REALIZE

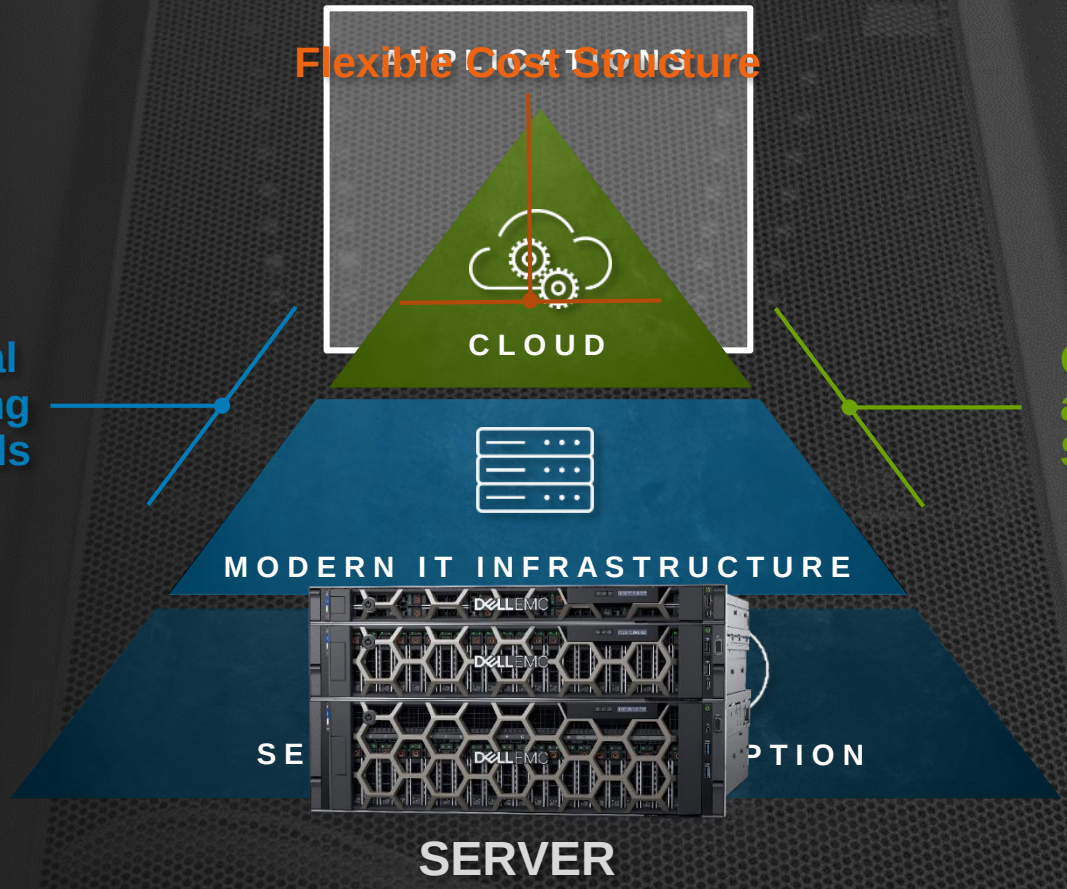
GLOBAL SPONSORS

Modernize Infrastructure

Dell EMC PowerEdge Server the Bedrock of the Modern Datacenter

GLOBAL SPONSORS

Server: primary source of competitive advantage



HOW TO BUILD A

Modern IT Infrastructure

1 **ADAPT AND SCALE**
to dynamic business needs

2 **AUTOMATE**
to sustain and grow

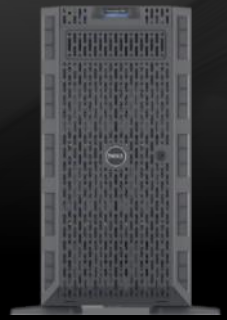
3 **PROTECT** your customers and your business

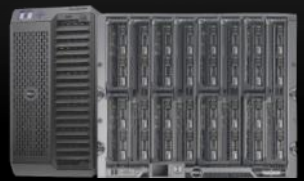
DELL EMC

SCALE
AUTOMATE
PROTECT

#1 INDUSTRY'S #1 Server Portfolio

PowerEdge





OpenManage Enterprise – Intelligent Automation Systems Management

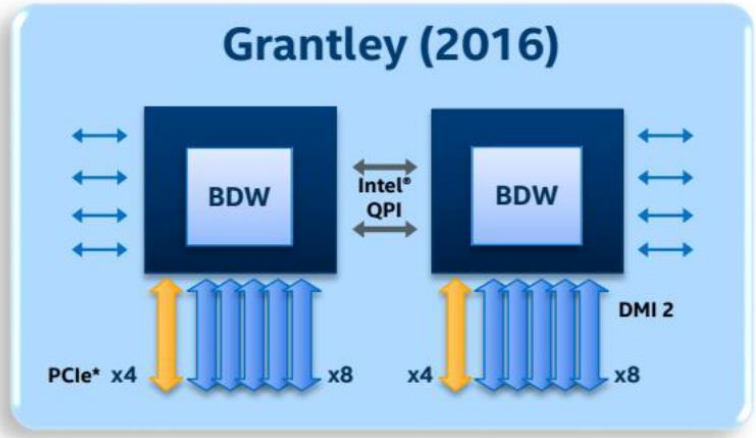
Towers | **Racks** | **Modular** | **Extreme Scale Infrastructure**

*Based on units sold (tie). IDC Worldwide Quarterly Server Tracker, Q1-Q3, 2016.

