

The Road to Data Center Infrastructure Management

An ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) White Paper
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The Road to Data Center Infrastructure Management

Executive Summary

With an increased reliance on Information Technology (IT) infrastructure to drive business objectives, organizations are seeking innovative solutions for greater effectiveness in data center implementations while improving cost efficiencies. Data Center Infrastructure Management (DCIM) offers IT service improvements that can greatly improve the value of technology investments to the business through each phase of data center maturity. Automated solutions are critical enablers of DCIM initiatives that will establish holistic views of the environment and enable informed planning and decision-making for greater IT agility, performance, and cost-effectiveness.

Data Center Infrastructure Management

In a grand departure from the chaotic data centers of the past, organizations are adopting new approaches to the planning, design, and ongoing administration of IT infrastructures. Traditional data center practices involved the acquisition of new equipment only as needed and the random deployment of it in conveniently available locations with little regard for environmental impacts or operational costs. Greatly improving on this antiquated model, DCIM offers best practice solutions designed to proactively bridge the gap between IT and facilities management in order to establish optimal data center configurations that minimize costs and maximize productivity.

Three principle elements comprise a DCIM implementation. First, granular details of the infrastructure need to be continuously collected and recorded in a centralized repository to enable an up-to-date, holistic view of the environment for easy identification of health status and areas of improvement. This information can then be used to enable the proactive planning, ongoing management, and problem resolution necessary for the second implementation element, establishing a stable and optimal environment for achieving business objectives. Finally, access and control must be maintained over the environment to prevent unexpected and unauthorized changes to the IT services that may reduce their effectiveness. Transitioning to a dynamic DCIM solution is, in most cases, not as straightforward as this over-simplified description may suggest. The extensive number of software and hardware components involved, along with complex environmental conditions (such as energy consumption and thermal conditions), contributes to some very substantial implementation challenges that need to be overcome.

With the right DCIM processes and automated solutions in place, however, organizations can achieve significant business benefits. With standardized management processes in place and a centralized data repository to reference, IT support personnel become more efficient in problem resolution and have more time available to focus on business improvement projects rather than reactive “firefighting.” This also translates into reduced incidents of downtime and performance degradation, ensuring greater availability of IT servers for the business. With a greater understanding of infrastructure dependencies and conditions, strategic decisions can be made to transition existing environments and plan for new implementations that will cost-effectively meet capacity requirements and ensure on-going value in data center investments.

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Key Stages of DCIM

Data centers evolve at different rates commiserate to individual IT requirements, budget constraints, and available management resources. As data centers mature, however, they commonly reach clearly delineated plateaus in manageability. These four levels – reactive, active, proactive, and dynamic – comprise the primary stages in the EMA Data Center Maturity Model. For each of these phases, a prescriptive plan can be mapped to systematically move IT infrastructures through adoption of DCIM disciplines.

Level 1 – Reactive: Incident Management

This is the starting point for most data center implementations. IT staff are principally trying to survive day-to-day crises and what few management tools are employed, are generally device specific rather than enterprise-class. At this level, organizations should focus on process improvements for improved administrative efficiency and cost effectiveness. Begin with an identification of all assets in the infrastructure along with their dependencies and performance status. These details should be stored in a centralized repository that is continuously updated to enable an accurate and holistic view of the environment. Processes for regular system maintenance and problem remediation should also be established and documented with clearly defined roles for both facilities and operational IT support staff.

Level 2 – Active: Process Management

Although day-to-day operational issues are still the primary focus in this phase, some processes are now documented and repeatable, enabling some automation to be introduced. Standardized processes should be combined into logically organized workflows, and a change management process must be established to ensure updates and new implementations are properly authorized and tracked. Data center control and access restrictions should be adopted to minimize incidents of unauthorized use and inappropriate changes. Energy consumption and thermal conditions should be recorded and included in a centralized report. It should be noted that some processes in Level 2 can be implemented in Level 1 (and vice versa), but all services should be established before proceeding to Level 3.

