# OpenManage Systems Management with iDRAC, iSM, & OMSA

## Selecting the right components for specific server management requirements

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# Executive Summary

The traditional approach to server systems management has been to install an agent in the server's operating system, and proceed from there. Years ago, Operating System (OS)-resident (also known as in-band) agents were needed to connect to various platform components in order to be able to discover, configure, update, and monitor the device. However, with Dell's introduction of the seventh version of the integrated Dell Remote Access Controller (iDRAC) with the twelfth generation of PowerEdge servers, that need was drastically reduced as iDRAC's "bare metal" or out-of-band management capabilities had become quite extensive. As Dell has added additional improvements to iDRAC8 and the thirteenth generation of servers, the gap between in-band and out-of-band management capabilities has continued to narrow. There are, however, still some functions that require the use of the in-band agent, OpenManage Server Administrator (OMSA); this paper includes a detailed functionality chart, making it easy to identify supported functions for each type of management.

# Introduction

Dell OpenManage tools help IT Administrators effectively deploy, update, monitor, and manage IT assets and to quickly respond to problems by helping them manage Dell servers effectively and efficiently in physical, virtual, local, and remote environments via in-band and out-of-band technologies.

Because the in-band method has been the de facto management means for many years, many companies have yet to adopt an out-of-band approach to systems management. Dell's traditional, in-band approach has been anchored with the OpenManage Server Administrator (OMSA) component. The out-of-band approach uses the integrated Dell Remote Access Controller (iDRAC), which is embedded into each server, thus needing no additional software in order to start working. Dell has just recently developed the iDRAC Service Module (iSM), a very small OS-resident process that is able to communicate OS-related information to iDRAC. This additional functionality makes the combination of iDRAC and iSM a possible replacement for OMSA's functionality for many customers. This paper will provide an overview of these OpenManage components and describe their capabilities.

# integrated Dell Remote Access Controller (iDRAC) with Lifecycle Controller

The integrated Dell Remote Access Controller (iDRAC) is designed to enhance the productivity of server administrators and improve the overall availability of Dell servers. iDRAC achieves this by alerting administrators, enabling remote server management, and reducing the need for an administrator to physically visit the server. iDRAC with Lifecycle Controller allows administrators to deploy, update, monitor and manage Dell servers from any location without the use of agents, whether they are dealing with one server at a time or hundreds all at once. Out-of-band management allows updates to be sent from Dell or third-party consoles directly to the iDRAC with Lifecycle Controller on a Dell PowerEdge server, regardless of the server's operating system and whether or not the server is powered up and running.

With iDRAC having its own network connection and being in an always-available state, PowerEdge servers are ready for your IT Administrator anytime, anywhere. Because the iDRAC is embedded in the "bare metal" of the PowerEdge server platform, it can be said to be "OS agnostic" or "OS unaware," making it able to work regardless the state or presence of an installed OS. This is a great benefit to IT Administrators who want to deploy, update, or manage a server system without having to install additional software before being able to take such action. This ability to provide management functionality via the embedded iDRAC sets Dell apart from firms supplying only a

typical in-band, OS-resident software agent, as those agents typically perform hardware monitoring and management via privileged drivers and other, similar modules, and have their own set of requirements and management needs. There are times though when an administrator may need to interact with a server's OS or hypervisor. For such situations, Dell has long had a traditional in-OS agent (more on that in a moment) and now also has a very small software process, the iDRAC Service Module (iSM), which installs in supported server operating systems to perform similar operations.

### iDRAC Service Module (iSM)

The relatively new iSM, is a very small process which installs in supported (and many unsupported) operating systems. The iSM makes OS-related information available to the iDRAC, and provides features like a watchdog timer for automatic server recovery, which are important in certain IT environments. The iSM software process does not have its own interface but assists iDRAC by providing additional data that is accessible via the iDRAC GUI interface, Dell Remote Access Controller Admin (RACADM)[1] , or the Web Services for Management (WSMAN) API.[2] Another key aspect of iSM is that is only fraction of OMSA's size, so it has a much smaller memory footprint. There are also features offered by iSM that OMSA does not provide. See the charts below for details.

