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Interface Specifications
HKEx Orion Central Gateway Platform

Binary Trading Protocol

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1. Document Control

1.1 Change History

Version Number	Issue Date	Section Number	Status
1.0	31 October 2012	All	First Version
1.1	21 December 2012	<ul style="list-style-type: none"> ▪ 3.6 – Password Policy ▪ 5.7 – Transmission of missed messages ▪ 7.1 – Message Types ▪ 7.4.1 – Lookup Request ▪ 7.4.2 – Lookup Response ▪ 7.5.1 – Logon ▪ 7.5.2 – Logout ▪ 7.6.6.2 – Execution Report – Order Rejected ▪ 7.6.6.4 – Execution Report – Order Cancelled (Unsolicited) ▪ 7.6.6.11 – Auto-matched Trade Cancelled ▪ 7.8.1 – Trade Capture – Submission ▪ 7.8.2 – Trade Capture – Confirmation/Acknowledgement ▪ 8 – Data Dictionary ▪ Appendix A – Password Policy 	Revised Version
1.2	25 March 2013	<ul style="list-style-type: none"> ▪ 3.5 – Encryption ▪ 6.5 – Text Field ▪ 6.6.3.3 – Trade Report ID ▪ 6.6.8 – Amending an Order ▪ 6.10 – Cancel on Disconnect ▪ 7 – Message Format ▪ 8 – Data Dictionary 	Revised Version
1.3	28 June 2013	<ul style="list-style-type: none"> ▪ 3.7 – Change Password ▪ 5.3 – Logon Message Processing – Next Expected Message Sequence ▪ 6.1 – Data Types ▪ 6.3 – Security Identification ▪ 6.4 – Party Identification ▪ 6.6.3.1 – Client Order ID ▪ 6.6.3.2 – Quote Bid ID, Quote Offer ID and Quote Message ID ▪ 6.6.3.3 – Trade Report ID ▪ 6.6.8 – Amending an Order ▪ 6.7.4 – Message Flow ▪ 7.4.2 – Lookup Response (8) ▪ 7.6.1 – New Order – Single (11) ▪ 7.6.2 – Amend Order (12) ▪ 7.6.6.8 – Order Cancel Rejected ▪ 7.6.6.9 – Order Amend Rejected ▪ 7.6.6.10 – Order Executed (Trade) ▪ 7.8.2.3 – Trade Capture Report Ack (22) ▪ 8.2 – Body Fields 	Revised Version

1.4	2 December 2013	Clarification of message fields and message handling: <ul style="list-style-type: none"> ▪ Section 3.5 - Encryption ▪ Section 6 – Service Description ▪ Section 7 – Message Format ▪ Section 8 – Data Dictionary 	Revised Version
1.5	20 June 2014	Odd lot/Special lot Order functions added: <ul style="list-style-type: none"> ▪ 6.9 – Odd lot/Special lot order handling ▪ 7.6.2 – New Odd Lot/Special Lot Order ▪ 7.6.7.12 – Trade (Odd lot/Special lot Order Executed) ▪ 7.6.7.13 – Trade (Semi-auto-matched) Cancelled ▪ 7.8.1.3 – New Odd lot/Special lot Trade ▪ 7.8.2.2 – Trade (Odd lot/Special lot/ Accepted) ▪ Data Dictionary 	Revised Version
1.6	23 July 2015	Update (description only) for AMS Volatility Control Mechanism (VCM): <ul style="list-style-type: none"> ▪ 7.6.7.4 – Order Cancelled – Unsolicited ▪ 8.2 – Body Fields 	Revised Version

2. Introduction

This document describes the binary interface of the HKEx Orion Central Gateway (“OCG”), the market access platform for the Securities market.

The OCG provides a centralized, highly resilient, low latency, flexible and scalable platform for all Exchange Participants (EPs) to access HKEx securities trading system (“AMS”) for order, quote and trade management.

The terminology used, message format, message flow and event models described throughout this document are similar to that of FIX 5.0 SP2 protocol specifications, where applicable, with some specific and explicit changes for performance and adaptability reasons.

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3. Connectivity

3.1 Session

Exchange Participants connect their broker supplied systems (“BSS” or “Client”) to the OCG via subscription to one or more OCG “Session”. This connection is a standard TCP/IP point-to-point connection.

EPs are expected to pre-register at least one IP address using which a client from their end would establish a Trading Session with the OCG. For backup purposes EPs can optionally pre-register up to 3 additional IP addresses for each session.

A session can be established from only one of the pre-registered IP addresses for that session. EPs can pre-register any given IP address for more than one session such that the same BSS can be used to connect to OCG through one or more sessions.

3.2 Comp ID

The client should use the Comp ID (a unique session identifier) provided by HKEx for each session in order to connect to the OCG. A single client may have multiple connections to the OCG i.e., multiple Binary sessions, each with its own Comp ID.

The messages sent to the OCG should contain the Comp ID assigned to the client in the field Comp ID in the header section.

3.3 IP Address and Port Numbers

The client that wishes to connect to the OCG will first connect to the Lookup Service by using one of the four (4) Lookup Service IP-port pairs published by HKEx. Two of these connection points represent the primary site Lookup Service and the other two represent the backup site Lookup Service

HKEx will provide these four (4) IP address and Port number pairs through a separate medium.

3.4 Lookup Service

The client connecting to the OCG via the binary protocol must first connect to a predefined Lookup Service and request for a connection point (an IP address and port) to the binary trading gateway.

The client should attempt the Lookup Service connections in the following order:

- Primary site primary Lookup Service
- Primary site mirror Lookup Service
- Backup site primary Lookup Service
- Backup site mirror Lookup Service
- Cycle back to primary site primary Lookup Service

The backup site Lookup Service will not be open unless there is a failover.

The client can request for the Lookup Service via the Lookup Request message by specifying the Type of Service and the Protocol Type the client wish to connect to.

The Lookup Request must originate from an IP address allowed (i.e., one of the 4 IP addresses as mentioned in [Section 3.1](#)) for the Comp ID specified in the Lookup Request.

The Lookup Service will respond to a Lookup Request with a Lookup Response. If the Lookup Request is accepted, the Lookup Service will deliver two IP Address & Port pairs (one for the primary and one for the mirror) of the OCG trading service to the client via the Lookup Response. The client is expected to always attempt the primary service first.

In the case where the Lookup Request is rejected, the Lookup Service will reply with a Lookup Response with Lookup Status set to Rejected (1). The reason for rejection of the Lookup Request will be reflected in the Lookup Reject Code field.

If Lookup Service can't be reached for reasons or the service rejects the request, client should observe a delay of 5 seconds before re-attempting.

3.5 Encryption

The binary protocol expects Password and New Password be encrypted when they are sent in the Logon message from the client to the OCG.

To encrypt the password, the client is expected to use a 2048-bit RSA ([http://en.wikipedia.org/wiki/RSA \(algorithm\)](http://en.wikipedia.org/wiki/RSA_algorithm)) public key circulated (through a different medium) by HKEx. The binary output of the RSA encryption must be represented in Big Endian format (Padding scheme is PKCS #1) and then converted to an alphanumeric value by means of standard base-64 encoding (<http://en.wikipedia.org/wiki/Base64>) when communicating with the OCG.

HKEx may periodically renew the public key used by the client and after a public key renewal; a client may continue to use the old key for a limited grace period. Both keys may be used during this time.

3.6 Password

The client should specify their password in the Password field of the Logon message. This password must be in encrypted form. For security reasons, the client is expected to prefix the login time, in UTC format (YYYYMMDDHHMMSS), to the password before encryption. The client must ensure that login time is in accurate UTC. The OCG will extract the login time prefix from the decrypted password string and validate that it is within the configured tolerance of the actual current time. A Logon request that fails this validation is rejected by the OCG.

The status of the password (i.e. whether it is accepted or rejected) will be specified in the Session Status field of the Logon sent by the OCG to confirm the establishment of a binary connection.

Repeated failures in password validation may force HKEx to lock the client; the EP is expected to contact HKEx to unlock the client and reset the password.

3.7 Change Password

Each new Comp ID will be assigned a password on registration. The client is expected to change the password upon first logon whenever a password is (re)issued by HKEx.

Password change request can be made together with Logon request. The client should specify the encrypted new password in the New Password field and the current encrypted password in the Password field.

The new password must comply with HKEx password policy (refer to Appendix [A](#)). The status of the new password (i.e. whether it is accepted or rejected) will be specified in the Session Status field of the Logon sent by the OCG to confirm the establishment of a binary connection. The new password will, if accepted, be effective for subsequent logins.

The client is required to change the password periodically. HKEx will set expiry duration for the password without exemption; a reminder will be sent indicating that the password is to about to expire, through the Text field in the Logon response. Once the password has expired for a client, that client will not be allowed to logon, and the EP is required to contact HKEx to unlock and reset the client password.

3.8 Failure and Recovery

The system has been designed with fault tolerance and disaster recovery technology that ensures that trading should continue in the unlikely event of a process or server outage.

If the client is unexpectedly disconnected from the Primary OCG, it should attempt to re-connect to the Primary OCG before attempting to connect to the Secondary OCG. Even after these attempts if a connection can't be established, the client then should make use of Lookup Service to determine the connection points once again.

4. Session Management

4.1 Establishing a Binary Session

Each client will use the assigned IP address and port provided via the Lookup Service to establish a TCP/IP connection with the OCG. The client will initiate a Binary session at the start of each trading day by sending the Logon message.

A client must identify itself using the Comp ID field. The OCG will validate the Comp ID, password and IP address of the client.

Once the client is authenticated, the OCG will respond with a Logon message with Session Status set to Session Active (0). If the client's Logon message included the field New Password and the client is authenticated, the OCG will respond with a Logon message with Session Status set to Session Password Changed (1).

The client must wait for the Logon from the OCG before sending additional messages. If additional messages are received from the client before the exchange of Logon messages, the TCP/IP connection with the client will be disconnected.

If a logon attempt fails for the following reasons, the OCG will send a Logout or a Reject and then terminate the session; the Session Status of the Logout message will indicate the reason for the logout:

- Password failure
- Comp ID is locked
- Logon is not permitted during this time

For all other reasons, including the following, the OCG will terminate the session without sending a Logout or Reject:

- Invalid Comp ID or IP address

If during a logon of a client (i.e., a Comp ID), the OCG receives a second connection attempt while a valid binary session is already underway for that same Comp ID, the OCG will terminate both connections without sending a Logout or Reject message.

Inbound message sequence number will not be incremented if the connection is abruptly terminated due to the logon failure.

If a session level failure occurs due to a message sent by the client which contains a sequence number that is less than what is expected and the PossDup is not set to 1 (Yes), then the OCG will send a Logout message and terminate the Binary connection. In this scenario the inbound sequence number will not be incremented but the outbound sequence number will be incremented.

If the OCG does not respond to the session initiation (client initiated Logon message), the client is expected to wait for a time period of **60 seconds** prior to terminating the connection. The client is expected to retry session initiation after an elapsed time period of **60 seconds**.

If a client is disconnected abruptly or via a Logout message from the OCG, the client is expected to wait for a time period of **10 seconds** prior to reconnecting to the OCG.

4.2 Message Sequence Numbers

Under the binary protocol, the client and OCG will each maintain a separate and independent set of incoming and outgoing message sequence numbers. Sequence numbers

should be initialized¹ to 1 (one) at the start of the day and be incremented throughout the session. Either side of a binary session will track the:

- Next Expected Message Sequence number (starting at 1)
- Next To Be Sent Message Sequence number (starting at 1); with respect to the contra-party.

Monitoring sequence numbers will enable parties to identify and react to missed messages and to gracefully synchronize applications when reconnecting during a Binary session.

Any message sent by either side of a binary session will increment the sequence number unless explicitly specified for a given message type.

If any message sent by one side of a binary session contains a sequence number that is LESS than the Next Expected Message Sequence number then the other side of this session is expected to send a Logout message and terminate the Binary connection immediately, unless the PossDup flag is set to 1 (Yes)

A Binary session will not be continued to the next trading day. Both sides are expected to initialize (reset to 1) the sequence numbers at the start of each day. At the start of each trading day if the client starts with a sequence number greater than 1 then the OCG will terminate the session immediately without any further exchange of messages.

4.3 Heart Beat and Test Request

The client and the OCG will use the Heartbeat message to monitor the communication line during periods of inactivity and to verify that the interfaces at each end are available.

The heartbeat interval is expected to be set as **20 Seconds**.

The OCG will send a Heartbeat anytime it has not transmitted a message for the duration of the heartbeat interval. The client is expected to employ the same logic.

If the OCG detects inactivity for a period longer than **3 heartbeat intervals**, it will send a Test Request message to force a Heartbeat from the client. If a response to the Test Request is not received within a reasonable transmission time (recommended being an elapsed time equivalent to 3 heartbeat intervals), the OCG will send a Logout and break the TCP/IP connection with the client. The client is expected to employ similar logic if inactivity is detected on the part of the OCG.

4.4 Terminating a Binary Session

Session termination can be initiated by either the OCG or the client by sending a Logout message. Upon receiving the Logout request, the contra party will respond with a Logout message signifying a Logout reply. Upon receiving the Logout reply, the receiving party will terminate the connection.

If the contra-party does not reply with either a Resend Request or a Logout reply, the Logout initiator should wait for **60 seconds** prior to terminating the connection.

The client is expected to terminate each Binary connection at the end of each trading day before the OCG service is shut down. However, all open Binary connections will be terminated (a Logout message will be sent) by the OCG when its service is shut down. Under exceptional circumstances the OCG may initiate the termination of a connection during the trading day by sending the Logout message.

¹ *Lookup service related messages (i.e., Lookup Request and Lookup Response) are expected to have a sequence number of 1 always; and these sequence numbers have no relationship with the sequence numbers for the session referred to here.*

If, during the exchange of Logout messages, the client or the OCG detects a sequence gap, it should send a Resend Request.

4.5 Re-establishing a Binary Session

If a Binary connection is terminated during the trading day it may be re-established via an exchange of Logon messages.

Once the Binary session is re-established, the message sequence numbers will continue from the last message successfully transmitted prior to the termination.

4.6 Sequence Reset

The sequence reset could be done in two modes;

1. Gap-fill mode:

Gap-fill mode is expected to be used by one side when skipping session level messages which can be ignored by the other side.

2. Reset mode:

Reset mode is used only in exceptional scenarios to indicate a reset in the session's starting sequence number. This mode can ONLY be used by the OCG. Client initiated resets would be rejected by the OCG.

Following scenarios exist:

4.6.1 During a Session

The OCG and the client may use the Sequence Reset message in Gap Fill mode if either side wishes to increase the expected incoming sequence number of the other party.

The OCG may also use the Sequence Reset message in Sequence Reset mode if it wishes to increase the expected incoming sequence number of the other party. The Sequence Reset mode should only be used to recover from an emergency situation. It should not be relied upon as a regular practice.

4.6.2 When starting a new Session

4.6.2.1 Reset Initiated by the Client

Reset sequence (reset to 1) through the Logon Message will not be facilitated by the OCG. In order to reset the sequence (reset to 1), the client should manually inform the HKEx Operations Desk.

4.6.2.2 Reset Initiated by the OCG

The system has been designed with fault tolerance and disaster recovery technology that should ensure that the OCG retains its incoming and outgoing message sequence numbers for each client in the unlikely event of an outage. However, the client is required to support a manual request by HKEx to initialize sequence numbers prior to the next login attempt.

4.7 Fault Tolerance

After a failure on client side or on OCG side, the client is expected to be able to continue the same session.

In case of a catastrophic scenario, the binary gateway will restart from a higher sequence number considering the previous session or may start from sequence number 1.

If the sequence number is reset to 1 by the OCG, all previous messages will not be available for the client side.

The client and the OCG are expected to negotiate on the Next Expected Message Sequence number and Next To Be Received Sequence number through an alternate medium prior to initiating the new session (Manually setting the sequence number for both ends after having a direct communication with the client).

4.8 Checksum Validation

The OCG performs a checksum validation on all incoming messages into the input services. Incoming messages that fail the checksum validation will be rejected and the connection will be dropped by the OCG without sending a logout.

Conversely, the OCG stamps an identically calculated checksum field on all outgoing messages from the input interfaces. In case of a checksum validation failure, the client is expected to drop the connection and take any appropriate action before reconnecting. Messages that fail the checksum validation should not be processed.

This checksum is a **CRC32C** value with the polynomial **0x1EDC6F41**, presented as a 32-bit unsigned integer (http://en.wikipedia.org/wiki/Cyclic_redundancy_check#CRC-32C).

5. Recovery

5.1 General Message Recovery

- A gap is identified when an incoming message sequence number is found to be greater than Next Expected Message Sequence number.
- The Resend Request will indicate the Start Sequence and End Sequence of the message gap identified and when replying to a Resend Request, the messages are expected to be sent strictly honouring the sequence.
- If messages are received outside of the Start and End sequence numbers, then the recovering party is expected to queue those messages until the gap is recovered.

During the message recovery process, the recovering party will increment the Next Expected Sequence number accordingly based on the messages received. If messages applicable to the message gap are received out of sequence then the recovering party will drop these messages.

- The party requesting the Resend Request can specify “0” in the End Sequence to indicate that they expect the sender to send ALL messages starting from the Start Sequence.

In this scenario, if the recovering party receives messages with a sequence greater than the Start Sequence, out of sequence, the message will be ignored.

- Administrative messages such as Sequence Reset, Heartbeat and Test Request which can be considered irrelevant for a retransmission could be skipped using the Sequence Reset message in gap-fill mode.

Note that the OCG expects the client to skip Sequence Reset messages when replying to a Resend Request at all times.

- When resending messages, the OCG would use either PossDup or PossResend flag to indicate whether the messages were retransmitted earlier.

If PossDup flag is set, it indicates that the same message with the given sequence number with the same business content may have been transmitted earlier.

In the case where PossResend flag is set, it indicates that the same business content may have been transmitted previously but under the different message sequence number. In this case business contents needs to be processed to identify the resend. For example, in Execution Reports the Execution ID may be used for this purpose.

5.2 Resend Request

The client may use the Resend Request message to recover any lost messages. This message may be used in one of three modes:

- (i) To request a single message. The Start Sequence and End Sequence should be the same.
- (ii) To request a specific range of messages. The Start Sequence should be the first message of the range and the End Sequence should be the last of the range.
- (iii) To request all messages after a particular message. The Start Sequence should be the sequence number immediately after that of the last processed message and the End Sequence should be zero (0).

5.3 Logon Message Processing – Next Expected Message Sequence

Upon receipt of a Logon message from a client, the OCG will validate the Comp ID and the Password. If this validation results in an invalid Comp ID or invalid password the OCG would terminate the session with the client without any further exchange of messages.

If the Logon request is validated successfully for Comp ID and password, the OCG will move onto validate the Next Expected Message Sequence number of the incoming Logon message.

If the Next Expected Message Sequence number indicated is:

1. Greater than the OCG's Next To Be Sent Sequence number, then the session will be terminated immediately after sending the logout message (i.e., manual intervention is required in this case).
2. Equal to the OCG's Next To Be Sent Sequence number, then the OCG will start sending message starting from the indicated sequence number
3. Less than the OCG's Next To Be Sent Sequence number, then the OCG would consider this as a gap-fill (i.e., the client has not received these messages and the OCG has to resend them now²) and send messages starting from the indicated message up to the logon message sequence and skip the logon message sequence using a gap-fill and continue sending new messages from there on

If the Next Expected Message Sequence number indicated is valid then the OCG will send a Logon signifying a logon reply specifying the Next Expected Message Sequence number from the client. Immediately following the logon reply, the OCG would start message transmission as indicated above.

The client upon receipt of the Logon message from the OCG is expected follow the exact steps as indicated above.

Neither side should generate a Resend Request based on the Sequence Number of the incoming Logon message but should expect any gaps to be filled automatically by following the Next Expected Sequence processing described above².

Note that indicating the Next Expected Message Sequence number in the Logon request is mandatory.

5.4 Possible Duplicates

The OCG handles possible duplicates according to the Financial Information Exchange – FIX protocol.

5.5 Possible Resends

5.5.1 Client Initiated Messages

The OCG does not handle possible resends for the client-initiated messages (e.g., New Order, Quote, etc.) and the message will be processed without considering the value in the PossResend field. Any message with duplicate Client Order ID will be rejected based on the Client Order ID uniqueness check and messages which conform to the uniqueness check will be processed as normal messages.

5.5.2 OCG Initiated Messages

The OCG may use the PossResend field to indicate that an application message may have already been sent under a different sequence number. The client should validate the

² During the period where the OCG is resending messages to the client, the OCG does not allow another Resend Request from the client. If a new Resend Request is received during this time, the OCG will terminate the session immediately without sending the Logout message.

contents (e.g., Execution ID) of such a message against those of messages already received during the current trading day to determine whether the new message should be ignored or processed.

5.6 Gap Fills

The following messages are expected to be skipped using gap-fills when being retransmitted:

1. Logon
2. Logout
3. Heartbeat
4. Test Request
5. Resend Request
6. Sequence Reset

All other messages are expected to be replayed within a retransmission.

5.7 Transmission of Missed Messages

The Execution Report, Order Mass Cancel Report, Quote Status Report, Trade Capture Reports/Acks, Business Message Reject and Reject messages generated during a period when a client is disconnected from the OCG will be sent to the client when it next reconnects. In the unlikely event the disconnection was due to an outage of the OCG, Business Message Reject and Reject messages may not be retransmitted, and the messages which will be retransmitted to the client will include a PossResend set to 1 (Yes).

6. Service Description

6.1 Data Types

The table below describes each data type included in all of the messages in the Binary Trading Gateway.

#	Data Type	Size in Bytes	Description
1.	Alphanumeric Fixed Length (n)	Length is n bytes (Fixed for a given field)	<p>These fields use standard ASCII character bytes. All fields of this data type will be null terminated and the length of the field will include this null character. If the field value does not occupy the full length of the field then data after the null termination should be discarded.</p> <p>For messages coming into OCG:</p> <ul style="list-style-type: none"> if the field value occupies the full length of the field including the null character, OCG will override the last character with null value. if the field value does not occupy the full length of the field and if there is no null termination character specified, OCG will consider the full length excluding the null character as the field value. <p><i>In case the field is empty, the first byte will be null filled.</i></p> <p>Each Alphanumeric Fixed Length field will have its size indicated within the Data Dictionary section.</p> <p>Alphanumeric Fixed Length fields will support Multiple Values to be specified separated by a space.</p> <p>For applicable fields please refer the Data Dictionary.</p>
2.	Alphanumeric Variable Length	Variable	<p>These fields use standard ASCII character bytes. All fields of this data type will be null terminated and the length of the field will include this null character. If the field value does not occupy the full length of the field then data after the null termination should be discarded.</p> <p><i>In case the field is empty, the third byte will be null filled.</i></p> <p>The length of each Alphanumeric Variable Length field will be indicated in the first two bytes as UInt16.</p> <p>The length range of this field will be from 0 – 65,535.</p> <p>The Alphanumeric Variable Length fields will also support Multiple Values to be specified separated by a space.</p>
3.	Byte	1	A single byte used to hold any ASCII character.
4.	Decimal	8	<p>Signed Little-Endian encoded integer field with 8 implied decimal places.</p> <p>For example, 10000.03100012 the system will multiply this by 10^8 converting it to an integer and this integer will be bit encoded accordingly as a signed 8 byte binary number</p>
5.	UInt8	1	<p>Unsigned integer. Range: 0 - 255</p>
6.	Int8	1	<p>Signed integer. Range: -128 – 127</p>

#	Data Type	Size in Bytes	Description
7.	UInt16	2	Little-Endian encoded unsigned integer. Range: 0 – 65,535
8.	Int16	2	Little-Endian encoded signed integer. Range: -32,768 – 32,767
9.	UInt32	4	Little-Ending encoded unsigned integer Range: 0 – 4,294,967,295
10.	Int32	4	Little-Endian encoded signed integer. Range: -2,147,483,648 – 2,147,483,647
11.	Bitmap Fixed Length	32	Bitmap Fixed Length provides up to 256 representation options. To indicate availability set 1 to the applicable bit position and 0 for unavailability. Each bit in the presence map will represent a field and the sequence in which the fields should be included into the message will be based on the bit position (starting from the most significant bit position).
12.	Bitmap Variable Length	Variable	Bitmap Variable Length is used to indicate the presence of fields and nested repeating blocks in a repeating block. To indicate availability set 1 to the applicable bit position and 0 for unavailability. The length of the bitmaps used for different repeating blocks may vary. Each Bitmap Variable Length field will have its size indicated within the Data Dictionary section.
13.	Int64	8	Little -Endian encoded 64 bits signed integer Range: -9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
14.	UInt64	8	Little -Endian encoded 64 bits unsigned integer Range: 0 to 18,446,744,073,709,551,615

6.2 Message Composition

Each message comprises of the following logical components:

1. Header
2. Body
3. Trailer

Fields within a message are formed in the same order as the composition given above.

