
FIX Antenna C++

High-Performance FIX Connectivity for Electronic
Trading

WHERE FIX ANTENNA C++ IS USED

Exchange & Market Connectivity

Connectivity to major exchanges

Exchange Partnership Programs support, including MDGW and OEGW

FIX/FAST gateways for OMX technology-based exchanges

Market data and trading connectivity across multiple venues

Trading & Execution

Smart Order Routers

OMS and EMS platforms across multiple asset classes

Automated Market Making

FX algorithmic trading and market-making platforms

Interbank FX trading platforms

Post-Trade & Trade Capture

Drop Copy and Trade Capture connectivity

Integration with broker/dealer networks and other venues

FIX gateways for clearing and post-trade workflows

Enterprise & High-Performance Deployments

Replacement of legacy FIX engine infrastructure in FX and Rates

High-performance connectivity gateways for major US equity trading environments

Low-latency infrastructure for high-volume trading applications

FIX ANTENNA C++ FEATURES

100% FIX/FAST standard compliance (FIX 4.0 - 5.0 SP2, FIX Latest, FAST 1.1)

Customizable FIX protocol, user-defined tags and message types

Messages validation

Supports up to several hundred concurrent sessions on a single instance on recommended hardware

Each session can be configured separately. FIX Dialect can be configured for a session

Standard FIX routing based on DeliverTo and OnBehalfOf fields

Ability to create custom handler for any type of message

Ability to add custom pre-processing of messages before they will be handled by FIX Antenna

Guaranteed delivery

Relies on the store and forward technique

flat/memory mapped files used for persistence to achieve maximum performance

Later delivery mode to store unsent message and deliver then upon re-established connection

Rejecting mode to reject of messages not sent during some reasonable (customizable) time

Standard FIX authorization (Username & Password tags in FIX Logon message)

Native built-in TLS support

Auto-accept all incoming sessions or Auto-decline non pre-configured sessions

CORE DOMAINS

MESSAGING PROTOCOLS

SESSION MANAGEMENT

MESSAGES ROUTING

HIGHLY CUSTOMIZABLE MESSAGE PROCESSION LOGIC

DELIVERY MODELS

SECURITY

BUILT-IN REMOTE MONITORING AND ADMINISTRATIVE INTERFACE

PERFORMANCE

100,000+

messages/sec on a single CPU

500,000

messages/sec sustained throughput

500

current sessions at 1,000 messages/sec each

FIX CONNECTIVITY & SESSION MANAGEMENT

Supports Standard FIX

100% FIX standard compliance:

- FIX 4.0 – FIXT 1.1 session-level FIX versions
- FIX 4.0 – FIX Latest application-level FIX versions, EPs included
- FAST 1.1

Customizable FIX dictionaries with user-defined tags and message types

QuickFIX-formatted dictionaries

All FIX message types — pre-trade, trade, post-trade and market data

FIX messages validation

Guaranteed delivery

Standard FIX routing based on DeliverTo and OnBehalfOf fields

High-precision timestamps support

Session Management

Configure and run acceptor and initiator sessions

Session Qualifier support

Incoming and outgoing sequence numbers management

Intraday logout tolerance

Force sequence number reset on logon

Unexpected Logout and invalid Logon handling

Smart session scheduling

CRON expressions for sessions schedule accurate to the second

Support of different time zones

MONITORING & ADMINISTRATION



Built-in remote monitoring and administrative interface for sessions monitoring and management



Friendly XML-based DSL for administrative instructions



Public API to override and/or extend existing administrative instructions



Built-in WebUI



Logging to plaintext files



Logging with Log4cplus as system backend for writing logs to a log collector via TCP



Ability to log important lifecycle events in CEF format

PERFORMANCE TUNING & HIGH AVAILABILITY



Performance Tuning

Ability to enable or disable Nagle's algorithm to minimize latency or maximize throughput

Ability to configure the number of messages to be joined in a bunch before sending

