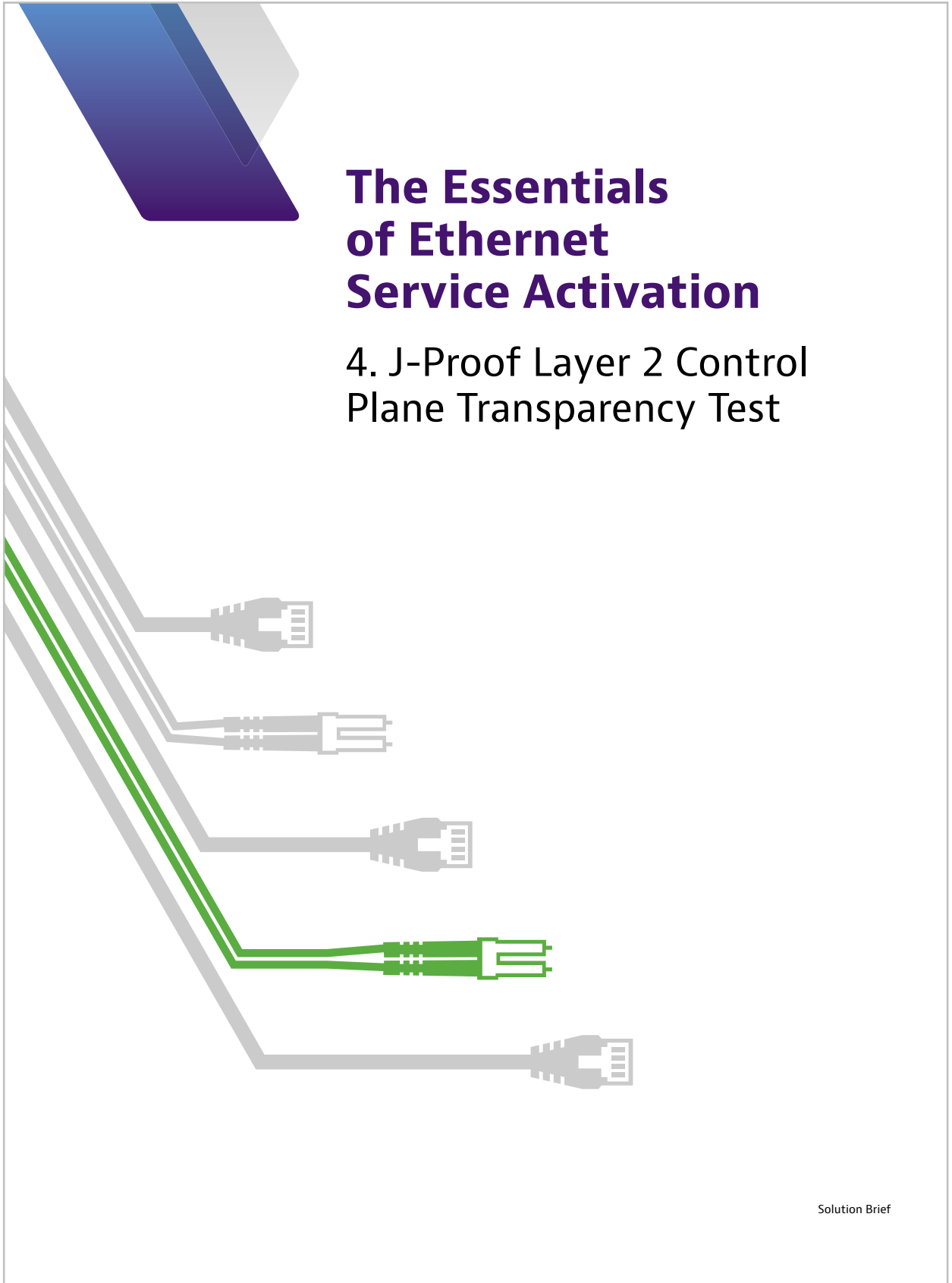


The Essentials of Ethernet Service Activation

4. J-Proof Layer 2 Control Plane Transparency Test



Solution Brief

4. J-Proof Layer 2 Control Plane Transparency Test

Global growth in communications and data services is driving increasing demand for Ethernet. As businesses and consumers demand more and more data, the pressure is on service providers (SP) to supply reliable Ethernet with the capacity for growth – and to do it quickly. Customers want easy, well-priced access to reliable high-speed, cloud-based data services such as streaming, Internet of Things, and next-generation networks. At the same time, service providers are keen to supply new services—and benefit from new, growing revenues. To capitalize on demand and manage operational costs, service providers will rely on testing tools that help them turn up and monitor Ethernet connections quickly, safely, and cost-effectively with minimal complications.

