



Financial Benefits of Juniper Networks Wired, Wireless, and SD-WAN Driven by Mist AI in Managed Network Services

Peter Fetterolf, Ph.D.



EXECUTIVE SUMMARY

The changing dynamics in the enterprise as a result of the COVID pandemic, multicloud migrations, new application requirements, and security concerns have elevated the network to the status of essential infrastructure. High availability, performance, and security are essential features of a network that needs to adapt to constantly evolving requirements. These trends have amplified enterprises' demands for managed network services from trusted partners.

Delivering services that meet or exceed users' expectations means that networks need to be highly flexible, automated, and efficient. This drives two key requirements for enterprise managed WAN, WiFi, wired LAN services, and security services:

- Common cloud platform to simplify and streamline all network management functions
- Artificial intelligence for IT operations (AIOps) to perform event correlation, root-cause analysis, and automatic or semiautomatic problem resolution before issues arise

ACG Research developed a business case model for managed SD-WAN, WiFi, and wired LAN services. The model calculates revenue, capital expense (CapEx), and operation expense (OpEx) for two scenarios:

1. Managed network services with Juniper Networks' wired, wireless, and SD-WAN driven by Mist AI
2. Managed network services without Juniper Networks' wired, wireless, and SD-WAN driven by Mist AI

Table 1 presents the cumulative results over five years. Our modeling shows that Juniper's managed network solutions result in an OpEx savings of 85% and a TCO savings of 27% over the five years. These savings and improvement in business financial metrics are due to using AIOps in the Juniper Mist cloud platform for wired, wireless, and SD-WAN operations to reduce labor in network management activities.

	With Wired, Wireless, and SD-WAN Driven by Mist AI	Without Wired, Wireless, and SD-WAN Driven by Mist AI
ROI	191%	161%
Margin	72%	58%
NPV	\$2.8B	\$2.2B
Payback	4 Months	5 Months
Revenue	\$5.18B	\$5.18B
Cumulative Cash Flow	\$3.31B	\$2.61B
CapEx	\$1.73B	\$1.63B
OpEx	\$137M	\$937M
TCO	\$1.87B	\$2.56B

Table 1. Cumulative Five-Year Comparison of Networks with Wired, Wireless, and SD-WAN Driven by Mist AI and without Mist AI

Enterprise Network Opportunities for MSPs

Managed enterprise network services represent a significant growth opportunity for service providers. The managed SD-WAN global market is estimated to be \$7 billion in 2022, growing to \$19 billion in 2027 with a 22% annual growth. The managed WiFi global market is estimated to be \$4.8 billion in 2022, growing to \$12.5 billion in 2027 with 21% annual growth. The overall market for managed network services, which includes managed LAN, managed WiFi, managed WAN, managed security, managed VPN, and managed network monitoring, is projected to grow from \$61.7 billion in 2022 to \$88.5 billion in 2027 with an annual growth rate of 7.5%¹.

Enterprises' networks are continuing to increase in complexity, making performance and reliability more important than ever. There are a number of key trends that are driving network growth and complexity:

¹ <https://www.acgcc.com/>

- Hybrid and work-at-home models during COVID changed network connectivity requirements overnight
- Hybrid work has also accelerated the globalization of the workforce due the virtual work environment
- The great resignation is creating resource gaps in enterprises that provide opportunities for MSPs
- Dramatic growth in video and cloud meetings (Zoom, MS Teams, WebEx, etc.)
- Security is extremely complex and increasingly important
- Internet of things and edge computing continue to expand in importance and complexity

The remarkable changes in 2020 due to the COVID pandemic have dramatically changed the requirements for enterprises' networks. Employees now demand flexibility to work either in the office or remotely. A typical enterprise has WiFi everywhere, wired LANs, bring your own device, guests, and workers with different requirements and varied levels of privileges. Security is required everywhere, and security requirements are becoming increasingly complex. Users expect the network to be always on and work well for all applications and devices. At the same time the great resignation is contributing to loss of IT resources and talent in many enterprises, which makes it difficult to meet these new requirements. These challenges create an opportunity for managed service providers (MSPs) to provide reliable, secure, and flexible network solutions to enterprises. However, in order for MSPs to create profitable and scalable services it is necessary for them to use cloud managed services bolstered by AIOps.