Fields present within the body of the message is defined through a field presence map where the present fields are indicated as part of the header.

Fields which are part of the header and the trailer are considered mandatory.

6.2.1 Field Presence Map

The binary protocol provides a concept of field presence maps per each message type where using these bitmap fields available within the message, senders could indicate the fields available within the message in a dynamic nature.

Each bit in the presence map will represent a field and the sequence in which the fields should be included into the message will be based on the bit position (starting from the most significant bit position). All fields applicable to a particular presence map should be included into message immediately following the applicable presence map.

For example, consider an 8 bit presence map. Positions 1, 2 and 3 indicate Instrument, Client Order ID and Order Quantity respectively where rest of the positions has not been assigned to a field.

To indicate the presence of the fields Instrument and Order Quantity the presence map will be set as shown below:

Position	0	1	2	3	4	5	6	7
Represented field	Instrument	Client Order ID	Order Qty	N/A	N/A	N/A	N/A	N/A
Bit value (presence)	1	0	1	0	0	0	0	0

Message view:

Preceding fields of the message								
Presence Map	1	0	1	0	0	0	0	0
Instrument	HKEX							
Order Quantity	1000							
Succeeding fields of the message								

The applicable data types and lengths of the body fields are provided in the data dictionary. Based on the available fields as indicated by the field presence map, the recipient of the message is expected to decode the message accordingly.

Bit position for a field that commonly appears in multiple messages may be different; each message will have its own bit position for individual fields present in that message.

6.2.2 Repeating Blocks and Nested Repeating Blocks

The binary protocol supports repeating blocks within the message body while also allowing nested repeating blocks within a repeating block.

When indicating a repeating block the field presence map will only indicate the presence of the repeating block. Based on the repeating block construct, the receiving party is expected to evaluate the field contents and the numbers of repeating blocks.

This specification describes the repeating block construct and the relevant field information such as the data types required to identify the message contents and also to calculate header and trailer information such as message length and checksums.

Each repeating block construct will have a repeating block header field which is immediately followed by a field presence map which will indicate the presence of the applicable fields in that repeating block and any nested repeating blocks included within.

For example, consider an 8-bit field presence map included in the message header:

Position	0	1	2	3	4	5	6	7
Represented field	Inst	Client Order ID	Order Qty	No Entitlements	N/A	N/A	N/A	N/A
Bit value (presence)	1	0	1	1	0	0	0	0

The 3rd position indicates a repeating block which indicates the number of entitlement applicable to the particular message.

A sample 'No Entitlements' repeating block construct is given below:

No Entitlements		Number of repeating blocks. Valid values are 1 or 2. <i>(Repeating block header field)</i>
No Entitlements Body Fields Presence Map		This will indicate the fields/nested repeating blocks present in this repeating block
0	Entitlement Type	Absence of this field indicates the meaning of the entitlement is implicit. Else: <ul style="list-style-type: none"> ▪ 0 = Trade ▪ 1 = Make Market
1	Entitlement Indicator	Determines if the party is entitled for the specified Entitlement Type <ul style="list-style-type: none"> ▪ 0 = No ▪ 1 = Yes
2		Number of entitlement attributes for the specified Entitlement Type <i>(Repeating block header field)</i>
No Entitlement Attributes Body Fields Presence Map		This will indicate the fields/nested repeating blocks present in this repeating block
0	Entitlement Attribute Type	Name of the entitlement attribute <ul style="list-style-type: none"> ▪ 4000 = Minimum Quote Obligation ▪ 4001 = Maximum Quote Spread Obligation
1	Entitlement Attribute Data Type	The data type applicable to the specified Entitlement Attribute Type: <ul style="list-style-type: none"> ▪ 7 = Decimal
2	Entitlement Attribute Value	The value of the Entitlement Attribute.
3	Entitlement ID	Unique identifier for a specific Entitlement Group instance

In the above message construct, 'No Entitlement Attributes' is a nested repeating block within the 'No Entitlements' repeating group.

The following provides an example message view when the nested repeating block is not present in the message. This is indicated in the Body Field Presence Map of the 'No Entitlements' repeating block.

Message view:

Order	Field	Value								
1	No Entitlements	1 (one repeating blocks indicated)								
2	No Entitlements Body Field Presence map	Position	0	1	2	3	4	5	6	7
		Represented field	Ent Type	Ent Ind	No Ent Attribs	Ent ID	N/A	N/A	N/A	N/A
		Bit value (presence)	1	1	0	1	0	0	0	0

3	Entitlement Type	0 = Trade
4	Entitlement Indicator	1 = Yes
5	Entitlement ID	TEST_01

6.3 Security Identification

Instruments will be identified using the Security ID field. It is required to specify Security ID Source as Exchange Symbol (8) and Security Exchange as XHKG (similar to FIX exchange code for HKEx). Security ID with leading zeros will not be accepted.

6.4 Party Identification

Party Identification is defined as follows:

ID	Description	Relevant Binary Field
Broker ID ¹	Identifier of the member the interest is submitted under	Owning Broker ID
Entering Broker ID	Identifier of the entering member the interest is submitted under	Submitting Broker ID
Contra Broker ID	Identifier of the Contra member the interest is submitted under	Counterparty Broker ID
BS User ID ²	The location ID of the member	Broker Location ID

Notes:

1. Any Broker ID with leading zeroes will be rejected
2. BS User ID if specified would be restricted to numeric digits only with possible range of values being 1 to 99,999,999; a value with leading zeroes will be rejected.

6.5 Text Field

The Text Field sent in any business message from a client will be used as Broker Comment/Broker Reference field, and may not contain more than 10 characters; if the Text field contains more than this permitted number of characters, the additional characters will be truncated.

Additionally, this text field is expected to contain only printable characters excluding any punctuation mark.

6.6 Order Handling

6.6.1 Order Types

The client may submit the following order types:

Order Type	Description	Relevant Binary Field
Market	An order that will execute at the best available prices until it is fully filled. Any remainder will be expired.	Order Type =1
Limit	An order that will execute at or better than the specified price. The remainder, if any, is added to the order book or expired in terms of its TIF	Order Type =2

6.6.2 Validity Types

The client may submit the following validity types:

Validity Type	Description	Relevant Binary Field
Day	An order that will expire at the end of the day.	TIF = 0 (Default)
Immediate or Cancel (IOC)	An order that will be executed on receipt and the remainder, if any, immediately expired.	TIF = 3
Fill or Kill (FOK)	An order that will be fully executed on receipt or immediately expired	TIF = 4
At Crossing	An order submitted during an Auction	TIF= 9

6.6.3 Order, Quote, Trade and Execution Identifiers

6.6.3.1 Client Order ID

The client must ensure each Client Order ID to be unique per Submitting Broker ID as an identifier of the order. The client should comply with the Binary protocol and ensure uniqueness of Client Order IDs across all messages (e.g., New Order, Cancel Request, etc.) across trading days sent under a particular Submitting Broker ID. However during the initial launch (and until further notice) the uniqueness is required to be within a trading day and the contents of Client Order ID would be restricted to numeric digits only with possible range of values being 1 to 99,999,999. Client order IDs with leading zeroes will be rejected by OCG.

The client must, in terms of the Binary protocol, specify the Client Order ID when submitting a New Order, Cancel Request, Mass Cancel Request or an Amend Request.

6.6.3.2 Quote Bid ID, Quote Offer ID and Quote Message ID

The client must ensure Quote Bid ID, Quote Offer ID and Quote Message ID to be unique per Submitting Broker ID as an identifier of the quote. The client should comply with the Binary protocol and ensure uniqueness of these IDs across all messages sent under a particular Submitting Broker ID.

The client must, in terms of the Binary protocol, specify

- Quote Bid ID and Quote Offer ID when submitting a Quote
- Quote Message ID when submitting a Quote Cancel

Quote Bid ID, Quote Offer ID and Quote Message ID will be treated the same as Client Order ID for order related messages from the perspective of uniqueness, contents and restrictions.

6.6.3.3 Trade Report ID

The client must ensure each Trade Report ID to be unique per Submitting Broker ID as an identifier of the trade in the Trade Capture Reports sent by the client. The client should comply with the Binary protocol and ensure uniqueness of Trade Report IDs sent in the Trade Capture Reports under a particular Submitting Broker ID.

Trade Report ID is required to be unique within a trading day and the contents of this ID would be restricted to numeric digits only with possible range of values being 1 to 99,999,999. However, Trade Report ID need not be unique across all Client Order ID equivalent fields (such as Quote Bid ID, Quote Offer ID, Quote Message ID etc). Trade Report IDs with leading zeroes will be rejected by OCG.

6.6.3.4 Order ID

The OCG will use the Order ID field of the Execution Report to keep track of orders with the matching system.

In terms of the Binary protocol, unlike Client Order ID which requires a chaining through amend requests and cancel requests, the Order ID of an order will remain constant throughout its life. However upon an amend request which results in a successful cancel/replace order in the market, the replaced order will be assigned a new Order ID.

The client has the option to either specify the Order ID when submitting a Cancel Request or an Amend Request or not. However, in the event where the client is submitting a Cancel Request on behalf of another client (e.g., a session through OCG, Terminal or Open Gateway), the Order ID must be specified in the Cancel Request message.

6.6.3.5 Trade ID

The OCG will use the Trade ID field of the Trade Capture Report to identify a trade in the event that the client requests to cancel/reject reported off-exchange trade (subject to applicable rules).

6.6.3.6 Execution ID

The OCG will use the Execution ID field to affix a unique identifier for each Execution Report. Execution IDs will be unique per trading day.

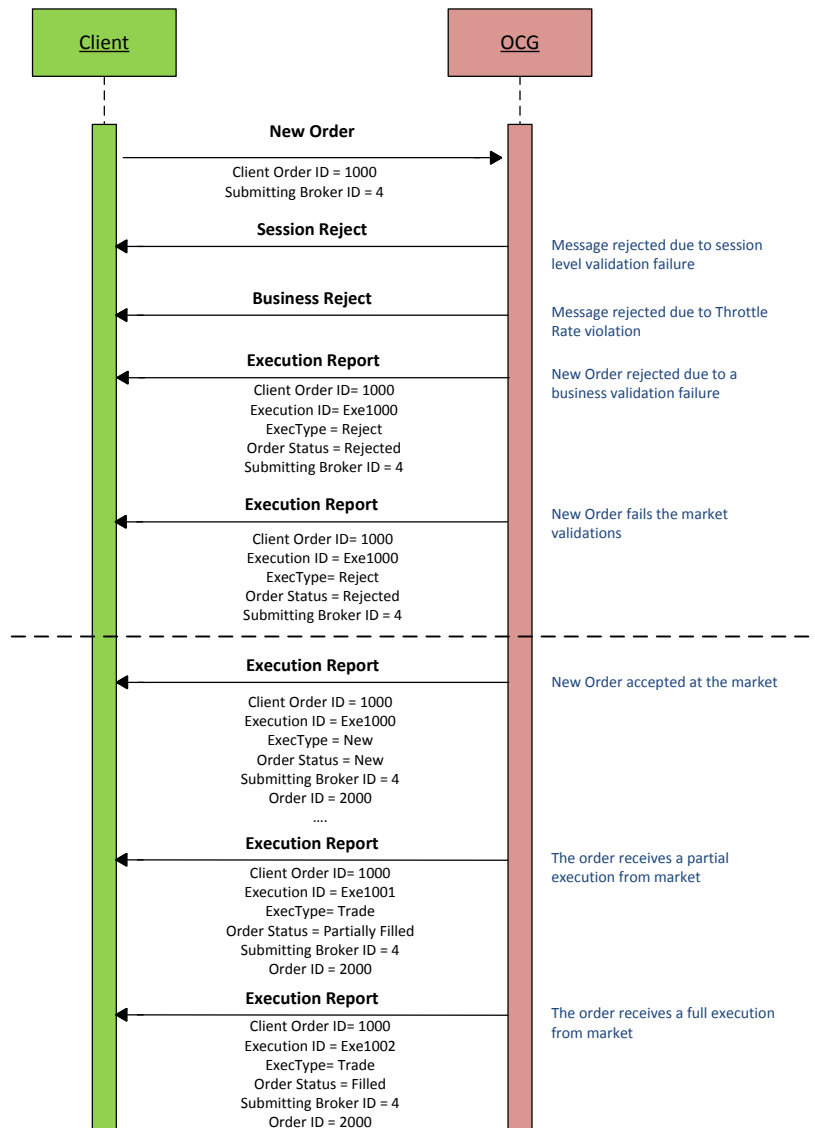
6.6.4 Order Submission

Single sided orders can be submitted into the OCG using the New Order and the updates to the order submitted will be published in the form of Execution Reports, Session Rejects or Business Message Rejects based messages.

The client must specify the Client Order ID when submitting a New Order Message.

For a Limit order, the Order Price must be specified whereas for a Market order Price must not be present; any order submission that does not adhere to this will be rejected.

6.6.4.1 Message Flow – New Order



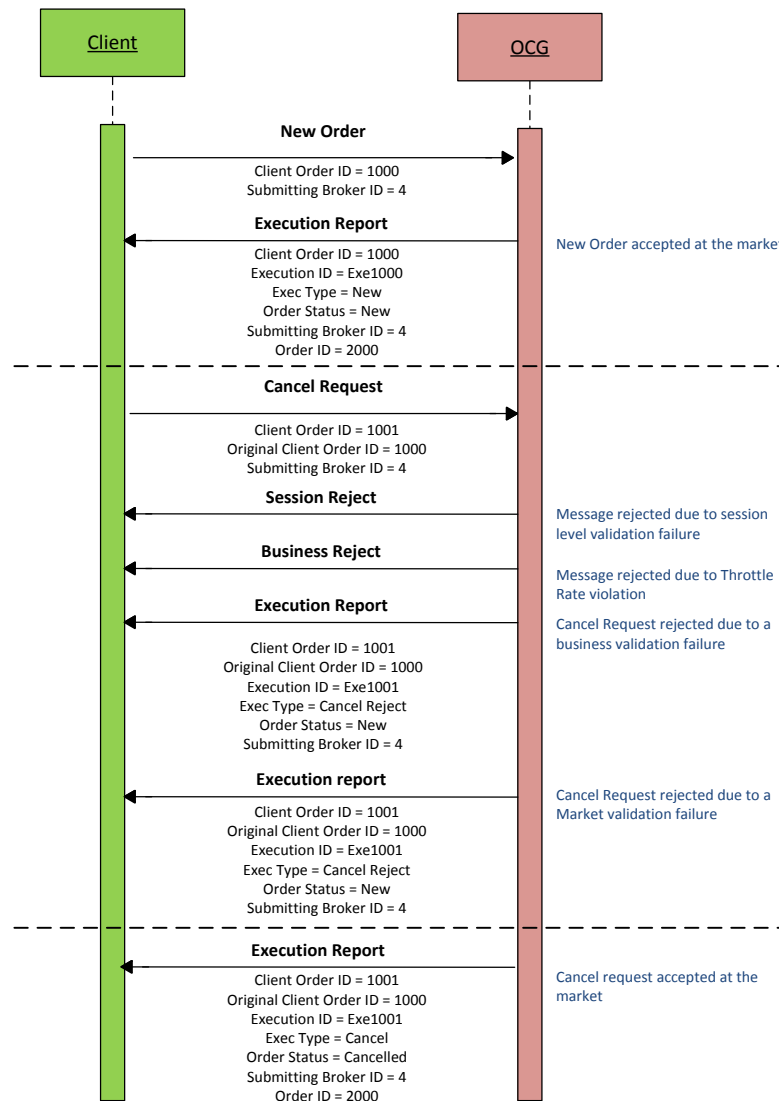
6.6.5 Cancellations

The remainder of a live order may be cancelled via the Cancel Request message. The OCG will respond with an Execution Report to confirm or reject the cancellation request.

The client should identify the order being cancelled by its Original Client Order ID. The client can specify the Order ID in the Cancel Request message but it is not a mandatory requirement. If the Order ID is specified in the Cancel Request message, the system will validate the specified Order ID with the actual Order ID assigned to the particular order by the system (order is identified by the Original Client Order ID). The Cancel Request will be rejected if the specified Order ID is invalid based on this validation.

The client may not cancel an order that is fully filled/cancelled/expired. If the client sends a cancel request for an order for which an amendment or a cancellation is already being processed the incoming cancel request will be rejected.

6.6.5.1 Message Flow – Cancel Request



6.6.6 Mass Cancellation

A client may mass cancel live orders via the Mass Cancel Request message. The OCG will respond with an Order Mass Cancel Report to confirm or reject the mass cancellation request.

If the Mass Cancel Request is accepted, the OCG will respond with an Order Mass Cancel Report where the Mass Cancel Response field will reflect the action taken by the OCG as a result of the Mass Cancel Request. The OCG will generate an Execution Report for each order that is cancelled due to the Mass Cancel Request.

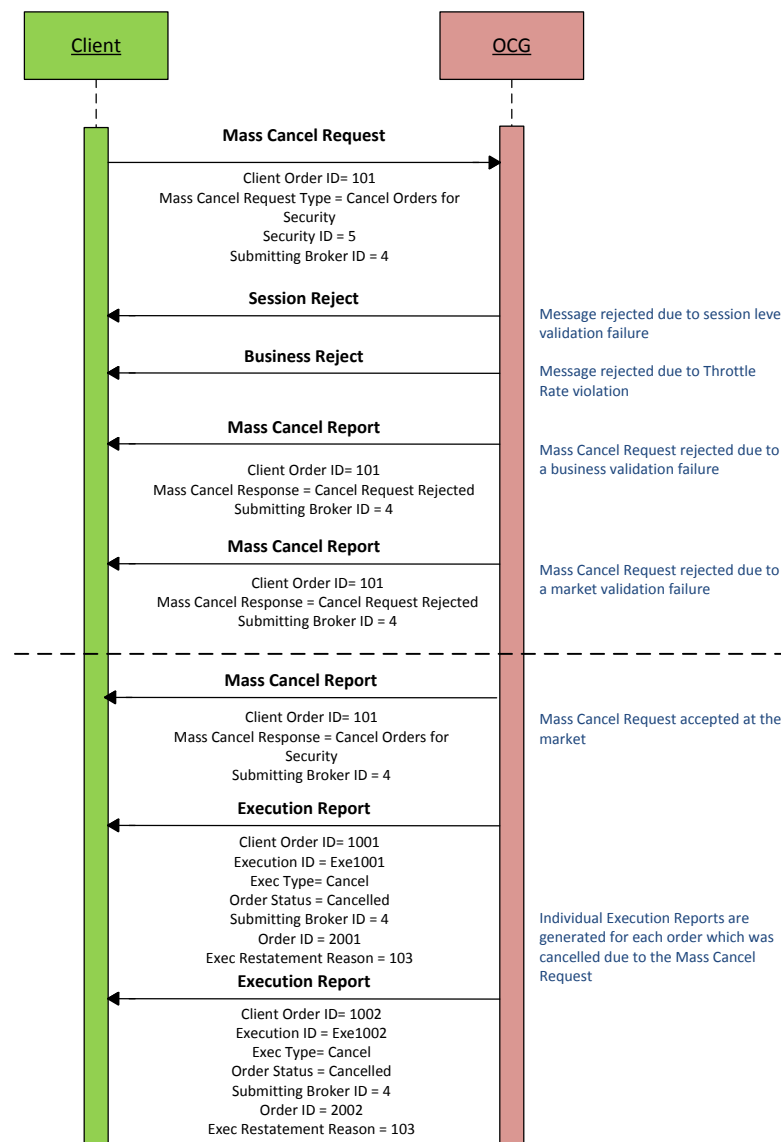
If the Mass Cancel Request is rejected, the OCG will respond with an Order Mass Cancel Report with Mass Cancel Response = 0 (Cancel Request Rejected). The Mass Cancel Reject Code will indicate the reason why the Mass Cancel Request was rejected.

The client may use the Mass Cancel Request to mass cancel all orders, mass cancel orders for a particular instrument or a market segment by specifying the applicable mass cancel type in the Mass Cancel Request Type field. All orders to be mass cancelled here must belong to the given Broker ID associated with this client.

The Binary fields relevant to each of the supported mass cancel types are outlined below:

Description	Relevant Binary Field
Cancel all orders	Mass Cancel Request Type = 7
Cancel all orders for a security ID	Mass Cancel Request Type= 1 Security ID Security ID Source =8 Security Exchange = XHKG
Cancel all orders for a market segment	Mass Cancel Request Type = 9 Market Segment ID

6.6.6.1 Message Flow – Mass Cancel Request



6.6.7 On Behalf Of (OBO) Cancellations

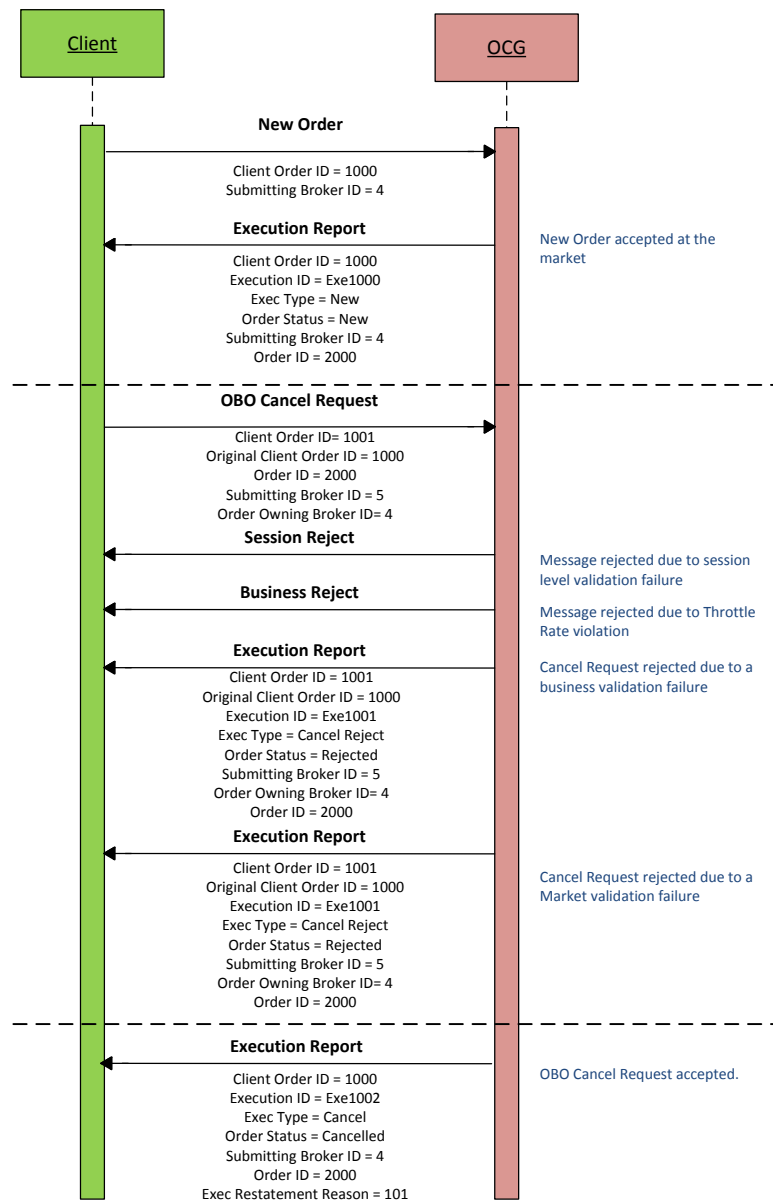
OBO Cancel functionality allows a Broker ID to cancel order(s) belonging to another Broker ID within the same member firm (Exchange Participant) but these two Broker IDs must

belong to two different sessions, where either of these sessions is through OCG and the other may or may not be through OCG.

