

Facilitating Application Consolidation onto Linux-based Platforms

As enterprises look for ways to reduce costs and simplify IT management, they often consider various approaches to server consolidation. Among them, application consolidation offers significant benefits, particularly when the applications are consolidated onto an open platform, such as one running the Linux® operating system. This article examines how tools from BMC Software can coordinate application software deployment in Linux-based environments and can evaluate the performance benefits of application consolidation.

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Managing multiple distributed applications can be costly and difficult. To lower management costs and improve application performance, IT personnel are consolidating their databases, Web application servers, and mission-critical applications onto platforms running the Linux® operating system. The cost-effectiveness, stability, and scalability of Linux have made it the fastest growing operating system in the IT industry today.

In addition to a stable operating system, application consolidation¹ requires reliable hardware and management software to ensure the availability and performance of the applications. BMC Software offers a scalable, heterogeneous blend of monitoring and management tools that support various applications, databases, and operating systems. Successful application consolidation on Linux platforms requires a holistic life-cycle perspective on Linux migration and the ability to manage Linux-based applications within a heterogeneous enterprise

environment. This article examines some aspects of Linux-based application consolidation:

- **Coordination of application software deployment:** Businesses must be able to plan seamless software installations, upgrades, and maintenance on hundreds or even thousands of Linux-based servers. BMC® Deployment Manager for Linux can facilitate these tasks from a central console.
- **Service management:** Once applications are ported to Linux, IT personnel must be able to measure return on investment (ROI) and end-to-end response times. The BMC PATROL® family of systems management software can help accomplish these tasks.

Coordinating application deployment to Linux systems

While offering obvious technical and economic benefits, Linux-based application consolidation also introduces some

¹ For more information about application consolidation and other types of server consolidation, see "Approaches to Server Consolidation" by Todd Muirhead at http://www.dell.com/us/en/esg/topics/power_ps3q02-muirhead.htm.

unique deployment, systems management, security, and reliability challenges. IT personnel must address the logistical effort associated with installing, upgrading, and managing an environment that has hundreds or thousands of Linux systems running diverse applications.

Dell™ PowerEdge™ servers support multiple configurations and versions of the Linux operating system. Permitting different configurations and deployment methods can provide a flexible and customized environment, but it also makes one straightforward, general deployment procedure impractical. IT personnel need the capability to perform specific, simultaneous tasks on multiple machines and to configure an environment that best supports an organization’s business objectives.

BMC Deployment Manager for Linux can help IT departments install and deploy software to Linux-based systems. This tool can facilitate the deployment of heterogeneous applications over thousands of Linux nodes, reduce scheduled maintenance downtime, and lower operational costs. Furthermore, Deployment Manager for Linux can provide controlled interoperability and application software prerequisites when software is upgraded. These functions can help improve IT staff productivity during application installations and upgrades.

The capabilities of Deployment Manager for Linux

Deployment Manager for Linux complements the capabilities of Linux, optimizes its strengths, and helps prevent possible interoperability problems.

Providing automatic work analysis and estimates. Before application software is installed, Deployment Manager for Linux analyzes each machine to determine the resources, components, and tasks required for the deployment. In addition, Deployment Manager for Linux automatically provides the most cost-efficient method for a deployment, depending upon the requirements set for the job.

Managing multiple machines simultaneously. Deployment Manager for Linux provides a central point for managing large numbers of Linux-based machines, allowing IT personnel to categorize the machines in groups and simultaneously control machines in different groups. Director, a part of Deployment Manager for Linux, can provide access to scripts, configuration files, and probes that can be automatically customized (through macros) to suit each machine. Any function that Deployment Manager for Linux performs for one machine, it can perform for a thousand machines, without requiring additional user intervention.

Creating component profiles. IT personnel can create a component profile of the ideal machine: what it must contain, what it should not contain, and which components must always be updated. Deployment Manager for Linux can store an unlimited number of these profiles and then run them simultaneously on multiple machines. It automatically installs or upgrades the required components and uninstalls the prohibited components. Without Deployment

Manager for Linux, IT personnel would need to configure and install each server individually—a process that could become tedious and arduous, especially if an environment contains hundreds or thousands of servers. This tool lets IT personnel deploy, install, and upgrade in a fraction of the time, cutting costs and increasing staff availability and productivity.

Checking application dependencies. Application dependency is a major concern in Linux deployments. Most Linux applications use existing components to facilitate installations, upgrades, and dependency checking. Thus, when installing an application on a Linux machine, IT personnel must install all the dependent packages as well. Sometimes, components or product fixes conflict. These issues should be resolved before the application is installed or upgraded.

However, if a system uses Deployment Manager for Linux, all dependency checking and application interoperability issues are handled automatically. This tool determines the certified components by using its knowledge-base application inventory. To create this knowledge base, BMC regularly tests the interoperability of Linux components (see Figure 1). A team of BMC engineers gathers software, hardware, and kernel components from public sources and vendors. Another BMC team then installs and runs each component in a wide range of Linux environments to verify which components work or conflict with others. They record their conclusions as a set of rules that define each component’s conflict and dependency relations with other components. This set of rules composes the knowledge base.

