Simpler Server Management

This technical white paper shows how Dell Lifecycle Controller integrates with Microsoft System Center Configuration Manager (SCCM), allowing enterprises to manage Dell PowerEdge servers from a single SCCM console. It further exhibits how some of these same benefits are extended to small-businesses (SMB) via the System Center Essentials (SCE 2010) product.
Executive summary

Efficient management of IT assets is critical for any business. The biggest impact you can make on your IT operational costs is through efficiency improvements and driving down your operational labor costs.\(^1\) Adopting core best practices can save over $10,000 per server, per year in IT labor costs.\(^2\)

Dell continually designs and tests products and processes to simplify and automate server manageability. In this paper, we describe how Dell™ Lifecycle Controller and Microsoft® System Center Configuration Manager (SCCM) combine to provide more efficient management of Dell PowerEdge servers.

Introduction

Dell Lifecycle Controller Integration (DLCI) version 1.3 for Microsoft System Center Configuration Manager 2007 R3 allows enterprises to take advantage of the capabilities of the Dell Integrated Remote Access Controller (iDRAC) with Lifecycle Controller to deploy and troubleshoot their Dell PowerEdge servers from a single SCCM portal. The capabilities of this approach include the following:

- **Automatic discovery:** Using DLCI for SCCM, you can automate the addition of current or future generations of Dell PowerEdge servers to your ecosystem. DLCI will even create a collection for them. Unlike a basic Simple Network Management Protocol (SNMP) detection, detailed hardware inventory is gathered as part of the discovery.

- **Configuring a deployment:** DLCI lets you control all aspects of the deployment task, including Dell PowerEdge-specific components, from within the SCCM framework. You can create the boot image, customize the drivers, configure the BIOS/firmware/RAID and customize the OS image, all using wizards and standard SCCM interfaces.

- **Deployment:** Deployment is truly automatic, even to the point of powering the servers up.

- **Error detection:** DLCI gives you easy access within SCCM to quickly recognize and diagnose any hardware errors, should they occur, for a single server or an entire collection of Dell servers.

Recognizing that some data centers have fewer than 50 servers, Microsoft created a similar management tool for smaller IT environments—Microsoft System Center Essentials (SCE). Small- and medium-sized businesses (SMBs) can enjoy many of the same benefits of Dell OpenManage integration using Microsoft System Center Essentials 2010. In particular, the Dell Server Management Pack Suite and Dell Server Update Catalogs can help you improve and simplify server maintenance and compliance.

About Dell Lifecycle Controller Integration

A few years ago, Dynamic Markets Ltd. found that only 28 percent of IT managers used a single management tool to discover, track, secure and manage all the IT hardware and software assets in their environments.\(^3\)

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\(^1\) *Driving Costs out of IT Infrastructure while Increasing Optimization with System Center* [http://microsoftio.partnersalesresources.com/content/coreio/Presentation%20-%20SMSE_SMSPitchv%20V2%20-%20FY10.pptx](http://microsoftio.partnersalesresources.com/content/coreio/Presentation%20-%20SMSE_SMSPitchv%20V2%20-%20FY10.pptx)

Using Dell Management in Microsoft System Center

their organization.³ Time spent finding, learning to use and maintaining an array of tools is not only inefficient and expensive, but also increases the risk of security vulnerabilities and non-compliance. By consolidating many of the capabilities you need for server deployment and maintenance into a single utility, Dell has an answer to your server management needs with the Dell Lifecycle Controller Integration for Microsoft System Center Configuration Manager.

The Dell Lifecycle Controller is delivered as part of the Integrated Dell Remote Access Controller (iDRAC) Express or Enterprise versions in current and future generations of Dell PowerEdge servers. It provides a simplified, streamlined and automatable method of managing servers through the complete life cycle, from provisioning and deployment through configuration changes and updates to end-of-life re-purposing or obsolescence.

Recognizing that data centers have existing ecosystems, Dell has developed Dell Lifecycle Controller Integration for Microsoft System Center Configuration Manager (DLCI for ConfigMgr). This enables IT administrators to take advantage of the capabilities of the Dell Lifecycle Controller, all within the context of the ConfigMgr Console they already own and use to manage servers in a production environment. Within the ConfigMgr Console, IT administrators can use the Lifecycle Controller Integration System Viewer to configure and manage a single Dell server, or use the Lifecycle Controller Configuration Utility to configure and manage an entire collection of Dell servers. Even servers not running Microsoft Windows⁵ can be maintained and kept compliant with DLCI and SCCM.