Ability to dedicate threads for session for sending and receiving data

Ability to configure CPU affinity

Ability to use transient sessions which do not use any persistence



High Availability

Stores session state in an application-specified storage location

Allows backup application to continue sessions without data loss

API for applications to retrieve session state information

State replication tool

API for remote control of sessions

PERFORMANCE & RELIABILITY

High Throughput / Low Latency

100,000+ messages per second per CPU

500,000 messages per second of sustained throughput

500+ sessions on a single instance

Ready for use with Solarflare™ OpenOnload

Reliability and Redundancy

Switch to backup connection manually or automatically

Can be configured to work in a cluster as a part of HA solution

Limit the maximum number of connections waiting for Logon

Time limit for sending Logon messages before closing the socket

Denial of Service protection from buffer overflow attack

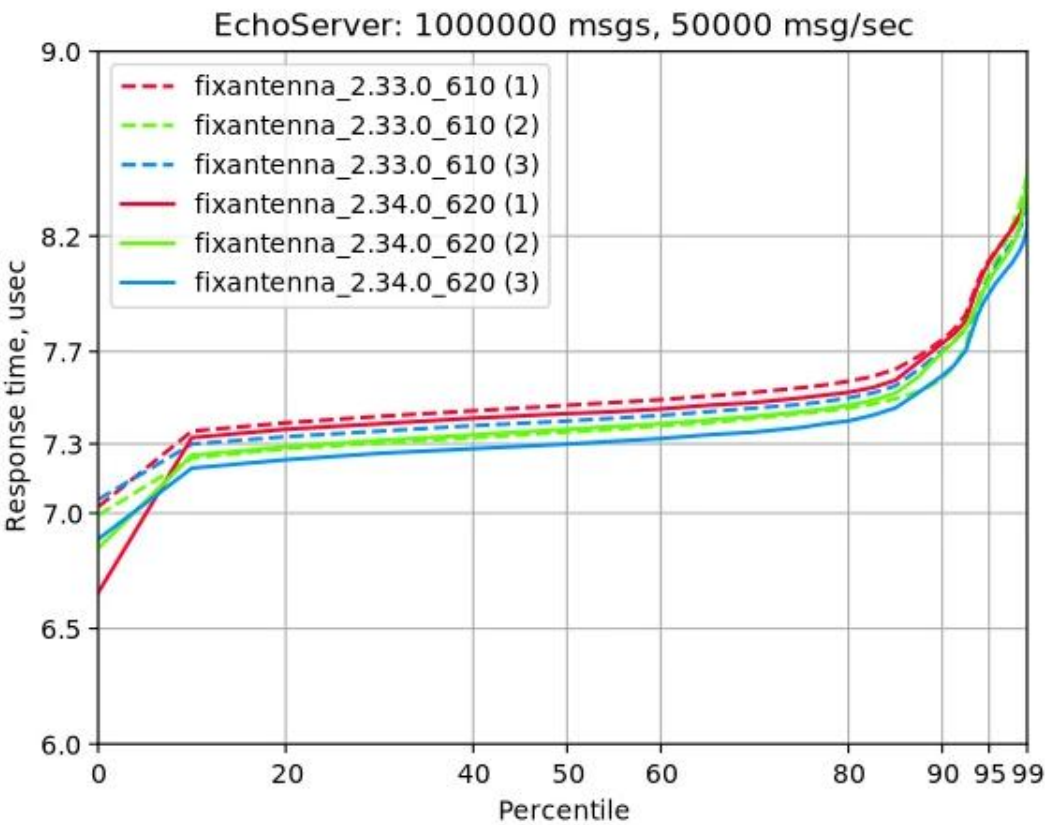
Ability to limit a memory buffer for incoming messages