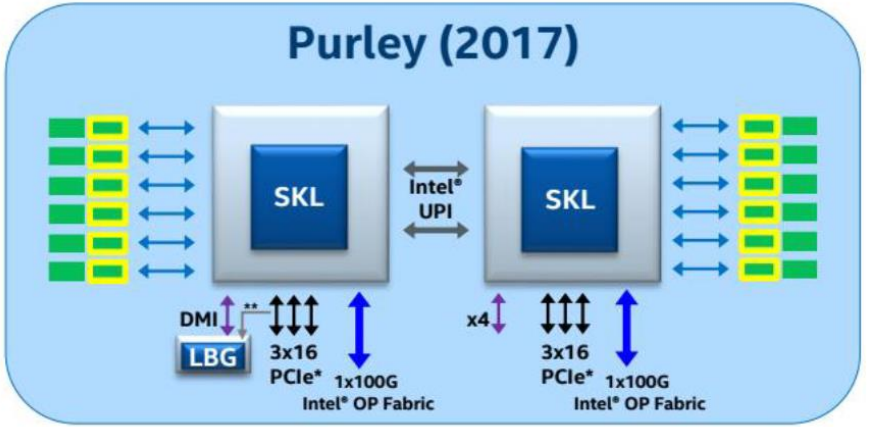
PowerEdge: solutions for every workload

Customer Concerns	PowerEdge Innovations	Customer Benefits
Increasing performance for In Memory DB	NVDIMM for Persistent Memory	PowerEdge with NVDIMM dramatically increases speed of access and performance for applications like Microsoft SQL
Increasing capacity for VDI	Multi Vector Cooling, GPUs	PowerEdge can now support 33% more instances and up to 192 VDI users per server
Continue to slash OPEX	Scripting APIs and mobile monitoring	OpenManage Enterprise delivers increased automation through powerful scripting APIs & iDRAC RESTful API. Mobile management via Quick Sync 2 for Android / Apple devices
Mitigate security risks	System Security Lockdown	PowerEdge has new security setting that shuts downs updates to protect server configuration / firmware from malicious changes

Intel Purley
(SkyLake / Scalable Processor)

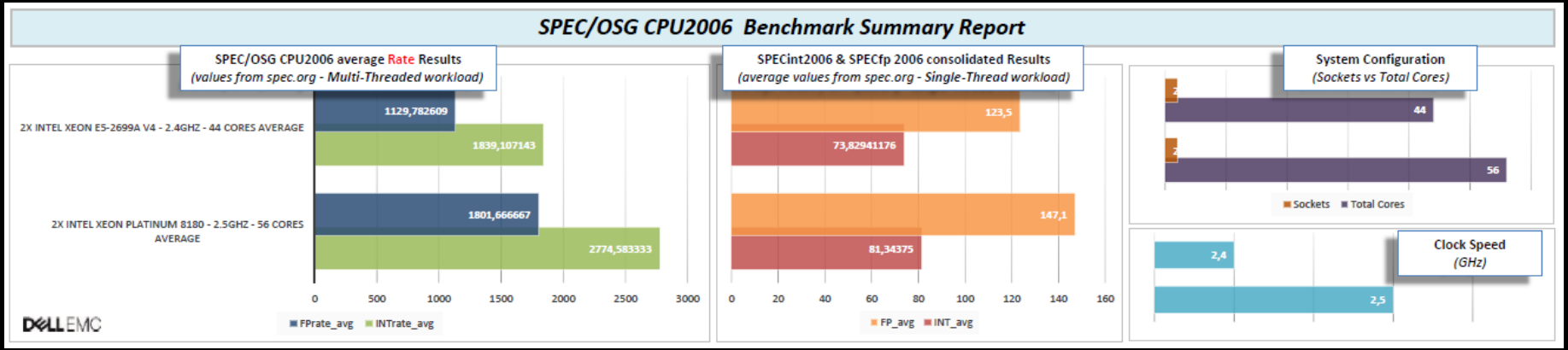


- Four DDR4 memory channels
- up to 24 DIMMs
- Up to 80 PCIe lanes
- Two QPI links (up to 9.6 GT/s)

