

AN APPROACH TO OFFERING PROFITABLE MANAGED NETWORK SERVICES

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EXECUTIVE SUMMARY

Juniper Flexible Service Edge (FSE) provides service providers with three options to create network services:

- Layer 3 Network Interface Device (L3NID: Low-end service)
- Services Edge Router (SER: Medium service)
- Session Smart Router (SSR: High-end service)

Offering flexible services allows service providers to expand their total addressable market while allowing customers and upgrade path to higher value services.

Key Results:

- 2–3 month payback
- 426% ROI
- Positive cumulative cash flow in first year
- Larger total addressable market

The market for managed network services is large and growing. The worldwide market for managed services in 2020 was \$52 billion and is expected to grow to \$71 billion in 2025. For managed service providers (MSP) to continue to grow revenue and profitability in this lucrative business it is critical that they continue to develop their managed services offerings to SMBs and enterprises.

SD-WAN has become a popular managed service over the last five years. However, not all customers' or enterprises' sites need all capabilities of SD-WAN. To address this gap in the market Juniper Networks SSN solution has developed a Flexible Service Edge (FSE) offering consisting of three options: Layer 3 Network Interface Device, Services Edge Router, and Session Smart Router. The FSE licensing options use the same hardware and software at each site. Therefore, service capabilities can easily be upgraded without hardware replacements or software upgrades. ACG Research has created a business model that shows positive cumulative cash flows over 5 years, payback of between 2–3 months and return on investment (ROI) up to 426% for these service offers.

By offering a full range of managed services from L3NID to session-aware SD-WAN, managed service providers can increase their total addressable market and also create an opportunity to upsell customers who initially opted for lower-end services to higher-end services. The key to the great financial results are unique features of Juniper's Session Smart Networking.

- Application and session aware monitoring for managed circuits.
- Flexible licensing and upgrades: Single product with multiple functions easily upgraded with no forklifts on hardware
- Tunnel Free SD-WAN
- Secure Vector Routing

This paper provides an overview of the opportunities for managed services, the Juniper FSE solution for services, and a detailed business case analysis.

CHALLENGES FOR MANAGED SERVICE PROVIDERS

There are some key challenges in the managed services market today:

- SD-WAN and overlay technologies allow MSPs to offer services outside of their network footprint using a set of POPs distributed globally
- Large enterprises have the option of using SD-WAN as an overlay technology on top of their Internet and MPLS services
- MSPs face more competition for managed services

The level of competition for SD-WAN managed services is continuing to drive down pricing for services, and therefore, it is critical for MSPs to select network solutions that are both cost-effective while offering a rich set of features. This allows MSPs to tune solutions and services to demand while offering competitive pricing, which allows high margins on services.

REQUIREMENTS FOR MANAGED SERVICES

The number one requirement for managed services is to provide scalable, high-quality, and high-availability services. The services must scale from small customers with small sites to large complex enterprises with a diverse set of sites and requirements. Unlike traditional MPLS networks that were usually hub and spoke networks connecting branch offices with data centers, SD-WAN networks should have mesh connectivity and provide flexible options for connectivity. For example, branches could connect to central data centers, multiple public cloud providers, Internet POPs, and other branch offices. Traffic is growing at a rapid rate and it is much less predictable. This means that network designs need to be flexible to adapt to changing traffic patterns.

Networks must have high levels of availability for both voice and data, ensure security, and have flexible options for features. Some customers and offers require only simple connectivity; others require much more advanced SD-WAN features. Easy and secure integration with all public clouds is also key.

JUNIPER SSN SOLUTION OVERVIEW

The Juniper SSN solution provides service providers with a different SD-WAN architecture and a unique pricing architecture. This approach allows MSPs to offer simple, low-cost services at the low end and highly-scalable, secure, and feature-rich services at the high end. These capabilities are enabled by the Juniper Flexible Service Edge and Secure Vector Routing.

