Internet Financial EXchange (IFEX)

Searc

Protocol Design Considerations

This section details considerations made during the design of IFEX in an attempt to explain the reasoning behind specific design decisions to implementing or technical audiences.

Transport Neutrality
Transaction protocols such as [HTTP] and [JSON-RPC] were necessarily avoided on account of their lack of support for arbitrary communications topologies.

Message Identification
The IFEX policy of transport and communications topology neutrality necessitates a broader approach to message identification than classical [TCP]-based transaction-oriented application level protocols.

This is because the use of unreliable transports AND/OR broadcast/multicast (one-to-many) topologies MAY occur. At the other extreme, an IFEX deployment MAY make use of a reliable transport with bandwidth and latency sensitivity and opt to exclude message identification overheads entirely.

Financial Transaction ID (FTID)
The Account of Interest Identifier (AOI) is 13 characters to facilitate the straightforward association of an IIBAN with a transaction; note however that the use of IIBAN for AOI is NOT required. (Use of IIBAN relieves IIBAN-based implementations of the need to store the entire FTID; instead they MAY store only the subsequent (UTCSO and ISTI) portions against the internal transaction ledger(s) in question.)

The second-level granularity of the temporal portion (UTC Second of Origination, or UTCSO) was chosen in order to provide a reasonable mechanism for the immediate association of a FTID with an adequately specific point in time to facilitate sorting. The day-based granularity alternative would reduce the overall length of a FTID significantly but was discounted as a probable cause of increased human error, particularly on numerous existing systems that MAY operate partly or wholly upon local timezones instead of UTC.

The length of the Intrasecond Transaction Identifier (ISTI) was set at 5 characters as it rounds out the overall FTID length neatly to 32 bytes and provides what is felt to be an adequate maximum of 60,466,176 transactions per AOI per second. (Implementors requiring scalability beyond this number of transactions per second should refer to the Maximum Transaction Throughput section for recommendations).

Fee/Tax/Discount Support
It is recognized that a frequent case is that a fee, tax or discount will affect all settlement paths, for instance jurisdiction-based taxation usually falls in to this type of situation.

Whilst a mechanism for the description of such cases was considered at a disparate level to that of settlement paths in order to realize shorter message lengths (ie. removing the need to redundantly specify the same

fee, tax or discount on duplicate settlement paths), this was ruled out on the grounds that removing a secondary location within messages for the specification of equivalent cases was a simplification and therefore desirable. In addition, the optimization of such cases at the wire-level is possible to effect through alternate wire-formats (or 'middleware' in today's enterprise parlance), and it has been previously noted that "Premature Optimization is the Root of All Evil".

Transaction Types

While other financial protocols have seen fit to categorise transactions in to fixed categories, IFEX avoids such a scheme due to its goal of maintaining a maximum breadth of deployment applicability. This decision also serves to remove the frequently observed potential for latter accretion of redundancy in protocols where the sum total of all future requirements failed to be perceived at the protocol design stage.

The need for specific deployments to include mechanisms for transaction categorisation is, however, acknowledged with IFEX's capacity for parties to establish agreed vocabularies of transaction types to suit deployment time requirements. In addition to more specific and/or one-time vocabularies, it is anticipated that common common transaction type vocabularies will be established to cater to repeating industry, market and regulatory jurisdiction level requirements; possibly even by industry bodies and/or regulators themselves.

Multiple transaction types are allowed per transaction due to this perceived need for multiple transaction type affinities per transaction, ie: local system or deployment linked, industry or market linked, and (possibly multiple) jurisdiction specific regulatory requirement linked transaction types may be associated with a single transaction.

Comments