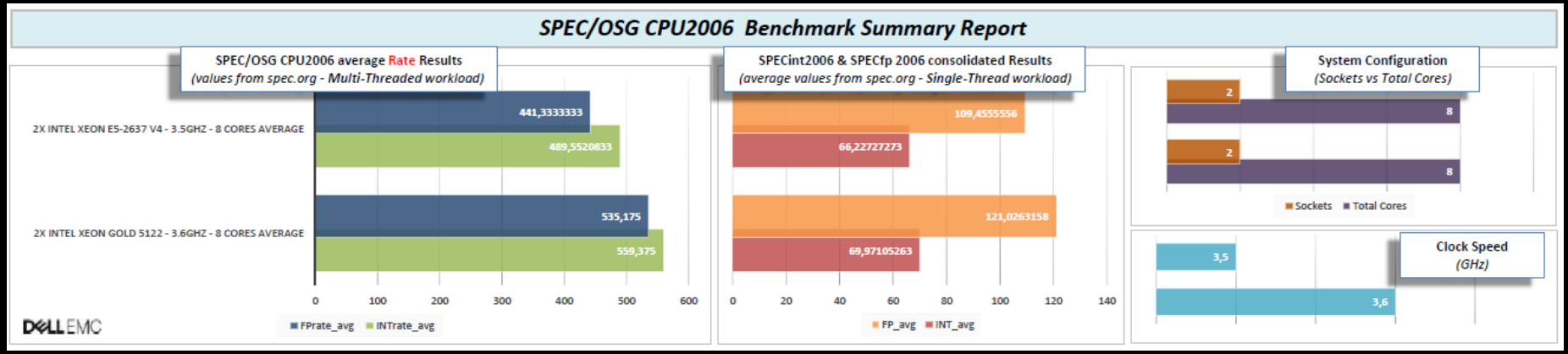


- Six DDR4 memory channels
- up to 24 DIMMs
- Up to 96 PCIe lanes
- Two UPI links (up to 10.4 GT/s); up to 3 UPI links in 4S and 8S configurations
- Integrated Intel® Omni-Path Architecture (Fabric)

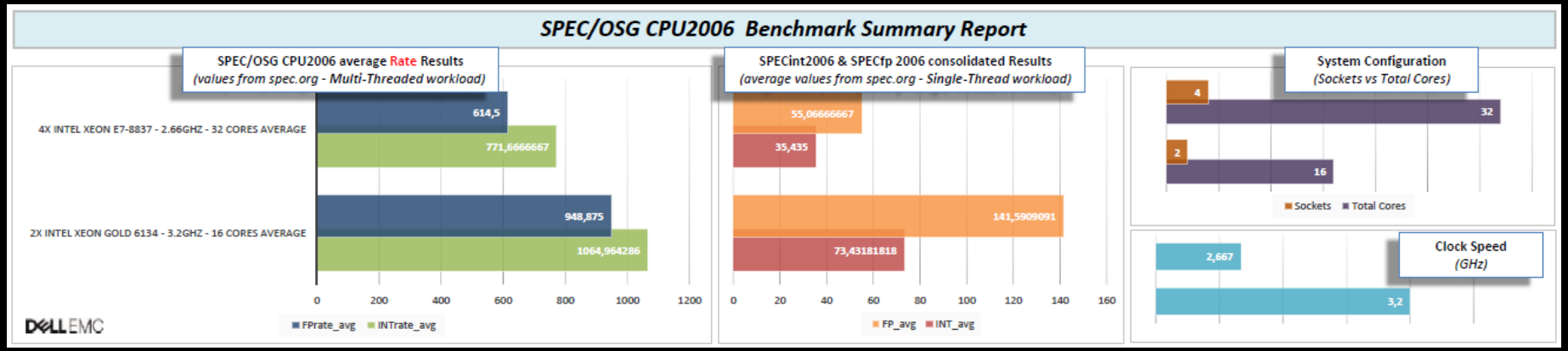
CPU Performance comparison (max. number of cores 13G/14G)



CPU Performance
(8 cores, max. frequency)

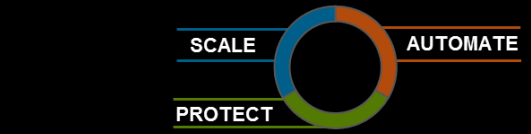


CPU Performance
(DB server migration 11G -> 14G)



PowerEdge R640

1U Dense scale out compute for high performance



Automated Workload tuning

Optimize & Deploy faster for key workloads like HPC, database & virtualization

Low Latency & high performance

Up to 8 NVMe (12 total) 2.5” drives with a direct-to-IO connection for latency-sensitive applications

Integrated Security

Cyber resilient architecture, integrated into full server lifecycle – from design to retirement

Intelligent automation

New OpenManage™ Enterprise console delivers crystal clear reporting & full lifecycle automation

Based on Dell Internal Analyses 03/01/2017.

PowerEdge R740

General purpose workhorse optimized for workload acceleration

SCALE
AUTOMATE
PROTECT

33% more VDI instances & 50% more users

Expanded GPU & storage capacity boost workload performance

Innovative Design

Winner of the 2017 Red Dot Design for usability & enhanced user experience

reddot design award

Integrated Security

Cyber resilient architecture, security is integrated into full server lifecycle – from design to retirement

