ASX Trade OUCH Specification

Q2 2015 Release - SR8

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1. Introduction

ASX Trade OUCH is the premium ultra-low latency order handling protocol for ASX Trade. ASX Trade OUCH provides low latency versions of the three principal order-handling actions; entering new orders, amending and cancelling existing orders and receiving order executions on ASX Trade. For public information about the ASX Trade order book, refer to ASX Trade ITCH and Glimpse Specification.

ASX Trade OUCH is a streamlined native protocol for order management on ASX Trade matching engine. It is designed to offer the maximum possible performance for the essential order management actions and effects matching engine changes in approximately one third of the time of the current premium offering (OMNet API connection via Australian Liquidity Centre Liquidity Cross Connect).

The ASX Trade OUCH protocol provides:

- Ultra-low latency order entry and updates for those orders
- Virtually un-throttled access to the matching engine
- Asynchronous protocol, no need to wait for order acknowledgment
- Entry of orders with Day validity
- Amendment of orders entered with ASX Trade OUCH
- Cancellation of orders entered with ASX Trade OUCH
- Cancellation of own customer's orders entered via other protocols (for example OMNet API)
- Notification of executions of orders entered with ASX Trade OUCH
- Support of Unintentional Crossing Prevention functionality
- Support of ASX Sweep and Centre Point order functionality
- Access to all asset classes available in ASX Trade
- Internationally recognised and standardised protocol
- Time-stamping from ASX Trade to the 100 nanoseconds.

For ASX Trade OUCH questions contact ASX Customer Technical Support (CTS) team either via email on cts@asx.com.au or phone 1800 663 053 (or on +61 2 9227 0372 from outside Australia).

2. ASX Trade OUCH Architecture

The ASX Trade OUCH protocol is composed of logical messages passed between the ASX Trade 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 8859-1 (Latin-1) encoded bytes.

All outbound messages sent from the ASX Trade 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 ASX Trade OUCH messages sent from the host to the client.

Messages sent from the ASX Trade 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 ASX Trade OUCH host port is bound to an ASX Trade OUCH account assigned by ASX. Every order entered on ASX Trade OUCH is uniquely identified by the combination of the physical ASX Trade OUCH host port and a customer created order token field. Order tokens have a one day lifetime and can be reused on subsequent days.

2.1. Data Types

For data types:

- All numeric fields are composed of binary encoded numbers
- All alpha fields are left justified and padded on the right with spaces
- The Alpha fields are composed of non-control ISO 8859-1 (Latin-1) encoded bytes.

Type	Size	Notes
Numeric	1, 2, 4, 8 or 12 bytes	Unsigned big-endian binary encoded numbers.
Alpha	Variable	Left justified and padded on the right with spaces.
Price	4 bytes	Prices are signed integer fields. Number of decimals is specified in the ITCH Order Book Directory message. **Note**: The number of decimal places for prices in ASX Trade OUCH is universally set to two decimal places, regardless of the configured number of decimal places for the instrument in ASX Trade.
Timestamp	8 bytes	UNIX time (number of nanoseconds since 1970-01-01 00:00:00 UTC).

2.2. Inbound Messages

Inbound messages are sent from the customer'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 there is uncertainty whether ASX Trade has received it in the case of a connection loss or an application error.

The idea of benign inbound message retransmission with end-to-end acknowledgement is fundamental to the ASX Trade OUCH failover redundancy. If the connection ever fails, there is no way of knowing if pending messages were received before the failure. A robust ASX Trade OUCH client can safely resend any pending messages over a mirrored link without the risk of generating duplicates. This applies to ASX Trade's disaster failover capability as well. If ASX Trade ever needs to failover 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. See Access *Configuration and Infrastructure* for further details and considerations.

All inbound messages on an ASX Trade 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.

2.2.1. Enter Order Message

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

2.2.1.1. Mid-Tick on Mid-Point Orders

ASX Trade OUCH supports the use of mid-tick prices on mid-point orders (OUCH Order Types: N, S, B, D, F, T, C and E) by permitting entry of limit prices at half-tick. ASX Trade OUCH interprets a mid-point order with a half-tick price as equivalent to an order at the next permitted worse on tick price with mid-tick flag enabled.

For example:

- A buy ASX Trade OUCH order of order type B, price 15.75 cents is considered to be an order of price 15.50 cents with mid-tick flag enabled.
- A sell ASX Trade OUCH order of order type B, price 15.75 cents, is considered to be an order of price 16.00 cents with mid-tick flag enabled.

This feature is only supported for OUCH Order Types N, S, B, F, D, T, C and E. All other order types will reject half-tick prices. The Replace Order message also supports entry of mid-tick prices and can therefore be used to turn on or off half-tick improvement if required.

2.2.1.2. Enter Order Message Details

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 (i.e. the instrument identifier). This can be found in *the ITCH Order Book Directory* message in ASX Trade ITCH and Glimpse Specification.
Side	19	1	Alpha	The type of order being entered. Values: "B" = Buy order "S" = Sell order "T" = Short Sell order "C" = Buy order in a Combination where the sell leg(s) are short sell(s).
Quantity	20	8	Numeric	Order quantity

Name	Offset	Length	Value	Notes
Price	28	4	Price	Price of the order (signed integer) **Note**: Number of decimals is specified in the *ITCH Order Book Directory* message in ASX Trade ITCH and Glimpse Specification. The number of decimal places for prices in ASX Trade OUCH is universally set to two decimal places, regardless of the configured number of decimal places for the instrument in ASX Trade. For OUCH Order Types N, S, B, D, F, T, C and E, prices at half-tick are permitted and will be interpreted as on-tick Limit price with half-tick improvement.
Time In Force	32	1	Numeric	The time validity of the order. Values: 0 = Day 3 = Fill and Kill 4 = Fill or Kill.
Open Close	33	1	Numeric	Not used by ASX. Set to zero.
Client/Account	34	10	Alpha	Client – a free text field typically used by the customer to indicate the ultimate client making the order.
Customer Info	44	15	Alpha	Customer information – a free text field typically used by the customer to indicate the own order identifier.
Exchange Info	59	32	Alpha	A free text field used at the customer's discretion.
Clearing Participant	91	1	Alpha	Clearing participant identifier. Possible values for a participant can be retrieved from the first character of the clearing_customer_s field in the OMNet API Clearing Participant query DQ55 in the ASX Trade Query document at: ASX Trade Queries.
Crossing Key	92	4	Numeric	Crossing key for Unintentional Crossing Prevention. When two orders from the same customer with the same crossing key trade out, the resulting trade is treated like a booked transaction and not published to the market as a trade. 0 (zero) means "no Unintentional Crossing Prevention" for this order.

Name	Offset	Length	Value	Notes
Regulatory Data	96	44	Alpha	Regulatory data field used to facilitate the capture and transmission of regulatory data from ASX Trade customers to ASIC. The ASX specific structure presented in the table below is required to be applied as an overlay to the field in the specified character position to support the transmission of the ASIC defined content to ASIC. All unused Regulatory Data character positions are to be padded with spaces (ASCII 0x20).
OUCH Order Type	140	1	Alpha	OUCH order type. Values: "Y" = Limit order "N" = Centre Point order (mid-point only) • Price > 0 defines a Centre Point Limit order • Price = 0 defines a Centre Point Market order "D" = Centre Point order (dark limit order) "S" = Sweep order (can be dual-posted if entered price is at half-tick) • Price > 0 defines a Limit Sweep order • Price = 0 defines a Market-to-Limit Sweep order "P" = Dual-posted Sweep order (mid-tick flag enabled). "B" = Centre Point Block order (mid-point only) with single fill MAQ • Price > 0 defines a Centre Point Block Limit order • Price = 0 defines a Centre Point Block Market order "F" = Centre Point order (dark limit order) with single fill MAQ "T" = Limit Sweep order (can be dual-posted if entered price is at half-tick) with single fill MAQ "C" = Any Price Block order "E" = Any Price Block order with single fill MAQ. Refer to *Appendix 2 – Mapping of ASX Trade OUCH Order Types to OMNet* API Values on how the OUCH order types map to OMNet API equivalent order type values.
Short Sell Quantity	141	8	Numeric	For short sell orders, the portion of the quantity that is short. Must be zero for orders that are not short sell orders (Side = "B" or "S"). Must be greater than zero for short sell orders (Side = "T" or "C").

Name	Offset	Length	Value	Notes
Minimum Acceptable Quantity	149	8	Numeric	MAQ of Centre Point Block order, Any Price Block order or Limit Sweep order when executing in Centre Point. Specifies the minimum quantity that must be traded in each execution cycle. 0 = no MAQ. For Fill Or Kill Centre Point Block orders or Any Price Block orders (Time In Force = 4), the MAQ must be equal to the order quantity.

2.2.1.2.1. ASX Specific Structures for Regulatory Data Overlay

Name	Offset	Length	Value	Notes
Capacity of Participant	96	1	Alpha	Capacity of the participant. Values: "A" = Agency "P" = Principal "M" = Mixed Agency and Principal.
Directed Wholesale	97	1	Alpha	Directed wholesale indicator for agency orders and transactions. Values: "Y" = True "N" = False (default)
Execution Venue	98	4	Alpha	Execution venue. Not required on order messages, therefore not applicable for ASX Trade OUCH. To be padded with spaces (ASCII 0x20).
Intermediary ID	102	10	Alpha	Intermediary identifier for agency orders and transactions.
Order Origin	112	20	Alpha	Origin or order information for agency orders and transactions.
Filler	132	8	Alpha	Ignore, not currently used. To be padded with spaces (ASCII 0x20).