Note that deployment is only available for Windows operating systems.

³ Survey of Corporate IT Managers Finds ‘Asset Amnesia’ Rife in Organizations
About Microsoft System Center Configuration Manager

Microsoft System Center Configuration Manager 2007 is Microsoft’s solution for managing large Windows-based deployments. The examples provided in this paper use the R3 version of Microsoft System Center Configuration Manager 2007. SCCM includes many capabilities, including operating system deployment, as well as hardware and software inventory.

About Microsoft System Center Essentials

Microsoft System Center Essentials 2010 (SCE) is the Microsoft solution for small and medium deployments, supporting up to 50 servers. Although it does not enable server deployment capabilities, as does SCCM, SCE with Dell OpenManage integration allows SMBs to enjoy many of the same features and benefits as DLCI with SCCM.

Advantages of Lifecycle Controller Integration with SCCM

There are numerous advantages of the tight integration of DLCI and SCCM when integrating Dell PowerEdge servers into an existing SCCM ecosystem. You can take advantage of the Lifecycle Controller for automatic discovery, configuring deployments, unattended deployment and error detection. You can get all these capabilities and still stay within the SCCM ConfigMgr Console. This integration reduces the number of tools, simplifying management and reducing operational costs.

Integrating Dell Lifecycle Controller with Microsoft SCCM

Microsoft estimates that 60 percent of server cost is operational, and the most effective way to keep operational expenses under control is by reducing operational labor costs. 4 This means you need data center solutions that work with your existing systems, not ones that add more complexity. Dell Lifecycle Controller Integration makes it easy to use the capabilities of the Dell Lifecycle Controller from within your existing Microsoft System Center Configuration Manager infrastructure.

The following information demonstrates how easy it is to use Dell Lifecycle Controller Integration 1.3 to add Dell server management capabilities to Microsoft System Center Configuration Manager 2007 R3.

Begin by downloading Dell Server Deployment Pack 1.2 and Dell Lifecycle Controller Integration 1.3 from www.dell.com/systemcenter. These software downloads are available at no charge. After running the executable for each utility, you can launch the SCCM ConfigMgr Console and verify that the Dell packages are now part of your SCCM deployment.

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4 Driving Costs out of IT Infrastructure while Increasing Optimization with System Center
http://microsoftio.partnersalesresources.com/content/coreio/Presentation%20-%20SMSE_SMSDPitchv%20V2%20-%20FY10.pptx
At this point, you could use the Dell PowerEdge Deployment Toolkit Configuration Wizard from within the ConfigMgr Console to create a boot image. However, before SCCM can discover the Dell PowerEdge servers in your network, you have to make a few changes that are particular to your environment. You will need to set the security posture for the discovery and handshake, import certificates and set the certification authority for the provisioning Web service. You will also need to add the DHCP scope for the Lifecycle Controller to the DHCP server. The Dell documentation included in the References section provides detailed information on these procedures.

**Automatic discovery of servers**

When new servers arrive in the data center, the pressure is on to get them up and running in your production environment. It is essential that they be integrated into the existing server infrastructure as quickly as possible.

You can order all current- and next-generation Dell PowerEdge servers with support for agent-free discovery through DLCI and SCCM. There is no need to install an agent or to perform any other preparation steps. Just plug a network cable into the server and apply power. DLCI and SCCM will do the rest. If this is the first discovery of Dell PowerEdge servers in your environment, DLCI will also automatically create the Dell Lifecycle Controller Servers collection.
Unlike some forms of server discovery, this is no SNMP-based, barebones discovery—this is truly agent-free, with no need to edit a management information base (MIB) to get system information. Detailed information, such as this hardware inventory, is immediately available.

When ordering and configuring your PowerEdge server, make sure to select Auto Discovery Enabled under Systems Management Upgrades. The no-cost factory configuration option enables auto-discovery in the BIOS. However, if your server did not come from the factory with this option selected, you may need to boot into the BIOS and enable auto-discovery using the iDRAC6 Configuration Utility.\(^5\)

\(^5\) For more information, refer to the document *Using iDRAC6 Configuration Utility*, available at [http://support.dell.com/manuals](http://support.dell.com/manuals).
Configuring the deployment

In an increasingly regulated and litigious world, making sure your systems comply with company policy has never been more important. A 2011 study by the Ponemon Institute\(^6\) found that the cost of noncompliance was 2.6 times the cost of compliance, averaging $280 per employee.

