

# Managing Virtualized Environments in Application Context with EMC Smarts Application Discovery Manager v6.0

## Highlights

**Vendor name:** EMC

**Product name:** EMC Smarts Application Discovery Manager v6.0

**Production function:** Application Dependency Mapping

**Availability:** May 2008

## Executive Summary

In May of 2008, EMC introduced EMC Smarts Application Discovery Manager v6.0, designed to provide application dependency mapping across both physical and virtualized (VMware) environments. ADM has been a successful product for EMC since it was introduced in 2006 and has a distinctive footprint in the application dependency mapping marketplace with strong advantages in real-time monitoring that are paramount in accommodating virtualized environments. ADM enables strong and much-needed application-aware governance, best practices and compliance monitoring to the virtualized as well as physical infrastructure. This combination complements the core capabilities of VMware's VirtualCenter for monitoring and managing virtual machines.

Enterprise Management Associates (EMA) believes this is a significant "next step" in enhancing EMC's strengths in managing VMs, especially since EMC's ADM solution has proven its strengths in terms of deploy-ability, real-time awareness, and support for federated CMDB Systems. The combination of governance, analysis, integration and world-class data sharing that ADM brings to the table is a natural fit for a virtualization "marketplace" that's rocketing ahead and forcing many IT organizations to struggle to keep up with a nearly overnight transition from exploratory investments to mainstream deployments – as virtualization in a variety of forms is not only redefining

the data center, but the broader application-infrastructure as a whole.

## The Management Challenges of Virtualization

EMA defines *virtualization* as: "a technique for abstracting the physical characteristics of computing resources from the way in which other systems, applications, or end users interact with those resources." As such, virtualization includes OS virtualization, server virtualization, application virtualization, desktop virtualization, network virtualization, storage virtualization, streaming, and grid and cluster virtualization. And while some of these terms are more defined – e.g., "network virtualization" may include a variety of capabilities such as WAN optimization, dynamic routing, VLANs, etc. – others, in particular systems/server virtualization, are more established. And the growth is dramatic. According to EMA research, server and OS virtualization is growing at about 20% per year, while desktop and application virtualization is growing at 28% and 24% respectively.

The appeal of virtualization goes far beyond technology. For instance, virtualization allows a business to deliver new products and services more quickly and efficiently by providing faster deployment of the new systems and applications needed to support those products and services. It also enables superior business continuity for critical services by providing a resilient and dynamic set of resources to draw from to support desired levels of application service performance. And of course virtualization provides significant cost advantages in terms of infrastructure optimization.

However, harvesting these benefits depends on standing up to some pretty significant management challenges. Since, for instance, VMware automatically moves applications from one server to another for performance and load balancing, the volume and frequency of change to the virtual environment is dramatically escalated from what had been traditional physical systems management

issues in the past. The implications for this go beyond the individual system and VM, moreover, but may profoundly impact the performance of the applications they host. This requires a dynamic awareness of the relationship between the application itself and the infrastructure fabric that supports it. But most specifically, virtual platform monitoring capabilities look at some basic capacity and evaluate where apps can go, but don't do a lot more.

These challenges are compounded by complexity. For instance:

- The diversity of use cases (development, test, production level deployment, SaaS)
- The diversity of business and IT drivers interested in virtualization infrastructure optimization initiatives
- The diversity of management teams responsible for managing the process and all of its implications from compliance, to application performance, to cost and financial planning
- The diversity of management tools required to effectively monitor, assess and actively manage this highly dynamic environment.

EMA has documented these challenges overall in 2008 research:

**Increased management requirements** – *As more and more VMs are deployed, they must be managed with the same rigor as any system. Administrators need to put in more time and effort managing configurations, patches, software levels and security; and they must monitor many more systems for performance, penetration, resource utilization, and more. This in turn increases the cost of managing virtual environments, and greatly reduces the potential cost benefits of virtualization.*

**Software compliance issues** – *Unapproved VM sprawl can have a serious impact on compliance. The ease of VM deployment also means it is easier to deploy new systems and applications without obtaining correct licenses. Tens or even hundreds of new systems could be deployed using replicated copies of software licenses that are already in use. A reconciliation of these licenses could cost the enterprise hundreds of thousands of dollars; a prosecution for using unauthorized software could cost millions more in compensatory and punitive damages, legal fees, loss of business and reputation, share price impact, and more.*

**Configuration management problems** – *In addition to the license compliance issues, the configuration of “rogue” VMs can lead to significant policy compliance issues. As more and more VMs are*

*deployed, they can easily become out-of-synch with established procedures for fine-tuning applications for performance, storage abuse, over-allocation of bandwidth, and other improper configuration settings. This can in turn lead to unplanned downtime, poor application performance, high rate of service desk issues, increased support costs, and more.*

