



Dell PowerEdge Updates Best Practices Guide

Dell Product Management
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1 Executive summary

Servers can require updates for many reasons, including addressing security issues, performance enhancement, enabling new functionality, adding support for new operating systems as well as to address defects.

Keeping your servers and the devices inside of them at the most current level will help get the most out of your investment.

There are three important components of a good update plan.

1. Establish and maintain a baseline
2. Notification of new updates
3. Deployment of updates

Dell provides easy-to-use tools for each of these steps.

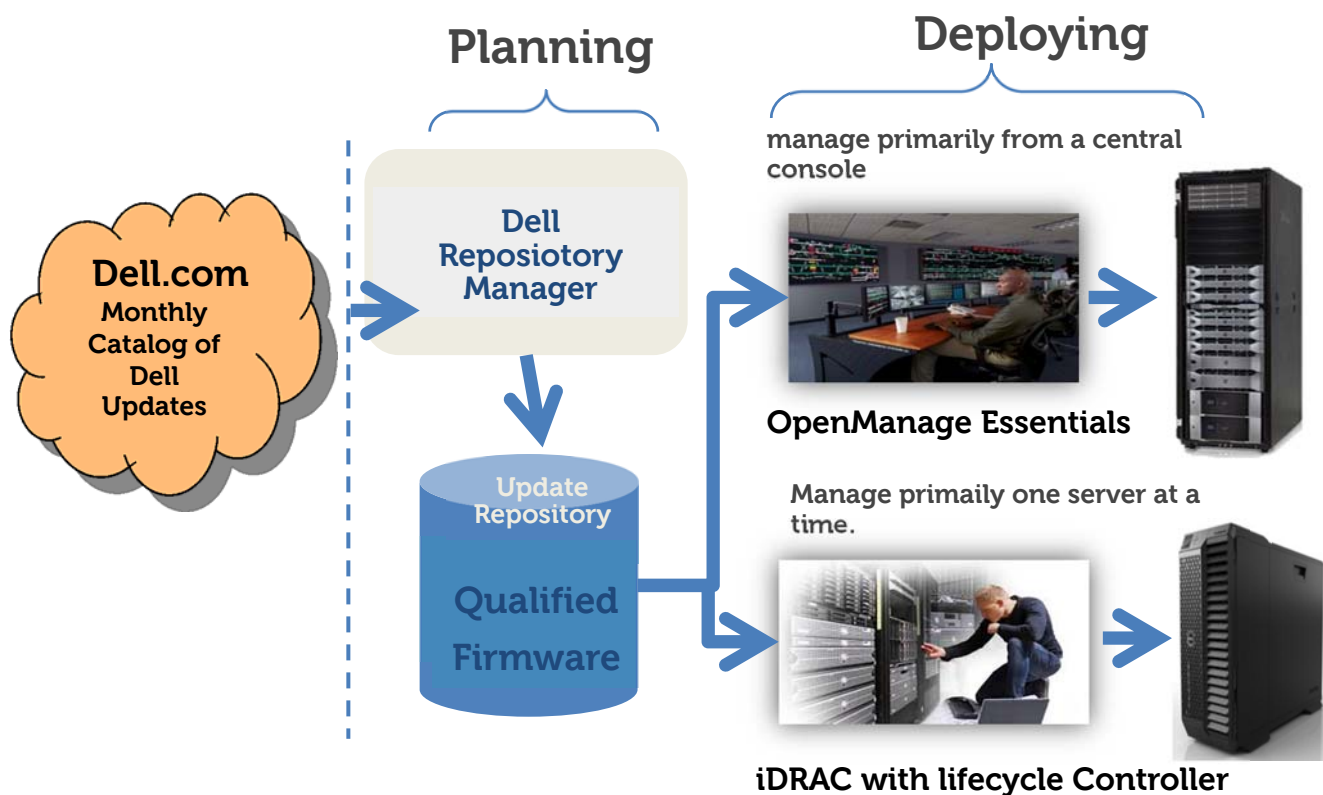
2 Establishing a server maintenance strategy

The best practice for establishing a server maintenance strategy is to identify the components of a good plan. The core of a good plan is the creation and maintenance of a baseline of device levels.

