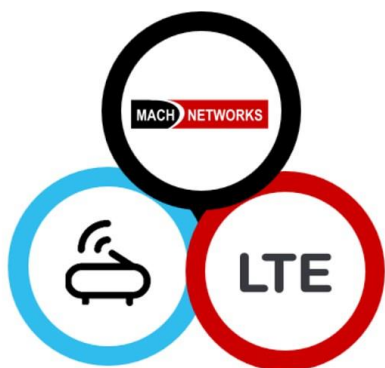




Network Service Providers

The Hidden Costs of Standing Up A Wireless WAN Business



EXECUTIVE SUMMARY

The telecommunication industry is going through a profound technological shift. Traditional Wide Area Networking (WAN) products and services are expensive, complex, hard to manage and slow to deploy. New technology has emerged that enables distributed enterprises to address these limitations by extending secure connectivity to the increasingly fluid and flexible network edge.

The opportunity ahead for the telecommunications industry is unheralded. Driven by trends like cloud computing, mobility, 5G, and a wide variety of WWAN applications, new technologies like Software Defined WAN (SD-WAN) offers secure, scalable, highly reliable, easy to manage, and quick to deploy services that are able to constantly evolve and adapt as business needs dictate. However, adding this new generation of Wireless WAN solutions to a Service Provider's existing portfolio can be an expensive, resource intensive, and time-consuming process, especially when you consider the unknowns that lie below the surface.

There are multiple aspects that must be considered, so Service Providers need a clear understanding of the real costs associated with standing up a Wireless WAN business as well as the time it will take to achieve a return on investment. Most Service Providers tend to focus on the upfront expenditures including application design, hardware sourcing, security and implementation costs. While these are considerable expenses, they only represent the initial, non-recurring costs, and ultimately only a fraction of the cost of the entire process.

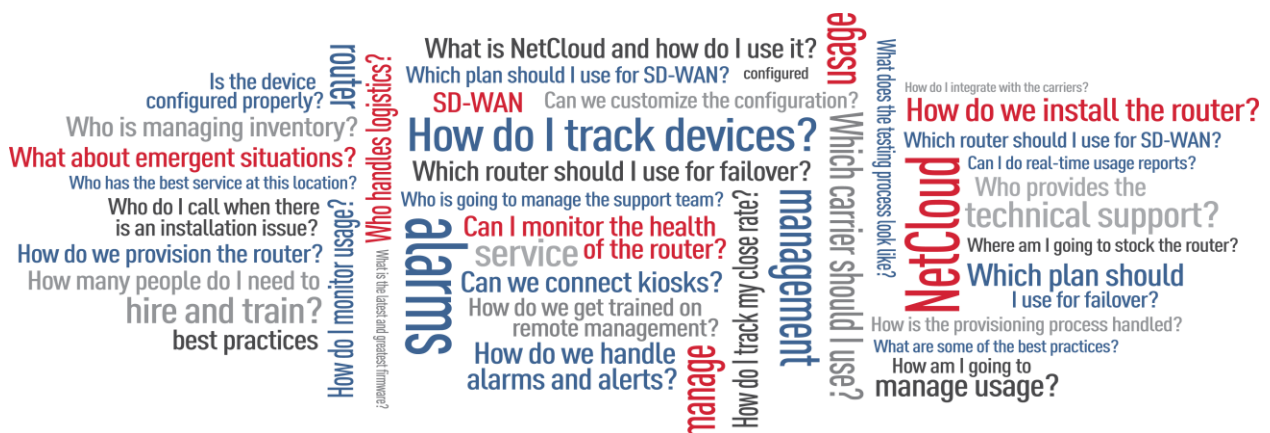
The ongoing operational expenses are often overlooked, and usually represent a bigger portion of the cost of the overall solution. These include administrative labor, management of product inventory, setup and provisioning of devices, monitoring and managing deployed devices, monitoring and managing usage (critical for a metered Wireless WAN solution!), and providing ongoing technical support.



The SD-WAN Factor

By the end of 2020, 60% of distributed enterprises will have deployed or be in the process of deploying SD-WAN solutions to their branch office locations.

