

Error Injection Solutions

Absolute Investigator™ Error Injector

Conduct TRUE Multi-Protocol, Multi-Speed Testing in *Real-Time*

- ◆ *Study network behavior*
- ◆ *Check fail-over recovery systems*
- ◆ *Simulate impairment effects*
- ◆ *Report corruption*

Real-Time Error injection

Use the Absolute Investigator™ Error Injector to test the recovery of systems and line failures for communications using Fibre Channel and Ethernet, including AFDX, iSCSI, IP, IPv6, TCP, and other Ethernet-based protocols.

The Absolute Investigator™ Error Injector's unrivalled integrated functionality with our entire Investigator™ test suite enables time-correlated, multi-protocol, multi-speed testing. Conduct deep diagnostics and follow-up with comprehensive reporting using our feature-rich Absolute Investigator™ Protocol Analyzer, just one of the many test solutions available in our Investigator™ product line.

Available Speeds and Protocols Supported

- ◆ 1Gbps through 10Gbps Fibre Channel
- ◆ 1Gbps and 10Gbps Ethernet
- ◆ 10Gbps FCoE
- ◆ AFDX, iSCSI, IP, IPv6, TCP, and other Ethernet-based protocols
- ◆ Custom and Proprietary Protocols

One Architecture

Absolute Investigator™ features the most flexible, scalable and versatile instrument for protocol test and verification. The architecture is extensible to support multiple protocols and multiple test applications to meet the expanding requirements of various network topologies.

Perform negative testing to make your system more robust and verify that fail-over recovery works in the correct sequence with the Absolute Investigator™ Error Injector

True Protocol Testing

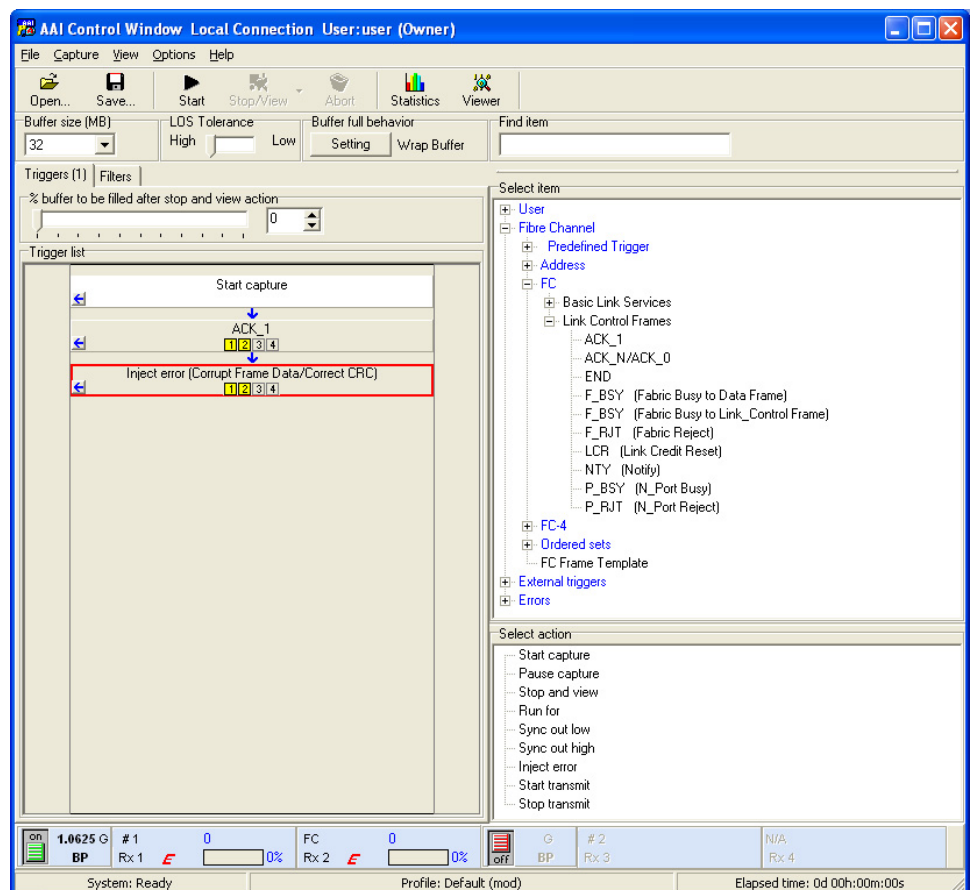
A unique strength of the Investigator™ Error Injector is the ability to use the full triggering and filtering functionality of the Investigator™ Protocol Analyzer. This multi-stage, triggering state analyzer transforms simple error injection on a matched frame into TRUE protocol testing, where multiple states within a protocol must occur – *in sequence* – before the error injection will take place.

- ◆ Inject real-time sequential errors with the only test solution on the market that allows up to 10Gbps test.
- ◆ **Replace data** on the link with user-defined data in **real time**
- ◆ **Corrupt values or remove events** from the link to replace data and simulate slow device response times
- ◆ Recalculate and insert CRC values automatically where applicable
- ◆ Integrate proprietary protocols into error injection
- ◆ Generate custom test patterns for custom applications with Investigator™ Protocol Database Editor and application software

Specifications

- ◆ Configured in port pairs
- ◆ Sits invisibly, in-line between two devices
- ◆ Hardware enabled by firmware (FPGA)

Error Injector



The Absolute Investigator™ Error Injector works in conjunction with all of these Absolute Analysis Solutions

Absolute Investigator™ Error Injector can work alone to test your storage network or devices and to test the quality of the physical layer connectivity. It can also in conjunction with Absolute Investigator™ Traffic Generators and Protocol Analyzers providing you with the freedom to test completely, from physical layer connectivity to upper layer protocols, and from static protocol analysis to dynamic protocol analysis.

