

INFOBRIEF

Navigator Network Control Suite

Intelligent software control and automation to optimize and accelerate multi-layer operations

End-customers want more from service providers—more bandwidth, more services, more speed. To address this industry trend, service providers are scaling their networks, yet need to do so in a cost-effective and sustainable way. However, service providers are encumbered with multiple legacy network management systems (NMSs) or controllers that require manual coordination of IP and optical operational workflows, resulting in long lead times and suboptimal network designs. With Ciena's Navigator Network Control Suite™ (Navigator NCS), providers gain a single point of control to visualize the performance of their multi-layer, multi-vendor infrastructure to simplify, optimize, and automate network operations—reducing costs, improving customer quality of experience, and supercharging the journey to the Adaptive Network.

Navigator NCS unifies network management, service fulfillment and assurance, and capacity planning in a single interface across multiple technology layers, leveraging software-defined networking (SDN) control and data-driven analytics for coordinated lifecycle operations. With a centralized and accurate view of the state of their multi-vendor optical, Ethernet, and IP infrastructure, service providers can most efficiently fulfill and assure customer services across multi-layer infrastructure—and optimize network utilization. Whether through the intuitive user interface or programmatic APIs, operations teams can quickly execute all the essential tasks that keep the network running smoothly to provide high service quality. Furthermore, by leveraging integrated online capacity planning in Navigator NCS, driven by real-time network telemetry, operators can ensure the network can satisfy customers' bandwidth and quality demands in the future.

Features and benefits

- Drive operational efficiency with centralized software control of network resources and deployed services across multiple technology layers and multiple vendors
- Improve time to market of customer services through coordinated multi-layer lifecycle operations
- Optimize multi-layer network performance with Liquid Spectrum™, Adaptive IP™ Apps, and intelligent applications
- Expedite troubleshooting of network performance issues and impacted services with real-time monitoring capabilities across complex networks, including foreign line systems, transponders, or routers
- Reduce OPEX by leveraging open APIs to integrate easily with OSS and automate end-to-end workflows
- Choose the deployment option to best suit business goals—on-premises, private or public cloud, or turnkey Navigator Hosted Service
- Accelerate installation, operationalization, and adoption with the expertise of Ciena Services