Gartner, 2018

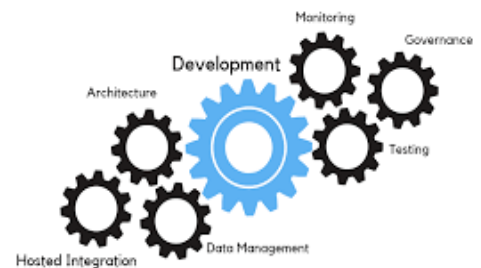


This white paper is written for Service Providers who are asking their business unit leaders to stand-up a Wireless WAN practice that includes SD-WAN connectivity and/or wireless failover. The purpose is to help these business unit leaders understand the tremendous opportunity, but also appreciate the hidden costs associated with Wireless WAN network services. In addition, this white paper will assist you in developing a business case that goes beyond the realm of IT, and ultimately to share best practices that may be emulated to obtain operational scalability and long-term business growth.

UNDERSTANDING OPERATIONAL EXPENSES

Understanding operational costs can help business leaders make smart business decisions. Minimizing organizational impact while at the same time implementing next generation technology and processes will ensure network and communications initiatives run at the lowest cost, highest availability and provide the best customer experience.

First, let's define the different categories of costs incurred in running almost any network services business.



- **Hardware.** The costs associated with purchasing, stocking and managing inventory for enterprise class connected devices.
- **Network Connectivity.** The costs associated with connecting devices to the Internet, in this case via a mobile network like AT&T or Verizon Wireless.
- **Administrative Labor.** The ongoing costs associated with the day-to-day monitoring, management and operational oversight of network assets and business processes.
- **Technical Support.** The costs associated with identifying, troubleshooting and resolving field-reported issues with the available assets.
- **Time-to-Market:** The costs associated with the time required to start generating revenue from these services.

**IT TAKES MUCH MORE THAN JUST
A ROUTER AND A DATA PLAN TO
DELIVER A FULLY MANAGED
WWAN SOLUTION**

TOTAL COST EQUALS

Hardware Costs +
Network Connectivity Costs +
Administrative Labor Costs +
Technical Support Costs +
Time-To-Market Costs

For the purposes of this paper we are going to focus on the hard costs but you also need to consider the soft cost areas that can impact your business model. These soft costs include but are not limited to:

- How much training is going to be needed to deliver an enterprise class solution?
- How long will it take to build the systems and processes to monitor and manage the usage?

Hardware

10%-20% of total costs

Enterprise class routers typically cost \$250 - \$500 per 4G LTE devices

Remote management platforms typically cost \$25-\$50 per year.

\$89 for optional external antennas

Technical Support

10-33% of total costs

10% of all deployed devices will require some level of tech support

Average MTTR = ~25 minutes

1 full time Tech Support specialist needed for every 1K lines of service

Administrative Labor

20-40% of total costs

Each deployed device requires 10+ interactions per year at 5-20 minutes per interaction

Usage for each device must be monitored regularly on an daily or even hourly basis to prevent excessive overage charges

Each device takes ~30 minutes to activate, configure and test prior to shipping.

Each device takes ~10 minutes to pick, pack and ship.

Each device takes ~5 minutes to notify customer of shipment

Network Connectivity

33-50% of total costs

Monthly Service Fee on Data Plans

Static IP fees (if any)

Overage Charges

Time to Market

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Develop processes and system to process orders and monitor usage

Opportunity cost of business lost to competitors

Completing network certification prior to launch date

HARDWARE COSTS

Enterprise class solutions need enterprise class hardware. This means devices need to be reliable and able to be remotely monitored and managed. There are also several factors that go into which device is selected, and in the world of Wireless WAN solutions, you really do get what you pay for.



4G LTE router charges: WWAN deployments are typically either pay-per use, where you pay per megabyte or gigabyte, or even based on speed. In these cases you typically subscribe to a fixed amount of data per month. Depending on the use case, applications like Wireless Failover for Point-of-Sale applications average as little as 500MB per month, while other applications can use as much as 100GB per month.

