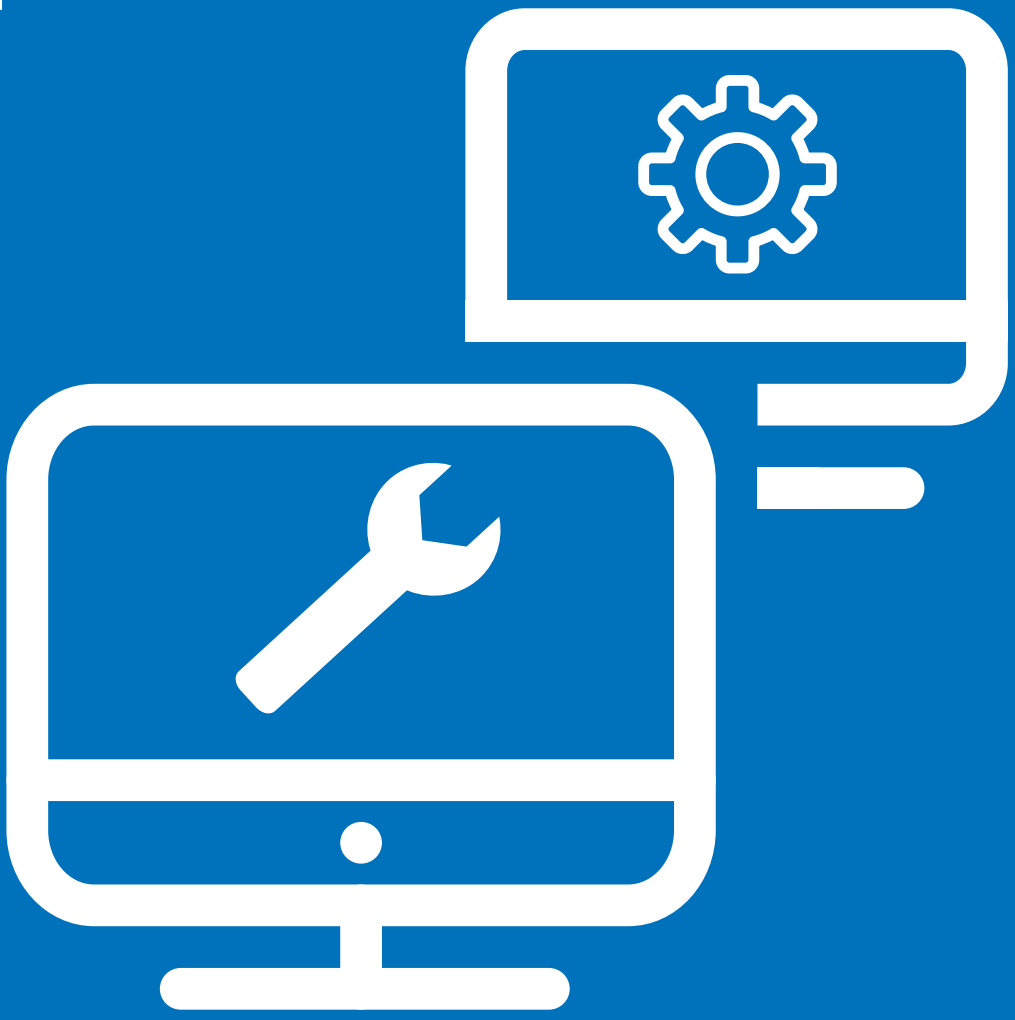
TIPS AND TRICKS:
NETWORK TROUBLESHOOTING

PeerPaper Report



BASED ON ACTUAL USER EXPERIENCES & OPINIONS

IT Central Station
Unbiased reviews from the tech community

ABSTRACT

Network problems tend to affect more than just the network. Business processes slow down or cease altogether—costing money and causing stress. With wireless networks, a slowdown affects worker productivity. It's imperative that network admins have the ability to troubleshoot problems quickly and accurately. Achieving this goal requires a mix of skill, process and tooling. This paper explores proven tips and tricks for network troubleshooting taken from reviews by real users of network hardware on IT Central Station. It reveals how today's network professionals combine knowledge with the right tools to solve vexing network problems quickly and efficiently.

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INTRODUCTION

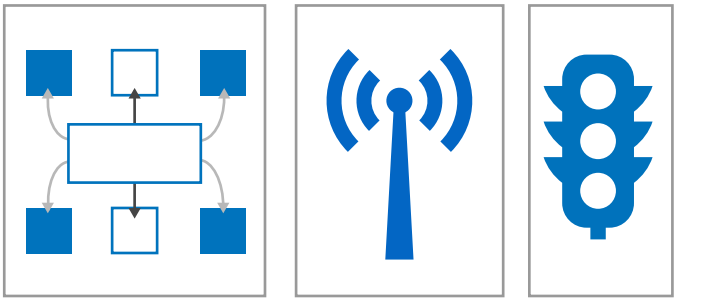
A network is more than simply a mechanism for connecting devices in your organization. It's a critical backbone of your business. Network quality affects customer experience, worker productivity and IT department workload. As a result, network problems tend to affect more than just the network.

