

**DATA SHEET**

# Blue Planet Multi-Domain Service Orchestration

Take control of network evolution

Mobile, cloud, and the Internet of Things (IoT) are fueling the need for new network services. At the same time, network operations have become increasingly complex, and the competitive landscape is fiercer today than ever before. In this environment, service providers and network operators require greater levels of automation to operate with increased speed and scale—and respond more quickly to customer’s fast changing service requirements

Blue Planet Multi-Domain Service Orchestration (MDSO) is an open software solution that allows network operators to automate the end-to-end delivery of services across both physical and virtual domains, including any mix of vendors and network layers. MDSO’s extensible and programmable architecture leverages model-driven abstraction and open APIs for integration with diverse domains like traditional and software-defined WANs, as well as public or private cloud and Network Functions Virtualization (NFV) domains. This capability eliminates management silos while improving end-to-end control, visibility, and operational agility. As a key component of the Blue Planet Intelligent Automation Platform, Blue Planet MDSO can also be integrated with other products within the Blue Planet software suite, including Blue Planet Analytics (BPA) and Route Optimization and Assurance (ROA), for accelerating the evolution to a more adaptive network.

Blue Planet Intelligent Automation.  
Learn More. 

## Shorten time to revenue

Delivering services across today’s infrastructure—which consists of multiple technologies and domains that require vendor-specific tools and specialized interfaces—is not an easy task. Blue Planet MDSO breaks down operational silos and drastically simplifies the creation and automated delivery of services across this complex and heterogeneous infrastructure. It enables seamless integration of virtualization and cloud applications alongside traditional network domains.

**With Blue Planet MDSO, network operators can:**

- **Shorten time to revenue** by simplifying and automating service delivery across multiple vendor systems and equipment spanning the WAN, data center, and cloud
- **Rapidly innovate new services** and maintain full, self-service control of their network transformation
- **Quickly adapt to new demands** by efficiently and effectively customizing and optimizing the network



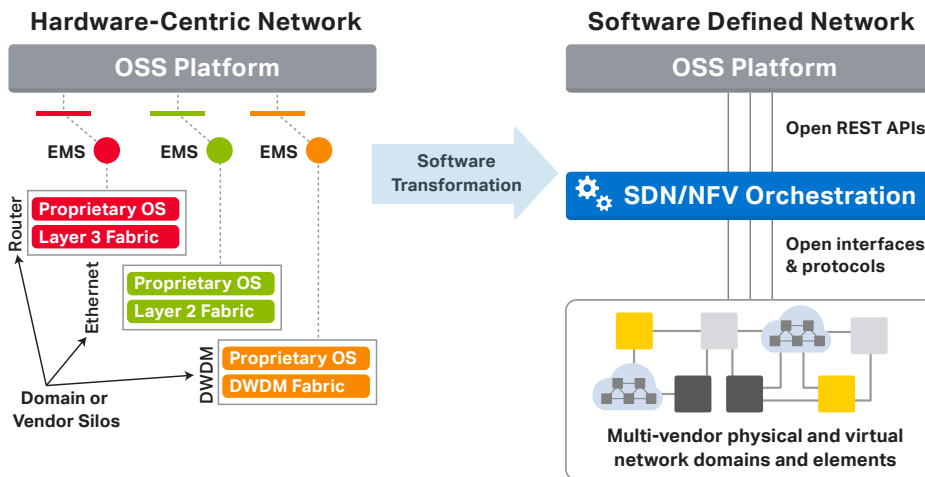


Figure 1. Blue Planet MDSO enables an open, automated, and programmable infrastructure for meeting today's digital service requirements

Blue Planet MDSO leverages a model- and template-driven methodology to enable intent-based automation. These approaches minimize tedious and time-consuming manual steps involved in designing the network for supporting specific services, while enabling network operators to manage services at a higher level of abstraction.

Blue Planet service templates are based on the TOSCA standard, which provides mechanisms to help control workflow, describe relationships, and reflect dependencies that exist between various resources on a network. TOSCA-based service templates allow network operators to program the high-level service intent required to execute end-to-end intelligent automation. Because TOSCA was optimized for cloud environments, it is ideal for service orchestration and for network operators planning to expand virtualization across WAN and data centers.

Service templates are re-usable and unite services components with network resources to streamline the automation of both physical and virtual resources across the network.

Blue Planet MDSO is capable of orchestrating and automating service delivery across both Ciena and third-party network elements by leveraging Blue Planet's Resource Adapter (RA) technology. With RAs, Blue Planet MDSO can interface directly with network elements or vendor-specific element/network

management systems and SDN domain controllers. In this way, it supports an array of native protocols including CLI, TL1, SNMP, NETCONF/YANG, and REST API. Network operators can benefit from a [wide variety of RAs](#) available today.

