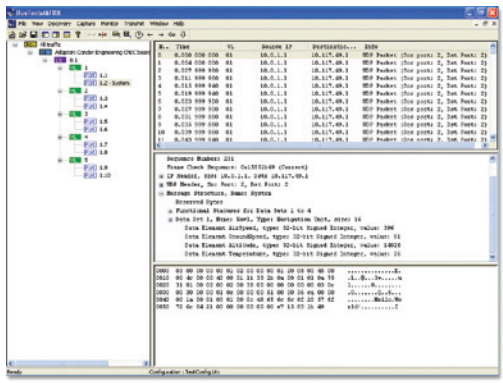
GE
Intelligent Platforms



BusTools/AFDX

Features

- Easy-to-use, intuitive, multi-window displays
- Traffic sorter view with Auto-Discovery
- Simultaneous real-time monitoring and logging
- Create Message Structures via XML importing or drag-and-drop
- Apply Message Structures to End System, Virtual Link (VL) and Port views
- Display message data in Engineering Units
- Flexible AFDX Frame Analysis with statistics
- High-resolution Timestamping
- Advanced, multi-level triggering and filtering
- Log data simultaneously at Port, VL or All Traffic levels
- Replay (or loop) previously captured files and apply message structures to view data
- Supports GE Intelligent Platforms' CNIC or standard NIC interfaces

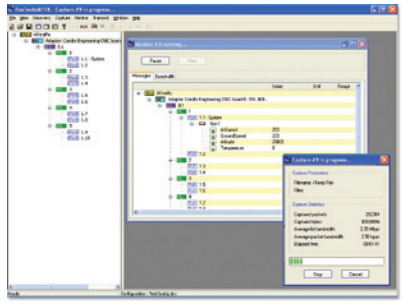
BusTools/AFDX is a Microsoft® Windows® XP/2000-based GUI application solution that establishes new levels of power, flexibility and ease-of-use for AFDX (Avionics Full Duplex Switched Ethernet) traffic monitoring, analysis and simulation. Available for use with GE Intelligent Platforms' powerful CNIC interface or a standard NIC card, BusTools/AFDX offers an intuitive interface to view, log, analyze and generate AFDX network traffic at the Adapter, End System, Virtual Link (VL) and Port levels.

Auto-Discovery

Starting from the Network Discovery window, GE's exclusive, high-level Auto-Discovery feature provides the user with an immediate overview of all network traffic. Utilizing a familiar "Tree" view, you can instantly drill-down thru Adapters, End Systems, VLs and Ports to quickly survey your network configuration. Simply select the level you wish to view, then right-click, and BusTools/AFDX gives you immediate context menu access to packet summaries, dissected packets (MAC/IP/UDP headers, message structures, etc.) and raw hex data. Each layer of data is presented in resizable windows that can be easily organized to meet individual user requirements.

Simultaneous Real-Time Monitoring and Logging

Coupling BusTools/AFDX with GE's two-channel CNIC interface gives you the power of our exclusive pipelined DMA architecture. BusTools/AFDX simultaneously supports real-time monitoring while logging fully loaded traffic to disk storage. Apply Message Structure definitions, and then monitor Data Elements in real-time with engineering unit displays. View real-time statistics – packet count, byte count and



bandwidth. Capture, view and dissect data from multiple levels simultaneously in engineering units or hex. Received packets are time-tagged with 20 nanosecond resolution for analysis or playback. Logged data can be replayed or looped with accurate timing.

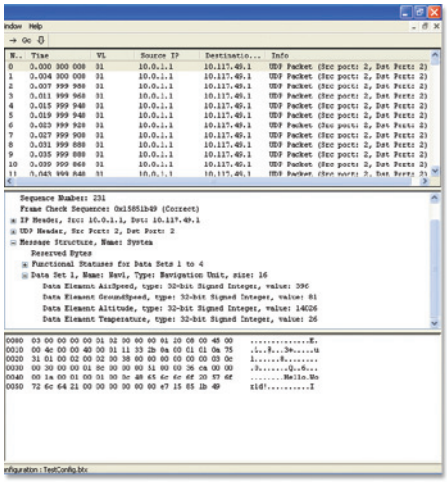
GE's CNIC interface is the only AFDX interface currently available in the industry that supports the most demanding ADFX traffic without data loss (full-rate with small packet sizes and large numbers of VLs and ports). Contact GE Intelligent Platforms for actual test results.

