TRADELOGIQ MARKETS INC.

Omega ATS and Lynx ATS
Snapshot Recovery Specifications

v. 1.09

Revision History

Date	Revision	Description of Change
December 13, 2017	1.01	First Draft
December 19, 2017	1.02	General edits and formatting changes
May 3, 2018	1.03	Removed “Packet Length” field from all tables. Adjusted all offset values for removal of “Packet Length” field on all tables. Corrected Sequence Length from 20 to 10.
May 7, 2018	1.04	Added Terminating Linefeed field for all packet tables.
July 26, 2018	1.05	The addition of Symbol Spin sessions in section 4. a Login Request Packet.
Feb 10, 2020	1.06	Corrected Sequence length from 10 to 20 for all packet types (Login Request, Accepted). Removed the Terminating Linefeed on all packet types and re-introduced the Packet Length field. All offsets on all packet types incremented by value of 2 accordingly for the addition of the Packet Length field. Also adjusted the following: Login Request Packet Table Comments Section update. Production “with symbol spin” session will be implemented soon. Currently only available in our GTE environment.
March 30, 2021	1.07	Correct Comments for Login Request Packet section on Request Session portion. Removed text “Note: For Production “with symbol spin” session will be implemented in future”. Service has been available in production environment since July 2020.
July 28, 2021	1.08	Updated comments column for Login Request Packet for row Requested Session to reflect single sessions used for our two venues (Omega/Lynx) and the inclusion of the stock trading status messages that will follow the symbol spin when using sequence “1”.
June 5, 2025	1.09	Updated title of document for clarity.

Overview

Tradelogiq participants may use Multicast QTP to acquire real-time depth of book quotations and execution information directly from Omega and Lynx marketplaces. This is the primary means of disseminating market data. There are two multicasting ITCH Feed servers: A and B. Omega and Lynx Multicast ITCH real-time events are delivered by using a published range of multicast addresses. Subscribers have access to these two identically sequenced feeds per marketplace and guidance is for subscribers to arbitrate between the two feeds to minimize the probability of data loss.

Dropped messages can be requested using a UDP/Unicast connection to the Retransmission server with replayed messages being delivered to the request source directly This recovery service may be used for small data loss. Please refer to Tradelogiq QTP Specification for more detail.

The **Reallocation Server** maybe used by subscribers to recover from large data loss.

- Intraday, a spin of all open orders may be requested from the Reallocation Server. This capability allows a client to become current without requesting a gap for all messages up to that point in the day.
- In the event of late application start-up by the subscriber the Reallocation Server also supports a Symbol Spin recovery which is the retrieval of Instrument Directory messages and Stock Trading Action messages distributed early in the Tradelogiq start of day.

Reallocation Server

The Reallocation Server allows Participants to connect via TCP and receive a spin of all currently open orders. By using reallocation, a Participant can retrieve the current Omega and/or Lynx order books quickly any time during trading session without requesting a gap for all messages up to that point in the day. The Reallocation Server listens on the well-known address/port for client requests and produces a snapshot of all currently open orders per particular session.

The Participant requests the spin for the orders up to the sequence number using a Login Request with Request Sequence Number specified.

Upon successful login from the client the Reallocation Server establishes the connection and sends Login Accepted Message with the sequence number which indicates the most recent message applied to the book. This sequence number is typically equal or greater than the sequence number received in Login Request message. The Server then proceeds with the dissemination that consists of Start-Of-Messages event, Add Order message and End-Of-Messages event. The Reallocation Server *will disconnect immediately after sending End-Of-Messages event*.

Only open orders are sent in the spin. Spin will not contain any message for an order which is no longer in the book. While receiving a spin the Participant must buffer any messages received with sequence number greater than the number specified in the Login Accepted message on the ITCH 5.0 multicast feed.

If sequence 1 is used for the **Sequenced Number** field the reallocation server will return the symbol spin with the stock trading status messages before returning all open orders seen on the book as indicated previously.

The Reallocation Server uses SoupTCP Binary protocol to communicate with its clients.

Assumptions and Terms

The document assumes that the reader is familiar with Tradelogiq SoupTCP Binary specification, Tradelogiq QTP Multicast Specification as well as Tradelogiq ITCH 5.0 specification and should refer to those documents for the details of corresponding protocols.

