



**Using Automated Application
Discovery to Solve Critical
VMware Management
Challenges**

By Brian Lett and Glenn O'Donnell
Resource Management Software
Group EMC Corporation

Executive Summary

Effective management of VMware® environments requires understanding how virtual servers fit—along with other technology domains—into the broader context of IT service delivery. Achieving that level of understanding can be especially challenging in dynamic virtual environments where change is nearly constant. Without accurate information about the current state of the application relationships that exist in your virtual infrastructure, you simply can't manage that VMware environment easily or effectively.

This makes automated discovery of these relationships critical. Automated assembly of data into information gives you much-needed visibility into—and understanding of—the IT services layered on top of VMware.

VMware tools help you understand what's happening at the infrastructure level. However, only automated application discovery capabilities can provide critical, up-to-date information about relationships between applications and infrastructure required for IT service delivery over VMware. By leveraging the strengths of both VMware tools and automated application discovery, you can effectively manage your VMware environment.

Using Automated Application Discovery to Solve Critical VMware Management Challenges

Using VMware to virtualize servers significantly increases and enhances your flexibility to meet shifting business and customer demands. These virtualization technologies allow you to configure new IT services and systems rapidly. By putting unused server capacity to effective business use, you increase server utilization tremendously and improve efficiencies—both of which save time and money by reducing server hardware and management costs.

VMware management solutions address many server-virtualization needs extremely well (for example, monitoring the virtual machines and manipulating the virtual instances across the pool of physical servers). However, managing IT service delivery and applications that rely on a virtual infrastructure likely require consideration of additional tools to fill that management gap.

The Complication of Dynamic Change

Effective management of VMware environments requires understanding how virtual servers fit, along with other technology domains, into the broader context of IT service delivery. Achieving that level of understanding can be especially challenging in dynamic virtual environments.

Before the rise of virtualization, relationships between applications and the information infrastructure didn't change much—or that often. Although configuration changes occurred regularly, relationships rarely changed. For example, once connected to a switch, a server usually wasn't moved to a different switch port. For these kinds of unchanging environments, discovery and understanding of the relationships between applications and infrastructure was somewhat easy.

Virtualization changes that reality. Environments and relationships aren't, for the most part, fixed anymore. What were once mostly static and unchanging links between applications and the information infrastructure can now, in VMware environments, change on the fly—and often. Furthermore, the frequency of changes will only increase as use of VMware expands.

Those who attempt to manage this new world using the same old methods and technologies will fail to deliver the proper levels of IT service delivery that the business demands. But by applying the right automation technologies, you can mitigate and even eliminate many of these management complications.

Making the Right Management Decisions Requires Accurate Information

Like all management issues, the answer lies in the information available to drive decisions. If information about the virtual environment is poor, the risk to IT services delivered over VMware is high. Effective management of the environment requires accurate information about relationships.

Assembling data according to their relationships allows you to transform these elements into actionable information. This makes automated discovery of relationships—that is, automatically assembling data into information that can help you make the right management decisions—critical. As virtualization creates new management challenges, the value of automated discovery to the effective management of VMware environments will only increase.

Three Approaches to Automated Application Discovery

Leveraging the power of automation, automated application discovery can capture, connect, and unveil these intricate relationships—including the way in which applications behave and relate to the infrastructure on which they rely (see Figure 1). With this understanding, you would have the accurate, up-to-date information you need to make the right decisions about optimizing IT service management and IT service delivery.

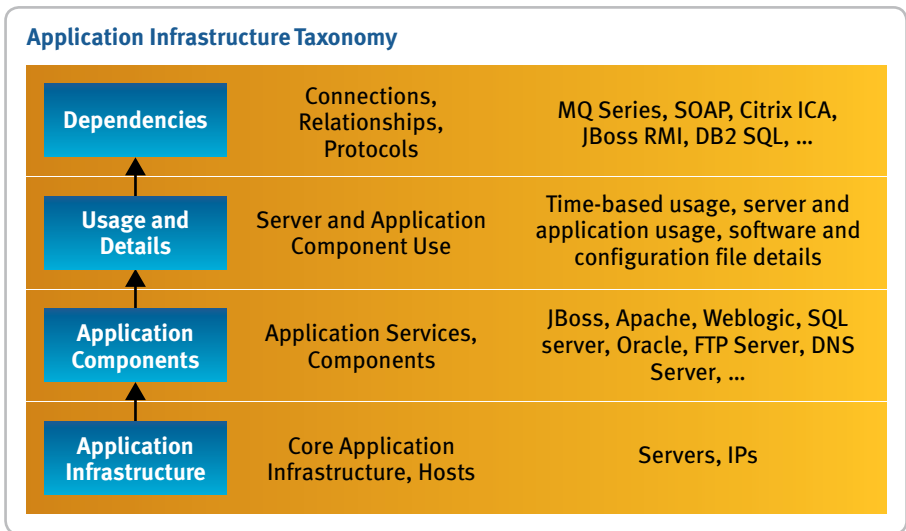


Figure 1. The Types of Information an Automated Application Discovery Product Should Provide