6.6.7.1 OBO Cancel Order

The client can perform an OBO Cancel for a single order by specifying the Order ID as well as the Order Owning Broker ID of that order in the Cancel Request message. In case the request is rejected the OCG will respond with an Execution Report to the submitter of the Cancel request. In the case of successful order cancellation, the Execution Report will be sent to the owner of the order as opposed to the submitter of the Cancel Request and no message will be sent to the submitter of the OBO cancel order request.

6.6.7.2 Message Flow – OBO Cancel Request



6.6.7.3 OBO Mass Order Cancellation

The client can perform an OBO Mass Cancel for a selected set of orders based on the Mass Cancel Request Type field in the Order Mass Cancel Request message. The OCG will respond with an Order Mass Cancel Report to accept or reject the mass cancellation request. These responses will be sent to the submitter of the Mass Cancel Request. In the case of successful

order cancellations, Execution Reports will be generated for each order which was cancelled and which will be sent to the respective owner of the each order.

6.6.7.4 Message Flow – OBO Mass Cancel Request



6.6.8 Amending an Order

The following attributes of a live order may be amended via the Amend Request message:

- Order Quantity
- Price
- Side (the only amendment allowed is to change from Sell to Sell Short and vice versa)
- Order Capacity
- Short Sell Indication (using Order Restrictions / Position Effect)
- Disclosure Instruction
- Text

- Broker Location ID

The OCG will respond with an Execution Report to confirm or reject the Amend Request sent by the client.

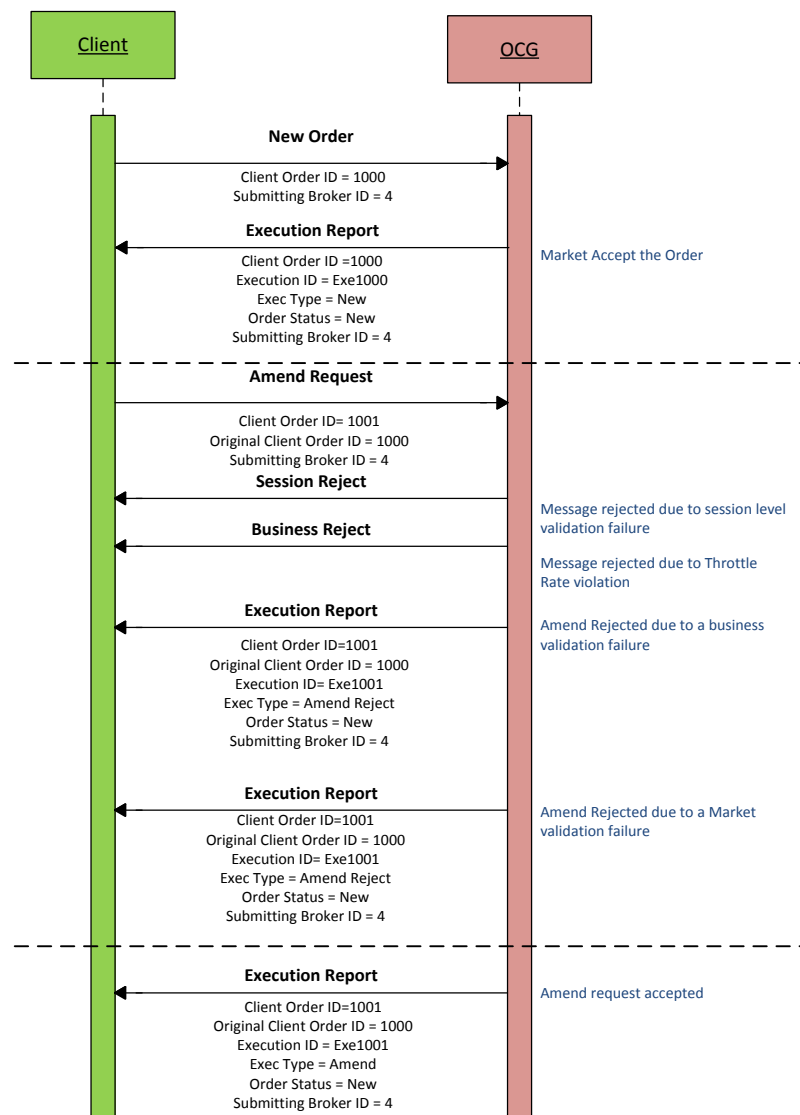
The client should identify the order being amended by its Original Client Order ID. The client may or may not specify the Order ID in the Amend Request message. If the Order ID is specified in the Amend Request message, it must be the Order ID assigned to this particular order as identified using the Original Client Order ID. The Amend Request will be rejected if the specified Order ID is invalid based on this validation.

The client may not amend an order that is fully filled or cancelled or expired.

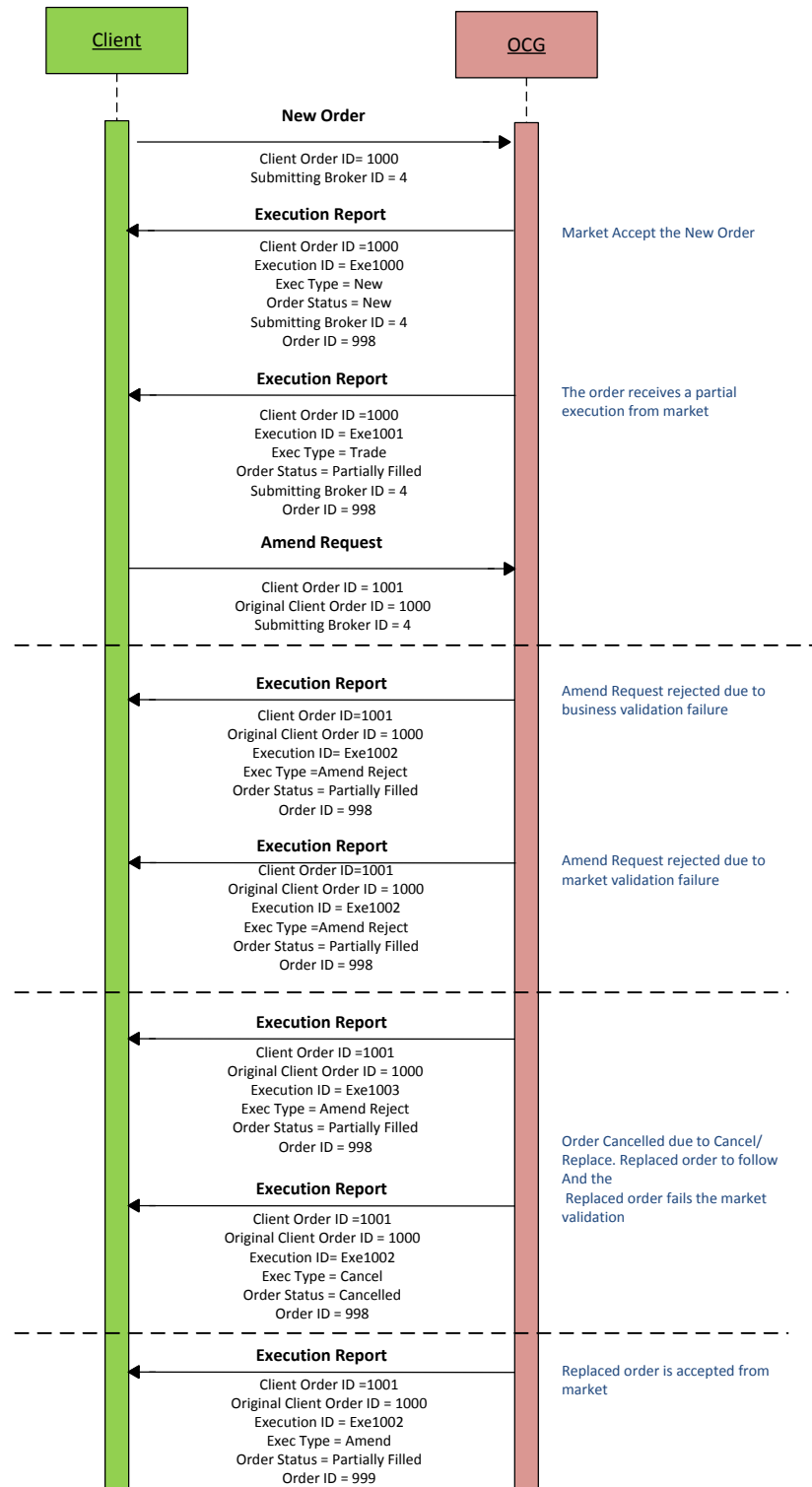
If the client sends an amend request for an order for which an amendment or a cancellation is already being processed the incoming amend request will be rejected.

The OCG will facilitate order chaining up to the maximum limit of 99,999,999 and will reject subsequent requests to amend if the Order Quantity of the amend request exceeds this value.

6.6.8.1 Message Flow - Amend Request - No Price Change + No Quantity Increase



6.6.8.2 Message Flow – Amend Request – Change Price / Increase Quantity



6.6.9 Cancel Auto-matched Trades

A trade already concluded for an order could be cancelled by the HKE_x Market Operations. A trade cancel will be communicated to the client(s) via an Execution Report. The Execution

Report will include the Reference Execution ID in order to identify the particular trade which is being cancelled.

If a trade is cancelled in this manner, system will not reinstate the Leaves Quantity of that order by the busted (cancelled) quantity. In this specific scenario Order Quantity will NOT be equal to the summation of the Leaves Quantity and the Cumulative Executed Quantity.

6.6.10 Execution Reports

The Execution Report message is used to communicate many different events to the client. The events are differentiated by the value in the Exec Type field as outlined below:

Exec Type	Description	Order Status Field
0 = New	Order Accepted Indicates that a new order has been accepted.	<ul style="list-style-type: none"> ▪ 0 = New
8 = Reject	Order Rejected Indicates that an order has been rejected. The reason for the rejection is specified in the field Order Reject Code.	<ul style="list-style-type: none"> ▪ 8 = Rejected
C = Expire	Order Expired Indicates that an order has been expired. The reason for expiry is specified in the field Reason. Original Client Order ID field will not be provided in this Execution Report.	<ul style="list-style-type: none"> ▪ 12 = Expired
F = Trade	Order Executed (Trade) Indicates that an order has been partially or fully filled. The execution details (e.g., price and quantity) are specified.	<ul style="list-style-type: none"> ▪ 1 = Partially Filled ▪ 2 = Filled
4 = Cancel	Order Cancelled Indicates that an order cancel request has been accepted and successfully processed. This message can also be sent unsolicited in which case the Execution Report may include the Exec Restatement Reason Field to indicate the reason for cancellation; Original Client Order ID field will not be provided.	<ul style="list-style-type: none"> ▪ 4 = Cancelled
5 = Amend	Order Amended Indicates that an order cancel/replace request has been accepted and successfully processed.	<ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled
H = Trade Cancel	Trade Cancel Indicates that an execution has been cancelled by Market Operations. The message will include a Reference Execution ID to identify the execution being cancelled and the updated execution details (e.g., price and quantity).	<ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled ▪ 4 = Cancelled ▪ 12 = Expired
X = Cancel Reject	Order Cancel Rejected Indicates that an order cancel request has been rejected.	<ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled ▪ 4 = Cancelled ▪ 6 = Pending Cancel

Exec Type	Description	Order Status Field
		<ul style="list-style-type: none"> ▪ 8 = Rejected ▪ 10 = Pending New ▪ 12 = Expired ▪ 14 = Pending Amend
Y = Amend Reject	Order Amend Rejected Indicates that an order amend request has been rejected.	<ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled ▪ 4 = Cancelled ▪ 6 = Pending Cancel ▪ 8 = Rejected ▪ 10 = Pending New ▪ 12 = Expired ▪ 14 = Pending Amend

6.7 Quote Handling

Quotes are input or modified as a two-sided (i.e. bid and offer) order pair. If one side of a quote fails the basic validations (e.g., price is not on tick, quantity is not on lot size, etc.), then both sides will be rejected. However, if a quote is accepted it is treated as two separate and independent limit orders where each of these two orders may be accepted or rejected (due to business validation failures).

Quotes may be submitted individually via the Quote message.

6.7.1 Acknowledgement

The OCG will respond with Execution Report(s) to confirm the Quote message. If the Quote message is rejected the OCG will respond with a Quote Status Report message.

The OCG will explicitly reject each Quote message via the Quote Status Report message with Quote Status field set to Rejected (5); the Quote Reject Code will indicate the reason why the quote is rejected.

6.7.2 Execution

The Execution Report message is used to notify the client if a quote is executed. The Client Order ID of the Execution Report will contain either the Quote Bid ID or the Quote Offer ID of the last Quote message based on the executed side of the Quote (bid or offer).

6.7.3 Updating a Quote

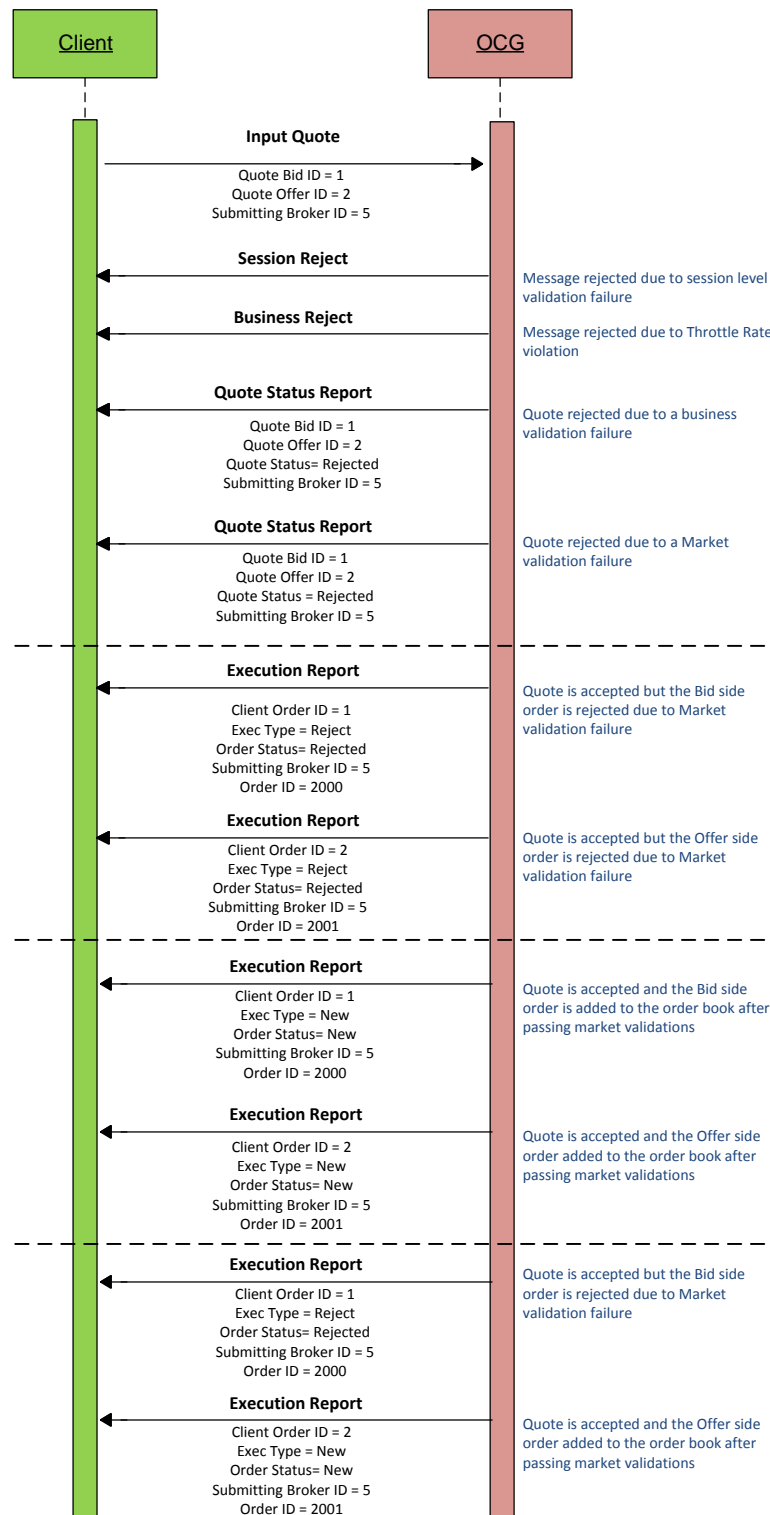
The client may update a live quote entry by sending another quote, via the Quote message, for the same instrument. When submitting an update, the client may:

- (i) Update both sides of a quote
- (ii) Update one side of a quote and leave the other side unchanged

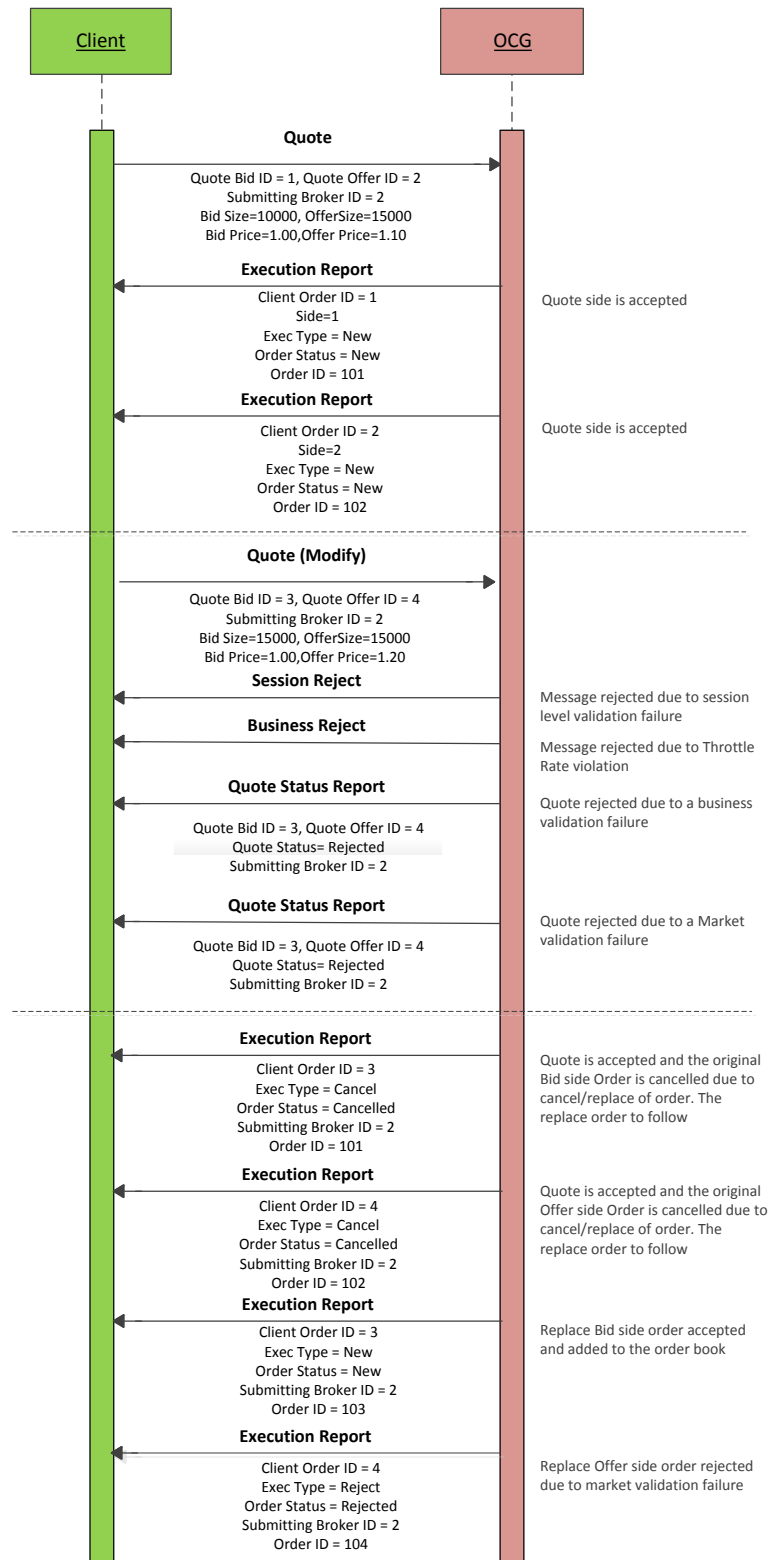
The client may update a side of a quote by providing a new price and/or quantity.