Once the components of a sound strategy are in place, ongoing maintenance is easier.

1. Develop and maintain a baseline
2. Notification of new updates
3. Deploy the baseline and any subsequent updates.

Dell tools assist in each of these areas, providing you with as much or as little control as you require.



2.1 Baseline Development and Management

It is a best practice to establish a common set of device levels (both drivers and firmware) for the systems in your data center; this is referred to as a baseline configuration.

The Dell Advantage: Dell Repository Manager (DRM) is designed to assist in the creation and maintenance of a baseline configuration of BIOS, Firmware and Driver levels. DRM assists in identifying the updates that are relevant to the systems in your environment, by using DRM in combination with OpenManage Essentials a baseline configuration capturing current versions of firmware and drivers can be created. This process will also identify updates that are newer than those which are currently installed.

DRM integrates with other Dell OpenManage tools such as OpenManage Integration for VMware vCenter and Dell Chassis Management Controller.

You can use Repository Manager to publish a baseline software catalog and the update files on your internal network, thus providing a secure, internal location for your systems' updates.

Once an initial baseline is set, it can be applied to all the systems in your data center to ensure that all your systems are at the same level. When new systems are brought into your data center, this baseline should be deployed to them so that all systems are at the same version.

By doing this, it will be simpler to develop and apply future updates since your systems will be the same.

Best Practice: When a new update is identified, it can be deployed to the systems in your data center and also placed in the Baseline created using Dell Repository Manager. This keeps **your** baseline up to date with the file versions that are deployed on the servers in your data center.

The advantages of using baselines and applying the baseline to all systems in your data center is that you know what levels the systems in your data center are at. When a new update is identified, only that new update needs to be deployed to the systems in your data center.

2.2 Update Notification

As part of a Baseline strategy for maintaining your systems, it is important to know when a new update is available.

The Dell Advantage: Using Dell Repository Manager's Scheduled Search for New updates feature will assist in identifying new updates as they become available.

It is a straightforward process to add new updates to an existing baseline created with Repository Manager.

2.3 Deployment

Deploying the updates to the physical systems in your Data Center is the most critical part of an update. It is important to determine the best time for updates in order to minimize the impact of server downtime.

Maintenance Window: System downtime is a major concern for any organization. Operating system providers offer maintenance releases to their Operating Systems. When the OS is being updated is often a good time to also perform updates to your devices. However, each company needs to determine what is best for them.

If an update is identified as urgent, it is recommended that the update be applied as soon as possible. Consult any readme files and/or related documentation for more information.

How to deploy updates is usually a matter of personal preference. A large consideration is determining whether or not to deploying to multiple servers at once or to one server at a time.

The advantage of deploying to multiple servers is that entire groups of serves can be update based upon the maintenance schedule that you have set. However there are instances where an individual server requires updates.

Dell OpenManage Essentials is recommended for deployments to multiple servers, while there are several methods (remote web GUI, scripting) that take advantage of each Dell server's embedded iDRAC with Lifecycle Controller for single server deployment.

The Dell Advantage: Both OME and iDRAC with Lifecycle Controller can utilize the same baseline configuration, which will ensure that your servers have a consistent configuration.

2.3.1 Updating multiple servers: OpenManage Essentials

OpenManage Essentials provides the features and functionality to deploy updates to many servers simultaneously. It will determine the best method to deploy the update; either in-band through the Operating System or Out-of-Band using Dell's embedded update capabilities in iDRAC with Lifecycle Controller.

OpenManage Essentials will inventory the systems in your data center, compare it against the Baseline you have established using Dell Repository Manager and select the appropriate updates to deploy to bring your systems into compliance with your Baseline.

