

Muse™

What-if-Analytics

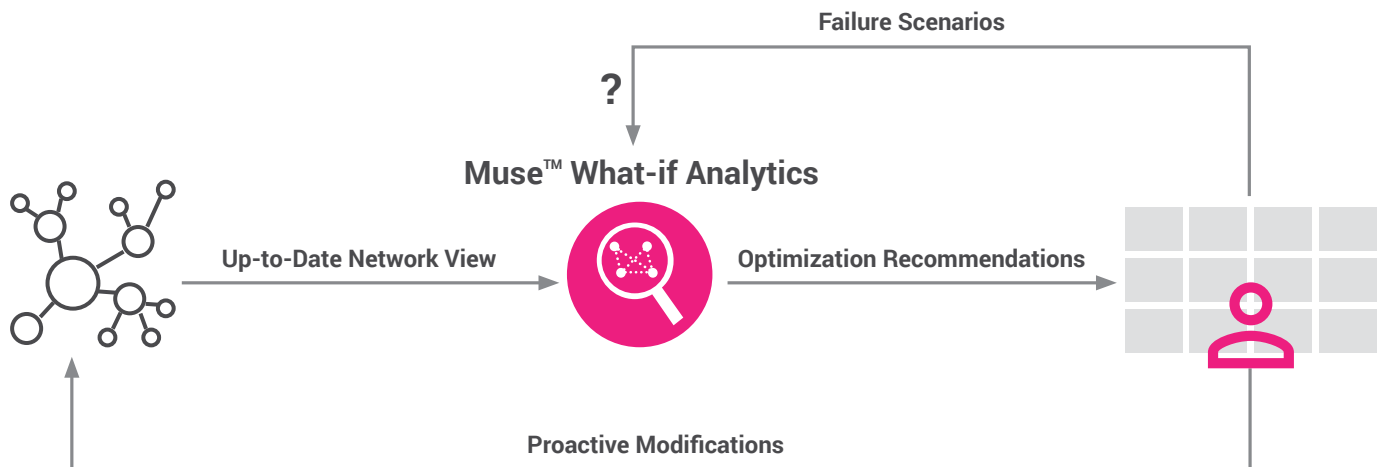


Simulate Network Failures for Optimized Service Availability

Analytics should be at the core of every intelligent decision made by a human or a machine. Muse What-if Analytics module guides network planners on how to optimize a network's ability to sustain failures and assure Service Level Agreements (SLAs).

Muse What-if Analytics operates on a multilayer view of the network that refreshes the topology continuously for up-to-date accuracy. It performs stress tests on the network topology to determine how services are impacted under multiple failure scenarios, such as individual card failures, fiber breaks, entire site failures, and more. It then simulates the capability of the network to maintain SLAs through dynamic protection and restoration architectures. The Muse What-if Analytics software module creates reports that guide network planners and NOC personnel in optimizing the network, increasing its sustainability to withstand failures, and maximizing service availability.

- Model Failure Scenarios** of all types
- Flag Problems** before they affect services
- Plan Preventive Maintenance** systematically
- Guarantee SLAs** with confidence



Muse What-if Analytics Module Covers Four Stages:

1 Unified Network And Services View

Muse What-if Analytics obtains regular snapshots of the network topology. It uses these to create a comprehensive network and service dependency view spanning topology, fibers, OMS (optical multiplex section) layer, OCH (optical channel) layer, service tunnels, and the provisioned services. It also accounts for any protection mechanisms and dynamic restoration schemes. This provides the concrete basis for What-if simulations.

2 What-If Simulations

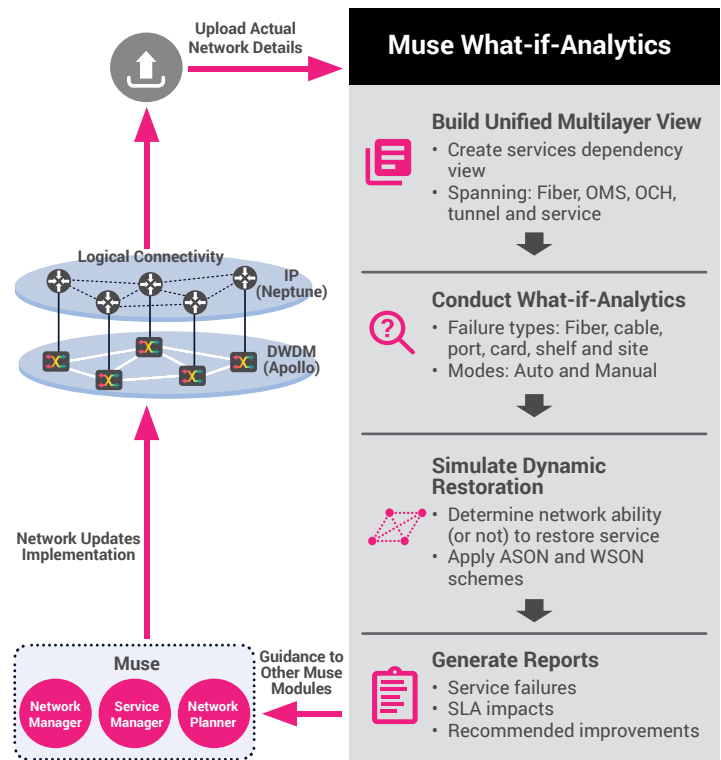
Muse What-if Analytics simulates a wide range of failure conditions, occurring individually or concurrently. These can include fiber, cable, port, card, shelf, or entire site failures. The simulations can be conducted for multiple network scenarios with varying levels of packet (LSP) and optical (OCH) standby protection (1+0, 1+1, 1+R, etc.) and in various combinations of protection, to simulate true multilayer conditions. Simulations can be run automatically, using predefined options, or manually, to stress a particular area or aspect of the network. Simulation results identify which services are affected and zero in on network vulnerabilities, like single points of failure (SPOFs).

3 Dynamic Restoration Simulations

Besides relying on only standard standby protection mechanisms, Muse What-if Analytics also simulates the effectiveness of dynamic restoration schemes. These can be applied at both the OTN level, using an Automated Switched Optical Network (ASON) architecture, or at the wavelength level, using a Wavelength Switched Optical Network (WSO) architecture. Using these simulations, a network planner can determine whether a sufficient level of service availability is obtainable using dynamic restoration, rather than more expensive standby protection, at least for some portions of the network.

4 Reports

Muse What-if Analytics reports detail network vulnerabilities to different types of failure, and recommend improvements. These reports serve as input to other Muse Network Lifecycle Automation software modules. They can also be used directly by network planning and NOC personnel to optimize the network, increasing its sustainability to withstand failures, and maximize service availability.



About Ribbon

Ribbon Communications (Nasdaq: RBBN) delivers communications software, IP and optical networking solutions to service providers, enterprises and critical infrastructure sectors globally. We engage deeply with our customers, helping them modernize their networks for improved competitive positioning and business outcomes in today's smart, always-on and data-hungry world. Our innovative, end-to-end solutions portfolio delivers unparalleled scale, performance, and agility, including core to edge software-centric solutions, cloud-native offers, leading-edge security and analytics tools, along with IP and optical networking solutions for 5G. We maintain a keen focus on our commitments to Environmental, Social and Governance (ESG) matters, offering an annual Sustainability Report to our stakeholders. To learn more about Ribbon visit rbbn.com.

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