External antennas: Signal strength is key, and in most cases, the screw-on antennas that come with the routers are sufficient. However, there will always be locations where external high-gain antennas are preferred.

TIP

Don't mess around. Use highly reliable enterprise class routers that offer enterprise class remote monitoring and management capability and be sure to check and understand where the router will be located and how it will be used.

NETWORK CONNECTIVITY COSTS

Network connectivity is now a mission critical element of any business. However, providing remote connectivity poses a significant challenge and is dependent on multiple factors including technical, security, performance, reliability, environment and location. Today, many companies are moving to hybrid SD-WAN and wireless failover solutions that use the mobile broadband (cellular) networks to give them better control over their networking and communications experience.

In terms of ongoing costs for WWAN initiatives, payments to your mobile network operator (MNO) typically account for 33-50 percent of the overall operational expenses. There are also several factors that can impact your total ongoing operational costs, each having unique characteristics that are important to understand when building your WWAN business model.



Monthly data plan charges: WWAN deployments are typically either pay-per use, (where you pay per megabyte or gigabyte), or based on speed. In these cases you typically subscribe to a fixed amount of data per month. Depending on the use case, applications like Wireless Failover for Point-of-Sale applications average as little as 500MB per month, while other applications can use as much as 100GB per month. Depending on how often you are conducting health checks on the remote devices, (which should be at least every few minutes), managing the device can use anywhere from 50MB to 250MB per month not including customer usage. Paying per GB may be the most cost effective, especially if the monthly usage fluctuates, but only if the plans pool together. For other companies with devices that have higher data usage scenarios – like SD-WAN or Video Surveillance, per device plans with pooling could be the most cost effective, especially if the monthly usage is relatively consistent.

Overage Charges: *Overage is the highest risk part of the managing a WWAN business* so it must be aggressively and proactively managed on a daily basis. Overage can easily impact the difference between Profit and Loss, with overage risk for a single customer often reaching in the tens of thousands of dollars. Unfortunately, it can also be inherently very difficult to estimate the amount of data required for your services, especially if it is a new application or usage has never been previously measured. As a required service, it is the operators responsibility to insure users are properly alerted of overage risk, usually on an hourly or daily basis, so as not to incur the risk of heated dispute, which often ends up a no-win situation for all parties involved. And to compound matters, one also must be careful as many MNOs will not allow you to change plans in the middle of the billing cycle.

There are certain plans that let you pool data usage across a large number of devices, and some MNOs offer proprietary tools that can help you control your rates. If available, both of these options could help you avoid unexpected and costly overage charges.

SIMs, Activation and Configuration Fees: The Non-Recurring Fees (NRF) can vary greatly, but they must be factored into the equation. SIM costs typically range between \$1 - \$3 per device with activation fees of around \$5 per device. It typically costs between \$20 - \$30 to have a router activated, configured and tested prior to shipping. The total cost is between \$30-\$40 per device.



Roaming: If your devices will be on the move, consider whether they will be used outside their primary coverage area. If so, there are usually additional charges for roaming, which vary by country and zone.

Rounding: Some MNOs limit the amount of time that a device can be connected to their network. A session typically lasts up to 24 hours before the device is disconnected to free up resources for other devices on the network. When the session ends, usage is generally rounded up one KB. Rounding charges may not seem that significant, but over time, rounding can add up if you're deploying thousands or tens of thousands of devices. Additionally, some MNOs round up considerably more when calculating roaming sessions.

Taxes and surcharges: Some MNOs, which are governed by country-specific regulatory bodies, are required to charge more taxes than non-regulated MNOs. Although these costs may vary, the MNO should be able to give an estimate of the charges.

TIP

A best practice in managing network connectivity includes finding an experienced partner that has the people, systems and processes in place to properly monitor and manage data usage in real time. And be sure to align the application with the optimal rate plans.