If a server drifts from the defined Baseline, you will be alerted and can take the necessary actions to bring it back into compliance.

The Dell Advantage: Dell Repository Manager integrates with OpenManage Essentials to assist in the creation of the initial baseline, as well as the identification of newer updates that are available.

Additional information:

http://en.community.dell.com/techcenter/extras/m/white_papers/20217144.aspx

<http://delltechcenter.com/OME>

2.3.2 Updating a single server: iDRAC with Lifecycle Controller

There are times where a single or small number of servers need to be updated. Dell provides an easy means to update these boxes through using the remote access capabilities of iDRAC to access the Lifecycle controller and perform the updates.

From iDRAC you can logon using the virtual console feature to provide access to the server. From here you can access the embedded Lifecycle Controller and select the update option to perform your updates. The option allows you to easily select the location of your baseline and bring the system up to compliance.

The Dell Advantage: iDRAC7 and iDRAC8 Staged Firmware Update feature allows for the server to deploy updates to a server(s). The staged update feature can be set to get its updates from the same Baseline that was created using Dell Repository Manager and leveraged by OME. This provides a means of keeping systems all at the same levels.

<http://en.community.dell.com/techcenter/systems-management/w/wiki/3204.dell-remote-access-controller-drac-idrac.aspx>

http://en.community.dell.com/techcenter/extras/m/white_papers/20431638.aspx

Conclusion: Dell provides easy to use tools that integrate together, allowing for easy development and implementation of a good update strategy.

2.4 Additional Deployment Options

Dell realizes that one size does not fit all scenarios, Dell provides the tools for many optimized environments as well as the building blocks for creating your own tool for deploying updates. Multiple Server update tools can also be used to update a single server, however they are not optimized for that use.

http://en.community.dell.com/techcenter/extras/m/white_papers/20438129.aspx

2.4.1 Updataing Single Server Options

Dell Update Package: A self-extracting executable that contains an individual update. Used for performing a single update on a server. DUPs are the cornerstone of most Dell update offerings.

<http://en.community.dell.com/techcenter/systems-management/w/wiki/5174.dell-update-package.aspx>

iDRAC Auto-Update: iDRAC7 & iDRAC8 provide unique features that allows for the staging and deployment of updates on a schedule that you set. Setting iDRAC to compare the baseline you created and stage the deployment of any update that is newer than what is currently installed will assist in automating the update process, while still giving you control. Using Dell Repository Manager to create and maintain the Baseline provides an easy means of keeping the systems up to date.

http://en.community.dell.com/techcenter/extras/m/white_papers/20438771.aspx

Lifecycle Controller: Lifecycle controller is Dell's embedded systems management tool for Dell PowerEdge 11G and above servers. LC contains systems management, OS deployment and system updates features. LC can be invoked using the F10 key at system start up, or through the iDRAC.

http://en.community.dell.com/techcenter/extras/m/white_papers/20101309.aspx

Server Update Utility: Optimized for 1:1 deployment of updates through the operating system. SUU is a standalone product that is downloadable from Dell.com or can be custom built using Dell Repository Manager.

http://en.community.dell.com/techcenter/extras/m/white_papers/20438122.aspx

<http://en.community.dell.com/techcenter/m/videos/20437403.aspx>

2.4.2 Updating Multiple Server Options

Chassis Management Controller: Dell's Chassis Management Controller provides monitoring and management of a Dell Blade environment. CMC includes an update deployment feature, Dell Repository Managers integration with CMC can assist in identifying and gathering the updates that CMC uses.

http://en.community.dell.com/techcenter/extras/m/white_papers/20439115.aspx.

<http://en.community.dell.com/techcenter/systems-management/w/wiki/1987.dell-chassis-management-controller.aspx>

FTP Catalog: Catalog of updates that point to the physical update files. Very useful for custom built deployment tools, as well as many 3rd party deployment tools.