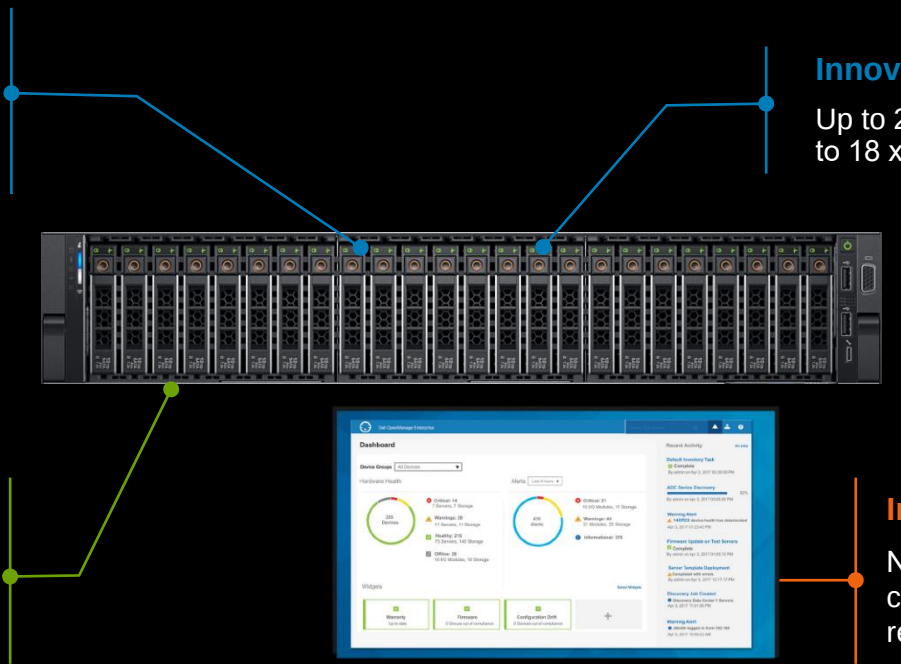
Intelligent automation

New OpenManage™ Enterprise console delivers crystal clear reporting & full lifecycle automation

Based on Dell Internal Analyses 03/01/2017.

PowerEdge R740xd

High performance software defined storage server



33% more VDI instances & 50% more users

Expanded GPU & storage capacity boost workload performance

Innovative Design

Up to 24 NVME with up to 18 x 3.5” drives

reddot design award

Integrated Security

Cyber resilient architecture, security is integrated into full server lifecycle – from design to retirement

Intelligent automation

New OpenManage™ Enterprise console delivers crystal clear reporting & full lifecycle automation

Based on Dell Internal Analyses 03/01/2017.

PowerEdge R940

4 Socket powerhouse for large scale-up data analytics

33% more bandwidth

With support for 4 sockets or 2 sockets with 33% increased bandwidth (in super 2S config.)

Integrated Security

Cyber resilient architecture, security is integrated into full server lifecycle – from design to retirement

Massive I/O Capacity

3 additional PCIe slots available

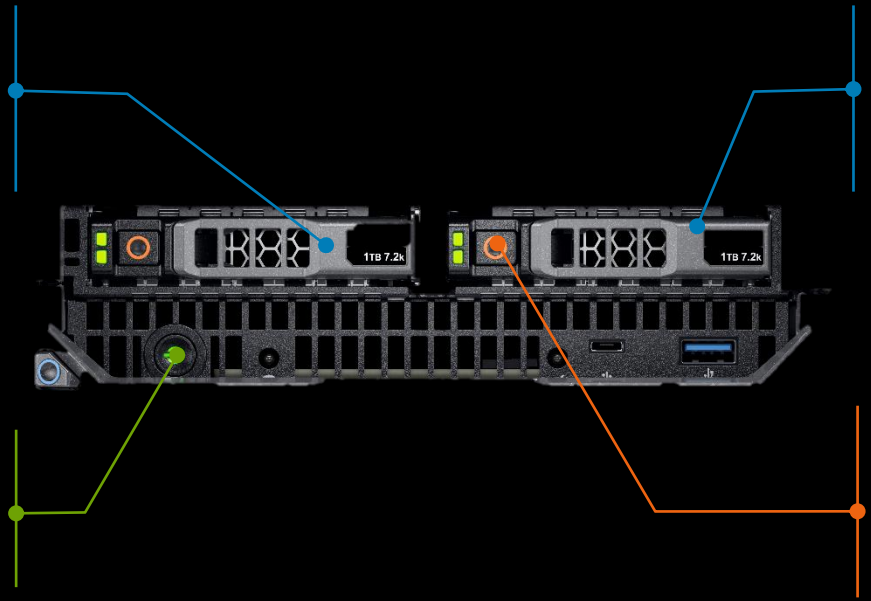
Intelligent automation

New OpenManage™ Enterprise console delivers crystal clear reporting & full lifecycle automation

Based on Dell Internal Analyses 03/01/2017.

PowerEdge M640:

High performance modular server blade for exceptional scalability



Higher Core Density / Sled

56% more core density per sled with new Intel Xeon SP with up to 28 cores

High performing storage

Up to 2 2.5-inch drives, with optional NVMe PCIe SSDs; 12.8TB maximum capacity

Integrated Security

Cyber resilient architecture, security is integrated into full server lifecycle – from design to retirement

Intelligent automation

iDRAC9 and Redfish REST APIs enable automated workflows for deployment, updates and management

Based on Dell Internal Analyses 03/01/2017.