SoupTCP Binary Packets

Login Request Packet

The Reallocation client must send a Login Request Packet immediately upon establishing a new TCP/IP socket connection to the server.

The server can terminate an incoming TCP/IP socket if it does not receive a Login Request Packet within a reasonable period of time (typically 30 seconds).

If the Requested Session is unknown Reallocation Server will send Login Reject Message.

Name	Offset	Length	Value	Comments
Packet Length	0	2	Integer	Number of bytes after this field until the next packet.
Packet Type	2	1	'L'	Login Request Packet
Username	3	6	Alphanumeric	Not used
Password	9	10	Alphanumeric	Not used
Requested Session	19	10	Alphanumeric	**Prod** Omega = OMEGASSALL Lynx = LYNXATSALL **GTE** Omega = OMGATESALL Lynx = LYNXTESALL
Requested Sequence Number	29	20	Numeric	Specifies the sequence number the client wants to receive open orders up to or 0 to request the latest state of the book. Sequence 1 will return symbol spin and stock trading status messages.

Login Accepted Packet

The Reallocation server sends a Login Accepted Packet in response to receiving a valid Login Request from the client. This packet will always be the first packet sent by the server after a successful login request.

Name	Offset	Length	Value	Comments
Packet Length	0	2	Integer	Number of bytes after this field until the next packet.
Packet Type	2	1	'A'	Login Accept Packet
Session	3	10	Alphanumeric	Session ID of the session that is now logged into. Left padded with spaces.
Sequence Number	13	20	Numeric	The sequence number of the most recent message applied to the book. Left padded with spaces.

Login Rejected Packet

The Reallocation server sends this packet in response to an invalid Login Request Packet from the client. The server closes the socket connection after sending the Login Reject Packet. The Login Rejected Packet will be the only packet sent by the server in the case of an unsuccessful login attempt.

Name	Offset	Length	Value	Comments
Packet Length	0	2	Integer	Number of bytes after this field until the next packet.
Packet Type	2	1	'J'	Login Rejected Packet
Reject Reason Code	3	1	Alpha	'S' Session invalid or not available

Sequenced Data Packet

The Sequenced Data Packets act as an envelope to carry the Tradelogiq ITCH 5.0 sequenced data messages that are transferred from the server to the client. Each Sequenced Data Packet carries one message from the higher-lever protocol. Only Start-Of-Messages event, Add Order message and End-Of-Messages event are used in the Reallocation.

Name	Offset	Length	Value	Comments
Packet Length	0	2	Integer	Number of bytes after this field until the next packet.
Packet Type	2	1	'S'	Sequenced Data Packed.
Message	3	Variable	Any	Defined by a higher-level protocol.

Client Heartbeat Packet

The client can send a Client Heartbeat Packet as defined in SoupTCP Binary Specification. No action from the Reallocation Server is expected.

Name	Offset	Length	Value	Comments
Packet Length	0	2	Integer	Number of bytes after this field until the next packet.
Packet Type	2	1	'R'	Client Heartbeat Packet

Logout Request Packet

The client may send a Logout Request Packet to request the connection be terminated. Upon receiving a Logout Request Packet, the Reallocation Server will immediately terminate the connection and close the associated TCP/IP socket.