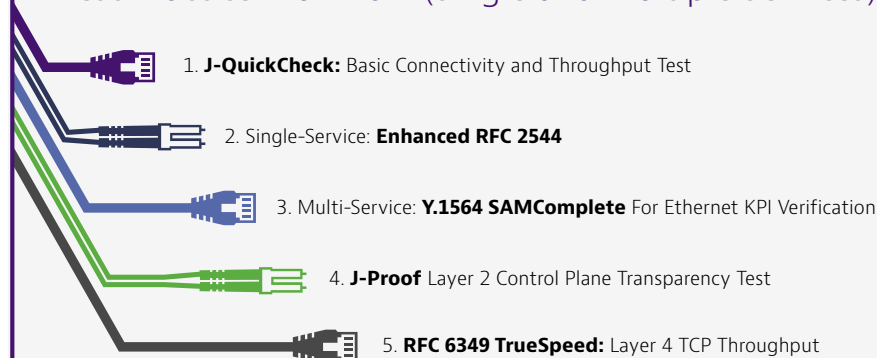
Key Advantage:

Running as fast as ten seconds, Viavi's J-Proof test confirms the transparent forwarding of Ethernet traffic through a provider's network and dramatically reduces post-install finger-pointing and customer churn.

Speedy Test for Transparent Forwarding

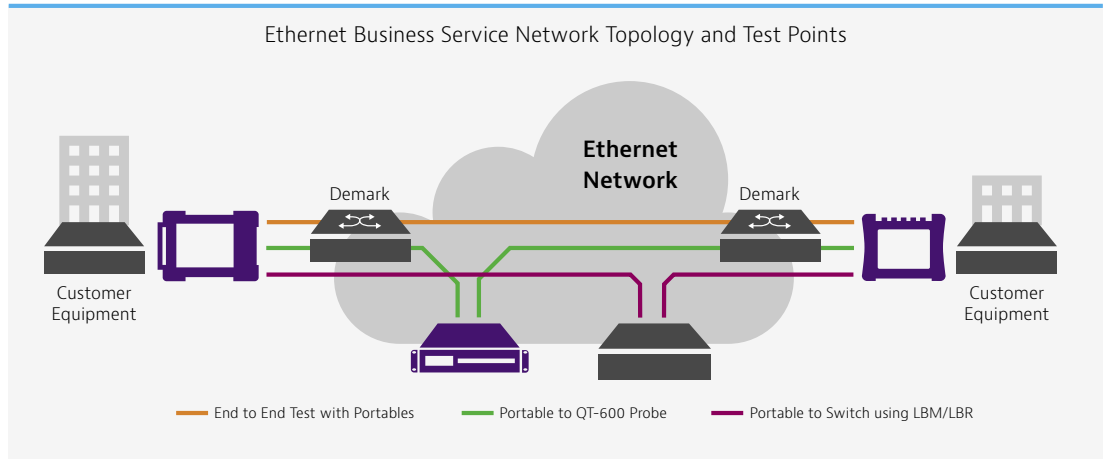
Viavi's J-Proof test verifies transparent end-to-end Ethernet forwarding through switched Ethernet networks. Unlike sending Ethernet over dark fiber, enterprise Ethernet LAN is transported over Ethernet WAN networks and can be adversely effected by the WAN Ethernet network elements. Improperly configured network elements, such as routers and switches, can drop Ethernet control-plane messages which can cause installation delays and troubleshooting nightmares.

