blueplanet®
a division of Ciena

Intelligent Automation
Accelerating digital transformation and improving customer experience

Introduction

Digital native companies like Amazon have changed the expectations for customer experience across industries. Today, end-users want to order services on demand using self-service capabilities, and they expect flawless performance. As a result, Communications Service Providers (CSPs) are under tremendous pressure to develop and deliver services much more quickly, with exceptional quality and at the lowest possible cost. Meeting these requirements is no small feat, especially when customers often ascribe more value to cloud applications, mobile devices, and media-rich content than they do to connectivity.

CSPs know they must change the way their businesses operate. They are embracing digital transformation to evolve into Digital Service Providers (DSPs). However, most have not yet fully realized the business benefits of transforming their networks and IT operations. Increasing agility and driving sustainable growth while reducing costs can only be achieved through a holistic approach that eliminates operations silos and intelligently automates the entire service lifecycle.

Ciena's Blue Planet® intelligent automation product portfolio helps service providers take an evolutionary approach to digitizing and automating the

service delivery lifecycle—from design to activation and assurance—without requiring extensive customization. The open and modular Blue Planet software enables intelligent automation to be applied in specific domains, or across multiple domains, using service order management, inventory, assurance, and orchestration to accelerate digital transformation.

Using this modular automation approach and open standard APIs, service providers gain real-time service visibility and control from end to end—lowering their operating costs and improving overall business agility while reducing the time it takes to go from concept to reality. Instead of spending a year or more developing a new service for which there may or may not be a market, CSPs can quickly create the services their customers want and deliver an optimized digital experience.
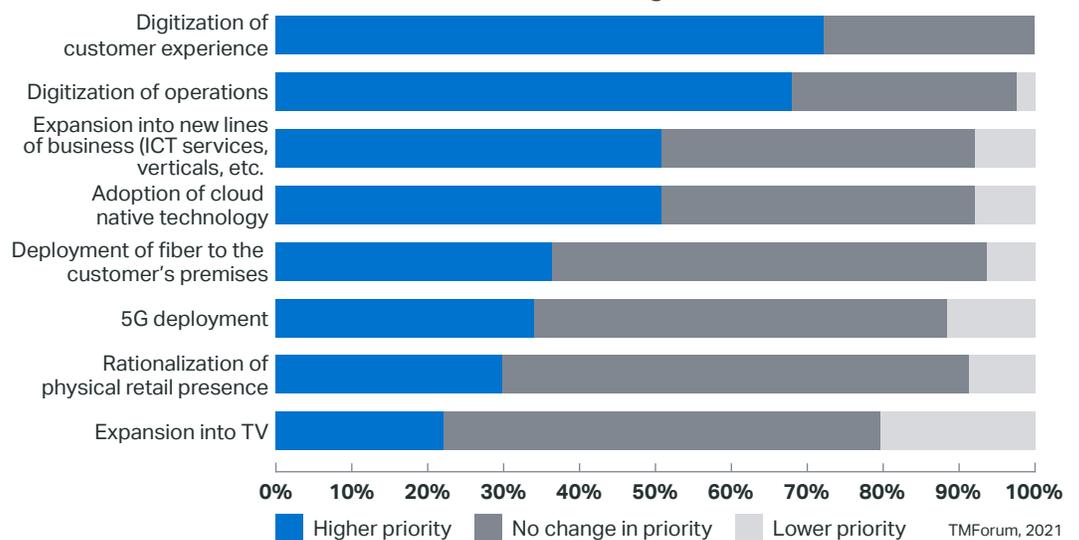
Effect of COVID-19 on digital transformation
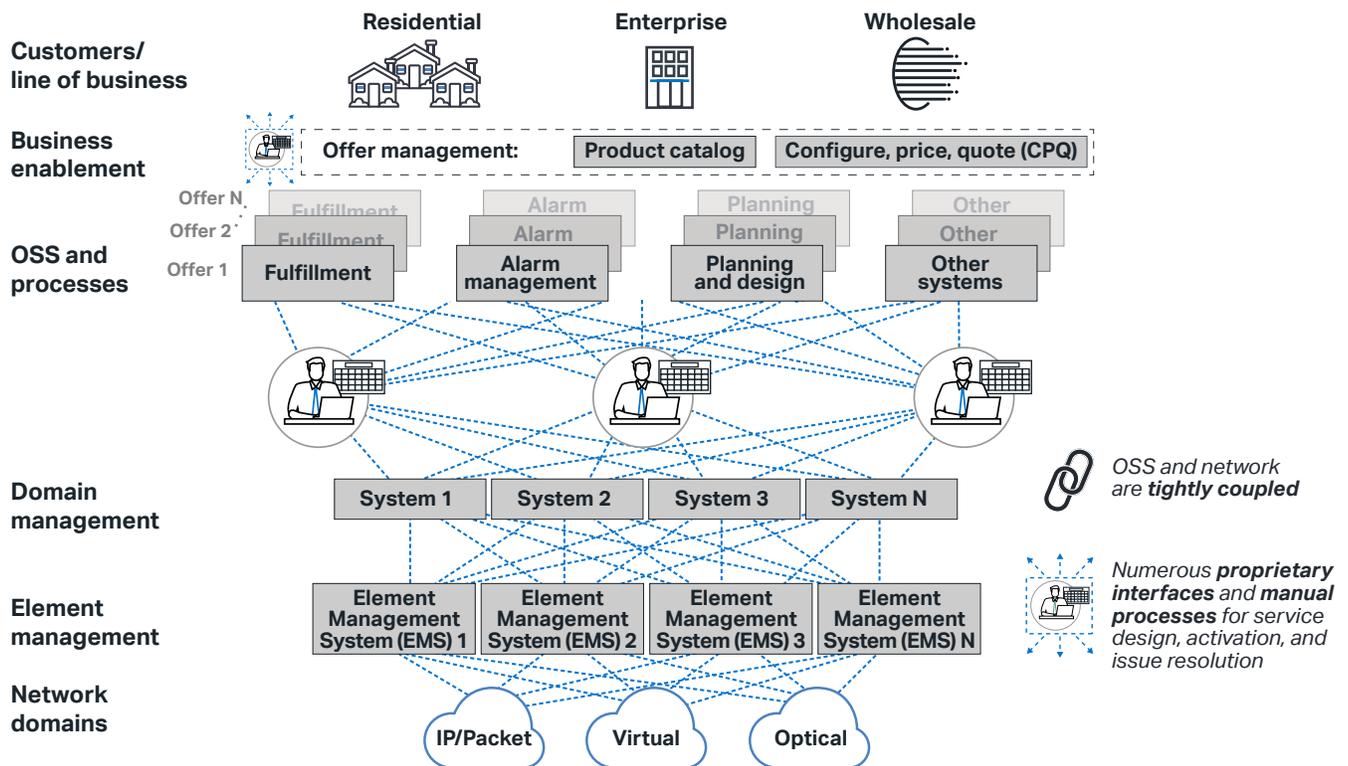

