

Integris™ 1000

C-RAN Performance Tester

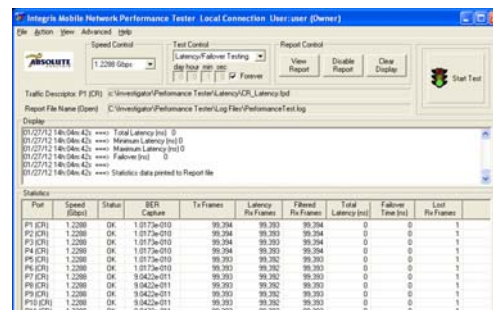
Monitor and Measure the Performance of Cloud-RAN Networks

Overview

The Integris C-RAN Performance Tester is ideal for testing access networks that use DWDM or CWDM as their transport, as these types of networks require monitoring and testing of multiple points in the network to ensure performance will meet specifications. Gigabit Ethernet, CPRI, and OBSAI protocols are supported.

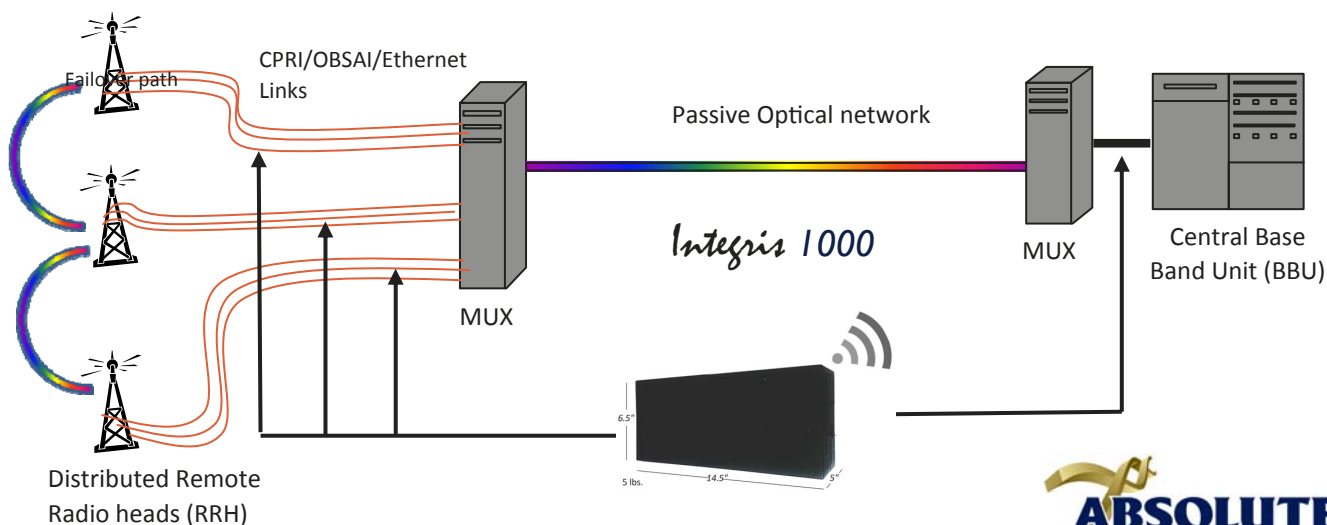
Key Features

- Increase reliability of your network by measuring real time performance for
 - ◇ Bit Error Rate (BER)
 - ◇ Latency
 - ◇ Failover/Recovery switch time
 - ◇ Transmitted frames
- Test Gigabit Ethernet, CPRI, OBSAI on DWDM or CWDM or uncolored optics all with the same hardware test platform.
- Full support for testing **Layer 1** (physical layer) up to **Layer 4** (transport layer).
- Portable and compact chassis for **laboratory or field testing**