2.2.2. Replace Order Message

The Replace Order message is used to amend an existing order that was entered with ASX Trade OUCH. The response to a successful Replace Order message is an Order Replaced message. If the amendment is rejected, the Order Rejected message will be returned.

There are two order tokens in the Replace Order message:

- The Existing Order Token is used to reference the order to be replaced.

  Note: This order token can be the original token used when the order was entered, or the replacement order token from any prior amendments.

- Replacement Order Token is the new order token to be assigned to the order if the amendment is successful. The Replacement Order Token must not be a token previously used in Enter Order and Replace Order messages that day.

If the order amendment is successful, the Order Replaced message received as the response contains the current state of the order. See below for details about amending order quantity.

The following fields of an order may be amended in ASX Trade OUCH:

- Quantity

- Price
- Client/Account
- Customer Info
- Exchange Info
- Regulatory Data
- Short Sell Quantity
- Minimum Acceptable Quantity (MAQ).

All fields not to be changed should be sent as follows in the Replace Order message:

- Numeric order parameters should be set to zero to leave them unchanged
- String (alpha) fields should either carry the original value or the first byte set to integer null and all other bytes set to space to leave them unchanged.

Note:
Since the system assumes **no change** for numeric fields set to zero, it is not possible to amend the order price, quantity, short sell quantity or MAQ to 0.

2.2.2.1. Amending Order Quantity

In the ASX Trade OUCH Replace Order message, the **Quantity** field contains the desired total quantity of the order (open quantity plus any executed quantity). An example is listed below.

Example:

An order with a quantity of 1,000 is entered with ASX Trade OUCH. An Order Accepted message with Quantity = 1,000 is returned.

A partial execution for 200 occurs. A quantity of 800 is left in the order book. An Executed Order message with Traded Quantity = 200 is returned.

The user wants to increase the open quantity (quantity in the order book) to 2,000. To do this the user sends an Order Replace message with Quantity = 2,200. A Replaced Order message with Quantity = 2,000 is returned.

In the case of this amendment, the desired total quantity of the order was 2,200 (2,000 open quantity and 200 executed quantity).

2.2.2.2. Amending Minimum Acceptable Quantity

When amending MAQ, the new value is compared to the original order quantity and subsequent executions do not need to be considered. The following examples illustrate the OUCH logic for MAQ amendments:

Scenario	Order Details	Replace Order Message Values	Result
1	Order with quantity = 5,000 and MAQ = 3,000	MAQ = 2,000	Order with quantity = 5,000 and MAQ = 2,000
2	Order with quantity = 5,000 and MAQ = 3,000	New price MAQ = 0	Order with quantity = 5,000 and MAQ = 3,000 (i.e. MAQ is unchanged)
3	Order with quantity = 10,000 and MAQ = 7,000. Order partially trades for 7,000 and remains with quantity = 3,000 and MAQ = 0.	3,000 <= MAQ <= 10,000	Order with quantity = 3,000 and MAQ = 3,000
4	Order with quantity = 10,000 and MAQ = 7,000.	MAQ > 10,000	Replace Order Message will be rejected. The MAQ

Scenario	Order Details	Replace Order Message Values	Result
	Order partially trades for 7,000 and remains with quantity = 3,000 and MAQ = 0.		cannot be larger than the original order quantity.
5	Order with quantity = 10,000 and MAQ = 7,000. Order partially trades for 7,000 and remains with quantity = 3,000 and MAQ = 0.	MAQ = 2,000	Order with quantity = 3,000 and MAQ = 2,000
6	Order with quantity = 10,000 and MAQ = 7,000. Order partially trades for 7,000 and remains with quantity = 3,000 and MAQ = 0.	Quantity = 13,000 MAQ = 13,000	Order with quantity = 6,000 and MAQ = 6,000
7	Order with quantity = 10,000 and MAQ = 7,000. Order partially trades for 7,000 and remains with quantity = 3,000 and MAQ = 0.	Quantity = 13,000 MAQ = 0	Order with quantity = 6,000 and MAQ = 0

Losing Order Book Priority

Any change to the price of an order or increasing the quantity will result in the order losing its priority in the market.

2.2.2.3. Replace Order Message Details

Name	Offset	Length	Value	Notes
Message Type	0	1	"U"	Replace Order Message.
Existing Order Token	1	14	Alpha	The original order token used when the order was entered, not from any prior amendments.
Replacement Order Token	15	14	Alpha	The original order token used when the order was entered, or the replacement order token from any prior amendments.
Quantity	29	8	Numeric	Desired total quantity of the order (open quantity plus any executed quantity).

Name	Offset	Length	Value	Notes
Price	37	4	Price	Price of the order (signed integer). **Note:** Number of decimals is specified in the *ITCH Order Book Directory* message at: ASX Trade ITCH and Glimpse Specification. The number of decimal places for prices in ASX Trade OUCH is universally set to two decimal places, regardless of the configured number of decimal places for the instrument in ASX Trade. For OUCH Order Types N, S, B, D, F, T, C and E prices at half-tick are permitted and will be interpreted as on-tick Limit price with half-tick improvement.
Open Close	41	1	Numeric	Not used by ASX. Set to zero.
Client/Account	42	10	Alpha	Client – a free text field typically used by the customer to indicate the ultimate client making the order.
Customer Info	52	15	Alpha	Customer information – a free text field typically used by the customer to indicate the own order identifier.
Exchange Info	67	32	Alpha	A free text field used at the customer's discretion.
Regulatory Data	99	44	Alpha	Regulatory data field used to facilitate the capture and transmission of regulatory data from ASX Trade customers to ASIC. The ASX specific structure presented in the table below is required to be applied as an overlay to the field in the specified character position to support the transmission of the ASIC defined content to ASIC. All unused Regulatory Data character positions are to be padded with spaces (ASCII 0x20).
Short Sell Quantity	143	8	Numeric	For short sell orders, the portion of the quantity that is short. Must be zero for orders that are not short sell orders (Side = "B" or "S"). Must be greater than zero for short sell orders (Side = "T" or "C"').
Minimum Acceptable Quantity	151	8	Numeric	MAQ of Centre Point Block order, Any Price Block order or Limit Sweep order when executing in Centre Point. Specifies the minimum quantity that must be traded in each execution cycle. 0 = no change to MAQ.

2.2.2.3.1. ASX Specific Structures for Regulatory Data Overlay

Name	Offset	Length	Value	Notes
Capacity of Participant	99	1	Alpha	Capacity of the participant. Values: "A" = Agency "P" = Principal "M" = Mixed Agency and Principal.
Directed Wholesale	100	1	Alpha	Directed wholesale indicator for agency orders and transactions. Values: "Y" = True "N" = False (default).
Execution Venue	101	4	Alpha	Execution venue. Not required on order messages, therefore not applicable for ASX Trade OUCH. To be padded with spaces (ASCII 0x20).
Intermediary ID	105	10	Alpha	Intermediary identifier for agency orders and transactions.
Order Origin	115	20	Alpha	Origin or order information for agency orders and transactions.
Filler	135	8	Alpha	Ignore, not currently used. To be padded with spaces (ASCII 0x20).

2.2.3. Cancel Order Message

The Cancel Order message is used to cancel an existing order that was entered with ASX Trade OUCH, using the order token to identify the order being cancelled. The response to a successful Cancel Order message is an Order Cancelled message. If the cancellation is rejected, the Order Rejected message will be returned.

Note:
The order token used in the Cancel Order message must be the original token used when the order was entered, not the replacement token from a subsequent amendment.

2.2.3.1. Cancel Order Message Details

Name	Offset	Length	Value	Notes
Message Type	0	1	"X"	Cancel Order Message
Order Token	1	14	Alpha	The original order token used when the order was entered, not the replacement token from a subsequent amendment.

2.2.4. Cancel By Order ID Message

The Cancel By Order ID message is used to cancel an existing own customer order that was entered with ASX Trade OUCH or another protocol (for example the OMNet API), using the order ID to identify the order being cancelled. The response to a successful Cancel By Order ID message is an Order Cancelled message. If the cancellation is rejected, the Order Rejected message will be returned.

Because an ASX Trade OUCH gateway is directly connected to an ASX Trade partition, the Cancel By Order ID message must be sent from the gateway connected to the partition that the order resides in.

2.2.4.1. Cancel By Order ID Message Details

Name	Offset	Length	Value	Notes
Message Type	0	1	"Y"	Cancel By Order ID Message.
Order Book ID	1	4	Numeric	Order book identifier (i.e. the instrument identifier). This can be found in the *ITCH Order Book Directory* message in: ASX Trade ITCH and Glimpse Specification.
Side	5	1	Alpha	The type of order being cancelled. Values: "B" = Buy order "S" = Sell order.
Order ID	6	8	Numeric	The order identifier assigned to the order by ASX Trade.