Figure 1. TM Forum survey results

Figure 2. Traditional CSP operational model—OSS and network are tightly coupled

The time is right for intelligent automation

The COVID-19 pandemic has made enterprises and consumers more reliant than ever on the network, and CSPs are transforming their businesses to meet the challenge. A recent TM Forum survey of 164 CSP executives finds that nearly 70 percent believe digitization of customer experience and operations has become a bigger priority for their companies as a result of the pandemic, as seen in figure 1. This is driving service providers to virtualize their networks and embrace Software-Defined Networking (SDN). At the same time, they are modernizing and transforming IT operations to provide differentiated experiences that meet the demands of digital customers.

These changes are overdue. The way CSPs have been managing the service lifecycle—from design to ordering, fulfillment, and assurance—is antiquated, complex, and expensive. While they have made significant progress digitizing customer engagement and virtualizing network infrastructure, many of their Operations Support Systems (OSS) remain highly customized and are tightly coupled with the network infrastructure domains. Figure 2 shows the siloed and manual present mode of operations for service management that is typical for most service providers.
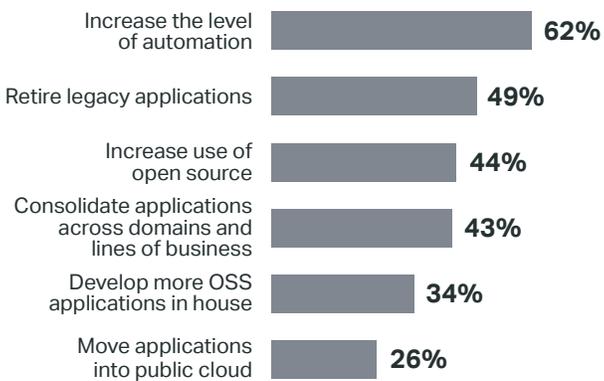
These highly fragmented and closed systems struggle to support dynamic services. Technicians must manually access multiple OSS to gather and correlate the information they need to design, provision, and assure services. As a result, it takes 12 to 18 months to bring a new service offering to market, and activating a new service order takes months as well.

