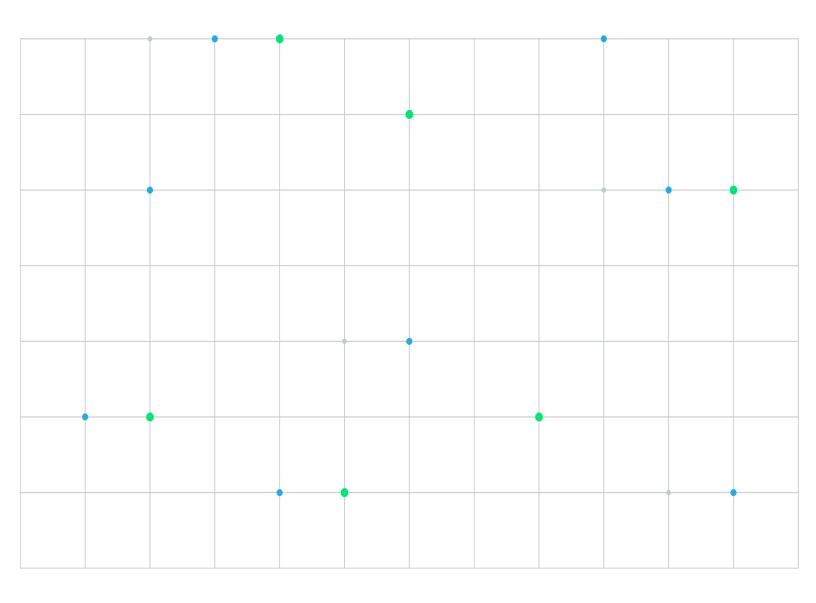


AutoCert+ iLink 3.x (External Binary) for Convenience Gateway User Manual

October 9, 2024



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Getting Started

The AutoCert+ tool is an automated testing tool for validating application functionality. It provides an easy-to-use web interface for walking through CME Group certification scenarios.

To facilitate the process of connecting a customer application to CME Globex, CME Group provides a dedicated certification environment to allow customers to test their systems before they complete certification.

The following apply to each iLink test case:

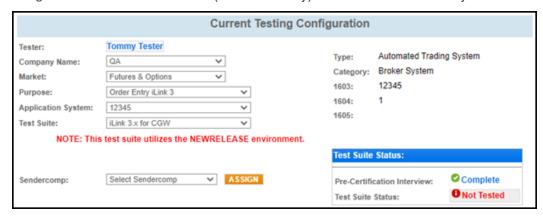
- The book is clear at the beginning of each test.
- · After the instrument is selected, the instrument is locked until the test is completed.
- If you submit an incorrect response to any question in a test case, you must repeat the test case from the beginning.
- For partial or complete fills, assume CME Group creates the appropriate orders in the book.

Note: If a test is not proceeding to the next step, selecting the Refresh button (REFRESH) below the test steps may resolve the issue.



To run and navigate AutoCert+:

- 1. Log in to the automated certification tool.
- 2. Review general AutoCert+ test suite navigation and general interview information.
- 3. Navigate to the AutoCert+ iLink 3.x (External Binary) for Convenience Gateway test suite.



- a. Tester: Automatically selected based on the logged in user
- b. Select a Company Name
- c. Market: Futures & Options
- d. Purpose: Order Entry iLink 3
- e. Select an Application System
- f. Test Suite: iLink 3.x for CGW
- g. Select a Sendercomp, then select ASSIGN.
- 4. Complete the Interview for this test suite.

Available test cases are determined by interview question responses.

5. Complete available test cases:

- Session Layer
- Business Layer
- Failover
- 6. Complete the certification process from the Post Certification tab.

What's New

The list below illustrates the updates made to the AutoCert+ iLink 3.x (External Binary) for Convenience Gateway Help system.

Date	Topic	Description
October 9, 2024	Mass Quote	updated due to mass quote protection functionality update
March 26, 2023	All	initial release

Interview

The interview consists of a series of questions about your trading application and products. You must complete the precertification interview before running the test cases.



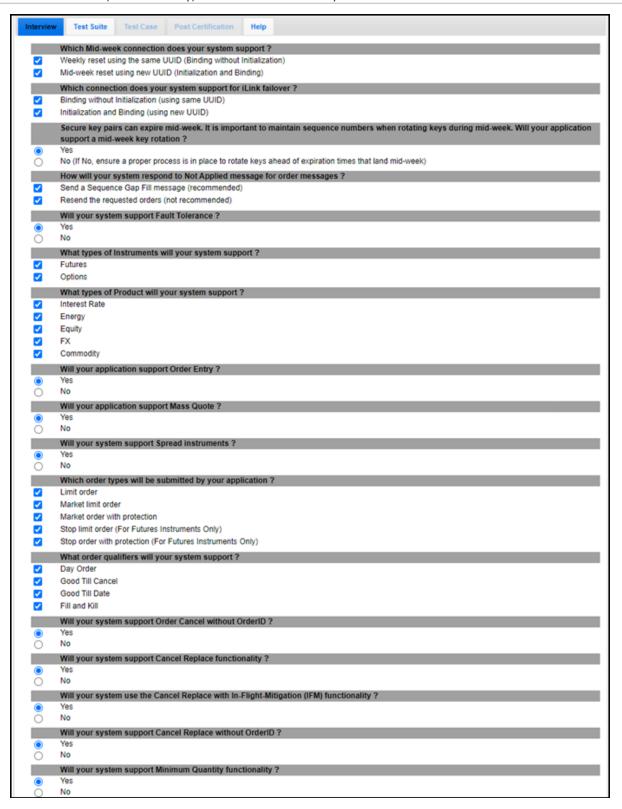
Note: FOK functionality is not available for Futures and Options.



To complete the interview:

Answer each question, then select Complete when finished.

Based on your responses, certain tests are required and others are optional.



	Will your system support Maximum Quantity Display functionality ?
•	Yes
0	No
	Will your system support GiveUp Orders ?
•	Yes
Ŏ	No
	Will your system support Route-Through functionality ?
•	Yes
Ŏ	No
	Which Quote Cancellation functionality will your system support ?
	All Quotes
~	Instruments
	Instruments Groups
Z	Quote Set ID
	Can your system send Mass quote on UDS instruments ?
0	Yes No
	How will your system send orders ?
✓	Manual
✓	ATS Somi Automated
✓	Semi Automated
	Will your system support Cross Order functionality ?
	Yes
0_	No .
	Will your system support R-Cross Order functionality for Equity contracts ?
	Yes
0	No .
	Will your system support R-Cross Order functionality for contracts belonging to a product complex other than Equity?
	Yes No
0	
	Will your system support Cross Order Cancel functionality ? Yes
0	No No
_	
	Will your system support C-Cross Order functionality ? Yes
lő	No
_	Will your system support UDS ?
	Yes
lŏ	No.
	Can your system create Covered Option instruments ?
•	Yes
lŏ	
	No No
	No
	No Can your system create Combo Option instruments ?
•	No Can your system create Combo Option instruments ? Yes No
•	No Can your system create Combo Option instruments ? Yes
•	No Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ?
0	No Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ? Yes No
0	No Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ? Yes
0	Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ? Yes No Can your system send orders on UDS instruments ?
	Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ? Yes No Can your system send orders on UDS instruments ? Yes
	Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ? Yes No Can your system send orders on UDS instruments ? Yes No
0	No Can your system create Combo Option instruments? Yes No Can your system create Recursive UDS instruments? Yes No Can your system send orders on UDS instruments? Yes No Can your system send orders on UDS instruments? Yes No Does your system support Mass Order Cancel functionality?
0	Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ? Yes No Can your system send orders on UDS instruments ? Yes No Can your system send orders on UDS instruments ? Yes No Does your system support Mass Order Cancel functionality ? Yes
0	Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ? Yes No Can your system send orders on UDS instruments ? Yes No Can your system send orders on UDS instruments ? Yes No Does your system support Mass Order Cancel functionality ? Yes No
	Can your system create Combo Option instruments ? Yes No Can your system create Recursive UDS instruments ? Yes No Can your system send orders on UDS instruments ? Yes No Can your system send orders on UDS instruments ? Yes No Does your system support Mass Order Cancel functionality ? Yes No Which Mass Order Cancel Functionality does your system support ?

_	
	Does your system support Order Status functionality ?
•	Yes
0	No
	Does your system support Mass Order Status functionality ?
	Yes
0	No .
	Which Mass Order Status Functionality does your system support ?
~	Market Segment
~	Instrument Group
~	Instrument
V	All Orders
_	
	Will your system support Quote Request functionality ?
•	Yes No
0	
	How does your application register Administrative Information? (check all that apply).
~	Pre-Registration (Service Gateway)
✓	On-Demand
	Will your system support Cancel on Behalf?
•	Yes
0	No
	Will your system support Cancel on Behalf using Order Cancel Request (MsgType 35=F) ?
•	Yes
ŏ	No
	Will your system support Cancel on Behalf using Order Mass Action Request (MsgType 35=CA) ?
•	The system support current on behalf using order mass readon request (magripe 35-54).
ŏ	No.
_	
	Which Cancel on Behalf using Order Mass Action Request functionality does your system support ?
~	Market Segment ID
✓	Instrument Group
✓	Instrument
	Will your system support Cancel on Behalf using Quote Cancel without Mass Quote Block/Unblock (Please contact CSET to authorize your SenderComplD to Mass Quote AutoCert+ product group).
	Yes
0	No
	Which Cancel on Behalf using Quote Cancel functionality without Mass Quote Block will your system support?
~	All Quotes
~	Instruments
~	Instruments Groups
~	Quote Set ID
	Will your system support Cancel on Behalf using Quote Cancel with Mass Quote Block/Unblock (Please contact CSET to authorize your
	SenderCompID to Mass Quote AutoCert+ product group).
•	Sender Compile to miss square AutoCert Product groups.
ŏ	No.
	Which Cancel on Behalf using Quote Cancel functionality with Mass Quote Block will your system support?
Z	All Quotes
~	Instruments Groups
-	·
	Please acknowledge that you are aware Cancel on Behalf using Quote Cancel by Instrument and Quote Set with Mass Quote Block will be rejected.
~	Acknowledge
~	Not Acknowledge
	Will your system support Order Status functionality for Cancel on Behalf?
•	Yes
0	No
	Cancel on Disconnect (CoD) functionality is offered by CME Group on a best-effort basis. If CoD functionality is unable to cancel an order that has been completely filled at the host, your application can submit a Retransmit Request message to recover unsent Execution Report - Fill messages upon re-connection. All iLink 3 sessions are Cancel on Disconnect (CoD) mandatory. For more info on Cancel on Disconnect (CoD), please read here https://www.cmegroup.com/confluence/display/EPICSANDBOX/Cancel+on+Disconnect.
✓/	Acknowledge
✓	Not Acknowledge
Con	nplete

Session Layer Management Tests

This section contains information on the AutoCert+ iLink 3.x (External Binary) for Convenience Gateway for Futures & Options.

To run test cases, users must initially <u>log in to the Request Center NR / CERT environment</u> to create / migrate the iLink 2.x CGW session to iLink 3.

iLink 3 uses the FIX Performance (FIXP) protocol to establish and manage bi-directional sessions. Per the FIXP protocol, a FIX session is defined as a bi-directional stream of ordered messages between two parties within a continuous sequence number series.

See more: iLink 3 Binary Order Entry - Session Layer and iLink 3 Session Layer - message specification

Session Layer Tests

- Primary Gateway Connection Enforcement
- · Beginning of Week Logon
- Beginning of Week Connection
- Mid Week Connection / Rotation
- Re-Setting UUID
- Verify Sequence Warning KeepAliveInterval Lapsing Procedure/Methodology
- Message Gaps
- · Processing Real-Time Messages
- Mid week Connection (Binding without Initialization) for Pre-Registered / On-Demand Format

Primary Gateway Connection Enforcement Test

The purpose of this test is to verify that your system can support primary gateway enforcement.

Note: Due to the assisted failover setup needed for repeatable conditions during certification, failover of gateway components takes a few seconds. It is necessary, only for the purposes of these certification tests, to wait a few seconds before attempting a connection to the newly promoted primary gateway.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



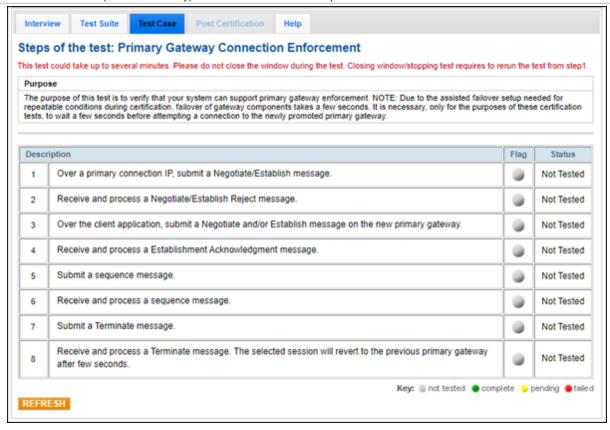
Note

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.



To run the Primary Gateway Connection Enforcement test:



- 1. Over a primary connection IP, submit a Negotiate / Establish message.
- 2. Receive and process a Negotiate / Establish Reject message.
- 3. Over the client application, submit a Negotiate / Establish message on the new primary gateway.
- 4. Receive and process a Establishment Acknowledgment message.
- 5. Submit a sequence message.
- 6. Receive and process a sequence message.
- 7. Submit a Terminate message.
- 8. Receive and process a Terminate message.

The selected session will revert to the previous primary gateway after few seconds.

Beginning of Week Logon

The purpose of this test is to verify that the client system can connect to the CME system at the beginning of the week and be able to adjust the inbound and outbound sequence numbers as needed as well as pick a globally unique UUID for each FIXP session.



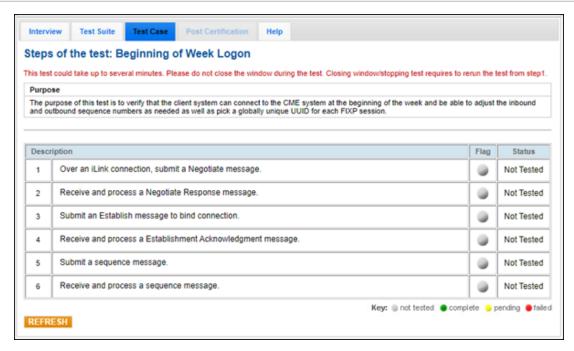
To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.



To run the Beginning of Week Logon test:

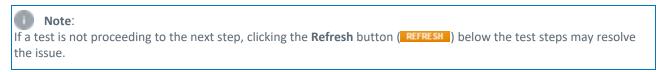
- 1. Over an iLink connection, submit a Negotiate message.
- 2. Receive and process a Negotiate Response message.
- 3. Submit an Establish message to bind connection.
- 4. Receive and process a Establishment Acknowledgment message.
- 5. Submit a sequence message.
- 6. Receive and process a sequence message.

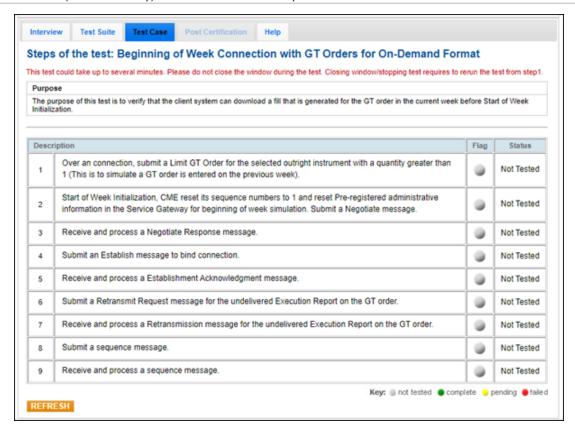
Beginning of the Week Connection with GT Orders for On-Demand Format test

The purpose of this test is to verify that the client system can download a fill that is generated for the GT order in the current week before Start of Week Initialization.

To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab. select the linked test.





To run the Beginning of the Week Connection with GT Orders test:

1. Over an connection, submit a <u>Limit GT Order</u> [35=D (tag 40-OrdType=2) (tag 59-TimeInForce)] for the selected outright instrument with a quantity greater than 1 (tag 38-OrderQty); to simulate a GT order is entered for the previous week.

Start of Week Initialization, CME reset its sequence numbers to 1 and reset Pre-registered administrative information in the Service Gateway for beginning of week simulation.

- 2. Submit a Negotiate message.
- 3. Receive and process a Negotiate Response message.
- 4. Submit an Establish message to bind connection.
- 5. Receive and process a **Establishment Acknowledgment** message.
- 6. Submit a Retransmit Request message for the undelivered Execution Report on the GT order.
- 7. Receive and process a Retransmission message for the undelivered Execution Report on the GT order.
- 8. Submit a sequence message.
- 9. Receive and process a sequence message.

Mid week Connection / Rotation

The following instructions illustrate the process to run and complete Mid Week tests.



To select the test:

1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.

- 2. From the **Test Suite** tab, select from the linked tests (below), then proceed to the instructions.
 - Mid week Connection (Binding without Initialization) for Pre-Registered / On-Demand Format
 - Mid-week Connection for Mass Quote Systems (Binding without Initialization) for Pre-Registered / On-Demand Format
 - Mid week Connection (Initialization and Binding) with New UUID for Pre-Registered / On-Demand Format
 - Mid-week Connection (Initialization and Binding) with New UUID for Mass Quote Systems using Pre-Registered / On-Demand Format
 - · Mid Week Key Rotation

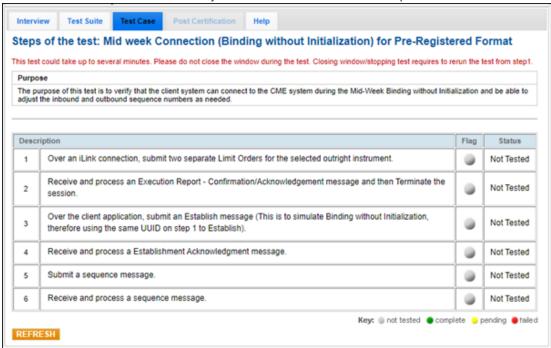
3. Click the START TEST button.

Note:DO NOT select the START TEST button once the test is in progress.

If a test is not proceeding to the next step, clicking the **Refresh** button (REFRESH) below the test steps may resolve the issue.

Mid week Connection (Binding without Initialization) for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can connect to the CME system during the Mid-Week Binding without Initialization and be able to adjust the inbound and outbound sequence numbers as needed.



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

To run the Mid week Connection (Binding without Initialization) test:

- Over an iLink connection, submit two separate <u>Limit Orders</u> [35=D (tag 40-OrdType)] for the selected outright instrument.
- 2. Receive and process an <u>Execution Report Confirmation / Acknowledgement</u> message and then <u>Terminate</u> the session.
- 3. Over the client application, submit an Establish message.

This simulates Binding without Initialization using the same UUID (tag 39001) on step 1 to Establish.

- 4. Receive and process a Establishment Acknowledgment message.
- 5. Submit a sequence message.
- 6. Receive and process a sequence message.

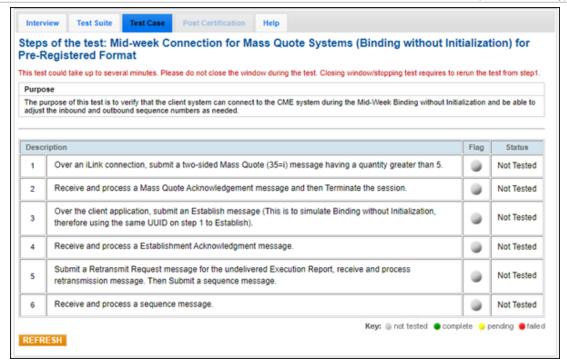
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On-Demand format screen



Mid-week Connection for Mass Quote Systems (Binding without Initialization) for Pre-Registered / On-Demand Format

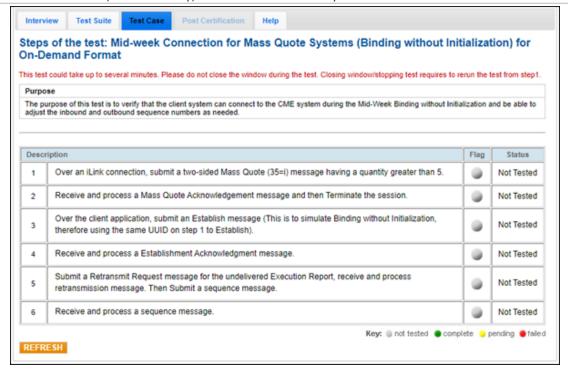
The purpose of this test is to verify that the client system can connect to the CME system during the Mid-Week Binding without Initialization and be able to adjust the inbound and outbound sequence numbers as needed.



