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OUCH Protocol Specification

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Contents

1 Summary of Changes

No	Changes	Comment
1	In Chapter Message Formats, added field OffHours and update of existing field Reserved in subchapter Enter Order on page 8.	
2	Order Accepted message is updated with off-hours flag.	
3	Mass Quote functionality added with MassQuote (Q) and MAssQuoteAck(K) messages.	R.2.11 (21 May 2020)
4	MassQuoteAck message updated.	R.2.11 (1 July 2020)
5	MassQuoteAck message offset updated	10 July 2020
6	Updated of order replaced message description	
7	Notes in Client/Account field in Table 6: Mass Quote is updated by changing valid values to capital letter	5 May 2021
8	Customer Info field in Table 2 and Table 3 is updated by adding a note	8 September 2021
9	Notes in Reason field in Order Canceled Message is updated.	29 September 2021
10	Added a new change reason (125) to Order Cancelled Message.	23 October 2023

2 About the Manual

The purpose of this document is to describe the OUCH protocol.

2.1 References

For more information, refer to the following documents:

- *Genium INET ITCH Protocol Specification*
- *System Error Message Reference*

3 OUCH Overview

The OUCH protocol accepts limit orders from system participants and executes matching orders when possible. Non-matching orders may be added to the order book where they are waiting to be matched according to the matching priority model.

OUCH is a simple protocol that allows Genium INET Trading users to enter orders, replace and cancel existing orders and receive executions. It is intended to allow participants and their software developers to integrate Genium INET Trading into their proprietary trading systems or to build custom front ends.

OUCH only provides a method for participants to send orders to Genium INET Trading and receive updates on those orders entered. For information about all orders entered into and executed on the Genium INET Trading book, refer to the ITCH protocol specification.

OUCH is the low-level native protocol for connecting to the Genium INET Trading system. It is designed to offer the maximum possible performance at the cost of flexibility and ease of use. For applications that do not require this extreme level of performance, Genium INET Trading offers other, more standard interfaces that may be more suitable and easier to develop to.

3.1 Architecture

The OUCH protocol is composed of logical messages passed between the OUCH host and the client application. Each message type has a fixed message length. The messages are binary encoded, which means that all numeric values are represented as binary values. Character or string values are composed of non-control ISO 8859-9 (Latin-9) encoded bytes.

All (outbound) messages sent from the OUCH system to the client are assumed to be sequenced, and their delivery is guaranteed by the lower level protocol. The SoupBinTCP protocol (specification available separately) is used to guarantee the delivery and sequencing of OUCH messages sent from the host to the client. Please refer to the SoupBinTCP manual for details.

Messages sent from the OUCH client to the host are inherently non-guaranteed, even if they are carried by a lower level protocol that guarantees delivery (like TCP/IP sockets). Therefore, all host-bound messages are designed so that they can be benignly resent for robust recovery from connection and application failures.

Each physical OUCH host port is bound to an OUCH Account assigned by the marketplace. On a given day, every order entered on OUCH is uniquely identified by the combination of the logical OUCH Account and the participant-created Token field.

3.2 Data Types

All Integer fields are composed of binary encoded numbers.

Table 1: Data Types

Type	Size	Notes
Numeric	1, 2, 4, 8 or 12 bytes	Unsigned big-endian binary encoded numbers. NOTE: Exception, Reject Code is signed integer.

Type	Size	Notes
Alpha	variable	Left justified and padded on the right with spaces. Composed of non-control ISO 8859-9 (Latin-9) encoded bytes.
Price	4 bytes	Prices are signed integer fields. Number of decimals and allowed tick steps are specified in the ITCH Order book Directory message (Number of decimals in Price). NOTE: Order books may also trade in fractions. This is also indicated in the Order book Directory message.
Timestamp	8 bytes	UNIX Time (number of nanoseconds since 1970-01-01 00:00:00 UTC)

3.3 Fault Redundancy

A single OUCH Account can be bound to two physical OUCH gateways. These OUCH gateways then act as mirrors of each other for fault redundancy. In this configuration, the client can connect to any one of the gateways. It is not allowed to be logged on to both gateways simultaneously. The system will log out the first client session when a second is established for the same account.

The OUCH Gateway does not support nor block another OUCH Account accessing the standby gateway port of an already engaged primary gateway port.

4 Message Formats

4.1 Inbound Messages

Inbound messages are sent from the participant's application to the OUCH host. They are not sequenced. All Inbound Messages may be repeated benignly. This gives the client the ability to resend any inbound message if, in the case of a connection loss or an application error, it is uncertain whether or not the Genium INET Trading system received it.

The idea of benign inbound message retransmission with end-to-end acknowledgement is fundamental to OUCH's fail-over redundancy. If your connection ever fails, there is no way for you to know if pending messages actually made it over the link before the failure. A robust OUCH client can safely resend any pending messages over a mirrored link without worrying about generating duplicates. This applies to Genium INET Trading's disaster failover capability as well; if the system ever needs to fail over to the backup site, some messages sent at the moment of the failure may be lost. A robust application can simply resend the pending messages, making the failover seamless to the end user.

All inbound messages on an OUCH port are processed sequentially. This guarantees that if two orders are entered consecutively on the same connection, the first order entered will always be accepted first.

4.1.1 Enter Order

Enter Order is used to enter a new order into the system. The response to a successful Enter Order is an Order Accepted message. If the order is rejected, the Order Rejected message will be returned.