2.3. Outbound Messages

Outbound messages are generated by ASX Trade and sent to the ASX Trade OUCH client.

2.3.1. Order Accepted Message

The Order Accepted message acknowledges the receipt and acceptance of a valid Enter Order message. The data fields from the Enter Order message are echoed back in the Order Accepted message, but some of the accepted values may differ from the entered values for some fields, depending on the state of the order. If the order for example traded immediately at entry, the Order Accepted message will show the state of the order after the trade.

Order Accepted messages are guaranteed to come before any Order Executed message or Order Cancelled message for an order. When the **Order State** field in the Order Accepted message is "Not on book" (2), no quantity of the order is remaining in the order book.

Centre Point and dual posted Sweep orders (OUCH Order Type "N", "D", "S", "P", "B", "F","T", "C" or "E") may have part of the Exchange Info field overlaid with an ASCII representation of the Centre Point price, if the order trades at an extended price (i.e. with more than one decimal of a cent).This mirrors existing behaviour in the OMNet API.

2.3.1.1. Order Accepted Message Details

Name	Offset	Length	Value	Notes
Message Type	0	1	"A"	Order Accepted Message.
Timestamp – Nanoseconds	1	8	Timestamp	UNIX time (number of nanoseconds since 1970-01-01 00:00:00 UTC).
Order Token	9	14	Alpha	Client-generated order identifier.
Order Book ID	23	4	Numeric	Order book identifier (i.e. the instrument identifier). This can be found in the *ITCH Order Book Directory* message: ASX Trade ITCH and Glimpse Specification.

Name	Offset	Length	Value	Notes
Side	27	1	Alpha	The type of order being entered. Values: "B" = Buy order "S" = Sell order "T" = Short Sell order "C" = Buy order in a Combination where the sell leg(s) are short sell(s).
Order ID	28	8	Numeric	The identifier assigned to the new order by ASX Trade. Note that this number is only unique per order book and side.
Quantity	36	8	Numeric	Order quantity that is currently open in the book.
Price	44	4	Price	Price of the order (signed integer). **Note**: Number of decimals is specified in the *ITCH Order Book Directory* message: ASX Trade ITCH and Glimpse Specification The number of decimal places for prices in ASX Trade OUCH is universally set to two decimal places, regardless of the configured number of decimal places for the instrument in ASX Trade. For OUCH Order Types N, S, B, D, F, T, C and E prices at half-tick are permitted and will be interpreted as on-tick Limit price with half-tick improvement.
Time In Force	48	1	Numeric	The time validity of the order. Values: 0 = Day 3 = Fill and Kill 4 = Fill or Kill.
Open Close	49	1	Numeric	Not used by ASX. Ignore.
Client/Account	50	10	Alpha	Client – a free text field typically used by the customer to indicate the ultimate client making the order.
Order State	60	1	Numeric	Current state of the order. Values: 1 = On book 2 = Not on book.
Customer Info	61	15	Alpha	Customer information – a free text field typically used by the customer to indicate the own order identifier.
Exchange Info	76	32	Alpha	A free text field used at the customer's discretion.

Name	Offset	Length	Value	Notes
Clearing Participant	108	1	Alpha	Clearing participant identifier. Possible values for a participant can be retrieved from the first character of the clearing_customer_s field in the *OMNet* API Clearing Participant query DQ55 in the ASX Trade Query document at: ASX Trade Queries.
Crossing Key	109	4	Numeric	Crossing key for Unintentional Crossing Prevention. When two orders from the same customer with the same crossing key trade out, the resulting trade is treated like a booked transaction and not published to the market as a trade. Zero means "no Unintentional Crossing Prevention" for this order.
Regulatory Data	113	44	Alpha	Regulatory data field used to facilitate the capture and transmission of regulatory data from ASX Trade Customers to ASIC. The ASX specific structure presented in the table below is required to be applied as an overlay to the field in the specified character position to support the transmission of the ASIC defined content to ASIC. All unused Regulatory Data character positions are to be padded with spaces (ASCII 0x20).

Name	Offset	Length	Value	Notes
OUCH Order Type	157	1	Alpha	OUCH order type. Values: "Y" = Limit order "N" = Centre Point order (mid-point only) • Price > 0 defines a Centre Point Limit order • Price = 0 defines a Centre Point Market order "D" = Centre Point order (dark limit order) "S" = Sweep order (can be dual-posted if entered price is at half-tick) • Price > 0 defines a Limit Sweep order • Price = 0 defines a Market-to-Limit Sweep order "P" = Dual-posted Sweep order (mid-tick flag enabled). "B" = Centre Point Block order (mid-point only) with single fill MAQ • Price > 0 defines a Centre Point Block Limit order • Price = 0 defines a Centre Point Block Market order "F" = Centre Point order (dark limit order) with single fill MAQ "T" = Limit Sweep order (can be dual-posted if entered price is at half-tick) with single fill MAQ "C" = Any Price Block order "E" = Any Price Block order with single fill MAQ. "C" = Any Price Block order "E" = Any Price Block order with single fill MAQ. Refer to *Appendix 2 – Mapping of ASX Trade OUCH Order Types to OMNet* API Values on how the OUCH order types map to OMNet API equivalent order type values.
Short Sell Quantity	158	8	Numeric	For short sell orders, the remaining portion of the quantity that is short.
Minimum Acceptable Quantity	166	8	Numeric	MAQ of Centre Point Block order, Any Price Block order or Limit Sweep order when executing in Centre Point. Specifies the minimum quantity that must be traded in each execution cycle. 0 = no MAQ.

2.3.1.1.1. ASX Specific Structures for Regulatory Data Overlay

Name	Offset	Length	Value	Notes
Capacity of Participant	113	1	Alpha	Capacity of the participant. Values: "A" = Agency "P" = Principal "M" = Mixed Agency and Principal
Directed Wholesale	114	1	Alpha	Directed wholesale indicator for agency orders and transactions. Values: "Y" = True "N" = False (default).
Execution Venue	115	4	Alpha	Execution venue. Not required on order messages, therefore not applicable for ASX Trade OUCH. To be padded with spaces (ASCII 0x20).
Intermediary ID	119	10	Alpha	Intermediary identifier for agency orders and transactions.
Order Origin	129	20	Alpha	Origin or order information for agency orders and transactions.
Filler	149	8	Alpha	Ignore, not currently used. To be padded with spaces (ASCII 0x20).

2.3.2. Order Rejected Message

This message is returned when an Enter Order, Replace Order, Cancel Order or Cancel By Order ID message is rejected

2.3.2.1. Order Rejected Message Details

Name	Offset	Length	Value	Notes
Message Type	0	1	"J"	Order Rejected Message.
Timestamp – Nanoseconds	1	8	Timestamp	UNIX time (number of nanoseconds since 1970-01-01 00:00:00 UTC).
Order Token	9	14	Alpha	Client-generated order identifier.
Reject Code	23	4	Numeric	ASX Trade error code. See the *Genium System Error Message Reference* document for details about the error code.

2.3.3. Order Replaced Message

The Order Replaced message acknowledges the receipt and acceptance of a valid Replace Order message.

The data fields from the Replace Order message are echoed back in the Order Replaced message, but some of the accepted values may differ from the entered values for some fields, depending on the state of the order.

Like the Order Accepted message, the Order Replaced message uses the Order State field to show that an amendment was accepted and no quantity of the order is remaining in the order book through the value "Not on book" (2).

If an ASX Trade OUCH order is amended using another protocol (e.g. OMNet API), the ownership of that order is considered as changed to that protocol/session. The ASX Trade OUCH client who has originally entered the order receives an Order Replaced message with Order State set to 99 (OUCH order ownership lost). The ASX Trade OUCH client will not receive any further updates for this order after this. The ASX Trade OUCH client can still cancel this order using the Cancel By Order ID message.

Centre Point and dual posted Sweep orders (OUCH Order Type "N", "D", "S", "P", "B", "F", "T", "C" and "E") OUCH Order Type "N", "D" or "P") may have part of the Exchange Info field overlaid with an ASCII representation of the Centre Point price, if the order trades at an extended price (i.e. with more than one decimal of a cent).This mirrors existing behaviour in the OMNet API.

2.3.3.1. Order Replaced Message Details

Name	Offset	Length	Value	Notes
Message Type	0	1	"U"	Order Replaced Message.
Timestamp – Nanoseconds	1	8	Timestamp	UNIX time (number of nanoseconds since 1970-01-01 00:00:00 UTC).
Replacement Order Token	9	14	Alpha	The replacement order token that assigned to the order.
Previous Order Token	23	14	Alpha	The original order token used when the order was entered, not from any prior amendments.
Order Book ID	37	4	Numeric	Order book identifier (i.e. the instrument identifier). This can be found in the *ITCH Order Book Directory* message: ASX Trade ITCH and Glimpse Specification.
Side	41	1	Alpha	The type of order. Values: "B" = Buy order "S" = Sell order "T" = Short Sell order "C" = Buy order in a Combination where the sell leg(s) are short sell(s).
Order ID	42	8	Numeric	The identifier assigned to the order by ASX Trade. Note that this number is only unique per order book and side.
Quantity	50	8	Numeric	Order quantity that is currently open in the book.

