



# Optimizing Virtualization Management with Automated Application Discovery

TECHNICAL WHITE PAPER

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## Executive Summary

Effective management of virtualized IT environments requires understanding how virtual machines, hypervisors and other critical elements fit 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 and there is no 1:1 mapping between physical servers to applications. Without accurate information about the current state of the application relationships that exist in your virtual infrastructure, managing your virtualized IT environment can become a complex and time-consuming process.

As such, automated discovery of these relationships is critical, and automated assembly of data into information gives you much-needed visibility into—and understanding of—IT services running across the VMware vSphere™ virtualization platform and physical systems.

This white paper discusses how organizations can use the automated application discovery capabilities in VMware vCenter™ Application Discovery Manager to get accurate, on-demand information about relationships between applications and infrastructure required for IT service delivery so that you can optimize management of your vSphere environment and virtualized datacenter.

Virtualization significantly increases and enhances your flexibility to meet shifting business and customer demands by giving you the ability to configure new IT services and systems rapidly. By putting unused server capacity to effective business use, you can dramatically increase server utilization and improve operational efficiency, saving time and money by reducing server hardware and management costs. However, virtualization also introduces an additional level of complexity that must be addressed with virtualization-specific management tools.

### The Complexity of Dynamic Change

Before virtualization became mainstream technology, relationships between applications and infrastructure were typically static and unchanging in nature. 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 static environments, discovery and understanding of the relationships between applications and infrastructure was relatively simple (albeit time-consuming) process.

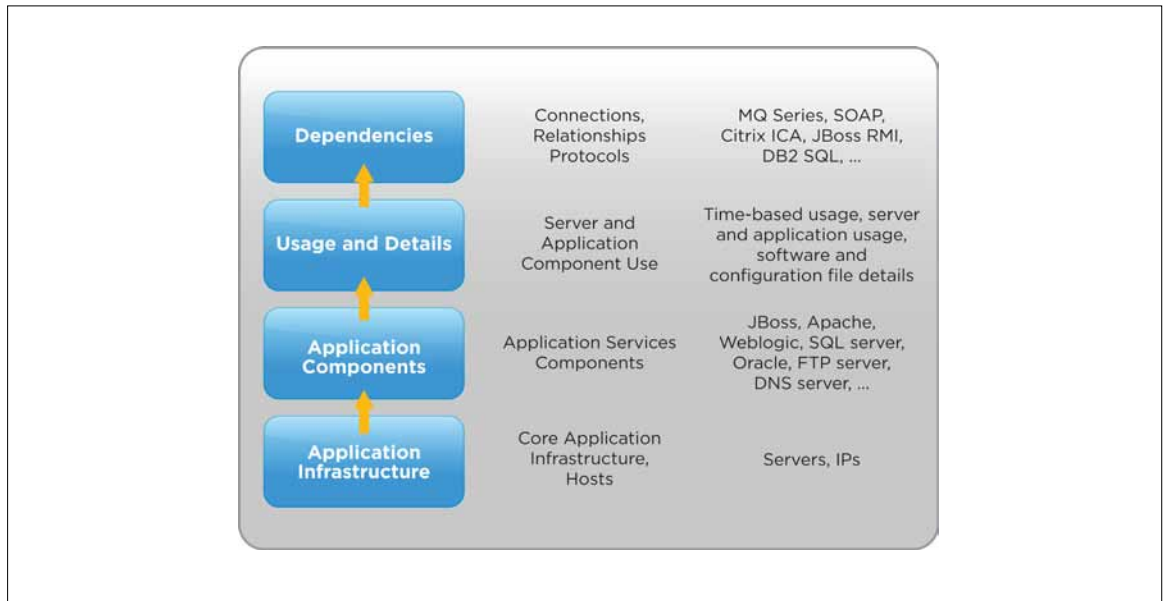
Virtualization dramatically changes these relationships. What were once mostly static and unchanging links between applications and the information infrastructure are now variable and dynamic. Traditional methods and technologies cannot fully address this new paradigm, but by adopting an automated solution designed specifically for vSphere environments, you can increase visibility and understanding of dynamic application-infrastructure relationships, resulting in more effective management of your virtual infrastructure and how that infrastructure interacts with the physical environment.

### 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—a critical activity.

### 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 (Figure 1). With this understanding, you can get the accurate, up-to-date information you need to make the right decisions about optimizing IT service management and IT service delivery.