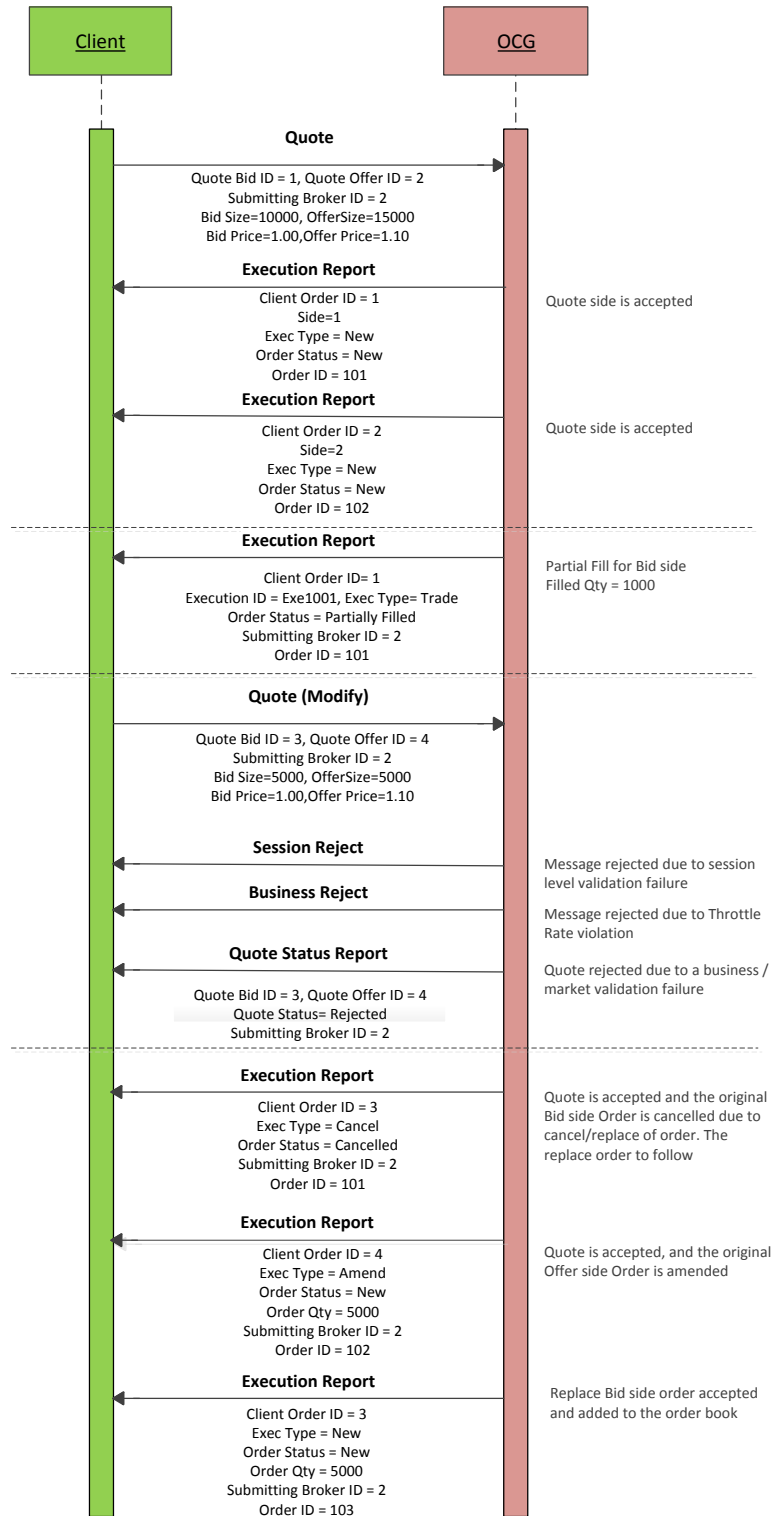
6.7.4 Message Flow

Client submits a new two sided quote via the Quote message:

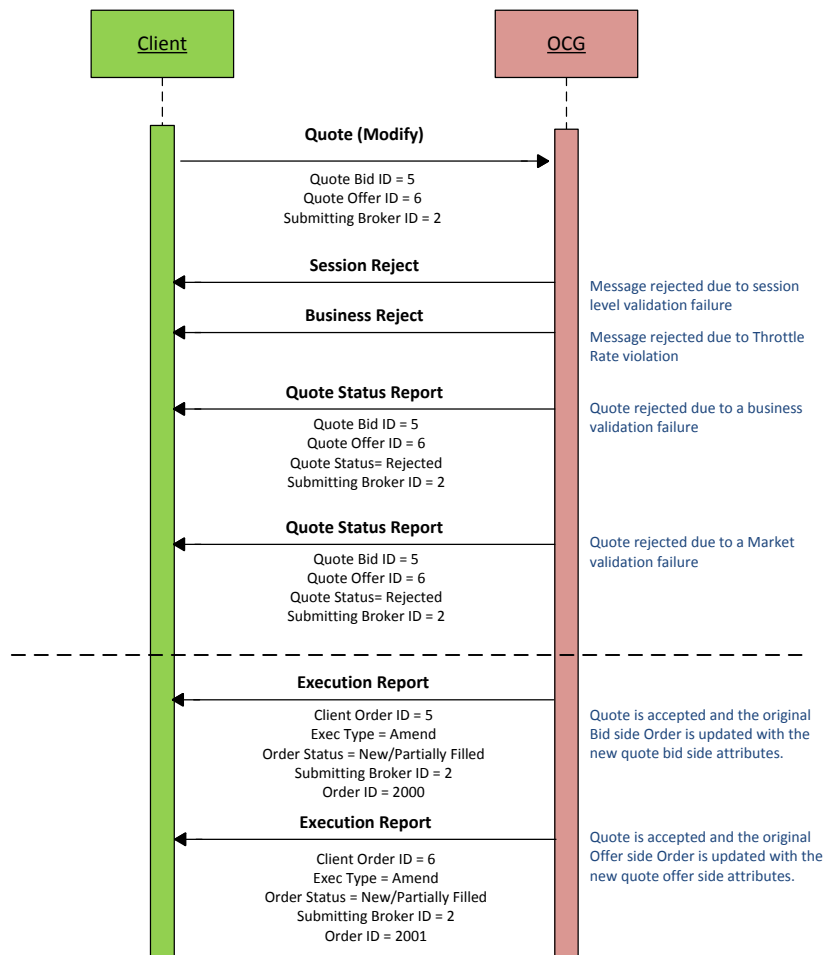


The client submits a quote to modify an existing quote in the market which results in order cancel/replace at the market:





The client submits a quote to modify an existing quote in the market which results in order updates at the market:

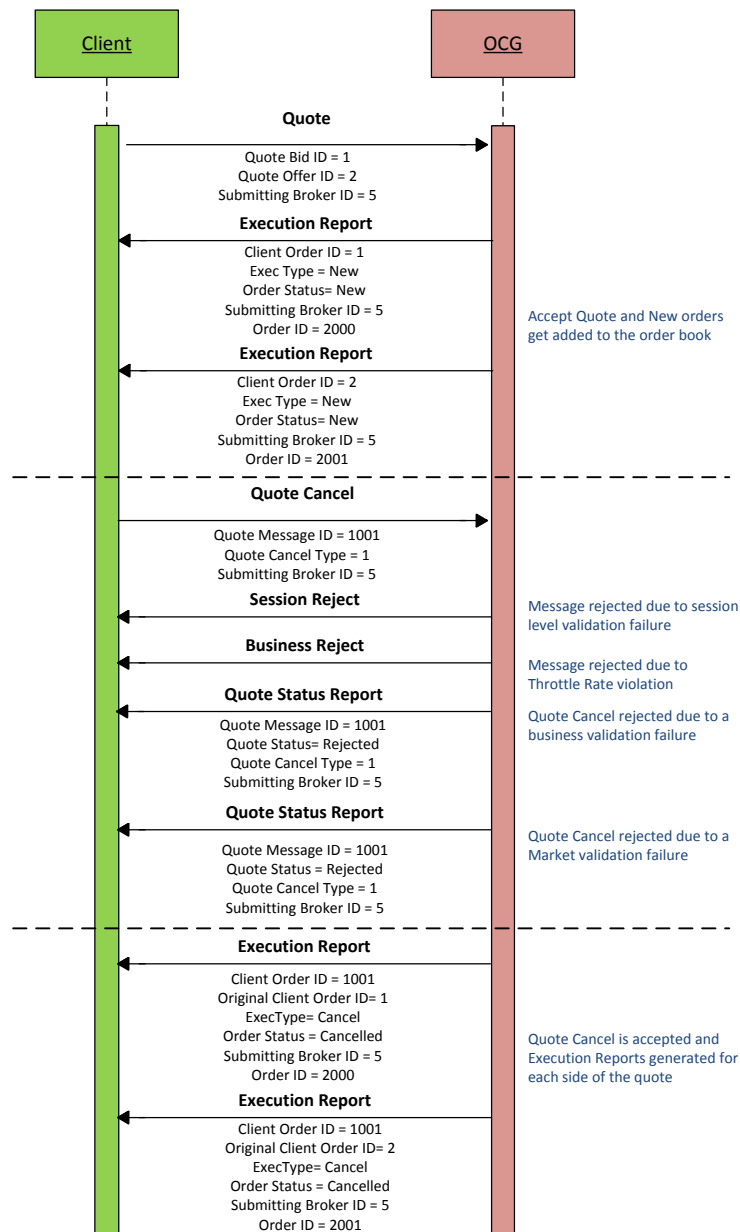


6.7.5 Cancelling a Quote

The client may use the Quote Cancel message to cancel a single quote entry. The message should include a Quote Cancel Type of Cancel for Instruments (1). The OCG will respond with Execution Report(s) for successful cancellation.

If the Quote Cancel message is rejected the OCG will respond with a Quote Status Report message. The Quote Status field will be set to Rejected (5) and the reason will be specified in the Quote Reject Code field.

6.7.5.1 Message Flow



6.8 Trade Report Handling

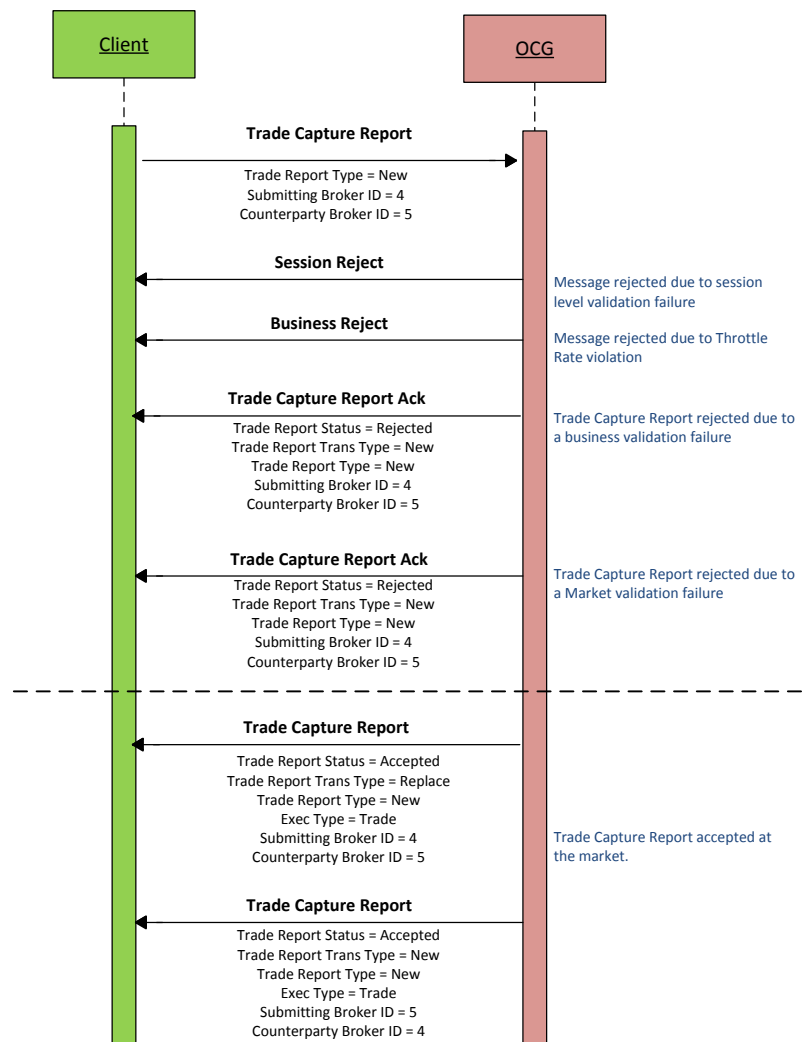
The client may use the Trade Capture Report message to report an off exchange trade or to cancel an alleged off exchange trade. In order to report an off exchange trade, the Trade Report Type field must be set to New (0) and in the case of cancelling a trade, this field must be set to Trade Report Cancel (6).

6.8.1 Trade Acknowledgement

Once a Trade is accepted, two Trade Capture Reports will be sent (if the trade has two sides) independently to the two broker IDs (buyer and seller broker IDs) involved in the trade with Exec Type set to Trade (F). The Trade Report Trans Type field of the Trade Capture Report will be set as Replace(2) for the reporting side and as New(0) for the counterparty side of the trade.

The OCG will explicitly reject Trade message via the Trade Capture Report Ack message to the submitter of the Trade Capture Report message. The Trade Report Status field will indicate whether the trade is Rejected (1) or not. If a trade is rejected, the reason will be specified in the Trade Report Reject Code field.

6.8.1.1 Message Flow



6.8.2 Trade Cancel

Purchasing side of an off-exchange trade may cancel the reported trade by submitting a Trade Capture report message with Trade Report Type field set to Trade Report Cancel (6).

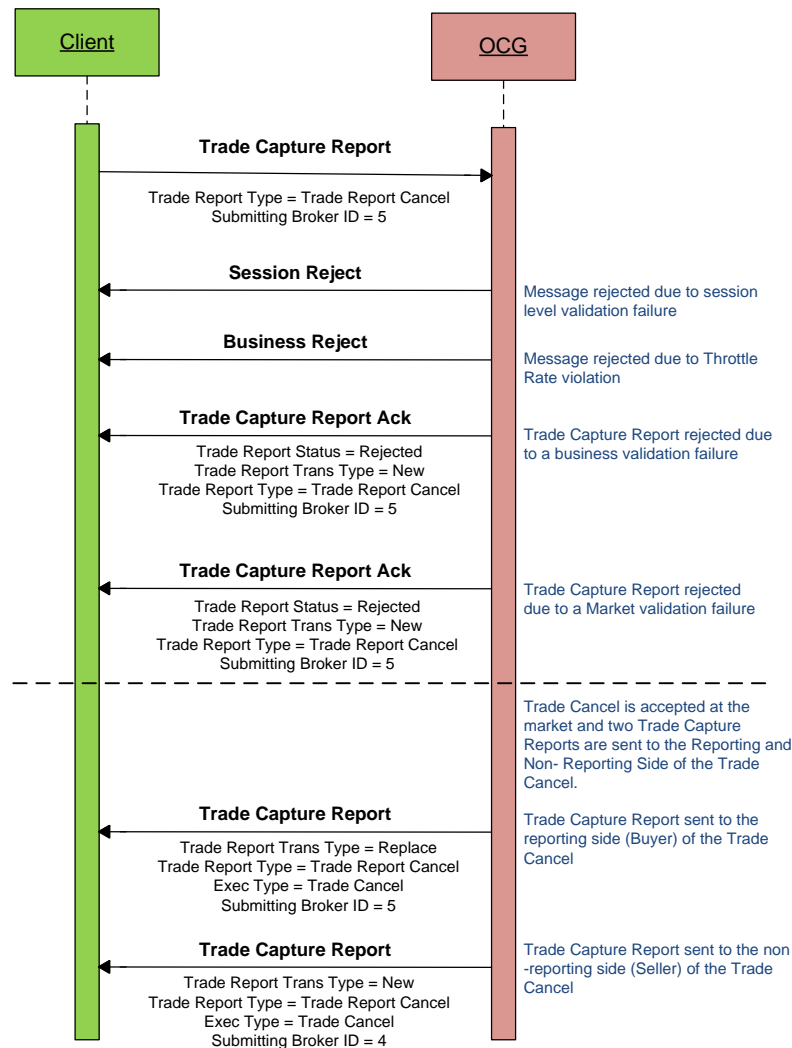
6.8.3 Trade Cancel Acknowledgement

Once a Trade Cancel is accepted, two Trade Capture Reports will be sent (if the trade has two sides) independently to the two broker IDs (buyer and seller broker IDs) involved in the trade with Exec Type set to Trade Cancel (H). The Trade Report Trans Type field of the Trade Capture Report will be set as Replace (2) for the side that submits this cancel request and as New (0) for the counterparty side of the trade.

The OCG will explicitly reject a Trade Cancel message via the Trade Capture Report Ack message to the submitter of the cancel request. The Trade Report Status field will indicate whether the trade is Rejected (1) or not. If a trade cancel request is rejected, the reason will be specified in the Trade Report Reject Code field.

6.8.3.1 Message Flow

Trade Capture Report submitted by the purchasing side of the reported trade to cancel/reject the trade:



6.9 Odd Lot/Special Lot Order Handling

The OCG supports Odd lot/Special Lot order related functions in semi-automatic trading. The functions here include:

- submission of new order,
- cancellation of existing order and
- reporting a trade against a specific resting order

The OCG uses the following matrix for the acknowledgements, confirmations and executions:

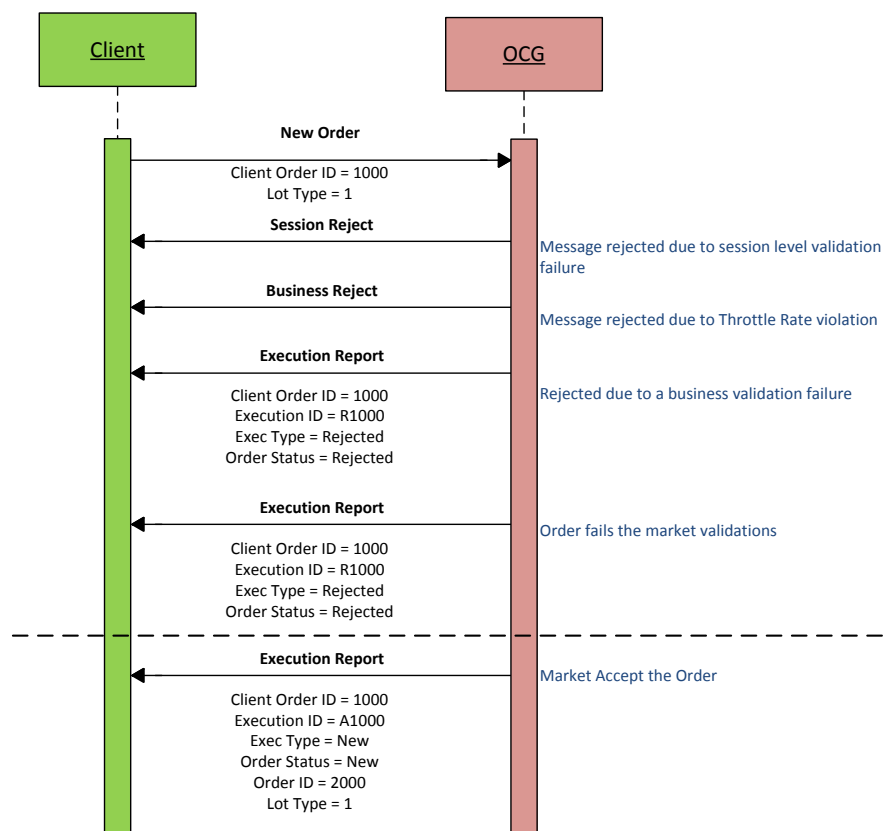
Business Scenario	Odd lot/Special Lot Order Submitting Broker	Trade Submitting Broker
Odd lot/Special lot New Order – Confirmation/Rejection	Execution Report	N/A
Odd lot/Special lot Cancel –	Execution Report	N/A

Business Scenario	Odd lot/Special Lot Order Submitting Broker	Trade Submitting Broker
Confirmation/Rejection		
Odd lot/Special lot Trade – Accepted	Execution Report	Trade Capture Report
Odd lot/Special lot Trade – Rejected	N/A	Trade Capture Report Ack
Odd lot/Special lot Trade – Cancelled	Execution Report	Trade Capture Report

6.9.1 Order Submission

Similar to a board lot order submission, single sided odd lot/special lot orders can be submitted to the OCG using the New Order. The OCG identifies this being an odd lot/special lot order using Lot Type = 1 – Odd Lot.

6.9.1.1 Message Flow – New Odd lot/Special lot Order



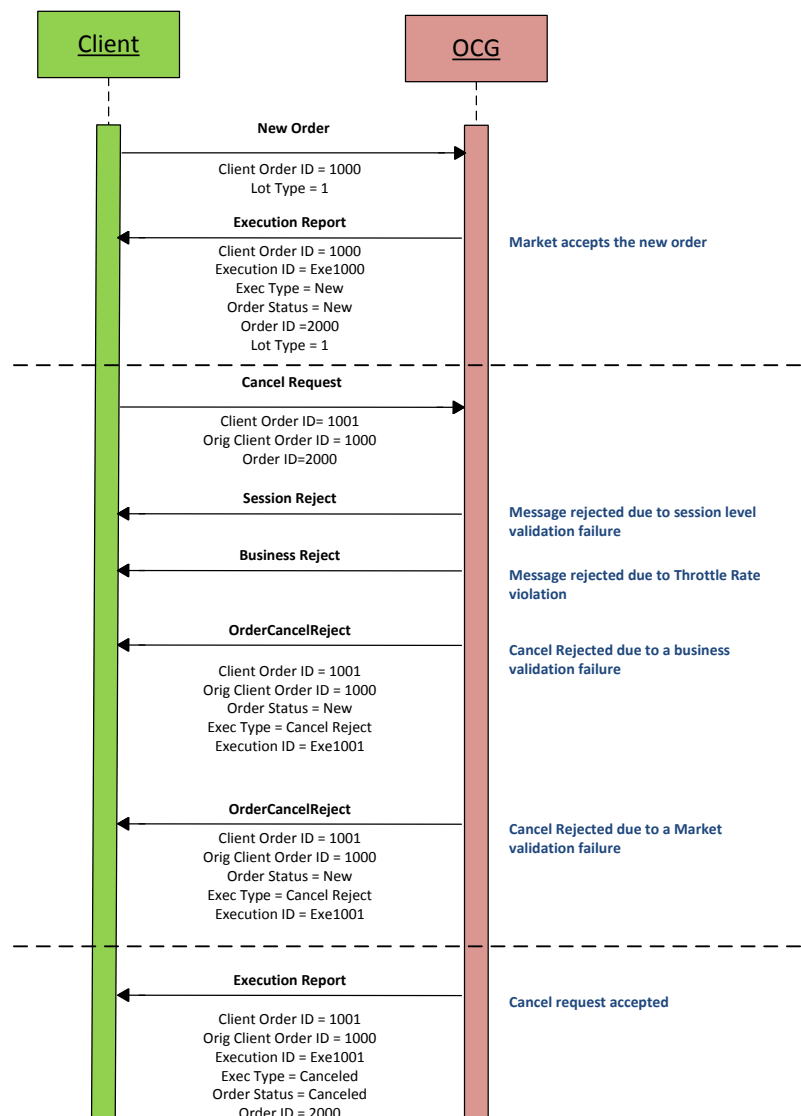
6.9.2 Order Cancellation

As for an odd lot/special lot order, a resting odd lot/special lot order may be cancelled via the Cancel Request message. The OCG will respond with an Execution Report to confirm or reject.

The client should identify the order being cancelled by its OrigClOrdID. The client can specify the OrderID in the Cancel Request message but it is not a mandatory requirement. If the OrderID is specified in the Cancel Request message, the system will validate the specified OrderID with the actual OrderID assigned to the particular order by the system (order is identified by the OrigClOrdID). The Cancel Request will be rejected if the specified OrderID is invalid based on this validation.

The client may not cancel an odd lot/special lot order that is fully filled/cancelled/expired. If the client sends a cancel request for an order for which a cancellation is already being processed the incoming cancel request will be rejected.

6.9.2.1 Message Flow – Cancel Request



6.9.3 Order Amendment

An odd lot/special lot order may not be amended. Any amendment request for an odd lot/special lot order will be rejected by the OCG.

6.9.4 Trade Request

A semi-automatic odd lot/special lot trade request, pointing to a resting order (i.e., existing open order) may be submitted using Trade Capture Report message.

Since Trade Capture Report message can also be used to report an off-exchange trade, the OCG will identify the incoming Trade Capture Report being a semi-automatic odd lot/special lot trade if:

- Trade Type = 102 – Odd Lot Trade, and
- Existence of Order ID in the details of the Side opposite to the submitting side.

If the above criterion is not met then the OCG will treat the incoming Trade Capture Report as an off-exchange trade to be reported as described in [Section 6.8](#).

If the trade is accepted by the market then:

- Trade Capture Report submitter will receive a Trade Capture Report confirming the acceptance, and
- The resting order owner will receive a trade through Execution Report to confirm the trade.

Note that this resting order should be considered as fully filled.