Flexible Service Edge

The FSE is a software licensing strategy that allows MSPs to pay for features they need when they are needed. MSPs can introduce tiered services starting at low price points with limited features and evolving to higher price points with more features and capabilities as needed by its customers. The FSE solution is purely a software licensing model approach to solve this problem. All systems run the same feature-rich software, but users only pay for the features they need. The FSE model is depicted in Figure 1. There are three basic service offerings:

- Layer 3 Network Interface Device (L3NID): Provides application-aware demarcation, monitoring, and troubleshooting with deep session-aware analytics
- Services Edge Router (SER): Builds upon the L3NID to provide a managed services edge with advanced routing, QoS, traffic engineering and network security
- Session Smart Router (SSR): Delivers full tunnel-free SD-WAN with policy-driven session management and secure vector routing

Regardless of which service is chosen users will have access to session-aware analytics that provide detail on application performance, which is critical to efficient troubleshooting. Customers can start at the low end L3NID offer, upgrade to a SER, and finally to premium SD-WAN with the SSR based on the requirements for a customer and site. Upgrading service does not require hardware or software upgrades and can be done remotely. It is easy to upgrade services without truck rolls.

Announcing the Flexibility Service Edge

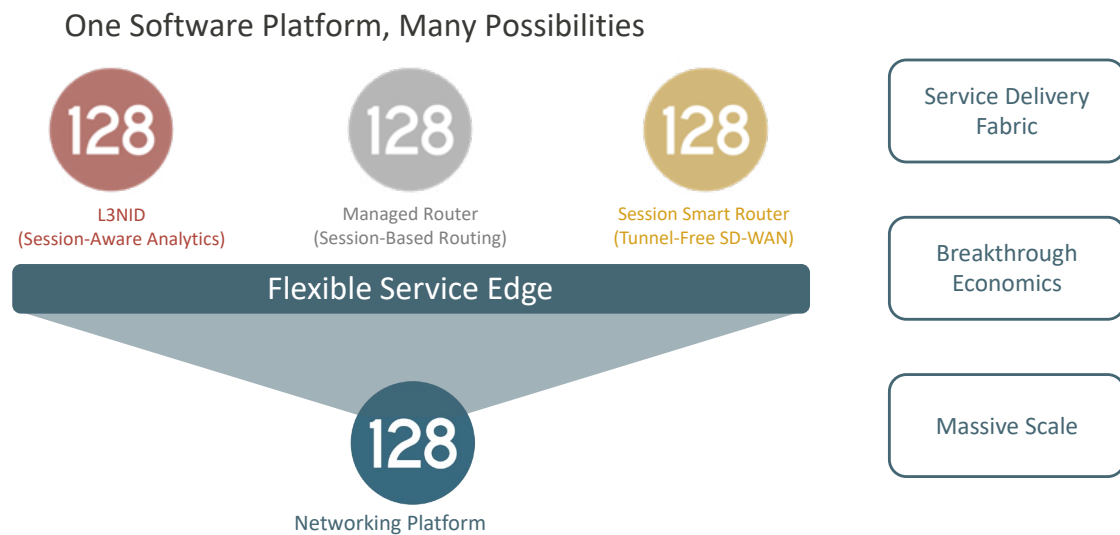


Figure 1. Juniper's Flexible Service Edge

Secure Vector Routing

The Juniper Session Smart Networking solutions are unique in the SD-WAN marketplace, because unlike all other products they do not use tunnels to provide an overlay network but instead use Secure Vector Routing (SVR), a new technology. SVR utilizes a session-based approach to routing using native stateful session control, application awareness, and a zero-trust security approach. Source and destination IP addresses are rewritten using NAT and meta data to isolate traffic for different tenants. SVR allows selective encryption at the session level. This means that it is not necessary to encrypt traffic that is already encrypted, for example, https. Giving the network manager the option to only encrypt clear text traffic saves a tremendous amount of processing power in the router and helps reduce the cost of network hardware at branch offices. SVR provides the benefit of tunnels without the overhead and scalability issues associated with tunnels. It also adds session-based monitoring and awareness, which is a feature that tunnel-based SD-WAN lacks. SVR provides better scalability, better security, higher throughput, better session analytics, and lower cost than competing SD-WAN solutions.¹

¹ For more information see Ray Mota's Tunnel-Based versus Tunnel-Free SD-WAN on tunnel free routing.