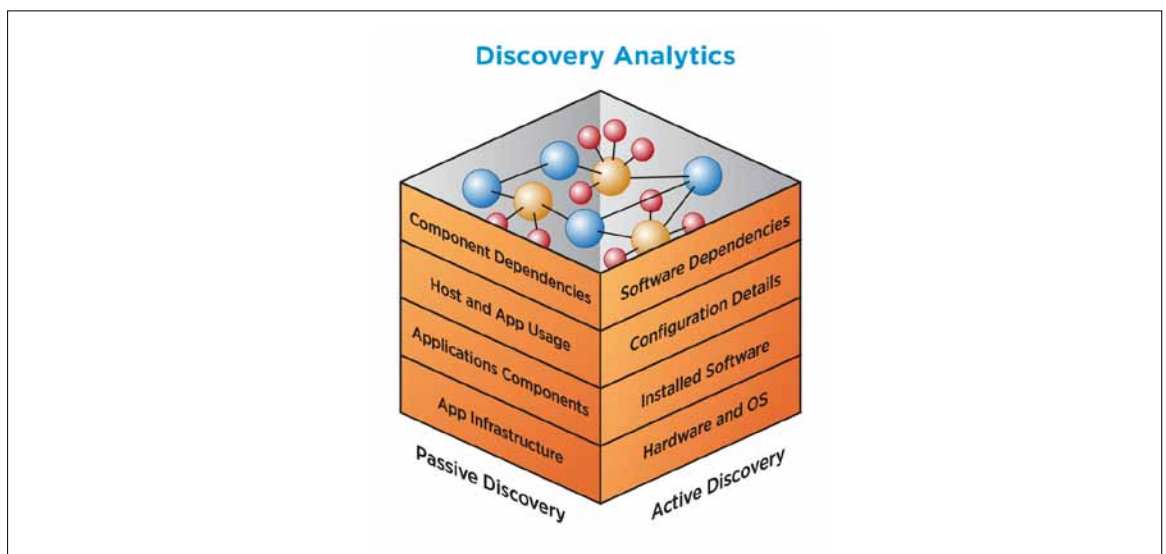


**Figure 1:** The Types of Information an Automated Application Discovery Product Should Provide

Automated application discovery should leverage an effective, proven, agentless discovery method—commonly called “passive discovery”—to automatically and uniquely discover the structural and behavioral aspects of applications. Passive discovery simply observes network traffic in real time, 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 vSphere 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, using a 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 (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 vSphere 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 virtual infrastructure, such adaptation is necessary. With the rapid pace of change in vSphere environments, you need to know what has changed so you can effectively ensure IT service delivery. 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

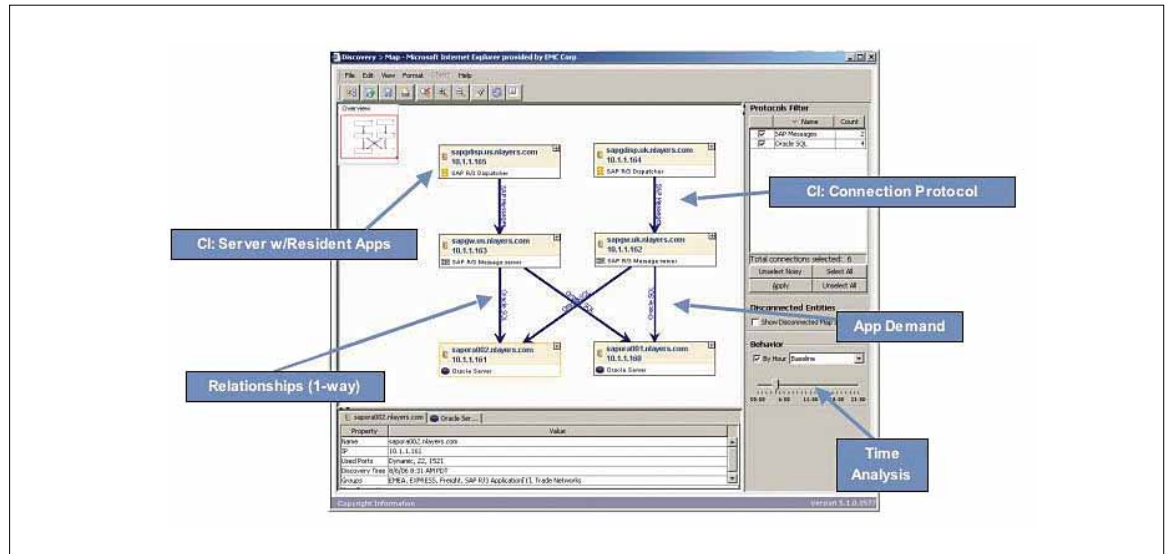
To solve the critical challenges associated with effectively managing VMware environments, you need to leverage automated application discovery. Key capabilities include:

- **The ability to analyze** discovered configuration items and dependencies—including modeling the impact of potential changes
- **A hybrid discovery model** that lets you 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; and understand core application infrastructure, application components, usage and details, and dependencies
- **Tracking of configuration changes** for applications, services, and hardware; and compare system to system (such as a test environment to a production system), to identify differences
- **Problem and incident management** with “triage” capabilities to readily determine what changed and what should be changed back to restore delivery of the IT service; and problem forensics for post-mortem problem analysis to determine the root cause
- **Physical and virtual visibility** is required as today's application dependencies span both vSphere components and also physical servers.

### Unlocking Hidden Value Before and After Virtualization

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

Application Discovery Manager offers real-time visibility into applications and infrastructure elements, relationships, and behaviors offers unsurpassed value before and after consolidation and virtualization. The solution also determines the key dependencies that exist between applications and their physical hosts, based on your network traffic and application use (Figure 3).



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

With this information, you can place critical applications on the right virtual machines to ensure appropriate levels of IT service delivery and performance. For example, Application Discovery Manager can 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.

For IT environments that are already virtualized, 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

Automated application discovery simplifies virtualization management by delivering insight and understanding into an often-overlooked area: the IT services that run on VMware vSphere and across the virtualized datacenter. VMware vCenter 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 vSphere environment. With real-time 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 vSphere environment and beyond—in short, the ability to optimize the promise of your entire virtualization investment.