## Dell OpenManage Server Administrator (OMSA)

The Dell OpenManage Server Administrator provides a comprehensive 1:1 systems management solution for both local and remote servers, their storage controllers and Direct Attached Storage (DAS). OMSA is able to provide this support by being installed in the operating system or hypervisor on a PowerEdge server. For a complete list of supported operating systems and OMSA versions, please visit http://dell.to/1lYkBTX.

OMSA provides many of the same functions as iDRAC, but as iDRAC has continued to improve and evolve, the need for OMSA has been reduced. OMSA does provide a great deal of storage information (see chart below) that is still not available via iSM/iDRAC, so for certain customers, that is a compelling reason to continue using OMSA.

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[1] The Dell Remote Access Controller Admin (RACADM) utility is a command-line tool that provides remote or local management of Dell Servers; its commands can be run remotely from a management station or locally on the managed system. In either case, these commands are executed via Dell's embedded integrated Dell Remote Access Controller (iDRAC) or its predecessor, DRAC. RACADM provides similar functionality to the iDRAC/DRAC Graphical User Interface (GUI). Additionally, the Dell Chassis Management Controller (CMC) can also be managed via RACADM. By using RACADM, IT administrators can view system information, perform firmware updates, configure settings and more. Since RACADM is run from a command line interface (CLI), system administrators can create scripts that can be easily distributed to multiple systems.

[2] Web Services for Management (WSMAN) is a SOAP-XML–based protocol for exchanging system management information. Dell's implementation provides remote management capabilities through a secure and standards-based Web Services–Management (WS-MAN) interface to PowerEdge servers and blade server node chassis.

# Feature set and comparison

The following table helps break down and identity features supported by these different OpenManage components:

| Category | Feature | iDRAC7/8 2.10.10.10 or higher | iDRAC with iSM | OMSA (In Band) |
|---|---|---|---|---|
| **Server Health** | CPU (Processors) | ✓ | ✓ | ✓ |
| | CPU Throttling Warning | ✓ | ✓ | ✓ |
| | Predictive CPU failure | ✓ | ✓ | ✓ |
| | Fans | ✓ | ✓ | ✓ |
| | Temperatures | ✓ | ✓ | ✓ |
| | Memory | ✓ | ✓ | ✓ |
| | DIMM ranking | ✓ | ✓ | ✓ |
| | NIC's | ✓ | ✓ | ✓ |
| | CNA's | ✓ | ✓ | ✓ |
| | Power Supplies | ✓ | ✓ | ✓ |
| | Power Consumption | ✓ | ✓ | ✓ |
| | Power Consumption History | ✓ | ✓ | |
| | Voltages | ✓ | ✓ | ✓ |
| | Batteries | ✓ | ✓ | ✓ |
| | Chassis Intrusion | ✓ | ✓ | ✓ |
| | Inlet Temperature history | ✓ | ✓ | |
| **Storage** | PERC storage controller | ✓ | ✓ | ✓ |
| | PERC battery | ✓ | ✓ | ✓ |
| | Physical Hard Drives | ✓ | ✓ | ✓ |
| | Virtual Drive | ✓ | ✓ | ✓ |
| | External Storage Enclosure | ✓ | ✓ | ✓ |
| | SSD monitoring | ✓ | ✓ | ✓ |
| | SSD write endurance | ✓ | ✓ | ✓ |
| | PCIe SSD's | ✓ | ✓ | ✓ |
| | FC HBA's | ✓ | ✓ | card/slot info |
| | Online Capacity Expansion (OCE) | | | ✓ |
| | RAID Level Management (RLM) | | | ✓ |
| | Rename Virtual Disk | | | ✓ |
| | Cancel Initialization | | | ✓ |
| | Rebuild Physical Disks | | | ✓ |
| | Set Enclosure Asset tag and Asset name | | | ✓ |
| | Enabling revertible hotspare | | | ✓ |
| | Instant Erase Secure Physical Disk | | | ✓ |