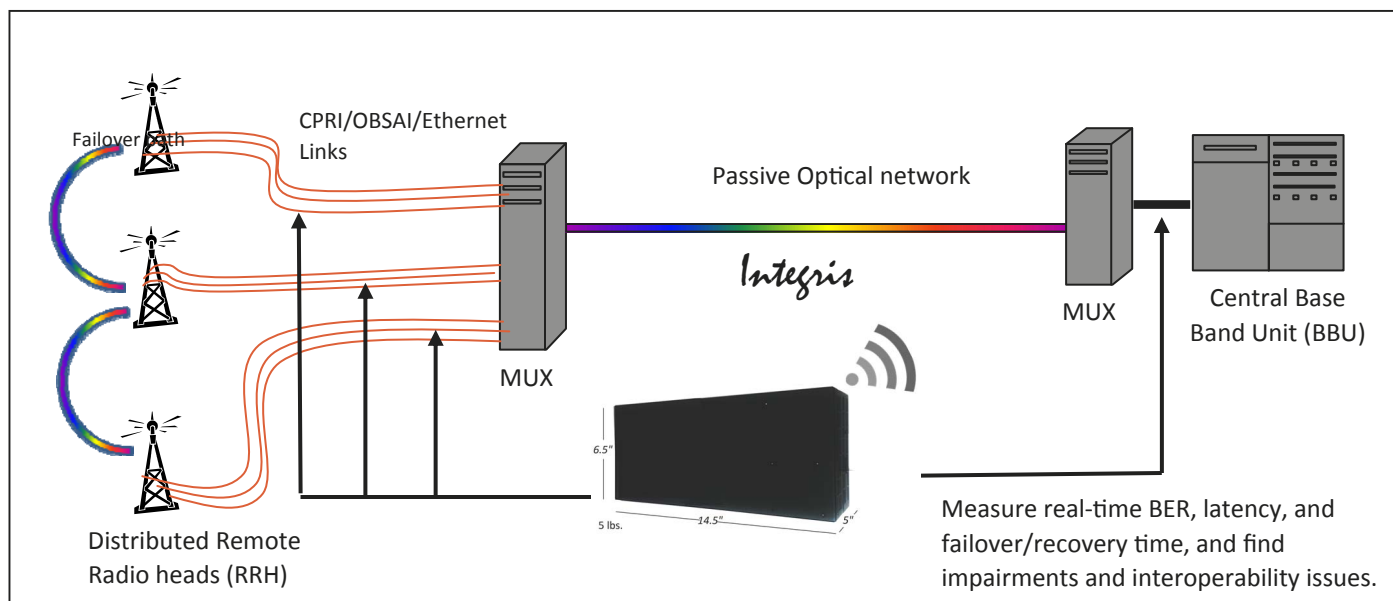



Port	Speed (Gbps)	Status	BERs Captured	Tx Frames	Latency (µs)	Filtered Rx Frames	Total Latency (ms)	Failover Time (ms)	Lost Rx Frames
P1 (CR)	1.2208	OK	1:0175w-010	99,204	99,203	99,204	0	0	1
P2 (CR)	1.2208	OK	1:0175w-010	99,204	99,203	99,204	0	0	1
P3 (CR)	1.2208	OK	1:0175w-010	99,204	99,203	99,204	0	0	1
P4 (CR)	1.2208	OK	1:0175w-010	99,204	99,203	99,204	0	0	1
P5 (CR)	1.2208	OK	1:0175w-010	99,203	99,202	99,203	0	0	1
P6 (CR)	1.2208	OK	1:0175w-010	99,203	99,202	99,203	0	0	1
P7 (CR)	1.2208	OK	9:0425w-011	99,203	99,202	99,203	0	0	1
P8 (CR)	1.2208	OK	9:0425w-011	99,203	99,202	99,203	0	0	1
P9 (CR)	1.2208	OK	9:0425w-011	99,203	99,202	99,203	0	0	1
P10 (CR)	1.2208	OK	9:0425w-011	99,203	99,202	99,203	0	0	1
P11 (CR)	1.2208	OK	9:0425w-011	99,203	99,202	99,203	0	0	1

Integris 1000 Chassis and Software GUI



Sample Application: RRH to BBU Performance Testing



Meeting the LTE Challenge

Network operators must meet the bandwidth requirements of today's LTE and 4G networks by having proper test plans to ensure reliability, performance, and quality of service. Integris provides the test functionality to meet these requirements.

Confidence in Network Performance

Integris is a tool designed to completely cover as many scenarios as possible. Thorough testing instills confidence in network performance. Integris does this by not only testing for compliance, but also including different stress testing capabilities.

Meeting Time to Market Demands

Test and debug can often use up to 50% of a product development cycle. Integris helps reduce this time by providing the ability to locate misbehaving devices in the network quickly, and then debugging these devices at a deep packet inspection level. No other tool can provide this information quickly.

Reduce Testing Costs

Mobile networks are complex, often containing multiple media types and multiple technologies. The multi-function, multi-technology Integris is designed so test engineers will not have to purchase several pieces of test equipment to validate their mobile network performance.

Where to Use *Integris*

Integris is a perfect fit for both laboratory testing and field testing, at each stage of the network lifecycle.

