Multilayer Convergence Assessment

Service Overview

This assessment is targeted at providers supporting an IP and an optical transport network (OTN) infrastructure who are considering a converged multilayer network that optimizes investment without compromises to availability and network performance.

Providers considering 100GbE insertion or tackling optimized 10GbE deployment would benefit from evaluation of a converged multilayer approach provided by this service, which creates the framework for a cost-optimized topology that meets customer demand and resiliency requirements.

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Service Description

Service providers and carriers are increasingly seeking strategies that will enable them to continue providing exceptional levels of service while improving the cost per bit equation. One such strategy is multilayer network convergence.

In the past, the various network layers (IP, optical transport, etc.) were optimized independently. Even if design teams work closely, there is still the potential for building over or under capacity and redundancy in the combined infrastructure.

The best approach is to consider multiple layers simultaneously during the evaluation process to meet the scaling needs of the network, while also optimizing the investment in the infrastructure across all layers. This approach is referred to as multilayer IP-over-transport network design.

The overall goals of the Multilayer Convergence Assessment are to optimize network costs while meeting traffic and capacity requirements. For example, the client network design has to be able to survive any single router outage, any single link outage, and/or any Shared Risk Link Group outage.

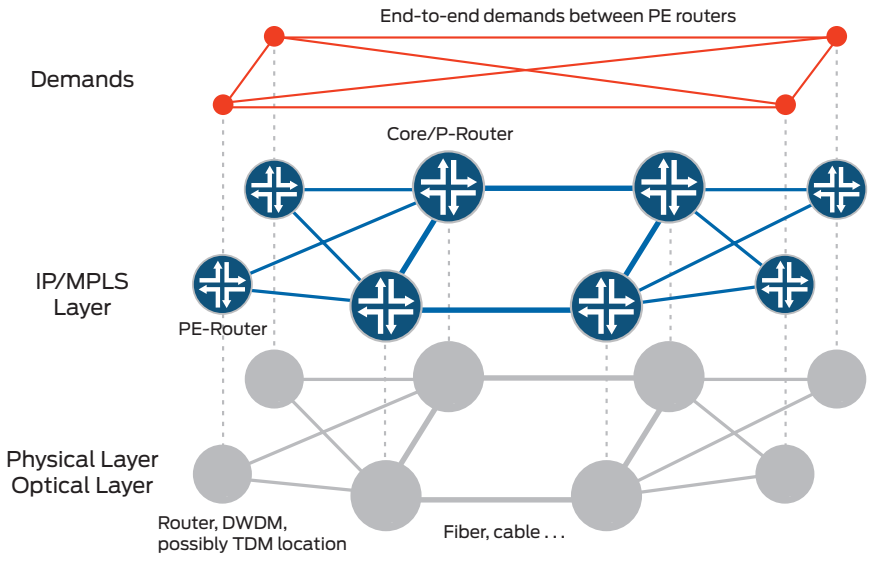

Fig. 1: This illustration highlights how multiple network type and networks layers impact the demand between Provider Edge routers

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Service Features and Benefits

Feature	Feature Description	Benefit
Multilayer design considerations	Review benefits of a multilayer converged network	Understand the potential to improve traffic switching through the network infrastructure
Identifying inefficiencies	Identify areas where the current technology and design are preventing goals from being achieved	Understand redundancy at the IP layer as well as optical network, which can inflate the cost of infrastructure unnecessarily
Failure simulation	Validate the design showing impact of link and node failure	Understand the expected impact to applications should a failure occur, as well as congestion points and quality-of-service (QoS) performance

Outline Methodology

To perform an assessment of a multilayer converged network, we take the following steps:

1. Understand your cost and technology requirements
2. Review the agreed upon areas of your current network
3. Analyze and evaluate gaps in current capabilities that will need to be addressed in order for your requirements to be addressed
4. Develop recommendations and potential impacts on requirements and costs

Using industry-leading network modeling tools, hundreds if not thousands of topologies are considered and cost compared for optimization of infrastructure required to meet the specified demand.

Examples of the data used to develop a robust model include:

- Locations, and number of provider and provider edge (PE) routers
- Locations and number of dense wavelength-division multiplexing (DWDM) systems
- Fiber pairs between locations and distance
- Core routed topology
- Traffic statistics
- Assumptions on optical reach
- Relative per port costs

Service Deliverables

Specific deliverables will be defined for each customer's requirements. However, a basic assessment includes;

- Up to three scenario's/permutations/variations to be considered
- Analysis of the current network, including:
  - IP routed topology
  - Transport layer topology
  - Resulting link utilization (with and without network failure)
  - The Shared Risk Link Groups
  - Documented recommendations for proposed multilayer converged infrastructure
  - Recommended next steps

Service Scope

The basic assessment service is applicable to a single IP/MPLS over transport network only. It considers PE to PE routed networks only and excludes PE to customer edge (CE) links, metro, backhaul, or other last mile facilities.

Juniper Professional Services

As leaders in networks and security, Juniper Networks Professional Services consultants and engineers are uniquely qualified to assist service providers in designing, implementing, and optimizing security solutions. Our team appreciates the complexities and the subtleties inherent in large-scale internetwork design and can assist service providers and enterprises, plus provide customized and integrated "turn-key" solutions.

Juniper Networks Professional Services helps accelerate your network's time to value and enhanced security, bringing revenue-generating capabilities online faster for bigger productivity gains, faster rollouts of new business models and ventures, and higher levels of customer satisfaction. Your onsite staff will work closely with Juniper specialists, building operational capabilities and reducing your exposure to IT risks.

As a result of our previous experience involving hundreds of customers around the world, Juniper Networks Professional Services is uniquely qualified to help you design, implement, and optimize your network for confident operation and rapid returns on infrastructure investments. These professionals understand today's network demands and those that are just around the corner—for bandwidth efficiency, best-in-class security, solid reliability, and cost-effective scaling.

Additional Services to Optimize Your Network

Juniper Networks provides additional consulting services to consider along with available QuickStart services. In addition to engagements that are customized for individual customers, a broad range of consulting and packaged implementation services is available to help you enhance your network design and optimize your production environment.

- **Assessment Service:** Leverages all the breadth and depth of Juniper Networks experience to identify your technology options and develop your network and security plans for the future

- **Design Service:** Provides a design and technology recommendations for a network that will meet your business and technical needs
- **Migration Service:** Delivers an end-to-end risk managed migration of your network or security environment

Juniper Networks Services and Support

Juniper Networks is the leader in performance-enabling services that are designed to accelerate, extend, and optimize your high-performance network. Our services allow you to maximize operational efficiency while reducing costs and minimizing risk, achieving a faster time to value for your network. Juniper Networks ensures operational excellence by optimizing the network to maintain required levels of performance, reliability, and availability. For more details, please visit www.juniper.net/us/en/products-services.

Ordering Information

To order the Multilayer Convergence Assessment service or for additional information, please contact your Juniper account manager. Before the service begins, a statement of work (SOW) will be established outlining the scope of effort to be performed.

Model Number	Description
PRO-ASSESS	Mulitlayer Convergenece Assessment Service

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at www.juniper.net.

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