

# Problem Domain Isolation With LinkSprinter



Complaints of slowness are nothing new. In fact, “The network is slow” has become such a common phrase that some engineers now ignore it. Even after years of network and system upgrades, modifications, and so-called improvements, calls continue to stream into help desk centers and IT support with one word as a common theme—slow. The propensity of these issues in today’s networks is both puzzling and frustrating. There are several things that make troubleshooting network problems difficult, especially ones that impact connectivity or cause performance to crawl. These challenges include but are not limited to:

- No standard troubleshooting workflow for IT Technicians and Engineers
- Increasingly complex network and application systems
- Dissimilar tool sets and documentation methods
- Isolating the problem takes too much time
- Technician skill sets widely vary

In addition to these challenges, when we peel back the layers and really dig into why network problems persist, we find that legacy tools and methods are being used to troubleshoot everyday issues. One of the most common “old school” methodologies for troubleshooting is the laptop with freeware or use of CLI commands. As technology such as BYOD and IoT become pervasive in the modern network, however, those old-school methods will only take you so far, costing your organization time in lost productivity, user patience, and ultimately—money.

Using a legacy approach is not restricted to troubleshooting efforts. Other tasks within IT are impacted as well across the copper, fiber, and Wi-Fi network environment including pre-deployment validation, new connections, moving users into new areas, and testing connectivity to new servers and applications once they are brought online.

### What Are We Doing Today, and Why Isn't It Working?

A call comes in to the help desk. A ticket is generated. The CRM application is slow. After checking the green lights on the network health map in the command center, the technician grabs his laptop loaded with a few software-based troubleshooting tools and heads out to the user site. After connecting into the network from the user connection point, the technician looks at the address and user configuration. He tries a few pings, monitors a network connection or two for utilization, checks that he has access to the server, and makes sure that he can log in.

Since each technician has a different tool set and method, this general sequence and execution time will change depending on who was sent out. In many cases, these steps do not follow a workflow with a standard tool set, which means that each technician has his "style" based on his experience and training. Network problems may be quickly identified by some technicians, but not by others, resulting in an escalation to network engineering. The network engineer is then pulled away and often is forced to start at the beginning since there was no standardized workflow, no documentation of what was tested and where the connectivity issue is, and so on, thus it goes into the escalation cycle and frustration for all.

### How Can We Resolve These Issues Faster?

A call comes in to the help desk. A ticket is generated. The CRM application is slow. After checking the green lights on the network health map in the command center, the technician grabs his LinkSprinter and heads to the user's desk so further testing can be performed from the user's connection point. Plug LinkSprinter in, and it automatically begins a standardized autotest for the following:

- **Power over Ethernet (PoE):** Check to make sure you can power a phone, security camera or an access point through a specific port. The LinkSprinter network tester can even run without batteries on PoE.
- **Link to the Switch:** Using CDP/LLDP, the LinkSprinter will discover the connected switch name, model, slot, port and VLAN (noting both data and voice VLAN ID).
- **DHCP Connection:** Confirm that the DHCP server is running and responsive. Request an IP address, get your subnet information, and identify the default gateway and DNS server (static IP address can also be configured).

- **Gateway Connection:** Verify the router/gateway address and reachability by pinging the device.
- **Internet Connection:** Confirm cloud connectivity or internal service reachability. Verify DNS server lookup and application port connectivity.

Using LinkSprinter—in less than 10 seconds—the technician finds that while the user should be getting 1-gigabit-per-second speed, they are actually getting 10 Mbps and there is a delay getting through the gateway router.

## Automated Results Through Mobile User Interface

First, look at the color-coded LEDs on LinkSprinter. If all lights are green, then network connectivity from the user wall jack location is validated. If you want to dive into the details or understand why you see yellow or red LEDs, you have two options:

- **Option 1, check your email:**

At the completion of each test, the result is automatically pushed to the Link-Live results management database as well as sent to you via e-mail. The email benefits you in a couple of different ways. First, you now have the problem domain identified and documented with a standardized test. If an escalation needs to occur to further resolve the issue or to make note on a trouble ticket, simply forward the email. If you want to add detail to your test result in Link-Live, just respond to the email with jack location or any other details (i.e. attach a photo). Photos are very handy for documenting serial number/asset tags of a device plugged into a given wall jack and associated with switch slot/port/VLAN, but they are also handy for documenting visually what is going on at that wall jack.
- **Option 2, use the built-in web service to associate to as your access point:**

The benefit of this method versus requiring an application is that it doesn't take up memory on what is typically a personal mobile device for a work application. Test details are now displayed on your mobile device and include the same details you would get in the email such as: the PoE voltage level at the wall jack, speed/duplex (error warning if you were expecting 1 Gig and only got 10/100), switch name, model, IP, slot/port/VLAN, as well as gateway and server response time. The technician is also able to annotate additional information about the test that will automatically be associated to the documented result in Link-Live.

