

QUICK CARD

Ethernet Network Connectivity Testing

This quick card describes how to set up the OneAdvisor 800 to verify Layer 2 and Layer 3 Network Connectivity. The quick card documents a procedure to set up the OneAdvisor on a 1GigE Optical Interface utilizing IPv4 addressing, but the same workflow may be applied to other data rates and IPv6.









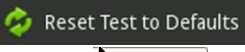

EQUIPMENT REQUIREMENTS

- OneAdvisor 800 equipped with the following:
 - RAXxMA-O Radio Analysis Module, SPA06MA-O Spectrum Analyzer Module, TM400GB-QQ 400G Module, or TM400GB-QO 400G Module.
 - Transport software release V5.1.0 or greater
 - CA10M1GE or ONA-SP-10M1GE 1 Gigabit Ethernet option
- Optical Transceiver supporting the Ethernet data rate to be tested (SFP, SFP+, SFP28, or QSFP28)
- Cables to match the optical transceiver and the line under test
- Fiber optic inspection microscope (P5000i, FiberChek Probe, or INX-760)
- Fiber optic cleaning supplies



Figure 1: Equipment Requirements

LAUNCH TEST

1. Press the Power button  on the ONA-800 base top panel to turn on the OneAdvisor.
2. Tap  to display the Home Screen.
3. Tap  to display the Tests menu.
4. Tap  or  to show the Transport test application.
5. Tap the **Transport** icon. 
6. If the **Select Test** menu is not displayed, tap  in the lower left screen corner.
7. Using the **Select Test** menu or favorite test list, launch the Ethernet Layer 3 Traffic test for the desired data rate and port (P1 or P2). For example: **Ethernet ▶ 1GigE Optical ▶ Layer 3 Traffic ▶ IPv4 ▶ P1 Terminate**.
8. If the current configuration is unknown, tap  to open the **Tools** Panel and select .
9. Press  to continue.

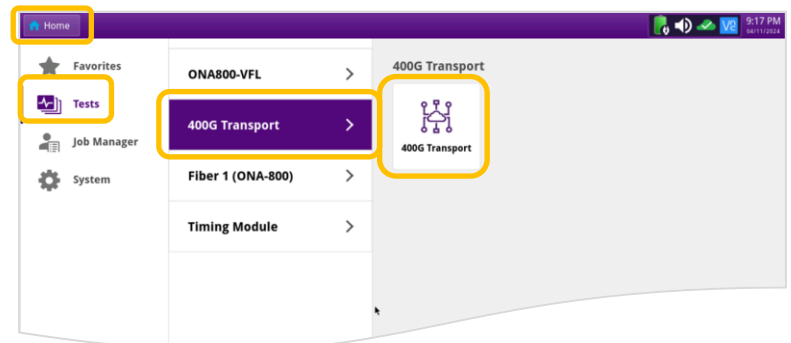


Figure 2: Transport Launch screen

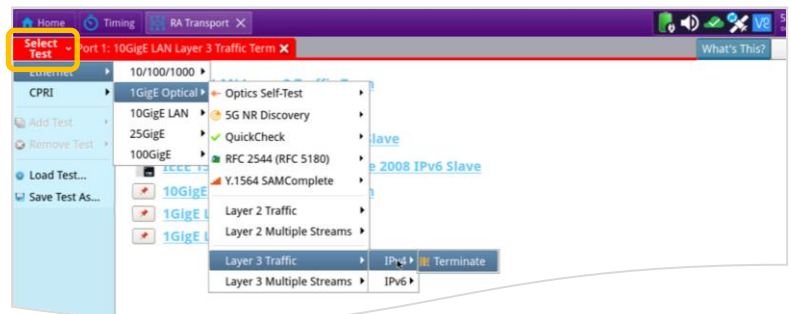


Figure 3: Select Test

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CONFIGURE TEST

- ▶ The following info is needed to configure the test:
 - Type of Optical Transceiver (10/100/1000 Copper SFP, 1G/10G Multimode SFP+, 10G/25G Single mode SFP+, 100G LR4 QSFP28, etc.)
 - Auto Negotiation settings of the port under test.
 - IP Address settings (DHCP or Static, Source IP, Default Gateway, Subnet Mask, and Destination IP)



Figure 4: Work Order

- ▶ For 1GigE Optical or 10/100/1000 Copper tests, tap the **Ethernet** tab of the Quick Configuration menu and set **Auto Neg.** to the same value as the Ethernet port under test (**On** or **Off**).
- ▶ For 10/100/1000 Copper tests, tap the **Setup** soft key on the top right side of the screen and proceed to page 3.

