Dell Technologies
Bare Metal Orchestrator

Automate the deployment and lifecycle management of servers at massive scale

Business Challenge

- 5G transformation across Core, Edge, and RAN requires Communications Service Providers (CSPs) to deploy, configure, and lifecycle-manage thousands of multi-vendor servers across geographically dispersed locations, while reducing costs and increasing agility

Solution | Bare Metal Orchestrator

- Automate and orchestrate multi-vendor servers at massive scale from deployment to decommissioning
- Reduce OpEx costs by automating manual tasks
- Centralize hardware lifecycle management on a single screen
- Meet SLAs consistently through policy alignment, enforcement, and drift detection

Communications Service Providers (CSPs) recognize the opportunity ahead of them as 5G gains momentum and enables new services, especially at the enterprise edge. To capitalize on the growing demand for high bandwidth, low latency services, such as factory automation, autonomous guided vehicles, and smart healthcare, CSPs need to both scale out their networks and increase network efficiency to minimize costs as they look to deliver these next-generation applications. What's more, CSPs need to transform their networks with increased business agility, flexibility, and openness to innovation. The path forward lies in moving to virtual and cloud-native network functions running on industry-standard servers across Core, Edge, and RAN environments.

CSPs can easily and quickly combine best-in-class software and hardware from multiple vendors to develop and deliver innovative services that drive revenue growth. But there is a challenge: deploying, configuring, orchestrating, and updating potentially thousands of bare metal servers across geographically dispersed sites can be costly, time-consuming, and prone to human error.

To help CSPs meet the challenge of lifecycle management of distributed multi-vendor bare metal servers at scale, Dell Technologies has developed Bare Metal Orchestrator, a simple, seamless automation and orchestration solution for telecom networks. With BMO, CSPs can centrally and remotely deploy, configure, and lifecycle manage thousands of servers from a single screen that shows a consolidated view of all bare metal servers. BMO dramatically simplifies and accelerates server deployment time, eliminates manual configuration errors, detects and corrects for configuration drifts, and ensures that server availability, reliability, and performance meet even the most stringent Service Level Agreements (SLAs).

Centralize to expand cost-savings

Network disaggregation is critical to enabling rapid technology adoption and the development and deployment of new services, but staying on top of infrastructure across vast, multi-vendor networks is no easy task. Bare Metal Orchestrator solves this challenge by replacing manual, local hardware management with centralized automation, an approach that has been shown to reduce OpEx costs by as much as 57 percent (source: ACG Research).
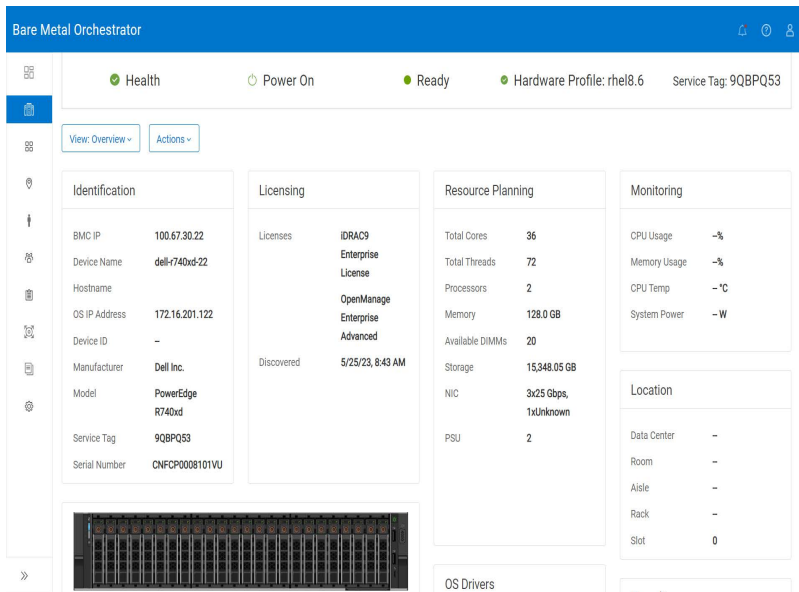

Figure 1 A graphical intuitive interface makes it simple to manage individual servers and more

BMO optimizes CapEx that all your resources are being fully utilized. Even before you deploy a single new server, BMO's automatic discovery capability enables you to inventory your server resources, helping you to optimize server utilization and plan for changes in network capacity. With BMO, you can automate the network of tomorrow with the skills and resources you have today by using simple, intuitive, unified automation controls to ensure that every single server is working optimally.