PowerEdge FC640

Built for dense "everything-as-a-service" (XaaS) environments

27% more processor cores

Up to 2 Intel Xeon processors per compute node delivering up to 224 physical cores per chassis

High performing storage

Up to 2 2.5-inch drives, with optional NVMe PCIe SSDs; 12.8TB maximum capacity

Integrated Security

Cyber resilient architecture, security is integrated into full server lifecycle – from design to retirement

Intelligent automation

iDRAC9 and Redfish REST APIs enable automated workflows for deployment, updates and management

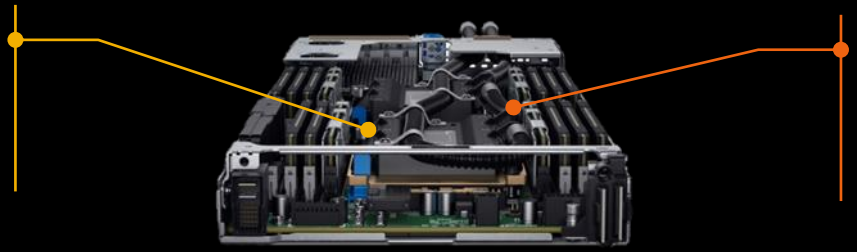
Based on Dell Internal Analyses 03/01/2017.

PowerEdge C6420

Purpose-built for high performance hyperscale workloads

27% more processor cores

Up to 2 Intel Xeon processors per compute node delivering up to 224 physical cores per chassis

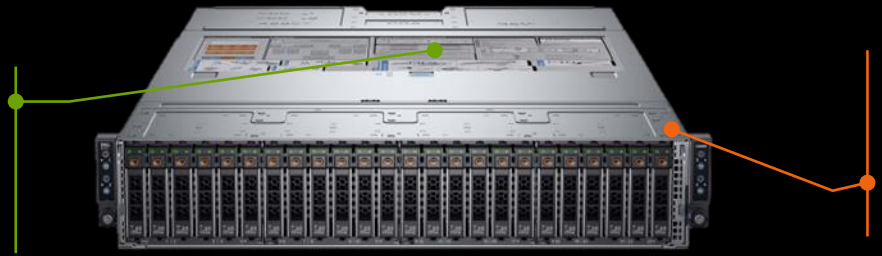


Efficient Cooling

Direct Liquid Cooling Technology improves power efficiency, increases rack level density and improves TCO

Integrated Security

Built on a cyber resilient architectural framework, Security is integrated into server lifecycle



Efficient Automation

iDRAC 9 and Redfish REST APIs enable automated workflows for deployment and monitoring

Based on Dell Internal Analyses 03/01/2017.

If blocks are identical, why Dell EMC?

GLOBAL SPONSORS

A **differentiated** approach to IT management

Simple

Agent-free embedded server management

Efficient

Automated and replicable processes

Available

Continuous uptime and reliability

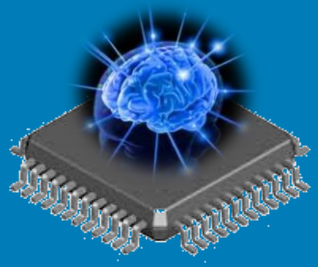
Standard-based management solutions for maximum flexibility and choice

Common management paradigms

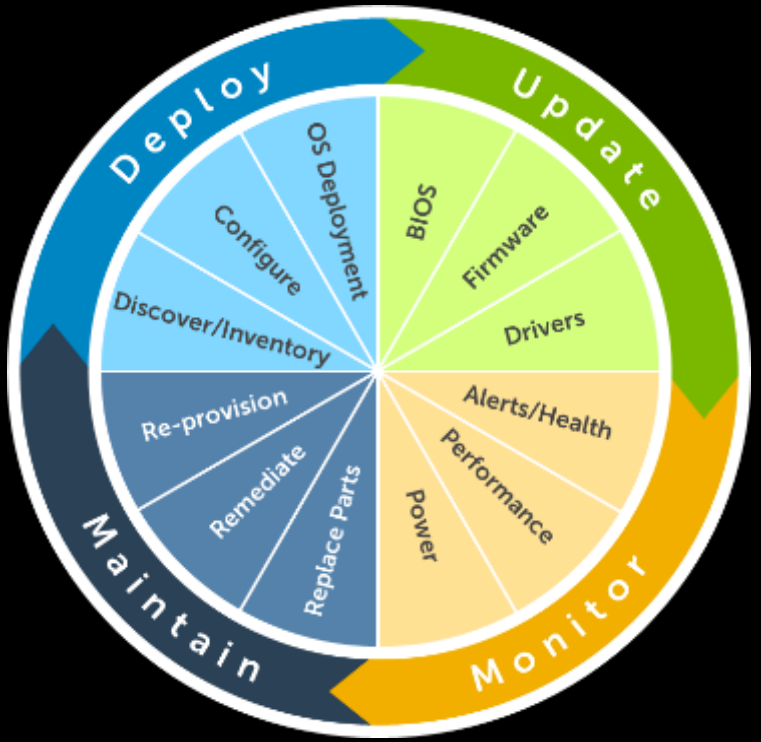
Operation	We frequently do some management locally at the server	We manage primarily from a central console	We manage primarily using scripts
HW Configuration & Deployment	"We have a team that does rack/stack/deploy" "We just work right at the server"	"We need simple, automated server deployment through a console"	"We operate at scale – need something automated within our ops framework
Monitoring & Troubleshooting	"We monitor servers based on amber lights"	"We've been burned by failure events in the past – we need a console that provides comprehensive monitoring"	"I need alerts integrated into my current monitoring architecture – MS, BMC, etc"
Change Management	"We bring our systems down and do updates at the server."	"We need non-disruptive mechanisms for BIOS and firmware updates."	"We need to build our ops to be OS agnostic"
Converged, Service Lifecycle, and Private Cloud Integration		"We need a console that enables us to provide scalable, reliable, consistent, and efficient IT services."	"API's are mandatory, don't show me something in the GUI if it can't be automated"

iDRAC with Lifecycle Controller is an IT Admin's "best friend"