The problem is that enterprise customers have come to expect the on-demand experiences they have when ordering storage or compute from hyperscale cloud providers such as Amazon Web Services, Google Cloud, and Microsoft Azure. These cloud platforms run automated operations that support continuous integration, testing, and delivery of new capabilities, which allows them to turn up new services in hours. They have set the bar high for digital experiences. CSPs can either transform their own operations to compete or risk commoditization of connectivity services.

A better approach: Automating the service lifecycle

Fortunately, service providers realize that service lifecycle automation is critical to their survival. A recent survey by research firm Omdia finds that increasing automation is a priority for OSS investment. As shown in Figure 3, more than 60 percent of respondents cited it as their biggest driver of OSS transformation, followed by retiring legacy applications.

Which of the following factors are the biggest drivers for your OSS update/transformation?

Factor	
Increase the level of automation	62%
Retire legacy applications	49%
Increase use of open source	44%
Consolidate applications across domains and lines of business	43%
Develop more OSS applications in house	34%
Move applications into public cloud	26%

n=61   © 2020 Omdia

Figure 3. Biggest drivers for OSS update/transformation

As service providers deploy 5G and offer on-demand services such as Software-Defined Wide Area Network (SD-WAN) and network slicing, zero-touch operations become necessary. It simply is not possible to handle the volume and speed of changes required using manual processes.

Figure 4 shows the alternative to manual and siloed operations. Rather than a complex architecture linking network domains with multiple support systems, this approach decouples operations from the network by using industry-standard open APIs to expose information from network domains into the OSS and Business Support Systems (BSS) layers. This approach simplifies end-to-end services management and enables service lifecycle automation in order to eliminate inefficient manual processes as well as ensure rapid service delivery, optimization of resources, and quick remediation of issues when they arise.
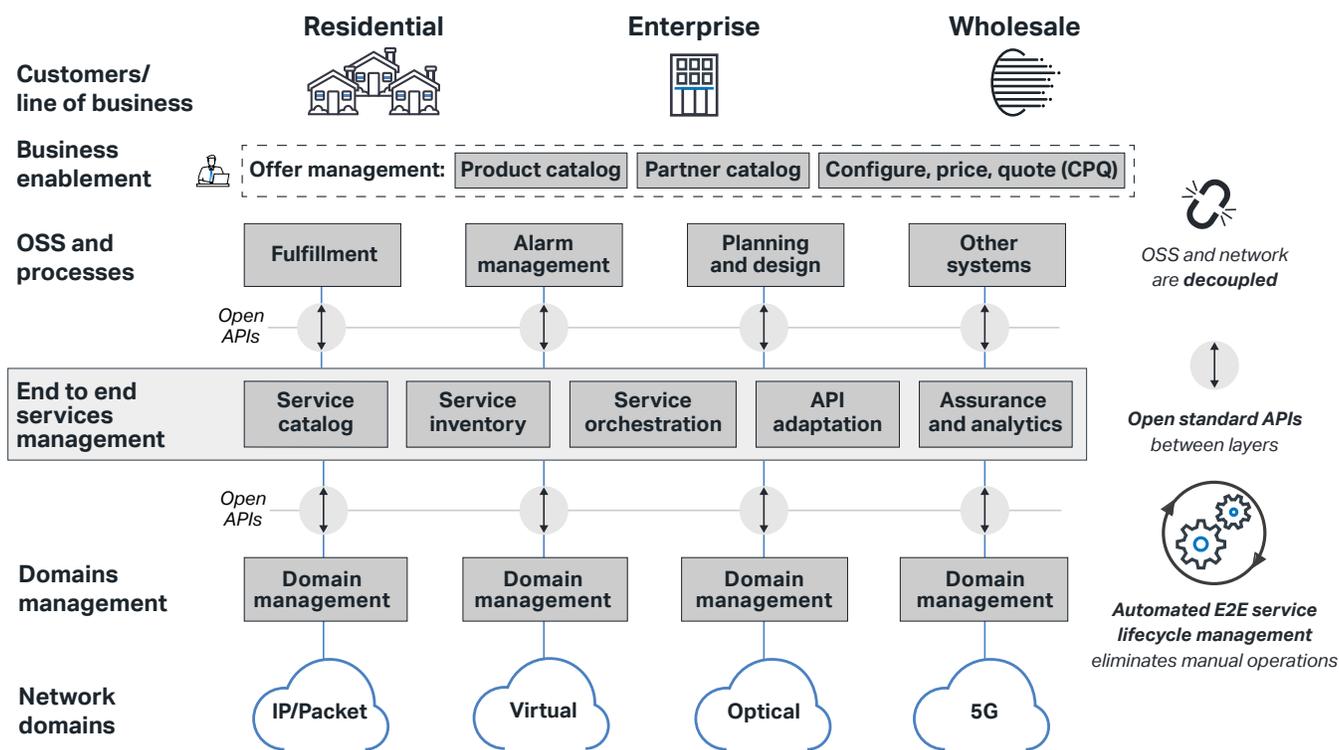
Figure 4. Using open APIs to decouple operations from the network enables end-to-end service lifecycle automation to ensure rapid service delivery, optimization of resources and an improved customer experience