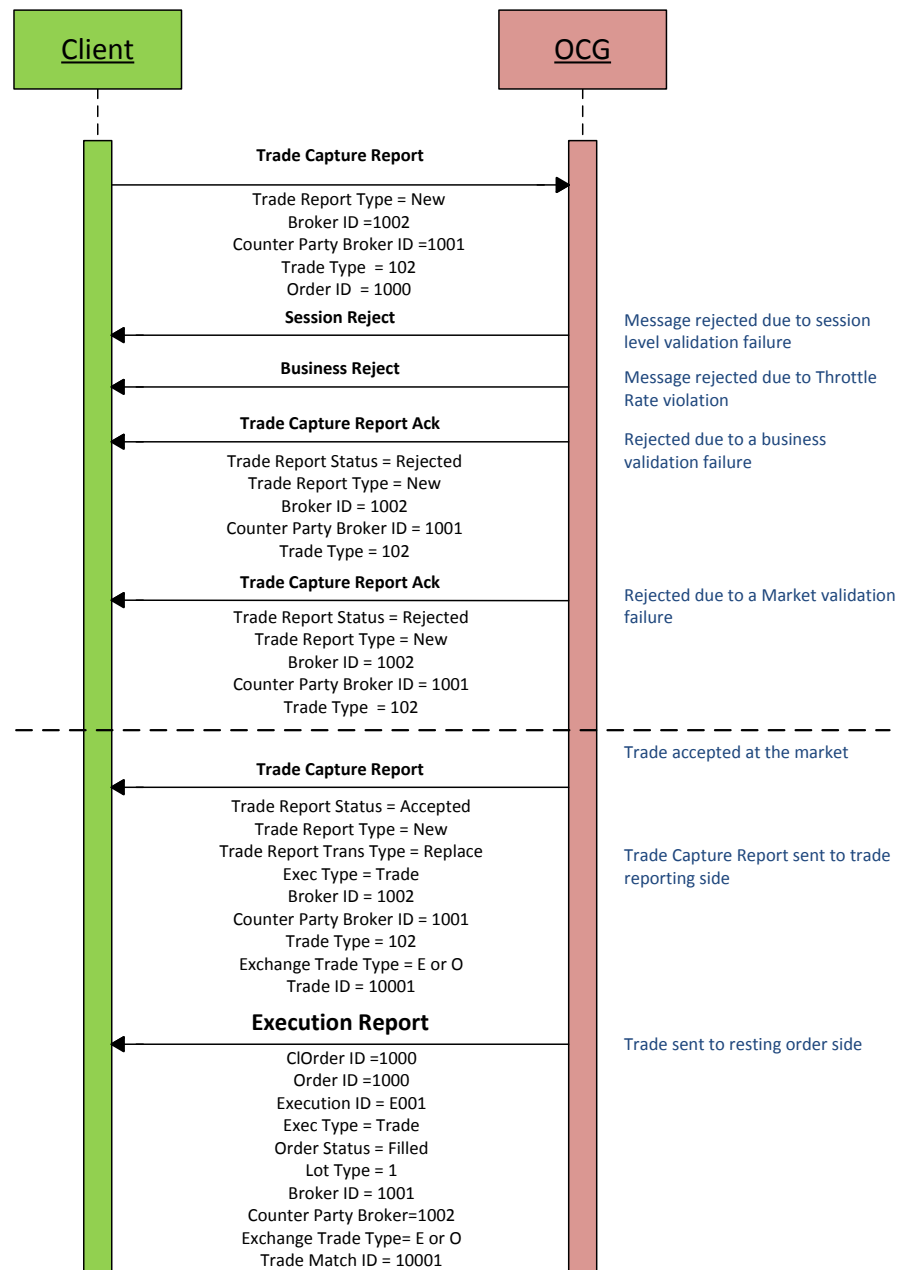
Whether the confirmed trade is odd lot or special lot may be determined by Exchange Trade Type as follows:

- E = Special Lot
- O = Odd Lot

If the trade is not accepted then the Trade Capture Report submitter will receive a Trade Capture Report Ack carrying the reason for rejection.

Once the trade is accepted, it can only be cancelled by the exchange subsequently.

6.9.4.1 Message Flow – Trade Request



6.10 Message Rejection

6.10.1 Session Level Reject

If an incoming message violates any message level validations such as data type mismatches or message structure mismatches, the messages are expected to be rejected back to the sender using a Reject message (applicable to both the client and the OCG).

6.10.2 Business Message Reject

Business Message Rejects will be used in rejecting business messages due to application level validation failures such as MPS rate violations, conditionally required field violations, etc.

6.10.3 Unconfirmed Acknowledgement

During a failure and recovery scenario, the OCG may send an unconfirmed acknowledgement in a reject response message. The client must handle a reject response with reject code “unconfirmed acknowledgement” as cases where the OCG might have lost the state of original response due to a failure and recovery within OCG. The client is expected to take any action as deemed appropriate whether to simply accept this unconfirmed acknowledgement as a real reject or resend the original request. However, resending a Mass Cancel request (direct or on-behalf-of) may result in the cancellation of new orders that were submitted *after* the original mass cancel request (direct or on-behalf-of).

The “Unconfirmed Acknowledgement” is applicable only for Order Mass Cancel Report in response to a direct Mass Cancel Request or an OBO Mass Cancel Request.

6.11 Cancel On Disconnect

At the request of the member firm, all live orders (board lot and odd lot/special lot) and quotes submitted under a Comp ID can be configured to be automatically cancelled whenever the OCG identifies an abrupt disconnection of the client session in the following scenarios:

- OCG detects a network-level disconnection from the client without a Logout message prior to this disconnection,
- OCG detects that the client session is inactive with no heartbeats being received for the specified interval of time as described in [Section 4.3](#).

The OCG supports a delayed cancellation of orders once the OCG triggers the Cancel on Disconnect scenario. In this case, the actual cancellation is initiated upon the abrupt disconnection plus the delay duration as specified for the client session; if within this delay duration the client is able to re-establish the session, then cancellation will be not triggered. Also, the Cancel on Disconnect will not be triggered due to an internal HKEx OCG system outage or failure.

This feature does not guarantee that all live orders will be successfully cancelled as executions that occur very near to the time of disconnect may not be reported to the client. It also depends on the market/instrument trading state when the cancellation is received by HKEx securities trading system.

If the OCG activates the Cancel on Disconnect feature for the client, on a subsequent successful login this client will receive the execution report messages for the cancelled orders, if any.

This optional feature is provided as an alternative to the cancellation submission on behalf of the EP’s manual process at present.

The configuration of the Cancel on Disconnect feature cannot be altered intra-day.

6.12 Message Rate Throttling

HKEx has implemented a scheme for throttling message traffic where each Comp ID is only permitted to submit up to a specified number of business messages per second (MPS).

The client can request for message rate entitlement information pertaining to that client by sending a Throttle Entitlement Request (25) message and the OCG will reply with a Throttle Entitlement Response (26) message to convey the message rate entitlement information.

Every message that exceeds the maximum rate of a Comp ID will be rejected via a Business Message Reject. In this situation, the remaining time for the present throttling interval will be indicated in the Reason text of the Business Message Reject.

HKEx reserves the right to drop the client session with or without sending a Logout (6) message to the client, if that client is found to be excessively violating the message rate.

6.13 Party Entitlements

The client can request for entitlement information for Broker IDs of that client via Party Entitlement Request Message. If the Request is accepted, Party Entitlement Report message will carry the entitlement information.

7. Message Format

7.1 Supported Message Types

All supported message types initiated by the client or the OCG:

#	Message	Message Type	Usage
1.	Heartbeat	0	Allows the client and the OCG to exercise the communication line during periods of inactivity and verify that the interfaces at each end are available.
2.	Test Request	1	Allows the client or the OCG to request a response from the other party if inactivity is detected.
3.	Resend Request	2	Allows for the recovery of messages lost during a malfunction of the communications layers.
4.	Reject	3	Used to reject a message that does not comply with session level validations.
5.	Sequence Reset	4	Allows the client or the OCG to increase the expected incoming sequence number of the other party.
6.	Logon	5	Allows the client and the OCG to establish a Binary session.
7.	Logout	6	Allows the client and the OCG to terminate a Binary session.
8.	Lookup Request	7	The Lookup Request can be used by a client to request for a connection point (IP/Port pair) to the OCG.
9.	Lookup Response	8	The Lookup Response message is used by the OCG in response to a valid Lookup Request sent by the client.
10.	Business Message Reject	9	Indicates that an application message could not be processed
11.	Execution Report	10	Indicates one of the following: <ul style="list-style-type: none"> ▪ Order Accepted ▪ Order Rejected ▪ Order Expired ▪ Order Cancelled ▪ Order Cancel Rejected ▪ Order Amended ▪ Order Amendment Rejected ▪ Trade ▪ Trade Cancel
12.	New Order	11	Allows the client to submit a new order.
13.	Amend Request	12	Allows the client to amend specific attributes a

#	Message	Message Type	Usage
			live order.
14.	Cancel Request	13	Allows the client to cancel a live order in the execution venue.
15.	Mass Cancel Request	14	Allows the client to mass cancel: <ul style="list-style-type: none"> ▪ All live orders. ▪ All live orders for a particular instrument. ▪ All live orders for a particular market segment.
16.	Order Mass Cancel Report	15	Indicates one of the following <ul style="list-style-type: none"> ▪ Mass cancel request accepted. ▪ Mass cancel request rejected.
17.	Quote	16	Allows the client to submit a quote for a single instrument.
18.	Quote Cancel	17	Allows the client to cancel a quote for a particular instrument.
19.	Quote Status Report	18	Indicates one of the following: <ul style="list-style-type: none"> ▪ Quote rejected ▪ Request to cancel a quote rejected
20.	Trade Capture Report	21	Indicates one of the following: <ul style="list-style-type: none"> ▪ Trade Submit ▪ Trade Cancel
21.	Trade Capture Report Ack	22	Indicates one of the following: <ul style="list-style-type: none"> ▪ Reject Trade ▪ Reject Trade Cancel
22.	OBO Cancel Request	23	Allows the client to cancel a live order in the execution venue on behalf of another user.
23.	OBO Mass Cancel Request	24	Allows the client to carry out mass cancellations on behalf of another user at the following order levels: <ul style="list-style-type: none"> ▪ All live orders. ▪ All live orders for a particular instrument. ▪ All live orders for a particular market segment
24.	Throttle Entitlement Request	25	Allows the client to request for throttle entitlement details
25.	Throttle Entitlement Response	26	Response to the Request (25)
26.	Party Entitlements Request	27	Request entitlement information for Exchange participant
27.	Party Entitlements Report	28	Response to Party Entitlements Request (27)

7.2 Message Header

Order	Field Name	Required	Description
1.	Start of Message	Y	Indicates the starting point of a message. Always set to ASCII STX character
2.	Length	Y	Length of the messaging including all the fields in the message (i.e., length of all header, body and trailer fields)
3.	Message Type	Y	Message Type. Refer to Data Dictionary
4.	Sequence Number	Y	Message sequence number applicable to this message
5.	PossDup	Y	Message with the same sequence number may have been sent previously?
6.	PossResend	Y	Message with the same business data may have been sent previously?
7.	Comp ID	Y	Comp ID assigned to the client
8.	Body Fields Presence Map	Y	Indicates the list of fields that would be present immediately after this Body Fields Presence Map field.

7.3 Message Trailer

Each binary message includes a trailer at the end of each message. The trailer contents are given below. The checksum will take into consideration the full message (The calculation of checksum will include fields in both Header and Body).

Order	Field Name	Required	Description
1.	Checksum	Y	CRC32C based checksum.

7.4 Lookup Service

7.4.1 Lookup Request (7)

This message is initiated by the client.

Bit Position	Field Name	Required	Description
0	Type Of Service	Y	Type of service required for the client: <ul style="list-style-type: none"> ▪ 1 = Order Input
1	Protocol Type	Y	Type of message protocol required by the client in order to connect to the specified service: <ul style="list-style-type: none"> ▪ 1 = Binary

Note: Bit Position refers to the Bit Presence Map.

The sequence number of the Lookup Request is always set to 1 by the client.

7.4.2 Lookup Response (8)

This response message is initiated by the OCG.

Bit Position	Field Name	Required	Description
0	Status	Y	Indicates whether the Lookup Request was accepted or rejected by the OCG: <ul style="list-style-type: none"> ▪ 0 = Accepted ▪ 1 = Rejected
1	Lookup Reject Code	N	If request is rejected then a code to identify the rejection: <ul style="list-style-type: none"> ▪ 0 = Invalid Client ▪ 1 = Invalid service type ▪ 2 = Invalid Protocol ▪ 3 = Client is blocked ▪ 4 = Other
2	Reason	N	Textual reason for the Lookup Request rejection
3	Primary IP	N	IP Address of the primary service in case of a successful lookup
4	Primary Port	N	Port number of the primary service in case of a successful lookup
5	Secondary IP	N	IP Address of the secondary service in case of a successful lookup
6	Secondary Port	N	Port number of the secondary service in case of a successful lookup

The sequence number of the Lookup Response will always be set to 1 by the OCG.

7.5 Administrative Messages

7.5.1 Logon (5)

This message is initiated by the client and the OCG may respond with the same message.

Bit Position	Field Name	Required	Description
0	Password	N	Encrypted Password assigned to the Comp ID.
1	New Password	N	New encrypted Password for Comp ID
2	Next Expected Message Sequence	Y	Indicates the next expected message sequence number by the party initiating this message
3	Session Status	N	Status of the Binary session. Required if the message is generated by the OCG.
4	Text	N	Text field will be used to convey the number of days to password expiry when the OCG replies with a Logon message upon a successful logon attempt.

5	Test Message Indicator	N	<p>The Test Message Indicator field will be used to indicate whether the binary client is connected to the 'Test' or 'Production Mode' of the system when the OCG replies with a LOGON message upon a successful logon attempt.</p> <ul style="list-style-type: none"> ▪ 0 = No (Production Mode) ▪ 1 = Yes (Test Mode)
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Password (Bit Position 0) must be present in the Logon message initiated by the client.

7.5.2 Logout (6)

This message can be initiated by both client and the OCG.

Bit Position	Field Name	Required	Description
0	Logout Text	N	Textual reason for the Logout
1	Session Status	N	<p>Status of the Binary session.</p> <p>May be present if the message is generated by the OCG.</p>

7.5.3 Heartbeat (0)

This message can be initiated by both client and OCG.

Bit Position	Field Name	Required	Description
0	Reference Test Request ID	N	Required if the Heartbeat is in response to a Test Request. The value in this field will echo the Test Request ID received in the test Request.

7.5.4 Test Request (1)

This message can be initiated by both the client and the OCG.

Bit Position	Field Name	Required	Description
0	Test Request ID	Y	Identifier included in Test Request message to be returned in resulting Heartbeat.

7.5.5 Resend Request (2)

This message can be initiated by both client and the OCG.

Bit Position	Field Name	Required	Description
0	Start Sequence	Y	Sequence number of the first message expected to be resent.
1	End Sequence	Y	<p>Sequence number of the last message expected to be resent.</p> <p>This may be set to 0 to request the sender to transmit ALL messages starting from Start Sequence Number.</p>

7.5.6 Reject (3)

This message is initiated by the OCG.

Bit Position	Field Name	Required	Description
0	Message Reject Code	Y	Code specifying the reason for the rejection of the message
1	Reason	N	Textual reason for the reject.
2	Reference Message Type	N	Type of message rejected.
3	Reference Field Name	N	Name of the field (as per the data dictionary) which caused the rejection
4	Reference Sequence Number	Y	Sequence number of the message which caused the rejection
5	Client Order ID	N	Client specified identifier of the rejected message if it is available.

7.5.7 Sequence Reset (4)

This message can be initiated by both client and the OCG.

Bit Position	Field Name	Required	Description
0	Gap Fill	N	Indicates whether the sequence number is to be interpreted in a RESET mode or a GAP-FILL mode. The default value will be set as ('N') RESET if this field is not present.
1	New Sequence Number	Y	Indicates the sequence number of the next message to be sent by the sender

7.6 Business Messages – Order Handling

7.6.1 New Board Lot Order – Single (11)

This message is initiated by the client to send a new board-lot order.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order.
1	Submitting Broker ID	Y	The Broker ID of the user that is submitting the new order
2	Security ID	Y	Instrument identifier value of Security ID Source type.
3	Security ID Source	Y	Identifies the source of the Security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol Required if: Security ID is specified
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol).
5	Broker Location ID	N	The location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated.
7	Side	Y	Side of the order <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short
8	Order Type	Y	Order type applicable to the order: <ul style="list-style-type: none"> ▪ 1 = Market ▪ 2 = Limit
9	Price	N	Price of order. Required if: Order Type = 2 (Limit)
10	Order Quantity	Y	Total order quantity of the order
11	Time In Force (TIF)	N	Time qualifier of the order. Absence of this field is interpreted as 0 = Day: <ul style="list-style-type: none"> ▪ 0 = Day (Default) ▪ 3 = Immediate or Cancel = IOC ▪ 4 = Fill or Kill = FOK ▪ 9 = At Crossing. Applicable for orders in Auction session.

12	Position Effect	N	<p>Indicates whether the resulting position after a trade should be an opening position or closing position:</p> <ul style="list-style-type: none"> ▪ 1 = Close <p>Applicable only if Side = 1 (Buy) to indicate covering a short sell.</p>
13	Order Restrictions	N	<p>Restrictions associated with this order:</p> <ul style="list-style-type: none"> ▪ 2 = Index Arbitrage ▪ 5 = Acting as Market Maker or Specialist in Security ▪ 6 = Acting as Market Maker or Specialist in underlying of a derivative security <p>The above 3 values are applicable only if Side = 5 (Sell Short)</p>
14	Max Price Levels	N	<p>Maximum number of price levels to trade through.</p> <p>Applicable if:</p> <p style="padding-left: 40px;">Order Type = 2 (Limit)</p> <p>If present, this should be set as 1.</p>
15	Order Capacity	N	<p>Designates the capacity of the firm placing the order:</p> <ul style="list-style-type: none"> ▪ 1 = Agency ▪ 2 = Principal
16	Text	N	Free Text
17	Execution Instructions	N	<p>Instructions for order handling:</p> <ul style="list-style-type: none"> ▪ 0 = Ignore Price Validity Checks ▪ 1 = Ignore Notional Value Checks <p>If either is missing, the respective check will be performed:</p> <p>Absence of this field is interpreted as None (i.e. system will perform both Price and Notional Value check).</p>

18	Disclosure Instructions	Y	<p>Disclosure Instructions to convey, a bit map with each bit representing a specific disclosure type:</p> <ul style="list-style-type: none"> Bit 0 = None (No specific information to disclose) <p>Each disclosure type can have only two possible values which will indicate the Disclosure Instruction as follows;</p> <ul style="list-style-type: none"> 0 = No 1 = Yes <p>All bits are required to be initialized to 0 (No) and only the required disclosure types will need to be set as 1 (Yes).</p> <p>If there is no specific information to disclose, bit 0 (None) must be set as 1 (Yes)</p> <p>If bit 0 is set as 1 (Yes), value in other individual bits will be ignored to consider this scenario as “Nothing to disclose”.</p> <p>(It is a mandatory field for future use; EP should specify bit 0 as 1 for completeness.)</p>
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7.6.2 New Odd Lot/Special Lot Order – Single (11)

This message is initiated by the client to send a new odd lot/special lot order to the market.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order.
1	Submitting Broker ID	Y	The Broker ID of the user that is submitting the new order
2	Security ID	Y	Instrument identifier value of Security ID Source type.
3	Security ID Source	Y	Identifies the source of the Security ID: <ul style="list-style-type: none"> 8 = Exchange Symbol Required if: Security ID is specified
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> XHKG Required if: Security ID Source = 8 (Exchange Symbol).
5	Broker Location ID	N	The location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated.
7	Side	Y	Side of the order <ul style="list-style-type: none"> 1 = Buy 2 = Sell 5 = Sell Short

8	Order Type	Y	Order type applicable to the order: <ul style="list-style-type: none"> 2 = Limit
9	Price	N	Price of order. Required if: Order Type = 2 (Limit)
10	Order Quantity	Y	Total order quantity of the order
11	Time In Force (TIF)	N	Time qualifier of the order. Absence of this field is interpreted as 0 = Day: <ul style="list-style-type: none"> 0 = Day (Default)
12	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position: <ul style="list-style-type: none"> 1 = Close Applicable only if Side = 1 (Buy) to indicate covering a short sell.
15	Order Capacity	N	Designates the capacity of the firm placing the order: <ul style="list-style-type: none"> 1 = Agency 2 = Principal
16	Text	N	Free Text
17	Execution Instructions	N	Instructions for order handling: <ul style="list-style-type: none"> 1 = Ignore Notional Value Checks Absence of this field is interpreted as None (i.e. system will perform Notional Value check).
18	Disclosure Instructions	Y	Disclosure Instructions to convey, a bit map with each bit representing a specific disclosure type: <ul style="list-style-type: none"> Bit 0 = None (No specific information to disclose) Each disclosure type can have only two possible values which will indicate the Disclosure Instruction as follows; <ul style="list-style-type: none"> 0 = No 1 = Yes All bits are required to be initialized to 0 (No) and only the required disclosure types will need to be set as 1 (Yes). If there is no specific information to disclose, bit 0 (None) must be set as 1 (Yes) If bit 0 is set as 1 (Yes), value in other individual bits will be ignored to consider this scenario as "Nothing to disclose". (It is a mandatory field for future use; EP should specify bit 0 as 1 for completeness.)
19	Lot Type	N	Lot Type of the order: <ul style="list-style-type: none"> 1 = Odd Lot See Notes.

Notes:

1. This message will be treated as a request for new board lot order (as in [Section 7.6.1](#)) if:
 - Lot Type is present but value is 2, or
 - Lot Type is absent

7.6.3 Amend Order (12)

This message is initiated by the client to amend an existing board-lot order.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	New client specified identifier of the order.
1	Submitting Broker ID	Y	The Broker ID of the user that is submitting the amend order request. This should be the same as in the original order.
2	Security ID	Y	Instrument identifier value of Security ID Source type. This must be the same as in the original order.
3	Security ID Source	Y	Identifies the source of the Security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol Required if: Security ID is specified
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol).
5	Broker Location ID	N	The location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated.
7	Side	Y	Side of the order: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short
8	Original Client Order ID	Y	Client Order ID of the order being amended.
9	Order ID	N	Order ID of the order being amended.
10	Order Type	Y	Order type applicable to the order, this must remain the same as in the original order: <ul style="list-style-type: none"> ▪ 1 = Market ▪ 2 = Limit
11	Price	N	Price of order. Required if: Order Type = 2 (Limit)
12	Order Quantity	Y	Total order quantity of the order

13	Time In Force (TIF)	N	<p>Time qualifier of the order; this must remain the same as in the original order:</p> <ul style="list-style-type: none"> ▪ 0 = Day (Default) ▪ 3 = Immediate or Cancel = IOC ▪ 4 = Fill or Kill = FOK ▪ 9 = At Crossing. Applicable for orders in Auction session.
14	Position Effect	N	<p>Indicates whether the resulting position after a trade should be an opening position or closing position:</p> <ul style="list-style-type: none"> ▪ 1 = Close <p>Applicable only if Side = 1 (Buy) to indicate covering a short sell.</p>
15	Order Restrictions	N	<p>Restrictions associated with this order:</p> <ul style="list-style-type: none"> ▪ 2 = Index Arbitrage ▪ 5 = Acting as Market Maker or Specialist in Security ▪ 6 = Acting as Market Maker or Specialist in underlying of a derivative security <p>The above 3 values are applicable only if Side = 5 (Sell Short)</p>
16	Max Price Levels	N	<p>Maximum number of price levels to trade through. This must be the same as in the original order.</p>
17	Order Capacity	N	<p>Designates the capacity of the firm placing the order:</p> <ul style="list-style-type: none"> ▪ 1 = Agency ▪ 2 = Principal
18	Text	N	<p>Free Text</p>
19	Execution Instructions	N	<p>Instructions for order handling:</p> <ul style="list-style-type: none"> ▪ 0 = Ignore Price Validity Checks ▪ 1 = Ignore Notional Value Checks <p>If either is missing, the respective check will be performed.</p> <p>Absence of this field is interpreted as None (i.e. system will perform both Price and Notional Value check).</p>

20	Disclosure Instructions	Y	<p>Disclosure Instructions to convey, a bit map with each bit representing a specific disclosure type:</p> <ul style="list-style-type: none"> Bit 0 = None (No specific information to disclose) <p>Each disclosure type can have only two possible values which will indicate the Disclosure Instruction as follows;</p> <ul style="list-style-type: none"> 0 = No 1 = Yes <p>All bits are required to be initialized to 0 (No) and only the required disclosure types will need to be set as 1 (Yes).</p> <p>If there is no specific information to disclose, bit 0 (None) must be set as 1 (Yes).</p> <p>If bit 0 is set as 1 (Yes), value in other individual bits will be ignored to consider this scenario as “Nothing to disclose”.</p> <p>If this field is not provided, the disclosure instructions from the original order will be assumed. (It is a mandatory field for future use; EP should specify bit 0 as 1 for completeness.)</p>
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7.6.4 Cancel Order (13)

This message is initiated by the client to cancel an existing order (board lot or odd lot/special lot).