Name	Offset	Length	Value	Notes
Price	58	4	Price	Price of the order (signed integer). **Note**: Number of decimals is specified in the *ITCH Order Book Directory* message: ASX Trade ITCH and Glimpse Specification. The number of decimal places for prices in ASX Trade OUCH is universally set to two decimal places, regardless of the configured number of decimal places for the instrument in ASX Trade. For OUCH Order Types N, S, B, D, F, T, C and E, prices at half-tick are permitted and will be interpreted as on-tick Limit price with half-tick improvement.
Time in Force	62	1	Numeric	The time validity of the order. Values: 0 = Day 3 = Fill and Kill 4 = Fill or Kill.
Open Close	63	1	Numeric	Not used by ASX. Ignore.
Client/Account	64	10	Alpha	Client – a free text field typically used by the customer to indicate the ultimate client making the order.
Order State	74	1	Numeric	Current state of the order. Values: 1 = On book 2 = Not on book 99 = OUCH ownership lost.
Customer Info	75	15	Alpha	Customer information – a free text field typically used by the customer to indicate their own order identifier.
Exchange Info	90	32	Alpha	A free text field used at the customer's discretion.
Clearing Participant	122	1	Alpha	Clearing participant identifier. Possible values for a participant can be retrieved from the first character of the clearing_customer_s field in the *OMNet API* Clearing Participant query DQ55 in the ASX Trade Query document at: ASX Trade Queries.
Crossing Key	123	4	Numeric	Crossing key for Unintentional Crossing Prevention. When two orders from the same customer with the same crossing key trade out, the resulting trade is treated like a booked transaction and not published to the market as a trade. Zero means "no Unintentional Crossing Prevention" for this order.

Name	Offset	Length	Value	Notes
Regulatory Data	127	44	Alpha	Regulatory data field used to facilitate the capture and transmission of regulatory data from ASX Trade Customers to ASIC. The ASX specific structures presented in the table below are required to be applied as an overlay to the field in the specified character position to support the transmission of the ASIC defined content to ASIC. All unused Regulatory Data character positions are to be padded by spaces (ASCII 0x20).
OUCH Order Type	171	1	Alpha	OUCH order type. Values: "Y" = Limit order "N" = Centre Point order (mid-point only) • Price > 0 defines a Centre Point Limit order • Price = 0 defines a Centre Point Market order "D" = Centre Point order (dark limit order) "S" = Sweep order (can be dual-posted if entered price is at half-tick) • Price > 0 defines a Limit Sweep order • Price = 0 defines a Market-to-Limit Sweep order "P" = Dual-posted Sweep order (mid-tick flag enabled). "B" = Centre Point Block order (mid-point only) with single fill MAQ • Price > 0 defines a Centre Point Block Limit order • Price = 0 defines a Centre Point Block Market order "F" = Centre Point order (dark limit order) with single fill MAQ "T" = Limit Sweep order (can be dual-posted if entered price is at half-tick) with single fill MAQ "C" = Any Price Block order "E" = Any Price Block order with single fill MAQ. Refer to *Appendix 2 – Mapping of ASX Trade OUCH Order Types to OMNet* API Values on how the OUCH order types map to OMNet API equivalent order type values.
Short Sell Quantity	172	8	Numeric	For short sell orders, the remaining portion of the quantity that is short.

Name	Offset	Length	Value	Notes
Minimum Acceptable Quantity	180	8	Numeric	MAQ of Centre Point Block order, Any Price Block order or Limit Sweep order when executing in Centre Point. Specifies the minimum quantity that must be traded in each execution cycle. 0 = no MAQ.

2.3.3.1.1. ASX Specific Structures for Regulatory Data Overlay

Name	Offset	Length	Value	Notes
Capacity of Participant	127	1	Alpha	Capacity of the participant. Values: "A" = Agency "P" = Principal "M" = Mixed Agency and Principal.
Directed Wholesale	128	1	Alpha	Directed wholesale indicator for agency orders and transactions. Values: "Y" = True "N" = False (default).
Execution Venue	129	4	Alpha	Execution venue. Not required on order messages, therefore not applicable for ASX Trade OUCH. To be padded with spaces (ASCII 0x20).
Intermediary ID	133	10	Alpha	Intermediary identifier for agency orders and transactions.
Order Origin	143	20	Alpha	Origin or order information for agency orders and transactions.
Filler	163	8	Alpha	Ignore, not currently used. To be padded with spaces (ASCII 0x20).

2.3.4. Order Cancelled Message

The Order Cancelled message informs the ASX Trade OUCH user that an order has been cancelled. This could be to acknowledge a Cancel Order or Cancel By Order Id message, or it could be as a result of system cancellation of an order.

An Order Cancelled message resulting from a Cancel By Order Id message or from another protocol / session cancelling the order (e.g. OMNet API), has the order token field blanked out (space filled).

If an ASX Trade OUCH user has elected to have own orders inactivated when a connection loss happens, in the event that the orders are inactivated, the user will receive an Order Cancelled message for each inactivated order. These orders cannot be re-activated again with ASX Trade OUCH, but it is possible to cancel these orders, in which case a second Order Cancelled message would be received. This is also the case for orders that are inactivated due to being purged as part of an Instrument Session State change.

2.3.4.1. Order Cancelled Message Details

Name	Offset	Length	Value	Notes
Message Type	0	1	"C"	Order Cancelled Message.
Timestamp – Nanoseconds	1	8	Timestamp	UNIX time (number of nanoseconds since 1970-01-01 00:00:00 UTC).
Order Token	9	14	Alpha	Client-generated order identifier.
Order Book ID	23	4	Numeric	Order book identifier (i.e. the instrument identifier). This can be found in the *ITCH Order Book Directory* message in: ASX Trade ITCH and Glimpse Specification.
Side	27	1	Alpha	The type of order. Values: "B" = Buy order "S" = Sell order "T" = Short Sell order "C" = Buy order in a Combination where the sell leg(s) are short sell(s).
Order ID	28	8	Numeric	The identifier assigned to the order by ASX Trade. Note that this number is only unique per order book and side.
Reason	36	1	Numeric	The reason for the cancellation. Values: 1 = Cancelled by user 4 = Order inactivated due to connection loss 9 = Fill and Kill order that was deleted in an auction 10 = Order deleted by ASX on behalf of the customer 20 = Deleted by system due to instrument session change 21 = Inactivated by system due to instrument session change 24 = Inactivated Day order.

2.3.5. Order Executed

The Order Executed message is returned when an order partially or fully trades.

When a Tailor Made Combination (TMC) order that was entered with ASX Trade OUCH trades out, an Order Executed message is received for the TMC instrument itself, as well as Order Executed messages for the individual instrument legs.

In OUCH, executions from TMCs are accumulated and published as one execution. This means that one execution could be published for multiple trades, including crossed and non-crossed trades. If any of the constituent trades are flagged with Crossing Dealing Capacity (Match Attribute bits 1 and 2) 01 (crossed with Principal order) or 11 (crossed with a Mixed Agency and Principal order) then the TMC execution will be marked as such, with 01 taking precedence over 11.

2.3.5.1. Order Executed Message Details

Name	Offset	Length	Value	Notes
Message Type	0	1	"E"	Order Executed Message
Timestamp – Nanoseconds	1	8	Timestamp	UNIX time (number of nanoseconds since 1970-01-01 00:00:00 UTC).
Order Token	9	14	Alpha	Client-generated order identifier
Order Book ID	23	4	Numeric	Order book identifier (i.e. the instrument identifier). This can be found in the *ITCH Order Book Directory* message in: ASX Trade ITCH and Glimpse Specification.
Traded Quantity	27	8	Numeric	Quantity that traded.
Trade Price	35	4	Price	Price that the order traded at (signed integer). **Note**: Number of decimals is specified in the *ITCH Order Book Directory* message: ASX Trade ITCH and Glimpse Specification. The number of decimal places for prices in ASX Trade OUCH is universally set to two decimal places, regardless of the configured number of decimal places for the instrument in ASX Trade.
Match ID	39	12	Numeric	Assigned by ASX Trade to each match executed.

Name	Offset	Length	Value	Notes
Deal Source	51	2	Numeric	The deal source is a numeric code that gives information about how the execution took place. The code matches the deal_source_c variable disseminated in the ASX Trade Open Interface. Applicable values for OUCH: 1 = Single series to single series auto-matched during continuous trading. 20 = Single series to single series auto-matched during an auction. 36 = Tailor made combination match. 43 = Combination order matched against outright legs. 44 = Booked transaction resulting from Unintentional Crossing Prevention. 45 = Booked transaction resulting from Unintentional Crossing Prevention during an auction. 46 = Centre Point Preference Matched trade. 47 = Centre Point trade. 48 = Centre Point booked transaction resulting from Unintentional Crossing Prevention. 49 = Reserved for future use. 50 = Block Trade. 51 = Preference Block Trade. 52 = Reserved for future use).
Match Attributes	53	1	Numeric	Match attributes of the executed order. This field consists of a bitmask, including the following attributes: Bit 0 – Passive/Aggressive indicator: • 0 = Order was executed passively (when resting in the book) • 1 = Order was executed aggressively (immediately on entry) Bit 1 and 2 – Crossing Dealing Capacity: • 00 = Order was not crossed or crossed with an order that was not defined as Principal, Agency or Mixed • 01 = Order crossed with a Principal order • 10 = Order crossed with an Agency order • 11 = Order crossed with a Mixed Agency and Principal order Bit 3-7 – Reserved for future use.