**Security and risk exposure** – *Without adequate control, virtual systems can quickly become unauthorized backdoors to the entire enterprise IT environment. For example, hackers and other unauthorized intruders can easily access the environment if a default password is left on a “vanilla” software setup, if certain vulnerable services like FTP or Web servers are left running with insecure configurations, or if IT fails to apply a new version or patch level to installed software. With VM sprawl, it is very hard to keep track of these details across all VMs, and exposures can quickly be exploited.*

*All of this inevitably leads to an increase in costs – as administrator productivity goes down and license and staffing costs go up – and poor performance and service is extended to your end users – as capacity is overused and unplanned downtime increases.*

Finally, as is true with most significant IT initiatives, there are cultural challenges inherent in stepping up to a virtualized environment. IT needs to work more cohesively and dynamically than in the past, which requires common points of reference to be shared by systems, applications, and infrastructure management professionals overall. This requires new types of technology beyond siloed monitoring tools with strong contextual values.

## **EMC Smarts Application Discovery Manager 6.0**

EMC Smarts Application Discovery Manager (ADM) is not only an industry leader in application dependency mapping with distinctive real-time capabilities, it plays a central and unifying role within EMC's broader Resource Management Software portfolio as well. This includes the EMC Smarts capabilities for Layers 2 and 3 topology and advanced root cause analytics across the networked and storage infrastructure, EMC VoyenceControl for change and configuration management across the network, and the InfraDesk Service Desk with its complementary CMDB and service management capabilities. This makes the extension of ADM to virtualized environments especially compelling, since it brings analytics, topological discovery, process control and CMDB support into the management of the VMware as well, with significant down-the-road

advantages for EMC and its customers as EMC begins to exploit these linkages. But the most immediate linkage at the time of 6.0 introduction in Q2 2008, is ADM's sister product, the IT Compliance Analyzer – Application Edition v1.1, which offers support for automated, user-defined, policy-based analysis of compliance, governance and best practices initiatives.

### Application Discovery Manager Evolution

EMC's Application Discovery Manager evolved out of its acquisition of nLayers on June 7, 2006. It was a good move on EMC's part back then, (see "EMC's Acquisition of nLayers: Value-add or Transformer?" EMA, June, 2006), and it seems even more astute now. Packaged as an appliance, ADM requires minimal configuration and shows fast time to value. It can, for instance, discover more than 500 servers in one minute.

ADM's agentless auto-discovery leverages a variety of technologies including deep packet analysis to discover and map relationships between business processes, applications and the infrastructure supporting them. Once installed, it continuously discovers applications, servers, routers and switches to maintain a real-time view of application usage and demand, relationships, dependencies and changes to the application infrastructure. ADM has a library of more than 500 application "Fingerprints" for identifying common commercial applications. It also allows users to use a simple GUI to define and add their own application patterns for accurate identification of n-tier and custom business applications.

This ongoing real-time passive discovery for visibility of the application infrastructure is complemented by policy-driven active discovery capabilities that can be programmed to occur at specified intervals, or on request. ADM's active discovery leverages SNMP, telnet, SSH, and WMI protocols to collect detailed information on servers and applications, and allows IT professionals to selectively examine specific configuration items (CIs) to ascertain in-depth CI information. By allowing users to selectively scan CI data while passively maintaining a real-time view of the IT environment, ADM streamlines the performance load and presents the detailed view in real-time context. ADM 6.0 provides the capability to adjust and control the depth of discovery, both passive and active, to focus on infrastructure, service components and CI categories of relevance to the user.

ADM can also track changes historically in a change log that resides on an Oracle 10g relational database, and can notify or alert when elements change. Its modeling capabilities allow administrators to identify applications, resources, dependencies, and usage demands as well as machine identities.

ADM can serve the role of what EMA calls a "citizen CMDB," optimized to define real-time service impact interdependencies, and coupled with Smarts analytics it can help to provide a dynamic and automated approach to service impact analysis. ADM is also optimized to help populate core CMDB systems and is already integrated with InfraDesk, EMC's emerging Service Desk offering. ADM's CMDB directions have required attention to data sharing with third-party solutions via XML, XLS, and API-level integration using an SDK.

Finally, ADM's real-time and historical awareness of application flows over the network through packet analysis will help to identify over- and under-utilized resources and provide insights into normal and abnormal application behaviors – which can become especially valuable in dynamic VM environments.