Best Practice Workflow (Single and Multiple Services):



This test workflow is applicable to Ethernet Business Services and Wireless Backhaul network topologies; a typical Ethernet business service network topology is shown in the following diagram.

4. J-Proof Layer 2 Control Plane Transparency Test



The diagram above shows the “local” TBERD represented on the left side and the “remote” TBERD on the right. The most common service activation use case is a loop-back of the remote device and in this case, the device will be the remote TBERD.

J-Proof Test Components and Benefits

The following table describes the distinct role of J-Proof as well as the Viavi enhancements that provide unique, valuable advantages:

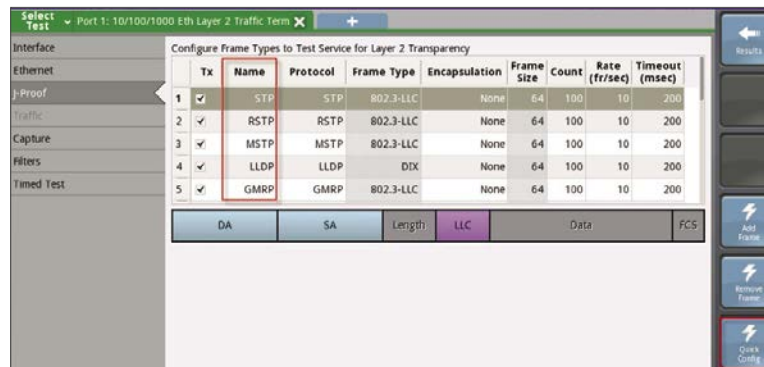
Service Activation Test	Description	Viavi Advantage
J-Proof	<ul style="list-style-type: none"> Verifies that Ethernet control plane traffic (ARP, STP, CDP, etc.) flows transparently from end to end. For example: enterprise Cisco switch protocols flow through service provider network and are not altered 	<ul style="list-style-type: none"> Ethernet control plane issues can be difficult to identify and troubleshoot. J-Proof is a customizable, reliable way to guarantee that an end-customer's control traffic will not be altered Test execution takes just ten seconds and saves potential hours spent trying to isolate hidden problems caused by transparency errors Many of your customers are unaware of this test and its quick results. If you are on site, you can run this test in just ten seconds to ensure control plane traffic.

4. J-Proof Layer 2 Control Plane Transparency Test

Service Activation Test	Description	Viavi Advantage
Quick Configuration User Interface	<ul style="list-style-type: none"> Intuitive GUI with easy pass/fail results 	<ul style="list-style-type: none"> Semi-automated test setup configures most Parameters which provides simple repetition with powerful customization.
VLAN and Q-in-Q	<ul style="list-style-type: none"> Test transparency over virtual LANs 	<ul style="list-style-type: none"> Verify VLAN and Q-Q transparency for a specific customer's or customers' traffic flow/service. Fine tune troubleshooting to specific problem VLAN/service.
VLAN Priority	<ul style="list-style-type: none"> Automatically "walk the P-bits" 	<ul style="list-style-type: none"> Confirm control plane Ethernet frame priority, ensuring control messages do not time out or get dropped.
Cisco Proprietary Protocol Test	<ul style="list-style-type: none"> Test Cisco VTP and CDP 	<ul style="list-style-type: none"> Tests commonly used and nonstandard Ethernet frames for a true end-to-end transparency test.
GARP and STP Test	<ul style="list-style-type: none"> Test GMRP/GVRP and STP/RSTP/MSTP 	<ul style="list-style-type: none"> Test transparency of registration and topology protocols, ensuring bridge switches can transparently exchange topology information.