Bare Metal Orchestrator is your single server automation solution

Accelerate outcomes with declarative automation

- Deploy workload-ready, virtualized servers using declarative automation
- Eliminate hardware configuration errors with simple, automation tools and blueprints
- Program and configure your hardware for optimal performance without having to rely on highly specialized domain expertise

Declare your network a busywork-free zone

The traditional manual process for server configuration is time-consuming, costly, and prone to human error. Bare Metal Orchestrator changes the game by using declarative automation, which enables administrators to state the outcome they want and let BMO automatically determine the optimal configuration. BMO ensure that the CPU has the right BIOS configuration, firmware, and host OS/hypervisor

In addition, BMO automatically detects and re-mediates server configuration drift, while aligning any changes to a centralized security model for consistent policy enforcement. These same capabilities can be used to accelerate greenfield deployments or support brownfield deployments without disruption of production workloads.

Reduce OpEx and boost revenue

- Reduce operational expenses by automating and orchestrating server deployment and lifecycle management
- Achieve TCO and OpEx savings of up to 57% while improving revenue up to 255%

Research shows BMO cuts TCO

ACG Research has developed a Total Cost of Ownership (TCO) model to identify the business impact Bare Metal Orchestrator can have on small, medium, and large CSPs. The following chart shows the savings for telecom operators with BMO implemented:

Financial Metric	Small	Medium	Large
OpEx Savings	39%	49%	57%
TCO Savings	33%	42%	53%
Revenue Improvement	2%	2%	2%
ROI	88%	139%	255%

Studies show that BMO can provide significant Day 1 OpEx savings. Two factors stand out: (1) BMO enables labor savings on complex server management and operations tasks, and (2) BMO reduces labor expenses for individual server provisioning by 99 percent, including NFVi and VIM installation.

For more information, download the ACG Research report at: ACG Research, "The Economic Benefits of the Dell Technologies Bare Metal Orchestrator", sponsored by Dell Technologies, 2021.

Consistently slay your SLAs

SLAs provide a contractual basis for meeting customer expectations, but they can quickly become the bane of network administrators who must constantly monitor and measure network performance. BMO simplifies the process of consistently meeting SLAs by automatically detecting performance issues and remediating those issues through configuration changes. BMO can apply your gold configuration settings across multi-vendor bare metal servers to ensure SLAs are met. Dell Technologies also offers its ProSupport service option to provide live monitoring and remediation resources where carrier-grade SLAs require them.

DMTF Redfish compliance

Dell Technologies is committed to open, multi-vendor solutions and, as such, supports the Distributed Management Task Force's Redfish® standard for multi-vendor network, ensuring interoperability with all servers that comply with the Redfish standards.

Make managing bare metal servers more bearable

- Reduce costs and increase efficiency by automating and orchestrating tens of thousands of bare metal servers
- Unify multi-vendor lifecycle management to drive simplicity by leveraging a unified, multitenant user interface that provides centralized telemetry and lifecycle management of distributed bare metal servers
- Meet SLAs consistently to assure performance by automating deployments and upgrades in accordance with approved configuration policies and consistent policy alignment without service disruptions

Bare Metal Orchestrator feature summary:

Scope

- Federated architecture
- Industry-standard Redfish interface
- Multi-vendor hardware support
- Environmental awareness
- Metering and chargeback
- Usage-based billing

Automation

- Auto-Discovery
- Inventory reconciliation
- Zero-touch deployment
- Provisioning
- Upgrade
- Configuration personality management

Federation

- Entire fleet under one umbrella
- Single API entry point

Hardware Management

- Firmware management
- BIOS setting
- Out-of-band management

Security

- Identity and Access Management (IAM) with single sign-on
- Certificate management
- Secure data erasure

Self Service

- Common portal
- Composability
- By location, workload, platform

Programmability

- Declarative automation
- API-first strategies
- Infrastructure as Code

16G Server support phase 1

- PowerEdge R760 and R660

Scale

- Tens of thousands of sites
- Globally distributed
- Single node to multi-rack
- Scaling to 75K servers

Multi-vendor Hardware Support

- Dell, HPE, and Supermicro

Log Management

- Detailed logging
- Event monitoring back-up/restore
- Configuration
- Firmware back-up and roll back

Day-2 Operations

- Drift management
- User activity logging
- Brownfield on-boarding

16G Server support phase 2

- PowerEdge XR8610T SP MCC
- PowerEdge 16G AMD

You can find a comprehensive list of documentation for this solution at Info Hub.

Learn more about Dell [Bare Metal Orchestrator] solutions

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