Secure centralized provisioning is essential to server compliance, and centralized operating system deployment is a critical component. DLCI works with SCCM and Active Directory to provide this provisioning.

To create your configuration, right-click Operating System deployment, and you will see Dell PowerEdge Server Deployment listed along with the other SCCM operations (shown in Figure 5).

**Figure 5.** The ConfigMgr Console offers options for deploying to Dell PowerEdge servers

DLCI lets you seamlessly create remote, unattended deployments specific to Dell PowerEdge systems from inside the ConfigMgr Console, enabling IT administrators to complete common tasks for your collection of Dell PowerEdge servers, including the following:

- Update firmware through the Dell Plug-in Deployment Kit (PDK) Catalog, the Dell FTP site, or an existing firmware inventory profile
- Make changes to the hardware configuration
- Apply a NIC or CAN profile
- Make changes to the RAID configuration and create a RAID profile using Array Builder
- Apply an iDRAC profile

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• Select the advertisement and the operating system to be deployed
• Select the bootable media to deploy the operating system

**Figure 6. Configuring an operating system deployment**

Once the task sequence is created, you can edit it and advertise it using the standard SCCM methods you already use in your environment. Dell provides a detailed workflow for hardware configuration and OS deployment in the Lifecycle Controller Integration 1.3 User Guide.⁷

**Launching the deployment**

When you are satisfied, you can use DLCI to launch the deployment and let DLCI and SCCM take care of everything, including remotely powering on the system.

Assuming you have not created a task sequence that requires interaction, there is nothing else to do. When the deployment is complete, SCCM and the Dell Lifecycle Controller Task Viewer will show the tasks as Complete in the Status field (shown in Figure 7).

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⁷ For more information, refer to the document, *Dell Lifecycle Controller Integration Version 1.3 for Microsoft System Center Configuration Manager*, available at [http://support.dell.com/manuals](http://support.dell.com/manuals).
Security is an integral part of the process. If, for example, you deploy using an operating system image that is not password protected, the task sequence will ask you to confirm that the deployment should proceed.

**Configuration and Compliance management through Lifecycle Controller Logs**

The increasing density of the modern data center can challenge IT administrators. A single 42U rack can represent as many as 42 1U servers, and a large deployment of 50 42U rack servers can have over 1,000 2U servers. Because it can take several minutes to log in and access the logs for a single system, individually examining each server can be prohibitively expensive, even when it can be done from a single window.

Fortunately, the right tools can help and the savings can be substantial. Standardizing processes for server maintenance tasks, such as adding, moving, or changing data management servers, and using rules-based monitoring practices such as setting thresholds for basic parameters, make IT organizations more effective and efficient. One study found that these two practices could save $2,100 per server per year in IT labor costs.⁸

These are exactly the types of tasks where DLCI for SCCM can help simplify IT management. Using the same ConfigMgr Console that your IT administrators use to auto-discover PowerEdge servers and remotely deploy custom OS images, you can easily manage your entire Dell Lifecycle Controller server collection with the Lifecycle Controller logs. Figure 8 shows how you can see the messages from all servers in your Dell collection in a single window using the Lifecycle Controller Configuration Utility. This example also illustrates how DLCI for SCCM can help your IT administrators quickly recognize critical hardware changes from within the ConfigMgr Console, regardless of the numbers of servers in the collection. The first message in the viewer shows that a power supply is missing on one of the systems in the collection.

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IT administrators can also mine this data, regardless of the number of servers, and identify any server with hardware configuration changes. Figure 9 shows that one server has a new network adapter. Once the new network adapter has been identified, a previously created NIC profile can be applied or a new NIC profile can be created through ConfigMgr.
In another example, Figure 10 below shows that additional memory has been added to the server to increase performance.
Osterman Research found that the average IT labor cost was 13.5 person-hours per incident. Finding and correcting problems is critical to a business’s bottom line, and tools that make it easier to prevent downtime are essential for your business. Fortunately, DLCI and SCCM can help you meet this challenge. Dell is committed to improving management in the data center, and future versions of DLCI will build upon the Lifecycle Controller Logs extensive reporting capabilities.