- **Research & Development:** Quickly evaluate different network topologies, configurations, and vendors without needing to spend money on multiple pieces of equipment. Integris provides all you need for performance testing in one box.
- **Equipment Benchmarking:** Understand which devices will meet your network specifications by being able to characterize each device individually.
- **Interoperability Testing:** Know exactly which devices are not interoperating with your network. Stress each device individually to check for proper error recovery.
- **Pre-Deployment Testing:** Test the full end-to-end performance of the network while still in the lab. Find network impairments and interoperability issues quickly.
- **Field Testing:** Use our portable field module to quickly test for connectivity and performance. Capture link traces to send back to the lab for further analysis.



Obtain the Performance Data You Need

The Integris GUI below exhibits the complete picture for testing your network. Up to 32 ports are available, depending upon configuration.

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The screenshot shows the main GUI of the Integris Mobile Network Performance Tester. Key components are labeled as follows:

- Link Speed Control:** A dropdown menu set to 1.2288 Gbps.
- Test Definition:** Includes a dropdown for 'Latency/Failover Testing' and a timer set to 00:01:00 with a 'Forever' checkbox.
- Report File:** A text field showing the path 'C:\Investigator\Performance Tester\Log Files\PerformanceTest.log'.
- Test Start Button:** A green traffic light icon labeled 'Start Test'.
- Latency Measurements:** A text area showing test results for Total, Minimum, and Maximum Latency (ns) and Failover (ns).
- Failover (Redundancy) Measurement:** A text area showing statistics data printed to the report file.
- Individual Port Measurements:** A large table with columns for Port, Speed (Gbps), Status, BER Capture, Tx Frames, Latency Rx Frames, Filtered Rx Frames, Total Latency (ns), Failover Time (ns), and Lost Rx Frames. It lists 32 ports (P1 to P32).
- Traffic Test Pattern Selection:** A dropdown menu.
- Port Control:** A set of buttons for 'Configuration', 'Select Descriptor', 'Enable/Disable Ports', and 'Clear All Statistics'.

Multiple Protocol Port Configuration

Multiple technologies are supported in a single platform, and are defined in the Port Configuration window. Here is an example of both CPRI and Ethernet defined within the same box.

The screenshot shows the 'Integris Configuration' dialog box. It contains the following information:

- Message: 'Please choose the new Interface Card personalities before selecting OK.' with 'OK' and 'Cancel' buttons.
- Connection: 'Connected to the IP Address: 127.0.0.1(This Computer)'.
- Ports 1,2: Voyager 800, Protocol Type: CPRI, Rate: 1, 2, 3.07, 3.68, 5, 6 Gbps.
- Ports 3,4: Voyager 800, Protocol Type: Ethernet, Rate: 1, 2, 3.07, 3.68, 5, 6 Gbps.



Integris 1000 C-RAN Performance Tester

Summary of Features and Specifications

<i>Application</i>	Measure performance of WDM equipment for RAN networks: <ul style="list-style-type: none"> • Research & Development laboratories • Equipment benchmarking • Pre-Deployment testing • Field testing
<i>Test functions</i>	Latency (point to point, round trip), recovery (failover) delay, BER measurements, trace capture of error conditions
<i>Test Port Interfaces</i>	SFP, Universal Push/Pull (UPP), single or multi-mode
<i>Protocol Support</i>	Ethernet 10/100/1000Base-T and 1000Base-X CRPI 1.2288, 2.4576, 3.072, 4.9152 and 6.144Gbps (up to version 4.2 of the CPRI specification) OBSAI RP3 1.536, 3.072 and 6.144Gbps (up to version 4.1 of the OBSAI specification)
<i>Chassis Types</i>	Portable Unit: 4 ports or 8 ports
<i>Display Features and Resolution</i>	Wireless 8" Tablet drives external chassis
<i>Storage and I/O Interfaces</i>	2x USB 2.0, 1x Ethernet 10/100/1000Base-T 1x VGA
<i>Power Supply</i>	Input 100—240V, 50—60 Hz
<i>Size and Weight</i>	14.5" x 6.5" x 5" 5 lbs.
<i>Environmental Specifications</i>	Operating Temperature -4 to 122 F, --20 to + 50 C
<i>Ordering Information</i>	AA-Int04-T Integris 4 full-duplex SFP ports AA-Int08-T Integris 8 full-duplex SFP ports -Optional high port count rack mount option -Optional SFP transceivers (1310nm, 1550nm, RJ45)

Information included in this overview is subject to change without notice.
 CPRI is a trademark of Nokia Siemens Networks.

Training

Absolute Analysis offers comprehensive training courses for products and protocols. Training can be provided at your location or remotely, and can be customized to your requirements.

Service and Support

Absolute Analysis provides unsurpassed service to all Integris users including remote diagnostics, extended warranties, and upgrade paths to current offerings from any Investigator™ system.

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