Requirements for CSP service automation

Modular software
Network operators do not want to be locked into a single vendor's closed, proprietary platform that requires extensive customization and integration services. Instead, they need modular automation software that can be deployed interchangeably with other components.

Open and standards based
Software must be open and vendor-agnostic to ensure interoperability, rapid integration, and incremental evolution. This means using a model-driven approach to dynamically compose and deliver services leveraging open standard APIs.

Cloud native
Solutions should be designed and optimized from the outset as cloud-native applications that can be deployed on premises or in a public or private cloud for rapid enhancements and scale. They should also offer the flexibility to consume the Software as a Service (SaaS) if required.

DevOps programmability
Just as enterprise customers want self-service, so do CSPs. Their software should be optimized for DevOps to enable co-development among multiple ecosystem partners and vendors, enabling self-sufficiency and eliminating change requests.

CSPs need open and modular software solutions to fully digitize and automate the service lifecycle. They want their suppliers to deliver best-in-class, cloud-native solutions that are easy to integrate and interoperate seamlessly with other vendors' products.

Open APIs and standard reference architectures from industry organizations such as ETSI, MEF, ONF and the TM Forum play a critical role in CSP transformation strategies because they allow operators to take a best-of-breed approach to selecting components. Operators do not want to be locked into monolithic software platforms that require costly and extensive customization every time a new service offering is introduced. They want to be able to customize their own solutions and co-create services with their cloud and System Integrator (SI) ecosystem partners, suppliers, and customers using agile software development and DevOps tools.

As CSPs deploy open and modular software and embrace on-demand service delivery models, three crucial operational processes can be optimized using intelligent automation: Plan to Build, Order to Service, and Trouble to Resolve.