Further, Blue Planet MDSO's REST APIs provide programmatic control for managing services and streamlining network operations as a whole. These APIs are used to integrate with OSS/BSS and customer-facing Web portals, and to interface with other business applications that utilize the network as a programmable resource. These open APIs are key enablers for dynamic, self-service, and on-demand services.

### NFV Orchestration

Blue Planet also integrates standards-based NFV Orchestration (NFVO) capabilities, providing the full lifecycle

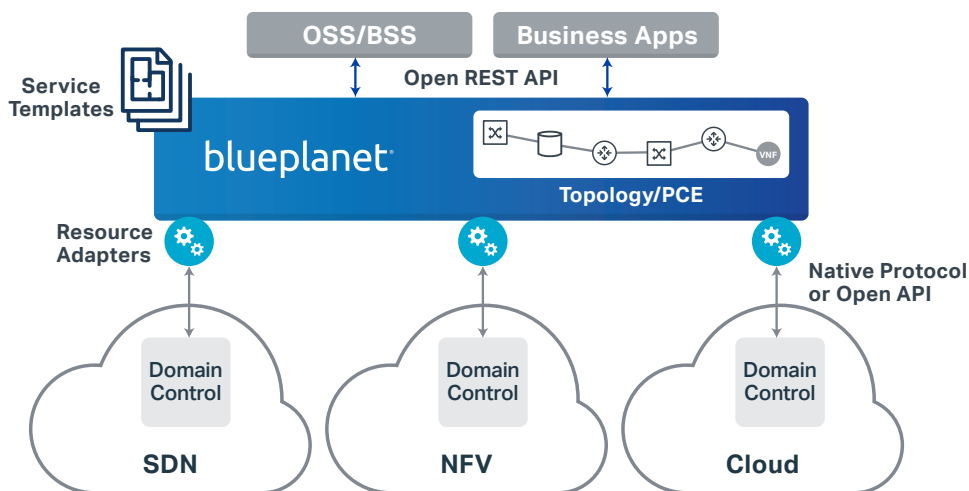


Figure 2. Blue Planet MDSO accelerates service delivery across multi-vendor domains through intent-based automation leveraging TOSCA service templates and Resource Adapter technology

management of Virtual Network Functions (VNFs) and meeting ETSI's Management and Orchestration (MANO) guidelines. When deployed for NFVO applications, Blue Planet automates the orchestration of NFV Infrastructure (NFVI) resources across single or distributed data centers. Conforming to the [ETSI NFV Release 2 specifications](#), Blue Planet also provides advanced visualization of the end-to-end flow of a network service consisting of VNFs and the relationships between them. This enables network operators to troubleshoot NFV deployments more efficiently, and simplify the overall end-to-end service lifecycle management process.



Figure 3. MDSO provides advanced visualization of end-to-end network services

### Rapidly innovate new services

For network operators, rapid service innovation is one of the key elements for business success. Ciena makes it easy for network operators to develop new services by offering an array of DevOps and software lifecycle tools for engineering and operations. The Blue Planet DevOps Toolkit and the Blue Planet DevOps Exchange provide a set of tools, as well as an open community, that facilitate collaboration between network and IT teams, third-party equipment suppliers, and other ecosystem partners for on-boarding new resources and developing new services to meet specific business needs. This agile operations approach enables incorporation of new networking equipment, VNFs, and even entire networks or cloud environments into the environment more rapidly. Once incorporated, resources can be combined into service templates and used to create new and innovative services, quickly and easily.

### Quickly adapt to new demands

Customers' fast evolving service needs require network operators to add new network capabilities and features at scale. Unlike most vendors' solutions, which are based on monolithic software architectures that require regression testing even with the smallest modifications, Blue Planet MDSO can accommodate any change with minimal disruption. Blue Planet's container-based microservices architecture enables new features and capabilities to be deployed and scaled independently of the others. This development methodology makes the software easier to enhance, maintain, and scale. Network operators can make rapid, incremental adjustments to existing services, which helps uncover new revenue streams.

MDSO's microservices-based architecture also allows the platform to readily leverage best-in-class open-source components as they mature. To date, the platform incorporates more than 30 open-source components including Docker, Cassandra, Kafka, Grafana, and others. Ciena is continually looking for open-source elements to enhance and extend the capabilities of Blue Planet.

