Visualization of the physical and virtual infrastructure
- Modeling of the move, add, change (MAC) initiatives
- Management control and workflow of data center processes and personnel
- Reporting on progress using advanced analytic capabilities
- Predictive intelligence of capacity resources well into the future

Perhaps the easiest way to appreciate the value that DCIM can deliver to your data center is to first consider a few simple questions.

- Are you having challenges managing your data center with spreadsheets and diagrams?
- Are you wondering if there is a better, more efficient, way to manage your data center assets and capacities?
- What servers do you have, where are they and what is their function? How much of their capacity is utilized, what applications run on them and who owns them?
- How are these servers powered and how much power do they use? How are they connected to which networks? Are any servers approaching power or heat thresholds that could cause them to fail?
- Do you have a current map of the power chain, network and server dependencies that would tell you what systems or power resources are impacted if a server, network or power circuit fails?
- Where do you have sufficient space, power and cooling capacity in the data center today to support new servers/racks required for a new, critical application?

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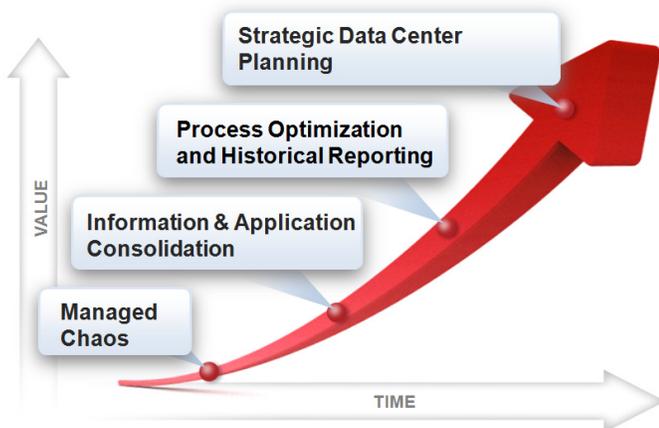
<sup>1</sup> Rick Schuknecht, The 451 Group Uptime Institute, June 2011

## GETTING STARTED WITH DCIM

One of the challenges many companies face getting started with DCIM is that they are afraid that implementing a full scale DCIM solution will take too long or cost too much. The impression they have is that DCIM is complicated. And while a fully mature DCIM implementation can be complicated, getting started doesn't have to be.

Like any other software solution, the value realized from your DCIM implementation is directly related to the discipline with which it is used by the entire data center staff and how tightly integrated it is with other IT processes and software. While your end goal might be to reach the upper right of the DCIM Maturity Model (see diagram below) you don't need to have a fully mature DCIM deployment, one in which you are performing Strategic Data Center Planning, to get tremendous value out of DCIM. In fact, just taking the first step from managing multiple spreadsheets and floor plan diagrams into a consolidated view with a single version of the truth is a very affordable first step that can return huge benefits.

### DCIM MATURITY MODEL



In fact the benefits of each layer of the DCIM Maturity Model build on the previous layers as described below:

**Phase 0 – Managed Chaos:** This is where most companies are today. Dealing with multiple spreadsheets, one each for servers, power cabling, network cabling, rack space and power consumption.

These spreadsheets are often out of synch with each other and often out of synch with reality on the data center floor.

**Phase 1 – Information & Application Consolidation:** This is the first step on the road to DCIM where you will consolidate your spreadsheets and diagrams into a single application. Entry level DCIM products provide tools to import spreadsheets directly into the DCIM database. From there, the DCIM software allows users to visualize the data center floor and the individual racks. At this DCIM maturity level, users should be able to see available space and power, get reports on precise utilization at a snapshot in time, perform rudimentary “what-if” scenario planning for deploying individual assets (e.g., servers) and perform basic move, add and change (MAC) management.