• **Plan to Build –** In order to deliver services on demand, network planning must be optimized and simplified. Today, capacity planning involves manually correlating network inventory data that is scattered across multiple infrastructure domains, legacy inventory systems, vendor-specific Element Management Systems (EMS) and even spreadsheets, making it a complex and lengthy process that causes errors and ultimately delayed network builds. Unified, end-to-end visualization of physical, logical, and virtual service inventory capacity—including planned assignments—helps service providers automate the planning process to quickly deploy a service-ready network.
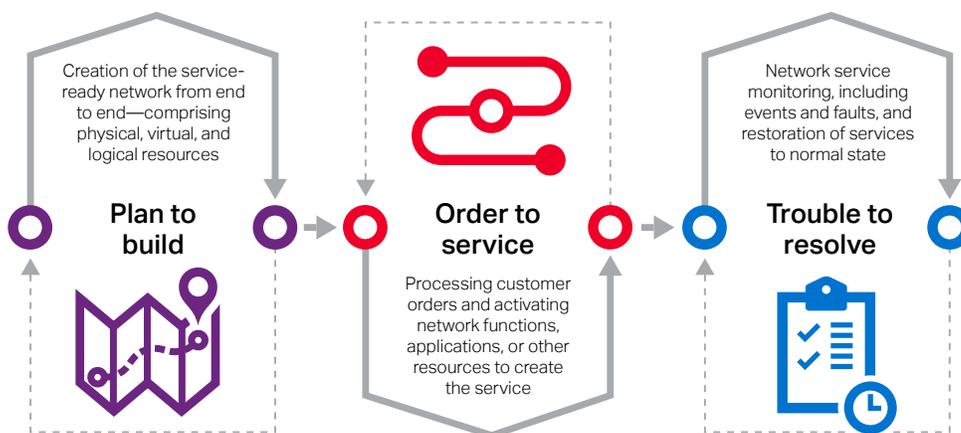
• **Order to Service –** Ordering and fulfillment processes must also be automated. Most CSPs are deploying digital engagement systems such as self-service portals and dynamic product catalogs that allow enterprise customers to order services with the click of a mouse. But the next steps in the process— processing the service order and activating services—are often handled manually and require truck rolls. Using intelligent automation,

Creation of the service-ready network from end to end—comprising physical, virtual, and logical resources

Plan to build

Order to service

Processing customer orders and activating network functions, applications, or other resources to create the service

Network service monitoring, including events and faults, and restoration of services to normal state

Trouble to resolve

Figure 5. Mission-critical processes for a service provider's business

the product catalog communicates with dynamic inventory and orchestration systems through standard APIs to verify the availability of related resources, determine the optimum paths and connections, and automate end-to-end fulfillment, significantly accelerating the conversion of customer orders into services.

• **Trouble to Resolve –** Finally, the process for assuring services must be automated to meet service-level agreements (SLAs) and ensure an optimal customer experience. Today, diagnosing service issues and determining how customers are impacted is a tedious process that requires manual correlation of fault, event, and performance data from multiple disjointed NMS and legacy assurance systems. Automating assurance provides more dynamic views of network and service connection hierarchies across multiple vendors and domains. This way, operators can quickly visualize the real-time state of their services, transform to proactive monitoring, and resolve service issues before they impact customers.

Getting it right: Service provider case studies show the benefits of automation

Use cases like network slicing and SD-WAN demonstrate the benefits of service lifecycle automation. Following are four real-world examples that illustrate how CSPs can use intelligent automation to modernize operations.

DISH Networks offers 5G network slicing

DISH Networks is deploying a greenfield standalone 5G network in the cloud to deliver network slice–based services. The company is using the Blue Planet Intelligent Automation Portfolio to manage inventory and assign network resources for orders that have specific requirements, such as bandwidth or latency.

"In a traditional network, your inventory is the sum of many parts built over time. It's hard to have one global inventory of the network," said Mark Rouanne, Chief Network Officer at DISH Networks. "Then it's very hard to slice it and automate it because you don't have a real-time database that tells you at any time how your network is doing."

Using Blue Planet's open and programmable approach, DISH Networks can rapidly deploy services and allocate resources to wholesale and enterprise customers, allowing them to provision network slices based on SLAs.

Telefónica deploys an open, programmable network

Telefónica is deploying an SDN-controlled transport architecture to cost-effectively support traffic demands

and to meet future demand for 5G services, including network slicing. As part of its iFUSION SDN initiative, the company is evolving its transport network to a disaggregated, open architecture. Using the Blue Planet Intelligent Automation Portfolio, the company is implementing an abstraction layer that decouples the network from operations support and automates service provisioning. Telefónica intends to enable 5G network slicing and lifecycle management through slice-based network resource allocation, monitoring, and assurance.

Telefónica Germany has used Blue Planet Multi-Domain Service Orchestration (MDSO) to implement five key use cases that enable network automation in a network that combines Optical Terminals (OTs) and Open Line Systems (OLSs) from different vendors. The use cases include automated network discovery, OT inventory discovery, service topology management, service management, and alarm management.