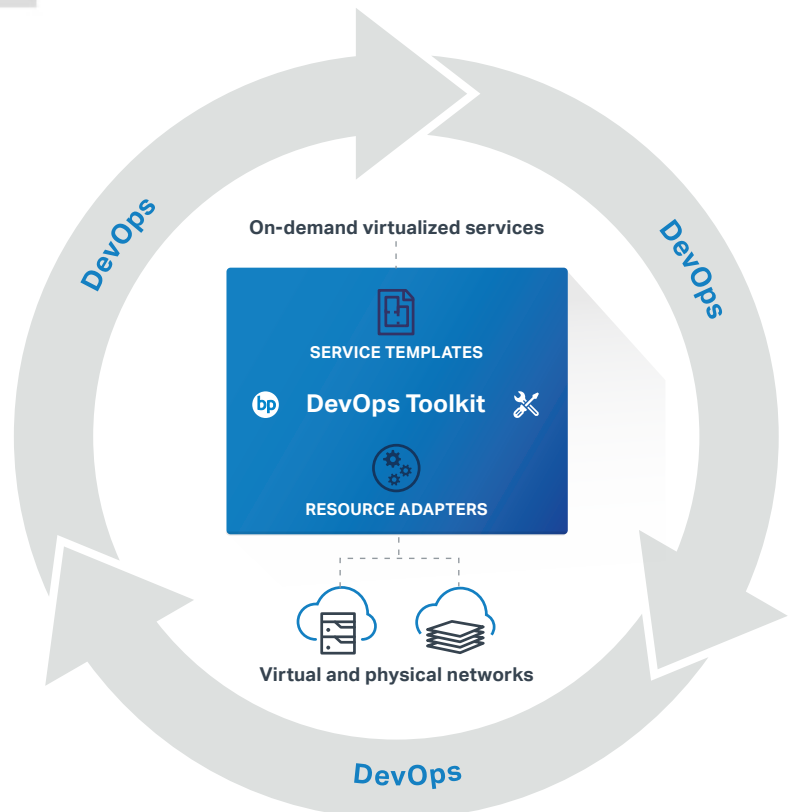
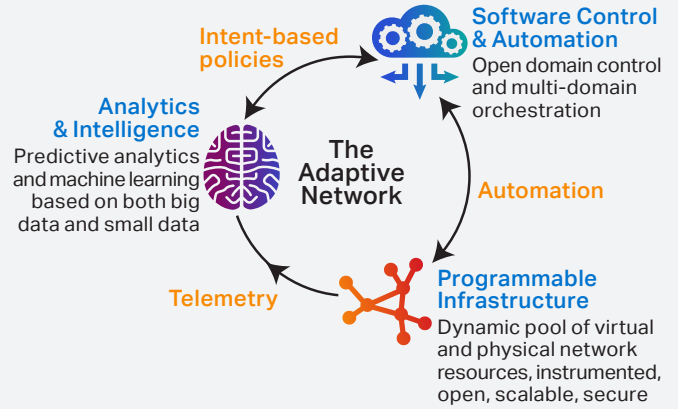


Figure 4. Blue Planet DevOps Toolkit allows network operators to utilize in-house product development, IT, and operations personnel to on-board physical and virtual network resources and accelerate service deployment

## The Adaptive Network

The Adaptive Network is Ciena's vision of a new target end-state for network providers. Utilizing automation guided by analytics and intent-based policies, the Adaptive Network rapidly scales, self-configures, and self-optimizes by constantly assessing network pressures and demands. The Adaptive Network is built upon three foundational elements: Programmable Infrastructure, Analytics & Intelligence, and Software Control & Automation. Ciena's Blue Planet MDSO plays a key role within Software Control & Automation.



## Blue Planet's proven success and real-world deployments

Blue Planet is already field-proven and deployed with customers worldwide. It serves as an essential component for network operators' transformation to more open, agile, and intelligent automated networks. Blue Planet supports a wide variety of customized and ready-to-deploy network virtualization and automation solutions for Ciena customers, backed by a full suite of services.

The following table lists a few examples of real-world Blue Planet deployments by service providers around the world today:

- **SD-WAN service orchestration** – Simplify delivery of managed SD-WAN services
- **WAN automation** – Automate network and service provisioning across multi-vendor optical (L0/L1), Ethernet (L2) and IP/MPLS (L3) networks
- **Cloud Connect automation** – Orchestrate seamless, on-demand, multi-cloud connectivity services
- **Virtualized Managed Services automation** – Provide customers flexible and on-demand network services

## Technical specifications

The Blue Planet platform can be hosted on a dedicated hardware appliance, or run in a Virtual Machine (VM) environment. Recommended hardware requirements are provided below for base and high-performance deployment options. Sizing should be based on the number of network nodes and/or VNFs to be managed and orchestrated.\*

- 20 CPU cores
- 64 GB memory
- 2.4 GHz E5-2640 or equivalent
- 1 TB disk space
- 1 Gb/s Ethernet network connection

For high-performance and high-availability environments, multi-host clusters are supported. Geo-redundant configuration is also supported.

## Resource Adapters

The following table lists examples of Resources Adapters that are available today.

ALU MEF	Juniper Contrail
AWS	Juniper vSRX
Blue Planet MCP	Nokia/ALU SAM
Ciena D-NFVI	Nokia Nuage VSP
Cisco ASR	OpenStack
Equinix Cloud Exchange	RAD ETX-2
Fortinet	VersaDirector
Infinera Xceed	VMware vCenter

See Ciena's DevOps Exchange  
for a more comprehensive list



\* Contact Ciena for additional information about sizing Blue Planet deployments.

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