

Ethernet Layer 3 Traffic Loopback

This quick card describes how to set up the OneAdvisor 800 as a Layer 3 Loopback device. The quick card documents a procedure to set up the OneAdvisor on a 1GigE Optical Interface utilizing IPv4 addressing, 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.
 - o 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

LAUNCH TEST

- 1. Press the Power button on the ONA-800 base top panel to turn on the OneAdvisor.
- 2. Tap from to display the Home Screen.
- 3. Tap 🚣 Tests to display the Tests menu.
- Tap Radio Analysis Transport > or
 400G Transport > to show the Transport test application.



- If the Select Test menu is not displayed, tap
 All Tests in the lower left screen corner.
- 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.
- If the current configuration is unknown, tap to open the **Tools** Panel and select
 Reset Test to Defaults.
- 9. Press **Vok** to continue.

OneAdvisor 800 Transport and Wireless Platforms



Figure 1: Equipment Requirements



| 🖈 Home 🌀 Tin | ning RA Transport 🗙 | 📙 📣 🛩 😪 🚾 🗄 |
|--|---|--------------|
| Select ~ Port 1: 1 | 10GigE LAN Layer 3 Traffic Term 🗙 | What's This? |
| CPRI Add Test CRI Commove Test Cad Test Cad Test Cad Test | 10/100/1000 • Torge Coptical • Optics Self-Test • 10Gige LAN • 5 G R Discovery • 2SGige • QuickCheck • 10Gige • RFC 254 (RFC 5180) • 2008 IPv6 Slave • 10Gige • 1 Gige • 1 Gige • 1 Gige • 1 Gige • | |
| | Layer 3 Traffic IPv6 IPv6 IPv6 IPv6 | |

Figure 3: Select Test



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)
- 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.
- ► For Optical Interfaces:
 - 1. Tap the **Setup** soft key on the top right side of the screen.
 - 2. Select the Interface/Connector folder.
 - 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, 1550nm,etc..).
 - Verify that the SFP supports the required data rate (10G, 25G, etc..)
 - Note the Min and Max Tx Levels (dBm) and Max Rx Level (dBm) to assess if optical attenuators are required.



Figure 4: Work Order

| n Home 💿 Timing | RA Transport | × | | | 📙 📣 🛩 🐝 🛛 | 5:15 PM |
|---|-------------------------|---|-----------------------------|---|---|----------------------------------|
| Select - Port 1: 1GigE | Laver 3 Traffic Terr | n 🗙 | | | What's This? | |
| ► Running 1m:3 | Ethernet | Payload | | | | Setup |
| Level (dBm) -0.3 | On + Ti al Auto Neg. | ffic = 192.168.1.2 est Mode Destination IP | Ping 46 | ¢ cket Size | | |
| Fred Dev (ppm) 22-2 | Summary | Status | • | Summary | s SLA / KPI * | C |
| Comparing a second | Link Active | | OFI 95 | Throughput, Current ⊟ The Mipps, L1 The Mipps, L1 The Mipps, L2 The Mipps, L2 The Mipps, L2 The Mipps, L3 The Mipps, L3 Frame Loss Fath Frame Loss Fath Frame Loss Fath Frame Loss Fath Constraints Frame Loss Fath Maximum Packet [Inter - FDV (us) ⊟ Maximum Packet [Inter - FDV (us) ⊟ Maximum Packet Instantianeous | Unavailable 6.0 Unavailable 0.0 Unavailable Unavailable Unavailable Unavailable Unavailable Unavailable Unavailable Unavailable Unavailable | Stop Test SAM- Complete |
| | | | | 01010 | | |
| | Caser Acti | ons Peak IFG Err | ors Capture | | | |
| Reports Tools View Help | Laser Off Clo | nal + -1 | +1 -10 Freq Offset (ppm) | +10 | | |

Figure 5: Quick Config, Auto Neg.