Next-generation Embedded Automation relieves IT of tedious server maintenance operations



iDRAC
with Lifecycle Controller



14G Systems management themes

Automating IT Management

Management Made Simple

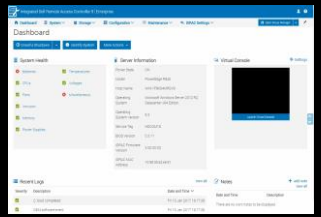
Secure by Default

Smarter Infrastructure Management

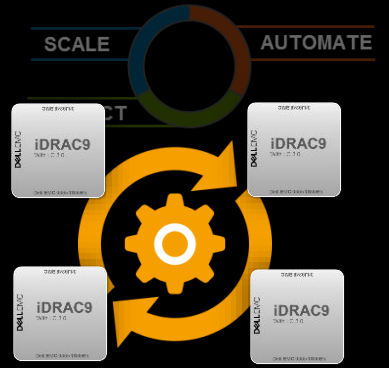
14G Systems Management Innovations

Trouble-shoot servers **70% faster** with Quick Sync 2

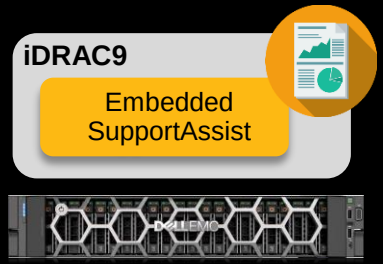
Eliminate **costly wiring** fixes with Connection View



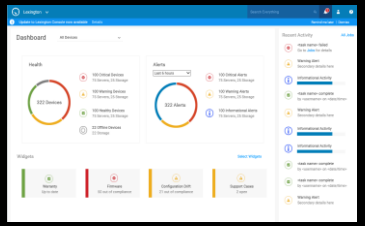
Navigate **60% faster** with the new secure HTML5 iDRAC GUI