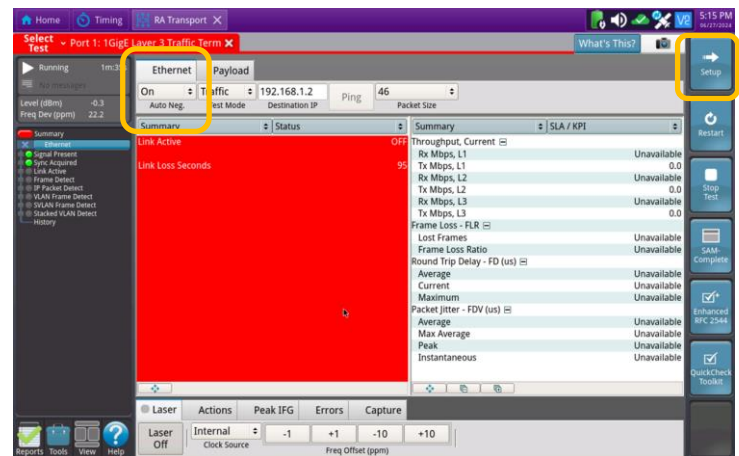


Figure 5: Quick Config, Auto Neg.

- ▶ For Optical Interfaces:
 1. Tap the **Setup** soft key on the top right side of the screen.
 2. Select the **Interface/Connector** folder.
 3. Insert desired Optical Transceiver into the Port 1 SFP or QSFP slot on the top of the OneAdvisor.
 4. Review SFP information:
 - Verify that the SFP operates on the required wavelength (850nm, 1310nm or 1550nm).
 - Verify that the SFP supports the required data rate (10G LAN, 25G, etc.)
 - Note the Min and Max Tx Levels (dBm) and Max Rx Level (dBm) to assess if optical attenuators are required.

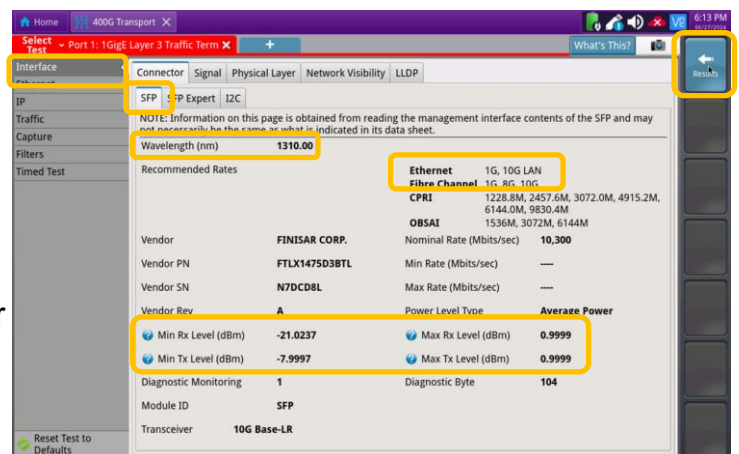


Figure 6: Setup, Interface/Connector/SFP

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CONFIGURE TEST (CONTINUED)

- ▶ If you are testing a VLAN, select the **Ethernet** settings tab, set **Encapsulation** to **VLAN**, tap the **VLAN** field and enter your **VLAN ID**.

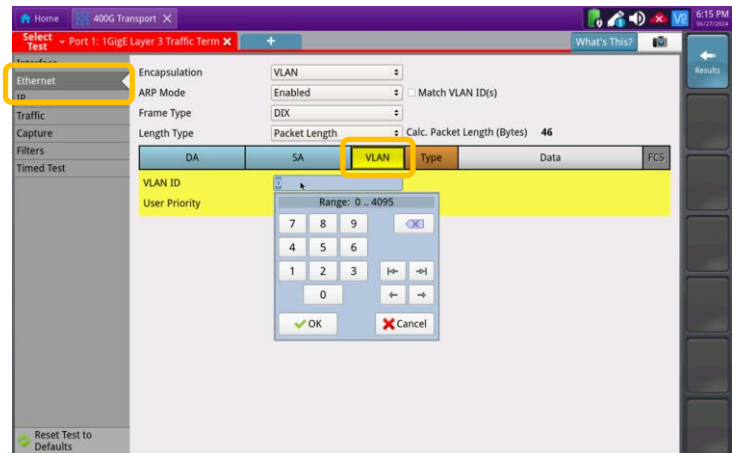


Figure 7: Setup, Ethernet/VLAN

- ▶ Select the **IP** settings tab:
 - Tab the **Source/Destination Addresses** field and configure **Source IP Type**, **Source IP Address**, **Default Gateway**, and **Subnet Mask**.
- ▶ Tap the **Results** soft key.