3. Access Configuration and Infrastructure

3.1. Overview

A customer can have multiple ASX Trade OUCH sessions. An ASX Trade OUCH port is associated with a customer using the ASX Trade OUCH ID. Any user belonging to the customer may log on to any of the customer's ASX Trade OUCH ports, assuming the user has been authorised to do so.

An ASX Trade OUCH client will only receive order updates for orders that were entered via the same ASX Trade OUCH session.

An ASX Trade OUCH gateway is directly connected to a specific ASX Trade partition. ASX Trade currently has five partitions; therefore customers need to have five separate ASX Trade OUCH sessions (one for each partition).

An ASX Trade OUCH session is logically tied to a specific port rather than a specific user. Updates for orders that have been entered on a specific session (port) will always be sent to that same port.

Example
User A logs on to an ASX Trade OUCH port, enters some orders and then logs out. User B from the same customer logs on to the same port (assuming User B is authorised to do so by the system). Assuming User B logs in with a sequence number of 1 (start of day), the user will receive all order acknowledgements, updates, fills and cancels for all orders User A has entered that day.

ASX Trade OUCH provides standard message recovery using SoupBinTCP. Users must keep track of how many messages they have received. This "implicit sequence number" is used when a user logs on after a disconnection. The logon must contain the last received sequence number, and ASX Trade OUCH replays all messages from that sequence number onwards.

See SoupBinTCP protocol details in the ASX Trade ITCH and Glimpse Specification.

The ASX Trade OUCH gateway servers are configured in families. Multiple families can co-exist. Each family consists of two nodes.

Since each gateway listens to all of the messages destined for it and its partner server in the family, each server will be up to date with all of the order information it needs in the event of a failure.

Inbound, ASX Trade OUCH accepts and filters out duplicate messages based on the order token, so the client can safely resend any messages for which no response has been received so far.

ASX Trade OUCH clients may log into either of the two servers. ASX Trade OUCH clients will be supplied with one unique username per partition. In the event of a server failure the client should log into the alterative server, either with sequence number 1 (to replay all acknowledgments to this point) or with their current sequence number. Logging in with sequence number zero is the equivalent to logging in with the current sequence number.

Note:
ASX Trade OUCH customers should **avoid** sending **duplicate messages** based on the same order token to both nodes of a gateway family at the **same time** or in **short succession** as this could result in a potential race condition where both nodes accept the transaction and action it. ASX recommends that customers wait at least two heartbeats before sending the duplicate message to the second node in case of a failover scenario.

3.2. ASX Trade OUCH Infrastructure Configuration Details

ASX Trade OUCH utilises TCP through a switched infrastructure. ASX Trade OUCH customers are required to allow for the following infrastructure requirements:

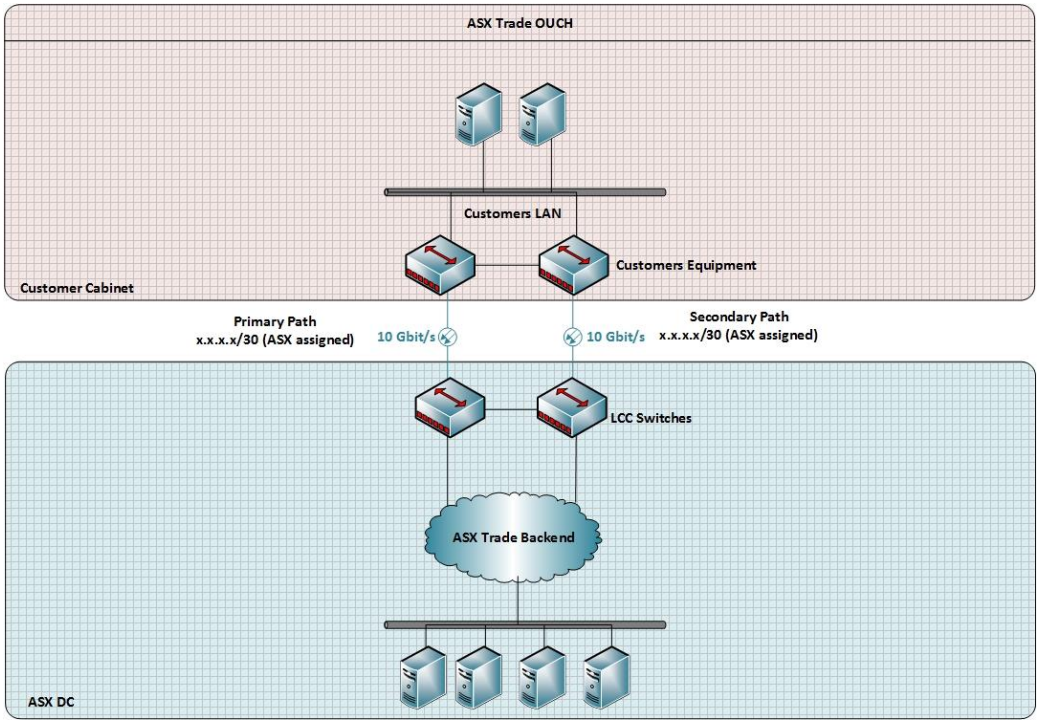
- Physical Layer:
  - Customers will use an ASX Trade (LCC) connection to connect to ASX Trade OUCH

- If this is a new service it will be delivered on OM3 multimode duplex LC connector
- The Media standard is 10GBASE-SR 10 Gigabit Ethernet connection
- It is the customer's responsibility to provide SFPs/XFPs to terminate the fibres.

- Customer Addressing:
  - All addressing is IP Version 4
  - Customers will in most cases use the same source subnet as their ASX Trade LCC connection. Additional ranges can be added if required, if so, they will need to be specified on the order request.
  - Customers can use their own globally unique addressing or can be allocated a private /24 address range and two /30 address ranges by ASX to be used on the customer's infrastructure from the following ranges:
    - 172.30.0.0
    - 10.30.0.0
    - 192.168.0.0
- ASX Addressing:
  - Unicast services addressing to be advised by ASX
- Routing:
  - ASX standard routing is static
  - ASX offers BGP for customers upon request
  - ASX numbers will vary for each service and connection
  - MD5 BGP key will be required and can be set by either ASX or the customer
  - Sending and receiving prefixes will also need to be agreed upon.
- Customer Infrastructure:
  - Customer network infrastructure will not require any additional feature sets.
  - Customer infrastructure should be sized so it can buffer 10Gbit/sec bursts.
- Customer Test Environment:
  - The customer test environment is provided on separate infrastructure thus a separate LCC is required although if customer has an existing trade PTE connection ASX will enable ASX Trade OUCH down that link.
  - The physical layer specifications are the same as production.

- Production Diagram:

  The following diagram shows the production configuration.



- IP Address and TCP Port Information:

Production				
Aggregate Address	203.0.119.81/28			
Service	Server 1	Server 2	API Port Range (five per customer)	OMNet API Port
Production OUCH Family 1	203.0.119.84	203.0.119.85	15501-15999	15024
Production OUCH Family 2	203.0.119.86	203.0.119.87	15501-15999	15024

Test				
Aggregate Address	203.0.119.161/28			
Service	Server 1	Server 2	API Port Range (five per customer)	OMNet API Port
FTE OUCH	203.0.119.168	203.0.119.169	15501-15999	15024
ETE OUCH	203.0.119.170	203.0.119.171	15501-15999	15024

Note:
Each customer will get a unique TCP port for each of the five ASX Trade OUCH partitions.

3.3. Changing Password

ASX Trade OUCH currently does not support changing the login password via a native OUCH message. To enable customers to change their ASX Trade OUCH user passwords, each ASX Trade OUCH server has an OMNet API port enabled (port 15024), so customers can use an OMNet API application to change the password.

ASX Trade OUCH customers are configured with non-expiring passwords, so a password change via OMNet API is optional.

4. Appendix 1 – ASX Trade OUCH Scenarios

The following ASX Trade OUCH scenarios are provided in this Appendix:

- **Scenario 1** – Order is entered, partially trades, is amended, partially trades again and is then cancelled.
- **Scenario 2** – Order is entered and trades out fully immediately.
- **Scenario 3** – Order is entered and then amended, causing it to partially trade immediately.
- **Scenario 4** – Fill and Kill order is entered trades partially and the remainder is cancelled.
- **Scenario 5** – Fill or Kill order entered and is cancelled immediately.
- **Scenario 6** – Order is entered but rejected by ASX Trade.
- **Scenario 7** – Order is entered and then amended by a different user using the OMNet API.
- **Scenario 8** – A TMC order is entered and immediately trades with orders in the market.

4.1. Scenario 1 – Order is entered, partially trades, is amended, partially trades again and is then cancelled

The process for this scenario can be summarised as:

1. Customer enters order.
2. Sometime later the order partially trades.
3. Customer amends the quantity of the order down.
4. Sometime later the order partially trades again.
5. The customer cancels the remaining order.

