

FIX Performance Session Layer

V 1.1 Draft Standard

Technical Proposal

April 2019

v0.1

Proposal Status: Published

DISCLAIMER

THE INFORMATION CONTAINED HEREIN AND THE FINANCIAL INFORMATION EXCHANGE PROTOCOL (COLLECTIVELY, THE "FIX PROTOCOL") ARE PROVIDED "AS IS" AND NO PERSON OR ENTITY ASSOCIATED WITH THE FIX PROTOCOL MAKES ANY REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, AS TO THE FIX PROTOCOL (OR THE RESULTS TO BE OBTAINED BY THE USE THEREOF) OR ANY OTHER MATTER AND EACH SUCH PERSON AND ENTITY SPECIFICALLY DISCLAIMS ANY WARRANTY OF ORIGINALITY, ACCURACY, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. SUCH PERSONS AND ENTITIES DO NOT WARRANT THAT THE FIX PROTOCOL WILL CONFORM TO ANY DESCRIPTION THEREOF OR BE FREE OF ERRORS. THE ENTIRE RISK OF ANY USE OF THE FIX PROTOCOL IS ASSUMED BY THE USER.

NO PERSON OR ENTITY ASSOCIATED WITH THE FIX PROTOCOL SHALL HAVE ANY LIABILITY FOR DAMAGES OF ANY KIND ARISING IN ANY MANNER OUT OF OR IN CONNECTION WITH ANY USER'S USE OF (OR ANY INABILITY TO USE) THE FIX PROTOCOL, WHETHER DIRECT, INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL (INCLUDING, WITHOUT LIMITATION, LOSS OF DATA, LOSS OF USE, CLAIMS OF THIRD PARTIES OR LOST PROFITS OR REVENUES OR OTHER ECONOMIC LOSS), WHETHER IN TORT (INCLUDING NEGLIGENCE AND STRICT LIABILITY), CONTRACT OR OTHERWISE, WHETHER OR NOT ANY SUCH PERSON OR ENTITY HAS BEEN ADVISED OF, OR OTHERWISE MIGHT HAVE ANTICIPATED THE POSSIBILITY OF, SUCH DAMAGES.

**DRAFT OR NOT RATIFIED PROPOSALS** (REFER TO PROPOSAL STATUS AND/OR SUBMISSION STATUS ON COVER PAGE) ARE PROVIDED "AS IS" TO INTERESTED PARTIES FOR DISCUSSION ONLY. PARTIES THAT CHOOSE TO IMPLEMENT THIS DRAFT PROPOSAL DO SO AT THEIR OWN RISK. IT IS A DRAFT DOCUMENT AND MAY BE UPDATED, REPLACED, OR MADE OBSOLETE BY OTHER DOCUMENTS AT ANY TIME. THE FPL GLOBAL TECHNICAL COMMITTEE WILL NOT ALLOW EARLY IMPLEMENTATION TO CONSTRAIN ITS ABILITY TO MAKE CHANGES TO THIS SPECIFICATION PRIOR TO FINAL RELEASE. IT IS INAPPROPRIATE TO USE FPL WORKING DRAFTS AS REFERENCE MATERIAL OR TO CITE THEM AS OTHER THAN “WORKS IN PROGRESS”. THE FPL GLOBAL TECHNICAL COMMITTEE WILL ISSUE, UPON COMPLETION OF REVIEW AND RATIFICATION, AN OFFICIAL STATUS ("APPROVED") OF/FOR THE PROPOSAL AND A RELEASE NUMBER.

No proprietary or ownership interest of any kind is granted with respect to the FIX Protocol (or any rights therein).

Copyright 2003-2018 FIX Protocol Limited, all rights reserved.

Table of Contents

Auto-generate the entire table of contents (press F9) here - or customize up to 3 levels deep.