Network administrators need to be able to troubleshoot network problems quickly and accurately. This takes a mix of skill, process and tooling. To give you some insights into achieving excellence in network troubleshooting, this paper explores proven tips and tricks taken from reviews by real users of network hardware on IT Central Station. It reveals how today's network professionals combine knowledge with the right tools to solve vexing network problems quickly and efficiently.

Common Network Problems

Even the best designed and managed network can erupt into problematic behaviors. Challenges for network administrators include packet loss, intra- and/or inter-site (WAN) latency as well as numerous WLAN issues like dead zones, interference and low throughput.

The dynamic nature of networks is a causative factor. Network usage, especially with wireless, tends to be irregular. For instance, today's new generation of office worker may expect to be able to work anywhere on a campus -- in the lunch room, in common areas, outdoors and so forth. The mobility of users, combined with the growth in the number of connected devices, frequently presents problem scenarios for the IT department to analyze and remediate.



DROPPED PACKETS | DEAD ZONE | TRAFFIC CONGESTION

Impacts of Wireless Network Issues

Network difficulties have a variety of impacts on a business. These range from nuisances to significant negative financial repercussions. Consider the following effects of a sub-optimally performing network:

• **Loss of revenue** – A slow network can cause dropped e-commerce shopping carts or even the loss of customers to competitors. In a business where customers have a $1,000 lifetime value, for example, a minute-long network outage could cost tens or even hundreds of thousands of dollars.

• **Worker productivity** – Slow or unreliable networks cause stress and poor productivity for information workers.

• **Delayed backup and disaster recovery** – Organizations that rely on networks for backup, database replication and disaster recovery will find these capabilities diminished due to an unreliable network.

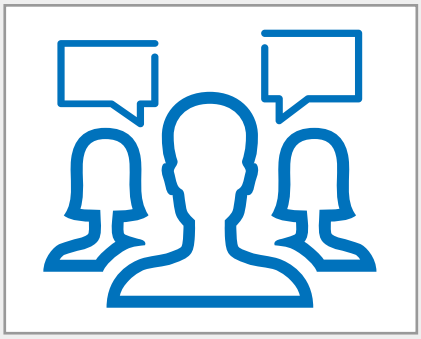
• **IT Department malaise** – Network problems make IT department staffers miserable. Employees and their managers may complain about the network, but they're really angry at the IT people, whom they blame for a problematic work experience.

Wi-Fi network surveys, efficiently sniffing packets, mapping network topologies, staying on top of Virtual Local Area Networks (VLANs), identifying application-specific problems and monitoring 10 GigE traffic.

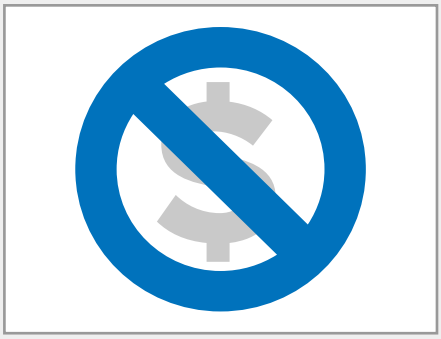
> "When we do a capture, it gives us the details of where the problem is and what it could be. It gives a detailed report of what it found on the network."

CONDUCTING WI-FI NETWORK SURVEYS

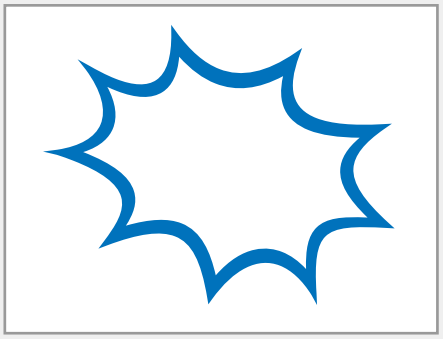
Network professionals almost always perform a Wi-Fi survey (also called a "wireless site survey" or "RF site survey") to ensure the wireless network installation is meeting the coverage, performance and capacity requirements. The survey also helps network designers build in sufficient roaming capability and Quality of Service (QoS).