ADMINISTRATIVE COSTS

Wireless WAN connectivity solutions enable Service Providers to expand customer relationships, drive customer engagement, increase customer loyalty, tap into new revenue streams, stay ahead of the competition, and plan for the next generation of technology that is coming down the pike – 5G! To make it all happen, proper planning and staffing are key. Considering that the average hourly salary for a professional operations administrator is \$48/hour, and one full time administrator is needed for every 1,000 units deployed, and each time they touch a remote device it takes approximately 5 – 10 minutes, this can quickly become a very expensive proposition.

Administrative labor around the WWAN service lifecycles will account for 20-50 percent of overall operational expenses. This includes the costs associated with the tasks of stocking and managing inventory, activating, provisioning, configuring, and testing devices prior to shipping, monitoring the health of deployed devices, generating detailed usage reports and deactivating, retiring or replacing devices. The cost of administrative labor is directly proportional to the scale of your operation which includes the size of your deployments, the number of deployments, the complexity of your device lifecycle, the number of devices per customer, and the supporting infrastructure. Companies new to WWAN need to do this cost effectively and quickly get WWAN services up and running, efficiently manage operations, monitor and manage each and every deployed device, manage rate plans, and keep costs in check to ensure a successful WWAN business model.



Building the Back-End Processes and Systems: This is the most difficult part of standing up a WWAN business unit. Order flow, order processing, tracking devices, managing usage, billing for service, managing data plans, and integrating with existing systems are all complex endeavors and take time, money, and a considerable amount of resources to pull together. So a word of caution, do not be surprised if it costs hundreds of thousands of dollars and takes a year or more to get all these pieces put together and working properly.

Time To Deploy WWAN Solutions: It takes time to pull a device from inventory, activate, configure, update firmware, and properly test WWAN devices prior to shipping. It then takes additional time to properly install the device at the customer premise. Devices exist in different states at different stages of the process, and each state determines the device's ability to establish connectivity on a network and determines whether the device is in a billable state or not. When delivering new connected devices, you will always need trained headcount to manage the process of pulling, packaging, testing, and shipping.

Streamline and Manage Operations: Once connected devices are deployed, you will need personnel to constantly monitor changing network conditions, data usage patterns, and network behavior to deliver the highest level of service and reliability. You must also be able to easily identify atypical usage patterns and quickly diagnose router, network or configuration issues. This requires highly trained personnel that are dedicated specifically to the WWAN support team. You will also need to establish internal standards, processes and measurement tools for how you expect the devices and services to behave to help control the behavior in real time and immediately identify and respond to rogue data usage activities.



Keeping costs in check: WWAN services can be a great source of new monthly recurring revenue. However, if usage and rate plans aren't rigorously managed, unexpected costs like overage can quickly erode margins and reduce or even eliminate profits. To help keep costs in check you will need to assign dedicated personnel to track data plan usage and manage the data plans in real-time to ensure that your devices are running at the lowest possible cost and the highest possible efficiency.

WWAN order management and billing platform: The costs for this vary depending on the IT management infrastructure in place, the number of devices being managed, the device lifecycle and geographic areas of deployment. As companies evolve their connected devices and the services they deliver, a WWAN order management and billing platform automates many of these processes and provides real-time visibility. For many companies, administrative labor around the WWAN service lifecycle will account for 20-50 percent of the overall operational expenses. The ultimate goal is to drive more effective business decisions, innovative business models and increase operational efficiencies.

TIP

Don't try to re-invent the wheel. Managing administrative resources is probably the most expensive, complex and time-consuming part of standing up a WWAN business unit. Find a good, proven, experienced partner that can help you quickly, easily and affordably get the business started. Later on then you can determine when and if you want to bring things in-

TECHNICAL SUPPORT COSTS

Supporting WWAN solutions is not an easy task. When a problem is reported, a highly trained support engineer must first determine the root cause - hardware, firmware, configuration, the WWAN application, or the connectivity, and then determine the optimal solution. There are hundreds of ways that WWAN devices and services might connect and interact, which in turn creates countless variables which can quickly become a headache for end users. Technical issues and their associated costs vary depending on the number of devices, complexity, and if the use case for a device is mission critical or not.