Enterprises' networks are critical infrastructure and most enterprises are not in the business of networking. Therefore, it makes sense for enterprises to outsource network operations in order to focus on their core competencies whether it be financial services, retail, manufacturing or biotechnology. Managed service providers are in the business of building, operating, and delivering network services to enterprises, and many of these enterprises are looking for trusted partners. For MSPs there is a large opportunity for growth in:

- Managed WiFi Services
- Managed Wired LAN Services
- Managed Security Services
- Managed SD-WAN
- Indoor Location Services
- Others

What MSPs Need to Do to Be Successful

Primarily, MSPs must deliver enterprise network services that have high availability and performance. They must support new and existing applications; users' expectations are high; and quality of experience is critical. Networks and services must be flexible and agile, allowing for fast roll-outs for new offices, changes in business requirements, complexities of integrating corporate acquisitions, and adjustments to network policy, security, and application management. MSPs' cost models should be competitive with an enterprise's do-it-yourself approach. MSPs should benefit from better technology, AIOps, experience, and economies of scale to allow them to deliver high-quality, reliable, and secure services at attractive price points.

MSPs need to provide visibility into the WAN and allow enterprises' customers to track application performance. While the MSP is responsible for delivering network services, the enterprise IT department is accountable for the end-to-end users' experiences, which require detailed visibility into the WAN and the ability to monitor and tune application performance.

How MSPs Can Be Successful

For MSPs to create successful service offerings there are some key capabilities that are needed in the network to allow for scalability, high availability, performance, and security.

Cloud Management

All network elements (routers, WiFi access points (APs), switches, etc.) need to be managed via the cloud. A solution using older on-site controllers is more expensive to operate, less scalable, and less flexible. Cloud management gives the MSP a single point of control for many different enterprises and sites. Alternatively, a solution that is not managed by the cloud requires custom installation, truck rolls, and results in increased network management expenses.

AIOps

WAN, wireless, and wired networks are complex, and manual human configuration, troubleshooting, and engineering do not scale to support large networks of MSPs, which often include many enormous enterprises with diverse locations and requirements. The key reason for using artificial intelligence is to automate fault management and problem remediation. AIOps performs event correlation, root-cause analysis, and automatic or semiautomatic problem resolution before issues arise. Problems are resolved before the customer sees and reports them.

In real networks we have seen trouble tickets reduced by 90%, which leads to a significant reduction in OpEx and increases in service profitability while also improving users' experiences and customers' satisfaction.

Security

All network elements, software, and services need high levels of security. This means that both software and hardware need to go through rigorous hardening and security testing and must be patched to preclude vulnerabilities. Partnerships with vendors with strong security capabilities are mandatory to achieving these goals.

Menu of Services

MSPs should offer a menu of managed services:

- SD-WAN
- WiFi
- Wired LAN
- Security

Business Model Framework and Assumptions

ACG Research has developed a business model that calculates the key financial metrics of a managed SD-WAN, WiFi, and wired LAN service. The key objectives of the business model are:

- Compare a managed service offering using a Juniper network with wired, wireless, and SD-WAN driven by Mist AI to a similar managed service using a noncloud, non AI approach
- Show the total cost of ownership (TCO), revenue, profitability, return on investment (RoI), and payback on these managed services
- Show the OpEx benefits and profitability benefits of these managed services

ACG used its Business Analytics Engine (BAE)² to model the managed services network. Figure 1 presents the high-level structure of the model. There are three main categories of input to the business model:

1. Network architecture assumptions
2. Unit expense and revenue assumptions
3. OpEx labor assumptions

² <https://www.acgbae.com/>

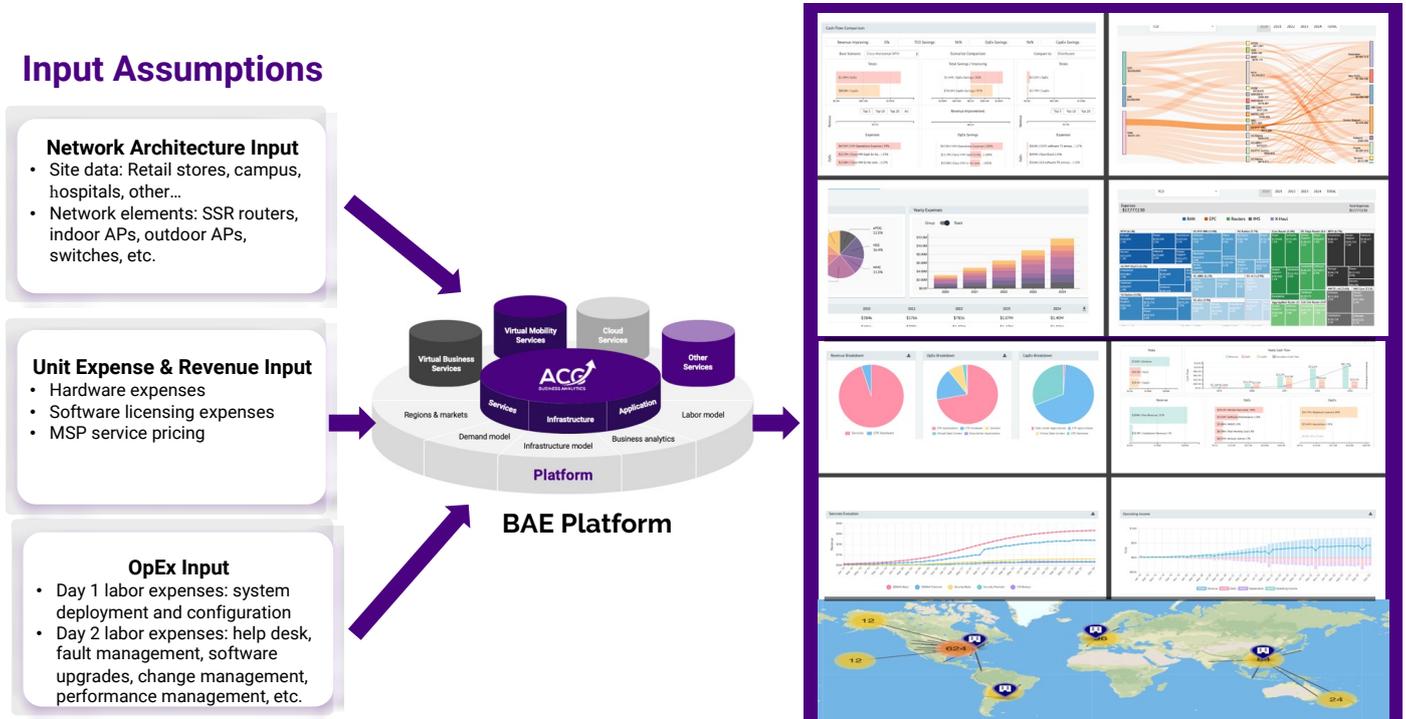


Figure 1. Structure of the Managed Services Business Model

Network Architecture Assumptions

In our model we assume a large managed service provider is providing services to multiple enterprises at many sites. We consider several different verticals:

- Healthcare
- Small retail
- Large retail
- Enterprise campus

The model grows the number of tenants over time using an S-Curve or logistics function, which models early adoption, peak growth, and a flattening of the growth curve. The number of tenants' establishments used in our model is presented in Table 2. These are buildings or campuses with the Juniper Networks SSR routers for SD-WAN, wireless access points for WiFi and EX switches for wired access. Each are enabled with Mist Cloud services and AI. The initial quantity specifies the number of tenants' establishments at the beginning of the model, and the terminal quantity specifies the number at the end of the model. The S-Curve is used to specify growth from the initial quantity to the terminal quantity.

Tenants Search Tenants		Initial Quantity	Terminal Quantity
<input type="checkbox"/>	Tenant Name		
<input type="checkbox"/>	Small Retail Stores	5000	50000
<input type="checkbox"/>	Large Retail Stores	100	5000
<input type="checkbox"/>	Hospitals	100	1000
<input type="checkbox"/>	Campus	5	50

Table 2. Number of Tenants at the Start and End of the Model

The number of network devices at each site for each tenant is specified in Table 3. The devices are the Juniper Networks SSR routers, wireless access points, and EX switches.

<input type="checkbox"/>	Endpoint Name	Tenant Name	CPE Model	Initial Quantity	Terminal Quantity
<input type="checkbox"/>	Campus EX Switches	Campus		50	50
<input type="checkbox"/>	Campus Indoor APs	Campus		190	190
<input type="checkbox"/>	Campus Outdoor APs	Campus		50	50
<input type="checkbox"/>	Campus SSR HA Router	Campus	Lenovo SR530 - 8C 32GB	1	1
<input type="checkbox"/>	Campus SSR Router	Campus	Lenovo SR530 - 8C 32GB	1	1
<input type="checkbox"/>	Hospital Access Switches	Hospitals		4	4
<input type="checkbox"/>	Hospital APs	Hospitals		50	50
<input type="checkbox"/>	Hospital SSR HA Router	Hospitals	Lenovo SR530 - 8C 32GB	1	1
<input type="checkbox"/>	Hospital SSR Router	Hospitals	Lenovo SR530 - 8C 32GB	1	1
<input type="checkbox"/>	Large Retail SSR HA Router	Large Retail Stores	Lenovo SR530 - 8C 32GB	1	1
<input type="checkbox"/>	Large Retail SSR Router	Large Retail Stores	Lenovo SR530 - 8C 32GB	1	1
<input type="checkbox"/>	Large Retail Store Access Switches	Large Retail Stores		2	2
<input type="checkbox"/>	Large Retail Store APs	Large Retail Stores		30	30
<input type="checkbox"/>	Small Retail SSR Router	Small Retail Stores	Silicom Madrid Desktop	1	1
<input type="checkbox"/>	Small Retail Store Access switches	Small Retail Stores		1	1
<input type="checkbox"/>	Small Retail Store APs	Small Retail Stores		5	5