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	New client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that is submitting the cancel request. This should be the same as in the original order.
2	Security ID	Y	Instrument identifier value of Security ID Source type. This must be the same as in the original order.
3	Security ID Source	Y	Identifies the source of the Security ID: <ul style="list-style-type: none"> 8 = Exchange Symbol Required if: Security ID is specified
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> XHKG Required if: Security ID Source = 8 (Exchange Symbol).
5	Broker Location ID	N	The location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated.

7	Side	Y	Side of the original order: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short
8	Original Client Order ID	Y	Client Order ID of the order being cancelled
9	Order ID	N	Order ID of the order being cancelled
10	Text	N	Free Text

7.6.5 Mass Cancel (14)

This message is initiated by the client to mass cancel orders (board lot only).

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the Mass Cancel request
1	Submitting Broker ID	Y	The Broker ID of the user that is submitting the mass cancel request on behalf of the Owning Broker
2	Security ID	N	Instrument identifier value of security ID source type. Required if: Mass Cancel Request Type = 1 (Cancel Orders for a Security)
3	Security ID Source	N	Identifies the source of the Security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol).
5	Broker Location ID	N	The location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated.
7	Side	N	Indicates the side of the market for which orders are to be cancelled: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell Absence of this field indicates that orders are to be cancelled regardless of side
8	Mass Cancel Request Type	Y	Specifies the scope of Order Mass Cancel Request: <ul style="list-style-type: none"> ▪ 1 = Cancel Orders for a Security ▪ 7 = Cancel All Orders ▪ 9 = Cancel Orders for a Market Segment

9	Market Segment ID	N	Identifies the market segment: <ul style="list-style-type: none"> ▪ MAIN ▪ GEM ▪ NASD ▪ ETS Required if: Mass Cancel Request Type = 9 (Cancel Orders for a Market Segment)
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7.6.6 On Behalf of Cancel

The client can request to cancel order(s) owned by a Broker ID that belongs to the same firm but different session.

7.6.6.1 Single Order Cancel (23)

This message is initiated by the client to cancel an existing board-lot order.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	New client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that is submitting the cancel request on behalf of the Order Owning Broker ID.
2	Security ID	Y	Instrument identifier value of Security ID Source type. This must be the same as in the original order.
3	Security ID Source	Y	Identifies the source of the Security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol Required if: Security ID is specified
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol).
5	Broker Location ID	N	The location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated.
7	Side	Y	Side of the original order: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short
8	Original Client Order ID	N	Client Order ID of the order being cancelled
9	Order ID	Y	Order ID of the order being cancelled.
10	Owning Broker ID	Y	Order Owner's Broker ID
11	Text	N	Free Text

7.6.6.2 Mass Order Cancel (24)

This message is initiated by the client to mass cancel orders (board lot and odd lot/special lot).

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the Mass Cancel request
1	Submitting Broker ID	Y	The Broker ID of the user that is submitting the cancel request on behalf of the Order Owning Broker ID.
2	Security ID	N	Instrument identifier value of security ID source type. Required if: Mass Cancel Request Type = 1 (Cancel Orders for a Security)
3	Security ID Source	N	Identifies the source of the Security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol).
5	Broker Location ID	N	The location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated.
7	Side	N	Indicates the side of the market for which orders are to be cancelled: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell Absence of this field indicates that orders are to be cancelled regardless of side
8	Mass Cancel Request Type	Y	Specifies the scope of Order Mass Cancel Request: <ul style="list-style-type: none"> ▪ 1 = Cancel Orders for a Security ▪ 7 = Cancel All Orders ▪ 9 = Cancel Orders for a Market Segment
9	Market Segment ID	N	Identifies the market segment: <ul style="list-style-type: none"> ▪ MAIN ▪ GEM ▪ NASD ▪ ETS Required if: Mass Cancel Request Type = 9 (Cancel Orders for a Market Segment)
10	Owning Broker ID	Y	Order Owner's Broker ID. This should be the same as in the original order.

7.6.7 Execution Report (10)

7.6.7.1 Order Accepted

The OCG will send this execution report once the new order (board lot or odd lot/special lot) is accepted.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated. Format: YYYYMMDD-HH:MM:SS.sss
7	Side	Y	Side of the order
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order
12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity
14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated

22	Order Status	Y	Order status after applying the transaction that is being communicated: <ul style="list-style-type: none"> 0 = New
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> 0 = New
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
27	Lot Type	N	Defines the lot type assigned to the order: <ul style="list-style-type: none"> 1 = Odd Lot 2 = Round Lot Absence of this field indicates a Round Lot order.

Notes:

1. If Lot Type is present and value is 1, then this execution report carries an odd lot/special lot order,
2. If Lot Type is present and value is 2, then this execution report carries a board (i.e., round) lot order,
3. If Lot Type is absent then this execution report carries a board (i.e., round) lot order.

7.6.7.2 Order Rejected

The OCG will send this execution report once the new order (board lot or odd lot/special lot) is rejected.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order

12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity
14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
20	Reason	N	Textual description of the rejection that is being communicated through this execution report
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated: <ul style="list-style-type: none"> ▪ 8 = Rejected
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> ▪ 8 = Reject
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
26	Order Reject Code	N	Reject code indicating the reason for the order reject: <ul style="list-style-type: none"> ▪ 3 = Order Exceed Limit ▪ 6 = Duplicate order ▪ 13 = Incorrect Qty ▪ 16 = Price exceeds current price band ▪ 19 = Reference price is not available ▪ 20 = Notional value exceeds threshold ▪ 99 = Other ▪ 101 = Price exceeds current price band (override not allowed) ▪ 102 = Price exceeds current price band

7.6.7.3 Order Cancelled

The OCG sends this execution report once the Cancel Request for an order (board lot or odd lot/special Lot) is accepted.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order
8	Original Client Order ID	Y	Original Client Order ID as specified in the incoming cancel request
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order
12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity
14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated: <ul style="list-style-type: none"> ▪ 4 = Cancelled

23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> ▪ 4 = Cancel
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity

7.6.7.4 Order Cancelled – Unsolicited

The OCG will send this execution report for an unsolicited cancel of an order (board lot or odd lot/special lot).

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order
12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity
14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order

19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated: <ul style="list-style-type: none"> ▪ 4 = Cancelled
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> ▪ 4 = Cancel
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
28	Exec Restatement Reason	N	Code to identify the reason for an Execution Report message with Exec Type= 4 (Cancel): <ul style="list-style-type: none"> ▪ 6 = Cancel on Trading Halt/VCM ▪ 8 = Market Operation ▪ 100 = Unsolicited Cancel for original order (for cancel/replace operation which fails market validation) ▪ 103 = Mass cancelled by Broker ▪ 104 = Cancel On Disconnect ▪ 105 = Cancel due to Broker suspended ▪ 106 = Cancel due to Exchange Participant suspended ▪ 107 = System Cancel

7.6.7.5 Order Cancelled – On-Behalf Of

The OCG will send this execution report for an OBO cancellation of an order (board lot or odd lot/special lot).

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker

6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order
12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity
14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated: <ul style="list-style-type: none"> ▪ 4 = Cancelled
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> ▪ 4 = Cancel
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
28	Exec Restatement Reason	N	Code to identify the reason for an Execution Report message with Exec Type= 4 (Cancel): <ul style="list-style-type: none"> ▪ 101 = On Behalf Of Single Cancel ▪ 102 = On Behalf Of Mass Cancel

7.6.7.6 Order Expired

The OCG will send this execution report when an order (board lot or odd lot/special lot) expires.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.

2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order
12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity
14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
20	Reason	N	Textual description for the reason for order expiry
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated: <ul style="list-style-type: none"> ▪ 12 = Expired
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> ▪ C = Expire
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity

7.6.7.7 Order Amended

The OCG sends this execution report when an Order Amend request for an order (board lot) is accepted.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order
8	Original Client Order ID	Y	Original Client Order ID as specified in the incoming amend request
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order
12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity
14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated

22	Order Status	Y	Order status after applying the transaction that is being communicated: <ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> ▪ 5 = Amend
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity

7.6.7.8 Order Cancel Rejected

The OCG sends this execution report when an Order Cancel Request is rejected.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order
8	Original Client Order ID	N	Original Client Order ID as specified in the incoming cancel request
9	Order ID	Y	Order ID assigned for the order
10	Owning Broker ID	N	Order owner's Broker ID. Owner and Submitter could be the same Broker ID.
11	Order Type	N	Type of the order
12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity

14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
20	Reason	N	Textual description of the rejection that is being communicated through this execution report
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status as at the time of this rejection: <ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled ▪ 4 = Cancelled ▪ 6 = Pending Cancel ▪ 8 = Rejected ▪ 10 = Pending New ▪ 12 = Expired ▪ 14 = Pending Amend
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> ▪ X = Cancel Reject
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
29	Cancel Reject Code	N	Reject code indicating the reason for the order reject: <ul style="list-style-type: none"> ▪ 0 = Too late to cancel ▪ 1 = Unknown Order ▪ 3 = Order already in Pending Cancel or Pending Replace status ▪ 6 = Duplicate Client Order ID received ▪ 99 = Other (default) ▪

Note: Order Status is set to 8 = Rejected in the event of one of the following scenarios:

- *It's an unknown order*
- *Validation failure of an OBO cancel request.*

7.6.7.9 Order Amend Rejected

The OCG sends this execution report when an Order Amend Request is rejected.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order
8	Original Client Order ID	Y	Original Client Order ID as specified in the incoming amend request
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order
12	Price	N	Limit price Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity
14	TIF	N	Time qualifier of the order
15	Position Effect	N	Indicates whether the resulting position after a trade should be a closing position
16	Order Restrictions	N	Restrictions associated with the order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
20	Reason	N	Textual description of the rejection that is being communicated through this execution report
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated

22	Order Status	Y	Order status as at the time of this rejection: <ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled ▪ 4 = Cancelled ▪ 6 = Pending Cancel ▪ 8 = Rejected ▪ 10 = Pending New ▪ 12 = Expired ▪ 14 = Pending Amend
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report: <ul style="list-style-type: none"> ▪ Y = Amend Reject
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
36	Amend Reject Code	N	Reject code indicating the reason for the order reject: <ul style="list-style-type: none"> ▪ 0 = Too late to amend ▪ 1 = Unknown Order ▪ 3 = Order already in Pending Cancel or Pending Replace status ▪ 6 = Duplicate Client Order ID received ▪ 8 = Price exceeds current price band ▪ 99 = Other ▪ 100 = Reference price is not available ▪ 101 = Price exceeds current price band(override not allowed) ▪ 102 = Price exceeds current price band ▪ 103 = Notional value exceeds threshold

Note: Order Status is set to 8 = Rejected if it's an unknown order.

7.6.7.10 Trade (Board lot Order Executed)

The OCG sends this execution report for an auto-matched trade.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order.
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)

5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order.
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order.
12	Price	N	Limit price. Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity.
14	TIF	N	Time qualifier of the order.
15	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position
16	Order Restrictions	N	Restrictions associated with an order
17	Max Price Levels	N	The maximum number of price levels to trade through
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated <ul style="list-style-type: none"> ▪ 1 = Partially Filled ▪ 2 = Filled
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report <ul style="list-style-type: none"> ▪ F = Trade
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
27	Lot Type	N	Defines the lot type assigned to the order: <ul style="list-style-type: none"> ▪ 2 = Round Lot Absence of this field indicates a Round Lot order.
30	Match Type	N	The point in the matching process at which this trade was matched <ul style="list-style-type: none"> ▪ 4 = Auto Match ▪ 5 = Cross Auction
31	Counterparty Broker ID	N	The Broker ID of the user sitting on the opposite side of the trade
32	Execution Quantity	Y	Execution Size
33	Execution Price	Y	Execution price

35	Order Category	N	Defines the type of interest behind a trade <ul style="list-style-type: none"> ▪ 1 = Internal Cross Order Absence of this field means the trade is not concluded within the same firm
38	Trade Match ID	N	Identifier assigned to a trade by the matching system

7.6.7.11 Auto-matched Trade Cancelled

This execution report message is sent by the OCG when an auto-matched trade is cancelled by the exchange.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order.
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order.
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order.
12	Price	N	Limit price. Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity.
14	TIF	N	Time qualifier of the order.
15	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position
16	Order Restrictions	N	Restrictions associated with an order
17	Max Price Levels	N	The maximum number of price levels to trade through

18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated <ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled ▪ 4 = Cancelled ▪ 12 = Expired
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report <ul style="list-style-type: none"> ▪ H = Trade Cancel
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
28	Exec Restatement Reason	N	Code to identify the reason for an Execution Report message with Exec Type = H (Trade Cancel) <ul style="list-style-type: none"> ▪ 8 = Market Operations
32	Execution Quantity	N	Execution Size Will be set to 0.
33	Execution Price	N	Execution price Will be set to 0
34	Reference Execution ID	Y	Execution ID previously published for this Trade.
35	Order Category	N	Defines the type of interest behind a trade <ul style="list-style-type: none"> ▪ 1 = Internal Cross Order Absence of this field means the trade is not concluded within the same firm

7.6.7.12 Trade (Odd lot/Special lot Order Executed)

The OCG sends this execution report for an odd lot/special lot order when it is filled.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order.
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol

4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order.
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order.
12	Price	N	Limit price. Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity.
14	TIF	N	Time qualifier of the order.
15	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated <ul style="list-style-type: none"> ▪ 2 = Filled
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report <ul style="list-style-type: none"> ▪ F = Trade
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
27	Lot Type	N	Defines the lot type assigned to the order: <ul style="list-style-type: none"> ▪ 1 = Odd Lot Absence of this field indicates a Round Lot order.
31	Counterparty Broker ID	N	The Broker ID of the user sitting on the opposite side of the trade
32	Execution Quantity	Y	Execution Size
33	Execution Price	Y	Execution price

35	Order Category	N	Defines the type of interest behind a trade <ul style="list-style-type: none"> 1 = Internal Cross Order Absence of this field means the trade is not concluded within the same firm
38	Trade Match ID	N	Identifier assigned to a trade by the matching system
39	Exchange Trade Type	N	Exchange assigned trade type <ul style="list-style-type: none"> E = Special Lot – Semi-automatic O = Odd Lot – Semi-automatic

7.6.7.13 Trade (Semi-auto-matched) Cancelled

The OCG sends this execution report when a semi-auto-matched trade is cancelled by the exchange.

Note that this trade cancellation message is sent to the Side that refers to an Odd lot/Special lot order.

Bit Position	Field Name	Required	Description
0	Client Order ID	Y	Client specified identifier of the order.
1	Submitting Broker ID	Y	The Broker ID of the user that submitted the order for which the Execution Report is generated.
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The Location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Side	Y	Side of the order.
9	Order ID	Y	Order ID assigned for the order
11	Order Type	N	Type of the order.
12	Price	N	Limit price. Required if: Order Type = 2 (Limit)
13	Order Quantity	N	Total order quantity.
14	TIF	N	Time qualifier of the order.

15	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position
18	Order Capacity	N	Designates the capacity of the firm placing the order
19	Text	N	The most recent text sent by the client will be echoed back to the client.
21	Execution ID	Y	Unique Execution ID assigned by the system for each Execution Report generated
22	Order Status	Y	Order status after applying the transaction that is being communicated <ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled ▪ 4 = Cancelled ▪ 12 = Expired
23	Exec Type	Y	Execution Type that indicates the reason for the generation of the Execution Report <ul style="list-style-type: none"> ▪ H = Trade Cancel
24	Cumulative Quantity	Y	Cumulative execution quantity
25	Leaves Quantity	Y	Open order quantity
28	Exec Restatement Reason	N	Code to identify the reason for an Execution Report message with Exec Type = H (Trade Cancel) <ul style="list-style-type: none"> ▪ 8 = Market Operations
32	Execution Quantity	N	Execution Size Will be set to 0.
33	Execution Price	N	Execution price Will be set to 0
34	Reference Execution ID	Y	Execution ID previously published for this Trade.
35	Order Category	N	Defines the type of interest behind a trade <ul style="list-style-type: none"> ▪ 1 = Internal Cross Order Absence of this field means the trade is not concluded within the same firm

7.6.8 Order Mass Cancel Report (15)

The OCG sends this message in response to an Order Mass Cancel Request message.

Bit Position	Field Name	Required	Description
0	Client Order ID	N	Client specified identifier of the Mass cancel request
1	Submitting Broker ID	N	The Broker ID of the user that submitted the mass cancel request
2	Security ID	N	Instrument identifier value of security ID source type.

3	Security ID Source	N	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Broker Location ID	N	The location ID of the Submitting Broker
6	Transaction Time	Y	The time at which the particular message was generated
7	Mass Cancel Request Type	Y	Specifies scope of Order Mass Cancel Request: <ul style="list-style-type: none"> 1 = Cancel Orders For Security 7 = Cancel All Orders 9 = Cancel Orders for a Market Segment
8	Owning Broker ID	N	Order owner's Broker ID. Owner and submitter could be the same Broker ID.
9	Mass Action Report ID	Y	Unique identifier assigned for the Order Mass Cancel Report by the system
10	Mass Cancel Response	Y	Indicates the action taken by the order handling system as a result of the cancel request: <ul style="list-style-type: none"> 0 = Cancel Request Rejected 1 = Cancel order for a security 7 = Cancel All Orders 9 = Cancel all orders for a market segment
11	Mass Cancel Reject Code	N	The code Indicating the reason why the Mass Cancel Request was rejected: <ul style="list-style-type: none"> 8 = Invalid or Unknown Market Segment(8) 99 = Other 100 = Unconfirmed Acknowledgement <i>(applicable, only if this message is a solicited response to a direct or OBO Mass Cancel request)</i> Required if: <i>Mass Cancel Response = Cancel Request Rejected</i>
12	Reason	N	Textual description of the transaction (mass cancel request rejected) that is being communicated through the order mass cancel report

7.7 Business Messages – Quote Handling

7.7.1 Quote (16)

The client sends this message to input a new quote/amend an existing quote.

Bit Position	Field Name	Required	Description
0	Submitting Broker ID	Y	The Broker ID of the user that is submitting the quote
1	Broker Location ID	N	The location ID of the Submitting Broker
2	Security ID	Y	Instrument identifier value of security ID source type.
3	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Quote Bid ID	Y	Client specified identifier of the bid side of the quote
6	Quote Offer ID	Y	Client specified identifier of the offer side of the quote
7	Quote Type	N	Indicates the type of Quote. Must be: <ul style="list-style-type: none"> ▪ 1 = Tradable
8	Side	N	Short sell indicator <ul style="list-style-type: none"> ▪ 5 = Sell Short
9	Bid Size	Y	Order quantity of the bid side of the quote
10	Offer Size	Y	Order quantity of the offer side of the quote
11	Bid Price	Y	Order price of the bid side of the quote
12	Offer Price	Y	Order price of the offer side of the quote
13	Transaction Time	Y	The time at which the particular message was generated
14	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position: <ul style="list-style-type: none"> ▪ 1 = Close Use this for indicating that the Bid side of this Quote is covering a short selling.
15	Order Restrictions	N	Restrictions associated with a quote: <ul style="list-style-type: none"> ▪ 2 = Index Arbitrage ▪ 5 = Acting as Market Maker Or Specialist in the security ▪ 6 = Acting as Market Maker Or Specialist In underlying of a derivative security Use these for indicating different types of short sells when Side = 5 (Sell Short).
16	Text	N	Free Text

17	Execution Instructions	N	<p>Instructions for quote handling on exchange trading floor.</p> <ul style="list-style-type: none"> ▪ 0 = Ignore Price Validity Checks ▪ 1 = Ignore Notional Value Checks <p>If either is missing, the respective check will be performed.</p> <p>Absence of this field is interpreted as both Price Validity and Notional Value checks are required.</p>
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7.7.2 Quote Cancel (17)

The client sends this message to cancel an existing quote.

Bit Position	Field Name	Required	Description
0	Submitting Broker ID	Y	The Broker ID of the user that is submitting the quote cancel
1	Broker Location ID	N	The location ID of the Submitting Broker
2	Security ID	N	Instrument identifier value of security ID source type. Required if Quote Cancel Type = 1 (Cancel for one or more securities).
3	Security ID Source	N	Identifies the source of the security ID. Required if Quote Cancel Type = 1 (Cancel for one or more securities). <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Quote Message ID	Y	Client specified identifier for this cancel request
6	Quote Cancel Type	Y	Identifies type of quote cancel: <ul style="list-style-type: none"> ▪ 1 = Cancel for one or more securities

7.7.3 Quote Status Report (18)

The OCG sends this message when a Quote (14) or Quote Cancel (15) message from the client is rejected.

Bit Position	Field Name	Required	Description
0	Submitting Broker ID	Y	The Broker ID of the user that is submitting the quote/quote cancel
1	Broker Location ID	N	The location ID of the Submitting Broker
2	Security ID	N	Instrument identifier value of security ID source type.

3	Security ID Source	N	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> 8 = Exchange Symbol
4	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> XHKG Required if: Security ID Source = 8 (Exchange Symbol)
5	Quote Bid ID	N	Client specified identifier of the bid side of the quote. Required to be present only if the Quote Status Report is in response to a Quote message
6	Quote Offer ID	N	Client specified identifier of the offer side of the quote. Required to be present only if the Quote Status Report is in response to a Quote message
7	Quote Type	N	Indicates the type of quote: <ul style="list-style-type: none"> 1 = Tradeable
8	Transaction Time	Y	Time at which this message was generated.
9	Quote Message ID	N	Client specified identifier for the Quote Cancel message. Required to be present only if the Quote Status Report is in response to a Quote Cancel message
10	Quote Cancel Type	N	Identifies the type of quote cancel <ul style="list-style-type: none"> 1 = Cancel for one more securities
11	Quote Status	N	Identifies the status of the quote acknowledgement <ul style="list-style-type: none"> 5 = Rejected
12	Quote Reject Code	N	The code indicating the reason why the quote got rejected <ul style="list-style-type: none"> 8 = Invalid Price 10 = Price exceeds current price band 14 = Notional value exceeds threshold 15 = Price exceeds current price band (override not allowed) 16 = Reference Price is not available 99 = Other 101 = Price exceeds current price band (override not allowed) 102 = Price exceeds current price band
13	Reason	N	Reason of rejection

7.8 Business Messages – Trade Handling

7.8.1 Trade Capture – Submission

This set of messages used for reporting an off-exchange trade follows “Privately Negotiated Trade, Two-Party Report” as described by FIX protocol (reference: FIX 5.0 SP2 Volume 5).

According to the business processing flow:

- For all types of off-exchange trades except “Overseas”, the selling counterparty has the responsibility to report the resultant trade. Purchasing counterparties are able to review the trades reported by sellers, and can reject any alleged trades if they are believed to be incorrect.
- Purchases can be input for off-exchange trades of type “Overseas” (i.e., one party to the trade is not a member of HKEx). Overseas trades are not reported with a correspondent/counterparty Broker ID and they cannot therefore be rejected.

The same set of messages is also used for reporting an odd lot/special lot trade in semi-automatic trading. Such a trade can be requested by either buyer or seller by pointing to a resting order.

7.8.1.1 New Off Exchange Trade (21)

The client sends this message to report an off-exchange trade.

Bit Position	Field Name	Required	Description
0	Trade Report ID	Y	Unique Identification for the trade capture report assigned by the reporting side of the Trade (to be returned to the reporting broker).
1	Trade Report Trans Type	N	Identifies the trade report message transaction type: <ul style="list-style-type: none"> ▪ 0 = New
2	Trade Report Type	Y	Type of the Trade Report: <ul style="list-style-type: none"> ▪ 0 = New
3	Trade Handling Instructions	N	Indicates how the trade capture report should be handled by the receiver: <ul style="list-style-type: none"> ▪ 1 = Two Party Report ▪ 6 = One Party Report (if Trade Type = 104)
4	Submitting Broker ID	Y	The Broker ID of the user submitting the trade capture report
5	Counterparty Broker ID	N	The Broker ID of the user sitting on the opposite side of the trade. Should not be present if: Trade Handling Instructions = 6 OR Order Category = 1
6	Broker Location ID	N	The location ID of the Submitting Broker
7	Security ID	Y	Instrument identifier value of security ID source type.