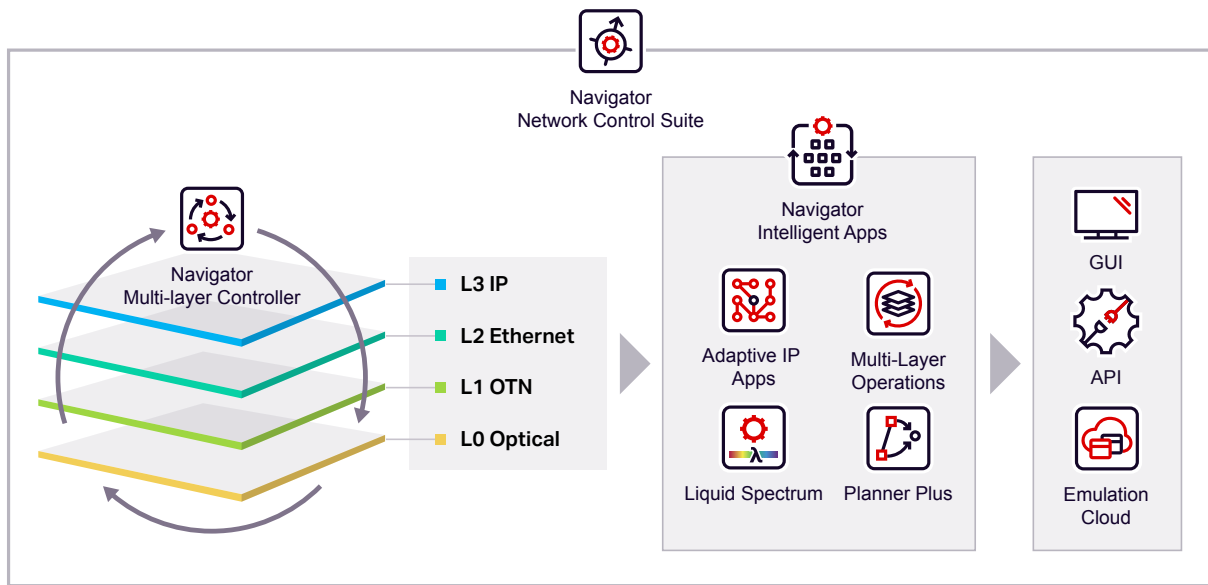


Figure 1. Navigator NCS enables simplified, coordinated multi-layer network operations

A single point of control for lifecycle multi-layer operations

Innovations in infrastructure technology continue to deliver staggering improvements in network capacity, bandwidth, reliability, and performance. However, a different way of operating the network is needed to capitalize on those network infrastructure investments and utilize them most optimally to satisfy market demands for on-demand connectivity and innovative services. Fault, configuration, accounting, performance, and security (FCAPS) operations are simply not enough to deliver the needed business agility. Nor is it efficient to maintain separate operations teams for optical, Ethernet, and IP infrastructure. The answer is intelligent software control, which drives automated lifecycle network operations for multi-layer optimization.

The essence of SDN control is an accurate, centralized view of the network and its resources, as deployed and as planned. Navigator Multi-layer Controller (Navigator MC) interfaces with the network elements under management to discover and maintain a comprehensive network information model, including Ciena infrastructure, foreign lines and transponders, and third-party IP routers. Telemetry is collected from the network dynamically, so Navigator MC always has the real-time view of the multi-vendor L0–L3 network and service topology, without operators needing to manually reconcile multiple tools and correlate static spreadsheets. Navigator MC continuously collects, collates, and clearly presents key performance

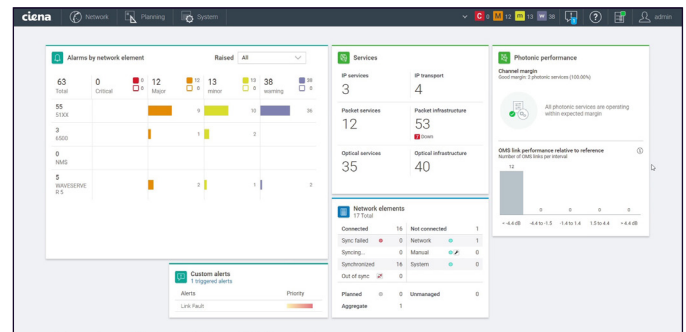


Figure 2. The Navigator NCS dashboard provides a comprehensive, real-time view of the state of the network and services

indicators and alarms, greatly facilitating network monitoring and troubleshooting. Real-time capacity, utilization, and performance metrics are leveraged by Navigator Intelligent Apps (Navigator IA) to provide insights into network behavior and to drive optimized decisions for service assurance and capacity planning. Integrated planning capabilities eliminate time delays and guesswork from network expansions. Operators can efficiently plan network buildouts, schedule commissioning of requisite equipment, and schedule future service activations, thus reducing the overall planning time horizon.

Users can manage the entire service lifecycle in conjunction with network resources through Navigator MC's rich intuitive GUI visualization, or through open APIs that allow for seamless, automated operations with backend operations support systems (OSS). End-customers' services can be provisioned in record time across optical, Ethernet, and IP layers,

all within Navigator MC's unified interface. A broad set of parameters and constraints are able to be specified for provisioning of wavelength, Ethernet, or IP/MPLS services. The embedded path computation engine (PCE) delivers all viable routes that satisfy the specified values so that optimal operational decisions can be made. Provisioning of protection routes for service reliability is also built in.

Advanced analytics for multi-layer optimization

Navigator IA enables multi-layer optimization so that resources are used most effectively to provide superior customer experience. With a consistent view across all technology layers: L0 photonic, L1 optical transport network (OTN), L2 Ethernet and G.8032, and L3 virtual private network (VPN) using multi-protocol label switching (MPLS) or segment routing. Providers can deploy more consumer services, more quickly, and keep them up and running more reliably over a multi-layer network.

