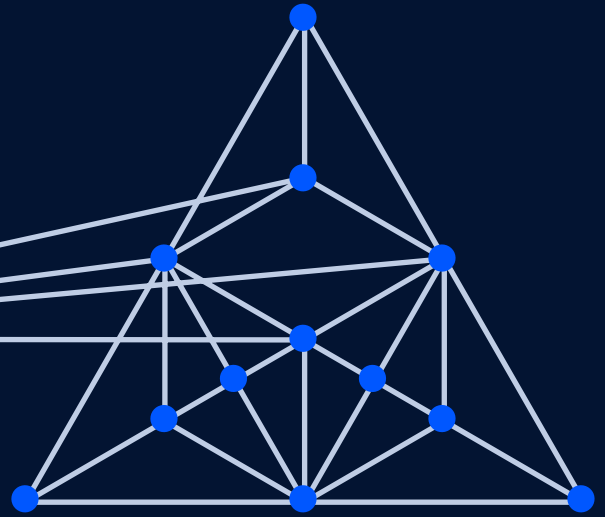


MUSE™

AUTOMATED SERVICE PROVISIONING



DYNAMIC MPLS SERVICES

MPLS is a backbone technology for creating high-performance telecommunications networks. However, MPLS service provisioning still relies largely on manual processes, which are often error-prone, time-consuming, and unoptimized. A new automated approach is needed to serve emerging agile networks, which respond dynamically to new service requests and changing traffic patterns, to make communication service providers more competitive.

Muse Automated Service Provisioning designs, verifies, and activates MPLS connections based on policies that cover the entire MPLS service lifecycle, from SLA performance specs to behavior in the event of alarms or failures. It streamlines operations, speeds up customer responsiveness, and maximizes the use of network resources using multi-constraint path computation.

Muse automated service provisioning is a building block of Muse's modular suite of service and network lifecycle applications. Muse exercises real-time control of a programmable network infrastructure to deliver ECI's ELASTIC Services Platform, which simplifies service delivery and automates network operations.



