Muse™

Network Planner

Network Planning Integrated with Lifecycle Automation

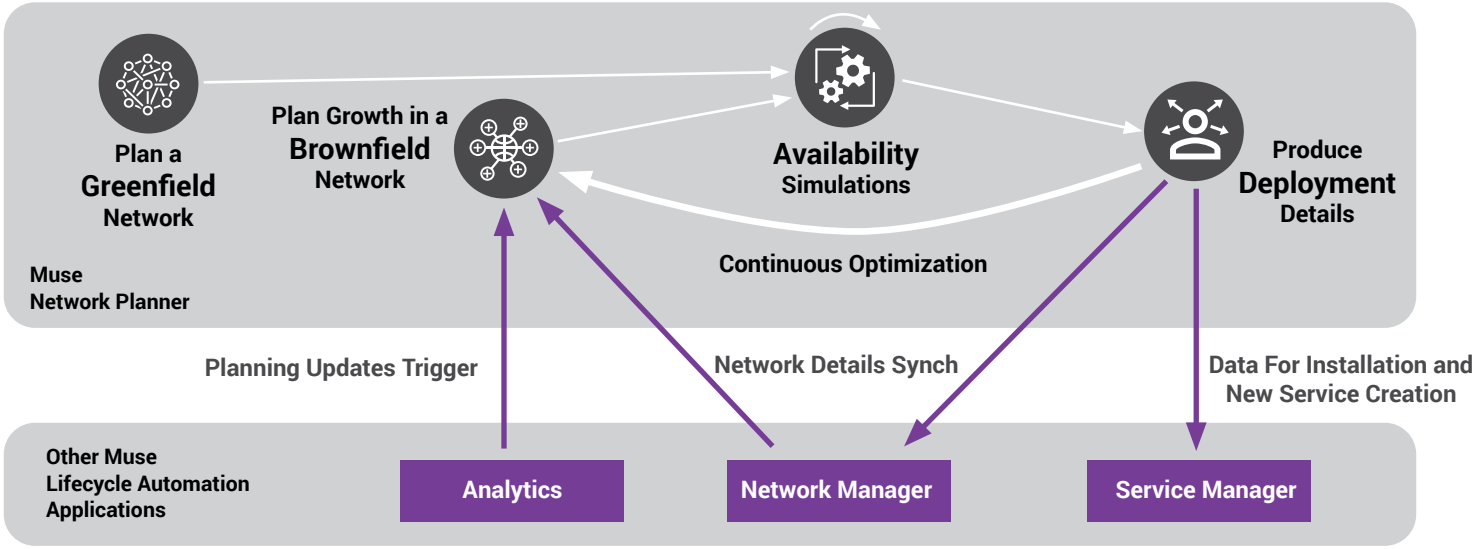
Muse Network Planner is a next-generation planning tool for packet and optical networks, with forward-looking abilities for multilayer optimization. State-of-the-art algorithms optimize on user-selectable factors including cost, latency, and OSNR, and can telescope-in to plan selected portions of the network critically. Sophisticated simulation testing analyzes design robustness, such as how to handle CIRs in the event of failures. As a part of Ribbon's Muse Lifecycle Automation suite, Network Planner works intimately with other Muse applications to maximize the network's service delivery capabilities and availability, using a minimum set of network resources.

Layers 0-3
packet-optical optimization

Advanced Algorithms
link with actual network data

Simulation Testing
against failure conditions

Plug-and-Play
for fast and error-free installation

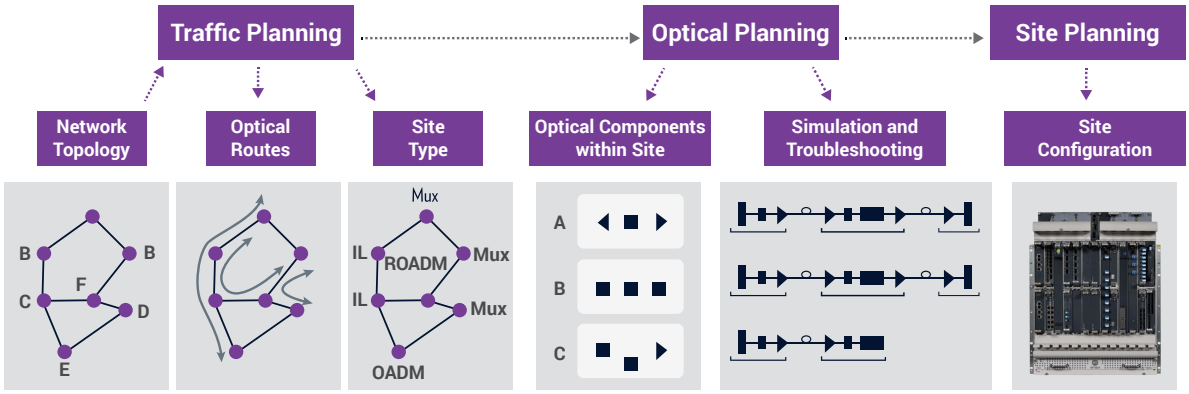


Muse Network Planner follows a systematic process to deliver comprehensive, optimized, and robust network designs that synchronize closely with actual network deployments. All steps are conducted via a friendly multi-window GUI that allows the operator to see and control what is happening at all times.

STEP 1: **Gather planning input**	• Physical network topology, technologies, interfaces, and fiber types • Packet service types and traffic matrix, with CIR/EIR bandwidth requirements, and growth forecast • Explicit route overrides, including SRLG constraints • Global and explicit protection and restoration requirements • Optimization goals: minimum ports, bandwidth distribution, route diversity, general and premium service latency, OSNR margins

STEP 2:
Create packet and optical network plans
	• Optimize based on customer preferences:
	  • Bulk global, bulk group, and premium (one-by-one) levels
	  • Weighting among optimization goals (cost, latency, minimum hops, etc.)
	• Produce high-level packet and optical infrastructure plans
	  • Service and transmission performance at initial and end-of-life conditions
	  • Power budgets

STEP 3: **Optimize using availablity simulations**	• Determine how the planned network behaves under traffic stress or network failure conditions • Identify non-compliances and points of vulnerability • Change preferences and weightings, add any needed explicit inputs, and iterate plan until goals are met
STEP 4: **Build site plans**	• Configure network sites at the equipment level • Produce detailed layouts and BOMs, specifying racks, platforms, cards, modules, and spares, plus management software • Export to XML files for fast plug-and-play installation
STEP 5: **Rapid installation**	• Use XML files to install and configure equipment on site, via Muse Network Manager • Avoid manual processes, ensuring fast and error-free equipment turn-up
STEP 6: **Comprehensive reports**	• Generate a wide range of reports for use by planners, project managers, supply chain, network engineering, field engineering, and operations • Includes varied types of BOM (ERP, power, inventory), installation, and topology reports



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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