To run the Mid-week Connection for Mass Quote Systems (Binding without Initialization) test:

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) message having a quantity (→134-BidSize / →135-Offer Size) greater than 5.
- 2. Receive and process a Mass Quote Acknowledgement message and then Terminate the session.
- 3. Over the client application, submit an <u>Establish</u> message (This is to simulate Binding without Initialization, therefore using the same UUID on step 4 to Establish).
- 4. Receive and process a Establishment Acknowledgment message.
- 5. Submit a <u>Retransmit Request</u> message for the undelivered Execution Report, receive and process <u>retransmission</u> message, then submit a <u>sequence</u> message.
- 6. Receive and process a sequence message.

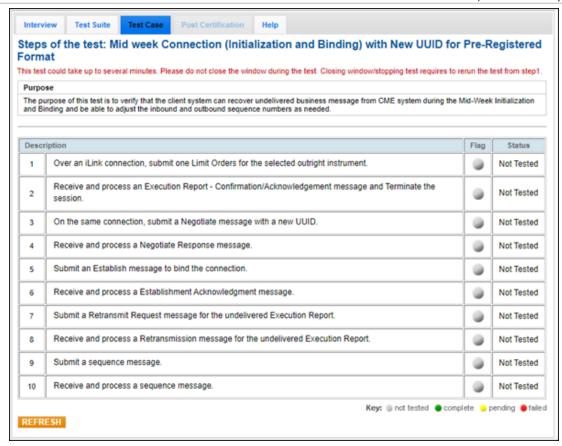
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Mid week Connection (Initialization and Binding) with New UUID for Pre-Registered / On-Demand Format

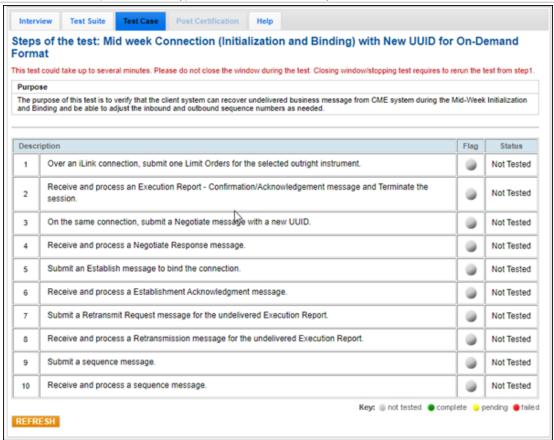
The purpose of this test is to verify that the client system can recover undelivered business message from CME system during the Mid-Week Initialization and Binding and be able to adjust the inbound and outbound sequence numbers as needed.



To run the Mid week Connection (Initialization and Binding) with New UUID test:

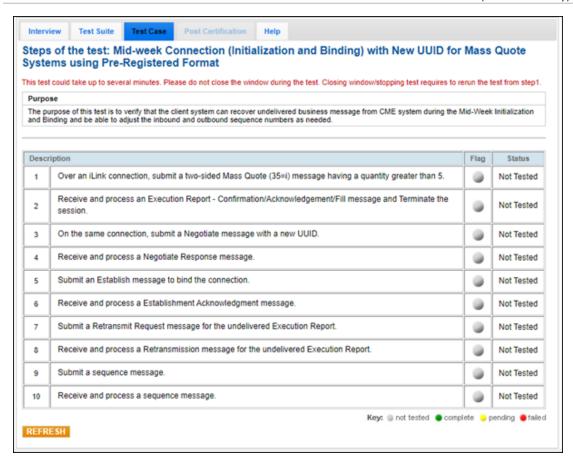
- 1. Over an iLink connection, submit a Limit Order (35=D) for the selected outright instrument.
- Receive and process an <u>Execution Report Confirmation / Acknowledgement</u> (35=8, 39=0) message and <u>Terminate</u> the session.
- 3. On the same connection, submit a Negotiate message with a new UUID (tag 39001-UUID).
- 4. Receive and process a Negotiate Response message.
- 5. Submit an Establish message to bind the connection.
- 6. Receive and process a Establishment Acknowledgment message.
- 7. Submit a Retransmit Request message for the undelivered Execution Report.
- 8. Receive and process a Retransmission message for the undelivered Execution Report.
- 9. Submit a sequence message.
- 10. Receive and process a sequence message.

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Mid-week Connection (Initialization and Binding) with New UUID for Mass Quote Systems using Pre-Registered / On-Demand Format

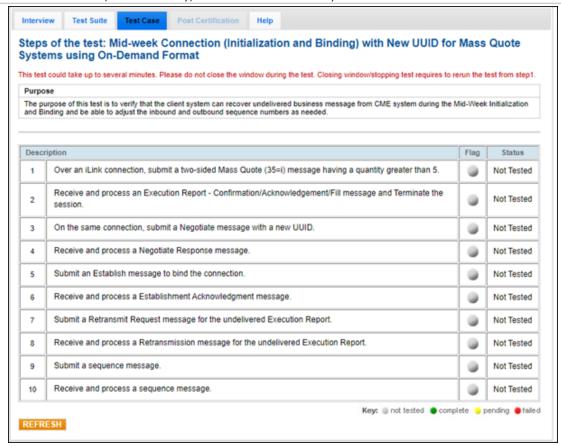
The purpose of this test is to verify that the client system can recover undelivered business message from CME system during the Mid-Week Initialization and Binding and be able to adjust the inbound and outbound sequence numbers as needed.



To run the Mid-week Connection (Initialization and Binding) with New UUID for Mass Quote Systems test:

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) message having a quantity (→134-BidSize / →135-OfferSize) greater than 5.
- 2. Receive and process an Execution Report Confirmation / Acknowledgement / Fill (35=8, 39=0) message and Terminate the session.
- 3. On the same connection, submit a Negotiate message with a new UUID (tag 39001-UUID).
- 4. Receive and process a Negotiate Response message.
- 5. Submit an Establish message to bind the connection.
- 6. Receive and process a Establishment Acknowledgment message.
- 7. Submit a Retransmit Request message for the undelivered Execution Report.
- 8. Receive and process a Retransmission message for the undelivered Execution Report.
- 9. Submit a sequence message.
- 10. Receive and process a sequence message.

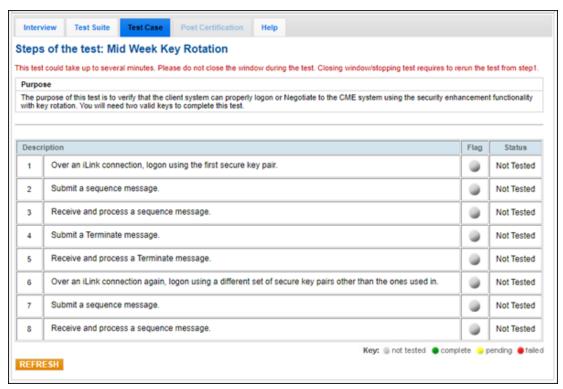
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Mid Week Key Rotation

The purpose of this test is to verify that the client system can properly logon or Negotiate to the CME system using the security enhancement functionality with key rotation. You will need two valid keys to complete this test.

This test is used for both Pre-Registered and On-Demand formats. The below instructions show the Pre-Registered format.



To run the Mid Week Key Rotation test:

- 1. Over an iLink connection, logon using the first secure key pair.
- 2. Submit a sequence message.
- 3. Receive and process a sequence message.
- 4. Submit a Terminate message.
- 5. Receive and process a Terminate message.
- 6. Over an iLink connection again, logon using a different set of secure key pairs other than the ones used in.
- 7. Submit a sequence message.
- 8. Receive and process a sequence message.

Re-Setting UUID

The purpose of this test is to verify in the event of customer application failure, it may be necessary to reset the UUID intrasession on the same trading day to force synchronization of sequence numbers to and from the exchange. Re-Negotiate with a new UUID should be used only when Customer is unable to re-sync out-of-sync sequence numbers (required).

To select the test:

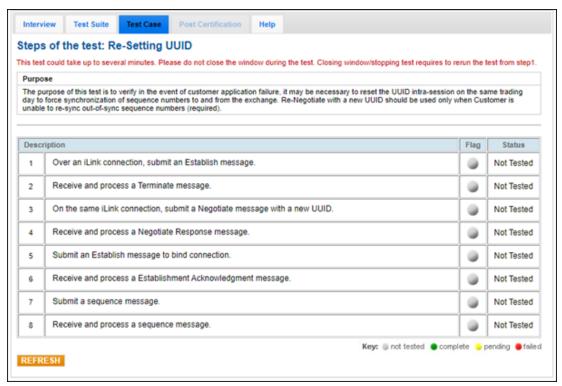
- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.



To run the Re-Setting UUID test:

- 1. Over an iLink connection, submit an **Establish** message.
- 2. Receive and process a Terminate message.
- 3. On the same iLink connection, submit a Negotiate message with a new UUID.
- 4. Receive and process a Negotiate Response message.
- 5. Submit an Establish message to bind connection.
- 6. Receive and process a **Establishment Acknowledgment** message.
- 7. Submit a sequence message.
- 8. Receive and process a sequence message.

Verify Sequence Warning KeepAliveInterval Lapsing Procedure / Methodology

The purpose of this test is to verify that the client system reacts correctly in case of an interruption of communication with CME.



To select the test:

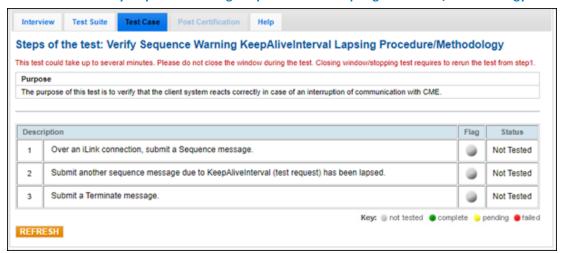
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

To run the Verify Sequence Warning KeepAliveInterval Lapsing Procedure / Methodology test:



- 1. Over an iLink connection, submit a <u>Sequence</u> message.
- 2. Submit another <u>sequence</u> message due to KeepAliveInterval (test request) has been lapsed (tag 39016-Keep-AliveIntervalLapsed=1).
- 3. Submit a Terminate message.

Message Gap Tests

The following tests are available to verify that the client system can process and request message retransmission (as applicable) when a gap is detected. The sections below describe the purpose of individual tests.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the linked tests (below), then proceed to the instructions.
 - Processing Message Gaps of More than 2500 Messages for Pre-Registered / On-Demand Format
 - Processing Message Gaps of More than 2500 Messages for Mass Quote Systems using Pre-Registered / On-Demand Format
 - Receiving and Processing Multiple Gaps for Pre-Registered / On-Demand Format
 - · Receiving and Processing Multiple Gaps (Mass Quote) for Pre-Registered / On-Demand Format
 - <u>Bi-Directional Gap Scenario (Resend Orders) (Day or FAK orders) for Pre-Registered / On-Demand</u> Format
 - <u>Bi-Directional Gap Scenario (Sequence Gap Fill)</u> (Day or FAK orders) for Pre-Registered / On-Demand Format
 - Bi-Directional Gap Scenario (Resend Mass Quotes) for Pre-Registered / On-Demand Format
 - <u>Bi-Directional Gap Scenario (Sequence Gap Fill for Mass Quotes) for Pre-Registered / On-Demand</u> Format

Referential information is included for messages sent / received during the test.

3. Click the START TEST button.



Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Processing Message Gaps of More than 2500 Messages for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system does not enter an infinite resend loop when facing an inbound sequence number gap greater than the maximum of 2500 messages.



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.



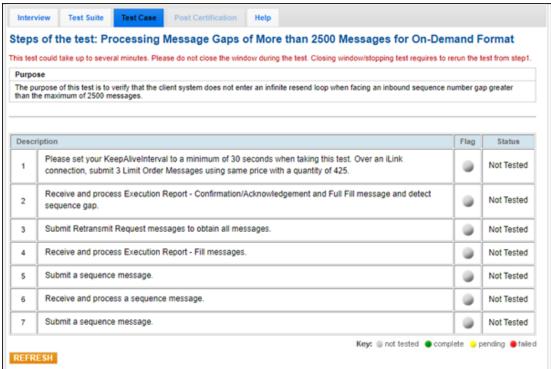
To run the Processing Message Gaps of More than 2500 Messages test:

Please set your KeepAliveInterval [35=Establish (tag 39014-HMACSignature)] to a minimum of 30 seconds when taking this test .

- 1. Over an iLink connection, submit three <u>Limit Order</u> (35=D) Messages using same price with a quantity (tag 38-Order-Qty) of 850.
- 2. Receive and process Execution Report Confirmation/Acknowledgement/Full Fill (35=8, 39=0) message and detect sequence gap.
- 3. Submit Retransmit Request messages to obtain all messages.
- 4. Receive and process Execution Report Fill (35=8, 39=0) messages.
- 5. Submit a sequence message.
- 6. Receive and process a sequence message.
- 7. Submit a sequence message.

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On-Demand format screen



Processing Message Gaps of More than 2500 Messages for Mass Quote Systems using Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system does not enter an infinite resend loop when facing an inbound sequence number gap greater than the maximum of 2500 messages.





To run the Processing Message Gaps of More than 2500 Messages for Mass Quote Systems test:

Please set your <u>KeepAliveInterval</u> [35=Establish (tag 39014-HMACSignature)] to a minimum of 30 seconds when taking this test.

- Over an iLink connection, submit three separate two-sided <u>Mass Quote</u> messages with a quantity (→134-BidSize / →135-OfferSize) of 850.
- 2. Receive and process a Mass Quote Acknowledgement and Full Fill message and detect sequence gap.
- 3. Submit Retransmit Request messages to obtain all messages.
- 4. Receive and process Execution Report Fill (35=b, 297=0,5) messages.
- 5. Submit a sequence message.
- 6. Receive and process a sequence message.
- 7. Submit a sequence message.

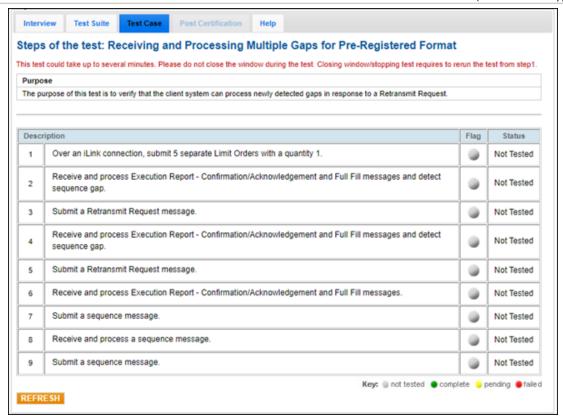
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On-Demand format screen



Receiving and Processing Multiple Gaps for Pre-Registered / On-Demand Format

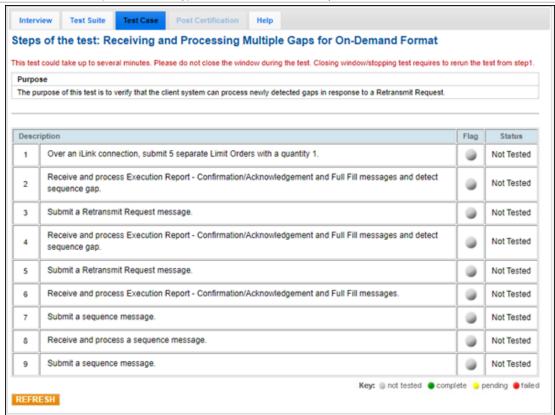
The purpose of this test is to verify that the client system can process newly detected gaps in response to a Retransmit Request.



To run the Receiving and Processing Multiple Gaps test:

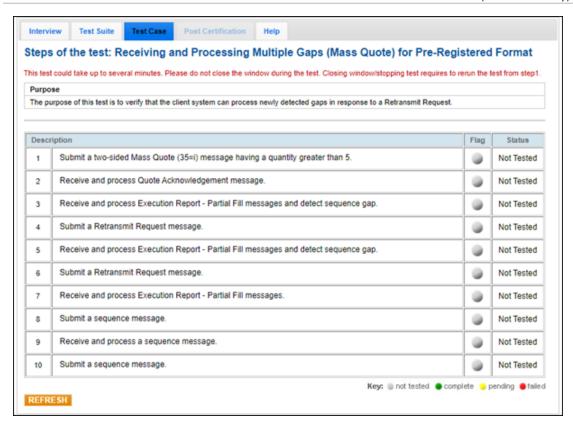
- 1. Over an iLink connection, submit five separate Limit Order (35=D) with a quantity (tag 38-OrderQty) 1.
- 2. Receive and process Execution Report Confirmation/Acknowledgement/Full Fill (35=8, 39=0) messages and detect sequence gap.
- 3. Submit a Retransmit Request message.
- 4. Receive and process Execution Report Confirmation/Acknowledgement/Full Fill (35=8, 39=0) messages and detect sequence gap.
- 5. Submit a Retransmit Request message.
- 6. Receive and process Execution Report Confirmation/Acknowledgement/Full Fill (35=8, 39=0) messages.
- 7. Submit a sequence message.
- 8. Receive and process a sequence message.
- 9. Submit a sequence message.

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Receiving and Processing Multiple Gaps (Mass Quote) for Pre-Registered / On-Demand Format

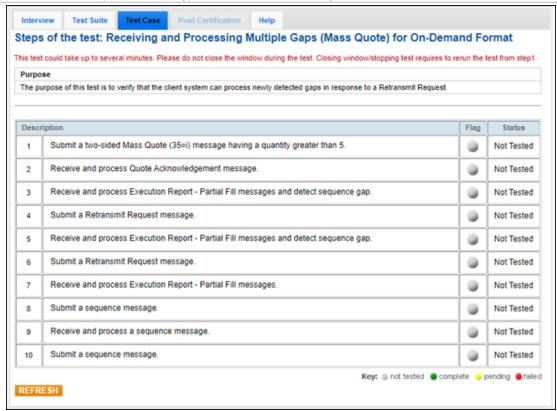
The purpose of this test is to verify that the client system can process newly detected gaps in response to a Retransmit Request.



To run the Receiving and Processing Multiple Gaps (Mass Quote) test:

- 1. Submit a two-sided Mass Quote (35=i) message having a quantity (→134-BidSize / →135-OfferSize) greater than 5.
- 2. Receive and process Quote Acknowledgement message.
- 3. Receive and process Execution Report (35=8, 150=I)- Partial Fill (tag 39-OrdStatus=1) messages and detect sequence gap.
- 4. Submit a Retransmit Request message.
- 5. Receive and process Execution Report (35=8, 150=I)- Partial Fill (tag 39-OrdStatus=1) messages and detect sequence gap.
- 6. Submit a Retransmit Request message.
- 7. Receive and process Execution Report (35=8, 150=I)- Partial Fill (tag 39-OrdStatus=1) messages.
- 8. Submit a sequence message.
- 9. Receive and process a sequence message.
- 10. Submit a sequence message.

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Bi-Directional Gap Scenario (Resend Orders) - (Day or FAK orders) for Pre-Registered / On-Demand Format

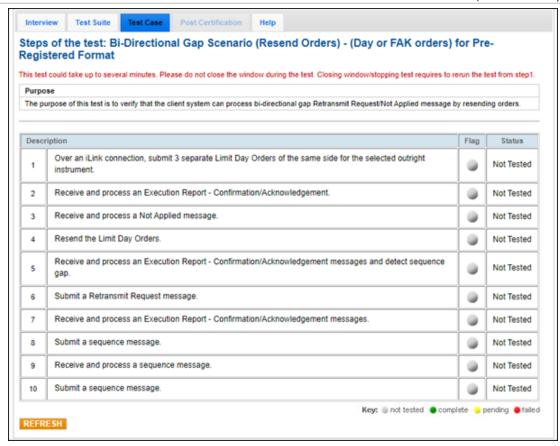
The purpose of this test is to verify that the client system can process bi-directional gap Retransmit Request / Not Applied message by resending orders.

