



Introducing iDRAC8 with Lifecycle Controller for Dell 13th Generation PowerEdge Servers

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1 Executive Summary

The Dell 13th generation PowerEdge servers introduces game-changing new features and functionality in the area of systems management. Management automation is a key component of optimizing any data center environment, and the new Integrated Dell Remote Access Controller 8 with Lifecycle Controller delivers automation across every dimension of server management. As a complement to automation, the “at the server” capabilities leverage new mobility and connectivity technologies to remove crash carts and optimize floor time for data center personnel. Underpinning every feature is a reduced reliance on management agents inside an OS, thereby reducing intrusion into production workloads. These features provide operational savings by reducing the time and steps required to deploy, monitor, update, and maintain a server during its lifecycle.



2 Introduction

The Integrated Dell Remote Access Controller 8 (iDRAC8) with Lifecycle Controller, an embedded part of every Dell 13th generation PowerEdge server, helps you to manage Dell servers in physical, virtual, local, and remote environments, operating in-band or out-of-band, with or without a systems management software agent. iDRAC8 alerts server problems, enables remote server management, and reduces the need to physically visit the server. iDRAC8 with Lifecycle Controller is part of Dell's comprehensive OpenManage™ portfolio and works as a stand-alone or in conjunction with other components such as OpenManage Essentials, OpenManage Power Center, and Dell's plug-ins for Microsoft and VMware consoles to simplify and streamline IT operations.

Dell provides a secure method of remote access to iDRAC8 with Lifecycle Controller, making it easy for any administrator—whether a single IT manager who has a few servers in various locations or an admin who manages hundreds of servers in a data center—to save time by using iDRAC8 with Lifecycle Controller to do the following:

Deploy—Discover a server, inventory it, configure it as desired, and deploy an OS/hypervisor, all remotely and without the use of a PXE agent.

Update—Use Lifecycle Controller and Dell's Repository Manager to store updates from ftp.dell.com and stage and deploy updates as desired.

Monitor—No agents are required to get full monitoring and alerting. New email format is clear, full of information, and very actionable allowing the user to open that server's iDRAC GUI or Virtual Console right from the email.

Maintain—Use Lifecycle Controller and vFlash to back up configuration details of components like NICs, CNAs, PERCs, and restore those settings quickly. No need to hunt down specs or compare to another server.

Figure 1 shows Dell's lifecycle approach to systems management which encompasses all of the above use cases.

This white paper provides a high-level overview of all new features added to the iDRAC8 and Lifecycle Controller products. It is divided into the lifecycle areas described above.





Figure 1 – The Lifecycle Approach to Dell Systems Management

3 Deploy

3.1 iDRAC Quick Sync

The iDRAC Quick Sync bezel available on the 13th generation PowerEdge servers enables zero-touch mobile management. Quick Sync uses the Near-Field Communications (NFC) technology to pair with an NFC-enabled mobile device, that enables you to transfer inventory information and configure initial hardware settings using a mobile device.

3.2 iDRAC Direct with USB storage device

Using iDRAC8, You can configure iDRAC at-the-server, which allows you to import a server configuration profile from a USB device connected to the server's front panel management port. You can use the imported profile to deploy the initial bare metal of the server or reset the server to a set baseline in case the server is repurposed.

3.3 Real-Time configuration of PERC9 controllers

iDRAC8 with Lifecycle Controller expands agent-free management to include direct configuration of the new PERC9 controllers without requiring OS tools. It enables you to remotely configure the storage components attached to the system at run-time. These components include RAID and non-RAID controllers and the channels, ports, enclosures, and disks attached to them.

Using iDRAC, you can perform most of the functions that are available in OpenManage Storage Management including real-time (no reboot) configuration commands (for example, create virtual disk). It also enables you to completely configure RAID before installing the operating system and without accessing the BIOS or PERC firmware tools.

3.4 Zero-Touch Automatic Configuration

The Zero-Touch Automatic Configuration feature allows you to automatically configure server hardware as part of the out-of-band network configuration process. This includes BIOS, NIC, iDRAC and RAID configuration. You must configure a DHCP server to provision the iDRAC7 network interface and the "AutoConfig" feature must be enabled in iDRAC7 settings. When enabled, iDRAC7 applies a server configuration profile provided by the DHCP server. For more information, see additional documents on Dell TechCenter.

3.5 Server Configuration Profile Enhancements

iDRAC8 with LC provides the following additional capabilities to the Server Configuration Profile feature set.



Password Hashing: iDRAC8 includes an additional security feature that allows you to export and import SCPs with hashed passwords. The hash encryption uses the SHA256 encryption format. This feature is available for iDRAC user accounts and BIOS passwords. This is available for iDRAC user accounts and BIOS passwords. The hash encryption uses the SHA256 encryption format.

Selective import and export: You can export or import server profiles by selecting only specific components.