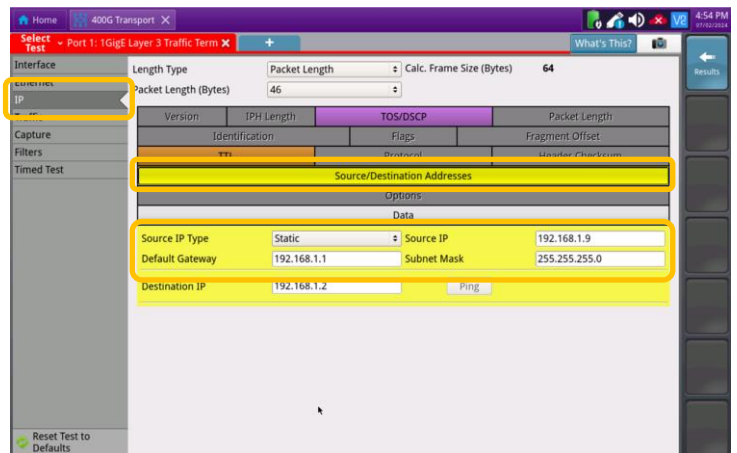




Figure 8: Setup, IP

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CONNECT TO LINE UNDER TEST

► For Optical Interfaces:

- Use the VIAVI P5000i or FiberChek Probe microscope to inspect both sides of every connection being used (SFP, attenuators, patch cables, bulkheads)
 - Focus the fiber on the screen.
 - If it appears dirty, clean the fiber end-face and re-inspect.
 - If it appears clean, run the inspection test.
 - If it fails, clean the fiber and re-run inspection test. Repeat until it passes.
- If necessary, insert optical attenuators into the SFP TX and/or RX ports.
- Connect the optical transceiver to the port under test using a jumper cable compatible with the line under test.
- Select the **Laser** tab in the **Actions** panel.
- Press . The button will turn yellow and be relabeled .
- Press the **Restart** soft key.
- Verify the following:
 - Summary** LED is yellow.
 - Signal Present** LED is green.
 - Sync Acquired** LED is green.
 - Link Active** LED is green.

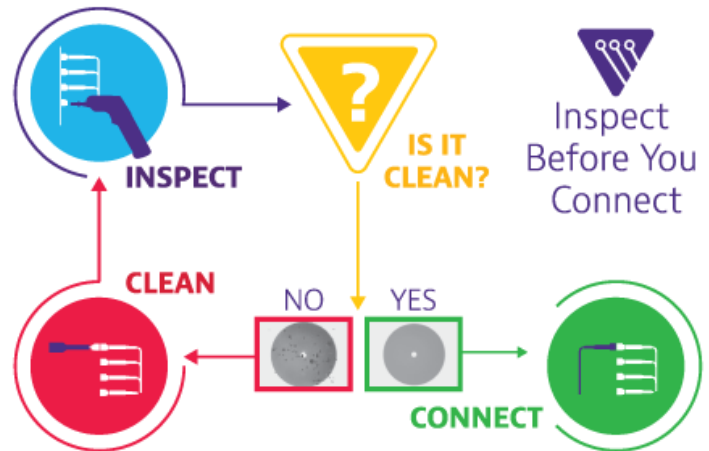


Figure 9: Inspect Before You Connect

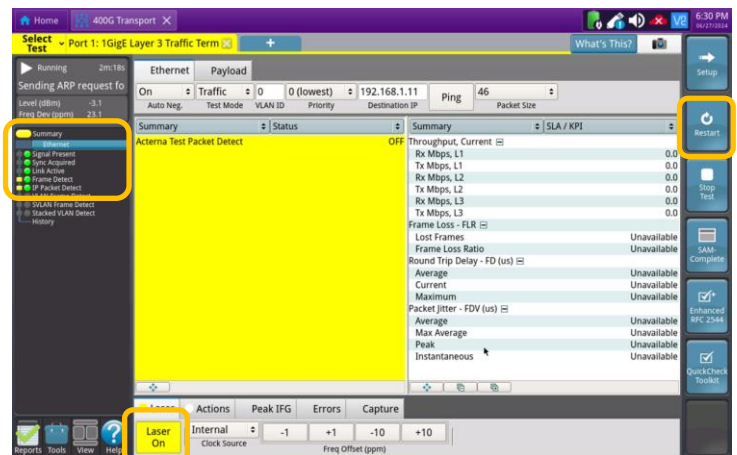


Figure 10: Optical Interface Results

► For 10/100/1000M Copper Interfaces:

- Connect the copper SFP to the port under test using CAT5e or better cable.
- Press the **Restart** soft key.
- Verify the following:
 - Summary** LED is yellow.
 - Sync Acquired** LED is green.
 - Link Active** LED is green.