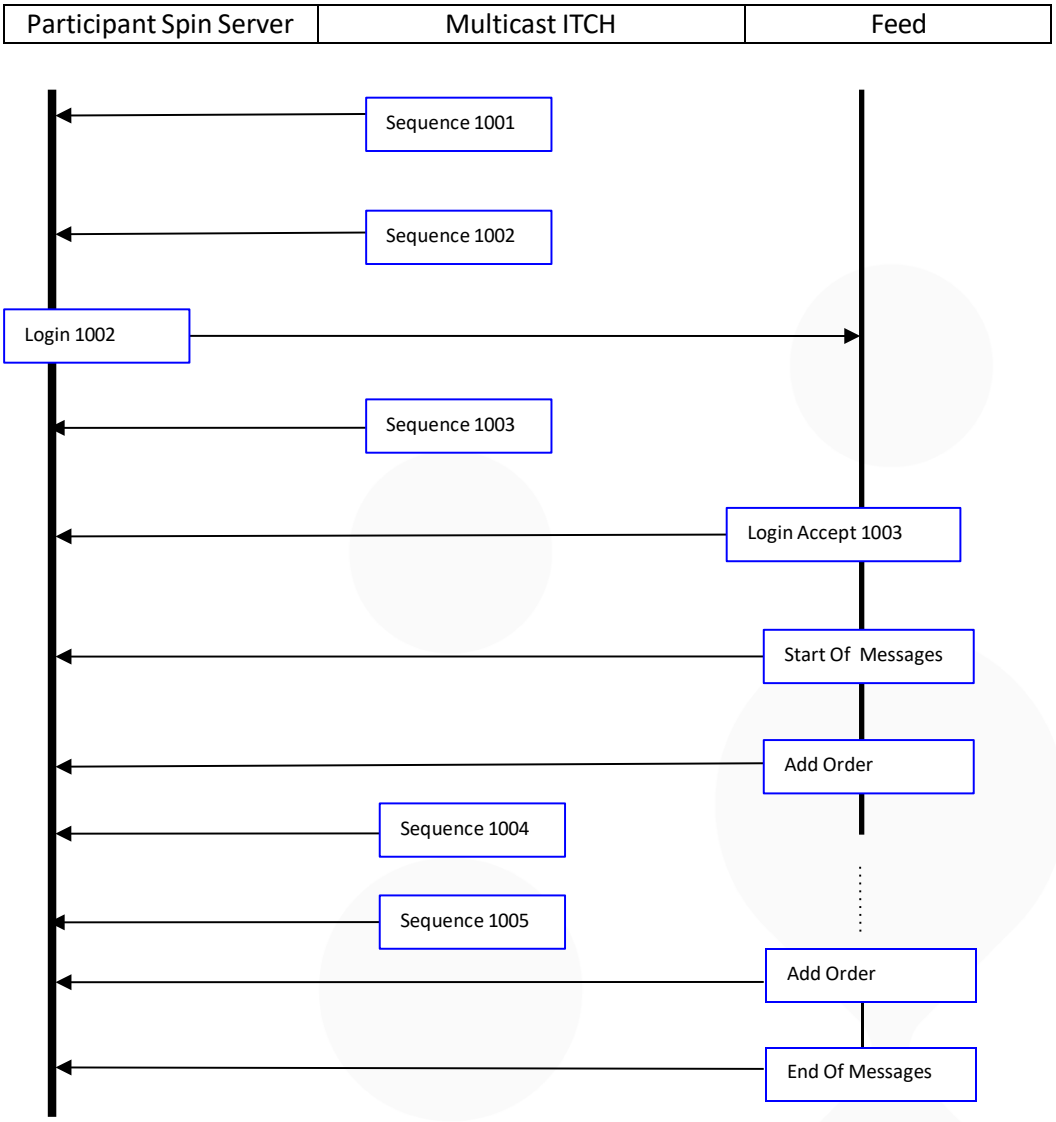
Name	Offset	Length	Value	Comments
Packet Length	0	2	Integer	Number of bytes after this field until the next packet.
Packet Type	2	1	'O'	Logout Request Packet

Reallocation Server Usage Example

At the beginning, the participant has no state of the book and wants to become current. It receives ITCH messages 1001, 1002, discards them and requests a spin of all open orders up to and including sequence 1002 in Login Request Message. Meanwhile, ITCH message 1003 is received and is cached by the participant.

Reallocation Server sends Login Accept Message indicating that the spin is capable of giving all open orders up to and including sequence 1003. The participant discards the cached 1003 message. The Spin Server starts sending open orders. While the spin is in progress the Participant caches messages with sequence 1004 and 1005. When End-Of-Messages event is received the participant applies the cached messages to the book and continues listening to multicast.

Please see the example on the next page.


Participant Spin Server
Multicast ITCH
Feed
Sequence 1001
Sequence 1002
Login 1002
Sequence 1003
Login Accept 1003
Start Of Messages
Add Order
Sequence 1004
Sequence 1005
Add Order
End Of Messages