Simple, "**No installation**" server monitoring with iDRAC Group Manager



Reduce service interactions **by 90%** with built-in SupportAssist

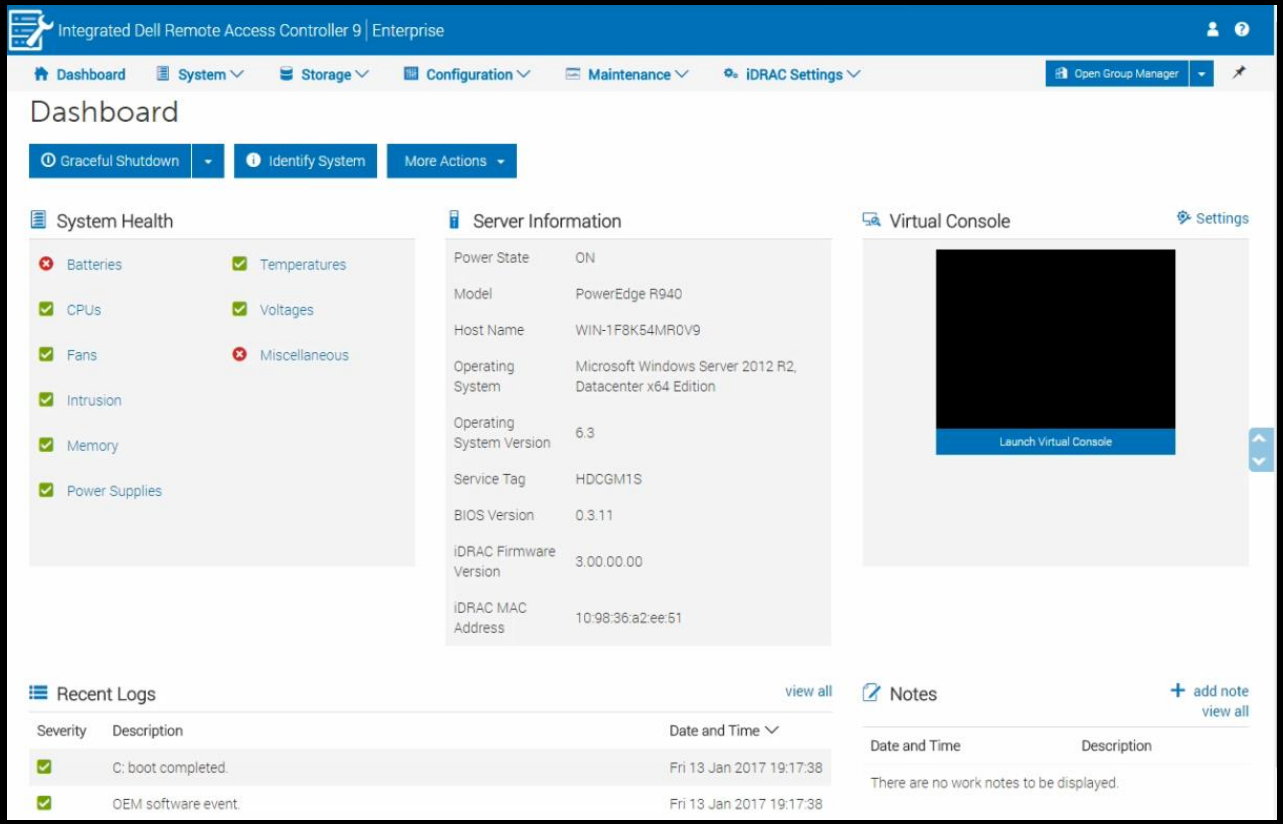


OpenManage Enterprise: Next-gen console for managing your PowerEdge servers

Prevent "**configuration drift**" with System Lockdown

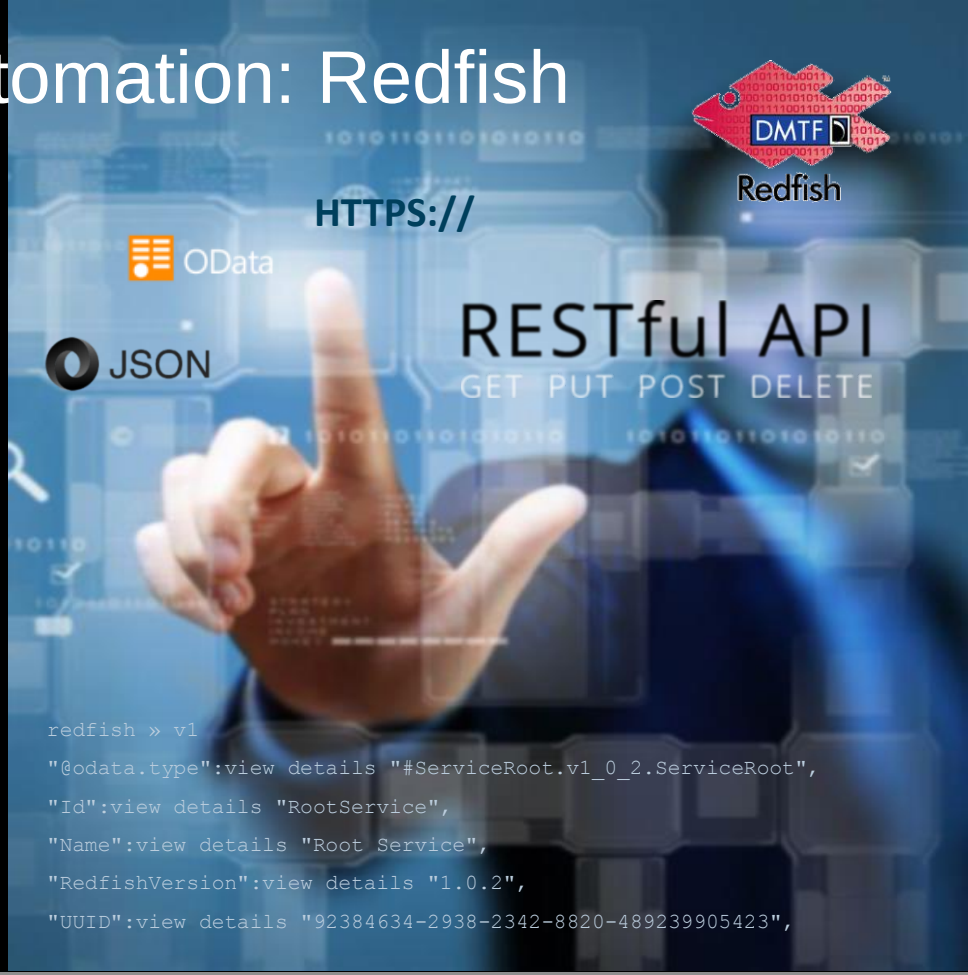
Erase server storage **in minutes rather than hours** using System Erase

iDRAC9 with Lifecycle Controller

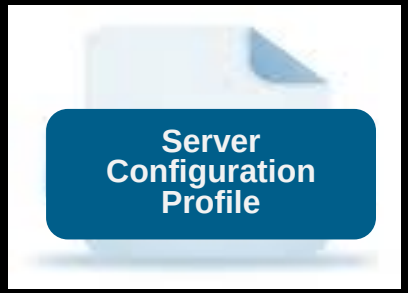


Next-generation Server Automation: Redfish

- Dell EMC offers the industry's leading server automation API's including IPMI, WS-MAN and the new **DMTF Redfish standard**
  - The **iDRAC RESTful API with RedFish support** is built upon HTTPS, JSON, and OData v4, enabling management automation by remote client applications and user scripts
  - Dell EMC was one of the original founders of Redfish and our implementation today offers comprehensive server inventory, monitoring and **even configuration**
  - **Redfish advantages:** easy to script, robust security, scalable, multi-vendor support
- **Enhancements planned for 14G**
  - Support for newest Redfish 2016 standards (R1 and R2)
  - Automate and standardize BIOS and secure boot configuration, firmware update, server asset inventory, health monitoring, and power/reset control
  - Dell Redfish **OEM extensions** also enable complete server configuration and firmware update for BIOS, iDRAC/LC, PERC, NICs and HBAs in XML or JSON formats