PRODUCTIVITY LOSS



FINANCIAL LOSS



POOR DR & BACKUP

Tips and Tricks for Network Troubleshooting

IT Central Station members who work with networks have weighed in extensively about what matters in network troubleshooting. Their insights reveal that new analysis tools help with discovering difficult, serious problems. Tips and tricks include conducting

A Network Engineer at a large media company uses an analytical tool for this purpose. He said, "It's great for going out there and getting environmental information regarding Wi-Fi. It's great for doing surveys." A Network Specialist II at a university praised his network analysis tool by saying, "When we do a capture, it gives us the details of where the problem is and what it could be. It gives a detailed report of what it found on the network."

A Telecom Project Leader at a transportation company with over 1,000 employees added, "We are leveraging [our tool] with the Wi-Fi analytics software, and also Wi-Fi survey and design software. Specific to my group, we're responsible for Wi-Fi design." An IT Manager/Director at a hospitality company with over 1,000 employees said, "We've been doing surveys, heat maps, verification of signal strength, and everything else."

> "I like the fact that it can map my whole network when I plug it into my router, my switch, that it can literally discover nodes and clients. That's very helpful, and then drill down to the switch."

AUTO-DISCOVERING NETWORK TOPOLOGY

As network admins well know, the original design of a network seldom remains static. The same can be said for the contrast between a network's actual versus expected usage patterns. To stay on top of network performance and troubleshoot problems effectively, it is necessary to understand the network's topology. Automated network discovery offers a best practice, giving admins a detailed topology with a minimum expenditure of labor.

A Network Engineer at a manufacturing company with more than 1,000 employees said that his network analysis tool "auto discovers and you can pretty much set it up and let it go. It uses a Windows interface so if you're familiar with Windows computers, it's fairly easy to use." A Business Analyst/Quality Analyst at an engineering firm with over 1,000 employees noted, "I like the fact that it can map my whole network when I plug it into my router, my switch, that it can literally discover nodes and clients. That's very helpful, and then drill down to the switch." A Contractor at a large consultancy offered a further comment on his tool's capability, saying, "To set it up, you plug it in and it pretty much discovers on its own, maybe it needs a little bit of technical input from myself. All that is really easy."

EFFICIENTLY AND ACCURATELY SNIFFING PACKETS

Are packets traveling on the network as they are meant to? This is a question network admins must constantly answer. And, as with auto-discovery, the less effort it takes to capture packets, the better. A Com Elec Supervisor at a government agency uses his network analysis tool "for fiber testing, for checking all the packets that are going in and out, availability, bandwidth, etc." As the Contractor at the large consultancy explained, "You can capture packets, all of the information, that is coming over the wire, which is immense."

Several IT Central Station members felt packet sniffing was a valuable feature in a network analysis tool. These include a Network Engineer Supervisor at a tech services company with over 1,000 employees and a Director of Enterprise Systems at an insurance company with over 500 employees. The Network Engineer at the manufacturing company praised his tool's packet sniffing, noting, "It allows us to see where there are communication errors between devices."

PINPOINTING THE SOURCE OF PROBLEMS ON THE NETWORK

Some network problems are general. There is some sort of universal difficulty. Other times, only users of a particular application or device will experience network trouble. Being able to determine the source of a problem quickly helps keep the network doing its job for the business and avoids downtime. For example, a Network Architect at a wholesaler/distributor with more than 1,000 employees explained that he uses his analysis tool "when someone says they've got issues with an application." The tool "made it easy to troubleshoot certain situations and to get a quicker resolution, depending on the situation. Basically, we utilize it to troubleshoot situations,

packet analysis, wired and wireless, sifting of traffic, and then accurate analysis."

> "My opinion is yes, we have seen an ROI. For me, just resolving our one VLAN problem really makes it worth it."

The Director of Enterprise Systems at the insurance company commented, "Basically, what OptiView XG allowed us to do is, when someone says, 'Hey, there's a problem, we're experiencing slow latency in a site.' we put it on both ends and we look at the traffic going between both ends and see where the latency lies. It gives us an overall view of what's going across that, and we can make adjustments or we can then pinpoint and say, 'Hey, this thing's going nuts and talk to whoever is responsible for that server or application.'"

A Network Engineer at a midsize aerospace/defense company added, "The data center supports three to five hundred users. We're using it [our analysis tool] for the servers and applications. A user might call and report problems; then, we'd go into the data center and try to isolate it. For example, if you call and say, 'Hey, we have problems with the SharePoint application,' I'm going to say, 'What are the problems?' You might say, 'Hey, we have connectivity issues or dropouts.' I go in there and I scan the port, I connect the OptiView up to it, send all that data to OptiView and analyze it."

STAYING ON TOP OF VLANS

VLANs, a boon to agility, can also cause network problems. While they allow network administrators to partition their networks adaptively without having to modify physical infrastructure, they sometimes result in troublesome traffic patterns. Network troubleshooting should encompass VLANs as well as traditional network technologies.