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VERIFY NETWORK CONNECTIVITY

- Autonegotiation Status:** If you are testing a **10/100/1000BASE-T** or **1GigE Optical** Interface with Autonegotiation enabled, Select **Ethernet / AutoNeg Status** for the left result windows using the drop-down menu above the window. The selection is at the bottom of the list.
 - Verify that **Link Advt. Status = Done** and **Link Config ACK = Yes**. Otherwise, set **Auto Neg.** to **Off** in the Ethernet settings above the left results window.
 - Note: Autonegotiation may be used by Ethernet devices that are capable of more than one transmission rate (10/100/1000 Mbps), duplex mode (half duplex and full duplex), flow control mode, or other capabilities. Devices share their capabilities and choose the highest performance mode they both support. Autonegotiation can be disabled, but a frame loss may occur if it is enabled on one device and disabled on the other.
- Link Layer Discovery Protocol (LLDP):** Select **Ethernet / LLDP Stats** for the left result windows using the drop-down menu above the window.
 - LLDP allows devices to advertise device information to directly connected devices. Although it can be disabled, most switches and routers will advertise System Names, Port IDs, VLAN IDs, and IP Management Addresses as shown in Figure 12.
- Layer 3 Configuration Status:** If you are using DHCP for IP Address Assignment, select **Ethernet / L3 Config Status** for the left result windows using the drop-down menu above the window to verify address assignment.
- Ping:** Enter a **Destination IP** Address and tap **Ping** to test connectivity to any IP host address. A green checkmark **✓** indicates the host is reachable.

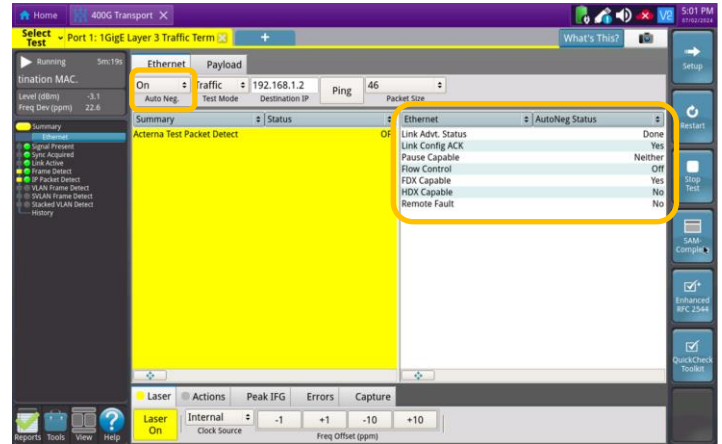


Figure 11: AutoNeg Status

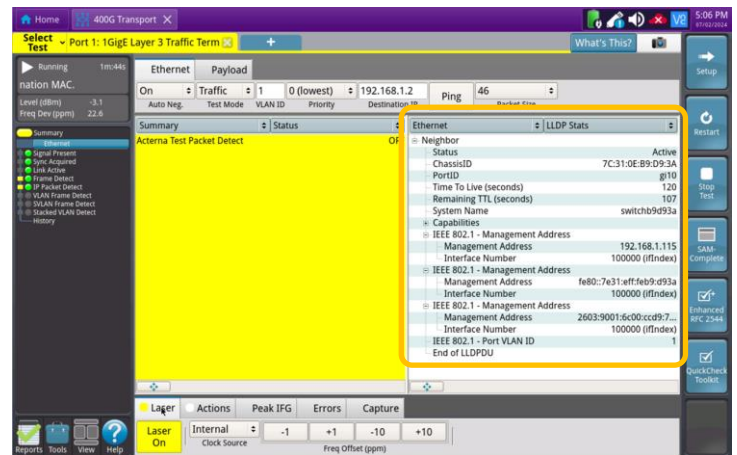


Figure 12: LLDP Stats

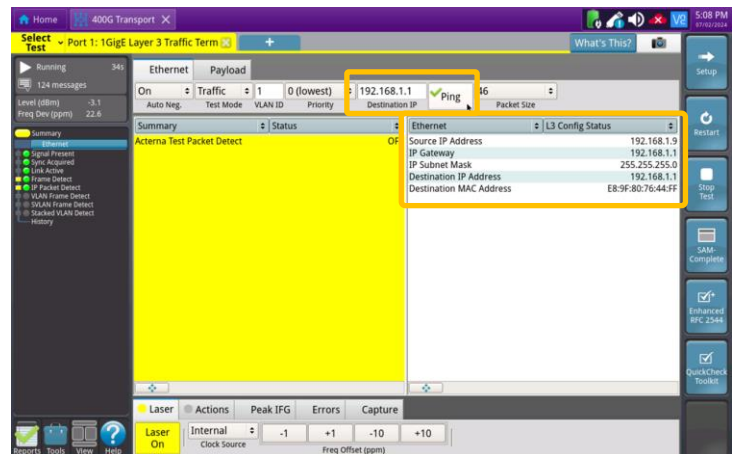


Figure 13: L3 Config Status