Read-only attributes now available: You can export profiles with read-only attributes included in the file. These attributes are ignored on import.

3.6 Unattended installation of Red Hat Enterprise Linux 7 using Lifecycle Controller

Lifecycle Controller (LC) available on the 13th generation PowerEdge servers support unattended installation of Red Hat Enterprise Linux 7. You can create a kickstart file using the OS installation wizard. LC provides this kickstart file during the OS installation process along with all the necessary drivers to the system.

3.7 UEFI Secure Boot

The UEFI Secure Boot feature enables you to configure Secure Boot and install the operating system. Secure Boot is technology that validates each component in the boot cycle using certificates. It ensures that only known and trusted software is booted on the system.

3.8 Persistence of Virtual MAC and WWN Address Assignment

Using iDRAC8, the assignment of virtual IO Identity settings can now be set to persist across system reboots. This was not possible on previous implementation, as persistence would be lost in case of a reboot. iDRAC8 with LC now manages the assignment and ensures that the network adapter will maintain the IO Identity.

3.9 NPAR-EP

You can configure NIC Partitioning Extended Partitioning (NPAR-EP).

3.10 Split Backplane Mode for PowerEdge Servers

Using iDRAC8 with LC, you can configure the split backplane mode for PERC adapters in the R730 and R730XD PowerEdge servers.

3.11 RACADM support for Fibre Channel Devices

You can configure fibre channel devices using the RACADM command line tool.



4 Update

4.1 Automatic Updates

Using the iDRAC GUI, you can schedule firmware updates to recur on a daily, weekly, or monthly basis. Updates can either be applied automatically or they can be “staged” for the next manual reboot. You can integrate the update process with the Dell Update catalogs made available by the Dell Repository Manager.

4.2 Signed Firmware

Dell’s firmware images are digitally signed and the digital signature is used to authenticate the identity of the signer of the firmware package and to certify that the original content is unchanged. With the previous generations of Dell’s servers, Dell offered digitally signed BIOS and iDRAC firmware update. Starting with the 13th generation of PowerEdge servers, Dell has now extended the signed firmware capability to its OEM Series 9 RAID controller including the PERC HX30 and 12Gbps HBA.

4.3 Combined Firmware Image for iDRAC8 and Lifecycle Controller

Starting with 13th generation PowerEdge servers, the firmware images for iDRAC8 and LC are combined. Version information is shared between the two products and follows the 2.xx.yy.zz format. You cannot independently update Lifecycle Controller.



5 Monitor

5.1 iDRAC Service Module 2.0

iDRAC Service Module (iSM) introduced in the 12th generation PowerEdge servers provides a lightweight interface for sharing information between iDRAC and the server operating system. It is supported on both Windows and Linux. The iSM 2.0 version available on the 13th generation servers, reports the OS network information to iDRAC, which is displayed in the GUI. The Tech Support Report (TSR) feature can also use iSM to launch OS inventory collection and include it in the TSR file. The iSM also exposes WS-MAN information to the Windows Management Interface (Windows only).

iSM greatly reduces or eliminates the need for OS-level agents (such as OMSA) when used in conjunction with iDRAC and LC management features. For more information, see the link below.

<http://en.community.dell.com/techcenter/systems-management/f/4469/p/19544690/20620009#20620009> .

5.2 Out-of-Band Performance Monitoring

The Compute Usage Per Second (CUPS) functionality provided by Intel ME on the 13th generation PowerEdge servers, provides performance metrics for CPU, memory, I/O and system-level utilization. The metrics are collected once every minute and can be reported by the last hour, last day, and last week. You can also set thresholds for each metric and generate alerts when the threshold is reached

5.3 iDRAC Direct with USB Cable

The iDRAC Direct feature enables you to directly connect the USB port on your laptop or PC to the front-panel management USB port. Using this feature, you can directly interact with iDRAC interfaces (such as web interface, RACADM, and WS-MAN) for advanced server management and servicing.

You must use a Type A/A cable to connect the laptop (a USB Host Controller) to the iDRAC in the server (a USB device). You can purchase the Type A/A cables from <http://accessories.dell.com/sna/default.aspx>.

5.4 12Gb SAS Monitoring

iDRAC8 with LC supports monitoring, inventorying, and updating of 12Gb SAS environments. This includes smart alerts, real-time inventory, enclosure monitoring, and update of both enclosures and HBAs.

5.5 Physical Computer System View in WS-MAN

The WS-MAN interface supports the Physical Computer System View (PCSV) model. This model provides a comprehensive enumeration of a server's configuration and state. It is exposed by Microsoft PowerShell cmdlets that are built specifically for the PCSV model.



For information about PCSV cmdlets in Microsoft PowerShell, see <http://technet.microsoft.com/en-us/library/dn283380.aspx>.