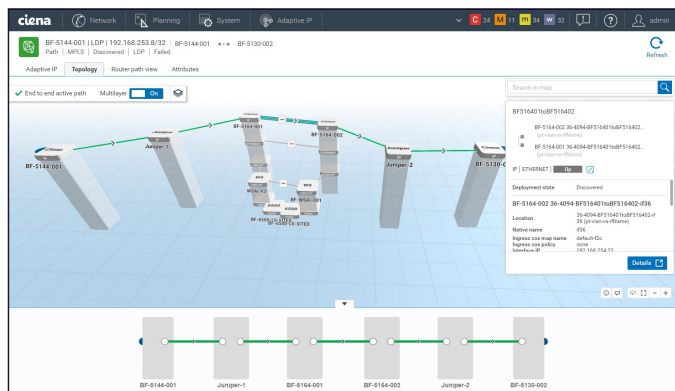


Figure 3. Intuitive multi-layer service topology visualization with Navigator NCS

Integrated monitoring, test, and analytics capabilities expedite troubleshooting and service assurance, so operators can take proactive measures to maintain a high level of service quality. For example, the Liquid Spectrum PinPoint OTDR app uses optical time domain reflectometer traces to localize physical fiber degradation and faults and accelerate service turn-up and repair, reducing the risk of outages. Additional Liquid Spectrum apps allow operations personnel to easily optimize utilization of Ciena's market-leading coherent optical WaveLogic™ infrastructure. For IP layer network performance optimization, Adaptive IP Apps collect extensive telemetry from multi-vendor IP networks and generate IP and MPLS network analytics, providing a real-time view of the current state of the IP network and services, allowing rapid identification and resolution of performance issues.

Next-gen architecture for scale and flexibility

The phenomenal rise of video, mobility, cloud, and internet of things (IoT) services demands massive scale and elasticity from the network, but many management systems are not up to the challenge. Unlike legacy NMS built on monolithic software architectures, Navigator MC is built on a containerized, micro-services architecture that can scale dynamically as the network grows. The platform aligns with service providers' strategies to transform legacy network operations centers (NOCs) to IT-based operations. Navigator NCS software can be installed in a NOC premise on commercial-off-the-shelf (COTS) servers, deployed in the private or public cloud, or operated as a turnkey Ciena-hosted solution.

Openness for ease of integration and automation

Navigator NCS offers open interfaces, including RESTCONF, NETCONF, OpenConfig, gRPC, and TAPI, allowing for ease of integration with adjacent OSS and orchestration systems. DevOps teams can leverage integrated Swagger and Postman capabilities to exercise APIs and develop software to specific business requirements.

Navigator NCS software is readily accessible to customers, third-party developers, and partners via Ciena's Emulation Cloud™, which supports a simulated Ciena network environment. This means operators can easily test REST APIs to third-party tools or OSS from anywhere and anytime, accelerating solution integration.