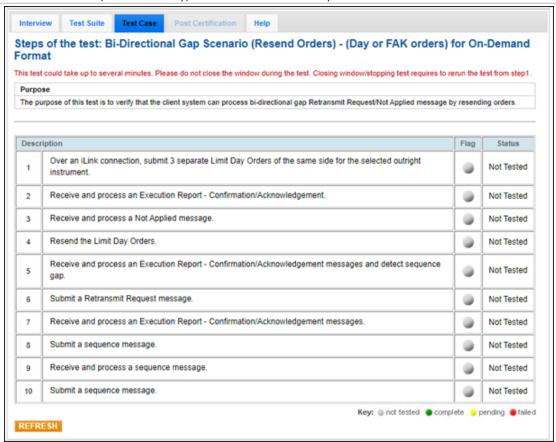


To run the Bi-Directional Gap Scenario (Resend Orders) - (Day or FAK orders) test:

- 1. Over an iLink connection, submit three separate <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] of the same side for the selected outright instrument.
- 2. Receive and process an Execution Report Confirmation / Acknowledgement (35=8, 39=0).
- 3. Receive and process a Not Applied message.
- 4. Resend the Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)].
- 5. Receive and process Execution Report Confirmation / Acknowledgement (35=8, 39=0) messages and detect sequence gap.
- 6. Submit a Retransmit Request message.
- 7. Receive and process Execution Report Confirmation / Acknowledgement (35=8, 39=0) messages.
- 8. Submit a sequence message.
- 9. Receive and process a sequence message.
- 10. Submit a sequence message.

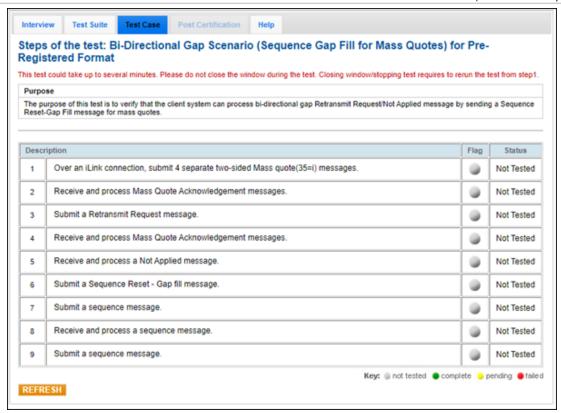
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Bi-Directional Gap Scenario (Sequence Gap Fill) - (Day or FAK orders) for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can process bi-directional gap Retransmit Request / Not Applied message by sending a Sequence Reset-Gap Fill message for mass quotes.

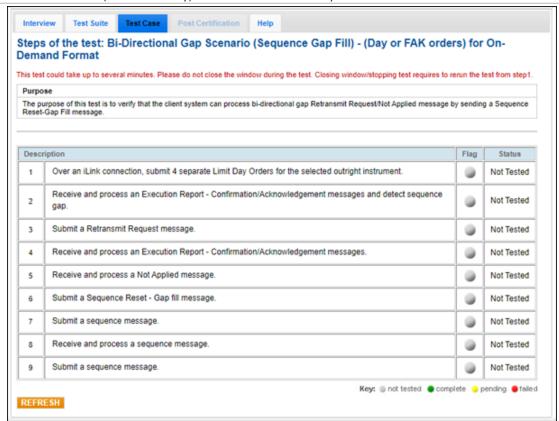




To run the Bi-Directional Gap Scenario (Sequence Gap Fill) - (Day or FAK orders) test:

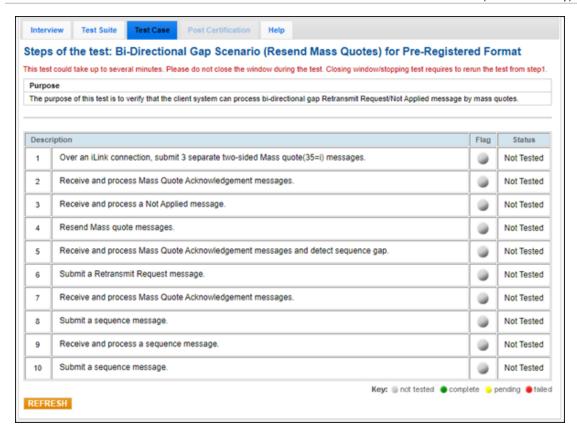
- 1. Over an iLink connection, submit four separate two-sided Mass quote (35=i) messages.
- 2. Receive and process Mass Quote Acknowledgement messages.
- 3. Submit a Retransmit Request message.
- 4. Receive and process Mass Quote Acknowledgement messages.
- 5. Receive and process a Not Applied message.
- 6. Submit a Sequence Reset (35=4) Gap fill (tag 123-GapFillFlag=Y) message.
- 7. Submit a sequence message.
- 8. Receive and process a sequence message.
- 9. Submit a sequence message.

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Bi-Directional Gap Scenario (Resend Mass Quotes) for Pre-Registered Format / On-Demand Format

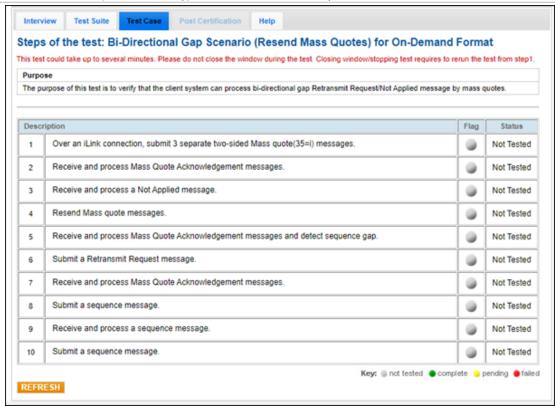
The purpose of this test is to verify that the client system can process bi-directional gap Retransmit Request / Not Applied message by mass quotes.



To run the Bi-Directional Gap Scenario (Resend Mass Quotes) test:

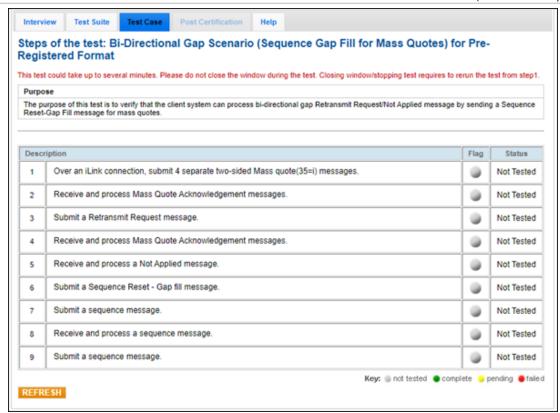
- 1. Over an iLink connection, submit three separate two-sided Mass quote (35=i) messages.
- 2. Receive and process Mass Quote Acknowledgement messages.
- 3. Receive and process a Not Applied message.
- 4. Resend Mass quote (35=i) messages.
- 5. Receive and process Mass Quote Acknowledgement messages and detect sequence gap.
- 6. Submit a Retransmit Request message.
- 7. Receive and process Mass Quote Acknowledgement messages.
- 8. Submit a sequence message.
- 9. Receive and process a sequence message.
- 10. Submit a sequence message.

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Bi-Directional Gap Scenario (Sequence Gap Fill for Mass Quotes) for Pre-Registered / On-Demand Format

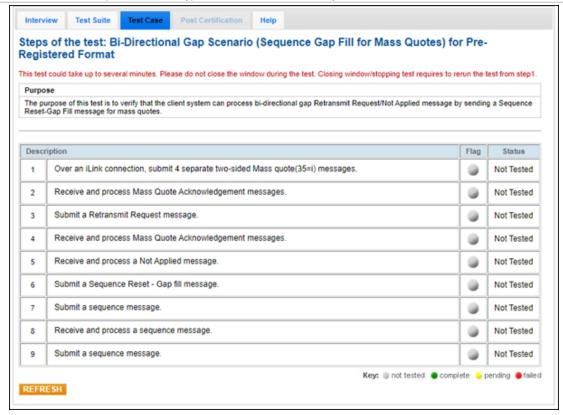
The purpose of this test is to verify that the client system can process bi-directional gap Retransmit Request / Not Applied message by sending a Sequence Reset-Gap Fill message for mass quotes.



To run the Bi-Directional Gap Scenario (Sequence Gap Fill for Mass Quotes) test:

- 1. Over an iLink connection, submit four separate two-sided Mass quote (35=i) messages.
- 2. Receive and process Mass Quote Acknowledgement messages.
- 3. Submit a Retransmit Request message.
- 4. Receive and process Mass Quote Acknowledgement messages.
- 5. Receive and process a Not Applied message.
- 6. Submit a Sequence Reset (35=4) Gap fill (tag 123-GapFillFlag=Y) message.
- 7. Submit a sequence message.
- 8. Receive and process a sequence message.
- 9. Submit a sequence message.

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Processing Real-Time Messages

The following instructions illustrate the process to run and complete tests for Real-Time messages.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the linked tests (below), then proceed to the instructions.
 - Process real-time messages during a Resend Response from CME Globex for Pre-Registered Format / On-Demand Format
 - Process real-time messages for FAK during a Resend Response from CME Globex for Pre-Registered Format / On-Demand Format
 - Process real-time Mass Quote messages during a Resend Response from CME Globex for Pre-Registered Format / On-Demand Format
- 3. Click the START TEST button.



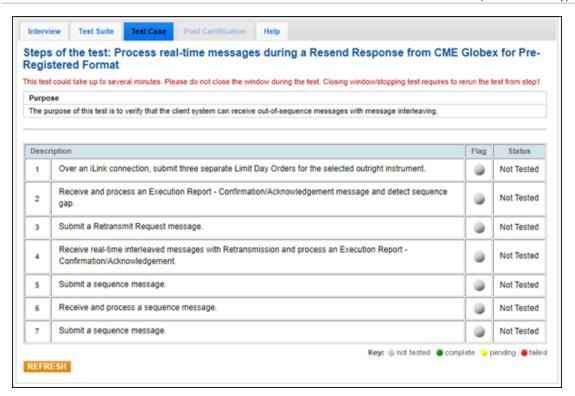
Note

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

Process real-time messages during a Resend Response from CME Globex for Pre-Registered Format / On-Demand Format

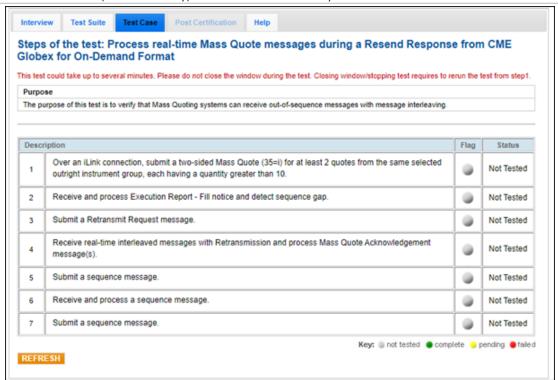
The purpose of this test is to verify that the client system can receive out-of-sequence messages with message interleaving.



To run the Process real-time messages during a Resend Response from CME Globex test:

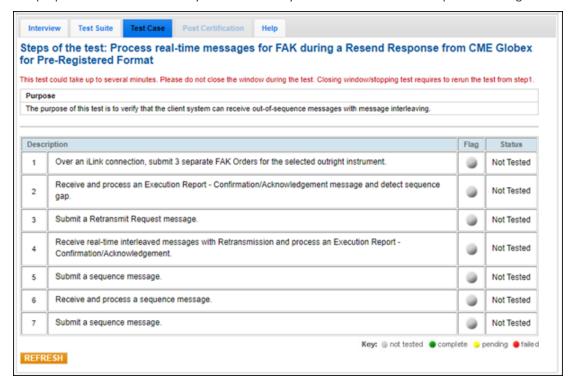
- 1. Over an iLink connection, submit three separate <u>Limit Day Orders</u> [35=D, tag 40-OrdType=2] for the selected outright instrument.
- 2. Receive and process an Execution Report Confirmation / Acknowledgement (35=8) message and detect sequence gap.
- 3. Submit a Retransmit Request message.
- 4. Receive real-time interleaved messages with <u>Retransmission</u> and process an <u>Execution Report Confirmation /</u> Acknowledgement (35=8).
- 5. Submit a sequence message.
- 6. Receive and process a sequence message.
- 7. Submit a sequence message.

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Process real-time messages for FAK during a Resend Response from CME Globex for Pre-Registered Format / On-Demand Format

The purpose of this test is to verify that the client system can receive out-of-sequence messages with message interleaving.

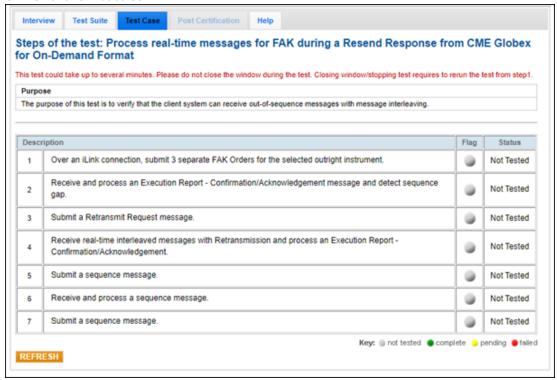


To run the Process real-time messages for FAK during a Resend Response from CME Globex test:

- 1. Over an iLink connection, submit three separate <u>FAK</u> [35=D (tag 59-TimeInForce=3)] Orders for the selected outright instrument.
- 2. Receive and process an Execution Report Confirmation / Acknowledgement (35=8, 39=0) message and detect sequence gap.
- 3. Submit a Retransmit Request message.
- 4. Receive real-time interleaved messages with Retransmission and process an Execution Report Confirmation /
 Acknowledgement (35=8, 39=0).
- 5. Submit a sequence message.
- 6. Receive and process a sequence message.
- 7. Submit a sequence message.

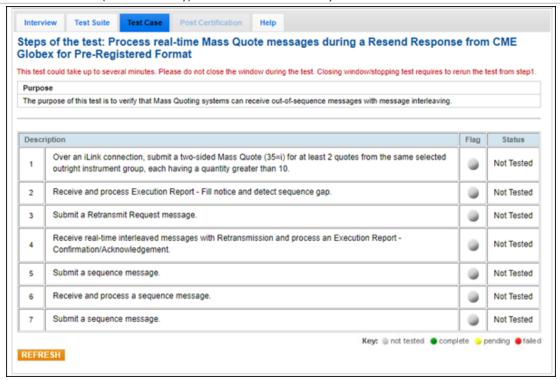
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On-Demand format screen



Process real-time Mass Quote messages during a Resend Response from CME Globex for Pre-Registered Format / On-Demand Format

The purpose of this test is to verify that Mass Quoting systems can receive out-of-sequence messages with message interleaving.

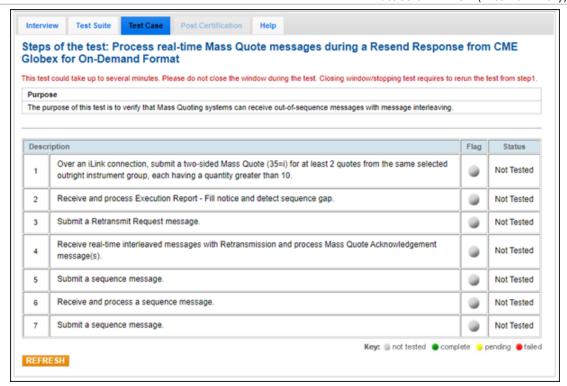




To run the Process real-time Mass Quote messages during a Resend Response from CME Globex test:

- Over an iLink connection, submit a two-sided <u>Mass Quote</u> (35=i) for at least 2 quotes from the same selected outright instrument group, each having a quantity (→134-BidSize / →135-OfferSize) greater than 10.
- 2. Receive and process Execution Report Fill notice (35=b) and detect sequence gap.
- 3. Submit a Retransmit Request message.
- 4. Receive real-time interleaved messages with Retransmission and process an <u>Execution Report Confirmation / Acknowledgement</u> (35=8, 39=0).
- 5. Submit a sequence message.
- 6. Receive and process a sequence message.
- 7. Submit a sequence message.

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Business Layer Tests

This section contains information on the AutoCert+ iLink 3.x (External Binary) for Convenience Gateway for Futures & Options - Business Layer Tests.



See more: iLink 3 Binary Order Entry - Business Layer

Market Limit / Order Tests

The purpose of this test is to verify the client system can submit and cancel a market-limit / market order and process the Acknowledgement and Fill messages for an outright instrument.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the Test Suite tab, select from the linked tests (below), then proceed to the instructions.
 - Market-Limit Order Test for Pre-Registered Format / On-Demand Format
 - Market Order Test for Pre-Registered Format /On-Demand Format
- 3. Click the START TEST button.



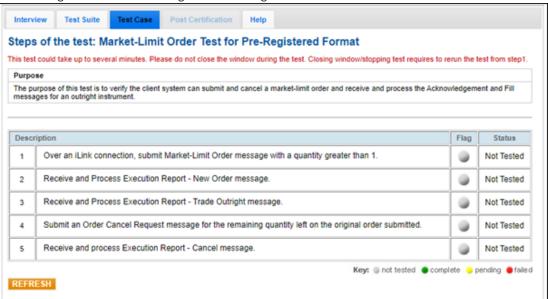
Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

Market-Limit Order Test for Pre-Registered Format / On-Demand Format

The purpose of this test is to verify the client system can submit and cancel a market-limit order and receive and process the Acknowledgement and Fill messages for an outright instrument.

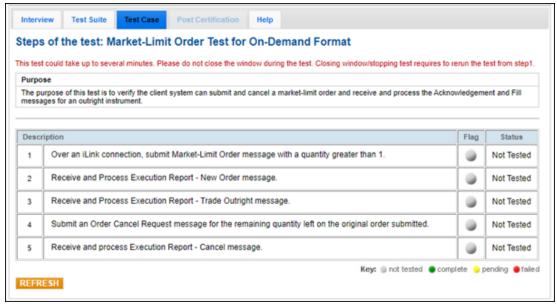


To run the Market-Limit Order test:

- 1. Over an iLink connection, submit Market-Limit Order (35=D) message with a quantity greater than 1 (tag 38-Order-Qty).
- 2. Receive and Process Execution Report New Order (35=8, 39=0) message.
- 3. Receive and Process Execution Report Trade Outright (35=8, 39=1,2) message.
- 4. Submit an Order Cancel Request message for the remaining quantity left on the original order (tag 2422-Order-RequestID) submitted.
- 5. Receive and process Execution Report Cancel message.

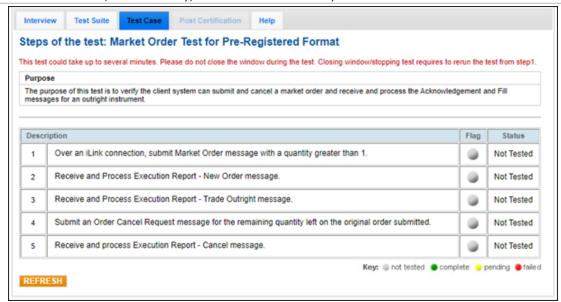
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Market Order Test for Pre-Registered Format /On-Demand Format

The purpose of this test is to verify the client system can submit and cancel a market order and receive and process the Acknowledgement and Fill messages for an outright instrument.