5.6 PCIe SSD Management

Using iDRAC interfaces, you can manage the PCIe SSDs by performing the following:

- Inventory and remotely monitor the health of the PCIe SSDs in the server.
- Prepare the PCIe SSD to be removed.
- Securely erase the data.
- Blink or unblink the device LEDs

5.7 Temperature and Power Threshold Configuration

You can configure both temperature and performance monitoring using iDRAC GUI, WS-MAN, RACADM, OpenManage Server Agent, and Intelligent Platform Management Interface.

5.8 New WS-Eventing Support

WS-Eventing provides a mechanism for asynchronous event notifications through the WS-MAN interface. On the 13th generation servers, WS-Eventing supports events for Lifecycle Controller Job life cycle (create, update and delete) changes, hardware inventory changes (additions and removals) and hardware monitoring (Power Change, OS Boot) notifications.

5.9 Support for DCMI 1.5

In addition to IPMI 2.0, iDRAC8 supports the Data Center Manageability Interface (DCMI 1.5) specifications. The DCMI specifications define standardized, abstracted interfaces to the server management subsystem specific to data center servers. These specifications are built upon the Intelligent Platform Management Interface (IPMI) 2.0 specifications.



6 Maintain

6.1 Technical Support Report

The Technical Support Report (TSR) feature enables you to collect necessary data to facilitate troubleshooting of issues without having to install software or download tools from Dell and without having access to the Internet from the server operating system or iDRAC. You can send the report from an alternate system and be certain that the data collected from the server is not viewable by non-authorized individuals during the transmission to tech support.

You can also export the report to a location on the management station (local) or to a shared network location such as Common Internet File System (CIFS) or Network File Share (NFS) and then share the report directly with tech support. To export to a network share such as CIFS or NFS, direct network connectivity to the iDRAC shared or dedicated network port is required.

The Technical Support Report is generated in the standard ZIP format. The report contains information that is similar to the information available in the DSET report such as:

- Hardware inventory for all components
- System, Lifecycle Controller, and component attributes
- Operating system and application information
- Active Lifecycle Controller logs (archived entries are not included)
- PCIe SSD logs
- Storage controller logs

6.2 System Erase

Using iDRAC8 WS-MAN and RACADM interface, you can selectively erase system components and user data. . This feature is also available as **Repurpose or Retire System** option in Lifecycle Controller GUI.

The system components include the following:

- Lifecycle Controller data
- Embedded diagnostics
- Embedded OS driver pack
- Reset BIOS configuration to defaults
- Reset iDRAC configuration to defaults

6.3 Easy Restore

Service events such as motherboard replacement usually require restoring the hardware configuration and licenses. Beginning with iDRAC6 in Dell's 11th generation PowerEdge servers, there is an option to back up the server hardware settings as well as firmware to either a file share or the vFlash SD



card. However, if this proactive backup has not been done, the only option is to restore these settings manually – a time consuming task that is prone to errors.

The 13th Generation PowerEdge servers provide Easy Restore, a built-in storage component that maintains critical configuration information. This information can be restored to a motherboard in the event of a replacement. The following are stored as part of Easy Restore:

- System Service Tag
- All licenses
- UEFI diagnostics
- System configuration settings (BIOS, iDRAC & NIC)

Customers can still choose to do the full system backup with iDRAC8 as they do with iDRAC6 and iDRAC7 as this solution will back up and restore the actual firmware versions in addition to the hardware settings. Easy Restore does not carry the firmware drivers due to size limitations.

Note: Easy Restore Storage is part of the server front panel or the management riser (for blade servers).

6.4 Optimizing System Performance and Power Consumption

The power required to cool a server contributes a significant amount to the overall system power. Thermal control is the active management of system cooling through fan speed and system power management to make sure that the system is reliable while minimizing system power consumption, airflow, and system acoustic output. You can adjust the thermal control settings and optimize against the system performance and performance-per-Watt requirements.

Using the iDRAC web interface, RACADM, or the iDRAC Settings Utility, you can change the following thermal settings:

- Optimize for performance
- Optimize for minimum power
- Set the maximum air exhaust temperature
- Increase airflow through a fan offset, if required
- Increase airflow through increasing minimum fan speed



7

Conclusion

Dell's iDRAC8 with Lifecycle Controller is a powerful tool to help IT admins reduce complexity and help save time and money. For more information on iDRAC8 with Lifecycle Controller, please visit www.delltechcenter.com/idrac and www.delltechcenter.com/lc.



8 Learn more

Visit Dell.com/PowerEdge for more information on Dell's enterprise-class servers.

Dell Tech Center

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

iDRAC8 with Lifecycle Controller manuals

<http://www.dell.com/support/home/us/en/19/product-support/product/integrated-dell-remote-access-cntrlr-8-with-lifecycle-controller-v2.00.00.00/manuals>

http://topics-cdn.dell.com/pdf/integrated-dell-remote-access-cntrlr-8-with-lifecycle-controller-v2.00.00.00_User's%20Guide_en-us.pdf