The process for scenario 1 is:

1. User enters a Buy order for BHP with quantity 5,000 at 3676 cents by sending an Enter Order message.

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"O" (*Enter Order Message*)
Order Token	14	Alpha	"token1 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Quantity	8	Numeric	5000
Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Customer Info	15	Alpha	"123456789A "
Exchange Info	32	Alpha	"ABC56789 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

The order is entered and as acknowledgement, the user receives an Order Accepted message.

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"A" (*Order Accepted Message*)
Timestamp	8	Timestamp	13:42:27.747280000
Order Token	14	Alpha	"token1 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	5000
Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Order State	1	Numeric	1 (*on book*)
Customer Info	15	Alpha	"123456789A "
Exchange Info	32	Alpha	"ABC56789 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

2. Sometime later the order partially trades for 1,000 at 3676 cents. The user receives an Order Executed message.

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"E" (*Order Executed Message*)
Timestamp	8	Timestamp	13:44:43.123390000
Order Token	14	Alpha	"token1 "
Order Book ID	4	Numeric	BHP (*translated value*)
Traded Quantity	8	Numeric	1000
Trade Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Match ID	12	Numeric	*match_id*
Deal Source	1	Numeric	1
Match Attributes	1	Numeric	0

3. The user amends the quantity of the order down to 2,000 using the Replace Order message. The quantity supplied in the Replace Order message is the desired total quantity, which is 2,000 on book plus 1,000 executed, i.e. 3,000.

Replace Order Message – Inbound message sent by participant			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"U" (*Replace Order Message*)
Existing Order Token	14	Alpha	"token1 "
Replacement Order Token	14	Alpha	"token2 "
Quantity	8	Numeric	3000
Price	4	Price	0 (*no change*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Customer Info	15	Alpha	"123456789A "
Exchange Info	32	Alpha	"ABC56789 "
Regulatory Data	44	Alpha	*As supplied by the customer.*
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

The order is amended and as acknowledgement, the user receives an Order Replaced message.

Order Replaced Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"U" (*Order Replaced Message*)
Timestamp	8	Timestamp	13:45:13.234710000
Replacement Order Token	14	Alpha	"token2 "
Previous Order Token	14	Alpha	"token1 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	2000
Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Order State	1	Numeric	1 (*on book*)
Customer Info	15	Alpha	"123456789A "
Exchange Info	32	Alpha	"ABC56789 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

4. Sometime later the order partially trades for 400 at 3676 cents. The user receives an Order Executed message.

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"E" (*Order Executed Message*)
Timestamp	8	Timestamp	13:49:10.551220000
Order Token	14	Alpha	"token2 "
Order Book ID	4	Numeric	BHP (*translated value*)
Traded Quantity	8	Numeric	400
Trade Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Match ID	12	Numeric	*match_id*
Deal Source	1	Numeric	1
Match Attributes	1	Numeric	0

5. The user choses to delete the order by sending a Cancel Order message.

Cancel Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"X" (*Cancel Order Message*)
Order Token	14	Alpha	"token2 "

4.2. Scenario 2 – Order is entered and trades out fully immediately

The process for this scenario can be summarised as:

1. User enters order.
2. The order trades out fully immediately with two opposing orders.

The process for scenario 2 is:

1. User enters a Sell order for BHP with quantity 6,000 at 3678 cents by sending an Enter Order message.

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"O" (*Enter Order Message*)
Order Token	14	Alpha	"token3 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"S"
Quantity	8	Numeric	6000
Price	4	Price	367800
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientXYZ "
Customer Info	15	Alpha	"123456789B "
Exchange Info	32	Alpha	"ABC56780 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

2. The order is entered and trades out immediately with two opposing orders, one for 2,000 and the second one for 4,000. As acknowledgement, the user receives an *Order Accepted* and two *Order Executed* messages.

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"A" (*Order Accepted Message*)
Timestamp	8	Timestamp	13:52:34.251340000
Order Token	14	Alpha	"token3 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"S"
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	0 (*no quantity left on book*)
Price	4	Price	367800
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientXYZ "
Order State	1	Numeric	2 (*not on book*)
Customer Info	15	Alpha	"123456789B "
Exchange Info	32	Alpha	"ABC56780 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"E" (*Order Executed Message*)
Timestamp	8	Timestamp	13:52:34.251340000
Order Token	14	Alpha	"token3 "
Order Book ID	4	Numeric	BHP (*translated value*)
Traded Quantity	8	Numeric	2000
Trade Price	4	Price	367800
Time In Force	1	Numeric	0 (*Day order*)
Match ID	12	Numeric	*match_id*

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Deal Source	1	Numeric	1
Match Attributes	1	Numeric	1

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"E" (*Order Executed Message*)
Timestamp	8	Timestamp	13:52:34.251340000
Order Token	14	Alpha	"token3 "
Traded Quantity	8	Numeric	4000
Trade Price	4	Price	367800
Time In Force	1	Numeric	0 (*Day order*)
Match ID	12	Numeric	*match_id*
Deal Source	1	Numeric	1
Match Attributes	1	Numeric	1

4.3. Scenario 3 – Order is entered and then amended, causing it to partially trade immediately

The process for this scenario can be summarised as:

1. User enters order.
2. User amends the price of the order.
3. The amendment causes the order to partially trade out immediately.

The process for scenario 3 is:

1. User enters a Buy order for BHP with quantity 3,000 at 3676 cents by sending an Enter Order message.

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"O" (*Enter Order Message*)
Order Token	14	Alpha	"token4 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Quantity	8	Numeric	3000
Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Customer Info	15	Alpha	"123456789C "
Exchange Info	32	Alpha	"ABC56790 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

The order is entered and as acknowledgement, the user receives an Order Accepted message.

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"A" (*Order Accepted Message*)
Timestamp	8	Timestamp	13:54:11.451340000
Order Token	14	Alpha	"token4 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	3000
Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Order State	1	Numeric	1 (*on book*)
Customer Info	15	Alpha	"123456789C "
Exchange Info	32	Alpha	"ABC56790 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

2. The user amends the price of the order to 3677 cents. This causes the order to trade out immediately for 500. As acknowledgement, the user receives an Order Replaced and an Order Executed message.

Replace Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"U" (*Replace Order Message*)
Existing Order Token	14	Alpha	"token4 "
Replacement Order Token	14	Alpha	"token5 "
Quantity	8	Numeric	0 (*no change*)
Price	4	Price	367700
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC"

Replace Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Customer Info	15	Alpha	“123456789C “
Exchange Info	32	Alpha	“ABC56790 “
Regulatory Data	44	Alpha	*As supplied by the customer.*
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

Order Replaced Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	“U” (*Order Replaced Message*)
Timestamp	8	Timestamp	13:55:16.421240000
Replacement Order Token	14	Alpha	“token5 “
Previous Order Token	14	Alpha	“token4 “
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	“B”
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	2500
Price	4	Price	367700
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	“clientABC “
Order State	1	Numeric	1 (*on book*)
Customer Info	15	Alpha	“123456789C “
Exchange Info	32	Alpha	“ABC56790 “
Clearing A	1	Alpha	“2”
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	“Y”
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	“E” (*Order Executed Message*)
Timestamp	8	Timestamp	13:55:16.421240000
Order Token	14	Alpha	“token5 “
Order Book ID	4	Numeric	BHP (*translated value*)
Traded Quantity	8	Numeric	500

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Trade Price	4	Price	367700
Time In Force	1	Numeric	0 (*Day order*)
Match ID	12	Numeric	*match_id*
Deal Source	1	Numeric	1
Match Attributes	1	Numeric	1

4.4. Scenario 4 – Fill and Kill order is entered that trades partially and remainder is cancelled

The process for scenario can be summarised as:

1. User enters Fill and Kill order.
2. The order trades partially and the remaining quantity is cancelled by the system.

The process for scenario 4 is:

1. User enters a Sell order for BHP with quantity 1,000 at 3678 cents and validity Fill and Kill by sending an Enter Order message.

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"O" (*Enter Order Message*)
Order Token	14	Alpha	"token6 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"S"
Quantity	8	Numeric	1000
Price	4	Price	367800
Time In Force	1	Numeric	3 (*Fill and Kill order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientXYZ "
Customer Info	15	Alpha	"1234567890 "
Exchange Info	32	Alpha	"ABC56799 "
Clearing	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

2. The order is entered and trades out immediately for 750. The remainder of the order is automatically cancelled by ASX Trade. As acknowledgement, the user receives an Order Accepted message, an Order Executed message and an Order Cancelled message.