Automated application discovery should leverage an effective, proven, non-agent-based discovery method—commonly called passive discovery—to automatically and uniquely discover the structural and behavioral aspects of applications. In real time, passive discovery simply observes network traffic, examining all applications as they execute, and identifies relationships based on real business usage. Passive discovery also means that management “overhead” is extremely low—that is, you don’t have to maintain and manage an army of software agents.

But passive discovery is just part of the equation. When trying to manage a VMware environment, you should also look to leverage active discovery. These capabilities allow the automated application discovery system to collect deep, fundamental data about configuration details.

Combining active and passive discovery capabilities with discovery analytics—that is, the hybrid approach to automated application discovery—provides the timely and detailed information, including visual presentation of that information, that you need to make the right management decisions (see Figure 2).

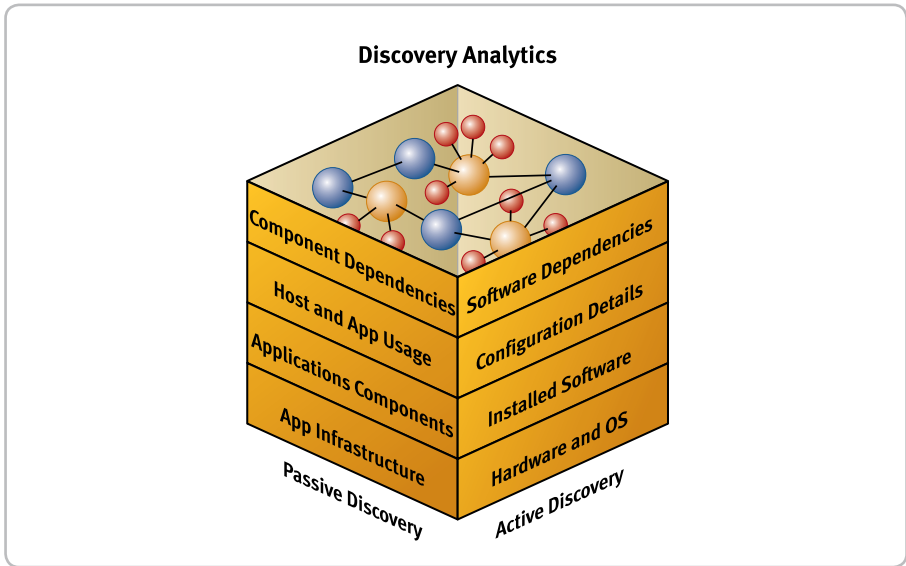


Figure 2. Only a Hybrid Approach to Automated Application Discovery Can Provide the Information Needed to Manage VMware Environments Effectively

Imagine driving along a twisting country road at night and only illuminating your headlights for a few seconds each hour. Between these hourly flashes, the road is invisible. You probably wouldn't put yourself in such a risky position.

However, this is analogous to what you're doing if you rely solely on active discovery at selected intervals to provide you with the information you need to manage IT service delivery over a virtual infrastructure. You're driving blind most of the time, risking IT service delivery and your virtualization efforts—and, most importantly, business operations—on sporadic flashes of illumination, rather than always driving with your lights on.

With the combination of benefits delivered through a hybrid approach to automated application discovery, you always have enough light to see the road ahead of you.

The Importance of Automated Discovery to VMware Environments

Passive discovery allows you to discover the “truth” about what exists because it observes actual application traffic on the network. This allows visibility into all applications, identifying application components, the servers on which they reside, the relationships representing the two sides of the conversation over the network, and activity levels of the conversation.

Therefore, the information about applications and their behavior is complete and constantly up to date. As these characteristics change, automated application discovery can immediately capture those changes and record them in a data repository. All other management functions and processes can then leverage this repository. Those responsible for these management functions and processes can act on these changes—or adapt to them—in real time.

In a VMware environment, such adaptation is necessary. With the rapid pace of change in VMware environments, you need to know what has changed so you can effectively ensure IT service delivery over a virtual infrastructure. Without this information, IT service automation cannot capitalize on the true benefits of virtualization.