Covers entire MPLS service lifecycle



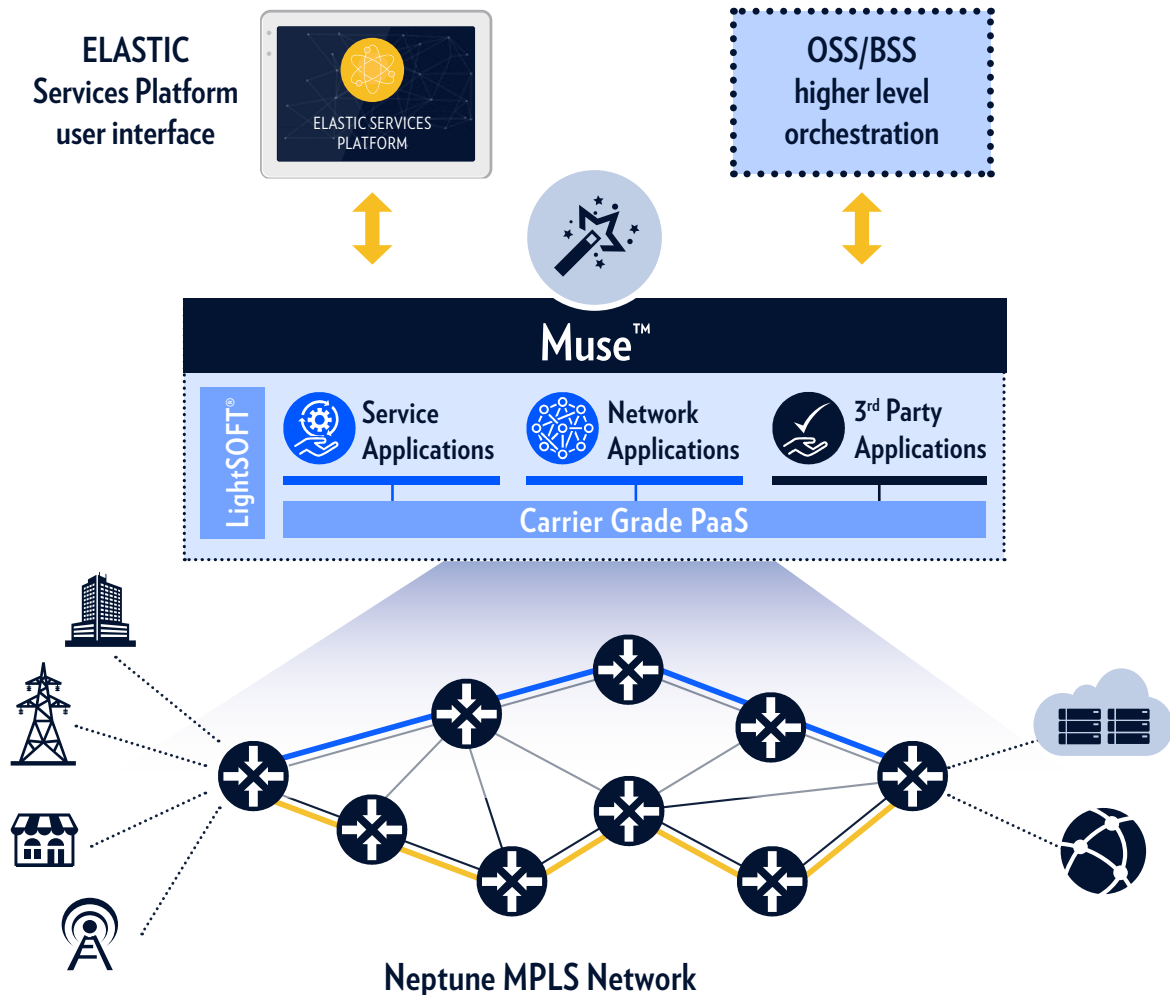
Multi-constraint path computation



SLA verification prior to activation



Intent-driven OSS or human interfaces



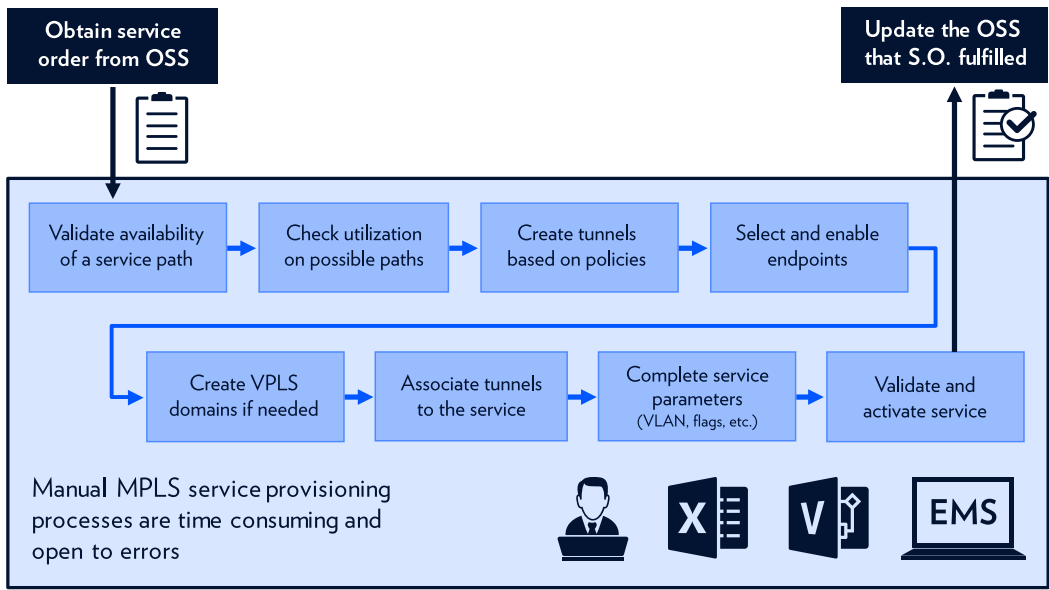
MPLS SERVICE PROVISIONING CHALLENGE

Multiprotocol Label Switching (MPLS) is valued for its versatility, from simplifying packet routing to creating traffic-engineered networks. It provides high-performance connectivity to power valuable applications across the wide area network, like traffic aggregation, mobile backhaul, and business services. Depending on the application, many parameters go into defining an MPLS service, such as:

- Topology: primarily P2P, M2MP, MP2MP, and Rooted MP
- Guaranteed bandwidth
- Service availability/protection that drives different types of dedicated, shared, or dynamic backup
- QoS parameters like latency, jitter, and packet loss
- Policies, such as route utilization, max hops, specific paths, and fiber sharing

Today's challenge is that the manual MPLS service provisioning process is time consuming, error prone, and frequently produces non-optimum results. It requires obtaining information from various sources like OSS and CRM systems. It also relies on manipulating spreadsheets and ad hoc design tools, and manually configuring the network through network and element management systems. This is particularly problematic in the case of larger networks with multiple degrees of freedom, often with incomplete or erroneous records.