If further troubleshooting of the physical cable is needed, LinkSprinter can provide distance to fault as well as open/short/split on an open-ended cable. If you are on an unmanaged switch and want to know the connection path between the wall jack and switch, leave LinkSprinter plugged into a wall jack with the flash switch port function activated and then take a look at the switch. You'll find one port blinking in a specific pattern, noting that's the connected port.



## Results Documentation

Documentation is a pain for any technician. It often suffers because it is considered a lower priority than taking on new issues that arise and can be time-consuming and cumbersome to generate.

LinkSprinter is designed with this task in mind. It can be configured to automatically send test results to the included Link-Live Cloud Service, saving documentation time for the technician and allowing results to be instantly shared between team members and archived for historical reporting, baselining and future troubleshooting. For example, someone moving a connection to a non-working port after the technician leaves and then calling in a trouble ticket because some device isn't working. It's important to note that Link-Live supports automated test results uploaded from other NETSCOUT handheld tools (LinkRunner AT, AirCheck G2, OneTouch G2) allowing a single dashboard that can include copper, fiber and Wi-Fi test results in a single location. Again, these results can be shared across team members and at various locations, with all you need being an internet connection and web browser to access them. LinkSprinter supports proxy configuration if needed.

The results can also be used to document network connections for new installations as well as adds/moves/changes (MACs), which greatly simplifies the process of drop identification. This saves a ton of time when problems strike in the future, as engineers can quickly identify which switch port is affected when a user calls in.

Test	PoE	Link	Access	DHCP	Gateway	WWW
1:33 PM 6/17/2016 AirCheckG2 /LinkLive Rocks Jack 23	Unloaded: 49v	10/100 HDX/FDX	sr-cos-us-1.nsn.net.local VLAN: 196 Model: cisco WS-C3750G-... Port: FastEthernet1/0/10	IP: 129.196.195.106 Server: 10.200.72.12 Subnet: 255.255.255.0	IP: 129.196.195.1 PING (ms): 10,1,1 Public: 74.202.20.245	PING: www.google.com:null IP: 216.58.217.36 Time (ms): 4,3,3
2:03 PM 6/2/2016 NTCT Sprinter /LinkLive Rocks Jack 24	Volts: 50v	10/100/1000 HDx/FDx RX Pair: All Polarity: Normal	COS_DEV_SW1.f.net.eng VLAN: 500 Model: cisco WS-C3750G-... Port: GigabitEthernet2/0/6	IP: 10.250.3.67 Server: 10.250.0.2 Subnet: 255.255.252.0	IP: 10.250.0.1 PING (ms): 1,3,2 Public: 74.202.20.245	TCP: www.google.com:80 IP: 216.58.193.68 Time (ms): 33,33,34
2:52 AM 5/11/2016 Lisa's LinkRunnerAT 2000 /LinkLive Rocks	Unloaded: 52v Loaded: 52v Req Power: 13W Rcvd Power: 13W	10/100/1000 HDX/FDX RX Pair: All Polarity: normal	Demo Switch Model: Netgear Gigabit S... Port: g5/5	IP: 10.207.255.146 Server: 10.207.0.3 Subnet: 255.255.000.000	IP: 10.207.0.1 PING (ms): 1,1,1 Public: 77.108.147.91	TCP: google.com:80 IP: 216.58.198.174 Time (ms): 1,1,1
11:46 AM 4/13/2016 Lisa's AirCheckG2 /LinkLive Rocks		PHY Rate (Mb/s): 48 S/N/SNR: -69 / -97 / 28 Retry Rate (%): 0	Cisco:92:9a:50 SSID: Radioson_Guest Channel: 1 802.11 Types: b,g	IP: 10.42.1.126 Server: 10.42.0.1 Subnet: 255.255.240.0	IP: 10.42.0.1 PING (ms): 92,10,4	PING: www.google.com:null IP: 172.217.16.4 Time (ms): --,--

## Conclusion

The LinkSprinter enables IT teams to get to the root cause of network problems quickly. It streamlines and simplifies common tests, creating an automated workflow for network technicians and engineers. This enables IT organizations to quickly isolate and resolve performance problems, regardless of who is sent out and their skill level. The easy-to-read LED's and test results enable technicians with all levels of IT experience to get to the root cause of tough network issues, while cutting documentation and collaboration time down to almost nothing.

## LinkSprinter Network Tester

Test and Validate Network Connectivity in less than 10 seconds

The LinkSprinter network tester provides network connectivity troubleshooting and identifies error problem domain in less than 10 seconds. Automated reporting to the included Link-Live Cloud Service ensures network connectivity status and path information is documented for every link.

The LinkSprinter gives you 5 essential network tests in the palm of your hand:

- Power Over Ethernet (PoE) Tester
- Link to the Switch
- DHCP Connection
- Gateway Connection
- Internet Connection



More information at:

[enterprise.netscout.com/linkspainter](http://enterprise.netscout.com/linkspainter)