A Sr. System Tech at a non-profit organization with over 500 employees said he used his network analysis tool "to troubleshoot our VLANs because we were having a problem. That helped quite a bit with displaying our VLANs and the paths things took." He added, "My opinion is yes, we have seen an ROI. For me, just resolving our one VLAN problem really makes it worth it."

LEVERAGING PORTABLE NETWORK ANALYSIS TOOLS

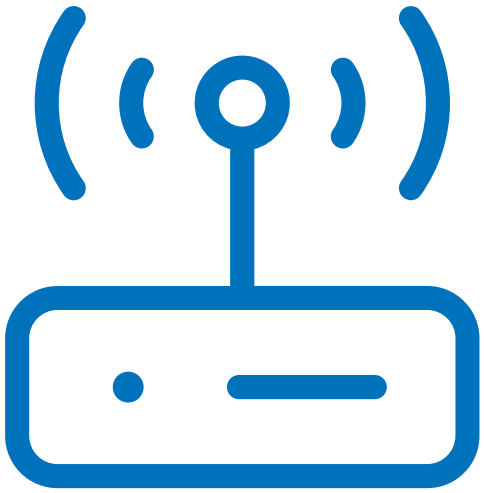
Given the physical distribution of networks across potentially large areas, it pays to employ portable network analysis tools. The IT Manager/Director at the hospitality company praised his portable network analysis tool by saying, "Most valuable to me is its size and the applications that are loaded on it. It's like a Swiss Army Knife. It's in a tablet size, but not like a laptop. It has handles and straps so it's easy to carry around and survey." The Network Engineer Supervisor at the tech services company noted the benefit of portable tools that combined features, saying, "For one thing, the OptiView is much more compact. The other things that I was using, I had to carry two or three things. OptiView has a lot of things rolled into one compact tablet."

DETECTING EXCESSIVE PROXIMITY OF WIRELESS CHANNELS

Wi-Fi networks don't work well when wireless channels are too close together. This issue emerged for the Contractor at the large consultancy. He explained, "We had a lot of problems with our clients implementing their own wireless, and they were doing it wrong. This [network analysis tool] was a way for me to troubleshoot their wireless infrastructure to offer a road map to make it better."

He then added, "It is hard to say what it takes to analyze a network without this device, and then of course with it. For example, with the wireless. I was able to plug it in and see that the client was using the same

channels for communication too close together. They were interfering with each other, causing problems with the client using their laptops. Once we were able to rearrange the channels that the individual access points were using, everything cleared up. Its effectiveness has improved the way my organization functions."



BEING ABLE TO ANALYZE 10GigE CONNECTIVITY

The large data volumes and network architecture typically used 10 GigE network segments may result in unexpected traffic management problems. For this reason, IT Central Station members like the Network Engineer at the aerospace/defense company value their network analysis tools' 10 GigE connectivity. He said, "Say someone has a connectivity issue in the data center. They might say, 'Hey, we're having issues; the 10 GigE connections are not coming up.' I'll take the OptiView in there and make sure that 10 GigE connection is coming up, make sure I get an IP address and so on."

DETAILED REPORTING

The IT department is held accountable for network problems. To show follow-through in fixing network issues, network admins should utilize analysis tools that show the effect of repair efforts. The Network Engineer at the media company described his network analysis tool by saying, "It's great for generating reports that can be submitted to management-type people." Reporting can also be helpful at the design stage, as the Telecom Project Leader at the transportation company found. He said, "We use it for all of our predictive Wi-Fi designs. We get standards reports, so we're able to do more of the designs, more quickly, and more consistently."

CONCLUSION

Networks need constant attention. Changing usage patterns and modifications to network topology inevitably lead to performance problems and service disruptions. Network problems translate into business problems, so troubleshooting is a must. The challenge for network admins is to analyze and then remediate network difficulties quickly and efficiently. This is partly a matter of expertise, but tooling is also critical for success.

A new generation of portable network analysis tools make it possible to troubleshoot network problems locally. These tools enable network admins to rapidly conduct wireless surveys, automatically map network topologies, differentiate between network and application issues, stay on top of VLANs and manage 10 GigE connections. They also offer detailed reporting, so network admins can communicate their progress in resolving network difficulties to senior management. Successful network administration efforts should now include the latest sophisticated, portable network analysis tools.

ABOUT IT CENTRAL STATION

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The Internet has completely changed the way we make buying decisions. We now use ratings and review sites to see what other real users think before we buy electronics, book a hotel, visit a doctor or choose a restaurant. But in the world of enterprise technology, most of the information online and in your inbox comes from vendors but what you really want is objective information from other users. IT Central Station provides technology professionals with a community platform to share information about enterprise solutions.

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