PERFORMANCE

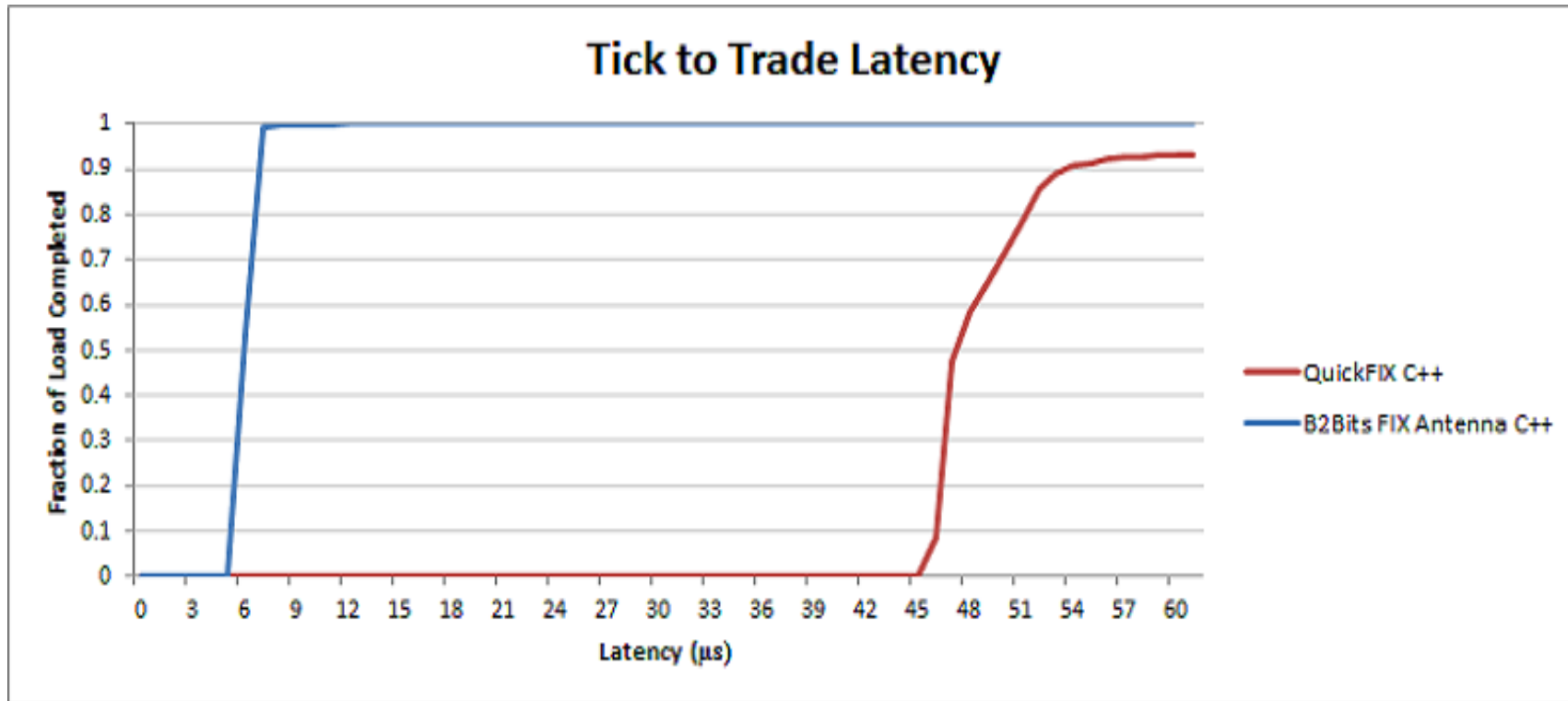
Single Session Echo Scenario

Single-Run Latency Comparison: FA 2.33.0 vs. FA 2.34.0

Metric	FA 2.33.0_610, usec	FA 2.34.0_620, usec
Min	7.024	6.652
Max	275.967	325.119
Median	7.467	7.431
Average	7.789	7.757
50%	7.467	7.431
75%	7.543	7.499
90%	7.751	7.735
95%	8.095	8.087
99%	8.3751	8.375
99.9%	137.215	137.343
99.99%	237.567	235.775



FIXAntenna C++ vs. QuickFIX (tick-to-trade)



8 times faster
in tick-to-trade
scenario

APIS

FIX Antenna C++ is a full implementation of FIX protocol. It provides the following main APIs for trading applications to:

Create multiple FIX sessions (initiators and acceptors)

Form/ Parse FIX and FIXML message

Form/Parse FIX and JSON message

Validate FIX message

Set sequence numbers

Configurable schedule for sessions

TLS support