



Simple Binary Encoding

Version 1.0

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v0.2

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Document History

Revision	Date	Author	Revision Comments
v0.1	Feb. 9, 2017	Don Mendelson Silver Flash LLC	Initial draft
v0.2	March 8, 2017	Don Mendelson Silver Flash LLC	Minor corrections

1 Introduction

The High Performance Working Group was formed with the goal of improving the fit-for-purposefulness of FIX for high performance.

Recent improvements in the speed of hardware, software, and network connections (such as in colocation solutions) are putting pressure on the FIX protocol and highlighting some inefficiencies of the current version of the protocol (e.g., excessive echoing of input values, inefficient encoding). New financial applications such as high-frequency trading and market data feeds pose new performance requirements. In recent years, several financial organizations have avoided the performance limitations of FIX and introduced new proprietary protocols that are optimized for speed. These proprietary interfaces have been offered, sometimes along with a FIX interface, to support high-speed transactions and/or data feeds.

The current performance limitations of FIX can be removed by making changes and additions at multiple levels of the protocol. At the *application* level, there is a need to define less-verbose versions of some FIX messages and to streamline the message flow. At the *presentation* level, there is a need to provide new encodings that are faster and more compact than the traditional Tag=Value encoding of FIX. At the *session* level, there is a need to specify a new lightweight session protocol with basic recovery options. The High Performance Working Group is drafting a set of specifications and guideline documents to address all these aspects.

This proposal entails the use of an FPL designed *Simple Binary Encoding* to produce fast and compact encodings of FIX messages.

Simple Binary Encoding provides different characteristics than other binary encodings. It is optimized for low latency. This new FPL binary encoding complements the existing only binary encoding developed in 2005 (FAST) with a focus on reducing bandwidth utilization for market data. In addition, the encoding is also defined and controlled within FPL only in contrast to the binary encodings proposals to encode FIX with Google Protocol Buffers and ASN.1

1.1 Authors

Name	Affiliation	Contact	Role
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2 Requirements

2.1 Business Requirements

It is proposed that Simple Binary Encoding (SBE) version 1.0 Draft Standard be promoted to Technical Specification. This will be the final specification of version 1.0.

We recommend that any new SBE adopters use this version and that any current users update to it as soon as possible.

If the High Performance Working Group makes any future changes or enhancements to SBE, that work will culminate in a later version, guided by the FIX technical standard process.

2.2 Promotion Criteria

As specified in the FIX technical standard process, the SBE Draft Standard has met the criteria for promotion.

2.2.1 Public Review

The Draft Standard was published in June 2016, so the criterion of no less than 6-months public review has been met.

2.2.2 Interoperable Implementations

To be promoted to Technical Standard, at least two interoperable implementations of the standard must be demonstrated. FIX Trading Community has published an SBE conformance test suite for this purpose.

The Real Logic implementation is considered the reference implementation for conformance testing. Even within the Real Logic umbrella, there are implementations of SBE in three programming languages (C++, Java and Golang), each one lead by a different principal author.

Now another implementer (GitHub project bwsoft/iris) has demonstrated interoperability with Real Logic (GitHub project real-logic/simple-binary-encoding) by passing the test suite.

2.3 Technical Requirements

Three minor errata were posted to the Draft Standard project, and the corrections were incorporated into the final specification to be published.

No changes were made to the wire format compared to Release Candidate 4.

3 Issues and Discussion Points

Several issues were posted to the GitHub project since the Draft Standard was issued. The working group will consider proposals for future enhancements. Some of the proposed changes would break back-compatibility with version 1.0 if accepted.

4 References

Reference	Version	Relevance	Normative
FIX Simple Binary Encoding Technical Specification	Final	Approved for promotion from Draft Standard to Technical Specification on Feb. 9 2017 by the FPL GTC.	Yes
GitHub project FIXTradingCommunity/fix-simple-binary-encoding		Final specifications as well as working drafts and issue tracking.	

5 Relevant and Related Standards

Related Standard	Version	Reference location	Relationship	Normative
None				

6 Intellectual Property Disclosure

Related Intellection Property	Type of IP (copyright, patent)	IP Owner	Relationship to proposed standard
None			

7 Definitions

Term	Definition

8 Simple Binary Encoding

8.1 Specifications

Full specifications for the Simple Binary Encoding are available in separate document (*FIX Simple Binary Encoding Technical Specification*). The standard defines wire format and message schema declaration. The specification was developed in GitHub project [FIXTradingCommunity/fix-simple-binary-encoding](https://github.com/FIXTradingCommunity/fix-simple-binary-encoding), and that project contains additional technical resources.

8.2 Schema

An XML schema (XSD) is provided to standardize XML message schemas. The XSD file is publicly available in GitHub project [FIXTradingCommunity/fix-simple-binary-encoding](https://github.com/FIXTradingCommunity/fix-simple-binary-encoding). The XML schema is also served by the address corresponding to its XML namespace, <http://fixprotocol.io/2016/sbe/>.

Appendix A - Usage Examples

Examples are provided in the specification document.

Appendix B – Compliance Strategy

Message schemas should be validated against the provided XML schema (XSD).