What an Automated Application Discovery Offering Should Have to Improve Your VMware Management Capabilities

To solve the critical challenges associated with effectively managing VMware environments, you need to leverage automated application discovery. Key capabilities to look for include:

- Ability to analyze discovered configuration items and dependencies—including modeling the impact of potential changes
- Hybrid discovery model that offers you the best of everything:
 - Passively capture network traffic to discover your truth about your application infrastructure
 - Actively collect high-definition configuration details
 - Visually represent the information in an easy-to-use and understand format, such as a dependency map
 - Completely understand core application infrastructure, application components, usage and details, and dependencies
- Change tracking
 - Track configuration changes for applications, services, and hardware
 - Compare system to system (such as a test environment to a production system), to identify differences
- Support management of problems and incidents in VMware environments
 - Triage—readily determine what changed and what should be changed back to restore delivery of the IT service
 - Problem forensics—post-mortem problem analysis to determine the root cause

Unlocking Hidden Value Before and After Virtualization

Through EMC® Smarts® Application Discovery Manager, EMC provides all of the key attributes an automated application discovery product should have when supporting a VMware environment: hybrid discovery, analytic and modeling capabilities, easy change tracking, and strong support for problem and incident management.

Application Discovery Manager's realtime visibility into applications and infrastructure elements, relationships, and behaviors offers unsurpassed value before and after consolidation and virtualization. Beforehand—and based on your network traffic and application use—it determines the key dependencies that exist between applications and their physical hosts (see Figure 3).

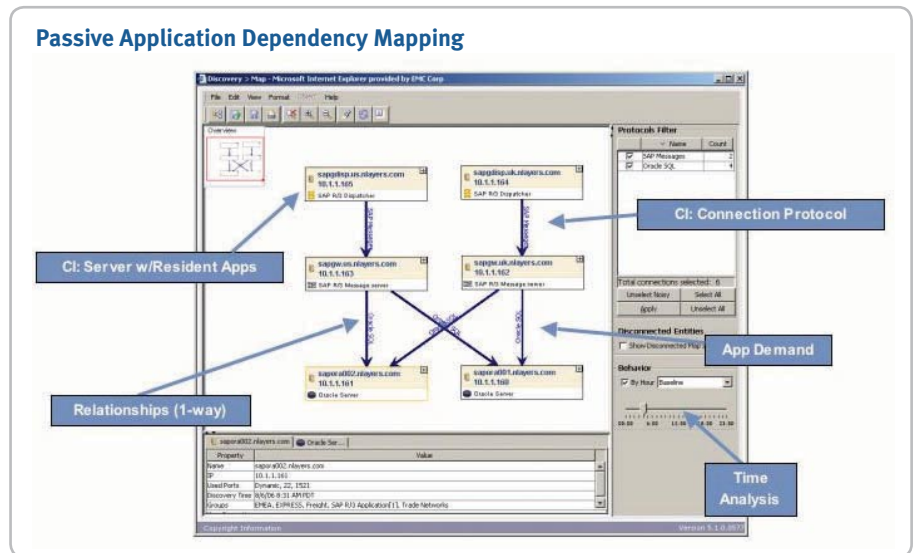


Figure 3. An Example of How Application Discovery Manager Displays Passive Application Dependency Mapping

With this information, you'll be able to place critical applications on the right virtual machines so that IT service delivery and performance are ensured. For example, Application Discovery Manager could identify a critical dependency between an application and database that could reduce overall network traffic. To maintain proper levels of performance after virtualization, IT operations could then ensure the application and database remain on the same server for greater efficiency.

Post-virtualization, Application Discovery Manager helps IT operations by ensuring ongoing performance and improvement. Most importantly, it tracks all of the numerous relationship changes that are occurring in your VMware environment, and provides this critical management information to you in real time. The application dependency information it provides can help you identify potential application-related performance bottlenecks and reduce unnecessary network traffic.

Conclusion

VMware provides many tools needed to simplify the process of physical-to-virtual consolidation. Automated application discovery enhances this infrastructure-level information by delivering insight and understanding into an often-overlooked area: the IT services layered on top of VMware.

The combination of these offerings is the right way to ensure overall success when managing a VMware environment. By automating tasks and the information management associated with these tasks, you can embark on consolidation and virtualization with confidence.

EMC Smarts Application Discovery Manager delivers the automated application discovery capabilities you need, allowing you to take control of the challenges presented by rapid, almost constant changes occurring in your VMware environment. With realtime visibility into applications and their related infrastructure elements, relationships, and behaviors, you gain the critical information you need to make the right management decisions and ensure IT service delivery. Most importantly, you gain the ability to control the dizzying pace of change, simplify IT complexity, and effectively manage your highly dynamic VMware environment—in short, the ability to optimize the promise of your entire virtualization investment.



EMC Corporation
Hopkinton
Massachusetts
01748-9103
1-508-435-1000
In North America 1-866-464-7381
www.EMC.com