### Policy-based Application Validation

As a sister product to ADM, EMC's IT Compliance Analyzer - Application Edition can help assess and maintain IT operations' compliance with industry and government initiatives such as Sarbanes-Oxley, PCI DSS (Payment Card Industry Data Security Standard) and HIPAA. It can also support internal initiatives for IT governance and best practices, such as ITIL, by applying user-defined policies across the application fabric by leveraging the data provided by ADM. As such, IT Compliance Analyzer identifies IT configuration violations by validating application-related configurations, changes and dependencies. IT Compliance Analyzer comes with pre-configured policy templates, such as PCI and VMware best practices, while its GUI-based "policy builder" allows for custom policy creation. This ability to audit to meet governance and compliance standards in real time answers one of the generally unmet requirements in the industry for virtualized environments.

## How ADM Supports the Superior Management of VMware Environments

Once you bring the power of EMC's ADM capabilities to the virtualized environment, a number of substantial benefits become evident:

- ADM accurately maps the dependencies of VMs and their application components that are running on a single server to application environments. More specifically, it maps out physical-to-physical, physical-to-virtual, and virtual-to-virtual interdependencies in application context.
- ADM's real-time, "continuous listening" capabilities independent of scanning cycles or polling make it a natural fit for the real-time and unpredictable dynamics of VMware environments.
- These capabilities can support initiatives such as data center consolidation by ensuring that applications remain optimized during periods of transition.
- ADM can also support pre-deployment planning for new VMware environments by mapping application dependencies to targeted resources with insights into how to optimize virtual machine configurations. ADM can take snapshots of applications moving from physical servers to VMs to help IT planners assess and rationalize systems resources and their dependencies. Then ADM can help to manage the migration to VMware by analyzing how VMware is positively or negatively impacting applications through its continuous discovery and tracking of application dependencies and configuration changes across physical and virtual environments.
- ADM can help to control the configuration consistencies of physical and virtual environments – including configuration drift – making sure that as virtual servers are built and destroyed, apps remain operational during start and stop.
- The dynamic nature of VMs creates a potential problem in shifting dependencies when VMs are moved from one server to the other. ADM can tell whether application dependencies will be maintained before, during, and after moving apps from one virtual server to another (for maintenance, for resource, and for load balancing, etc.) to help to ensure that business services are not disrupted.
- IT Compliance Analyzer – Application Edition can identify rogue VMware ESX Servers that are not currently managed by Virtual Center.
- In conjunction with IT Compliance Analyzer, ADM can help to ensure compliance with VM implementation strategies, operational best practices, and regulatory requirements such as Sarbanes-Oxley, PCI DSS, and HIPAA. Such support for governance and compliance is drastically underserved in the current market and so this is a much-needed advantage.
- ADM's visibility into the volume of application flows over the network will help it to validate that normal performance patterns are sustained, while helping to optimize VMware resources by discovering where systems resources may be underutilized. ADM's application flow monitoring also helps to detect chatty applications and other applications that may saturate I/O resources, and so may not be suitable to virtualized environments.
- Finally, ADM's support for CMDB Systems, and its linkages to products such as EMC Smarts for root cause and topology, helps to bring the management of virtualized environments into world-class systems for enterprise control, with world-class capabilities for contextual decision making and process automation.

## EMA Perspective

As should be clear from the above, EMA is thoroughly bullish about Application Discovery Manager's new support for VMware environments. ADM brings such a wide range of benefits to contextual planning and control for VMware customers, with few offerings like it today that can begin to compete, that both EMC and its customers should witness solid benefits from this solution introduction.

In fact, there is absolutely nothing to complain about in this announcement, except to remind IT adopters what it is not. It is not, for instance, a comprehensive initiative to provide multi-brand, and multi-platform support for managing virtualized environments across all server, OS, storage, desktop, application and network offerings. Instead, it is a very focused capability targeted at support for market leader VMware, which makes imminent good sense as a solid first step for EMC to tackle the management virtualized environments more completely. However, given

the versatile and dynamic nature of ADM itself, and given the growing industry need to recognize that virtualization is not just about server resources, EMA expects EMC to explore more options to expand these values in other contexts before too long.

EMA also expects that the introduction of Application Discovery Manager v6.0 will help drive more application dependency mapping vendors and their associated CMDB Systems towards support for virtualized environments. In fact, EMA anticipates that support for virtualization will become a critical “must-have” for application dependency and CMDB capabilities in the coming twelve to eighteen months. To some degree, based on EMA consulting, it already is. These requirements also serve to underscore the need for dynamism, flexibility and extensibility in CMDB System planning, and will continue to reinforce ITIL v3’s vision of a Configuration Management System (CMS) over earlier notions of a single, monolithic, CMDB repository. All these trends should further strengthen EMC’s hand as it emerges with increasing prevalence on the main stage of enterprise IT management today.

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