Enterprise class solutions need enterprise class technical support: For most organizations, the cost of labor from Tier 1 and Tier 2 engineers will account for 10-33 percent of their overall OpEx spend. A typical rate for Technical Support personnel is ~\$25 per hour. However, someone like a Cradlepoint Certified Technical Support Engineer is closer to \$35-\$45 per hour. For WWAN devices, 10-30% of your devices will likely encounter some type of service call, with ~20% being escalated to a Tier 2 engineer who must be prepared to fix the problem remotely on the first call.

TIP

Plan on having at least one Technical Support Specialist for every 1,000 devices deployed in the field, and make sure you have the systems and process in place to diagnose and resolve the vast majority of issues remotely.

TIME TO MARKET

It's difficult to put an actual fixed cost on Time-to-Market issues, especially against an emerging product like SD-WAN connectivity. One thing is certain, while you are out there in a highly competitive environment trying to build a solution from scratch, you are not in an enviable position. Even your most loyal of customers who need a solution to replace their MPLS connections are not going to wait while you get things figured out. Rest assured, if you can't deliver, one of your competitors is standing by and will be more than happy to do so.



Streamlining the Process: As mentioned earlier, it takes much more than a router and a data plan to deliver an enterprise class solution. It takes speed, agility, an enterprise class device, enterprise class connectivity, and enterprise class service and support. It also means the front-end ordering systems and back end provisioning and billing systems are able to manage metered services like 4G LTE. In other words, you must be able to deliver a level of service that enterprise customers receive for their traditional landline services. Designing and building these front and backend systems and process is a complex and time consuming process.

TIP

*The real question you need to ask yourself is **how soon can we start generating revenue** for WWAN solutions like SD-Wan and Wireless Failover? If your answer is months, or even years, then you may want to rethink your Go-To-Market strategy.*

CONCLUSION

WWAN initiatives vary widely, yet the hidden costs we explored in this white paper are common across different sectors of the telecommunication industry: Hardware, Network Connectivity, Administrative Labor, Technical Support and Time-to-Market.

As you begin to consider your strategy for adding WWAN services to your portfolio, appropriately anticipating the true costs associated with standing up a WWAN practice will help you take full advantage of the opportunity WWAN offers to generate new sources of revenue from new opportunities. With a better understanding of the total cost of delivering an WWAN service, you can make smart, profitable and sustainable business decisions. Companies of all sizes, across many industries, use WWAN connectivity management platforms to capitalize on WWAN opportunities and get the most out of their devices, networks and applications:

Wireless WAN really is a game changer for the telecommunications industry. It enables Service Providers to:

- Accelerate time to market by easily and rapidly scaling WWAN services across the nation.
- Gain automated, instant visibility and control over all of networked devices and services.
- Ensure higher service reliability with real-time intelligence and monitoring of changing network conditions.

MACH Networks is a professional managed service provider with many years of experience fine tuning the business models that will make you successful. If we can help your organization quickly, easily and profitably add WWAN solutions to your portfolio, please feel free to visit machnetworks.com, or give us a call at (866) 972-7677.

ABOUT MACH NETWORKS

MACH Networks provides fully managed, enterprise class WWAN solutions to Service Providers and Value-Added Resellers. Our mission is to make it quick, easy and profitable for our partners to add WWAN solutions to their portfolio with minimal impact on their existing business model. Additionally MACH offers "white label solutions" specifically designed for the Service Provider community to complement or replace existing legacy WAN solutions. Our fully managed 4G LTE solutions are purpose built to provide the best possible solution for your specific wireless failover, SD-WAN or IoT application. Our turn-key solutions are proven, market ready and well suited for applications requiring rapid deployment.

As part of the process, MACH does the following for each and every deployment:

- ✓ A multi-carrier coverage analysis to help ensure we provide service on the best available network for each location
- ✓ Data plans bundled with proven, enterprise class routers and industry leading remote management capabilities
- ✓ Enterprise class support that includes inventory management, fulfillment, remote monitoring and management, usage alarms and alerts and ongoing technical support that is unmatched in the industry.