[Document History 4](#_Toc6381981)

[1 Introduction 5](#_Toc6381982)

[1.1 Authors 6](#_Toc6381983)

[2 Requirements 6](#_Toc6381984)

[2.1 Business Requirements 6](#_Toc6381985)

[2.1.1 WebSocket Transport 6](#_Toc6381986)

[2.2 Technical Requirements 6](#_Toc6381987)

[2.2.1 Mapping FIXP Messages to WebSocket 6](#_Toc6381988)

[3 Issues and Discussion Points 6](#_Toc6381989)

[4 References 7](#_Toc6381990)

[5 Relevant and Related Standards 7](#_Toc6381991)

[6 Intellectual Property Disclosure 7](#_Toc6381992)

[7 Definitions 7](#_Toc6381993)

[8 Deliverables 8](#_Toc6381994)

[8.1 Specifications 8](#_Toc6381995)

[8.2 Resources 8](#_Toc6381996)

[8.2.1 SBE Message Schema for FIXP 8](#_Toc6381997)

[8.2.2 Repository File for FIXP 8](#_Toc6381998)

[Appendix A - Usage Examples 8](#_Toc6381999)

[Appendix B – Compliance Strategy 8](#_Toc6382000)

# Document History

| **Revision** | **Date** | **Author** | **Revision Comments** |
| --- | --- | --- | --- |
| v0.1 | April 18, 2019 | Don Mendelson  Silver Flash LLC | Initial draft |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

The above document history section, including date, author, and comments, is required to track editing changes to the document. List revisions in **ascending order**. Please insert additional rows in the table as needed.

Template version information:

r0.0: 2013-03-13 Initial draft

r0.1: 2013-03-27

r0.2: 2013-08-16 Clarified Section 2, provided subsections for "Business Requirements" and "Technical Requirements". Updated instructions.

# Introduction

Provide an introduction to the content, purpose, or impetus of the proposal; the business need / problem being solved; and the scope. Include and label any references, supporting documentation, and related proposals. If the proposal is based on existing implementations, describe them here in the appropriate subsections. It is recommended that a "Summary of Proposed Changes" sub-section be provided within this section.

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 co-location 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.

FIX Performance Session Layer (FIXP) is a lightweight protocol designed to replace FIXT for high performance use cases. It supports both point-to-point exchange of application messages as well as multicasts for market data and the like.

Notable FIXP features:

* Negotiable delivery guarantees, supporting asymmetrical flows
* Separates session identifier from business entity identifiers
* Well isolated from other layers:
  + Binary encoding, but wire format independent for both session and application messages
  + Transport independent; works on TCP streams as well as datagram-oriented transports. Additionally, a usage profile is described in this Release Candidate for FIXP over WebSocket.

FIXP is currently in public of Draft Standard version 1.0. Version 1.1 Release Candidate 1 enhances the specification without making any breaking changes.

## Authors

Provide list of authors of technical standard, their company or organizational affiliation, public email and or telephone number, and role in drafting the standard.

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Affiliation** | **Contact** | **Role** |
| Don Mendelson | Silver Flash LLC | [Donmendelson@gmail.com](mailto:Donmendelson@gmail.com) | FIXP subgroup lead |
|  |  |  |  |

# Requirements

No new requirements have been specified since version 1.1 Release Candidate 1. The following requirements were recognized since version 1.0.

## Business Requirements

### WebSocket Transport

WebSocket is am IETF protocol that consists of an opening HTTP handshake followed by basic message framing, layered over TCP.

Advantages of WebSocket:

* Familiar web connectivity and configuration
* May be used in combination with Transport Layer Security (TLS) for authentication, privacy, and non-repudiation
* Asynchronous messaging conducive to high performance. Like FIXP, WebSocket protocol imposes no session-layer headers on application messages.

However, WebSocket by itself lacks control of message delivery guarantees, and does not support durable sessions that survive transport disconnection. FIXP over WebSocket provides the advantages of WebSocket plus negotiation of delivery guarantees and durable sessions, if desired. Since WebSocket is a message framing protocol, no additional framing protocol like Simple Open Framing Header is needed.