The organization and consolidation of the raw asset data that Phase 1 provides, significantly increases the accuracy of the data center model represented in the DCIM database as compared to spreadsheets. As a result, data center managers make better decisions and reduce the number of human errors. Making the jump from spreadsheets and diagrams to Phase 1 of the DCIM Maturity Model is very simple and straightforward and can be achieved literally in a few hours to days of work. It is extremely important to put the effort in during Phase 1 to have good quality data so you are confident in the subsequent phases that you are building on a solid foundation.

**Phase 2 – Process Optimization:** The next phase of DCIM maturity requires a greater commitment to changing the processes you use in managing your data center. This is where data center processes are programmed into the DCIM software and where the DCIM software is used to reinforce those workflow processes. This level is also where data centers can begin tracking their utilization rates over time. This also allows for better forecasting based on historical results. Some data centers chose to inject real-time information into their DCIM software at this phase, increasing the precision of their DCIM database.

**Phase 3 – Strategic Data Center Planning:** This is where data centers begin performing multiple “what-if” planning scenarios with large numbers of servers, using the DCIM solution to identify potential failure points in the power chain and using predictive analytics to fully optimize the user of power, cooling and space. This is also where auto discovery software can be used to automatically audit devices in the data center and identify potential errors in the DCIM database without a manual audit. While integration with other IT solutions and processes often happens in Phase 2, at Phase 3 the DCIM solution should be integrated with help desk, CMDB and other IT management software solutions.

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## CONCLUSION AND PARTING ADVICE

One very important factor to consider when choosing DCIM software is to look for a product line that allows you to move seamlessly from Phase 0 to Phase 1 to Phase 2 and so on using the same DCIM software platform. By remaining on the same foundation, it is much easier to progress up the DCIM Maturity Model without having to change platforms or vendors.

There are many DCIM solutions in the market that offer only entry level products that don't go beyond Phase 1. This means you will be forced to migrate to another vendor once you are ready to move up the DCIM Maturity Model. Similarly, there are vendors that only offer enterprise class solutions that make you simultaneously deploy Phase 2 of the DCIM Maturity Model at the same time as Phase 1. The problem with this approach is that that you are forced to make too many changes to your data center processes too quickly before letting the foundational aspects of Phase 1 get settled. This often puts DCIM deployments at risk for failure.

The key to success is to start small but think big as you progressively make your way through the maturity model. You can do this quickly, but you shouldn't parallelize the steps. Don't get overwhelmed by the complexity of the end state of your DCIM deployment. It is important to consider how you can progressively layer on increasing levels of sophistication to your DCIM deployment to ensure success. Like most IT projects, you want to take DCIM step by step. This will increase your likelihood of a successful implementation, and prove the value that a well run data center provides to the entire IT organization and enterprise.

### Steps to Get Started With DCIM:

- **Step 1** – Look for DCIM solutions that automates some or all of the migration of your spreadsheets and diagrams directly into the DCIM repository. A good DCIM solution will automate much of the migration so getting started is easy. Also make sure to look for a DCIM vendor that can help you progress up the DCIM Maturity Model at your pace and who offers an entry-level to enterprise-class DCIM solution built on the same platform.
- **Step 2** – Migrate your data from spreadsheets and diagrams to a DCIM solution.
- **Step 3** – Use the DCIM solution to visualize, model and manage your data center moves, adds and changes.
- **Step 4** – Consider moving up the maturity curve by adding workflow to control processes and personnel and analytics to report on progress and predict capacity resources well into the future.



**GLOBAL HEADQUARTERS**

4040 Campbell Avenue, Suite 100 Menlo Park, CA 94025  
Tel: (650) 561-8200 Fax: (650) 561-8201

**UK & EMEA OFFICE**

Riverside House, 26 Osiers Road London SW18 1NH  
Tel: +44 (0)208 877 7200 Fax: +44 (0)208 877 7205

**WEB [www.nlyte.com](http://www.nlyte.com) EMAIL [info@nlyte.com](mailto:info@nlyte.com)**

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