The Future of Systems Management Automation

Today’s IT operations challenges
In today’s cloud-based, web-scaled computing world, the demands placed upon IT have never been greater. Organizations expect IT to rapidly deliver new services while maintaining the agility to meet evolving objectives. As these demands grow, IT must “keep the lights on” in the data center and deal with resource constraints.

From these challenges a new vision for operating the future-ready enterprise has arisen – a vision that relies upon maximizing existing data centers while seamlessly supporting cloud computing and systems management solutions that automate and simplify operations. The desired results of this vision are a faster time-to-production through infrastructure delivery automation and greater flexibility to deploy solutions where needed, with greater resiliency and security.

Evolution of systems management automation
Fulfilling this vision will require an evolution of systems management automation. From the dawn of the x86 industry-standard era in the early 1990’s, the exponential growth of deployments and increased criticality of workloads have driven demand for more powerful automation.

The early automation offerings focused on health monitoring of a small number of distributed servers. As x86 servers became the key platform for distributed computing in the 2000’s, server control and multi-vendor management requirements drove the creation of the first standard for x86 server management – the Intelligent Platform Management Interface (IPMI). Virtualization then created the need for OS-independent operations, leading to the development of the Common Information Model to describe management data and actions, and the WS-Man and Wbem applications programming interface (API) standards for data and command interchange.

As web technology-based computing models emerged in the 2010’s, scale, agility, and security requirements led to automation methods based upon the technologies of virtualized and hybrid cloud IT. The next generation of management automation is being built with RESTful APIs and orchestration and automation tools; foremost among these management technologies is the Distributed Management Task Force (DMTF) Redfish API.
DMTF Redfish

Redfish is an open industry standard that enables simpler, more scalable and secure management automation. Developed by DellEMC and other industry leaders, Redfish is built upon key technologies of hybrid cloud computing: a RESTful model; HTTPS for secure, structured access of management information and operations; JSON and OData for data description and interchange.

Redfish provides significant benefits for systems management, including:

- Increased simplicity and usability
- Encrypted connections and heightened security
- Programmatic interface easily scripted
- Aligned with widely used standards for web APIs and data formats

Due to these advantages, Redfish is being rapidly adopted for large scale automation. Dell began shipping Redfish support within the iDRAC with Lifecycle Controller in early 2016 and continues to enhance that support as the standard evolves.

Complete lifecycle automation

With its industry-leading agent-free architecture, the iDRAC with Lifecycle Controller enables complete lifecycle automation for deployment, configuration, monitoring, update and repurposing of Dell EMC PowerEdge servers via APIs. Utilizing commercial and open source solutions such as Ansible, Chef, Puppet, and Salt, the iDRAC APIs enable scalable operations, replacing custom scripting and manual, error-prone processes.

The future of management automation

Just as IT continues to evolve, so too must management automation. Dell EMC and the other members of the DMTF are at work expanding the capabilities of Redfish to encompass shared storage solutions, networking, datacenter HVAC, and facilities operations. Beyond management standardization, the industry is also exploring the use of Big Data analytics and artificial intelligence to assist administrators. By gathering and assessing data describing the state of IT deployments, such tools can spot hidden trends and recommend actions, saving time and resources.

Conclusion

DellEMC is an industry leader in management automation, driving the creation of new standards and delivering innovative solutions that simplify and speed server operations. Our embrace of management automation began with the first PowerEdge servers and has grown to include support for key industry standards, an agent-free management architecture for OS-independent management throughout the server lifecycle, and solution enablement through scripting support and the online knowledge repository, Dell TechCenter.