| Test - Port 1: | 1GigE Layer 3 Traffic Term 🗙 🚺 | + | | What's This? | 10 |
|----------------|--------------------------------|----------------------------|---|--|-------|
| Interface | Connector Signal Physic | al Layer Network Visibilit | y LLDP | | |
| IP | SFP SFP Expert 12C | | | | |
| Traffic | NOTE: Information on this | page is obtained from rea | ding the management interface | contents of the SFP and n | nay |
| Capture | Wavelength (nm) | 1310 00 | s data sheet. | | |
| Filters | Harcien Bur (min) | 1310.00 | | | |
| Timed Test | Recommended Rates | | Ethernet 1G, 10G I | AN | |
| | | | CPRI 1228.8M, 6144.0M, OBSAI 1536M, 3 | 2457.6M, 3072.0M, 4915 9830.4M 072M, 6144M | 5.2M, |
| | Vendor | FINISAR CORP. | Nominal Rate (Mbits/sec) | 10,300 | |
| | Vendor PN | FTLX1475D3BTL | Min Rate (Mbits/sec) | | |
| | Vendor SN | N7DCD8L | Max Rate (Mbits/sec) | | |
| | Vendor Rev | A | Power Level Type | Average Power | |
| | 😮 Min Rx Level (dBm) | -21.0237 | 🥪 Max Rx Level (dBm) | 0.9999 | |
| | 🥝 Min Tx Level (dBm) | -7.9997 | 🚱 Max Tx Level (dBm) | 0.9999 | |
| | Diagnostic Monitoring | 1 | Diagnostic Byte | 104 | |
| | Module ID | SFP | | | |
| Reset Test to | Transceiver 10G E | lase-LR | | | |

Figure 6: Setup, Interface/Connector/SFP



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.

| Test | ige cayer 5 trainic term 🗙 | | | WINCS THST | | | |
|------------|----------------------------|---------------|--------------------------|-----------------|--|--|--|
| nterface | Length Type | Packet Length | Calc. Frame Size (Bytes |) 64 | | | |
| nemer 2 | Packet Length (Bytes) | 46 | • | | | | |
| | Version | IPH Length | TOS/DSCP | Packet Length | | | |
| apture | Identi | fication | Flags | Fragment Offset | | | |
| lters | TTI | | Protocol | Header Checkcum | | | |
| imed Test | | Sour | ce/Destination Addresses | | | | |
| | Options | | | | | | |
| | | | Data | | | | |
| | Source IP Type | Static | Source IP | 192.168.1.9 | | | |
| | Default Gateway | 192.168.1.1 | Subnet Mask | 255.255.255.0 | | | |
| | Destination IP | 192.168.1.2 | Ping | | | | |
| | | | | | | | |

Figure 8: Setup, IP



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.
- 2. 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.
- 4. Select the **Laser** tab in the **Actions** panel.
- 5. Press Laser off . The button will turn yellow and be relabeled Laser .
- 6. Press the **Restart** soft key.
- 7. Verify the following:
 - Summary LED is yellow.
 - Signal Present LED is green.
 - Sync Acquired LED is green.
 - **Link Active** LED is green.

► For 10/100/1000M Copper Interfaces:

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



Figure 9: Inspect Before You Connect

| ding ARP request fo d (dBm) -3.1 Drv (ppm) 23.1 | On + Traffic + | 0 (lowert) | | | | |
|---|----------------------------|-----------------|---|--------------------------|------------------|-----------------|
| Dev (ppm) 23.1 | Auto Neg. Test Mode V | LAN ID Priority | 192.168.1. Destination | 11 Ping 46 | ¢ Packet Size | |
| | Summary | Status | : | Summary | ÷ SLA / KPI | |
| summary | Acterna Test Parket Detect | | OFF | Throughout Current | - | Re |
| Signal Present | receive restruction percet | | . OII | Rx Mbns L1 | 1.07 | 0.0 |
| Sync Acquired | | | | Tx Mbps, L1 | | 0.0 |
| Frame Detect | | | | Rx Mbps, L2 | | 0.0 |
| IP Packet Detect | | | | Tx Mbps, L2 | | 0.0 |
| SVLAN Frame Detect | | | | Rx Mbps, L3 | | 0.0 |
| Stacked VLAN Detect | | | | Tx Mbps, L3 | | 0.0 |
| History | | | | Frame Loss - FLR 🖃 | | |
| | | | | Lost Frames | | Unavailable |
| | | | | Prame Loss Ratio | (ur) 🖂 | Onavailable |
| | | | | Average | (03) 🖻 | Unavailable |
| | | | | Current | | Unavailable |
| | | | | Maximum | | Unavailable |
| | | | | Packet Jitter - FDV (us) | 8 | Enh |
| | | | | Average | | Unavailable RFC |
| | | | | Max Average | | Unavailable |
| | | | | Peak | | Unavailable |
| | | | | Instantaneous | | Unavailable |
| | | | | * 1 8 1 8 | | |

Figure 10: Optical Interface Results



LOOP UP

The OneAdvisor may be looped up by the following methods. Once looped, the OneAdvisor will reflect all received test packet after inverting Source and Destination MAC addresses and IP addresses.

- 1. Unicast Loop up message:
 - The OneAdvisor will respond to VIAVI Layer 3 Loop up messages and enter LLB mode.
- 2. Manual Local Loopback:
 - Select the Actions Panel and tap to manually enter LLB mode.
 - ► Tap _____ again to exit **LLB** mode when the test is complete.

In either case, real-time results can be viewed in the left and right results window, as the test progresses.



Figure 11: Loop Up message response

| Running 35s | Ethernet Payload | | | | THUS IN | |
|--------------------------|------------------------------------|------------------|----------|--------------------------|--------------|-------------|
| 3 messages (dBm) -3.1 | On + Traffic + Auto Neg. Test Mode | 192.168.1.1 Ping | 46 Pa | ¢ cket Size | | |
| | Summary | a Status | | Summary | \$ SLA / KPI | |
| ummary | Acterna Test Packet Detect | | OFF | Throughout Current E | | |
| ignal Present | | | | Rx Mbps, L1 | | 0.0 |
| yric Acquired | | | | Tx Mbps, L1 | | 0.0 |
| rame Detect | | | | Rx Mbps, L2 | | 0.0 |
| Packet Detect | | | | Tx Mbps, L2 | | 0.0 |
| ILAN Frame Detect | | | | Rx Mbps, L3 | | 0.0 |
| acked VLAN Detect | | | | Tx Mbps, L3 | | 0.0 |
| | | | | Frame Loss - FLR 🗄 | | |
| | | | | Lost Frames | | Unavailable |
| | | | | Packet litter - EDV (us) | | Unavanable |
| | | | | Average | | Unavailable |
| | | | | Max Average | | Unavailable |
| | | | | Peak | | Unavailable |
| | | | | Instantaneous | | Unavailable |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | * | | | 00 | | |
| | Lase Actions | Peak IFG Errors | Capture | | | |
| | | | | | | |

Figure 12: Manual LLB

| Running 1m:34s | Ethernet | Ethernet Payload | | | | | |
|---|------------|------------------------------|----------|---------|---|-------------|--|
| 11 messages | On + Tra | ffic = 192.168.1.1 | 1 Ping | 46 | • | | |
| | Summary | Status | · |) Pac | Summary | a SLA / KPI | |
| Byear Prevent Synck Acquered Shark Arrange Shark Acquered Shark Arrange Shara | | ALL SUMMARY RESULTS OK | | | R: Mbps. L1 T: Mbps. L1 T: Mbps. L2 R: Mbps. L2 R: Mbps. L2 R: Mbps. L3 R: Mb | | 1,000.0 1,000.0 761.9 761.9 547.6 547.6 0 0.0 12.216 12.148 22.831 0.032 0.281 4.020 0.030 |
| | Laser Acti | ons Peak IFG | Errors (| Capture | | | |
| | | | | optore | | | |

Figure 13: Real Time Results

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