Bootable Media: Bootable Media puts the update files into format that a server can boot to and perform the required updates. Dell Repository Manager can assist in creating a Bootable Media file.

http://en.community.dell.com/techcenter/extras/m/white_papers/20438117.aspx

http://en.community.dell.com/techcenter/extras/m/white_papers/20438117.aspx

Scripted Deployment Packs: Gathering updates into a group and deploying them using a script is a common practice. Dell Repository Manager can assist in gathering the updates together and attaching a script for deployment.

<http://en.community.dell.com/techcenter/m/videos/20437401.aspx>

2.4.3 Dell Partner Console Integration

Dell has partnerships with many providers of systems management consoles. Dell provides the building blocks for these consoles to deploy updates, and, when required, to optimize catalogs and repositories.

YUM Repository: Yellowdog Update Modified (YUM) is a popular Open Source tool used to update Linux based servers. Dell provides a YUM Repository, which is a collection of updates in RPM format for use by YUM. The YUM Repository can also be used with other Linux update deployment tools such as Zypper and Red Hat Satellite.

<http://linux.dell.com/repo/hardware>

Microsoft System Center: Microsoft System Center Management Console using SCUP provides update management for systems that it manages. SCCM/SCUP requires updates to be packaged in a specific format Dell provides: the SDP Catalog.

http://en.community.dell.com/techcenter/extras/m/white_papers/20208861.aspx

Microsoft System Center Configuration Manager: Dell provides Dell Lifecycle Controller Integration (DLCI) on Microsoft's Configuration Manager console to leverage the remote enablement capabilities of Dell Lifecycle Controllers (DLC), which is part of integrated Dell Remote Access Controller (iDRAC).

Microsoft Server Cluster Aware Updates: Microsoft Cluster Server contains an update feature that will assist in performing updates on the systems within a cluster with minimal disruption to the cluster. Dell Repository Manager can assist in gathering the updates for deployment by the Microsoft Server Cluster Update tool.

<http://en.community.dell.com/techcenter/extras/m/mediagallery/20309937.aspx>

VMware vCenter: The Dell OpenManage Integration for VMware vCenter provides vCenter with detailed information on the Dell PowerEdge servers that it manages. The integration between OMIVV and Dell Repository Manager can assist in identifying and gathering the updates that vCenter will use to update and maintain the servers in its environment.

http://en.community.dell.com/techcenter/extras/m/white_papers/20438119.aspx

BMC Software: Dell and BMC have a strategic partnership to provide enhanced integration of Dell PowerEdge Servers with BMC Bladelogic and Performance Net Manager. The deployment feature of BMC products utilizes standard Dell Update Packages. Dell Repository Manager can assist in gathering and packaging the required updates for use by BMC products.



<http://www.dell.com/learn/us/en/19/campaigns/dell-and-bmc-ga-partners>

CA Networks and Systems Managemt (NSM): The Dell OpenManage Connection for CA NSM provides enhanced monitoring and alerting capabilities for Dell PowerEdge Servers. The deployment feature of CA NSM utilizes standard Dell Update Packages. Dell Repository Manager can assist in gathering and packaging the required updates for use by CA NSM.

<http://en.community.dell.com/techcenter/systems-management/w/wiki/4108.dell-openmanage-connection-for-ca-network-and-systems-management-nsm.aspx>

HP Operations Manager: The Dell Connection for HP Operations Manager provides advanced monitoring and alerting capabilities of Dell PowerEdge Servers by HP Operations Manager. HP Operations Manager can utilize Dell Update Packages to deploy firmware updates to the Dell PowerEdge servers it monitors. Dell Repository Manager can assist in gathering and packaging the required updates for use by HP Operations Manager.

<http://en.community.dell.com/techcenter/systems-management/w/wiki/4106.dell-openmanage-connection-for-hp-operations-manager.aspx>

IBM Tivoli Netcool/Omnibus: The Dell OpenManage Connection for Netcool/Omnibus provides for enhance monitoring and alerts for Dell PowerEdge servers. At this time the Netcool/Omnibus integration does not provide a firmware update capability. However Netcool/Omnibus can send an alert to run OpenManage Essentials to deploy required updates.