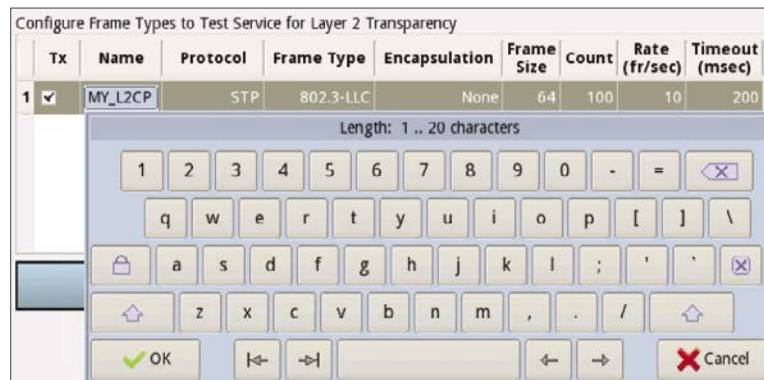
Simple Configuration and Test Execution

The true power of the J-Proof test is in its ease of configuration. There are many Layer 2 control protocols and the user can run a pre-canned test with over 20 L2CP protocols. In the figure below, the user simply selected the Quick Config button and the J-Proof test auto-populates the frame types (5 of 20 shown).

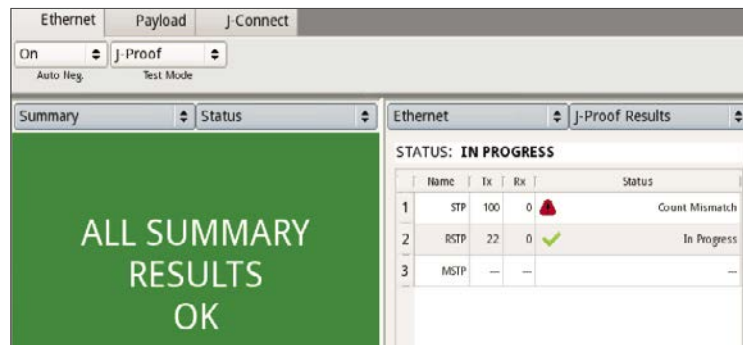


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For the more advanced user, a frame builder function is also provided as shown below. The user can select various protocols, frame sizes, rates, etc.



During test execution, the results screen shown below provides current status of test PASS/FAIL and progress:



Moreover, the results are all part of the report, so the entire J-Proof test suite can be executed and a formal report handed off to the end customer as "proof" that the Ethernet transport was truly transparent.

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J-Proof Use Case 1: Ethernet Circuit Backhaul

When a mobile or landline operator must interconnect with another carrier for long distance transport to the originating operator destination service, this is referred to as Ethernet backhaul. This is a classic example of two Ethernet networks that must co-exist; but where the backhaul network must not interact with or alter any of the originating operator's Ethernet frames.



J-Proof Use Case 2: Last Mile Ethernet Service Turn-Up

A facilities-based service provider has many options when delivering Ethernet service to a customer outside the normal coverage area. One option could involve leasing a UNE and installing a co-located access concentrator (DSLAM/ONT). A more cost-effective approach is to use the incumbent's infrastructure and confirm the SLA and Ethernet circuit transparency during service turn-up. In latter scenario, the facilities-based service provider should test the Ethernet circuit for transparency to ensure that control plane traffic used to manage CPE will transparently traverse the incumbent's access network.



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Conclusion

Ethernet service activation is your first step to ensure customer satisfaction. Service providers need to conduct service activation set up in a cost-effective manner and be confident that their services are operating at or above their SLA. Viavi's J-Proof test solution provides an advantage in time, efficiency and accuracy to make your service activation workflow as smooth and easy as possible.

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