8	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> 8 = Exchange Symbol
9	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> XHKG Required if: Security ID Source = 8 (Exchange Symbol)
10	Side	Y	The side of the trade applicable to the submitter of the trade capture report: <ul style="list-style-type: none"> 1 = Buy 2 = Sell 5 = Sell Short
11	Transaction Time	Y	The time at which the particular message was generated
13	Trade Type	Y	Type of the trade: <ul style="list-style-type: none"> 4 = Late Trade 22 = Privately Negotiated Trade 102 = Odd Lot Trade 104 = Overseas Trade
14	Execution Quantity	Y	Execution Size
15	Execution Price	Y	Execution price
16	Clearing Instruction	N	Clearing Information <ul style="list-style-type: none"> 0 = Process normally 1 = Exclude from all netting 14 = Buy In
17	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position: <ul style="list-style-type: none"> 1 = Close Applicable only if Side = 1 (Buy) to indicate covering a short sell.
19	Order Capacity	N	Designates the capacity of the firm submitting the trade <ul style="list-style-type: none"> 1 = Agency 2 = Principal
20	Order Category	N	Defines the type of interest behind a trade: <ul style="list-style-type: none"> 1 = Internal Cross Order Absence of this field means the trade is not concluded within the same firm.
21	Text	N	Free Text

22	Execution Instructions	N	<p>Instructions for trade report handling:</p> <ul style="list-style-type: none"> ▪ 0 = Ignore Price Validity Checks ▪ 1 = Ignore Notional Value Checks <p>If either is missing, the respective check will be performed.</p> <p>Absence of this field is interpreted as both Price Validity and Notional Value checks are required.</p>
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7.8.1.2 Cancel Off Exchange Trade (21)

The client sends this message to request for a cancellation of a reported off-exchange trade. This cancellation is always initiated by the counterparty of the reporting side of this trade.

Bit Position	Field Name	Required	Description
0	Trade Report ID	Y	Unique Identification for the trade capture report assigned by the reporting side of the Trade Cancel (to be returned to the reporting broker).
1	Trade Report Trans Type	N	Identifies the trade report message transaction type: <ul style="list-style-type: none"> ▪ 0 = New
2	Trade Report Type	Y	Type of the Trade Report: <ul style="list-style-type: none"> ▪ 6 = Trade Report Cancel
3	Trade Handling Instructions	N	Indicates how the trade capture report should be handled by the receiver: <ul style="list-style-type: none"> ▪ 1 = Two Party Report
4	Submitting Broker ID	Y	The Broker ID of the user submitting the trade capture report
6	Broker Location ID	N	The location ID of the Submitting Broker
7	Security ID	Y	Instrument identifier value of security ID source type.
8	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
9	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
10	Side	Y	The side of the trade applicable to the submitter of the trade capture report: <ul style="list-style-type: none"> ▪ 1 = Buy
11	Transaction Time	Y	The time at which the particular message was generated
12	Trade ID	Y	Unique ID assigned to the trade by the exchange when the trade was reported.
14	Execution Quantity	Y	Execution Size

15	Execution Price	Y	Execution price
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7.8.1.3 New Odd lot/Special lot Trade (21)

The client sends this message to report a semi-automatic Odd lot/Special lot trade, pointing to a resting/existing order.

Bit Position	Field Name	Required	Description
0	Trade Report ID	Y	Unique Identification for the trade capture report assigned by the reporting side of the Trade (to be returned to the reporting broker).
1	Trade Report Trans Type	N	Identifies the trade report message transaction type: <ul style="list-style-type: none"> ▪ 0 = New
2	Trade Report Type	Y	Type of the Trade Report: <ul style="list-style-type: none"> ▪ 0 = New
3	Trade Handling Instructions	N	Indicates how the trade capture report should be handled by the receiver: <ul style="list-style-type: none"> ▪ 1 = Two Party Report
4	Submitting Broker ID	Y	The Broker ID of the user submitting the trade capture report
5	Counterparty Broker ID	N	The Broker ID of the resting order.
6	Broker Location ID	N	The location ID of the Submitting Broker
7	Security ID	Y	Instrument identifier value of security ID source type.
8	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
9	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
10	Side	Y	The side of the trade applicable to the submitter of the trade capture report: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short
11	Transaction Time	Y	The time at which the particular message was generated
13	Trade Type	Y	Type of the trade: <ul style="list-style-type: none"> ▪ 102 = Odd Lot Trade
14	Execution Quantity	Y	Execution Size
15	Execution Price	Y	Execution price

16	Clearing Instruction	N	Clearing Information <ul style="list-style-type: none"> 0 = Process normally
17	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position: <ul style="list-style-type: none"> 1 = Close Applicable only if Side = 1 (Buy) to indicate covering a short sell.
19	Order Capacity	N	Designates the capacity of the firm submitting the trade <ul style="list-style-type: none"> 1 = Agency 2 = Principal
21	Text	N	Free Text
22	Execution Instructions	N	Instructions for trade report handling: <ul style="list-style-type: none"> 1 = Ignore Notional Value Checks Absence of this field is interpreted as Notional Value check is required.
27	Order ID	N	Order ID of the counterparty (i.e., resting) odd lot/special lot order.

7.8.2 Trade Capture – Confirmation/Acknowledgement

7.8.2.1 Trade (Off Exchange) Accepted (21)

The OCG sends this message to the submitter and the counterparty (if applicable) of the trade to confirm the acceptance.

Bit Position	Field Name	Required	Description
0	Trade Report ID	N	Unique Identification for the Trade Capture Report assigned by the reporting side of the Trade (to be returned to the reporting broker).
1	Trade Report Trans Type	Y	Identifies the trade report message transaction type: <ul style="list-style-type: none"> 0 = New (for the non-reporting side) 2 = Replace (for the reporting side)
2	Trade Report Type	Y	Type of the Trade Report: <ul style="list-style-type: none"> 0 = New (Submit)
3	Trade Handling Instructions	N	Indicates how the trade capture report should be handled by the receiver: <ul style="list-style-type: none"> 0 = Trade Confirm
4	Submitting Broker ID	Y	The Broker ID of the user submitting the trade capture report
5	Counterparty Broker ID	N	The Broker ID of the user sitting on the opposite side of the trade
6	Broker Location ID	N	The location ID of the Submitting Broker

7	Security ID	Y	Instrument identifier value of security ID source type.
8	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
9	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
10	Side	Y	The side of the trade applicable to the submitter of the trade capture report: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short
11	Transaction Time	Y	The time at which the particular message was generated
12	Trade ID	Y	The unique ID assigned to the trade entity once it is received or matched by the exchange.
13	Trade Type	Y	Type of the trade: <ul style="list-style-type: none"> ▪ 4 = Late Trade ▪ 22 = Privately Negotiated Trade ▪ 102 = Odd Lot Trade ▪ 104 = Overseas Trade
14	Execution Quantity	Y	Execution Size
15	Execution Price	Y	Execution price
16	Clearing Instruction	N	Clearing Information <ul style="list-style-type: none"> ▪ 0 = Process normally ▪ 1 = Exclude from all netting ▪ 14 = Buy In
17	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position: <ul style="list-style-type: none"> ▪ 1 = Close Applicable only if Side = 1 (Buy) to indicate covering a short sell.
19	Order Capacity	N	Designates the capacity of the firm <ul style="list-style-type: none"> ▪ 1 = Agency ▪ 2 = Principal
20	Order Category	N	Defines the type of interest behind this trade: <ul style="list-style-type: none"> ▪ 1 = Internal Cross Order Absence of this field means the trade is not concluded within the same firm.
21	Text	N	Free Text

23	Exec Type	N	Execution Type that indicates the reason for the generation of this confirmation: <ul style="list-style-type: none"> ▪ F = Trade
24	Trade Report Status	N	Trade Report Status: <ul style="list-style-type: none"> ▪ 0 = Accepted Absence of this field indicates 0 = Accepted.
25	Exchange Trade Type	N	Exchange assigned Trade Type: <ul style="list-style-type: none"> ▪ M = Manual Trade ▪ S = Manual – Non Standard Price Trade ▪ Q = Special Lot Trade ▪ P = Odd Lot Trade ▪ R = Previous Day’s Trade ▪ V = Overseas Trade

7.8.2.2 Trade (Odd Lot/Special Lot) Accepted (21)

The OCG sends this message to the submitter of the trade to confirm the acceptance.

Bit Position	Field Name	Required	Description
0	Trade Report ID	N	Unique Identification for the Trade Capture Report assigned by the reporting side of the Trade (to be returned to the reporting broker).
1	Trade Report Trans Type	Y	Identifies the trade report message transaction type: <ul style="list-style-type: none"> ▪ 2 = Replace (for the reporting side)
2	Trade Report Type	Y	Type of the Trade Report: <ul style="list-style-type: none"> ▪ 0 = New (Submit)
3	Trade Handling Instructions	N	Indicates how the trade capture report should be handled by the receiver: <ul style="list-style-type: none"> ▪ 0 = Trade Confirm
4	Submitting Broker ID	Y	The Broker ID of the user submitting the trade capture report
5	Counterparty Broker ID	N	The Broker ID of the user sitting on the opposite side of the trade (i.e., the resting order owner)
6	Broker Location ID	N	The location ID of the Submitting Broker
7	Security ID	Y	Instrument identifier value of security ID source type.
8	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
9	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)

10	Side	Y	The side of the trade applicable to the submitter of the trade capture report: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short
11	Transaction Time	Y	The time at which the particular message was generated
12	Trade ID	Y	The unique ID assigned to the trade entity once it is received or matched by the exchange.
13	Trade Type	Y	Type of the trade: <ul style="list-style-type: none"> ▪ 102 = Odd Lot Trade
14	Execution Quantity	Y	Execution Size
15	Execution Price	Y	Execution price
16	Clearing Instruction	N	Clearing Information <ul style="list-style-type: none"> ▪ 0 = Process normally
17	Position Effect	N	Indicates whether the resulting position after a trade should be an opening position or closing position: <ul style="list-style-type: none"> ▪ 1 = Close Applicable only if Side = 1 (Buy) to indicate covering a short sell.
19	Order Capacity	N	Designates the capacity of the firm <ul style="list-style-type: none"> ▪ 1 = Agency ▪ 2 = Principal
20	Order Category	N	Defines the type of interest behind this trade: <ul style="list-style-type: none"> ▪ 1 = Internal Cross Order Absence of this field means the trade is not concluded within the same firm.
21	Text	N	Free Text
23	Exec Type	N	Execution Type that indicates the reason for the generation of this confirmation: <ul style="list-style-type: none"> ▪ F = Trade
24	Trade Report Status	N	Trade Report Status: <ul style="list-style-type: none"> ▪ 0 = Accepted Absence of this field indicates 0 = Accepted.
25	Exchange Trade Type	N	Exchange assigned Trade Type: <ul style="list-style-type: none"> ▪ E = Special Lot – Semi-Automatic ▪ O = Odd Lot – Semi-Automatic

7.8.2.3 Trade Cancelled (21)

The OCG sends this message whenever a following trade is cancelled:

- off-exchange trade (cancelled by the counterparty or by the exchange), or
- Odd lot/Special lot trade (cancelled by the exchange)

Bit Position	Field Name	Required	Description
0	Trade Report ID	N	Unique Identification for the Trade Capture Report assigned by the reporting side of the Trade Cancel (to be returned to the reporting broker). This field is not applicable to Odd lot / Special lot trade (cancelled by the exchange).
1	Trade Report Trans Type	Y	Identifies the trade report message transaction type: <ul style="list-style-type: none"> 0 = New (for the party opposite to that requesting this cancel) 2 = Replace (for the party requesting this cancel) 5 = Cancel due to back out of trade (for both buyer and seller if Exec Type = L)
2	Trade Report Type	Y	Type of the Trade Report: <ul style="list-style-type: none"> 6 = Trade Report Cancel
3	Trade Handling Instructions	N	Indicates how the trade capture report should be handled by the receiver: <ul style="list-style-type: none"> 0 = Trade Confirm
4	Submitting Broker ID	Y	The Broker ID of the user submitting the trade capture report
6	Broker Location ID	N	The location ID of the Submitting Broker
7	Security ID	Y	Instrument identifier value of security ID source type.
8	Security ID Source	Y	Identifies the source of the security ID. Must be same as in the original order: <ul style="list-style-type: none"> 8 = Exchange Symbol
9	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> XHKG Required if: Security ID Source = 8 (Exchange Symbol)
10	Side	Y	The side of the trade applicable to the submitter of the trade capture report: <ul style="list-style-type: none"> 1 = Buy 2 = Sell
11	Transaction Time	Y	The time at which the particular message was generated
12	Trade ID	Y	Unique ID assigned to the trade by the exchange when the trade was reported.
14	Execution Quantity	Y	Execution Size
15	Execution Price	Y	Execution price

23	Exec Type	N	Execution Type that indicates the reason for the generation of this confirmation: <ul style="list-style-type: none"> ▪ H = Trade Cancel (by the counter-party) ▪ L = Triggered or activated by System (cancelled by the exchange)
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7.8.2.4 Trade Capture Report Ack (22)

The OCG sends this message to the sender of the business message to:

- reject a trade submission (off exchange or odd lot/special lot trade)
- reject a cancel request (off exchange or odd lot/special lot trade)

Bit Position	Field Name	Required	Description
0	Trade Report ID	Y	Unique Identification for the Trade Capture Report assigned by the reporting side of the Trade (to be returned to the reporting broker).
1	Trade Report Trans Type	N	Identifies the trade report message transaction type: <ul style="list-style-type: none"> ▪ 0 = New
2	Trade Report Type	Y	Type of the Trade Report: <ul style="list-style-type: none"> ▪ 0 = New (Submit) ▪ 6 = Trade Report Cancel
3	Trade Handling Instructions	N	Indicates how the trade capture report should be handled by the receiver: <ul style="list-style-type: none"> ▪ 1 = Two Party Report ▪ 6 = One Party Report
4	Submitting Broker ID	Y	The Broker ID of the user submitting the trade capture report
5	Counterparty Broker ID	N	The Broker ID of the user sitting on the opposite side of the trade
6	Broker Location ID	N	The location ID of the Submitting Broker
7	Security ID	Y	Instrument identifier value of security ID source type.
8	Security ID Source	Y	Identifies the source of the security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
9	Security Exchange	N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)
10	Side	Y	The side of the trade applicable to the submitter of the trade capture report: <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short

11	Transaction Time	Y	Time at which this particular message was generated
12	Trade ID	N	The unique ID assigned to the trade entity once it is received or matched by the exchange.
13	Trade Report Status	N	Trade Report Status: <ul style="list-style-type: none"> ▪ 1 = Rejected
14	Trade Report Reject Code	N	The code indicating the reason why the trade report is rejected: <ul style="list-style-type: none"> ▪ 4 = Invalid trade type ▪ 5 = Price exceeds current price band ▪ 6 = Reference price not available ▪ 7 = Notional value exceeds threshold ▪ 99 = Other
15	Reason	N	Text explaining the reject reason

7.9 Business Messages – Infrastructure

7.9.1 Business Message Reject (9)

Bit Position	Field Name	Required	Description
0	Business Reject Code	Y	Code specifying the reason for the rejection of the message: <ul style="list-style-type: none"> ▪ 0 = Other ▪ 1 = Unknown ID ▪ 2 = Unknown Security ▪ 3 = Unspecified Message Type ▪ 4 = Application not available ▪ 5 = Conditionally required field missing ▪ 8 = Throttle limit exceeded In case the Business Reject Code = 8 = Throttle Limit exceeded, then the Reason field will indicate the remaining throttle interval time in milliseconds.
1	Reason	N	Textual reason for the reject. If the rejection is due to an issue with a particular field its name will be specified.
2	Reference Message Type	Y	Type of message rejected.
3	Reference Field Name	N	Name of the field (as per the data dictionary) which caused the rejection
4	Reference Sequence Number	N	Sequence number of the message which caused the rejection
5	Business Reject Reference ID	N	Client specified identifier of the rejected message if it is available.

7.10 Party Entitlements

7.10.1 Party Entitlement Request (27)

The client sends this message to request for party entitlement details.

Bit Position	Field Name	Required	Description
0	Entitlement Request ID	Y	A unique identifier assigned to the Party Entitlement Request Message

7.10.2 Party Entitlement Report (28)

The OCG sends this message in response to a request for entitlement details.

The OCG will fragment this Party Entitlement Report per each Broker ID belonging to the client. The OCG will use *Total No Party List* to specify the total number of Broker IDs for which the entitlement information is provided. The last message will have the *Last Fragment* set to 1 = Yes.

If any Broker ID belonging to this client is a liquidity provider, then for such a Broker ID, *No Entitlements* will represent the number of symbols that the entitlements are provided for, and a single message fragment will provide the entitlement details for multiple (e.g., up to 10) symbols. For example, if an LP Broker ID is entitled to 15 symbols, two Party Entitlement Report messages will be sent with the first message carrying entitlement details for first 10 symbols, and the second message carrying information for the remaining 5 symbols.

Bit Position	Field Name	Required	Description
0	Entitlement Report ID	Y	A unique ID assigned to the Party Entitlement Report by the system
1	Entitlement Request ID	N	Conditionally required if the Party Entitlement Report is in response to a Party Entitlements Request
2	Request Result	N	Conditionally required if the Party Entitlement Report is in response to a Party Entitlements Request: <ul style="list-style-type: none"> ▪ 0 = Valid Request ▪ 1 = Invalid or unsupported request ▪ 2 = No data found that match selection criteria ▪ 5 = Request for data not supported ▪ 99 = Other
3	Total No Party List	N	The total number of Broker IDs to be returned across all fragments
4	Last Fragment	N	Indicates whether this message is that last in a sequence of fragmented messages: <ul style="list-style-type: none"> ▪ 0 = No ▪ 1 = Yes
5	Broker ID	N	Broker ID for which the Entitlement details are applicable
6	No Entitlements	N	The number of entitlements attached to the Broker ID specified

	No Entitlements Body Fields Presence Map		N	This will indicate the fields/nested repeating blocks present in this repeating block. Requires to be present if No Entitlements > 0
0	Entitlement Type		N	Absence of this field indicates the meaning of the entitlement is implicit. Else: <ul style="list-style-type: none"> ▪ 0 = Trade ▪ 1 = Make Market
1	Entitlement Indicator		N	Determines if the party is entitled for the specified Entitlement Type: <ul style="list-style-type: none"> ▪ 0 = No ▪ 1 = Yes
2	No Entitlement Attributes		N	Number of entitlement attributes for the specified broker
	No Entitlement Attributes Body Fields Presence Map		N	This will indicate the fields/nested repeating blocks present in this repeating block
0	Entitlement Attribute Type		N	Name of the entitlement attribute: <ul style="list-style-type: none"> ▪ 4000 = Minimum Volume Obligation ▪ 4001 = Maximum Spread/Tick Obligation
	Entitlement Attribute Data Type		N	The data type applicable to the specified Entitlement Attribute Type: <ul style="list-style-type: none"> ▪ 7 = Decimal
	Entitlement Attribute Value		N	The value of the Entitlement Attribute.
3	Entitlement ID		Y	Unique identifier for a specific Entitlement Group instance
4	No Instrument Scopes		N	Always set to 1
	No Instrument Scopes Body Fields Presence Map		N	This will indicate the fields/nested repeating blocks present in this repeating block
	Instrument Scope Operator		N	Operator to perform on the instrument(s) specified: <ul style="list-style-type: none"> ▪ 1 = Include
	Security ID		N	Symbol for which LP is entitled to.
	Security ID Source		N	Identifies the source of the security ID: <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
	Security Exchange		N	The market which is used to identify the security: <ul style="list-style-type: none"> ▪ XHKG Required if: Security ID Source = 8 (Exchange Symbol)

7.11 Throttle Entitlement

7.11.1 Throttle Entitlement Request (25)

The request messages can be used by a client to request for throttle entitlement details for this requesting client.

Bit Position	Field Name	Required	Description
0	User Request ID	Y	Unique identifier assigned for the User Request message
1	User Request Type	Y	Indicates the action required: <ul style="list-style-type: none"> ▪ 5 = Request Throttle Limit
2	User Name	Y	Comp ID assigned to the client.

7.11.2 Throttle Entitlement Response (26)

The response message is used by the OCG as a response to a request to provide throttle entitlement details for the requesting client.

Bit Position	Field Name	Required	Description	
0	User Request ID	Y	The User Request ID of the User Request message for which the User Response message is generated.	
1	User Name	Y	The User Name provided in the User Request message for which the User Response message is generated.	
2	No Throttles	N	TPS allocated to this user, as follows:	
	No Throttles Body Fields Presence Map	N	This will indicate the fields/nested repeating blocks present in this repeating block	
	0	Throttle Action	N	Indicates the action to be taken should the throttle limit be exceeded: <ul style="list-style-type: none"> ▪ 2 = Rejected
	1	Throttle Type	N	The type of throttle; <ul style="list-style-type: none"> ▪ 0 = Inbound Rate (Absolute Throttle Rate)
	2	Throttle No Messages	N	The maximum number of messages allowed by the throttle.
3	Throttle Time Interval	N	Indicates the interval of time in which the Throttle No Messages may be sent based on the Throttle Time Unit specified. Required if: Throttle Type = 0 (Inbound Rate)	

	4	Throttle Time Unit	N	Indicates the unit in which Throttle Time Interval is expressed: <ul style="list-style-type: none">▪ 0 = Seconds(default if not specified) Required if: Throttle Type = 0 (Inbound Rate)
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8. Data Dictionary

8.1 Header and Trailer Fields

#	Field Name	Data Type	Description
1.	Body Fields Presence Map	Bitmap Fixed Length	Bitmap indicates the fields and repeating blocks present in the body of the message. To indicate availability set 1 to the applicable bit position and 0 for unavailability.
2.	Checksum	UInt32	CRC32C based checksum. Polynomial used - 0x1EDC6F41
3.	Comp ID	Alphanumeric Fixed Length (12)	Comp ID assigned to the sender of the message.
4.	Length	UInt16	Length of the message including all the fields in the message (i.e. length of all header, body and trailer fields)
5.	Message Type	UInt8	Defines the message type: Value = Meaning <ul style="list-style-type: none"> ▪ 0 = Heartbeat ▪ 1 = Test Request ▪ 2 = Resend Request ▪ 3 = Reject ▪ 4 = Sequence Reset ▪ 5 = Logon ▪ 6 = Logout ▪ 7 = Lookup Request ▪ 8 = Lookup Response ▪ 9 = Business Message Reject ▪ 10 = Execution Report ▪ 11 = New Order ▪ 12 = Amend Request ▪ 13 = Cancel Request ▪ 14 = Mass Cancel Request ▪ 15 = Order Mass Cancel Report ▪ 16 = Quote ▪ 17 = Quote Cancel ▪ 18 = Quote Status Report ▪ 21 = Trade Capture Report ▪ 22 = Trade Capture Report Ack ▪ 23 = OBO Cancel Request ▪ 24 = OBO Mass Cancel Request ▪ 25 = Throttle Entitlement Request ▪ 26 = Throttle Entitlement Response ▪ 27 = Party Entitlements Request ▪ 28 = Party Entitlements Report

6.	PossDup	UInt8	Indicates possible retransmission of message with this sequence number: <ul style="list-style-type: none"> ▪ 0 – No (original transmission) ▪ 1 – Yes (possible duplicate)
7.	PossResend	UInt8	Indicates that message may contain information that has been sent under another sequence number: <ul style="list-style-type: none"> ▪ 0 – No (original transmission) ▪ 1 – Yes (possible resend)
8.	Sequence Number	UInt32	Message sequence number applicable to the message.
9.	Start of Message	UInt8	Indicates the starting point of a message. Always set to the ASCII STX character (0x02).