<http://en.community.dell.com/techcenter/systems-management/w/wiki/4107.dell-openmanage-connection-for-ibm-netcoolomnibus.aspx>

3 Additional Informations

Dell provides a collection of tools to assist in the deployment of updates in a number of specialized environments.

3.1 Scripting Information

Often updates are deployed using scripts to assist in the automation process. Dell has a robust set of scripting technologies to assist in the development and deployment of updates using scripting

General Scripting Resources:

<http://en.community.dell.com/techcenter/systems-management/w/wiki/2621.script-center.aspx>

Scripting WS-Man Firmware updates

http://en.community.dell.com/techcenter/extras/m/white_papers/20060871.aspx

Performing updates on VRTX

http://en.community.dell.com/techcenter/extras/m/white_papers/20402423.aspx

3.2 Frequently Asked Questions

Q: If I deploy updates in my Baseline to a system that already has those device levels, will it install them?

A: Dell Update Packages check to see what version is currently installed, unless a Forced install option is selected the package will not install.

Q: My Data Center has servers that are virtualized, using Hypervisors such as VMware or Microsoft HyperV, how do I update firmware on these systems?

A: When updating virtualized systems, it is recommended that the update be done using an out of band to minimize conflicts with the Host Operating systems. Utilize either the iDRAC/LC embedded out of band feature in 11G or greater systems or create a Bootable media utilizing Dell Repository Manager.

Q: Can I update Hard Disk Drive firmware using iDRAC/Lifecycle controller?

A: Not at this time. When updating HDD it is advised to do it through an in-band method or by using a Bootable media built using Dell Repository Manager.

3.3 Terminology

Updates can be classified into three general categories. Device Drivers, Device Firmware and BIOS.

Update Types	
Device Driver	Device Drivers allow a specific device to be utilized on a system, such as a Networking adapter. Device Drivers are Operating system specific, and must be deployed through the operating system. It is important to choose the correct device driver for the operating system that is running on the system.

Device Firmware	Firmware is the programmable portions of systems or devices. Firmware updates may provide performance improvements, increase functionality, or fix a defect for the devices that they are designed for. Firmware is typically operating system agnostic, in that it is not dependent on the operating system deployed on server. However many devices, such as networking adapters have programmable features that are updated through the firmware.
BIOS	BIOS is built into the system, and is the first set of instructions run when the system is run. The BIOS initializes the hardware components and starts the host operating systems.

Each Dell Update Package has a designation which indicates its criticality. DUPs are either Urgent, Recommended, Optional or Inapplicable.

Dell Update Package Criticality Levels	
Urgent	The update contains changes to improve the reliability and availability of the Dell system or related component. It is recommended that you apply this update immediately.
Recommended	The update contains feature enhancements or changes that help keep the system software current and compatible with other system modules (firmware, BIOS, drivers, and application).
Optional	The update contains changes that impact only certain configurations, or provides new features that may/may not apply to the environment. It is recommended that you review the update specifications to determine if it applies to the system.
Inapplicable	The update is not applicable on the system. The component version on the system is the same as the repository version and hence, no update is required.

Deployment of an update is either In-Band or Out-of-Band. This means either through the operating system or outside the operating system.

Dell Advantage: 11G and greater Dell PowerEdge Servers can perform out of band updates without the need to create Bootable Media.

In-Band and Out-Of-Band	
In-Band	In-Band is an update that is performed while the host operating system is running. Device drivers are operating system specific, and must be performed through an in band method. BIOS and Firmware can also often be applied in-band.
Out-of-Band	Out-of-Band is an update method that is done prior to the host operating System running. OOB is useful for deploying updates that are typically operating system independent such as BIOS and Firmware. An example of an OOB method is the update feature in iDRAC/LC or a Bootable ISO.