Traffic Generator

Absolute Investigator™ Traffic Generator allows the user to generate traffic into a Device Under Test (DUT) with complete control over the timing and content of the data. Valid and invalid traffic streams can be defined to test device error recovery. The traffic generator's ability to maintain full-line rate traffic, even across multiple links, allows device performance to be measured and operation under stress to be characterized.

Impairment Tester

The Impairment Tester sits invisibly, "in-line" between two devices to allow you to insert programmable delays on all traffic while simultaneously tracking the system's reaction to the delay.

Use the Absolute Investigator™ Impairment Tester for compliance, error identification, and delay determination. With our unique integrated functionality you can confidently test multiple protocols at multiple speeds and then generate comprehensive reporting and deep diagnostics.

Bit Error Rate Tester

The Bit Error Rate Tester (BERT) allows the user to send both framed and unframed bit error rate test patterns through a link to test its ability to reliably transport data between the transmitter and the receiver. Several standard test patterns are available and user-defined test patterns are supported.

API Library

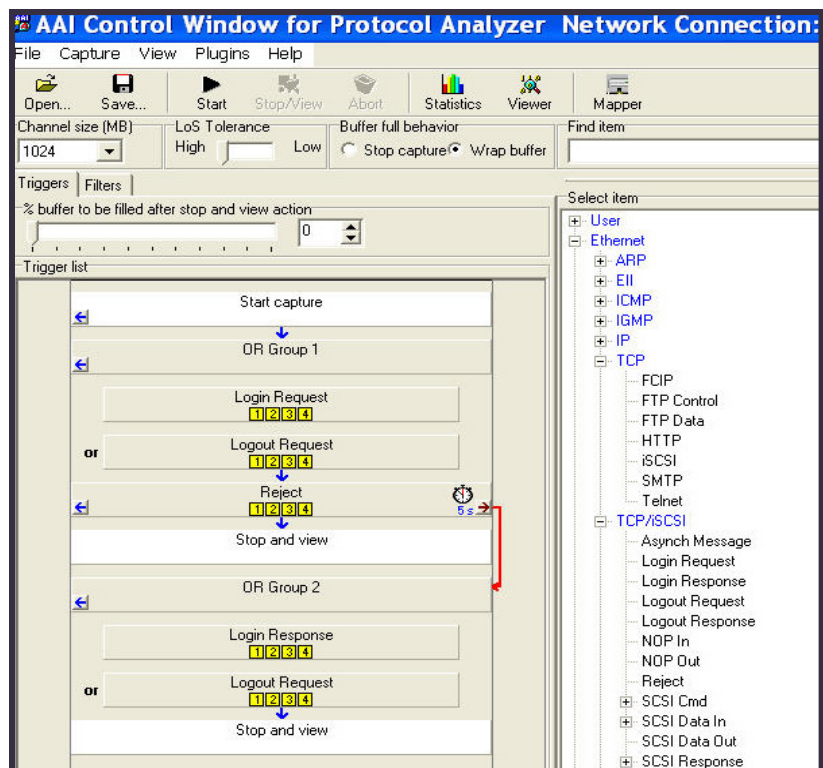
The API Library is a 'C' API that provides the user with programmatic control over all the Absolute Investigator™ tools. Using the API Library, the user can write custom applications that function over the platform or create code for test automation.

Network Connections

The Absolute Investigator™ platform supports Small Form Factor Pluggable modules (SFP's) to allow the user to easily switch between various optical and copper physical layers. Passive optical taps are also available where the circumstances dictate that the insertion of the test tool cannot disrupt the network traffic. (Protocol Analysis only.)

Platforms and Configurations

Absolute Investigator™ Solutions are available in several platforms ranging from highly portable notebooks to high port count rack mounts.



Capture
Control
Analyze

Absolute Investigator™ Protocol Testing Solutions

Absolute Investigator™ has been designed from the ground up to be a multi-speed, multi-protocol, multi-function test platform.

Absolute Investigator™ is used in the development, qualification, manufacturing and support of equipment with external or embedded communications interfaces. These communications interfaces can be based on industry standards or Absolute Investigator™ can also be customized to support non-standard interfaces and protocols.

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 needs.

Absolute Investigator™ Architecture

Service & Support

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

APPLICATIONS

API for Test
Automation

User Administration
and Security

SOLUTIONS

Analyzers

Traffic
Generators

Protocol
Editor

Error
Injection

Impairment
Test

Expert
Analytics

B.E.R.T

PROTOCOLS

Ethernet
FCoE, iSCSI, IPv6, TCP

AFDX

CPRI™/
OBSAI

Fibre
Channel

SAS/
SATA

Serial
FPDP

Custom
Protocols

↑ Investigator™
Software

↓ Investigator™
Hardware

PLATFORMS

Mini
Desktop

Mini
Desktop

Small
Portable

Large
Portable

Rack
Mounts

Three
Screen

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