Filters and Triggers

BusTools/AFDX provides advanced filtering and triggering functionality that is supported by a simple and intuitive user interface. As with many other BusTools/AFDX features, Filters and Triggers are structured in a hierarchical fashion in the form of "Trees." Filters can be used to screen the packets according to complex Boolean rules and can be used during network traffic capture, both at the protocol level and at the Data Element level.

Triggers associate a condition with an action. Triggers utilize Filters for activation and for data reduction, and are easily used to detect irregular conditions or to automate recurrent tasks.

BusTools/AFDX



Data Centric Analyzer

BusTools/AFDX utilizes a Message Structure/DataSet/DataType architecture for managing your ICD information by translating packet payload data into engineering unit information. Packet Headers, Payloads and Message Structures can be examined in the capture viewer while different Data Elements are simultaneously displayed in real-time monitor viewers. Advanced Boolean logic filtering tools can be applied to Message Structures, and intuitive, drag-and-drop techniques may be used to manually create AFDX Datasets, Message Structures and Port assignments. Captured/logged AFDX data is presented in a three-panel user-configurable viewer. The top panel provides a list view where each row summarizes corresponding identification for each packet. The middle panel contains a "dissection" of an individual packet selected in the top panel. Header and payload information (in engineering units, if message structures have been applied) are displayed in the middle panel. The bottom panel displays a hex dump of the packet selected in the top panel.

AFDX Traffic Generation

BusTools/AFDX can accurately replay (or loop) previously captured log files. To quickly create new files, Filters can be easily applied while replaying a file and by logging again, a revised file is created for traffic generation.

Additional Features

Users can analyze AFDX header protocol formats. Advanced Boolean logic filtering tools can be applied to reduce traffic while utilizing triggering applied to packet headers or message content.

BusTools/AFDX Features

View AFDX bus traffic at Multiple Levels

- All Traffic
- Virtual Link Traffic
- By Port
- All incoming packets are time-stamped

Configure and View AFDX Message Structures

- Define Message Structures composed of Data Sets
- Define Data Sets composed of AFDX variabletypes
- Assign Message Structures to AFDX Tx Port messages
- View AFDX message data in engineering units
- All frames can be viewed in hex

Configure and View Virtual Link Traffic

- AFDX Frame Analysis
- MAC, IP, and UDP addressing formats
- MAC, IP, and UDP AFDX Header Profile Analysis
- AFDX Frame Statistics

Triggering and Filtering

- Multi-level triggering and filtering on Port, VLID or All Traffic message streams
- Based on Berkeley Packet Filter (BPF)
- Filters and triggers are implemented as BPF filter expressions
- Uses trigger/filter Elements (relational expressions), trigger/filter equations (Boolean expressions) and trigger sequences
- Trigger elements can be user-defined (message structures), or MAC, IP or UDP headers and addresses

Logging

- Log at Port, VL or All Traffic levels
- Duration of capture: unlimited, max packets, max bytes or max time
- Can apply filters or Start on trigger
- Message structures may be applied tologged data.

Ordering Information

BT-AFDX	*BusTools*/AFDX Network Analysis Software for AFDX/ARINC 664 (Windows XP/2000)

About GE Intelligent Platforms

GE Intelligent Platforms is a division of GE that offers software, control systems, services, and expertise in automation and embedded computing. We offer a unique foundation of agile and reliable technology providing customers a sustainable competitive advantage in the industries they serve, including energy, water, consumer packaged goods, oil and gas, government and defense, and telecommunications. GE Intelligent Platforms is headquartered in Charlottesville, VA. For more information, visit www.ge-ip.com.

GE Intelligent Platforms Contact Information

Americas: **1 877 429 1553** Global regional phone numbers are listed by location on our web site at **defense.ge-ip.com/avionics-contacts**

defense.ge-ip.com/avionics