8.2 Body Fields

#	Field Name	Data Type	Description
1.	Amend Reject Code	UInt16	The reject code indicating the reason for the cancel/amend rejects. <ul style="list-style-type: none"> ▪ 0 = Too late to amend ▪ 1 = Unknown Order ▪ 3 = Order already in Pending Cancel or Pending Replace status ▪ 6 = Duplicate Client Order ID received ▪ 8 = Price exceeds current price band ▪ 99 = Other (Default) ▪ 100 = Reference price not available ▪ 101 = Price exceeds current price band (override not allowed) ▪ 102 = Price exceeds current price band ▪ 103 = Notional value exceeds threshold
2.	Broker ID	Alphanumeric Fixed Length (12)	The Broker ID of the User
3.	Broker Location ID	Alphanumeric Fixed Length (11)	The location ID of the Submitting Broker
4.	Business Reject Code	UInt16	Code specifying the reason for the rejection of the business message: <ul style="list-style-type: none"> ▪ 0 = Other ▪ 1 = Unknown ID ▪ 2 = Unknown Security ▪ 3 = Unspecified Message Type ▪ 4 = Application not available ▪ 5 = Conditionally required field missing ▪ 8 = Throttle Limit exceeded

5.	Business Reject Reference ID	Alphanumeric Fixed Length (21)	The value of the business-level "ID" field in the message being referenced.
6.	Bid Size	Decimal	Order quantity of the bid side of the quote
7.	Bid Price	Decimal	Order price of the bid side of the quote
8.	Cancel Reject Code	UInt16	<p>The reject code indicating the reason for the cancel/amend rejects.</p> <ul style="list-style-type: none"> ▪ 0 = Too late to cancel ▪ 1 = Unknown Order ▪ 3 = Order already in Pending Cancel or Pending Replace status ▪ 6 = Duplicate Client Order ID received ▪ 99 = Other (Default) ▪
9.	Clearing Instruction	UInt8	<p>Clearing Information:</p> <ul style="list-style-type: none"> ▪ 0 = Process normally ▪ 1 = Exclude from all netting ▪ 14 = Buy In
10.	Client Order ID	Alphanumeric Fixed Length (21)	Client specified identifier of the order.
11.	Counterparty Broker ID	Alphanumeric Fixed Length (12)	The Broker ID of the user sitting on the opposite side of the trade
12.	Cumulative Quantity	Decimal	Cumulative execution quantity
13.	Disclosure Instructions	UInt16	<p>Disclosure Instructions to convey. 16 bit representations will be available with each bit representing a specific disclosure type:</p> <ul style="list-style-type: none"> ▪ Bit 0 = None (No specific information to disclose) ▪ Bit 1 – 15 = Reserved <p>The Disclosure Instructions field value will represent the Integer value of the 16 bit representation.</p> <p>Each disclosure type can have only two possible values which will indicate the Disclosure Instruction as follows;</p> <ul style="list-style-type: none"> ▪ 0 = No ▪ 1 = Yes <p>All bits are required to be initialized to 0 (No) and only the required disclosure types will need to be set as 1 (Yes).</p> <p>If there is no specific information to disclose, bit 0 (None) must be set as 1 (Yes).</p> <p>If bit 0 is set as 1 (Yes), value in other individual bits will be ignored to consider this scenario as "Nothing to disclose".</p>

14.	End Sequence	UInt32	Sequence number of the last message expected to be resent. This may be set to 0 to request the sender to transmit ALL messages starting from the Start Sequence
15.	Entitlement Attribute Type	UInt16	Name of the entitlement attribute: <ul style="list-style-type: none"> ▪ 4000 = Minimum Volume Obligation ▪ 4001 = Maximum Spread/Tick Obligation
16.	Entitlement Attribute Data Type	UInt8	The data type applicable to the specified Entitlement Attribute Type: <ul style="list-style-type: none"> ▪ 7 = Decimal
17.	Entitlement Attribute Value	Alphanumeric Fixed Length (21)	The value of the Entitlement Attribute.
18.	Entitlement ID	Alphanumeric Fixed Length (21)	Unique identifier for a specific Entitlement Group instance
19.	Entitlement Indicator	UInt8	Determines if the party is entitled for the specified Entitlement Type <ul style="list-style-type: none"> ▪ 0 = No ▪ 1 = Yes
20.	Entitlement Request ID	Alphanumeric Fixed Length (21)	A unique identifier assigned to the Party Entitlement Request Message
21.	Entitlement Report ID	Alphanumeric Fixed Length (21)	A unique ID assigned to the Party Entitlement Report by the system
22.	Entitlement Type	UInt8	Absence of this field indicates the meaning of the entitlement is implicit. Else: <ul style="list-style-type: none"> ▪ 0 = Trade ▪ 1 = Make Market
23.	Exec Type	Byte	Execution Type that indicates the reason for the generation of the Execution Report <ul style="list-style-type: none"> ▪ '0' = New ▪ '4' = Cancel ▪ '5' = Amend ▪ '8' = Reject ▪ 'C' = Expire ▪ 'F' = Trade ▪ 'H' = Trade Cancel ▪ 'L' = Triggered or Activated by System ▪ 'X' = Cancel Reject ▪ 'Y' = Amend Reject
24.	Execution ID	Alphanumeric Fixed Length (21)	Unique Execution ID assigned by the system for each Execution Report generated

25.	Execution Price	Decimal	Execution price
26.	Execution Quantity	Decimal	Execution Size
27.	Execution Instructions	Alphanumeric Fixed Length (21)	<p>Multiple values can be sent separated by a space.</p> <p>Instructions for order handling on exchange trading floor:</p> <ul style="list-style-type: none"> ▪ 0 = Ignore Price Validity Checks ▪ 1 = Ignore Notional Value Checks <p>If either is missing, the respective check will be performed.</p> <p>Absence of this field is interpreted as None (i.e. system will perform both Price and Notional Value check).</p>
28.	Exec Restatement Reason	UInt16	<p>Code to identify the reason for an Execution Report message with Exec Type= 4 (Cancel) or H (Trade Cancel):</p> <ul style="list-style-type: none"> ▪ 6 = Cancel on Trading Halt/VCM ▪ 8 = Market Operation (for unsolicited admin / system cancel an order or trade) ▪ 100 = Unsolicited Cancel for original order (for cancel/replace operation which fails market validation when creating new order) ▪ 101 = On Behalf Of Single Cancel ▪ 102 = On Behalf Of Mass Cancel ▪ 103 = Mass cancelled by Broker ▪ 104 = Cancel on disconnect ▪ 105 = Cancel due to Broker suspended ▪ 106 = Cancel due to Exchange Participant suspended ▪ 107 = System Cancel
29.	Exchange Trade Type	Byte	<p>Exchange assigned Trade Type.</p> <ul style="list-style-type: none"> ▪ M = Manual Trade ▪ S = Manual – Non Standard Price Trade ▪ Q = Special Lot Trade ▪ P = Odd Lot Trade ▪ R = Previous Day's Trade ▪ V = Overseas Trade ▪ E = Special Lot – Semi Automatic Matching ▪ O = Odd Lot – Semi Automatic Matching
30.	Gap Fill	Byte	<p>Indicates whether the sequence number is to be interpreted in a RESET mode or a GAP-FILL mode:</p> <ul style="list-style-type: none"> ▪ 'N' = Reset ▪ 'Y' = Gap Fill
31.	Instrument Scope Operator	UInt8	<p>Operator to perform on the instrument(s) specified in Instrument Scope Symbol:</p> <ul style="list-style-type: none"> ▪ 1 = Include

32.	Last Fragment	UInt8	Indicates whether this message is that last in a sequence of fragmented messages <ul style="list-style-type: none"> ▪ 0 = No ▪ 1 = Yes
33.	Leaves Quantity	Decimal	Open order quantity
34.	Logout Text	Alphanumeric Variable Length (Max Length = 75)	Textual reason for the logout.
35.	Lot Type	UInt8	Defines the lot type assigned to the order. The absence of this field indicates a Round Lot order: <ul style="list-style-type: none"> ▪ 1 = Odd Lot ▪ 2 = Round Lot
36.	Lookup Reject Code	UInt8	Code to identify the lookup request rejection: <ul style="list-style-type: none"> ▪ 0 = Invalid Client ▪ 1 = Invalid service type ▪ 2 = Invalid Protocol ▪ 3 = Client is Blocked ▪ 4 = Other
37.	Market Segment ID	Alphanumeric Fixed Length (20)	Identifies the market segment: <ul style="list-style-type: none"> ▪ MAIN ▪ GEM ▪ NASD ▪ ETS Required if: Mass Cancel Request Type = 9 (Cancel Orders for a Market Segment.)
38.	Mass Cancel Request Type	UInt8	Specifies scope of Order Mass Cancel Request: <ul style="list-style-type: none"> ▪ 1 = Cancel Orders For Security ▪ 7 = Cancel All Orders ▪ 9 = Cancel Orders for a Market segment
39.	Mass Action Report ID	Alphanumeric Fixed Length (21)	Unique identifier assigned for the Order Mass Cancel Report by the system
40.	Mass Cancel Response	UInt8	Indicates the action taken by the order handling system as a result of the cancel request. <ul style="list-style-type: none"> ▪ 0 = Cancel Request Rejected ▪ 1 = Cancel order for a security ▪ 7 = Cancel All Orders ▪ 9 = Cancel all orders for a market segment

41.	Mass Cancel Reject Code	UInt16	<p>The code indicating the reason why the Mass Cancel Request was rejected:</p> <ul style="list-style-type: none"> ▪ 8 = Invalid or Unknown Market Segment(8) ▪ 99 = Other ▪ 100 = Unconfirmed acknowledgement <p>Required if: Mass Cancel Response = Cancel Request Rejected</p>
42.	Match Type	UInt8	<p>The point in the matching process at which this trade was matched:</p> <ul style="list-style-type: none"> ▪ 4 = Auto Match ▪ 5 = Cross Auction
43.	Max Price Levels	UInt8	<p>The maximum number of price levels to trade through</p>
44.	Message Reject Code	UInt16	<p>Code specifying the reason for the session level rejection:</p> <ul style="list-style-type: none"> ▪ 1 = Required field missing ▪ 2 = Field not defined for this message ▪ 3 = Undefined field ▪ 4 = Field specified without a value ▪ 5 = Value is incorrect for this field ▪ 6 = Incorrect data format for value ▪ 9 = Comp ID problem ▪ 11 = Invalid message type ▪ 13 = Field appears more than once ▪ 99 = Other
45.	New Password	Alphanumeric Fixed Length (450)	<p>New password for Comp ID</p>
46.	New Sequence Number	UInt32	<p>Indicates the sequence number of the next message to be sent by the sender</p>
47.	Next Expected Message Sequence	UInt32	<p>Indicates the next expected message sequence number by the party initiating this message</p>
48.	No Entitlements	UInt16	<p>The number of entitlements attached to a Broker ID specified in the Party Entitlement Report.</p>
49.	No Entitlements Body Fields Presence Map	Bitmap Variable Length (2)	<p>This will indicate the fields/nested repeating blocks present in No Entitlement repeating block in the Party Entitlement Report.</p>
50.	No Entitlement Attributes	UInt16	<p>Number of entitlement attributes for a specified broker in the Party Entitlement Report.</p>
51.	No Entitlement Attributes Body Fields Presence Map	Bitmap Variable Length (2)	<p>This will indicate the fields/nested repeating blocks present in No Entitlement Attributes repeating block in the Party Entitlement Report.</p>

52.	No Instrument Scopes	UInt16	The number of Instrument Scopes attached for a Broker ID in the Party Entitlement Report. Always set to 1
53.	No Instrument Scopes Body Fields Presence Map	Bitmap Variable Length (2)	This will indicate the fields/nested repeating blocks present in No Instrument Scopes repeating block in the Party Entitlement Report.
54.	No Throttles	UInt16	The number of Throttles to follow in the User Response message.
55.	No Throttles Body Fields Presence Map	Bitmap Variable Length (2)	This will indicate the fields/nested repeating blocks present in No Throttles repeating block in the User Response message.
56.	Offer Size	Decimal	Order quantity of the offer side of the quote
57.	Offer Price	Decimal	Order price of the offer side of the quote
58.	Order ID	Alphanumeric Fixed Length (21)	Order ID of the order
59.	Owning Broker ID	Alphanumeric Fixed Length (12)	Order owner's Broker ID as defined within the OCG.
60.	Order Quantity	Decimal	Total order quantity of the order
61.	Order Reject Code	UInt16	Reject code indicating the reason for the order reject: <ul style="list-style-type: none"> ▪ 3 = Order Exceed Limit ▪ 6 = Duplicate order ▪ 13 = Incorrect Qty ▪ 16 = Price exceeds current price band ▪ 19 = Reference price is not available ▪ 20 = Notional value exceeds threshold ▪ 99 = Other ▪ 101 = Price exceeds current price band (override not allowed) ▪ 102 = Price exceeds current price band
62.	Order Status	UInt8	Order status after applying the transaction that is being communicated: <ul style="list-style-type: none"> ▪ 0 = New ▪ 1 = Partially Filled ▪ 2 = Filled ▪ 4 = Cancelled ▪ 6 = Pending Cancel ▪ 8 = Rejected ▪ 10 = Pending New ▪ 12 = Expired ▪ 14 = Pending Amend
63.	Order Type	UInt8	Order type applicable to the order. Applicable values: <ul style="list-style-type: none"> ▪ 1 = Market ▪ 2 = Limit

64.	Order Restrictions	Alphanumeric Fixed Length (21)	<p>Multiple values can be sent separated by a space.</p> <p>Restrictions associated with an order</p> <ul style="list-style-type: none"> ▪ 2 = Index Arbitrage ▪ 5 = Acting As Market Maker Or Specialist In Security ▪ 6 = Acting As Market Maker Or Specialist In Underlying of a derivative security <p>The above 3 values are applicable only if Side = 5 (Sell Short)</p>
65.	Order Capacity	UInt8	<p>Designates the capacity of the firm placing the order</p> <ul style="list-style-type: none"> ▪ 1 = Agency ▪ 2 = Principal
66.	Order Category	UInt8	<p>Defines the type of interest behind a trade:</p> <ul style="list-style-type: none"> ▪ 1 = Internal Cross Order
67.	Original Client Order ID	Alphanumeric Fixed Length (21)	Client Order ID of the order being amended or cancelled
68.	Password	Alphanumeric Fixed Length (450)	Password assigned to the Comp ID.
69.	Position Effect	UInt8	<p>Indicates whether the resulting position after a trade should be an opening position or closing position</p> <ul style="list-style-type: none"> ▪ 1 = Close <p>Applicable only if: Side = 1 (Buy)</p>
70.	Price	Decimal	<p>Limit price of the order.</p> <p>Required if: Order Type = 2(Limit)</p>
71.	Protocol Type	UInt8	<p>The type of protocol required by the client in order to connect to the specified service:</p> <ul style="list-style-type: none"> ▪ 1 = Binary
72.	Primary IP	Alphanumeric Fixed Length (16)	The IP of the primary service in case of successful lookup, in x.x.x.x format.
73.	Primary Port	UInt16	The port of the primary service in case of successful lookup
74.	Quote Bid ID	Alphanumeric Fixed Length (21)	Client specified identifier of the bid side of the quote
75.	Quote Offer ID	Alphanumeric Fixed Length (21)	Client specified identifier of the offer side of the quote

76.	Quote Message ID	Alphanumeric Fixed Length (21)	Client specified identifier for a Quote Cancel message
77.	Quote Type	UInt8	Indicates the type of Quote: <ul style="list-style-type: none"> ▪ 1 = Tradable
78.	Quote Cancel Type	UInt8	Identifies the type of quote cancel: <ul style="list-style-type: none"> ▪ 1 = Cancel for one or more securities
79.	Quote Status	UInt8	Identifies the status of the quote acknowledgement: <ul style="list-style-type: none"> ▪ 0 = Accepted ▪ 1 = Cancel for Symbol ▪ 5 = Rejected ▪ 9 = Quote not found
80.	Quote Reject Code	UInt16	The code indicating the reason why the quote got rejected: <ul style="list-style-type: none"> ▪ 8 = Invalid Price ▪ 10 = Price exceeds current price band ▪ 14 = Notional value exceeds threshold ▪ 15 = Price exceeds current price band (override not allowed) ▪ 16 = Reference Price is not available ▪ 99 = Other ▪ 101 = Price exceeds current price band (override not allowed) ▪ 102 = Price exceeds current price band
81.	Reference Execution ID	Alphanumeric Fixed Length (21)	Refers to an ExecID previously published in case of a trade cancel or correct
82.	Reference Field Name	Alphanumeric Fixed Length (50)	Name of the field (as per the data dictionary) which caused the rejection
83.	Reference Message Type	UInt8	Type of message rejected.
84.	Reference Sequence Number	UInt32	Sequence number of the message which caused the rejection
85.	Reference Test Request ID	UInt16	Required if the Heat Beat is in response to a Test Request. The value in this field will echo the Test Request ID received in the test Request.
86.	Reason	Alphanumeric Variable Length (Max Length = 75)	Textual description of the transaction that is being communicated through the Execution Report, Quote Status Report, Mass Cancel Report, Trade Capture Report, etc.

87.	Request Result	UInt16	<p>Conditionally required if the Party Entitlement Report is in response to a Party Entitlements Request:</p> <ul style="list-style-type: none"> ▪ 0 = Valid Request ▪ 1 = Invalid or unsupported request ▪ 2 = No data found that match selection criteria ▪ 3 = Not authorized to retrieve data ▪ 4 = Data temporarily unavailable ▪ 5 = Request for data not supported ▪ 99 = Other
88.	Security Exchange	Alphanumeric Fixed Length (5)	<p>The market which is used to identify the security:</p> <ul style="list-style-type: none"> ▪ XHKG <p>Required if: Security ID Source = 8 (Exchange Symbol)</p>
89.	Security ID	Alphanumeric Fixed Length (21)	Instrument identifier value of security ID source type.
90.	Security ID Source	UInt8	<p>Identifies the source of the security ID:</p> <ul style="list-style-type: none"> ▪ 8 = Exchange Symbol
91.	Secondary IP	Alphanumeric Fixed Length (16)	The IP of the mirror service in case of successful lookup
92.	Secondary Port	UInt16	The port of the mirror service in case of successful lookup
93.	Session Status	UInt8	<p>Status of the Binary session. Required if the message is generated by the OCG:</p> <ul style="list-style-type: none"> ▪ 0 = Session active ▪ 1 = Session password change ▪ 2 = Session password due to expire ▪ 3 = New session password does not comply with the policy ▪ 5 = Invalid username or password ▪ 6 = Account locked ▪ 7 = Logons are not allowed at this time ▪ 8 = Password expired ▪ 100 = Password change is required ▪ 101 = Other
94.	Side	UInt8	<p>Side of the order:</p> <ul style="list-style-type: none"> ▪ 1 = Buy ▪ 2 = Sell ▪ 5 = Sell Short
95.	Start Sequence	UInt32	Sequence number of the first message expected to be resent

96.	Status	UInt8	Indicates whether the Lookup Request was accepted or rejected by the OCG. <ul style="list-style-type: none"> 0 = Accepted 1 = Rejected
97.	Submitting Broker ID	Alphanumeric Fixed Length (12)	The Broker ID of the user that is submitting the new order
98.	Text	Alphanumeric Variable Length (Max Length = 50)	Free Text
99.	TIF	UInt8	Time qualifier of the order. Absence of this field is interpreted as Day (0). Applicable values: <ul style="list-style-type: none"> 0 = Day (Default) 3 = IOC 4 = FOK 9 = At Crossing (for orders in Auction session)
100.	Test Message Indicator	UInt8	The Test Message Indicator field will be used to indicate whether the binary client is connected to the 'Test' or 'Production Mode' of the system when the OCG replies with a LOGON message upon a successful logon attempt: <ul style="list-style-type: none"> 0 = No (Production Mode) 1 = Yes (Test Mode)
101.	Test Request ID	UInt16	A unique ID applicable to the Test Request.
102.	Total No Party List	UInt16	The total number of Broker IDs to be returned across all fragments of Party Entitlement Report.
103.	Transaction Time	Alphanumeric Fixed Length (25)	The time at which the particular message was generated Format: YYYYMMDD-HH:MM:SS.sss; UTC.
104.	Trade Type	UInt8	Type of the trade being reported: <ul style="list-style-type: none"> 4 = Late Trade 22 = Privately Negotiated Trade 102 = Odd Lot Trade 104 = Overseas Trade
105.	Trade Report ID	Alphanumeric Fixed Length (21)	Unique Identification for trade capture report as assigned by the reporting party of the specific transaction. (to be returned to the reporting broker)

106.	Trade Report Trans Type	UInt8	Identifies the trade report message transaction type: <ul style="list-style-type: none"> ▪ 0 = New ▪ 2 = Replace ▪ 5 = Cancel due to back out of the trade (for both buyer and seller if Exec Type = L)
107.	Trade Report Type	UInt8	Type of the Trade Report: <ul style="list-style-type: none"> ▪ 0 = New ▪ 6 = Trade Report Cancel
108.	Trade Report Status	UInt8	Trade Report Status: <ul style="list-style-type: none"> ▪ 0 = Accepted ▪ 1 = Rejected Absence of this field indicates 0 = Accepted
109.	Trade Report Reject Code	UInt16	The code indicating the reason why the trade report got rejected: <ul style="list-style-type: none"> ▪ 4 = Invalid trade type ▪ 5 = Price exceeds current price band ▪ 6 = Reference price not available ▪ 7 = Notional value exceeds threshold ▪ 99 = Other
110.	Trade ID	Alphanumeric Fixed Length (25)	The unique ID assigned to the trade entity once it is received or matched by the exchange
111.	Trade Match ID	Alphanumeric Fixed Length (25)	Identifier assigned to a trade by a matching system
112.	Trade Handling Instructions	UInt8	Indicates how the trade capture report should be handled by the receiver: <ul style="list-style-type: none"> ▪ 0 = Trade Confirm ▪ 1 = Two Party Report ▪ 6 = One Party Report
113.	Throttle Action	UInt8	Indicates the action to be taken should the throttle limit be exceeded: <ul style="list-style-type: none"> ▪ 2 = Rejected
114.	Throttle No Messages	UInt32	The maximum number of messages allowed by the throttle
115.	Throttle Time Interval	UInt16	Indicates the interval of time in which the Throttle No Messages may be sent based on the Throttle Time Unit specified. Required if: Throttle Type = 0 (Inbound Rate)
116.	Throttle Time Unit	UInt8	Indicates the unit in which Throttle Time Interval is expressed: <ul style="list-style-type: none"> ▪ 0 = Seconds(default if not specified) Required if: Throttle Type = 0 (Inbound Rate)

117.	Throttle Type	UInt8	The type of throttle: <ul style="list-style-type: none"> ▪ 0 = Inbound Rate (Absolute Throttle Rate)
118.	Type of Service	UInt8	The type of service required by the client: <ul style="list-style-type: none"> ▪ 1 = Order Input
119.	User Name	Alphanumeric Fixed Length (50)	Any free format text for user identification
120.	User Request ID	Alphanumeric Fixed Length (20)	Unique identifier assigned for the User Request message
121.	User Request Type	UInt8	Indicates the action required: <ul style="list-style-type: none"> ▪ 5 = Request Throttle Limit

Appendices

A. Password Policy

- Length is 8 characters.
- Must comprise of a mix of alphabets (A-Z and a-z) and digits (0-9)
- Must be changed on first-time logon or first logon after reset from HKEx market operations.
- New password can't be one of the previous 5 passwords.
- Can't be changed more than once per day.
- Session will be locked after 3 consecutive invalid passwords
- Expires every 90 days.