KEY ECONOMIC BENEFITS

By using the FSE service model, MSPs can open up a new addressable market that consists of NID services, routing services, and SD-WAN services. They can provide these services with the same hardware and software infrastructure, which makes the model cost-effective and profitable. For example, many small and medium-size businesses or enterprises with small branch offices have low speed connections and relatively modest requirements. The NID service is perfect for these customers; it allows an upgrade path to more advanced and feature-rich services.

SVR technology provides several benefits that translate directly to cost savings and increased service profitability:

- Tunnel overhead is eliminated, which can reduce total network traffic by 40%
- Selective encryption dramatically reduces the need for encryption, which decreases the cost of CPE hardware

Traffic reduction can decrease the cost of network access and reduce the cost of network transport in public cloud data centers. Public cloud services, such as AWS, Azure, and Google Cloud, provide cost-effective compute services. However, one of the hidden secrets is that the cost of network transport is extremely high. The average price of network transport for public clouds is \$0.03 per Gbyte. At these prices network-intensive applications can result in high monthly bills for network transport. A 40% reduction in traffic translates to significant reductions in these monthly bills.

Session-aware routing also results in operations benefits. Session-based visibility and control allow for better:

- Fault management, troubleshooting, and repair
- Application and session performance management
- Reduced problems, calls, and faster time to repair
- Installed networks have had up to 50% OpEx reduction due to simplified processes and better visibility

The FSE also provides zero-touch provisioning, which reduces the cost of truck rolls and CPE installation. The benefits of zero-touch provisioning and remote service instantiation and upgrades also enable increased service velocity, which means faster time to revenue. The key benefits of the Juniper SSN solution are:

- Faster and higher service revenue
- Lower CapEx
- Lower OpEx
- Higher profit margins

BUSINESS CASE

ACG Research developed a business case model showing the revenue margin and profitability of offering managed network services with the Juniper FSE solution. The model was developed using the ACG Business Analytics Engine², which is a next-generation cloud-based economic simulation platform for networks, data centers, cloud, and NFV. The model in this network is representative of a service provider managing multiple enterprise networks. The model also compares the FSE solution with an alternative SD-WAN solution.