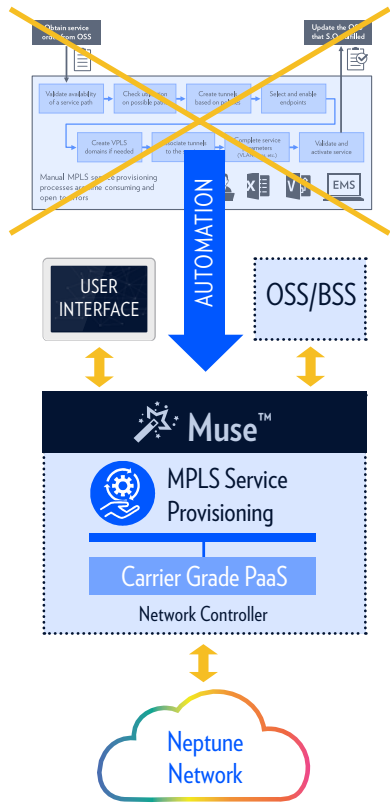
The current approach does not meet the needs of an agile network, which needs to respond dynamically to new service requests and changing traffic patterns. These needs are further driven by heightened customer expectations and competitive pressures.



MUSE AUTOMATED MPLS SERVICE PROVISIONING

Muse enables total automation for all steps of the MPLS service provisioning process. This includes obtaining the SO from the OSS, identifying resources, performing the path calculations while considering all constraints, configuring the end-points, verifying that the service meets its SLA, activating the service, updating relevant databases and systems, and ultimately informing the OSS that SO is fulfilled.

Muse also provides a modern user-friendly (non-telecom style) GUI, that allows human intervention at various stages of the process, if desired, such as providing final approval of the service configuration before it is activated. This allows service providers to gain confidence with an automated process before reducing or eliminating human intervention. The Muse GUI can also be used to initiate the service order and guide the process, in cases where an automated OSS interface has not yet been implemented.



- THE PRIMARY BENEFITS OF MUSE AUTOMATED SERVICE PROVISIONING ARE:**
- Fast response → Increased customer satisfaction
 - Optimum resource use → Better Capex leverage
 - Precise error-free process → Lower Opex
 - Reduced human involvement → Lower Opex

MORE THAN JUST AUTOMATION

While the primary benefit is automation, Muse MPLS Service Provisioning adds unique value in the following areas:

| | |
|---|---|
| Multiple flavors of MPLS networks | Covers IP/MPLS and MPLS-TP networks, including stitching between the two. This is important for providing customer choice and addressing different applications or parts of the network, where preferences may vary. |
| | Muse also supports IP/MPLS Traffic Engineered networks using Segment Routing. SR is particularly important for optimizing network slicing to support 5G services. |
| Predefined “service lifecycle” packages | Muse simplifies automated or human-guided MPLS service provisioning by predefining the most popular types of service configurations for their entire lifecycle, covering parameters like topology, bandwidth, QoS, protection, monitoring, and behavior in the event of alarms or failures. |
| | These are available as templates that cover the full service lifecycle in one place. |
| | A telco can take any service lifecycle configuration template as a starting point to create a new template with variants, based on their particular needs. |
| Advanced multi-constraint path computation algorithms | Muse’s advanced path computation algorithm can calculate routes that balance multiple cost, performance, and policy constraints. |
| | Specifically, it can tackle difficult problems like optimizing the balance between the shortest path and least loaded path. |
| | This is particularly important when calculating traffic-engineered paths, supporting network slicing for 5G services. |
| SLA checks prior to service activation | Muse takes MPLS provisioning a step further, by verifying SLA performance against its spec, before the service is activated to the customer, thus enhancing customer satisfaction and saving on subsequent troubleshooting costs. |
| | This fixes an issue with most MPLS provisioning processes, where a service is configured and activated and the SLA is only investigated if there is a problem or a customer complaint. |
| Intuitive, simple-to-use northbound control interfaces | Muse supports both automated interaction with OSS, based on open and standard northbound interfaces, and a modern user-friendly GUI, with a distinctly non-telecom look and feel. |
| | The interfaces are driven via abstract, intent-based controls, such as connecting points A and B, with specified bandwidth and policy constraints, without having to specify implementation details. |
| | Muse allows automated and manual control to operate hand-in-hand for a gradual transition to a fully-automated environment. |
| Vendor-agnostic southbound control interfaces to network equipment | Based on industry standard Netconf/Yang interface and models. |
| | Not limited to ECI equipment, so it can operate in a multivendor NE environment. |
| Third-party software | Muse is based on a carrier-grade PaaS. |
| | Through open interfaces on the PaaS, Muse and the automated MPLS service provisioning functionality is open to 3rd-party innovation, making it easy to benefit from other existing sources. |

Contact us to find out how Muse lets you get the most out of your network

ABOUT ECI



ECI is a global provider of ELASTIC network solutions to CSPs, utilities as well as data center operators. Along with its long-standing, industry-proven packet-optical transport, ECI offers a variety of SDN/NFV applications, end-to-end network management, a comprehensive cyber security solution, and a range of professional services. ECI’s ELASTIC solutions ensure open, future-proof, and secure communications. With ECI, customers have the luxury of choosing a network that can be tailor-made to their needs today – while being flexible enough to evolve with the changing needs of tomorrow. For more information, visit us at www.ecitele.com