Table 3. Number of Network Devices for Each Tenant

² https://en.wikipedia.org/wiki/Logistic_function

Unit Expense and Revenue Assumptions

The MSP's network expenses use the Juniper SSR routers for SD-WAN, wireless access points for WiFi and EX switches for wired access. Each component has been enabled with Mist Cloud Services and AI for Day 1 and 2 operations. We select appropriate SSR routers, APs, and switches based on the type of sites and the quantity of devices. The MSP's revenue is based on a pricing model that marks up the base expense of the network infrastructure by 70%. This is a margin on top of the hardware and software expenses. The BAE model calculates the gross margin and also accounts for the cost of labor in delivering the service.

OpEx Assumptions

In real customers' networks we have seen operations labor savings of 90% using Mist AI. These labor savings are because of:

- Day 0: Planning and design
- Day 1: Simplified system deployment and installation
- Day 2: AI automates fault management, performance management, change management, and remediation to reduce labor expenses

The specific OpEx labor categories modeled are:

- System deployment and configuration
- Help desk trouble tickets
- NOC fault management
- On-site fault management
- Software upgrades
- Change management
- Hardware replacement
- Performance management

CapEx Assumptions

We consider the cost of SSR routers, APs, and wired switches as CapEx in this model. In some cases the annual subscription costs are considered OpEx, but if subscriptions are for three years or five years, they can also be considered CapEx. Because many operators prefer the CapEx model, for the purposes of this analysis all hardware and software are considered CapEx. Although CapEx can vary between different vendors and architectures, we assume CapEx is the same for both scenarios. The main benefits conveyed in this analysis are labor savings, OpEx benefits, not CapEx benefits.

Business Model Results

The results of the model show that the Juniper network with wired, wireless, and SD-WAN solutions driven by Mist AI results in significant OpEx and TCO savings over a noncloud, non AI managed network. The results also show that the Juniper solution allows MSPs to operate a profitable managed services business. Table 4 presents the five-year cumulative OpEx and TCO savings of the Juniper network solution over an alternative network. Table 5 presents the five-year cumulative financial metrics for both scenarios. The results show that the business is more profitable with higher ROI with Juniper wired, wireless, and SD-WAN driven by Mist AI. Figure 2 and Figure 3 highlight the year-by-year comparisons of cumulative cash flow and TCO for the scenarios with Juniper wired, wireless, and SD-WAN driven by Mist AI and without.

Expense Type	Savings with Juniper Wired, Wireless and SD-WAN Driven by Mist AI
OpEx	85%
TCO	28%

Table 4. OpEx and TCO Savings of a Juniper Wired, Wireless, and SD-WAN Network Driven by Mist AI

	With Wired, Wireless and SD-WAN Driven by Mist AI	Without Wired, Wireless and SD-WAN Driven by Mist AI
ROI	191%	161%
Margin	72%	58%
NPV	\$2.8B	\$2.2B
Payback	4 Months	5 Months
Revenue	\$5.18B	\$5.18B
Cumulative Cash Flow	\$3.31B	\$2.61B
CapEx	\$1.73B	\$1.63B
OpEx	\$137M	\$937M
TCO	\$1.87B	\$2.56B

