THE TRIPLE CROWN OF CABLE TESTING

Tips for Certifying Cable, Validating PoE, and Supporting Multi-gig Networks

INTRODUCTION

Digital transformation continues to put more and more stress on the network as organizations adopt multi-gig network speeds and Power-over-Ethernet (PoE). Can the cabling infrastructure support these changes? Does it need to be upgraded? As new network devices are added over time, will it continue to function as intended? Cable installers and technicians face these questions daily. After all, they are responsible for identifying and remediating the issues quickly when any component of the networking infrastructure is found either incompatible, non-compliant, or non-functional. To help them perform this challenging role effectively, organizations are increasingly equipping them with new multifunction cable testers.

CABLE TESTERS FOR DIGITAL INFRASTRUCTURE

The newest testers on the market are what some call "The Triple Crown of Cable Testers" and include tests for cabling, PoE, and multi-gig networks. Consolidation of these test functions in one device helps technicians overcome a variety of challenges such as:

1. Facilities can have a variety of cabling types installed. For copper cabling, this can range from CAT5e through CAT8, and soon even single pair Ethernet cabling for applications such as IoT sensors. Certification testing of such a diverse cabling infrastructure can be a time-consuming and challenging process.

2. While resistance unbalance is an important cable parameter to ensure proper functioning under PoE load, most cable certifications testers don't provide this measurement. Some others perform this test only optionally at the expense of additional test time.

3. Proper PoE functioning needs more than cable performance. If PSE and PD are incompatible, PoE system may not work. There may be other issues like over-provisioning of PoE switch (a PoE switch that works with a few PDs, but malfunctions when a large number of PoE powered ports are connected). Issues like this can only be determined in advance if the tester can continuously load the switch while monitoring multi-gig performance. Most testers do not provide these testing options.

4. Multi-gig Ethernet is gaining popularity mainly because it allows the use of existing cables for faster data rates. While a certifier can rate a cable's suitability for multi-gig, it lacks direct and simple validation of proper functioning of multi-gig Ethernet. Besides, it is too expensive for this purpose.

OVERCOMING CABLE TEST CHALLENGES

Multifunction cable testers help organizations overcome these challenges by providing a greater range of test functions that help in deployment, and also in ongoing support and troubleshooting, thus saving cost and delivering significantly more value, making it easier to justify the investment.

Network infrastructure usually gets deployed over time. For example, a PoE switch being installed cannot be tested under normal working conditions if powered devices (e.g. wireless APs) are not yet available. A test instrument that can act as a PoE device and confirm the functioning in advance can save a lot of headache later. Without PoE validation including power load testing, the cable will be the first suspect when a PoE powered IoT device experiences a performance issue. A multifunction tester can help identify problem domain and eliminate conflict between the cable contractor, the network engineer and the IoT device installer when issues arise, and they will.

Being able to test for PoE and multi-gig speeds in advance will help organization make informed decisions about cable upgrades. If the existing cabling can meet the new multi-gig and PoE requirements, upgrade can be avoided, saving a significant amount of time and money. On the other hand, a flawed assumption that existing cables will be good enough might lead to poor network performance. The best way to avoid unnecessary upgrade costs without relying on assumptions, is to perform multi-gigabit network validation testing using a cost-effective, simple test tool.

04/08/18 09:21	Main 100%
c0001	PASS

TIA - Cat 6A Channel

Summary Wiremap	Details

	Result
Length(m)	33.0
Delay(ns)	162.0
Resistance(Ω)	6.7
NEXT(dB)	6.9
RL(dB)	9.1
IL(dB)	1.9
PSNEXT(dB)	7.9

09/04/18 10:51	Main 90%

PoE

Select Standard:

802.3bt (90W)

PSE Detected	Yes
Voltage	56.11 V
PSE Type	4
PD Class	8
PoE Cable Pairs	12-36, 45-78
Allocated Power	71.00 W

THE MULTIFUNCTION CHECKLIST

What should you look for when shopping for a new multifunction cable tester? First, be sure it offers the most comprehensive set of capabilities, or that "Triple Crown" approach. For certifying cables, look for a tester that certifies as fast as possible (more links laid = more money). Consider if you'll have wireless internet access at the job site before you choose a cloud-based tool. For validating PoE, find a tester that supports all IEEE PoE standards, which include 802.3at/af/bt up to 90W to future proof your investment. Some other key questions to consider when choosing a multifunction cable tester are:

- Does it detect basic connectivity issues instantly with live wiremap testing?
- Does it certify all cabling types you use?
- Can it test cable under power load to see how its properties change?
- Does it report PSE configuration and powered pairs, voltage, current and real power?
- Is it able to verify link speeds of up to 10 Gig?
- Does it offer stress testing of cable links?

Much like the prestige of winning the triple crown in horse racing, installers that have tools that allow them to successfully fulfil different testing requirements come out winners when it comes to time savings, which equals cost savings and reliability. If you're tasked with supporting digital infrastructure, make sure you have the tools necessary to streamline testing, validation and certification.

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