**Using Microsoft System Center Essentials**

For SMBs with up to 50 servers, Microsoft offers System Center Essentials (SCE) 2010 to efficiently manage your Windows environment from a single management interface. Just as Dell offers Lifecycle Controller integration for SCCM, Dell also offers the OpenManage Integration Suite for Microsoft System Center. These software tools, which you can download at no cost from [www.support.dell.com](http://www.support.dell.com) and [www.dell.com/systemcenter](http://www.dell.com/systemcenter), enable you to easily manage your Dell servers through SCE 2010.

With System Center Essentials 2010, SMBs can easily manage routine IT maintenance tasks through automation, reducing both operational error and expenses. In addition to enabling more efficient server maintenance with automated system updates and data collection, SCE 2010 also allows your IT administrators to accelerate problem resolution through proactive monitoring.

The Dell OpenManage Integration Suite for SCE 2010 gives your IT administrators the ability to seamlessly manage Dell systems:

- **Monitor**: Dell Management Packs discover and monitor the health status and hardware events of Dell servers, blades, MD storage and business client PCs.

- **Update PowerEdge servers and blades**: Dell Server Update Catalogs automate system BIOS, firmware, drivers and application updates for PowerEdge servers and blades.

- **Optimize and remediate**: Dell Server Performance and Resource Optimization Pack (PRO-Pack) monitors the health status of physical host servers, enabling optimal management of virtual resources.

As an example, consider updating the software for your PowerEdge servers. Dell provides the System Center Updates Publisher (SCUP) catalog for both servers and business clients, which you can download at no cost, allowing you to manage software updates for PowerEdge servers using SCE 2010. SCUP enables IT administrators to import software catalogs and manage software update definitions. In SCE 2010, IT administrators can then update PowerEdge servers through either a standalone Dell Update Package (DUP) or the Dell Server Update Catalogs.

A DUP contains feature enhancements or changes, such as firmware, BIOS, drivers and software, to help keep your system software current and compliant. A Dell Server Update Catalog is a .cab file containing DUPs applicable for all supported PowerEdge servers. Update Catalogs are automatically downloaded through SCE 2010 as soon as Dell releases them.

Importing a catalog for your Dell PowerEdge servers using SCE 2010 is a simple process:

1. In SCE 2010, access the Updates Overview pane and click Import updates from partners catalogs.

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2. Follow the wizard to select a specific product catalog, and either select the Dell catalog from the drop-down list, or specify the Dell FTP site URL (ftp.dell.com).

3. After verifying the update source and reviewing the update details, click Import.

4. All applicable updates will now import, completing the process.

Deploying software for your Dell PowerEdge servers is also simple. SCE 2010 supports software deployment with .msi and .exe file extensions:

1. In SCE 2010, access the Updates Overview pane.
2. Either select an existing group or create a new group on which you want to deploy software.
3. Approve the deployment for the appropriate group.
4. View reports and alerts to monitor the progress of the deployment and also identify and understand problems that caused the software installation to fail on specific systems.

**Conclusion**

Dell management technologies make integrating Dell PowerEdge servers into your data center easy. By integrating with Microsoft System Center Configuration Manager, Dell Lifecycle Controller Integration lets you fully manage Dell PowerEdge servers from within the SCCM portal, while the Dell OpenManage Integration Suite works with SCE to provide some of the same benefits to smaller installations. Whatever the size of your data center, Dell management technologies contribute to more effective and efficient IT management.
Appendix A: References

Dell Auto-Discovery Network Setup Specification:

Dell Lifecycle Controller Remote Services Overview:

Dell OpenManage Integration Suite for Microsoft System Center
www.dell.com/systemcenter

Dell OpenManage Systems Management Portfolio
www.dell.com/openmanage

Dell Lifecycle Controller Integration Version 1.3 for Microsoft System Center Configuration Manager
User’s Guide:
http://support.dell.com/manuals

The True Cost of Compliance Ponemon Institute:

Dell Lifecycle Controller Systems Management Wiki:

Dell Lifecycle Controller Integration for Configuration Manager:

Dell OpenManage Monitoring Tools for Microsoft System Center:

Driving Costs out of IT Infrastructure while Increasing Optimization with System Center:
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Microsoft System Center home page:

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Microsoft SCCM 2007 R3 overview:

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