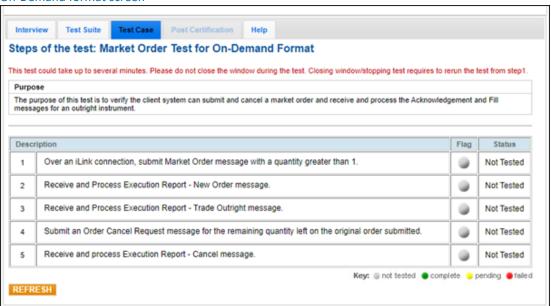




To run the Market Order test:

- 1. Over an iLink connection, submit Market Order (35=D) message with a quantity greater than 1 (tag 38-OrderQty).
- 2. Receive and Process Execution Report New Order message.
- 3. Receive and Process Execution Report Trade Outright message.
- 4. Submit an Order Cancel Request message for the remaining quantity left on the original order submitted.
- 5. Receive and process Execution Report Cancel message.

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Stop Limit / Order Tests

The purpose of this test is to verify the client system can submit and cancel a stop limit / stop order and process the Acknowledgement and Fill messages for an outright instrument.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the Test Suite tab, select from the linked tests (below), then proceed to the instructions.
 - Stop Limit Order Test for Pre-Registered / On-Demand Format
 - Stop Order Test for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.

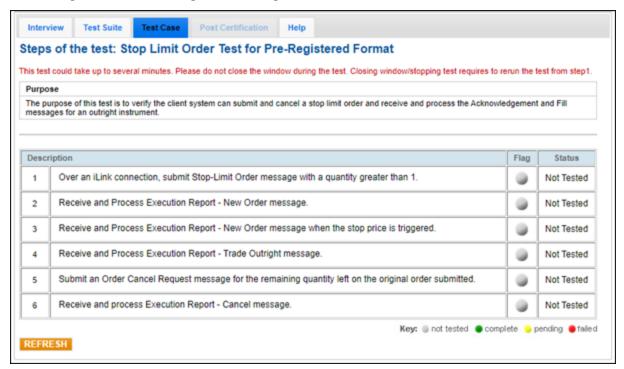


If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

Stop Limit Order Test for Pre-Registered / On-Demand Format

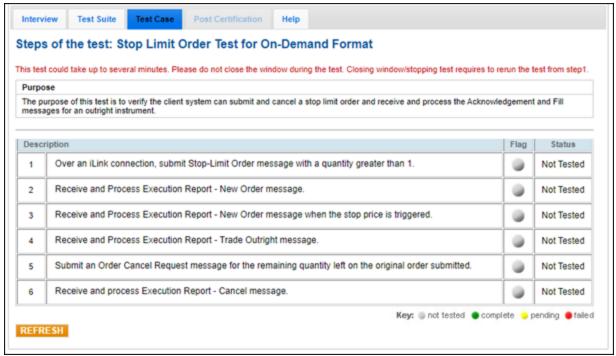
The purpose of this test is to verify the client system can submit and cancel a stop limit order and receive and process the Acknowledgement and Fill messages for an outright instrument.



- 1. Over an iLink connection, submit Stop Limit Order (35=D) message with a quantity (tag 38-OrderQty) greater than 1.
- 2. Receive and Process Execution Report New Order (35=8, 39=0) message.
- 3. Receive and Process Execution Report New Order (35=8, 39=0) message when the stop price (tag 99-StopPx) is triggered.
- 4. Receive and Process Execution Report Trade Outright (35=8, 39=1,2) message.

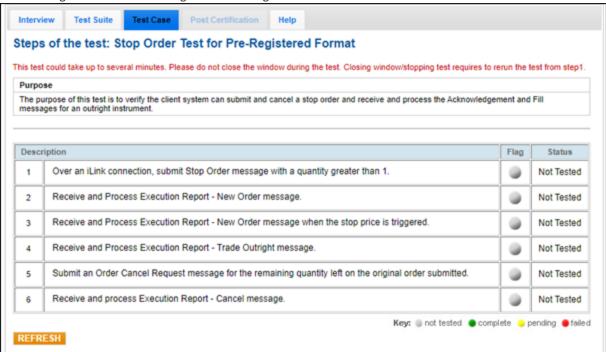
- 5. Submit an Order Cancel Request (35=F) message for the remaining quantity left on the original order submitted.
- 6. Receive and process Execution Report Cancel message.

On-Demand format screen



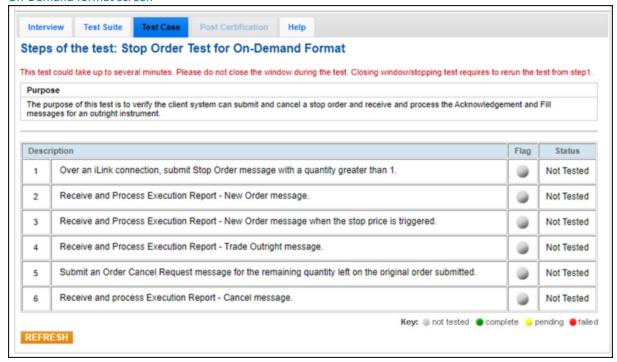
Stop Order Test for Pre-Registered / On-Demand Format

The purpose of this test is to verify the client system can submit and cancel a stop order and receive and process the Acknowledgement and Fill messages for an outright instrument.



- 1. Over an iLink connection, submit Stop Order (35=D) message with a quantity greater than 1 (tag 38-OrderQty).
- 2. Receive and Process Execution Report New Order message.
- 3. Receive and Process Execution Report New Order message when the stop price (tag 99-StopPx) is triggered.
- 4. Receive and Process Execution Report Trade Outright message.
- 5. Submit an Order Cancel Request (35=F) message for the remaining quantity left on the original order (tag 2422-OrderRequestID) submitted.
- 6. Receive and process Execution Report Cancel message.

On-Demand format screen



Give-Up Order with Pre-registered / On-demand administrative Give-Up information

The purpose of this test is to verify that the client system can submit an order with Give-Up information pre-register in Service Gateway.

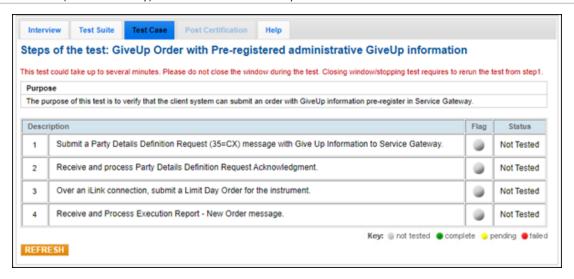


To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

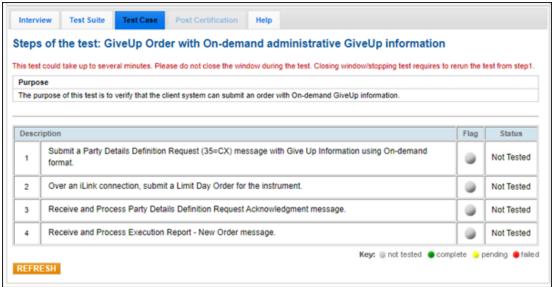


Referential information is included for messages sent / received during the test.

Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

To run the Give-Up Order test:

- 1. Submit a Party Details Definition Request (35=CX) message with Give-Up Information to Service Gateway.
- 2. Receive and process Party Details Definition Request Acknowledgment (35=CY).
- 3. Over an iLink connection, submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument.
- 4. Receive and Process Execution Report New Order (35=8, 39=0) message.



Outright Complete Order Test for Pre-Registered Format / On-Demand Format

The purpose of this test is to verify that your application can submit a limit order and receive and process the Execution Reports (Ack, Fill, Elimination, Correction, Bust) for an outright instrument.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



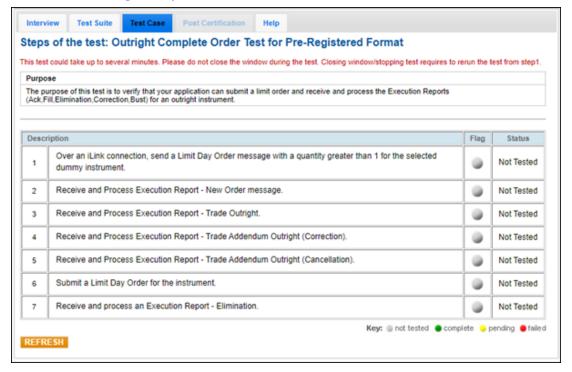
Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.



To run the Outright Complete Order Test:

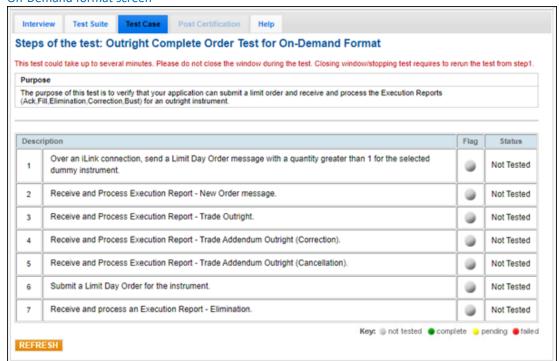


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message with a quantity (tag 38-OrderQty) greater than 1 for the selected dummy instrument.
- 2. Receive and Process Execution Report New Order message.
- 3. Receive and Process Execution Report Trade Outright.
- 4. Receive and Process Execution Report Trade Addendum Outright (Correction) (35=8, 39=H,G).
- 5. Receive and Process Execution Report Trade Addendum Outright (Cancellation) (35=8, 39=H,G).

- 6. Submit a Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument.
- 7. Receive and process an Execution Report Elimination (35=8, 39=C).

On-Demand format screen



Spread Complete Order Test for Pre-Registered / On-Demand Format

The purpose of this test is to verify that your application can submit a spread limit order and receive and process the Execution Reports (Ack, Fill, Elimination, Correction, Bust) for a spread instrument.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.



To run the spread complete order test:



- 1. Over an iLink connection, send a <u>Limit Order</u> [35=D (tag 40-OrdType=2)] message for the selected spread dummy instrument.
- 2. Receive and process an Execution Report Elimination (35=8, 39=C).
- 3. Submit a <u>Limit Order</u> [35=D (tag 40-OrdType=2)] message with a quantity (tag 38-OrderQty) 1 for the selected spread dummy instrument.
- 4. Receive and Process Execution Report New Order.
- 5. Receive and Process Execution Report Trade Spread [Full Fill (tag 39-OrdStatus=2)].
- 6. Receive and Process Execution Report Trade Spread Leg (First Leg Full Fill).
- 7. Receive and Process Execution Report Trade Spread Leg (Second Leg Full Fill).

- 8. Receive and process Execution Report Trade Addendum Spread (Cancellation) for Spread and Spread Leg for each leg.
- 9. Submit 4 separate Limit Orders [35=D (tag 40-OrdType=2)] with a quantity (tag 38-OrderQty=1) 1.
- 10. Receive and Process Execution Report Trade Spread and Trade Spread Leg for all 4 Full Fills messages.
- 11. Receive and Process Execution Report Trade Addendum Spread Leg (Correction for some legs only) for the first Full Fill message.
- 12. Receive and Process Execution Report <u>Trade Addendum Spread</u> and <u>Spread Leg</u> (Correction for Spread and some legs) for the second Full Fill messages.
 - Enter the value for leg trade correction.
- 13. Receive and Process Execution Report <u>Trade Addendum Spread</u> (35=8, 39=H,G) and <u>Spread Leg</u> [35=8, 39=H,G (Correction for Spread and all legs)] for the third Full Fill messages.
 - Answer Yes / No: Did you receive and process three separate trade correction messages (tag 39-OrdStatus=G, tag 150-ExecType=G) for the Spread and each leg?
- 14. Receive and Process Execution Report Trade Addendum Spread Leg (Correction for All legs only) for the fourth Full Fill messages.
 - Answer Yes / No: Did you receive and process two separate trade correction messages (tag 39-OrdStatus=G, tag 150-ExecType=G) for each leg?



Manage GTC / GTD Order LifeTime for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit orders and process corresponding responses for each eligible TimeInForce (GTC and GTD).



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.

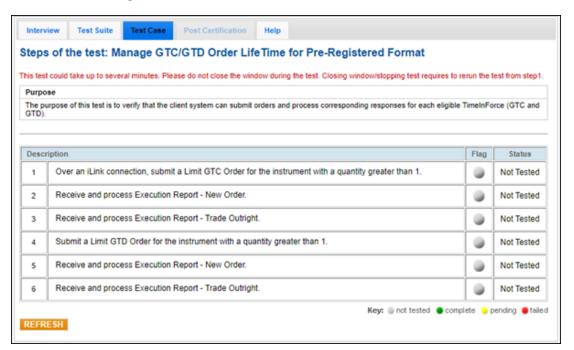


Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

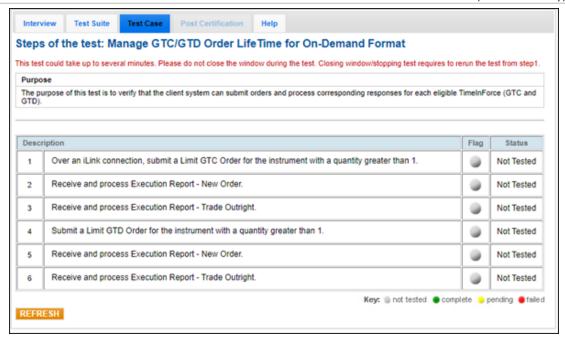
Referential information is included for messages sent / received during the test.

To run the manage GTC / GTD Order Lifetime test:



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a <u>Limit GTC Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=1)] for the instrument with a quantity (tag 38-OrderQty) greater than 1.
- 2. Receive and process Execution Report New Order (35=8, 39=0).
- 3. Receive and process Execution Report Trade Outright (35=8, 39=1,2).
- 4. Submit a <u>Limit GTD Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument with a quantity (tag 38-OrderQty) greater than 1.
- 5. Receive and process Execution Report New Order (35=8, 39=0).
- 6. Receive and process Execution Report Trade Outright (35=8, 39=1,2).



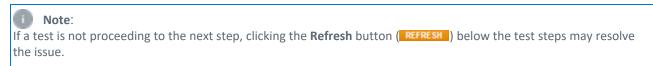
FAK Order Test for Pre-Registered / On-Demand Format

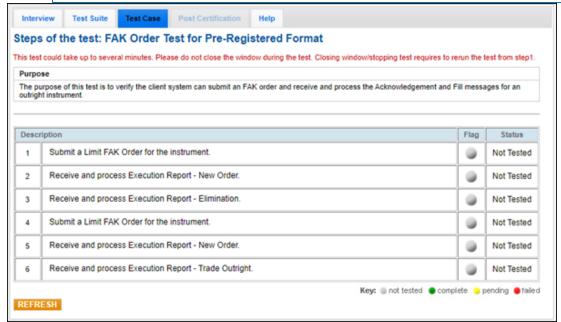
The purpose of this test is to verify the client system can submit an FAK order and receive and process the Acknowledgement and Fill messages for an outright instrument.



To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.





Referential information is included for messages sent / received during the test.

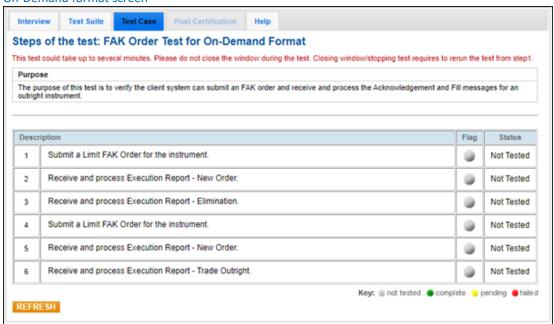


To run the Fill-and-Kill Order test:

Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Submit a Limit FAK Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)] for the instrument.
- 2. Receive and process Execution Report New Order (35=8, 39=0).
- 3. Receive and process Execution Report Elimination (35=8, 39=C).
- 4. Submit a Limit FAK Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)] for the instrument.
- 5. Receive and process Execution Report New Order (35=8, 39=0).
- 6. Receive and process Execution Report Trade Outright (35=8, 39=1,2).

On-Demand format screen



Order Cancel / Cancel-Replace Tests

The following instructions illustrate the process to run and complete order cancel and cancel replace tests.



To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Multiple Cancel Replace for Pre-Registered / On-Demand Format
 - Cancel-Replace with IFM for Pre-Registered / On-Demand Format
 - Order Cancel Replace without OrderID for Pre-Registered / On-Demand Format
 - Order Cancel without OrderID for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.



Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (REFRESH) below the test steps may resolve

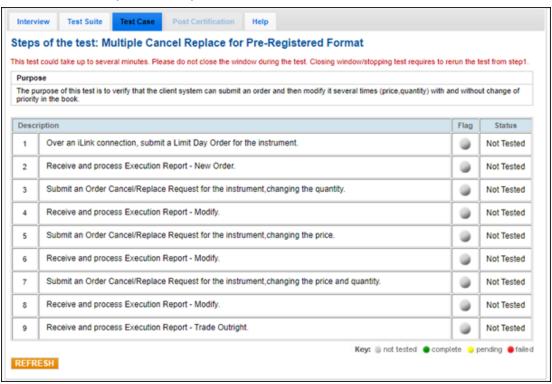
Referential information is included for messages sent / received during the test.

Multiple Cancel Replace for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit an order and then modify it several times (price, quantity) with and without change of priority in the book.



To run the Multiple Cancel Replace test:

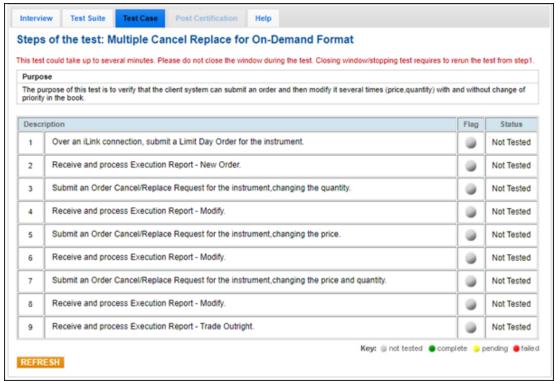


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument.
- 2. Receive and process Execution Report New Order (35=8, 39=0).
- 3. Submit an Order Cancel/Replace Request (35=G) for the instrument, changing the quantity (tag 38-OrderQty).
- 4. Receive and process Execution Report Modify (35=8, 39=5).
- 5. Submit an Order Cancel/Replace Request (35=G) for the instrument, changing the price (tag 44-Price).
- 6. Receive and process Execution Report Modify (35=8, 39=5).
- 7. Submit an Order Cancel/Replace Request (35=G) for the instrument, changing the price (tag 44-Price) and quantity (tag 38-OrderQty).

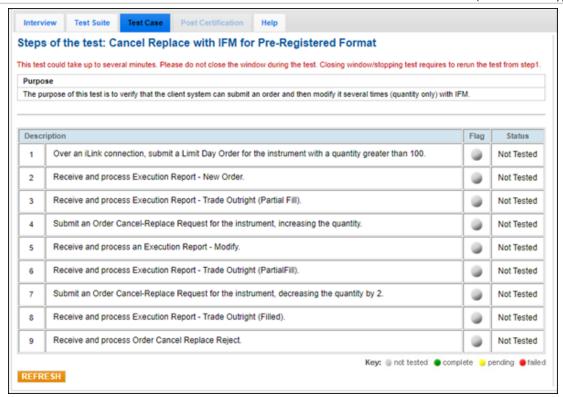
- 8. Receive and process Execution Report Modify (35=8, 39=5).
- 9. Receive and process Execution Report Trade Outright (35=8, 39=1,2)

On-Demand format screen



Cancel-Replace with IFM for Pre-Registered / On-Demand Format

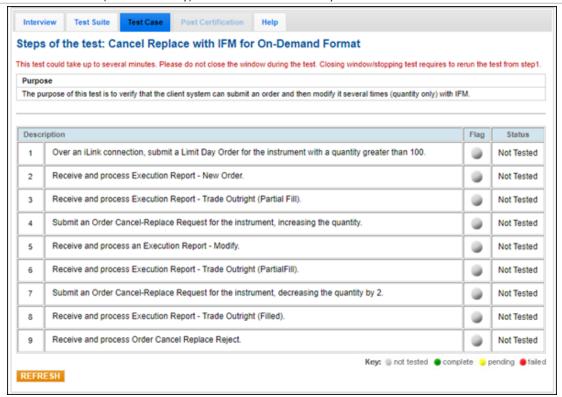
The purpose of this test is to verify that the client system can submit an order and then modify it several times (quantity only) with IFM.