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"A" (*Order Accepted Message*)
Timestamp	8	Timestamp	14:01:18.346820000

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Order Token	14	Alpha	“token6 “
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	“S”
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	250 (*250 left after execution*)
Price	4	Price	367800
Time In Force	1	Numeric	3 (*Fill and Kill order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	“clientXYZ “
Order State	1	Numeric	2 (*not on book*)
Customer Info	15	Alpha	“1234567890 “
Exchange Info	32	Alpha	“ABC56799 “
Clearing Participant	1	Alpha	“2”
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	“Y”
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	“E” (*Order Executed Message*)
Timestamp	8	Timestamp	14:01:18.346820000
Order Token	14	Alpha	“token6 “
Order Book ID	4	Numeric	BHP (*translated value*)
Traded Quantity	8	Numeric	750
Trade Price	4	Price	367800
Time In Force	1	Numeric	3 (*Fill and Kill order*)
Match ID	12	Numeric	*match_id*
Deal Source	1	Numeric	1
Match Attribute	1	Numeric	1

Order Cancelled Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	“C” (*Order Cancelled Message*)
Timestamp	8	Timestamp	14:01:18.346820000
Order Token	14	Alpha	“token6 “
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	“S”

Order Cancelled Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Order ID	8	Numeric	6222500519106127793
Reason	1	Numeric	1 (*cancelled by user*)

4.5. Scenario 5 – Fill or Kill order entered that is cancelled immediately

The process for this scenario can be summarised as:

1. User enters Fill or Kill order.
2. There is not enough quantity on the opposing side of the book and the Fill and Kill order is cancelled immediately by the system.

The process for scenario 5 is:

1. User enters a Buy order for BHP with quantity 2,000 at 3676 cents and validity Fill or Kill by sending an Enter Order message.

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"O" (*Enter Order Message*)
Order Token	14	Alpha	"token7 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Quantity	8	Numeric	2000
Price	4	Price	367600
Time In Force	1	Numeric	4 (*Fill or Kill order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientDEF "
Customer Info	15	Alpha	"1234567810 "
Exchange Info	32	Alpha	"ABC55799 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

2. The order is entered but cancelled immediately by ASX Trade because there is not enough quantity in the market to fully fill it. As acknowledgement, the user receives an Order Accepted and an Order Cancelled message.

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"A" (*Order Accepted Message*)
Timestamp	8	Timestamp	14:02:25.317830000
Order Token	14	Alpha	"token7 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	0 (*no quantity left on book*)
Price	4	Price	367600
Time In Force	1	Numeric	4 (*Fill or Kill order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientDEF "
Order State	1	Numeric	2 (*not on book*)
Customer Info	15	Alpha	"1234567810 "
Exchange Info	32	Alpha	"ABC55799 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

Order Cancelled Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"C" (*Order Cancelled Message*)
Timestamp	8	Timestamp	14:02:25.317830000
Order Token	14	Alpha	"token7 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Order ID	8	Numeric	*order_id*
Reason	1	Numeric	1 (*cancelled by user*)

4.6. Scenario 6 – Order is entered but rejected by ASX Trade

The process for this scenario can be summarised as:

1. Customer enters order.
2. ASX Trade rejects the order because the current session state does not allow order entry.

The process for scenario 6 is:

1. User enters a Buy order for BHP with quantity 500 at 3677 by sending an Enter Order message.

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"O" (*Enter Order Message*)
Order Token	14	Alpha	"token8 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Quantity	8	Numeric	500
Price	4	Price	367700
Time In Force	1	Numeric	1 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Customer Info	15	Alpha	"1234567811 "
Exchange Info	32	Alpha	"ABC55792 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

2. ASX Trade rejects the order because the current session state does not allow order entry (e.g. ADJUST). The user receives an Order Rejected message.

Order Rejected Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"J" (*Order Rejected Message*)
Timestamp	8	Timestamp	16:16:29.317830000
Order Token	14	Alpha	"token8 "
Reject Code	4	Numeric	-110023

4.7. Scenario 7 – Order is entered and then amended by a different user using the OMNet API

The process for this scenario can be summarised as:

1. Customer enters order.
2. Different user from the same customer amends the order using the OMNet API.
3. Sometime later the order trades out.

The process for scenario 7 is:

1. User enters a Buy order for BHP with quantity 5,000 at 3676 cents by sending an Enter Order message.

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"O" (*Enter Order Message*)
Order Token	14	Alpha	"token9 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Quantity	8	Numeric	5000
Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Customer Info	15	Alpha	"123456789A "
Exchange Info	32	Alpha	"ABC56789 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

The order is entered and as acknowledgement, the user receives an Order Accepted message.

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"A" (*Order Accepted Message*)
Timestamp	8	Timestamp	14:16:44.256810000
Order Token	14	Alpha	"token9 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	5000
Price	4	Price	367600
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0 (*no quantity left on book*)
Client/Account	10	Alpha	"clientABC"
Order State	1	Numeric	1 (*on book*)
Customer Info	15	Alpha	"123456789A "
Exchange Info	32	Alpha	"ABC56789 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

2. A non-OUCH user (e.g. OMNet API) amends the quantity of the order. The ASX Trade OUCH user receives an Order Replaced message with Order State set to 99 to show that ASX Trade OUCH order ownership has been lost.

Order Replaced Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"U" (*Order Replaced Message*)
Timestamp	8	Timestamp	14:16:46.256810000
Replacement Order Token	14	Alpha	" "
Previous Order Token	14	Alpha	"token9 "
Order Book ID	4	Numeric	BHP (*translated value*)
Side	1	Alpha	"B"
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	0
Price	4	Price	367700
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientABC "
Order State	1	Numeric	99 (*OUCH ownership lost)*
Customer Info	15	Alpha	"123456789A "
Exchange Info	32	Alpha	"ABC56789 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

3. Sometime later the order trades. The ASX Trade OUCH user does not receive any further updates on this order, because ASX Trade OUCH ownership has been lost.

4.8. Scenario 8 – A TMC order is entered and immediately trades with orders in the market

The process for this scenario can be summarised as:

1. User enters TMC order.
2. The TMC order trades immediately with orders already in the market.

The process for scenario 8 is:

1. User enters a Buy order for a BHP-RIO TMC with quantity 10,000 at net price 917 cents by sending an Enter Order message.

Enter Order Message – Inbound message sent by user			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"O" (*Enter Order Message*)
Order Token	14	Alpha	"token10 "
Order Book ID	4	Numeric	TMC_BHP_E_001 (*translated value*)
Side	1	Alpha	"B"
Quantity	8	Numeric	10000
Price	4	Price	91700
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientXYZ"
Customer Info	15	Alpha	"123456789B "
Exchange Info	32	Alpha	"ABC56780 "
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

2. The order is entered and trades out immediately with two orders in the market. As acknowledgement, the user receives one Order Accepted message and three Order Executed messages, one the TMC itself and one for each leg of the TMC.

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"A" (*Order Accepted Message*)
Timestamp	8	Timestamp	13:56:12.261240000
Order Token	14	Alpha	"token10 "
Order Book ID	4	Numeric	TMC_BHP_E_001(*translated value*)
Side	1	Alpha	"B"
Order ID	8	Numeric	*order_id*
Quantity	8	Numeric	0 (*no quantity left on book*)
Price	4	Price	91700
Time In Force	1	Numeric	0 (*Day order*)
Open Close	1	Numeric	0
Client/Account	10	Alpha	"clientXYZ "
Order State	1	Numeric	2 (*not on book*)
Customer Info	15	Alpha	"123456789B "
Exchange Info	32	Alpha	"ABC56780 "

Order Accepted Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Clearing Participant	1	Alpha	"2"
Crossing Key	4	Numeric	0
Regulatory Data	44	Alpha	*As supplied by the customer.*
OUCH Order Type	1	Alpha	"Y"
Short Sell Quantity	8	Numeric	0
Minimum Acceptable Quantity	8	Numeric	0

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"E" (*Order Executed Message*)
Timestamp	8	Timestamp	13:56:12.261240000
Order Token	14	Alpha	"token10 "
Order Book ID	4	Numeric	TMC_BHP_E_001(*translated value*)
Traded Quantity	8	Numeric	10000
Trade Price	4	Price	91700
Time In Force	1	Numeric	0 (*Day order*)
Match ID	12	Numeric	*match_id*
Deal Source	1	Numeric	43
Match Attributes	1	Numeric	1

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"E" (*Order Executed Message*)
Timestamp	8	Timestamp	13:56:12.261240000
Order Token	14	Alpha	"token10 "
Order Book ID	4	Numeric	RIO (*translated value*)
Traded Quantity	8	Numeric	10000
Trade Price	4	Price	275800
Time In Force	1	Numeric	0 (*Day order*)
Match ID	12	Numeric	*match_id*
Deal Source	1	Numeric	36
Match Attributes	1	Numeric	1

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Message Type	1	Alpha	"E" (*Order Executed Message*)
Timestamp	8	Timestamp	13:56:12.261240000

Order Executed Message – Outbound message sent by ASX Trade OUCH			
Field Name	**Length**	**Format**	**Example Value**
Order Token	14	Alpha	“token10 “
Order Book ID	4	Numeric	BHP (*translated value*)
Traded Quantity	8	Numeric	10000
Trade Price	4	Price	367500
Time In Force	1	Numeric	0 (*Day order*)
Match ID	12	Numeric	*match_id*
Deal Source	1	Numeric	36
Match Attributes	1	Numeric	1

5. Appendix 2 – Mapping of ASX Trade OUCH Order Types to OMNet API Values

This table shows how the supported ASX Trade OUCH order types map to OMNet API equivalent order type values.

Note:
All Centre Point order types will map to exch_order_type_n = 4096, regardless of whether they are entered with an MAQ or not.

