

# VIAVI

## Xgig 10G Ethernet/FCoE Jammer

The VIAVI Solutions Xgig® Jammer is a powerful tool to modify contents, insert errors and manage streams on full line rate live traffic. Xgig 10 Gigabit Ethernet/FCoE Jammer is specifically designed for Ethernet Data Center applications to ensure the Data Center Ethernet and FCoE networks recover from all error conditions without data loss or corruption. The FCoE Jammer also offers the unique capability to lively manage the traffic flow and measure the Priority Flow Control (PFC) performance of the converged Ethernet for data center applications.

With Xgig Jammer, network managers can manipulate live traffic on a link or network to simulate errors in real time, and verify that the recovery process operates as expected via Xgig Analyzer cascaded with it. The Xgig Jammer normally acts as a digital pass-through device passing network traffic (see figure 1). However, when it encounters a user-defined event (trigger condition) within network traffic, it either replaces the trigger contents with new information or insert new frame provided by the user.

For example, a PFC frame can be inserted in one direction to pause the traffic in the other direction. The frame injection can be repeated per user definition. (see figure 2)

### Key Features

- Discover and utilize any Jammer on the network via Port Selection Dialog
- Supports error injections in FCoE and FIP frames
- Modify bits, bytes and words
- Truncate or delete a frame
- Jam order sets/primitives
- Insert a complete frame or repeat the trigger frame

### Benefits

- Pass, overwrite or recalculate the CRC and Checksum
- Pass, overwrite or recalculate the CRC for the embedded Fibre Channel frame in the FCoE frame
- Operate in any topology with any upper-level protocol
- Supports data rates of 1 and 10 Gigabit Ethernet

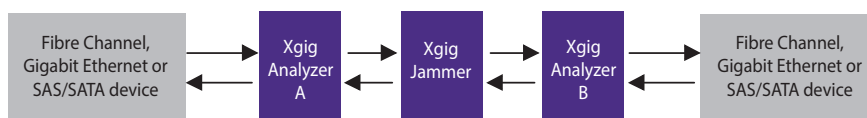


Figure 1

## Jamming Options

Jamming events can be Ordered Sets or frames. The following list details the events on which the Jammer can operate:

### Ordered Set and Primitive Modification

- Replace an Ordered Set and primitive with another Ordered Set and primitive or corrupt it with errors

### Frame Modification

- Any word in a frame may be replaced by a user-defined value or changed randomly
- Frames may be truncated or replaced with Idles or other Ordered Sets
- CRC and checksum may be corrected creating a valid frame or packet
- Insert one or multiple bit errors in the designated fields

### Frame Insertion

- Insert a pre-defined frame after the trigger frame
- Repeat the trigger frame

## DWORD Insertion

- Insert a pre-defined DWORD anywhere in the trigger frame

## Exact Frame Jam

- Modify the trigger FCoE frame to be longer or shorter
- Break one FCoE frame to two FCoE frames
- Merge two FCoE frames into one FCoE frame

## Triggering Configuration

Configuration of trigger conditions allows the following logic options:

- **ARM:** defines the frame or Ordered Set prior to the ones to be modified
- **TRIGGER:** defines the frame or Ordered Set to be modified
- **AM:** defines modifications to be made to the Trigger target
- **ROLLBACK:** defines the time or word count parameter allowed to look for the Trigger after finding the Arm, before returning to look for the Arm again

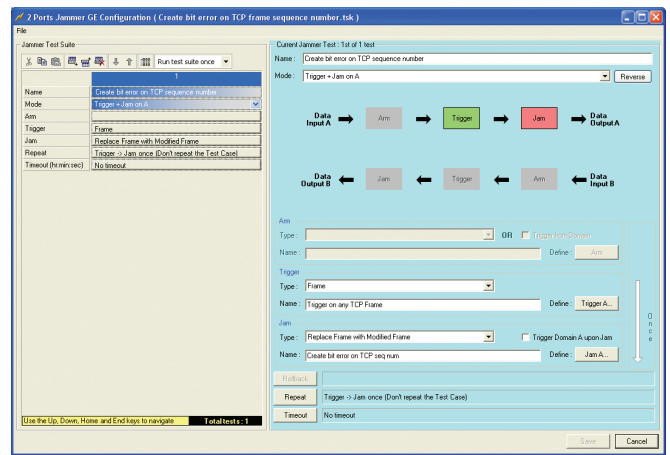


Figure 2

## General Features

- Execute multiple jam tests from a test stack
- Triggers shared with other Xgig devices (analyzer) in the same Xgig domain

## Automation Test

For automated testing, FRunner allows users to control Xgig Jammer through scripts. FRunner supports any combination of customized triggers and controls, and can be called from Perl, C and Tcl based APIs are also available for automation scripts.

## Use With Xgig Analyzer

The Xgig Jammer may be used in conjunction with one or more Xgig Analyzers to capture modified traffic and the system response to that traffic. The Jammer can trigger the Analyzer or the Analyzer can arm the Jammer.

## Maestro

The Jammer hardware is controlled by Finisar's Maestro software suite (see figure 3).

Maestro is the controller for Xgig generation products. Except for Jammer, other functions supported by Maestro include a protocol-aware Fibre Channel and Gigabit Ethernet BERT (Bit Error Rate Test) and SAS/SATA Generator.

Maestro allows management of multi-tests in the same screen. The pre-defined jamming configurations listed in the configuration manager **1** can be drag-n-drop directly to the device column **2**. The configurable device column summarizes the detailed status information of each port. The bottom ports manager **3** is used to control multi-port tests together and lists the short version of port status.

Xgig Maestro operates under Windows 2000, Windows XP, Window Vista Business and Premium, and Windows Server 2003.

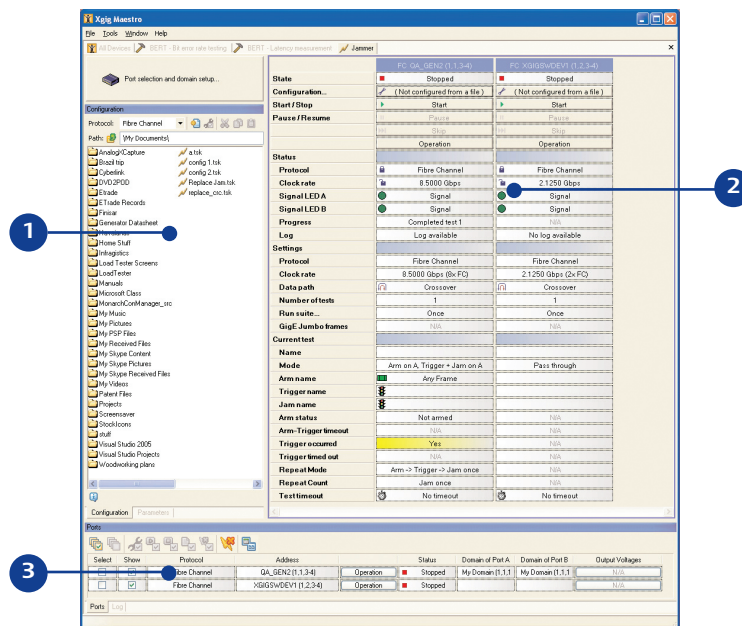


Figure 3