Level 3 – Proactive: Problem Management

By now, environment problems are more easily remediated with procedure in place for root cause identification. Proactive problem prevention is now becoming the primary focus; management solutions are being selected strategically, rather than reactively. A holistic view of the infrastructure should now be available and can be visually modeled to enable informed decision-making on environment improvements. Energy reduction programs can now be introduced that will significantly reduce operational expenses. Capacity planning also becomes more proactive at this stage as future growth is anticipated and new acquisitions are identified for their long-term business value.

Level 4 – Dynamic: Infrastructure Management

At the most mature stage in pragmatic data center management, day-to-day performance and availability issues are largely managed by automation, so IT operations can focus on meeting evolving business requirements. A “closed loop” infrastructure control system ensures issues are proactively identified on both physical and virtual platforms before becoming business impacting. Governance bodies choose optimal IT solutions and configurations that address the needs of multiple business units and ensure they are implemented cooperatively across the disparate IT support organizations. The primary focus of IT is to ensure the on-going vitality of the business.

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Transformative DCIM Solutions from Emerson Network Power

Essential to the success of all stages in the move to full DCIM is the availability of centralized and integrated automation solutions. Organizations are advised to invest in a set of automated platforms that achieve the depth and breadth of support necessary to enable critical problem and incident management service improvements. Further, the adopted solutions must provide the advanced visibility and control to evolve the data center toward more proactive and dynamic management practices. Emerson Network Power achieves both these criteria with its extensible set of DCIM solution suites currently offered under the Aperture™, Liebert™, and Avocent® brands. Today, these comprehensive platforms collectively address the breadth of automation needs for transforming IT infrastructures across all four stages to achieve dynamic DCIM.

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Taking this a step further, Emerson has announced it is actively unifying these solutions into a single, seamlessly-integrated platform designated as the Trellis™ platform. The first core Trellis platform modules are expected to be made generally available December 2011. Existing Emerson customers will be provided with a pathway to adopt this extensible platform and the current products will easily migrate to the new solution. With a vision of a holistic, end-to-end DCIM platform, Emerson Network Power is focused on enabling business-focused data center design, configuration, and management strategic decision-making for significantly improved operational efficiency and cost-effectiveness.

EMA Perspective

Emerging technologies and changing business requirements are transforming traditional concepts of the data center. IT infrastructures are relied upon more than ever before to drive business success, but this increased dependence comes with a price. Increased IT utilization translates into an increased need for availability, security, reliability, and performance in IT investments; however, fully supporting these increased requirements will bloat traditional data center environments beyond manageability and with costs typically greater than available budgets.

To meet expanding IT requirements while keeping costs contained requires both effectiveness and efficiency in data center implementations. Establishing this will be an extremely time-consuming and unreliable process if performed by traditional manual processes alone. Automation is essential for detailed intelligence gathering and enabling rapid infrastructure changes with minimal business impact. Caution should be employed, however, in the selection of automated tools that will be adopted to enable this level of IT agility. Although the immediate reaction in many cases might be to utilize automated point solutions to resolve specific problems as they occur, this will not achieve the much more important goal of enabling data center service improvements across the support stack. EMA recommends enterprises invest in a holistic DCIM platform that will lay the foundation today for a more dynamic, end-to-end business-focused IT infrastructure tomorrow.

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About Aperture/Emerson

Emerson Network Power, a business of Emerson (NYSE:EMR), is a global leader in enabling *Business-Critical Continuity*[™] from grid to chip for telecommunication networks, data centers, health care and industrial facilities. Emerson Network Power provides innovative solutions and expertise in areas including AC and DC power and precision cooling systems, embedded computing and power, integrated racks and enclosures, power switching and controls, monitoring and connectivity. All solutions are supported globally by local Emerson Network Power service technicians. Aperture and Avocent solutions from Emerson Network Power simplify data center infrastructure management by maximizing computing capacity and lowering costs while enabling the data center to operate at peak performance. For more information, visit www.Aperture.com, www.Avocent.com, or www.EmersonNetworkPower.com.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that provides deep insight across the full spectrum of IT and data management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help its clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise IT professionals, lines of business users, and IT vendors at www.enterprisemanagement.com or follow [EMA on Twitter](#).

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