To run the Cancel-Replace with IFM test:

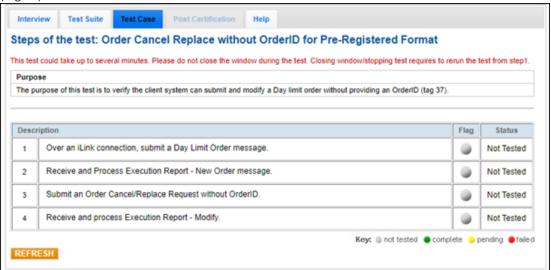
- 1. Over an iLink connection, submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument with a quantity (tag 38-OrderQty) greater than 100.
- 2. Receive and process Execution Report New Order (35=8, 39=0).
- 3. Receive and process Execution Report Trade Outright [35=8, 39=1,2 (tag 39-OrdStatus=1)] (Partially Filled).
- 4. Submit an Order Cancel-Replace Request for the instrument, increasing the quantity (tag 38-OrderQty).
- 5. Receive and process an Execution Report Modify.
- 6. Receive and process Execution Report Trade Outright (Partial Fill).
- 7. Submit an Order Cancel-Replace Request for the instrument, decreasing the quantity (tag 38-OrderQty) by 2.
- 8. Receive and process Execution Report Trade Outright [35=8, 39=1,2 (tag 39-OrdStatus=2)] (Filled).
- 9. Receive and process Order Cancel Replace Reject (35=9, 434=2).

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Order Cancel Replace without OrderID for Pre-Registered / On-Demand Format

The purpose of this test is to verify the client system can submit and modify a Day limit order without providing an OrderID (tag 37).



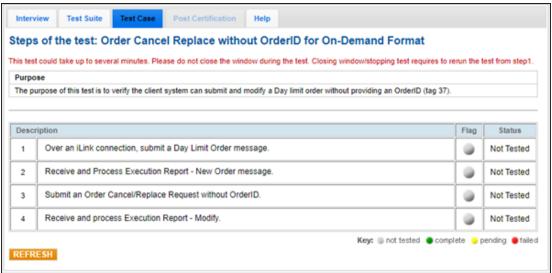
Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

To run the Order Cancel Replace without OrderID test:

- 1. Over an iLink connection, submit a Day Limit Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message.
- 2. Receive and Process Execution Report New Order (35=8, 39=0) message.

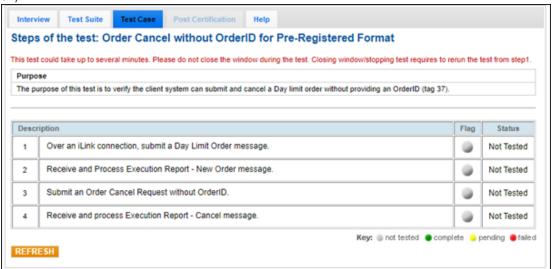
- 3. Submit an Order Cancel/Replace Request (35=G) without OrderID (tag 37).
- 4. Receive and process Execution Report Modify (35=8, 39=5).

On-Demand format screen



Order Cancel without OrderID for Pre-Registered / On-Demand Format

The purpose of this test is to verify the client system can submit and cancel a Day limit order without providing an OrderID (tag 37).

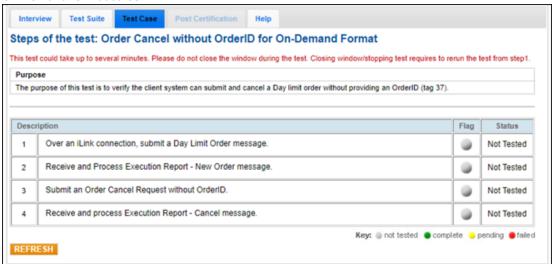


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

To run the Order Cancel without OrderID test:

- 1. Over an iLink connection, submit a Day Limit Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message.
- 2. Receive and Process Execution Report New Order (35=8, 39=0) message.
- 3. Submit an Order Cancel Request (35=F) without OrderID (tag 37).
- 4. Receive and process Execution Report Cancel (35=8, 39=4) message.

On-Demand format screen



Manage Route-Through for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can manage orders using multiple Firm IDs for the same session ID (alternate submission of order, cancel replace and cancels from different Firm IDs).



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.

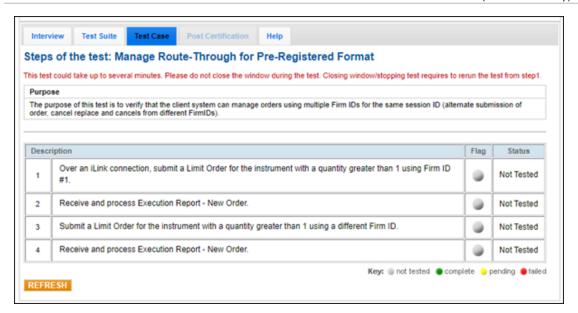


If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

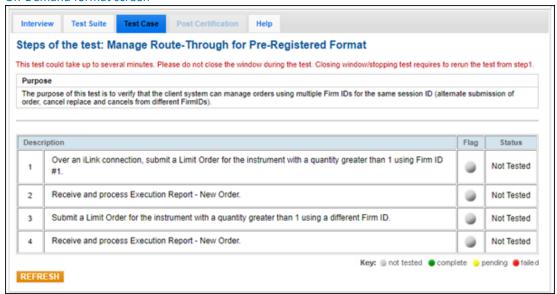


To run the Route-Through test:



- 1. Over an iLink connection, submit a <u>Limit Order (35=D)</u> for the instrument with a quantity (tag 38-OrderQty) greater than 1 using Firm ID #1.
- 2. Receive and process Execution Report New Order.
- 3. Submit a Limit Order (35=D) for the instrument with a quantity greater than 1 using a different Firm ID.
- 4. Receive and process Execution Report New Order.

On-Demand format screen

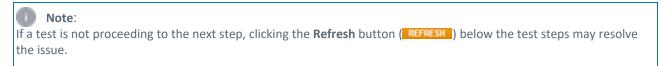


Manage Minimum Quantity

The following instructions illustrate the process to run and complete tests for minimum and maximum quantity tests.

To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Manage Minimum Quantity for Pre-Registered / On-Demand Format
 - Manage Maximum Quantity Display for Pre-Registered / On-Demand Format
 - Manage Maximum Quantity Display with Cancel-Replace for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.

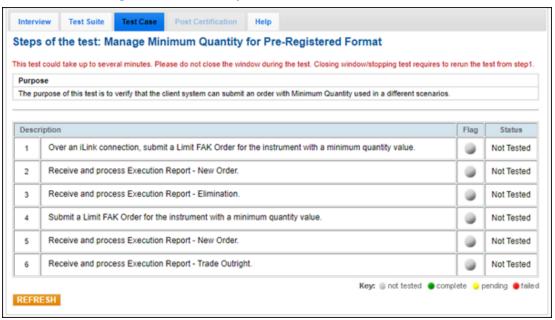


Referential information is included for messages sent / received during the test.

Manage Minimum Quantity for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit an order with Minimum Quantity used in a different scenarios.

To run the Manage Minimum Quantity test:

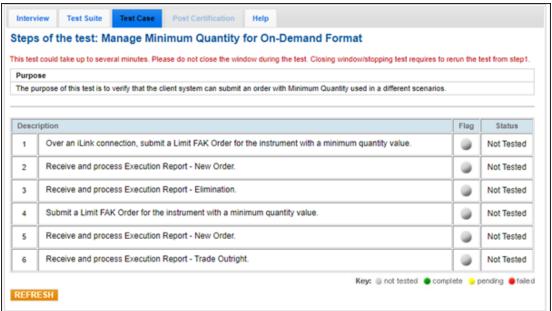


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a <u>Limit FAK Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)] for the instrument with a minimum quantity (tag 110-MinQty) value.
- 2. Receive and process Execution Report New Order (35=8, 39=0).
- 3. Receive and process Execution Report Elimination (35=8, 39=C).
- 4. Submit a <u>Limit FAK Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)] for the instrument with a minimum quantity (tag 110-MinQty) value.

- 5. Receive and process Execution Report New Order (35=8, 39=0).
- 6. Receive and process Execution Report Trade Outright (35=8, 39=1,2).

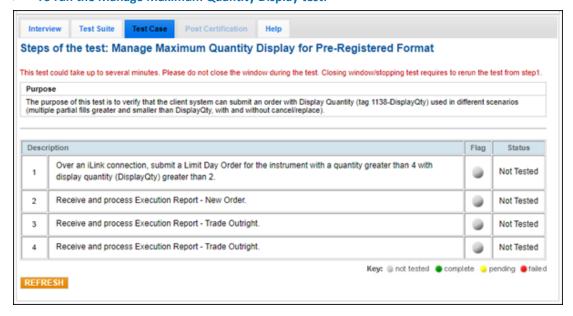
On-Demand format screen



Manage Maximum Quantity Display for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit an order with Display Quantity (tag 1138-DisplayQty) used in different scenarios (multiple partial fills greater and smaller than DisplayQty, with and without cancel / replace).

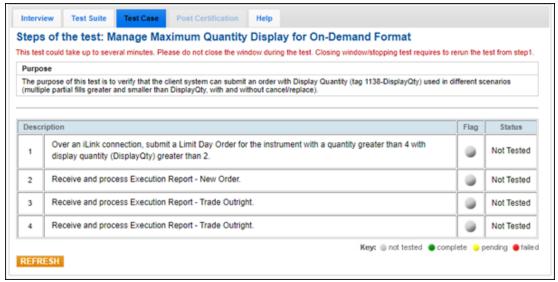
To run the Manage Maximum Quantity Display test:



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument with a quantity (tag 38-OrderQty) greater than 4 with display quantity (tag 1138-DisplayQty) greater than 2.
- 2. Receive and process Execution Report New Order (35=8, 39=0).
- 3. Receive and process Execution Report Trade Outright (35=8, 39=1,2)
- 4. Receive and process Execution Report Trade Outright (35=8, 39=1,2)

On-Demand format screen

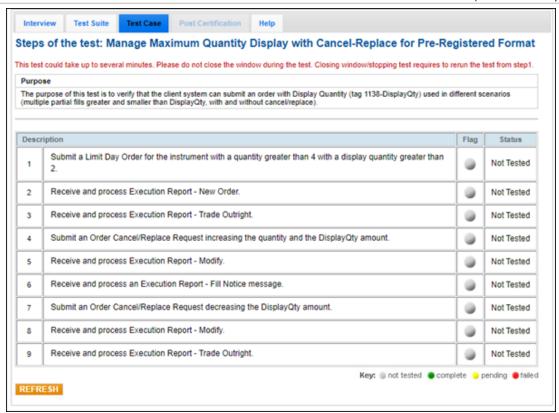


Manage Maximum Quantity Display with Cancel-Replace for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit an order with Display Quantity (tag 1138-DisplayQty) used in different scenarios (multiple partial fills greater and smaller than DisplayQty, with and without cancel / replace).

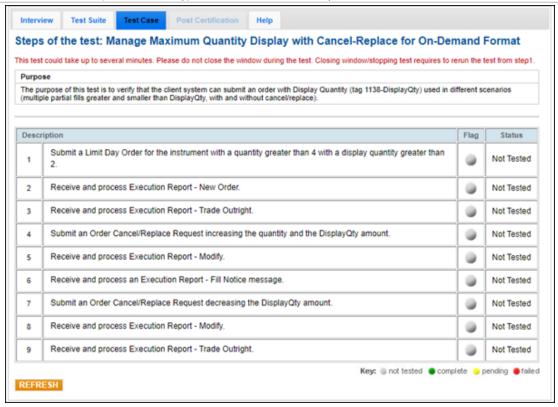


To run the Manage Maximum Quantity Display with Cancel-Replace test:



- 1. Submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument with a quantity (tag 38-OrderQty) greater than 4 with a display quantity (tag 1138-DisplayQty) greater than 2.
- 2. Receive and process Execution Report New Order (35=8, 39=0).
- 3. Receive and process Execution Report Trade Outright (35=8, 39=1,2)
- 4. Submit an Order Cancel/Replace Request (35=G) increasing the quantity (tag 38-OrderQty) and the DisplayQty (tag 1138-DisplayQty) amount.
- 5. Receive and process Execution Report Modify (35=8, 39=5).
- 6. Receive and process an Execution Report Fill notice (35=8) message.
- 7. Submit an Order Cancel/Replace Request (35=G) decreasing the DisplayQty (tag 1138-DisplayQty) amount.
- 8. Receive and process Execution Report Modify (35=8, 39=5).
- 9. Receive and process Execution Report Trade Outright (35=8, 39=1,2)

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Manual Order Indicator Tests

The following instructions illustrate the process to run and complete manual order indicator tests.



To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Manual Order Indicator for Manual System for Pre-Registered / On-Demand Format
 - Manual Order Indicator for Manual System (Mass Quotes) for Pre-Registered / On-Demand Format
 - Manual Order Indicator for ATS System for Pre-Registered / On-Demand Format
 - Manual Order Indicator for ATS System (Mass Quotes) for Pre-Registered / On-Demand Format
 - Manual Order Indicator for Semi Automated System for Pre-Registered / On-Demand Format
 - Manual Order Indicator for Semi Automated System (Mass Quotes) for Pre-Registered / On-Demand **Format**
- 3. Click the START TEST button.



If a test is not proceeding to the next step, clicking the Refresh button (REFRESH) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

Manual Order Indicator for Manual System for Pre-Registered / On-Demand Format

The purpose of this test case is to verify how customer is using Manual Order Indicator tag.

To run the Manual Order Indicator for Manual System test:

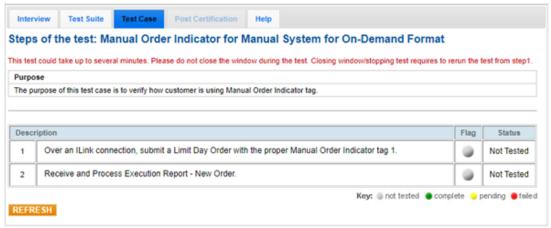


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] with the proper Manual Order Indicator tag 1 [tag 1028-ManualOrderIndicator=1(manual)].
- 2. Receive and Process Execution Report New Order (35=8, 39=0).

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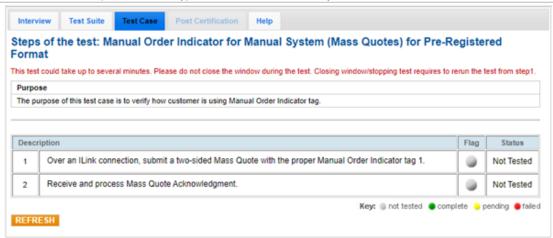
On-Demand format screen



Manual Order Indicator for Manual System (Mass Quotes) for Pre-Registered / On-Demand Format

The purpose of this test case is to verify how customer is using Manual Order Indicator tag.

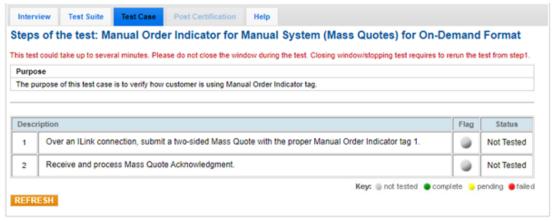
To run the Manual Order Indicator for Manual System (Mass Quotes) test:



- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with the proper Manual Order Indicator tag 1 [tag 1028-ManualOrderIndicator=1(manual)].
- 2. Receive and process Mass Quote Acknowledgment.

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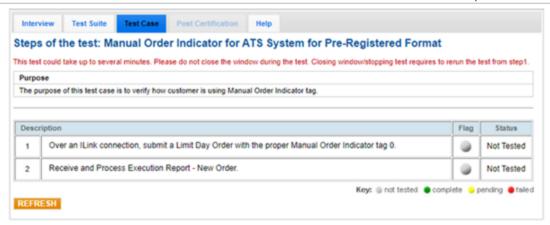
On-Demand format screen



Manual Order Indicator for ATS System for Pre-Registered / On-Demand **Format**

The purpose of this test case is to verify how customer is using Manual Order Indicator tag.

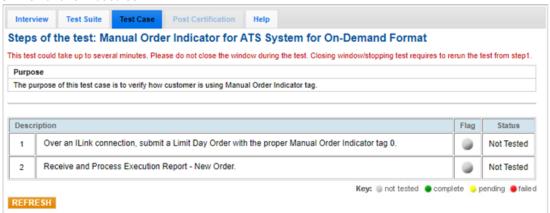
To run the Manual Order Indicator for ATS System test:



- 1. Over an iLink connection, submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] with the proper Manual Order Indicator tag 0 [tag 1028-ManualOrderIndicator=0(automated)].
- 2. Receive and Process Execution Report New Order (35=8, 39=0).

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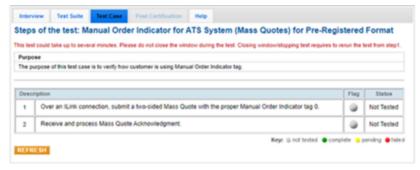
On-Demand format screen



Manual Order Indicator for ATS System (Mass Quotes) for Pre-Registered / On-Demand Format

The purpose of this test case is to verify how customer is using Manual Order Indicator tag.

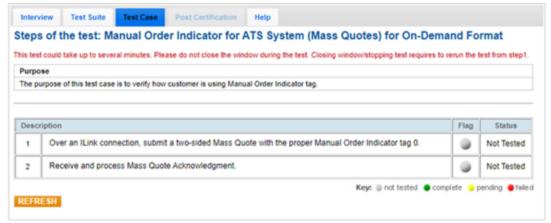
To run the Manual Order Indicator for ATS System (Mass Quotes) test:



- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with the proper Manual Order Indicator tag 0 [tag 1028-ManualOrderIndicator=0(automated)].
- 2. Receive and process Mass Quote Acknowledgment.

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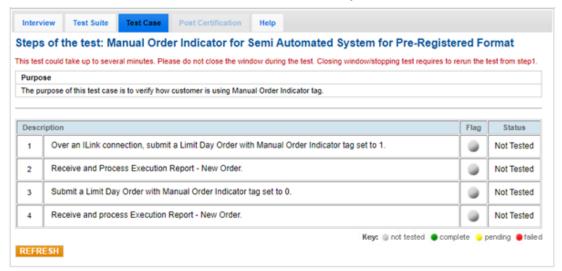
On-Demand format screen



Manual Order Indicator for Semi Automated System for Pre-Registered / On-Demand Format

The purpose of this test case is to verify how customer is using Manual Order Indicator tag.

To run the Manual Order Indicator for Semi Automated System test:



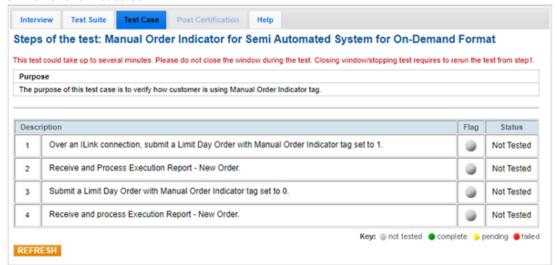
Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] with Manual Order Indicator tag set to 1 [tag 1028-ManualOrderIndicator=1(manual)].
- 2. Receive and Process Execution Report New Order (35=8, 39=0).

- 3. Submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] with Manual Order Indicator tag set to 0 (tag 1028-ManualOrderIndicator=0).
- 4. Receive and process Execution Report New Order (35=8, 39=0).

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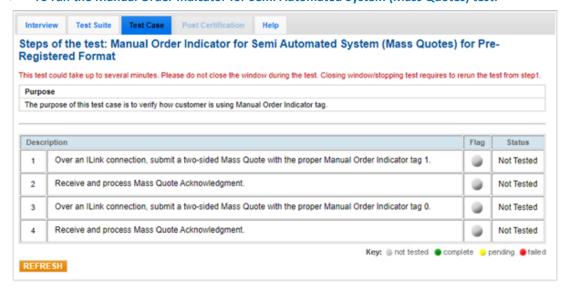
On-Demand format screen



Manual Order Indicator for Semi Automated System (Mass Quotes) for Pre-Registered / On-Demand Format

The purpose of this test case is to verify how customer is using Manual Order Indicator tag.

