

# iLink 3 Binary Order Entry

The iLink 3 order entry protocol on CME Globex provides:

- [Simple Binary Encoding \(SBE\)](#) - optimized for low latency of encoding and decoding
- [FIX Performance \(FIXP\) protocol](#) - supports simple session layer management; no session-level information (e.g. headers) required
- Optimized order entry on the CME Globex platform for futures, options, and BrokerTec markets
- Lean messages move administrative information out of order entry business message
- Standard message size, fixed positions, and fixed length fields
- Consistent encoding method for market data and order entry
- XML schema and templates for order entry as with MDP 3



- Only Market Segment Gateway (MSGW) sessions support iLink 3
- All iLink 3 sessions are Cancel on Disconnect (CoD) **mandatory**.

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## See Also

- [iLink 3 - Simple Binary Encoding](#)
- [iLink 3 Binary Order Entry - Session Layer](#)
- [iLink 3 Binary Order Entry - Business Layer](#)
- [iLink 3 Binary Order Entry - Message Specification](#)
- [iLink 3 Binary Order Entry - BrokerTec Markets](#)
  
- [iLink 3 FIX Tag Library](#)

## Video Overview

For a video overview see the *iLink 3 Order Entry* module in the CME Globex 101 playlist.



## iLink 3 Gateway Considerations

iLink 3 launch has the following considerations for Convenience Gateway (CGW), Market Segment Gateway (MSGW), and Drop Copy Gateway (DCGW) customers:

	CGW	MSGW	DCGW
<b>iLink 3</b>	<ul style="list-style-type: none"> <li>CGW sessions do not support iLink 3</li> <li>Only iLink 3 supports access to BrokerTec and EBS markets               <ul style="list-style-type: none"> <li>CGW customers must migrate to MSGW and iLink 3 to access the full array of CME Globex markets</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Only MSGW sessions support iLink 3</li> </ul>	<ul style="list-style-type: none"> <li>Drop Copy supports both iLink 3 and iLink 2 source sessions</li> <li>The encoded payload messages sent on Drop Copy with iLink 3 source sessions will be in ASCII format, but reflect the behavior described in the Drop Copy Client Functional Specification.</li> </ul>



If an iLink 2 message is received on an iLink 3 session, the session will be terminated immediately.

## Market Integrity Controls

### Automated Port Closure

CME Globex will automatically terminate and close both the primary and backup ports for any iLink 3 session on the **5th** invalid negotiate and establish attempts in **60** seconds.

Negotiate messages may be invalid due to:

- Invalid or missing UUID
- Invalid or missing HMAC Signature
- Invalid or missing RequestTimestamp
- Invalid or missing AccessKeyID
- Invalid or missing Session
- Invalid or missing Firm
- Sending Negotiate message without waiting for NegotiationResonse/NegotiationReject from previous Negotiate message
- Sending Negotiate message when session is already negotiated
- Sending Negotiate message when session is already established

Establish messages may be invalid due to:

- Invalid or missing UUID
- Invalid or missing HMAC Signature
- Invalid or missing RequestTimestamp
- Invalid or missing AccessKeyID
- Invalid or missing Session
- Invalid or missing Firm
- Invalid or missing NextSeqNo

- Sending Establish message without waiting for EstablishmentAck/EstablishmentReject from previous Establish message
- Sending Establish message when session is already established
- Sending Establish message when session is not negotiated
- Missing ApplicationSystemName
- Missing TradingSystemVersion
- Missing ApplicationSystemVendor
- Invalid or missing KeepAliveInterval

Automated Port Closure can also be triggered by customers sending messages other than Negotiate and Establish when the session has not been successfully established.

When triggered, CME Globex will send a Terminate message with tag 39012-ErrorCodes=8 (CMEAdministeredPortClosure: due to invalid number of Negotiate/Establish attempts being exceeded)

- Sessions with active-active fault tolerance will receive the Terminate message on both the primary and backup instances.
- Sessions without fault tolerance will only receive the Terminate on the primary instance, but both the primary and backup ports will be closed.

Primary and secondary clearing firm administrators must contact the [Global Command Center](#) directly to have a port re-opened.

## Messaging Controls

Messaging Controls prevent violation of the maximum Transactions per Second (TPS) rule. Messaging Controls measure Transactions per Second (TPS) and are enforced at the iLink session level.

iLink 3 will have the same [messaging controls](#) as iLink 2 except for the changes described below.