| Category | Feature | iDRAC7/8 2.10.10.10 or higher | iDRAC with iSM | OMSA (In Band) |
|---|---|---|---|---|
| | Manage Preserve cache | | | ✓ |
| | Create Virtual Disk | ✓ | ✓ | ✓ |
| | Delete Virtual Disk | ✓ | ✓ | ✓ |
| | Reset Controller Configuration | ✓ | ✓ | ✓ |
| | Clear Foreign Configuration | ✓ | ✓ | ✓ |
| | Import Foreign Configuration | ✓ | ✓ | ✓ |
| | Initialze Virtual Disk (Fast and Full) | ✓ | ✓ | ✓ |
| | Consistency Check for Virtual Disk | ✓ | ✓ | ✓ |
| | Start/Stop Patrol Read | ✓ | ✓ | ✓ |
| | Assign/Unassign Global and Dedicate Hotspares | ✓ | ✓ | ✓ |
| | Blink/Unblink Physical Disk/Virtual Disk | ✓ | ✓ | ✓ |
| | Local Key Management (Create/Change/Delete Security Key) | ✓ | ✓ | ✓ |
| | Controller Attributes | ✓ | ✓ | ✓ |
| | Virtual Disk Attributes | ✓ | ✓ | ✓ |
| | Convert drive to RAID | ✓ | ✓ | ✓ |
| | Convert drive to NonRAID | ✓ | ✓ | ✓ |
| | Staged RAID configuration | ✓ | ✓ | real time |
| | Preparing To Remove A PCIe SSD | | ✓ | ✓ |
| | Chipset/software RAID | | ✓ | ✓ |
| **Networking** | Internet standard MIB-II | ✓ | ✓ | ✓ |
| | Network device MIB | ✓ | ✓ | ✓ |
| | Link Up/Down traps | ✓ | ✓ | ✓ |
| | Teaming Information | | | ✓ |
| | VLAN Information | | | ✓ |
| | Statistics | ✓ | ✓ | ✓ |
| | IP Address | | | ✓ |
| | MAC Address | ✓ | ✓ | ✓ |
| | Device Configuration | ✓ | ✓ | |
| **Configuration and Settings** | BIOS settings | ✓ | ✓ | ✓ |
| | iDRAC settings | ✓ | ✓ | ✓ |
| | Import/export system configuration | ✓ | ✓ | |
| | Power Cap | ✓ | ✓ | ✓ |
| | Power State Control | ✓ | ✓ | ✓ |
| | LCD | ✓ | ✓ | ✓ |

| Category | Feature | iDRAC7/8 2.10.10.10 or higher | iDRAC with iSM | OMSA (In Band) |
|---|---|---|---|---|
| | Remote iDRAC reset | | ✓ | |
| **Inventory and Monitoring** | OS Information (OS name, version, hostname) | | ✓ | ✓ |
| | iDRAC Information | ✓ | ✓ | ✓ |
| | Firmware inventory | ✓ | ✓ | ✓ |
| | Logging to OS logs | | ✓ | ✓ |
| | Event notification via Email | ✓ | ✓ | ✓ |
| | Prescriptive Alert Messages | ✓ | ✓ | |
| | SNMP Traps (v1, v2, v3) | ✓ | ✓ | v1 v2 only |
| | SNMPv3 Gets | ✓ | ✓ | ✓ |
| | WS-MAN | ✓ | ✓ | |
| | Redfish support | ✓ | ✓ | |
| | Redfish IPv6 policy & vLAN information | | ✓ | |
| | Hardware Inventory | ✓ | ✓ | ✓ |
| | iDRAC License management | ✓ | ✓ | view only |
| | View Lifecycle Controller Log | ✓ | ✓ | |
| | Crash Screen Capture | | ✓ | ✓ |
| | Crash Video Capture (Enterprise) | | ✓ | ✓ |
| | Automatic System Recovery (Watchdog timer) | | ✓ | ✓ |
| | CLI tools | ✓ | ✓ | ✓ |
| **Updates** | iDRAC/LC update | ✓ | ✓ | |
| | System component update | ✓ | ✓ | |
| | Hard Drive updates (SAS/SATA) | ✓ | ✓ | ✓ |

# Summary

As shown above, iDRAC with iSM provide nearly the full range of monitoring and management functionality. However, the in-band OMSA agent provides several key storage features that can be important in certain IT environments. In keeping with OpenManage design philosophy, it is Dell's intent to provide a full set of tools that allow each customer the right components for their IT environments.

Based on customer feedback, we will continue to add more features to the out-of-band iDRAC and iSM solution to provide greater functionality and reduce the need for in-band software agents.

# Appendix

For additional information on iDRAC with Lifecycle Controller, please visit the Dell TechCenter @ www.delltechcenter.com/idrac

For more on OMSA, go to www.delltechcenter/omsa

For iSM, go to http://dell.to/1RPldJF