Profile-based automated server configuration



1. Configure 2. Capture
3. Clone 4. Re-provision
5. Maintain Baseline

BIOS | **PERC**
NIC/HBA | **iDRAC/LC**

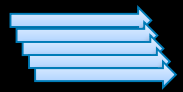
Multiple usage models

Integrate with existing processes

Apply profiles
“at the server”

“Zero Touch“ during
network setup

Use OpenManage Essentials to capture, configure and detect configuration drift for 1:M



Automated firmware updates

Use iDRAC/LC to perform comprehensive firmware updates…

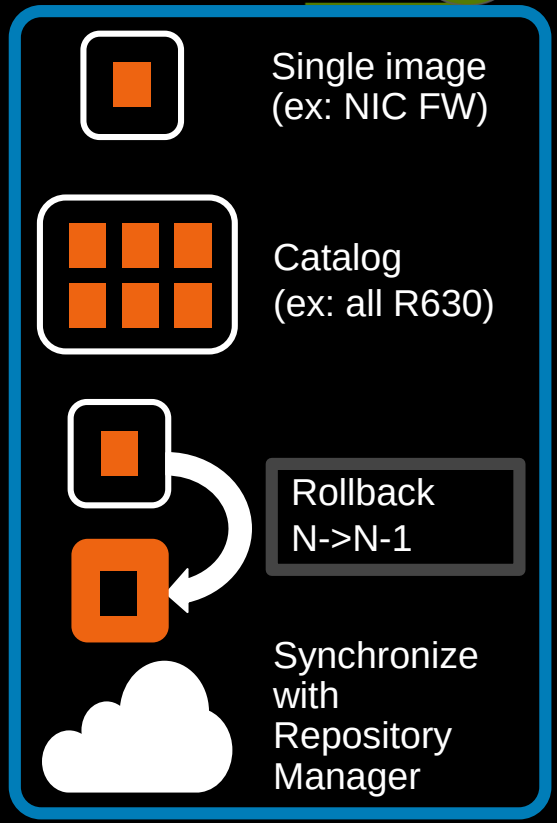
…according to the method that suits the datacenter

OME is an option when a 1:Many modality, via GUI, is desired

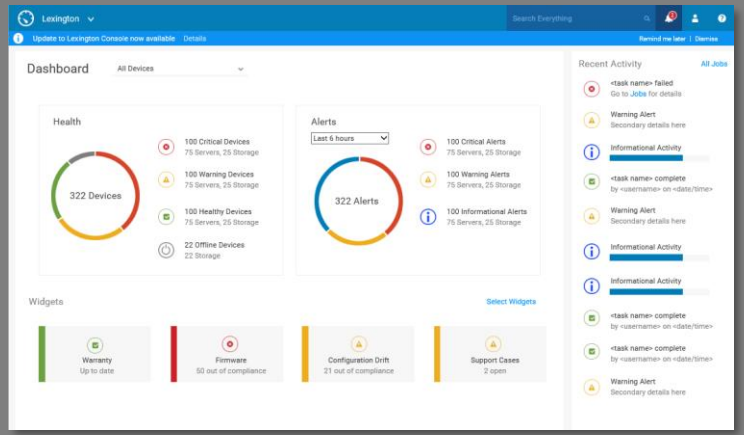
Schedule updates via iDRAC/LC

Script via remote interfaces

Interactively through iDRAC/LC or OME



Tenets of OpenManage Enterprise



A fresh look at what it means to be simple

Built for the next generation IT professional who refuses to be limited by management complexity and wants to add more value to the business

SIMPLE

- Hide unnecessary dependencies
- No specialized training required
- Manage dependencies so customer doesn't have to

UNIFIED

- Racks and modular under the same management paradigm
- Less tools, more productivity
- Single, secure layer of management that offers both depth & breadth

AUTOMATED

- Worry-free automation of mundane management tasks
- Reduce the time needed to manage large scale environments

Security from factory to production to retirement

Design / Build:

- Dell EMC servers are built with in-silicon chain of trust to ensure system only accepts firmware updates signed by Dell EMC
- Implements secure management protocols like WS-MAN and RedFish
- Provide FIPS 140-2 cryptographic compliance to ensure adherence to NIST crypto standards

Update / Maintain:

- System security lockdown setting to protect server configuration and firmware from malicious changes
- Implemented more secure default iDRAC password
- Rapid response to new CVEs (e.g. OpenSSL, TLS, etc.)

Redeploy / Retire:

- Redeploy/retire with secure instant erase for HDDs, SSDs, & NVMs

"IDC believes that security should be baked into datacenter servers from the start, not smeared on later as an afterthought. This means that security is embedded in the core hardware and firmware below the operating system and applications." ***–IDC Report.***

ACCELERATE YOUR BUSINESS ON

PowerEdge

ADAPT AND SCALE
your dynamic business needs
by leveraging **Scalable Business Architecture**

FREE UP SKILLED RESOURCES
and focus on core business
with **Intelligent Automation**

PROTECT YOUR CUSTOMERS
and your business robustly
with **Integrated Security**


DELL EMC