Table 5. Cumulative Five-Year Financial Results of the Business Model

Financial Indicators Evolution

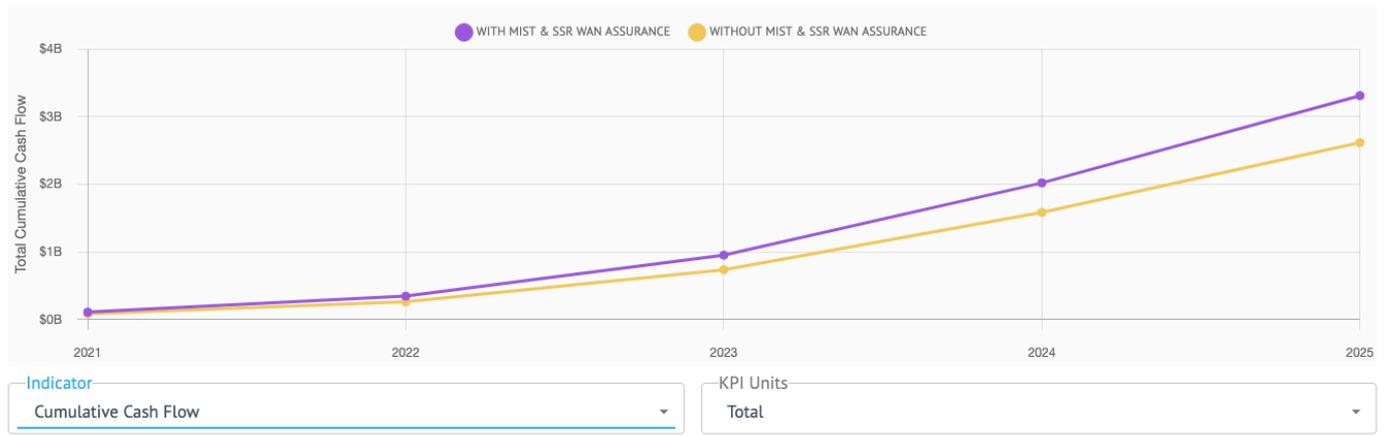


Figure 2. Year-by-Year Comparison of Cumulative Cash Flow for with Wired, Wireless, and SD-WAN Driven by Mist AI and without Mist AI Scenarios

Financial Indicators Evolution

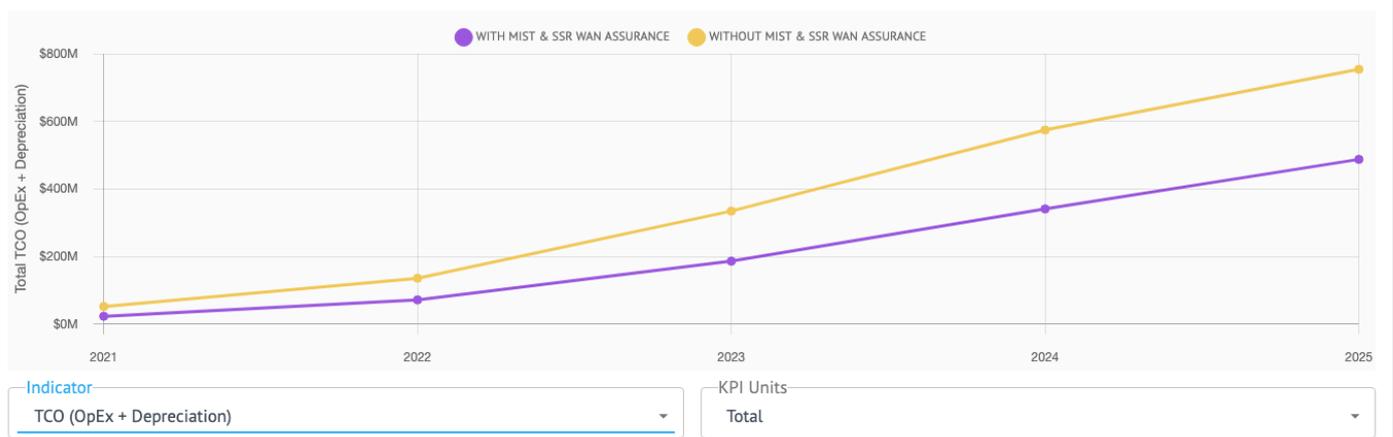


Figure 3. Year-by-Year Comparison TCO with Wired, Wireless, and SD-WAN Driven by Mist AI and without Mist AI Scenarios

Conclusion

The managed services network is an essential network resource that must provide high levels of availability, performance, and security. The dramatic changes in remote work and hybrid work accelerated by the pandemic in 2020 and 2021 have created new challenges for enterprises' networks. To meet stringent demands by users, enterprise IT must use cloud-enabled AIOps in all parts of the network to reduce labor expenses and improve network quality and reliability. ACG Research's business case modeling has shown that the Juniper wired, wireless, and SD-WAN driven by WAN assurance and Mist AI reduces OpEx by 85% and decreases TCO by 28%, which allows enterprise IT to do more with less.