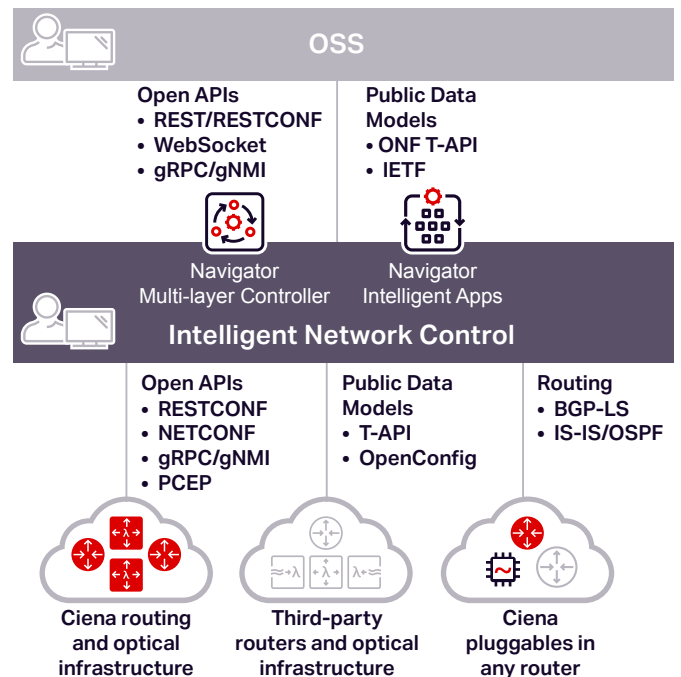


Figure 4. Navigator NCS open APIs facilitate integration and automation

Ciena's Emulation Cloud
Sign up

Customers and partners can also leverage the Ciena Community's expertise, advancing their own DevOps skills development.

Services to simplify and accelerate your Navigator NCS journey

Ciena's Navigator Hosted Service offers a deployment option to customers who want a premium service with Navigator NCS deployed in the cloud and securely managed, maintained, and operated by Ciena. This takes into account the unique composition of your network—the count, types, and mix of network elements, as well as the types and mix of network services. This practical alternative gives you full control of your network, without the challenge and cost of managing the IT infrastructure.

For customers who want to deploy Navigator NCS in their own network—on premises or in the public or private cloud—Ciena Services play a critical role in helping your team accelerate installation, operationalization, and adoption of Navigator MC and Navigator IA, ensuring a quick time to value. A full suite of professional services help you bridge gaps in skills and resources, so you quickly realize Navigator NCS benefits in your operational environment. This lets you maintain focus on your core business while relying on Ciena experts to provide broad capabilities and strategic assistance.

Ciena Services
Learn more

Technical specifications

Supported Operating Environments

Server

- Red Hat Enterprise Linux (RHEL) 7.9 and 8.x, Oracle Linux 7.9 and 8.x, CentOS 7.9
- Clustering for high availability and geographically redundant configurations available
- Deployment on bare metal and on virtualized private cloud infrastructure (such as OpenStack, VMware)

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- Virtualized deployment options available in public clouds (such as AWS, Microsoft Azure, and Google Cloud Platform)
- Specific hardware or VM requirements will vary based on network size, complexity, and supported network element types

Client

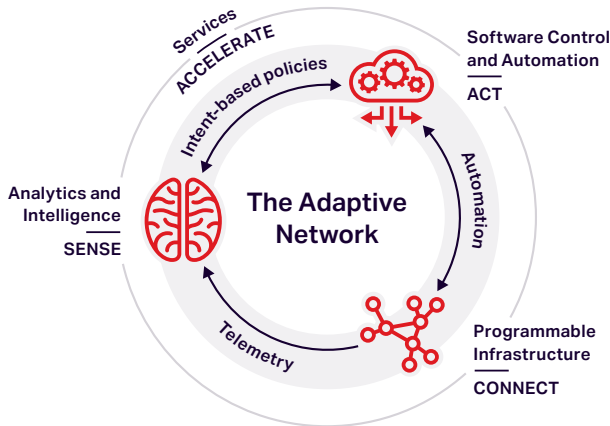
- HTML 5 web client using Google Chrome, Mozilla Firefox, or Microsoft Edge web browsers

Supported Ciena Network Elements

- Converged Packet Optical: 6500 Family, 6500 Reconfigurable Line System, Coherent ELS, Waveserver®, 5400 Family, O-NID
- Routing and Switching: 3000 Family, 5000 Family, 6500 Packet Transport System, 8100 family, WaveRouter™

The Adaptive Network

The Adaptive Network is Ciena's vision of network optimization—leveraging intelligent automation and guided by streaming telemetry, data-driven analytics, and intent-based policies to rapidly self-configure, self-optimize, and self-heal by constantly assessing and addressing ongoing network pressures and demands. Navigator NCS is an integral part of this vision by providing software control and automation of Ciena and multi-vendor infrastructure and network services, across multiple technology layers, driven by integrated Navigator IA for analytics and intelligence.



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 Yes
 No