## Technical Requirements

### Mapping FIXP Messages to WebSocket

FIXP version 1.1 provides a usage guide for WebSocket. No new message types are required. One FIXP message is rendered unnecessary when used with WebSocket since usage of its Close message is practically identical to FIXP’s Terminate message.

All other FIXP messages are used in the same way with WebSocket as with straight TCP. Thus, recoverable and idempotent flows have the usual behaviors.

# Issues and Discussion Points

No new discussions

# References

Authors should list references used in created the technical standard proposal.

* Reference – reference used to create the standard or related to the proposed technical standard.
* Version – version of reference
* Relevance – Relevance of specification to standard.
* Relationship – relationship of the related standard to the technical standard being proposed. Can be: **Extends** the related standard, **Overlaps** with related standard, **Incorporates** related standard, **Inspiration** fromrelated standard, **Uses** related standard, **Replaces** related standard.
* Normative – Yes – this reference contains provisions incorporated into this specification.

|  |  |  |  |
| --- | --- | --- | --- |
| **Reference** | **Version** | **Relevance** | **Normative** |
| FIX Performance Session Layer  Technical Specification | v1.1 Draft Standard | Published for public review April 2019 | Yes |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# Relevant and Related Standards

Authors should provide a list of any standards that are relevant or related to the technical standard being proposed.

* Related Standard – name of related standard (can be an acronym if widely known).
* Version – version of related standard being referenced
* Reference location – URL or document publication information
* Relationship – relationship of the related standard to the technical standard being proposed. Can be: **Extends** the related standard, **Overlaps** with related standard, **Incorporates** related standard, **Inspiration** fromrelated standard, **Uses** related standard, **Replaces** related standard.
* Normative – Yes – this reference contains provisions incorporated into this specification.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Related Standard** | **Version** | **Reference location** | **Relationship** | **Normative** |
| Simple Open Framing Header | v1.0 Draft Standard |  | Optional usage at presentation layer |  |
| Simple Binary Encoding | v1.0 |  | Optional usage at presentation layer |  |
|  |  |  |  |  |
|  |  |  |  |  |

# Intellectual Property Disclosure

Authors should provide a list of any intellectual property

* Related Standard – name of related standard (can be an acronym if widely known).
* Version – version of related standard being referenced
* Reference location – URL or document publication information
* Relationship – relationship of the related standard to the technical standard being proposed. Can be: **Extends** the related standard, **Overlaps** with related standard, **Incorporates** related standard, **Inspiration** fromrelated standard, **Uses** related standard, **Replaces** related standard.
* Normative – Yes – this reference contains provisions incorporated into this specification.

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

# Definitions

This section, if included, should contain explicit definitions for terms used in the technical standard.

* **Term** – term used in
* **Definition** - The definition of the term. If a term has different definitions in different contexts or for different asset types, include and identify fully these differing definitions. If the definition is copied or paraphrased from a source, identify the source in parentheses after the definition.

|  |  |
| --- | --- |
| **Term** | **Definition** |
|  |  |
|  |  |
|  |  |

# Deliverables

This section will contain the actual technical specification. Recommended that subheadings be used as necessary.

## Specifications

Full specifications for FIXP are available in separate document *FIX Performance Session Layer: Draft Technical Standard – v1.1*.

## Resources

### SBE Message Schema for FIXP

File name SBEschemaForFIXP.xml

### Repository File for FIXP

File name FixRepositoryForFIXP.xml

# Appendix A - Usage Examples

This is a required section where the sub-committee or working group can provide whole or fragments of example FIX messages with actual or dummy data. These examples are useful for illustrating usage or rules specific to the business domain covered in the proposal.

Examples are provided in the specification document.

# Appendix B – Compliance Strategy

The technical standard must include some plan for measuring compliance with the standard. This will either be test suites, a validation tool (such as an XML Schema document as an example).

Not yet developed.