To run the Manual Order Indicator for Semi Automated System (Mass Quotes) test:



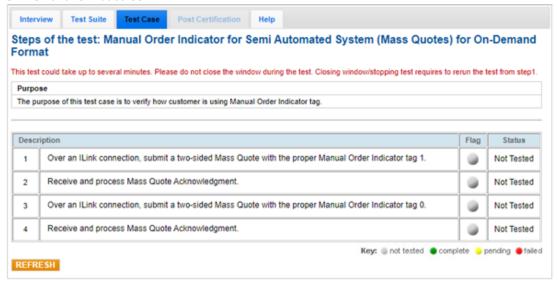
Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with the proper Manual Order Indicator tag 1 [tag 1028-ManualOrderIndicator=1(manual)].
- 2. Receive and process Mass Quote Acknowledgment.

- 3. Over an iLink connection, submit a two-sided Mass Quote (35=i) with the proper Manual Order Indicator tag 0 (tag 1028-ManualOrderIndicator=0).
- 4. Receive and process Mass Quote Acknowledgment.

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On-Demand format screen



Processing Rejects Test for Pre-Registered / On-Demand **Format**

The purpose of this test is to verify that your application can receive and process reject messages.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab. select the linked test.

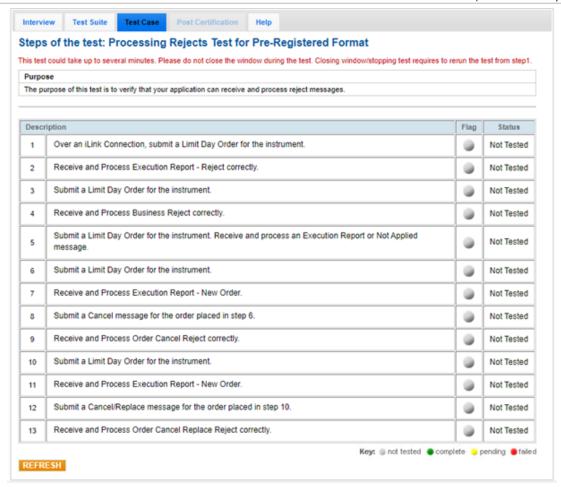


Referential information is included for messages sent / received during the test.

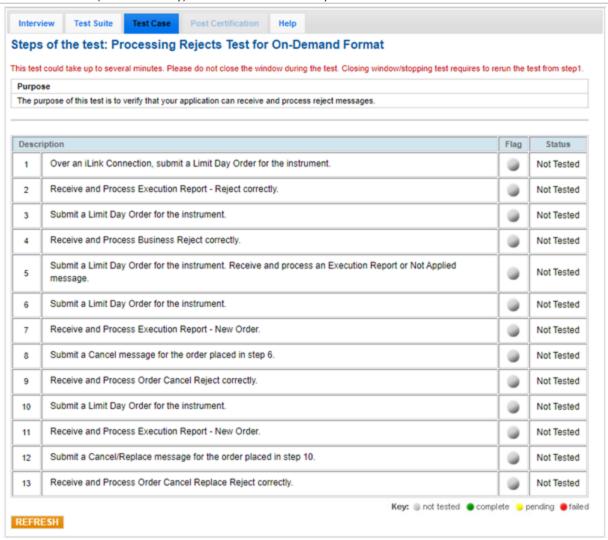
Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.



To run the Processing Rejects test:



- 1. Over an iLink Connection, submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument.
- 2. Receive and Process Execution Report Reject (35=8, 39=8) correctly.
- 3. Submit a Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument.
- 4. Receive and Process Business Reject (35=j) correctly.
- 5. Submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument. Receive and process an Execution Report or Not Applied message.
- 6. Submit a Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument.
- 7. Receive and Process Execution Report New Order (35=8, 39=0).
- 8. Submit a Cancel message (35=F) for the order placed in step 6.
- 9. Receive and Process Order Cancel Reject (35=9, 434=1) correctly.
- 10. Submit a Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the instrument.
- 11. Receive and Process Execution Report New Order (35=8, 39=0).
- 12. Submit a Cancel/Replace (35=G) message for the order placed in step 10.
- 13. Receive and Process <u>Order Cancel Replace Reject</u> (35=9, 434=2) correctly. On-Demand format screen



Create a Covered option contract and send an order on the new contract for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that your application can create a User-Defined Covered option contract and send a New Order and a Cancel Request on such instrument.



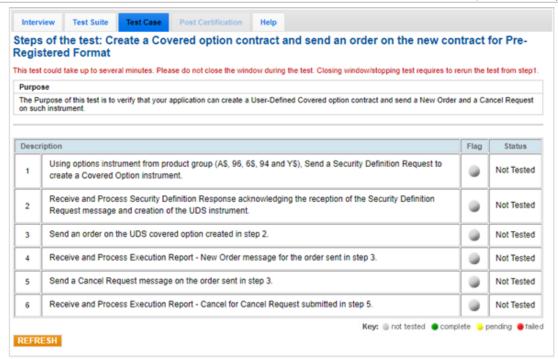
To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



Note:

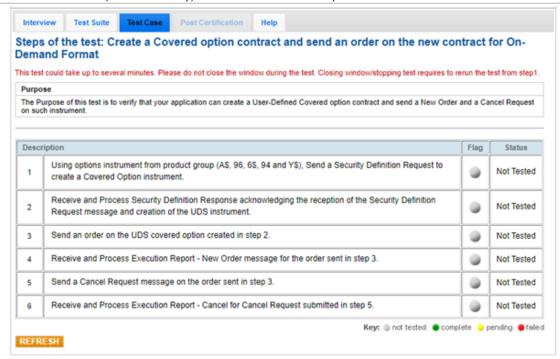
If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.



Referential information is included for messages sent / received during the test.

To run the covered option contract new order test:

- 1. Using options instrument from product group (A\$, 96, 6\$, 94 and Y\$), Send a <u>Security Definition Request</u> (35=c) to create a Covered Option (tag 762-SecuritySubType=COVERED) instrument.
- 2. Receive and Process <u>Security Definition Response</u> (35=d) acknowledging the reception of the Security Definition Request message and creation of the UDS instrument.
- 3. Send an order on the UDS covered option created in step 2.
- 4. Receive and Process Execution Report New Order (35=8, 39=0) message for the order sent in step 3.
- 5. Send a <u>Cancel Request</u> message on the order sent in step 3.
- 6. Receive and Process Execution Report Cancel (35=8, 39=4) for Cancel Request submitted in step 5. On-Demand format screen



Create a Combo option contract and send an order on the new contract for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that your application can create a User-Defined Combo option contract and send a New Order and a Cancel Request on such instrument.

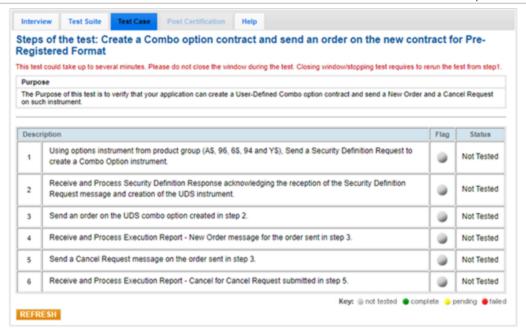


To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



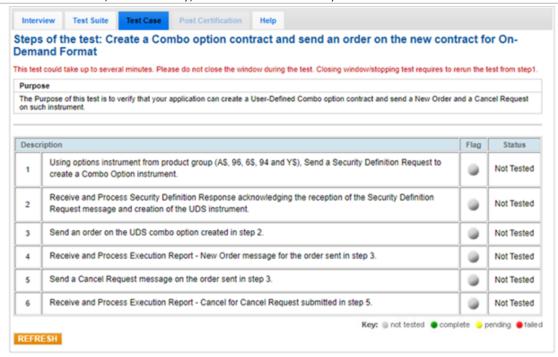
If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.



Referential information is included for messages sent / received during the test.

To run the Combo option contract new contract test:

- 1. Using options instrument from product group (A\$, 96, 6\$, 94 and Y\$), Send a <u>Security Definition Request</u> (35=c) to create a Combo Option (tag 762-SecuritySubType=COMBO) instrument.
- 2. Receive and Process <u>Security Definition Response</u> (35=d) acknowledging the reception of the Security Definition Request message and creation of the UDS instrument.
- 3. Send an order on the UDS combo option created in step 2.
- 4. Receive and Process Execution Report New Order (35=8, 39=0) message for the order sent in step 3.
- 5. Send a Cancel Request (35=F) message on the order sent in step 3.
- 6. Receive and Process Execution Report Cancel (35=8, 39=4) for Cancel Request submitted in step 5. On-Demand format screen



Process a Business-Level Reject message for Pre-Registered / On-Demand Format

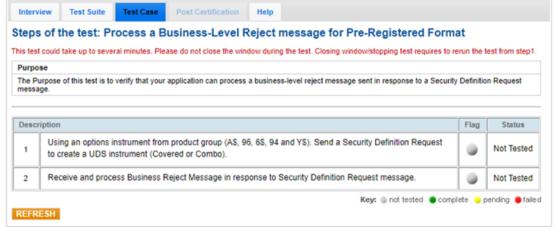
The Purpose of this test is to verify that your application can process a business-level reject message sent in response to a Security Definition Request message.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.





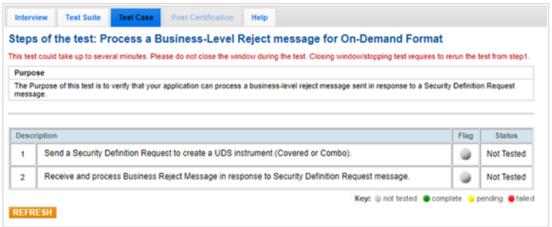
Referential information is included for messages sent / received during the test.



To run the Business-Level Reject test:

- 1. Using an options instrument from product group (A\$, 96, 6\$, 94 and Y\$). Send a Security Definition Request (35=c) to create a UDS instrument (tag 762-SecuritySubType=COVERED or COMBO or REPO).
- 2. Receive and process Business Reject Message (35=j) in response to Security Definition Request message.

On-Demand format screen



Process a Security Definition Reject in response to a Security Definition Request for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that your application can process a Security Definition Reject message.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



Note:

If a test is not proceeding to the next step, clicking the Refresh button (REFRESH) below the test steps may resolve

Referential information is included for messages sent / received during the test.

Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

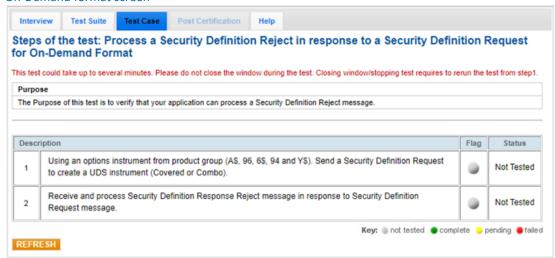


To run the Security Definition Reject in response to a Security Definition Request test:



- 1. Using an options instrument from product group (A\$, 96, 6\$, 94 and Y\$). Send a <u>Security Definition Request</u> (35=c) to create a UDS instrument (tag 762-SecuritySubType=COVERED *or* COMBO).
- 2. Receive and process <u>Security Definition Response</u> Reject [35=d (tag 323-SecurityResponseType=5)] message in response to Security Definition Request message.

On-Demand format screen



Send an order on an existing UDS for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that your application can submit a New Order message on an existing User-Defined Spread instrument.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.

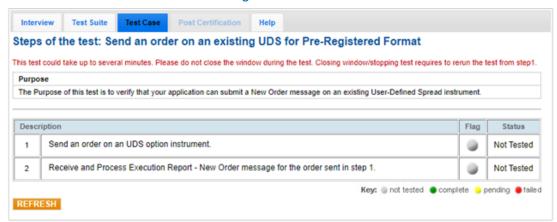


Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

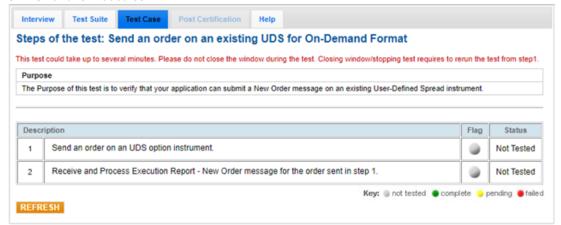
To run the Send an order on an existing UDS test:



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Send an order on a UDS option instrument [35=D (iLink 3 New Order)].
- 2. Receive and Process Execution Report New Order (35=8, 39=0) message for the order sent in step 1.

On-Demand format screen



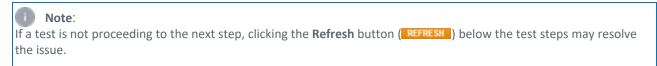
Create a recursive UDS contract and send an order on the new contract for Pre-Registered / On-Demand Format

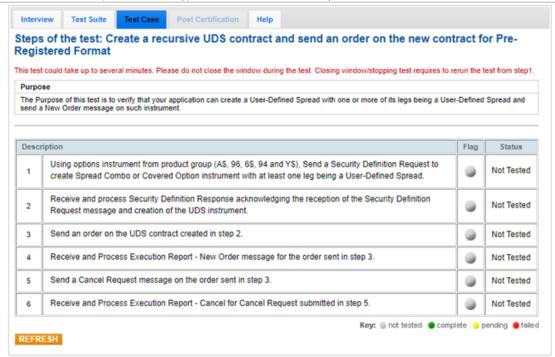
The Purpose of this test is to verify that your application can create a User-Defined Spread with one or more of its legs being a User-Defined Spread and send a New Order message on such instrument.



To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.





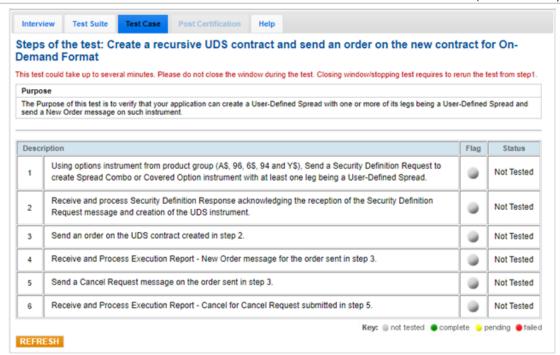
Referential information is included for messages sent / received during the test.



To run the recursive UDS contract and new contract order test:

- 1. Using options instrument from product group (A\$, 96, 6\$, 94 and Y\$), Send a <u>Security Definition Request</u> (35=c) to create Spread Combo or Covered Option (tag 762-SecuritySubType=COVERED *or* COMBO) instrument with at least one leg being a User-Defined Spread.
- 2. Receive and process <u>Security Definition Response</u> (35=d) acknowledging the reception of the Security Definition Request message and creation of the UDS instrument.
- 3. Send an order on the UDS contract [35=D(iLink 3 New Order)] created in step 2.
- 4. Receive and Process Execution Report New Order (35=8, 39=0) message for the order sent in step 3.
- 5. Send a Cancel Request (35=F) message on the order sent in step 3.
- 6. Receive and Process Execution Report Cancel for Cancel Request submitted in step 5.

On-Demand format screen



Mass Quote Submission for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit a Mass Quote and receive and process the Acknowledgement, Fill, Trade Correction, Trade Cancellation and Reject messages.



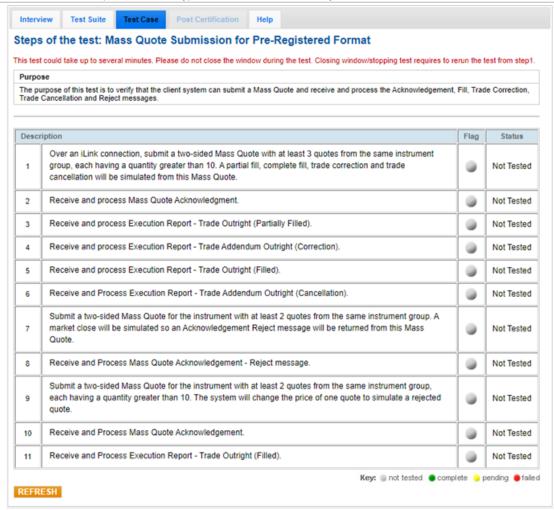
To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.



Referential information is included for messages sent / received during the test.

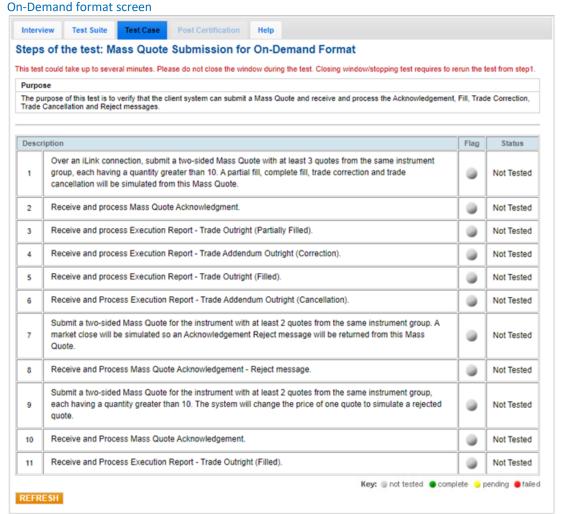


To run the Mass Quote Submission test:

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with at least 3 quotes from the same instrument group, each having a quantity (→134-BidSize, →135-OfferSize) greater than 10. The following will be simulated with this Mass Quote:
 - Partial fill (step 3)
 - Trade correction (stop 4)
 - Complete fill (step 5)
 - Trade cancellation (step 6)
- 2. Receive and process Mass Quote Acknowledgment (35=b, 297=0,5).
- 3. Receive and process Execution Report Trade Outright (35=8, 39=1,2). (Partially Filled).
- 4. Receive and process Execution Report Trade Addendum Outright (Correction).
- 5. Receive and process Execution Report Trade Outright (35=8, 39=1,2). (Filled).

- 6. Receive and Process Execution Report Trade Addendum Outright [35=8, 39=H,G (Cancellation)].
- 7. Submit a two-sided Mass Quote (35=i) for the instrument with at least 2 quotes from the same instrument group.

 A market close will be simulated so an Acknowledgement Reject message will be returned from this Mass Quote.
- 8. Receive and Process Mass Quote Acknowledgement Reject [35=b, 297=0,5 (tag 297-QuoteStatus=5)] message.
- 9. Submit a two-sided Mass Quote (35=i) for the instrument with at least 2 quotes from the same instrument group, each having a quantity (→134-BidSize, →135-OfferSize) greater than 10. The system will change the price of one quote to simulate a rejected quote.
- 10. Receive and Process Mass Quote Acknowledgement.
- 11. Receive and ProcessExecution Report Trade Outright (35=8, 39=1,2). (Filled).



Modify Quote Price and Quantity for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can modify the price and quantity for quote entries, including zero-out cancellation.



To select the test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.

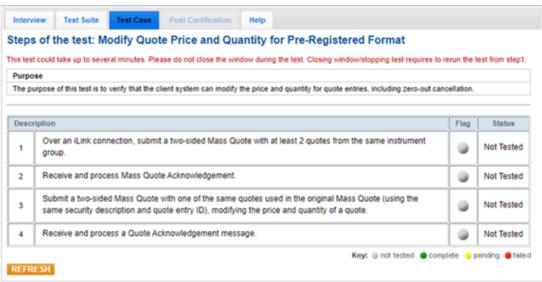
2. From the **Test Suite** tab, select the linked test.