"Telefónica is moving away from legacy single-vendor platforms to a model combining best-of-breed solutions from multiple vendors, enabling us to maintain diversity in our network and avoid depending on one vendor," says Cayetano Carbajo Martín, Global Director of Technology at Telefónica GCTIO. "In Germany, Blue Planet's software executes our SDN program to enable not only multi-vendor transport but also automation of our network."

Windstream cuts fulfillment by 80 percent

Windstream Communications is using the Blue Planet Intelligent Automation Portfolio to make its SD-WAN services dynamic. The company's SD-WAN suite is available through a self-service portal and mobile app called WE Connect, which allows enterprises to configure and manage SD-WAN and other services from a single pane of glass.

By automating the service lifecycle, Windstream has been able to cut the time it takes to provision SD-WAN services by 80 percent; it now takes just 20 minutes. Windstream also has been able to reduce fulfillment costs by an impressive 60 percent because fewer systems need to be accessed in order to fulfill services.

"The natural focus of the industry is on the technologies and processes needed for successful transformation," says Mike Frane, Vice President of Product Management (Network, Security, and Digital Experience). "But it is equally important to quantify the impact of transformation to the service provider's business, and ultimately our customers, in order to measure and report on success."

BT simplifies delivery of cloud-based collaboration

BT is leveraging Blue Planet Intelligent Automation to package cloud-based collaboration services like Zoom and Microsoft Teams with connectivity and SD-WAN. Previously, BT's products for multinational companies, which are offered through its BT Global division, were custom designed and integrated during a time-consuming process. But as the company's enterprise customers moved more of their operations and workloads to the cloud, it became critical for BT to do the same in order to empower customers with more choice and self-service experiences—and to avoid losing business to hyperscale cloud providers.

BT Global's initial offering combines over-the-top unified collaboration services such as Microsoft Teams and Zoom with end-to-end network connectivity. Additional services such as SD-WAN, Software-Defined Local Area Network (SD-LAN), security, and hybrid cloud-managed services offer enterprise customers a full suite of integrated and managed product offerings in a digital workplace.

BT is using Blue Planet Intelligent Automation for intent-based digital service orchestration. The Blue Planet software automates the design and activation of end-to-end network connectivity and unified collaboration services, helping BT provide a superior digital experience to customers. Deployed in BT's public cloud, Blue Planet eliminates the need for manual processes to help optimize operations, reduce costs, and ensure the network meets emerging digital demands.

"People around the world are relying more heavily on digital applications to improve productivity wherever they work," said Hriday Ravindranath, BT Global's Chief Technology and Information Officer. "With Ciena's Blue Planet software, BT further establishes itself as a partner of choice for organizations looking to provide outstanding user experience for their people accessing virtual work environments."

As a result of the transformation, BT has been able to accelerate the release cycle for newly introduced network- and cloud-managed services. The company successfully introduced three brand new products in the span of just 10 months.