An overview of the FSE business model is presented in Figure 2

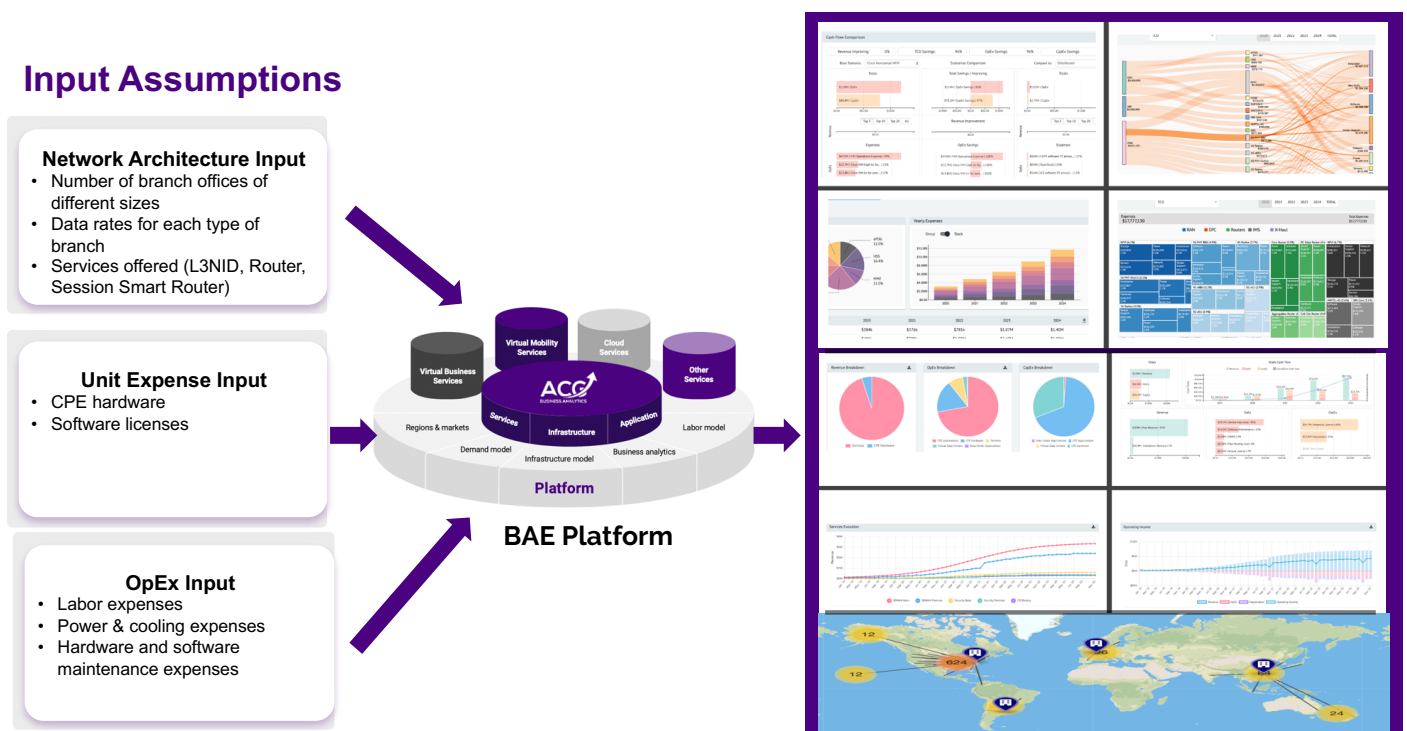


Figure 2. ACG Business Analytics Engine

² <https://www.acgcc.com/p/bae-software/>

We considered three main scenarios for managed service providers:

1. Managed SD-WAN premium service
2. Managed Services Edge Router service
3. Manage L3NID service

The services use a consistent set of hardware and software but utilize the Juniper Flexible Service Edge licensing models. The monthly pricing assumptions³ for each of the services are presented in Table 1. These prices include CPE hardware, software, and network operations management of the services. It should be noted that the L3NID service is an extremely cost-effective managed service that will appeal to SMB and enterprise customers with modest connectivity requirements. All services include session-level analytics. This is a feature that many premium SD-WAN services, today, do not include because the products do not have session-level visibility.

Mbps	Premium SD-WAN	Router	L3NID	CPE Installation
10	10	103	68	400
100	100	173	116	400
500	500	318	212	400
1,000	1,000	477	318	400
10,000	10,000	953	636	400

Table 1. Monthly MSP Pricing

We considered a managed service provider's medium-size network. The total number of sites for all enterprise customers is presented in Table 2. The business case for this network is modeled over five years, and we assume that it starts as a greenfield with zero sites deployed. The sites grow over time using an S-Curve, which uses a logistics function for growth.

Mbps	Number of Sites
10	10,000
100	50,000
500	1,000
1,000	2,500
10,000	50

Table 1. Monthly MSP Pricing

³ The MSP pricing for these services is based on a previous paper ACG wrote for Juniper on global pricing strategies for SD-WAN services: <https://www.juniper.net/assets/fr/fr/local/pdf/whitepapers/3200088-en.pdf>

The cumulative five-year financial indicators for each service are presented in Table 3. The Juniper FSE pricing models allow the TCO to scale up or down with the level of the service offering. The result is a compelling business case for all services, with fast payback of two to three months and high ROI and NPV for the investment in the solutions supporting the service. Figure 3 displays the cumulative cash flow for each service. It should be noted that for all three services the cumulative cash flow is positive in the first year. This is a result of the fast payback period for each of the services.