> ⓘ **Note**
> - All orders entered via OUCH will default to the Round Lot type. The quantity of the order must be a multiple of the Round Lot Size. The Round Lot Size of a particular order book can be found in the ITCH Order book Directory message.
> - All Or None orders are not supported.
> - Account Info should use the **Client/Account** field for the derivatives market and the **Exchange Info** field for the equity market.

Table 2: Enter Order Message

Name	Offset	Length	Value	Notes
Message Type	0	1	"O"	Enter Order Message.
Order Token	1	14	Alpha	Client-generated order identifier.
Order book ID	15	4	Numeric	Order book identifier.
Side	19	1	Alpha	Values: "B" = Buy order "S" = Sell order "T" = Short sell

Name	Offset	Length	Value	Notes
Quantity	20	8	Numeric	Quantity.
Price	28	4	Price	Signed integer price. Number of decimals and allowed tick steps are given by the Order book Directory message in ITCH. This field also tells if the security is traded in fractions.
Time In Force	32	1	Numeric	Values: 0 = Day 3 = Immediate or Cancel (FaK) 4 = Fill or Kill
Open Close	33	1	Numeric	Position update for the account. Values: 0 = Default for the account 1 = Open 2 = Close/Net
Client/Account	34	16	Alpha	Pass-thru field. Mandatory for Fund orders. Agency/Fund Code (AFK). **Note** Account Info should use this field for the derivatives market.
Customer Info	50	15	Alpha	Pass-thru field. Client Reference field. **Note** SOH character should not exist in this field.
Exchange Info	65	32	Alpha	Client Account number. Only the first 16 bytes are used. Using more than the first 16 bytes might lead to the transaction getting rejected. **Note** Account Info should use this field for the equity market.
Display Quantity	97	8	Numeric	Display quantity if reserved order, otherwise set to zero (0).
Client Category	105	1	Numeric	Type of client. Values: 1 = Client 2 = House 7 = Fund 9 = Investment Trust 10 = Primary Dealer Govt 11 = Primary Dealer Corp 12 = Portfolio Mgmt Company **Note** Client Category is not used by the derivatives market.
OffHours	106	1	Numeric	Values: 1 = Off-hour Orders 0 = Normal hours

				Other values are subjected to reject the request **Note:** Off-hours will be used by the Derivatives market.
Reserved	107	7		Reserved for future use.

4.1.2 Replace Order

Replace Order is used to modify an existing order entered via OUCH.

Modification of some order parameters may not be allowed, depending on how the system is configured. An Order Rejected will be returned in such case.

There are two order tokens in the Replace message.

- **Existing Order Token**

  The Existing Order Token is is used to reference the order to be replaced. The Order Token should be from the original Enter Order, not from any intermediate replaces. The current implementation allows intermediate tokens to be used, but this may not be supported in the future.

- **Replacement Order Token**

  The Replacement Order Token is the new Order Token that will be assigned to the order if the replace is successful. The replacement Order Token must not be a token previously used in Enter Order or Replace Order transactions.

The response to a Replace Order is:

- **Order Replaced** if the modification was successful. The Order Replaced will contain the current state of the returned order. See below for a discussion on order quantities.
- **Order Rejected** if the replace failed.

Table 3: Replace Order Message

Name	Offset	Length	Value	Notes
Message Type	0	1	"U"	Replace Order Message.
Existing Order Token	1	14	Alpha	Should be the Order Token from the original Enter Order, not from any intermediate replaces.
Replacement Order Token	15	14	Alpha	
Quantity	29	8	Numeric	Desired Open Quantity of the order.
Price	37	4	Price	Signed integer price. Number of decimals and allowed tick steps are given by the Order book Directory message in ITCH. This field also tells if the security is traded in fractions. Setting Price to 0 means “no change”.
Open Close	41	1	Numeric	Position update for the account. Values: 0 = No change 1 = Open 2 = Close/Net 4 = Default for the account

Client/Account	42	16	Alpha	Pass-thru field. **Note** Account Info should use this field for the derivatives market.
Customer Info	58	15	Alpha	Pass-thru field. **Note** SOH character should not exist in this field.
Exchange Info	73	32	Alpha	Client Account number. Only the first 16 bytes are used. Using more than the first 16 bytes might lead to the transaction getting rejected. **Note** Account Info should use this field for the equity market.
Display Quantity	105	8	Numeric	Desired displayed quantity (zero for unchanged).
Client Category	113	1	Numeric	Type of client. Values: 1 = Client 2 = House 7 = Fund 9 = Investment Trust 10 = Primary Dealer Govt 11 = Primary Dealer Corp 12 = Portfolio Mgmt Company **Note** Client Category is not used by the derivatives market.
Reserved	114	8		Reserved for future use.

4.1.2.1 Order Quantities

In Genium INET OUCH Replace messages, the Quantity field contains the desired total quantity of the order (Order Quantity = open quantity + executed quantity, where open quantity is the quantity of the order in the order book).

Example 1:

1. An order with a quantity of 1000 is entered via OUCH. An Order Accepted with Quantity = 1000 will be returned.
2. A partial execution for 200 occurs. A quantity of 800 is left in the order book. An Executed Order with Traded Quantity = 200 will be returned.
3. The client wants to decrease the open quantity (quantity in the book) to 750. He sends in an Order Replace with Quantity = 950. A Replaced Order with Quantity = 750 will be returned.

Example 2:

1. An order with a quantity of 1000 is entered via OUCH. An Order Accepted with Quantity = 1000 will be returned.
2. The client wants to decrease the open quantity (quantity in the book) to 500. He sends in an Order Replace with Quantity = 500.