When IT personnel use Deployment Manager for Linux, the knowledge base scans for dependencies and, before the software is deployed, automatically notifies the person performing the installation of any conflicts. IT personnel can manually run a system scan for dependencies, or they can schedule the scan to run automatically. They also can clone application servers to help troubleshoot production problems or to facilitate any process that may require a symmetric application environment.

Managing multiple Linux distributions and versions. In most IT environments, different Linux distributions or versions, such as those from Red Hat or SuSE, may be installed on the various Linux

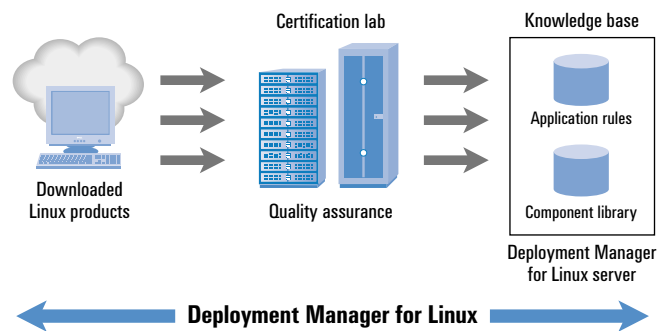


Figure 1. Creating the Deployment Manager for Linux knowledge base

nodes. In addition, Linux kernel upgrades are released quite frequently, challenging independent software vendors (ISVs) and the IT industry to keep up with the latest Linux enhancements. Linux distributions must be effectively recognized, tested, and certified before they can be moved into a production environment.

Deployment Manager for Linux easily handles the Linux maintenance process. It recognizes the distribution and version installed on each machine and can run a general deployment job simultaneously on multiple machines with different Linux distributions. Each machine receives the individual application software that best suits its configuration.

Enabling flexibility and efficiency. Deployment Manager for Linux is flexible enough to suit unique configurations and to accommodate future changes to a system's configuration, and it is specific enough to recognize the Linux distribution used on each machine and the configuration of the environment. Even if the environment includes multiple distributions, multiple machine profiles, or multiple configurations within Dell hardware, Director can automatically run one job for the list, using whatever method necessary for the machines' specific configurations.

Helping ensure Linux component security. Security is vital to Linux-based platforms. Effectively securing components within the Linux operating system depends upon IT staff expertise or the capabilities of management tools. Tools should identify components that are security hazards and not only warn IT personnel of them, but also provide an option to automatically replace those hazards with secure components. Deployment Manager for Linux determines which components are security hazards and upgrades them with secure patches or fixes. Security is also taken into account when the Deployment Manager agent looks for optimal solutions for jobs. Deployment Manager for Linux supports Web proxies, SOCKS servers, encryption, and firewalls. Unlike other tools that might compromise the security of a network, Deployment Manager for Linux works with the network and actually enhances its security.

Achieving cost-efficiency. Deployment Manager for Linux offers many benefits for Linux system administration, including cost-efficiency. Using this tool, IT departments can deploy applications onto Linux-based systems with fewer support staff and in less time.

Evaluating application performance through service management

IT personnel must be able to manage their Linux-based environments from a service-level perspective, and if consolidating to Dell hardware, they should have the tools to manage the consolidation process from an application perspective. In particular, IT administrators should note how the applications performed before consolidating onto the new hardware; what performance improvements were achieved, if any; and the end-to-end response time for the new system.

Verify SLA compliance with PATROL for Service Level Management


One tool that helps IT departments ensure successful application consolidation is BMC PATROL for Service Level Management (SLM), which helps gauge whether the end-user experience meets service level agreements (SLAs). This product can be applied to complex business transactions that interact with heterogeneous environments and span multiple e-business and business-to-business applications, including internally developed applications. PATROL for SLM provides a comprehensive view of application-service health, and it notifies IT staff and end users when application performance does not comply with SLAs. This tool also helps correct and prevent conditions out of SLA compliance.

Assess availability with PATROL End-to-End Response Timer

Another useful tool for application consolidation is the BMC PATROL End-to-End (ETE) Response Timer, which enables companies to determine the availability and performance of business applications. This tool executes real business transactions and monitors response times from desktop environments. PATROL ETE Response Timer automatically reports application availability and response times, and identifies locations where and transactions in which response time has degraded. This tool helps IT personnel evaluate application performance by:

- Eliminating manual gathering of response time and availability data
- Quantifying response time and availability data for business transactions rather than for technical transactions
- Enabling faster identification and problem isolation of availability and response time issues
- Delivering metrics to gauge customer satisfaction

Making application consolidation more effective

The BMC Software products presented in this article help ensure the business availability of Dell servers and their applications. IT departments can use these tools for deploying applications and measuring adherence to SLAs. Furthermore, these capabilities can help IT departments realize the benefits of consolidating applications onto a Linux-based platform. 

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