### Application Messaging Controls

Module	Messaging Controls
Common	New Order (D) Cancel-Replace (G) Status Request (H) Security Definition (c) Mass Status Request (AF) Quote Request (R) New Order Cross (s) Party Details Definition Request (CX) Party Details List Request (CF)
Cancel	Cancel (F) Mass Cancel (CA)
Mass Quote	Mass Quote (i) Mass Quote Cancel (Z)

### Administrative Message Controls

The thresholds are in place for the following Administrative message types:

- Negotiate
- Establish
- Terminate
- Sequence
- Retransmit Request

### Messaging Thresholds and Action Types

Messaging Thresholds	Action Type	Message Type	Error Code
Exceeding Reject Threshold	Reject subsequent messages until the TPS rate falls below the threshold.	Business Reject (tag 35-MsgType=j)	Tag 380-BusinessRejectReason=8
Exceeding Terminate Threshold	Terminate the offending iLink 3 session	Terminate	Tag 39012- ErrorCodes=9

## Party Details Messages

Party Details messages can be counted in Administrative or Application Messaging Controls depending on whether the messages are sent to MSGWs or OESGWs:

Messages	MSGWs	OESGW
PartyDetailsDefinitionRequest messages with PartyDetailsListRequestID=0	Administrative Message Controls	Common Module
PartyDetailsDefinitionRequest messages with PartyDetailsListRequestID=0	Common Module <i>*Regardless of whether the PartyDetailsDefinitionRequest message is sent on-demand directly preceding each New Order-Single, Order Cancel Replace Request, Order Cancel Request, etc.</i>	Administrative Message Controls
PartyDetailsListRequest	Administrative Message Controls	Common Module

## Developing from iLink 2 to iLink 3

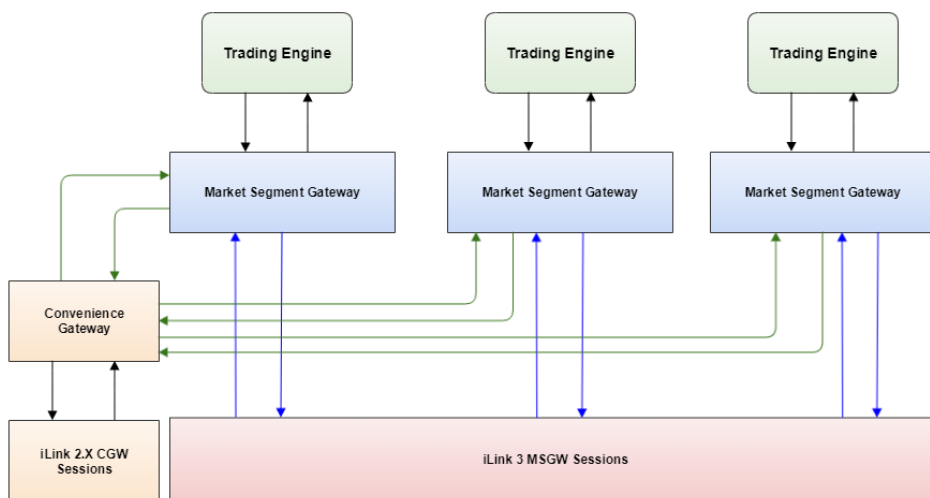
The following table summarizes the considerations for client systems developing to iLink 3 and outlines the differences from iLink 2 to iLink 3.

Layer	Feature	iLink 2	iLink 3
<b>Presentation</b>	Message encoding	Tag value ASCII encoding	Simple Binary Encoding
<b>Session</b>	Authentication, Recovery	FIX Transport (FIXT)	FIX Performance Session Layer (FIXP)
<b>Application</b>	Business logic	FIX semantics	Improved FIX semantics
<b>Transport</b>	End-to-end delivery	TCP	TCP – No change
<b>Network</b>	Virtual Circuits, Routing	IP	IP – No change

## System Architecture

This diagram provides an overview of iLink order entry architecture.

- MSGW sessions support only iLink 3.



## Order Entry Service Gateway (OESGW) - SFTP Site Information

The OESGW configuration information (i.e. market segments and IPs) will be added to the MSGW config file via an SFTP site ([sftpng.cmegroup.com](https://sftpng.cmegroup.com)), accessed via a CME Globex network direct connection. This SFTP site contains the configuration files for all environments. The SFTP site is a secure site that requires a user name and password for access.

New Market Segment is defined for each OESGW as follow:

```
<marketsegment id="12" label="Order Entry Service Gateway">
```

```
<marketsegment id="14" label="BTEC US Order Entry Service Gateway">
```

```
<marketsegment id="16" label="BTEC EU Order Entry Service Gateway">
```

More details on the SFTP site is available on [SFTP - MSGW Configuration](#)