OUCH Order Type Field Value	Description	ASX Trade Open Interface (OMNet API) Equivalent Definition
Y	Limit order	exch_order_type_n = 0
N	Centre Point order (mid-point only) Price > 0 defines a Centre Point Limit order Price = 0 defines a Centre Point Market order.	exch_order_type_n = 4096 mid_tick_c = 1 or 2, depending on entered price (if price is at half-tick, mid_tick_c = 1) minimum_quantity_i = entered MAQ single_fill_minimum_quantity_c = 2 preference_only_c = 2 order_type_c = 1 or 2 (depending on price)
D	Centre Point Order (dark limit order)	exch_order_type_n = 4096 mid_tick_c = 3 or 4, depending on entered price (if price is at half-tick, mid_tick_c = 4) minimum_quantity_i = entered MAQ single_fill_minimum_quantity_c = 2 preference_only_c = 2 order_type_c = 1
S	Sweep order Price > 0 defines a Limit Sweep order. Price = 0 defines a Market-to-Limit Sweep order.	exch_order_type_n = 2048 mid_tick_c = 1 or 2, depending on entered price (if price is at half-tick, mid_tick_c = 1) minimum_quantity_i = entered MAQ (must be zero for Market-to-Limit Sweep orders) single_fill_minimum_quantity_c = 2 preference_only_c = 2 order_type_c = 1 or 3 (depending on price)
P	Dual-posted Sweep order (i.e. mid-tick flag is enabled)	exch_order_type_n = 2048 mid_tick_c = 1 minimum_quantity_i = entered MAQ single_fill_minimum_quantity_c = 2 preference_only_c = 2 order_type_c = 1
B	Centre Point Block order (mid-point only) with single fill MAQ Price > 0 defines a Centre Point Block Limit order	exch_order_type_n = 4096 mid_tick_c = 1 or 2, depending on entered price (if price is at half-tick, mid_tick_c = 1)

OUCH Order Type Field Value	Description	ASX Trade Open Interface (OMNet API) Equivalent Definition
	Price = 0 defines a Centre Point Block Market order.	minimum_quantity_i = entered MAQ single_fill_minimum_quantity_c = 1 preference_only_c = 2 order_type_c = 1 or 2 (depending on price)
F	Centre Point Block order (dark limit order) with single fill MAQ	exch_order_type_n = 4096 mid_tick_c = 3 or 4, depending on entered price (if price is at half-tick, mid_tick_c = 4) minimum_quantity_i = entered MAQ single_fill_minimum_quantity_c = 1 preference_only_c = 2 order_type_c = 1
T	Limit Sweep order with single fill MAQ	exch_order_type_n = 2048 mid_tick_c = 1 or 2, depending on entered price (if price is at half-tick, mid_tick_c = 1) minimum_quantity_i = entered MAQ single_fill_minimum_quantity_c = 1 preference_only_c = 2 order_type_c = 1
C	Any Price Block order	exch_order_type_n = 4096 mid_tick_c = 5 or 6, depending on entered price (if price is at half-tick, mid_tick_c = 6) minimum_quantity_i = entered MAQ single_fill_minimum_quantity_c = 2 preference_only_c = 2 order_type_c = 1
E	Any Price Block order with single fill MAQ	exch_order_type_n = 4096 mid_tick_c = 5 or 6, depending on entered price (if price is at half-tick, mid_tick_c = 6) minimum_quantity_i = entered MAQ single_fill_minimum_quantity_c = 1 preference_only_c = 2 order_type_c = 1

Note:
Depending on the value of the ASX Trade OUCH Side field specified for the order, exch_order_type_n = 2 (Short Sell) may also apply in combination with the above exchange order types.

6. Appendix 3 – Frequently Asked Questions

6.1. General Protocol FAQs

Q: Is ASX Trade OUCH asynchronous? Can we enter a new order when the Order Accepted or Order Rejected message from the previous order is still pending?

A: Yes, ASX Trade OUCH is asynchronous. You can keep sending in transactions even if you haven't received the response to the previous transaction yet.

Q: How do we change the login passwords of the ASX Trade OUCH users?

A: ASX Trade OUCH currently does not support changing the login password via a native ASX Trade OUCH message. To enable customers to change their ASX Trade OUCH user passwords, each ASX Trade OUCH server has an OMNet API port enabled (port 15024), so customers can use an OMNet API application to change the password. ASX Trade OUCH users are configured with non-expiring passwords, so a password change via OMNet API is optional.

6.2. Environment FAQs

Q: How can users get access to the ASX Trade OUCH test environment?

A: Via the Liquidity Cross Connect to your rack in the ALC. Access via ASX Net or VPN is not supported.

Q: There is no ASX Trade OUCH protocol message to work out Order Book IDs and which Order Book IDs belong to which ASX Trade partition. Is this something that can be worked out programmatically?

A: The Order Book IDs have to be retrieved from ASX ITCH as seen in the ASX Trade ITCH and Glimpse Specification. ASX ITCH also has a connection per ASX Trade partition and the same partitions apply to ASX Trade OUCH.

6.3. Functionality FAQs

Q: ASX Trade OUCH supports the cancellation of orders that were entered by other sessions or protocols with the Cancel By Order ID message. Can we also amend orders that were entered by another session or protocol?

A: No, you can only amend orders created in the same ASX Trade OUCH session. Amends are only supported by order token and each ASX Trade OUCH session only knows its own order tokens.

Q: If an order amendment is unsuccessful (i.e. the Replace Order message is rejected), what happens to the order. Will it remain in the order book?

A: Yes, the order will remain in the order book unchanged.

Q: How do we know if a Fill and Kill order has fully traded, has only partially traded or not traded at all? Can we tell from the received Order Accepted message?

A: In addition to the Order Accepted message with Order State set to "Not on book" (2), you will receive Order Executed messages for any trades and an Order Cancelled message for the portion of the order that was cancelled. In Appendix 1 - *Scenario 4 – Fill and Kill order is entered that trades partially and remainder is cancelled* shows an example.

Q: What happens if an order entered with OMNet API marked with a Crossing Key for Unintentional Crossing Prevention crosses with an ASX Trade OUCH order?

A: ASX Trade OUCH also supports Unintentional Crossing Prevention. If the ASX Trade OUCH order has the same Crossing Key as the OMNet API order, a booked transaction will be created from the two orders, as per normal Unintentional Crossing Prevention functionality.

Q: Does ASX Trade OUCH support mass cancellation of orders?

A: No, mass cancellation of orders is not supported.

Q: Will a single or a mass cancellation of orders sent via OMNet API also cancel ASX Trade OUCH orders?

A: Yes, an OMNet API cancellation will cancel ASX Trade OUCH orders. For OMNet API mass cancellations, the ASX Trade OUCH orders have to fit into the filter criteria used for the mass cancellation.

Q: Will trades generated from ASX Trade OUCH orders be disseminated as normal via the OMNet API?

A: Yes, orders entered, amended and cancelled with ASX Trade OUCH and ASX Trade OUCH orders that trade out will generate all OMNet API broadcasts and responses to queries as normal (e.g. BO5, CB15, CB16).

Q: Will Market Makers be able to use ASX Trade OUCH for quoting?

A: Market Makers could use ASX Trade OUCH for quoting, but given the fact that the OMNet API MO36 transaction supports bulk quoting, the MO36 may in fact be a faster option for Market Makers. ASX Trade OUCH does not support bulk order entry. Additionally, ASX Trade OUCH orders generate OMNet BO5 broadcasts, whereas MO36 does not.

If Market Makers enter 12 double sided quotes via MO36 they are effectively able to enter 48 transactions (as deletes are done by the quote mechanism) times 10tps, equalling 480tps.

We know that it sometimes is difficult for Market Makers to fill up MO36s efficiently, so they may prefer to use ASX Trade OUCH to enter individual quote transactions in a rapid stream.

Q: When I enter an order for a TMC (tailor made combination) with ASX Trade OUCH, will I be informed of the individual leg executions?

A: When a Tailor Made Combination (TMC) order that was entered with ASX Trade OUCH trades out, an Order Executed message will be received for the TMC instrument itself, as well as Order Executed messages for the individual instrument legs.

7. Document Version Control

Date	Version	Change	Requested By	Author
18/03/15	V2.0	Updated with changes for the ASX Trade Q2 2015 Release (SR8): Addition of new field Minimum Acceptable Quantity in the following messages: • Enter Order • Replace Order • Order Entered • Order Replaced. Addition of new field Match Attributes the Order Executed message. Additional of five new OUCH Order Types: • OUCH Order Type = B: Mid-point Centre Point Block Order with single fill MAQ • OUCH Order Type = F: Dark limit Centre Point Block Order with single fill MAQ • OUCH Order Type = T: Centre Point Sweep order with single fill MAQ • OUCH Order Type = C: Any Price Block order • OUCH Order Type = E: Any Price Block order with single fill MAQ For OUCH Order Types N, S, B, D, F, T, C and E, the Enter Order and Replace Order messages will accept prices at half-tick. A price at half-tick to be interpreted as on-tick Limit price with half-tick improvement. Addition of four new values for the Deal Source field in the Order Executed message: • 49 = Reserved for future use • 50 = Block Trade • 51 = Preference Block Trade • 52 = Reserved for future use.	Silvia Ohr	Joanne Mottram

Information Classification – Public

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