If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

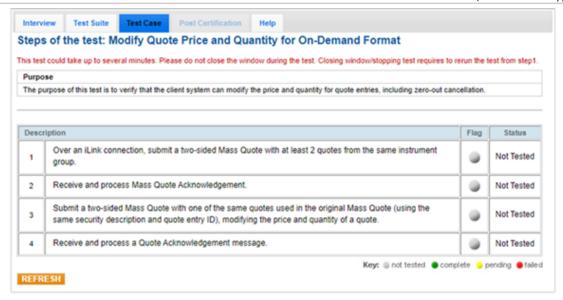
To run the Modify Quote Price and Quantity test:



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with at least 2 quotes from the same instrument group.
- 2. Receive and process Mass Quote Acknowledgment (35=b, 297=0,5).
- 3. Submit a two-sided Mass Quote (35=i) with one of the same quotes used in the original Mass Quote (using the same security description [(→309-UnderlyingSecurityID) and quote entry ID (→299-QuoteEntryID)], modifying the price (→132-BidPx / →133-OfferPx) and quantity (→134-BidSize /→135-OfferSize) of a quote.
- 4. Receive and process a Quote Acknowledgement (35=b, 297=0,5) message.

On-Demand format screen



Quote Cancellation Tests

The following instructions illustrate the process to run and complete tests for Quote Cancellation tests.



- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Quote Cancellation Instrument Level for Pre-Registered / On-Demand Format
 - Quote Cancellation Instrument Group Level for Pre-Registered / On-Demand Format
 - Quote Cancellation Quote Set ID Level for Pre-Registered / On-Demand Format
 - Quote Cancellation Cancel All Quotes for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.

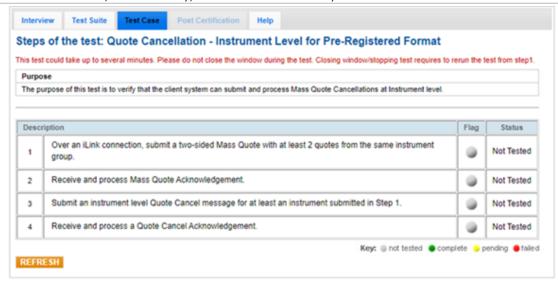


Referential information is included for messages sent / received during the test.

Quote Cancellation - Instrument Level for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit and process Mass Quote Cancellations at Instrument level.

To run the Quote Cancellation - Instrument Level test:



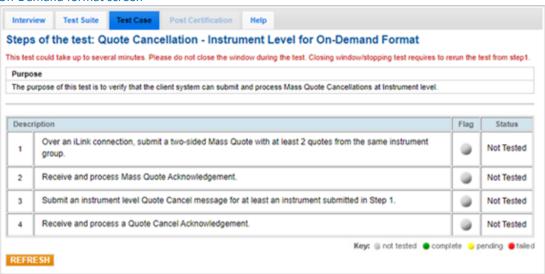
To run the Quote Cancellation - Instrument Level test:

Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with at least 2 quotes from the same instrument group.
- 2. Receive and process Mass Quote Acknowledgment (35=b, 297=0,5).
- 3. Submit an instrument level Quote Cancel (35=Z) message for at least an instrument (tag 298-QuoteCancelType=1, →48-SecurityID) submitted in Step 1.
- 4. Receive and process a Quote Cancel Acknowledgement (35=b, 297=1,3,4,100).

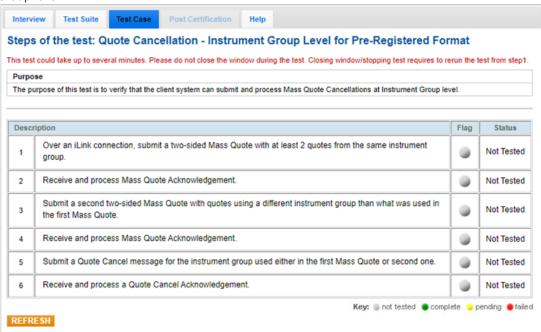
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Quote Cancellation - Instrument Group Level for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit and process Mass Quote Cancellations at Instrument Group level.



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

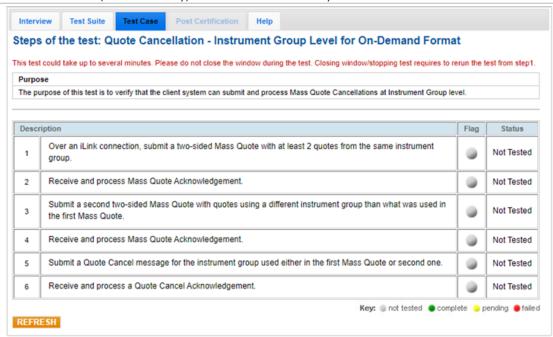


To run the Quote Cancellation - Instrument Group Level test:

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with at least 2 quotes from the same instrument group.
- 2. Receive and process Mass Quote Acknowledgment (35=b, 297=0,5).
- 3. Submit a second two-sided Mass Quote (35=i) with quotes using a different instrument group than what was used in the first Mass Quote.
- 4. Receive and processMass Quote Acknowledgment (35=b, 297=0,5).
- 5. Submit a Quote Cancel (35=Z) message for the instrument group used either in the first Mass Quote or second one.
- 6. Receive and process a Quote Cancel Acknowledgement (35=b, 297=1,3,4,100).

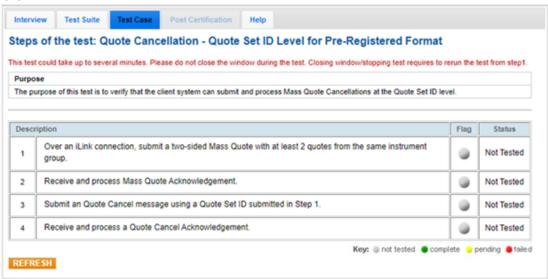
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On-Demand format screen



Quote Cancellation - Quote Set ID Level for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit and process Mass Quote Cancellations at the Quote Set ID level.



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.



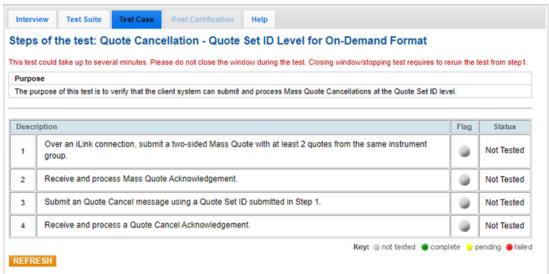
To run the Quote Cancellation - Quote Set ID Level test:

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with at least 2 quotes from the same instrument group.
- 2. Receive and process Mass Quote Acknowledgment (35=b, 297=0,5).

- 3. Submit an Quote Cancel (35=Z) message using a Quote Set ID submitted in Step 1.
- 4. Receive and process a Quote Cancel Acknowledgement (35=b, 297=1,3,4,100).

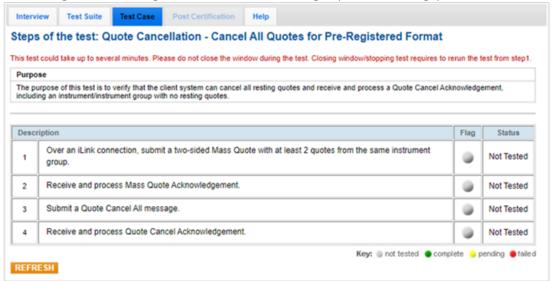
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Quote Cancellation - Cancel All Quotes for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can cancel all resting quotes and receive and process a Quote Cancel Acknowledgement, including an instrument / instrument group with no resting quotes.



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

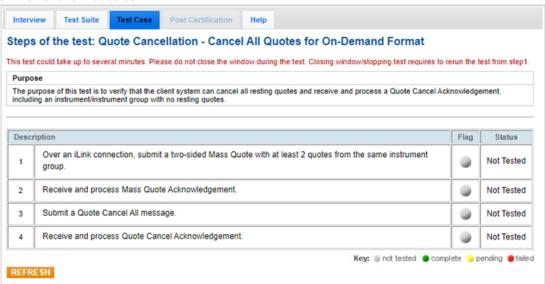
To run the Quote Cancellation - Cancel All Quotes test:

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with at least 2 quotes from the same instrument group.
- 2. Receive and process Mass Quote Acknowledgment (35=b, 297=0,5).

- 3. Submit a Quote Cancel (35=Z) message.
- 4. Receive and process Quote Cancel Acknowledgement (35=b, 297=1,3,4,100).

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Unsolicited Quote Cancellations for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can receive and process an unsolicited Quote Cancellations (disconnect, terminate, and GCC initiated).

Note: Due to the assisted hard-disconnection setup needed for repeatable conditions during certification, the port require a few seconds to prepare for a connection.

For the purposes of the certification tests, wait before attempting a connection after hard-disconnection.



To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.

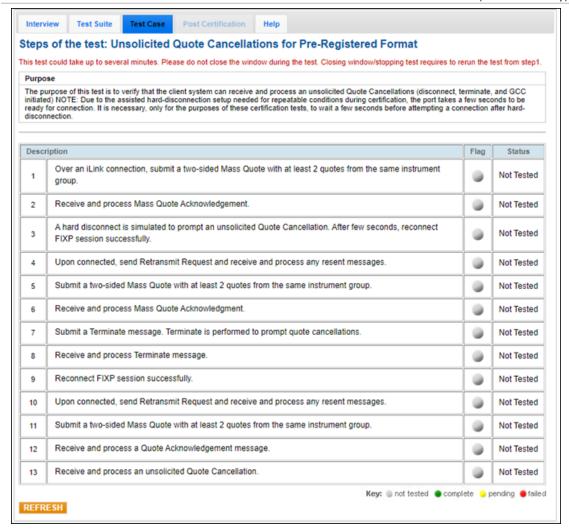


Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

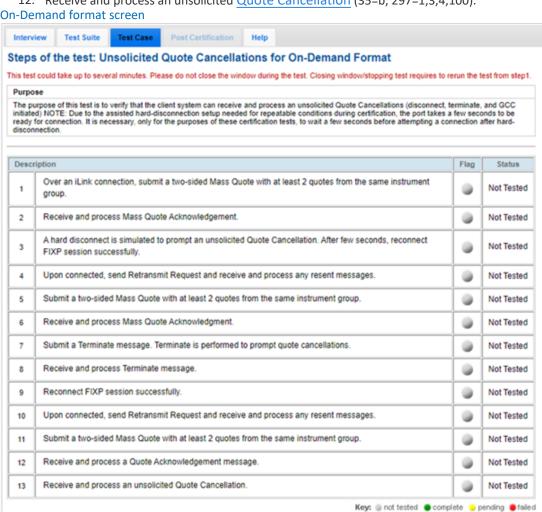
Referential information is included for messages sent / received during the test.

To run the Unsolicited Quote Cancellations test:



- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with at least 2 quotes from the same instrument group.
- 2. Receive and process Mass Quote Acknowledgment (35=b, 297=0,5).
 - A hard disconnect is simulated to prompt an unsolicited Quote Cancellation. After few seconds, reconnect FIXP session successfully.
- 3. Upon connected, send Retransmit Request and receive and process any resent messages.
- 4. Submit a two-sided Mass Quote (35=i) with at least 2 quotes from the same instrument group.
- 5. Receive and process Mass Quote Acknowledgment (35=b, 297=0,5).
- 6. Submit a Terminate message.
 - Terminate is performed to prompt quote cancellations.
- 7. Receive and process Terminate message.
- 8. Reconnect FIXP session successfully.
- 9. Upon connected, send Retransmit Request and receive and process any resent messages.

- 10. Submit a two-sided Mass Quote (35=i) with at least 2 quotes from the same instrument group.
- 11. Receive and process a Mass Quote Acknowledgment (35=b, 297=0,5) message.
- 12. Receive and process an unsolicited Quote Cancellation (35=b, 297=1,3,4,100).



Mass Quote Protection Tests

The following instructions illustrate the process to run and complete mass quote protection tests.



REFRESH

To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Mass Quote Protection for Pre-Registered On-Demand Format
- Click the START TEST button.

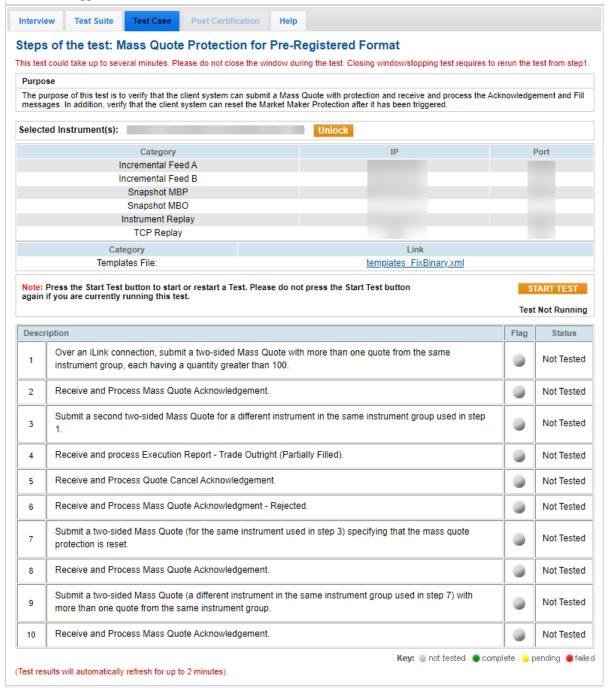


If a test is not proceeding to the next step, clicking the **Refresh** button (REFRESH) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

Mass Quote Protection for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit a Mass Quote with protection and receive and process the Acknowledgement and Fill messages. In addition, verify that the client system can reset the Market Maker Protection after it has been triggered.



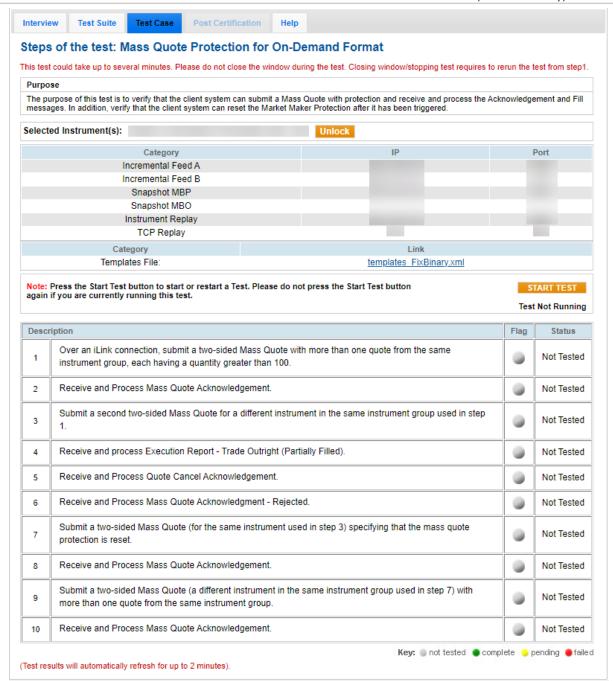
Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

To run the Mass Quote Protection test:

- 1. Over an iLink connection, submit a two-sided Mass Quote (35=i) with more than one quote from the same instrument group, each having a quantity greater than 100.
- 2. Receive and Process Mass Quote Acknowledgement (35=b, 297=0,5).
- 3. Submit a second two-sided Mass Quote (35=i) for a different instrument in the same instrument group used in step 1.
- 4. Receive and process Execution Report Trade Outright [Partially Filled (tag 39-OrdStatus=1)].
- 5. Receive and Process Quote Cancel Acknowledgement (35=b, 297=1,3,4,100).
- 6. Receive and Process Mass Quote Acknowledgement (35=b, 297=0,5) Rejected (tag 297-QuoteStatus=5).
- 7. Submit a two-sided Mass Quote (35=i) (for the same instrument used in step 3) specifying that the mass quote protection is reset.
- 8. Receive and Process Mass Quote Acknowledgement (35=b, 297=0,5).
- 9. Submit a two-sided Mass Quote (35=i) (a different instrument in the same instrument group used in step 7) with more than one quote from the same instrument group.
- 10. Receive and Process Mass Quote Acknowledgement (35=b, 297=0,5).

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Send a Mass Quote message on one or more UDS contracts

The Purpose of this test is to verify that your application can submit a Mass Quote message on a User-Defined Spread instrument.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.

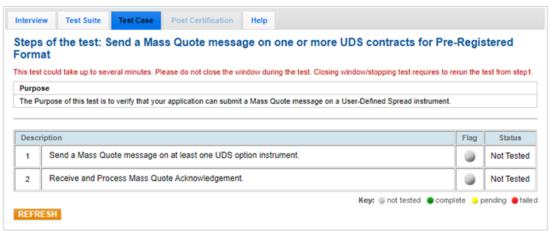


Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

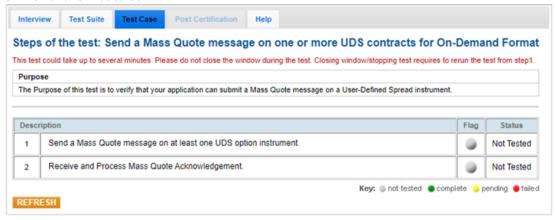
To run the mass quote test:



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test

- 1. Send a Mass Quote (35=i) message on at least one UDS option instrument.
- 2. Receive and Process Mass Quote Acknowledgement (35=b, 297=0,5).

On-Demand format screen



Request for Cross Message Tests

The following instructions illustrate the process to run and complete tests for Committed Cross.



To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Request for Cross Message (Equity) for Pre-Registered / On-Demand Format
 - Request for Cross Message (non-Equity) for Pre-Registered / On-Demand Format

3. Click the START TEST button.



If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

Request for Cross Message (Equity) for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit a Request for Cross Message, waiting for the proper RFC window, and process all Acknowledgments and Fills.

To run the Request for Cross Message (Equity) test:

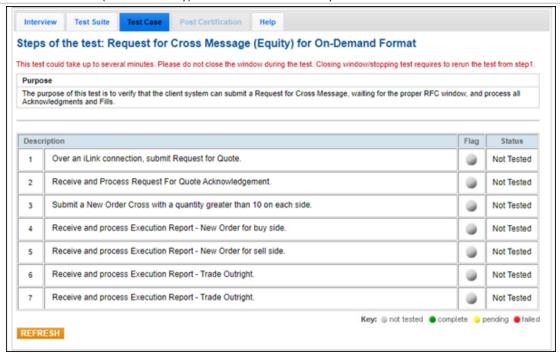


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit Request for Quote (35=R).
- 2. Receive and Process Quote Acknowledgement (35=b).
- 3. Submit a New Order Cross (35=s) with a quantity (→38-OrderQty) greater than 10 on each side.
- 4. Receive and process Execution Report New Order for buy (tag 54-Side=1) side.
- 5. Receive and process Execution Report New Order for sell (tag 54-Side=2) side.
- 6. Receive and process Execution Report Trade Outright.
- 7. Receive and processExecution Report Trade Outright.

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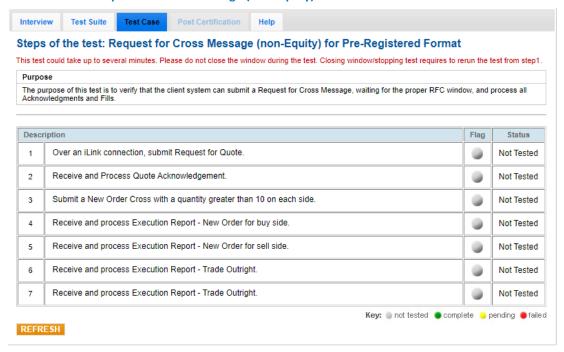
On-Demand format screen



Request for Cross Message (non-Equity) for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit a Request for Cross Message, waiting for the proper RFC window, and process all Acknowledgments and Fills.

To run the Request for Cross Message (non-Equity) test:

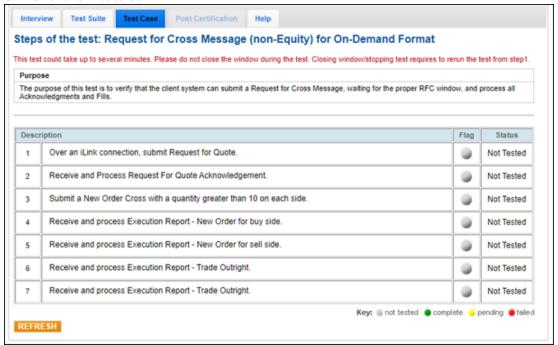


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit Request for Quote (35=R).
- 2. Receive and Process Quote Acknowledgement (35=b).
- 3. Submit a New Order Cross (35=s) with a quantity (→38-OrderQty) greater than 10 on each side.
- 4. Receive and process Execution Report New Order for buy (tag 54-Side=1) side.
- 5. Receive and process Execution Report New Order for sell (tag 54-Side=2) side.
- 6. Receive and process Execution Report Trade Outright.
- 7. Receive and process Execution Report Trade Outright.