	SD-WAN Premium	Router	L3NID
ROI	392%	426%	370%
NPV	\$361M	\$216M	\$162M
Payback (Months)	3	2	2
Revenue	\$580M	\$358M	\$247M
Cumulative Cash Flow	\$429M	\$257M	\$162M
CapEx	\$110M	\$60.2M	\$43.8M
OpEx	\$41.6M	\$41.6M	\$41.6M
TCO	\$151M	\$102M	\$85.4M

Table 3. Five-Year Financial Indicators

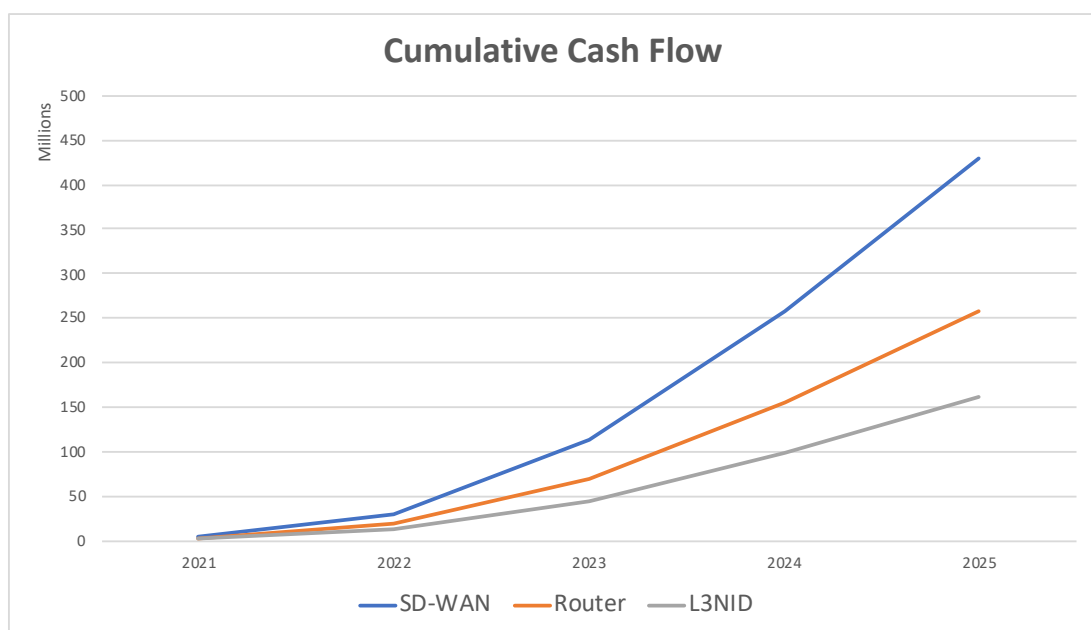


Figure 3. Cumulative Cash Flow for Each Service

Minimal CPE hardware expenses contribute to a positive business case for the FSE solution because it does not use tunnels, which potentially can increase traffic by 40%, and supports selective encryption. This capability provides encryption of traffic that is not already encrypted because there is no logical reason to encrypt traffic twice. In our model we assume that only 20% of the user traffic needs to be encrypted. This is a conservative assumption because today the lion's share of traffic is already encrypted and the percentage that needs encryption is probably much lower. However, using this conservative assumption of 20% when we compare the Juniper solution to a tunnel-based SD-WAN solution we see that the cost of CPE is 15% lower for the Juniper solution. This results in a cumulative five-year savings of \$3.99M (Table 4).

Alternative CPE	Juniper CPE	Savings (\$)	Savings (%)
\$25.9M	\$22M	\$3.99M	15%

Table 4. Juniper CPE Cost Savings

Another driver of the FSE business case is the reduced OpEx expense due to session-based visibility and control. Our model shows a 48% reduction in WAN operations expenses over five years as compared to a tunnel-based SD-WAN solution without session-based visibility.

CONCLUSION AND SUMMARY

The Juniper FSE solution provides MSPs with a unique approach to offering managed network services. A single hardware and software solution can be used to offer:

- Layer 3 Network Interface Device
- Services Edge Router
- Session Smart Router

This allows service providers to expand the total addressable market for SD-WAN services by providing solutions with fewer features for less money. The Flexible Service Edge enables MSPs to offer profitable services with a fast payback between 2–3 months and high ROI of between 370–426%. With Secure Vector Routing and the Flexible Service Edge, the Juniper SSN solution offers MSPs a unique approach to delivering profitable services.

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