Accelerating digital transformation with Blue Planet Intelligent Automation

Each of these case studies is an example of automated service lifecycle management in action. All share a common overarching goal of improving the experience for customers, allowing them to request the services they want when they want them. By implementing zero-touch ordering, fulfillment, orchestration, and assurance, CSPs can also increase innovation and substantially reduce their operating costs.
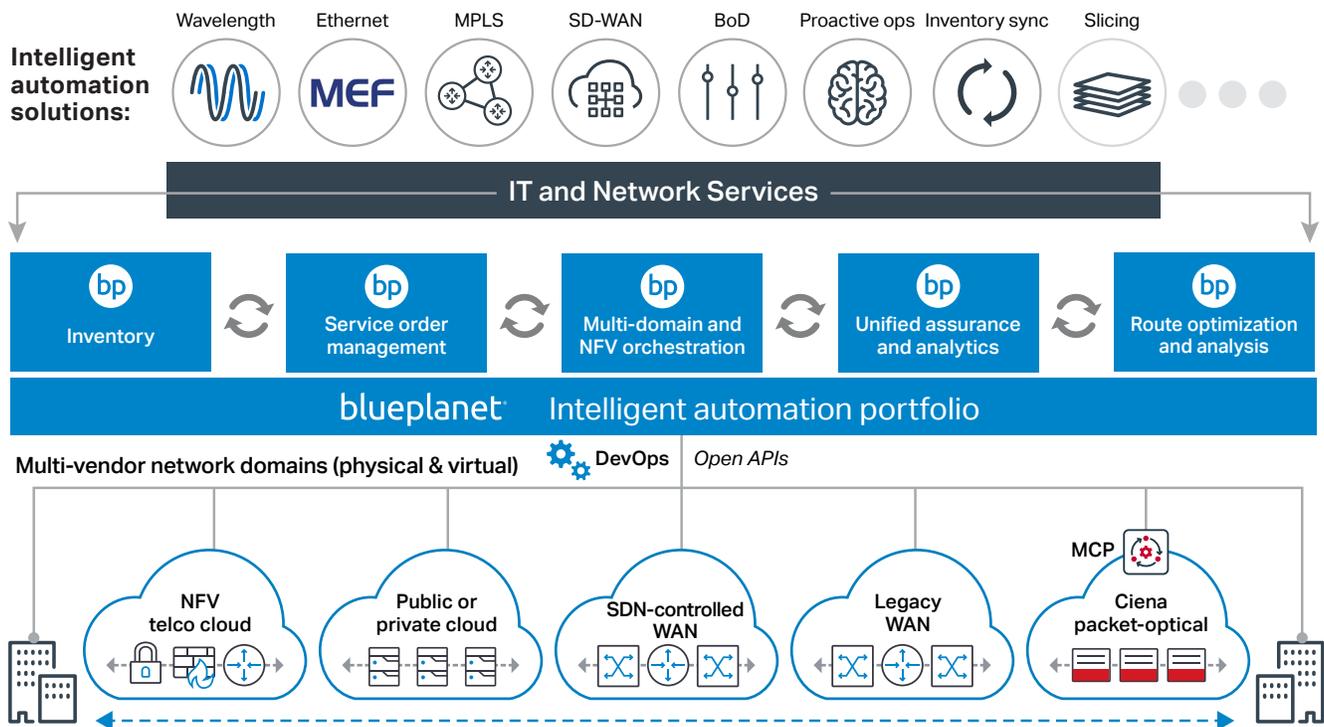

Figure 6. Blue Planet intelligent automation software

To achieve service lifecycle automation, CSPs must adopt cloud-native architectures that enable agile DevOps practices in their networks and operations. The days of highly customized, monolithic IT systems sourced from a single vendor are gone. Network operators want modular software products that are based on open standards and best practices to ensure interoperability. They want to be able to combine their preferred solutions to deliver a user experience that is on par with the experiences provided by hyperscale cloud providers.

The Blue Planet software provides an open, vendor-agnostic, and highly modular portfolio of products that are designed and optimized for automating the end-to-end service lifecycle. The following Blue Planet products can be deployed individually or in any combination:

- **Blue Planet Inventory** (BPI) provides a unified, accurate, end-to-end view of network and services resources. This enables a pragmatic approach to operations transformation by federating operational data from multiple existing systems, synchronizing it with real-time data from the multi-vendor network, and creating a single 'source of truth' that accurately reflects the current state of the network.

- **Blue Planet Multi-Domain Service Orchestration** (MDSO) simplifies the end-to-end orchestration of services across multiple physical and virtual technology domains. Leveraging abstraction and open APIs, it streamlines and automates end-to-end service delivery across any mix of vendors and network layers to increase velocity and reduce costs.

- **Blue Planet Service Order Management** (SOM) enables automation and real-time visibility of service orders. It uses advanced catalog-driven fulfillment to integrate with service orchestration platforms like MDSO to provide rapid service activation and the efficient adoption of new services and technologies.

- **Blue Planet Unified Assurance and Analytics** (UAA) harnesses the power of advanced analytics and AI to provide real-time network and services assurance. It unifies and correlates alarms, faults, events, and performance data from the entire network to accurately detect potential issues, and works with software-defined automation systems to preemptively resolve them.

- **Blue Planet Route Optimization and Analysis** (ROA) provides real-time visibility into how routing behavior affects service delivery, and traffic engineering.

Blue Planet is a division of Ciena that combines expertise across IT, network, and business operations to help customers accelerate their digital transformations and create differentiated end-customer experiences. The Blue Planet software is proven and deployed at more than 200 customers worldwide, and backed by a global team of delivery specialists and a broad ecosystem of partners.

CONNECT WITH BLUE PLANET TODAY

blueplanet®
a division of Ciena