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Request for Cross Rejection

The following instructions illustrate the process to run and complete tests for Cross Rejection.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



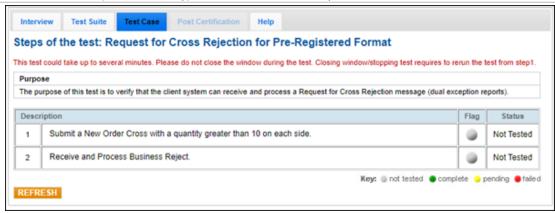
If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.



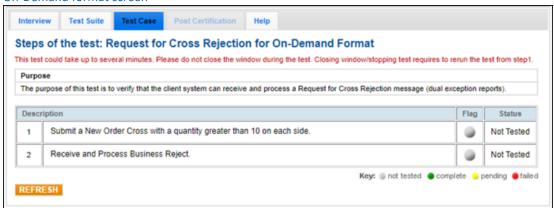
To run the Request for Cross Rejection test:

The purpose of this test is to verify that the client system can receive and process a Request for Cross Rejection message (dual exception reports).



- 1. Submit a New Order Cross with a quantity (→38-OrderQty) greater than 10 on each side.
- 2. Receive and Process Business Reject (35=j).

On-Demand format screen



Committed Cross

The following instructions illustrate the process to run and complete Committed Cross tests.



- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Committed Cross (C-Cross) order submission for Pre-Registered / On-Demand Format
 - Committed Cross (C-Cross) Rejection for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.

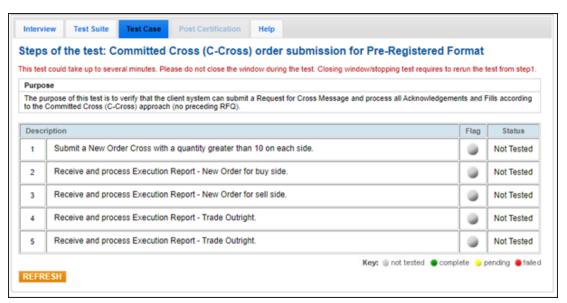


Referential information is included for messages sent / received during the test.

Committed Cross (C-Cross) order submission for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can submit a Request for Cross Message and process all Acknowledgements and Fills according to the Committed Cross (C-Cross) approach (no preceding RFQ).

To run the Committed Cross (C-Cross) Rejection for Pre-Registered / On-Demand Format test:

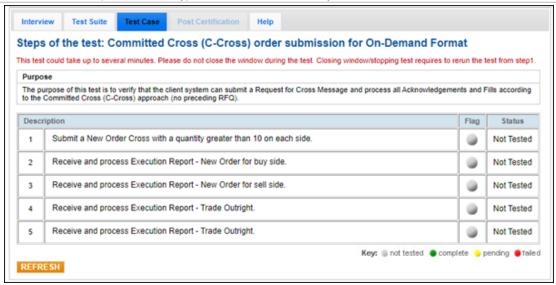


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Submit a New Order Cross (35=s) with a quantity (→38-OrderQty) greater than 10 on each side.
- 2. Receive and process Execution Report New Order (35=8, 39=0) for buy (tag 54-Side=1) side.
- 3. Receive and process Execution Report New Order (35=8, 39=0) for sell (tag 54-Side=2) side.
- 4. Receive and process Execution Report Trade Outright.
- 5. Receive and process Execution Report Trade Outright.

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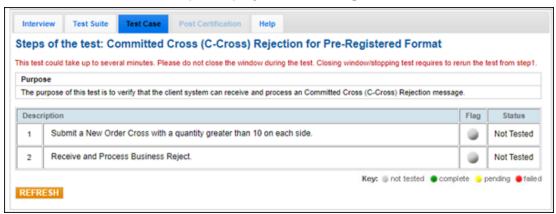
On-Demand format screen



Committed Cross (C-Cross) Rejection for Pre-Registered / On-Demand Format

The purpose of this test is to verify that the client system can receive and process an Committed Cross (C-Cross) Rejection message.

To run the Committed Cross (C-Cross) Rejection for Pre-Registered / On-Demand Format test:

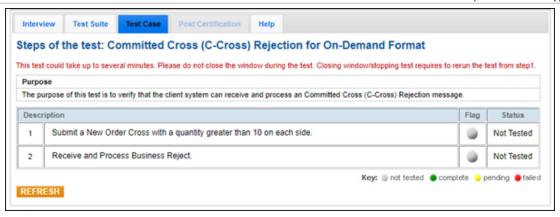


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Submit a New Order Cross (35=s) with a quantity (→38-OrderQty) greater than 10 on each side.
- 2. Receive and Process Business Reject (35=j).

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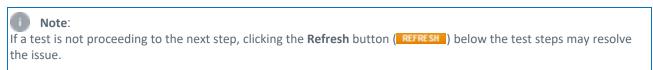


Cross Order Cancel for Pre-Registered / On-Demand Format

The following instructions illustrate the process to run and complete Cross Order Cancel tests.



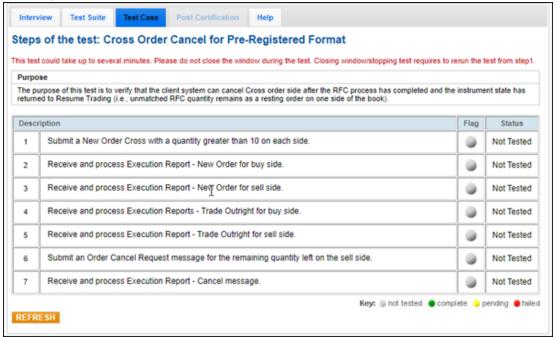
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



Referential information is included for messages sent / received during the test.

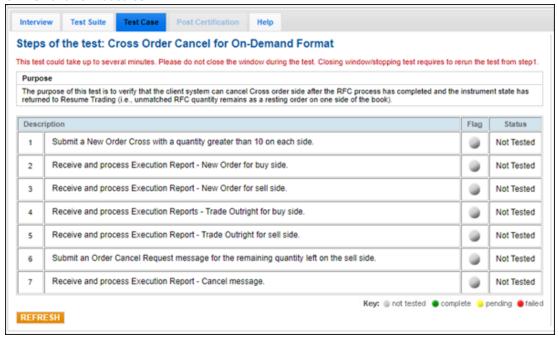
To run the Cross Order Cancel test:

The purpose of this test is to verify that the client system can cancel Cross order side after the RFC process has completed and the instrument state has returned to Resume Trading (i.e., unmatched RFC quantity remains as a resting order on one side of the book).



- 1. Submit a New Order Cross (35=s) with a quantity (→38-OrderQty) greater than 10 on each side.
- 2. Receive and process Execution Report New Order (35=8, 39=0) for buy (tag 54-Side=1) side.
- 3. Receive and process Execution Report New Order (35=8, 39=0) for sell (tag 54-Side=2) side.
- 4. Receive and process Execution Report Trade Outright for the buy (tag 54-Side=1) side.
- 5. Receive and process Execution Report Trade Outright for the sell (tag 54-Side=2) side.
- 6. Submit an Order Cancel Request (35=F) message for the remaining quantity left on the sell (tag 54-Side=2) side.
- 7. Receive and process Execution Report Cancel (35=8, 39=4) message.

On-Demand Format screen



iLink Order Mass Action Request

The following instructions illustrate the process to run and complete tests for iLink Order Mass Action Request.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - <u>iLink Order Mass Action Request by Market Segment ID for Pre-Registered / On-Demand Format</u>
 - iLink Order Mass Action Request by Instrument Group for Pre-Registered / On-Demand Format
 - iLink Order Mass Action Request by Instrument for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.



Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

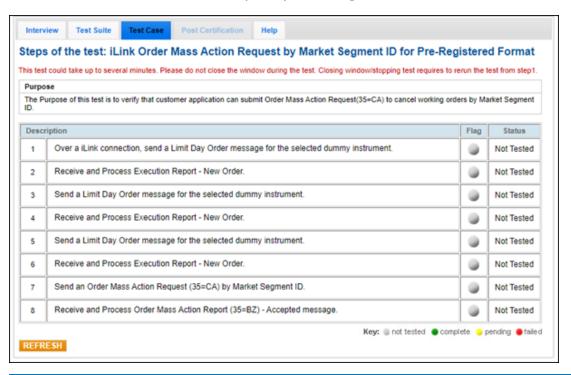
Referential information is included for messages sent / received during the test.

iLink Order Mass Action Request by Market Segment ID for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that customer application can submit Order Mass Action Request(35=CA) to cancel working orders by Market Segment ID.



To run the Link Order Mass Action Request by Market Segment ID test:

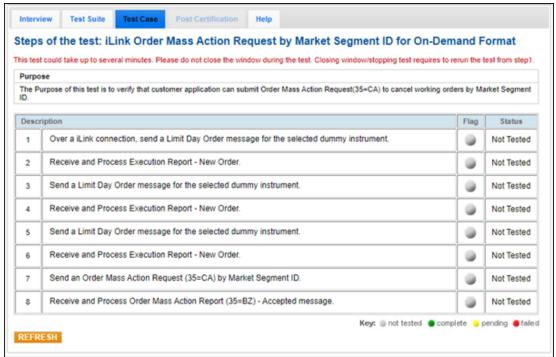


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over a iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for the selected dummy instrument.
- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for the selected dummy instrument.
- 4. Receive and Process Execution Report New Order (35=8, 39=0).
- 5. Send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for the selected dummy instrument.
- 6. Receive and Process Execution Report New Order (35=8, 39=0).
- 7. Send an Order Mass Action Request (35=CA) by Market Segment ID (tag 1374-MassActionScope=9).
- 8. Receive and Process Order Mass Action Report (35=BZ) Accepted (tag 1375-MassActionResponse=1) message.

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iLink Order Mass Action Request by Instrument Group for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that customer application can submit Order Mass Action Request(35=CA) to cancel working orders by Instrument Group.



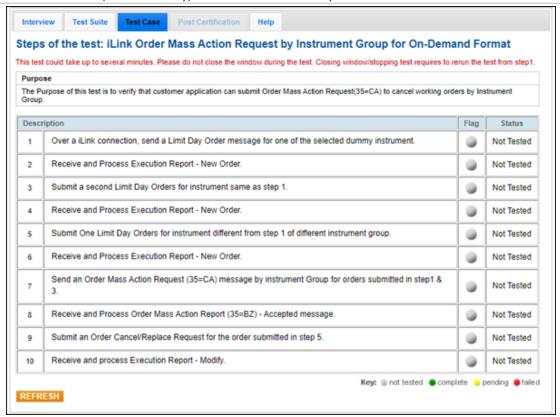
To run the iLink Order Mass Action Request by Instrument Group test:



- 1. Over a iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for one of the selected dummy instrument.
- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Submit a second Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for instrument same as step 1.
- 4. Receive and Process Execution Report New Order (35=8, 39=0).
- 5. Submit One Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for a different instrument than step 1.
- 6. Receive and Process Execution Report New Order (35=8, 39=0).
- 7. Send an Order Mass Action Request (35=CA) message by instrument Group for orders submitted in step 1 & 3.
- 8. Receive and Process Order Mass Action Report (35=BZ) Accepted (tag 1375-MassActionResponse=1) message.
- 9. Submit an Order Cancel/Replace Request for the order submitted in step 5.
- 10. Receive and process Execution Report Modify (35=8, 39=5).

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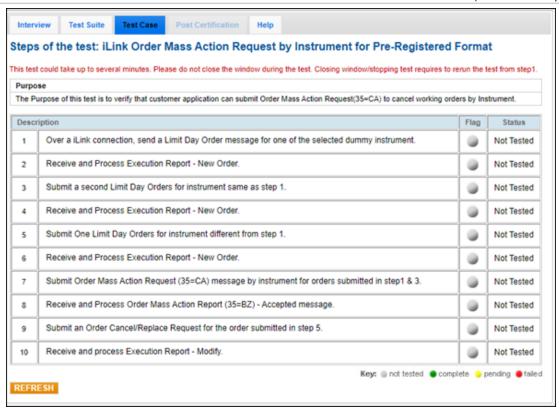


iLink Order Mass Action Request by Instrument for Pre-Registered / On-**Demand Format**

The Purpose of this test is to verify that customer application can submit Order Mass Action Request(35=CA) to cancel working orders by Instrument.



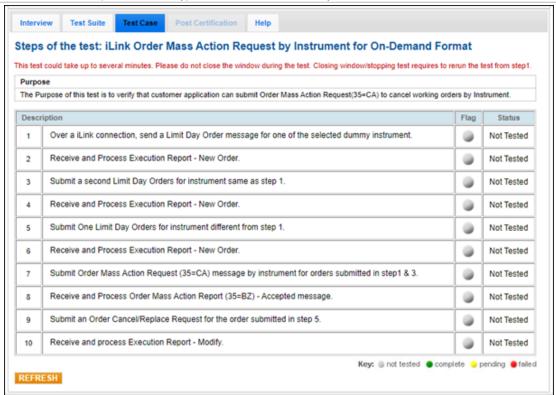
To run the iLink Order Mass Action Request by Instrument test:



- 1. Over a iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for one of the selected dummy instrument.
- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Submit a second Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for instrument same as step 1.
- 4. Receive and Process Execution Report New Order (35=8, 39=0).
- 5. Submit One Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for a different instrument from step 1.
- 6. Receive and Process Execution Report New Order (35=8, 39=0).
- 7. Submit Order Mass Action Request (35=CA) message by instrument for orders submitted in step 1 & 3.
- 8. Receive and Process Order Mass Action Report (35=BZ) Accepted (tag 1375-MassActionResponse=1) message.
- 9. Submit an Order Cancel/Replace Request for the order submitted in step 5.
- 10. Receive and process Execution Report Modify (35=8, 39=5).

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On-Demand Format screen



iLink Order Status Request for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that customer application can submit Order Status Request (35=H) and receive Execution Report - Status (35=8, 150=I) when obtaining status for the order.



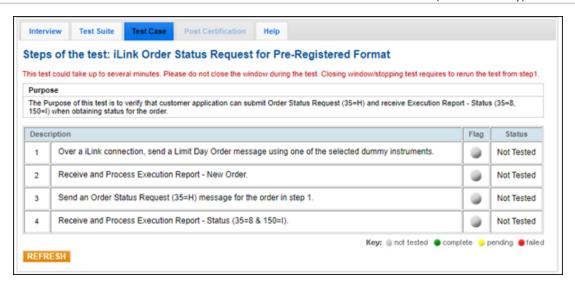
To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

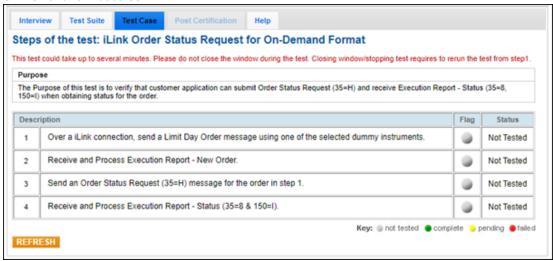


To run the iLink Order Status Request test:

Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over a iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message using one of the selected dummy instruments.
- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Send an Order Status Request (35=H) message for the order in step 1.
- 4. Receive and Process Execution Report Status (35=8 & 150=I).

On-Demand format screen



iLink Order Mass Status Request for all working orders

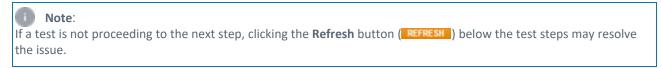
The following instructions illustrate the process to run and complete tests for iLink Order Mass Status Request for all working orders.



To select the test:

1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.

- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - <u>iLink Order Mass Status Request for all working orders for an instrument group for Pre-Registered /</u>
 On-Demand Format
 - <u>iLink Order Mass Status Request for all working orders for an instrument for Pre-Registered / On-</u> Demand Format
 - iLink Order Mass Status Request for all working orders for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.

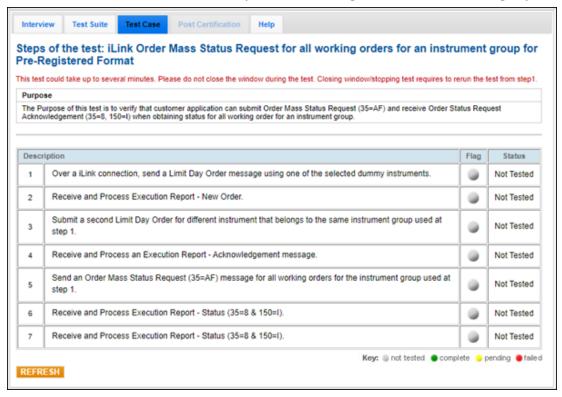


Referential information is included for messages sent / received during the test.

iLink Order Mass Status Request for all working orders for an instrument group for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that customer application can submit Order Mass Status Request (35=AF) and receive Order Status Request Acknowledgement (35=8, 150=I) when obtaining status for all working order for an instrument group.

To run the iLink Order Mass Status Request for all working orders for an instrument group test:



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

1. Over a iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message using one of the selected dummy instruments.

- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Submit a second <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for different instrument that belongs to the same instrument group used at step 1.
- 4. Receive and Process an Execution Report Acknowledgement (35=8) message.
- 5. Send an Order Mass Status Request (35=AF) message for all working orders for the instrument group used at step 1.
- 6. Receive and Process Execution Report Status (35=8 & 150=I).
- 7. Receive and Process Execution Report Status (35=8 & 150=I).

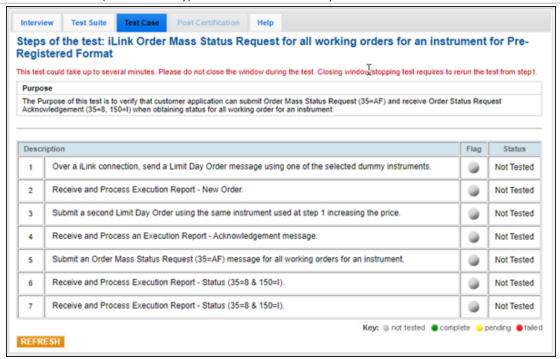
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iLink Order Mass Status Request for all working orders for an instrument for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that customer application can submit Order Mass Status Request (35=AF) and receive Order Status Request Acknowledgement (35=8, 150=I) when obtaining status for all working order for an instrument.

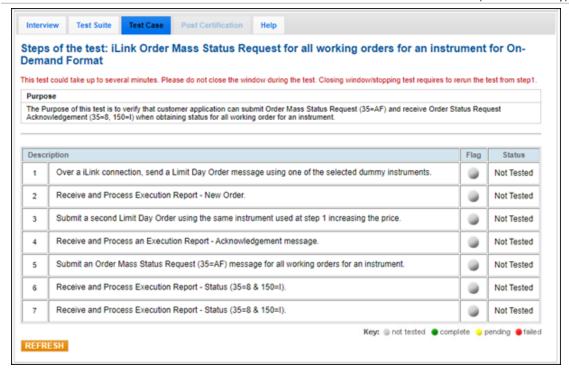
To run the iLink Order Mass Status Request for all working orders for an instrument test:



- 1. Over a iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message using one of the selected dummy instruments.
- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Submit a second <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] using the same instrument used at step 1 increasing the price.
- 4. Receive and Process an Execution Report Acknowledgement (35=8, 39=0) message.
- 5. Submit an Order Mass Status Request (35=AF) message for all working orders for an instrument.
- 6. Receive and Process Execution Report Status (35=8 & 150=I).
- 7. Receive and Process Execution Report Status (35=8 & 150=I).

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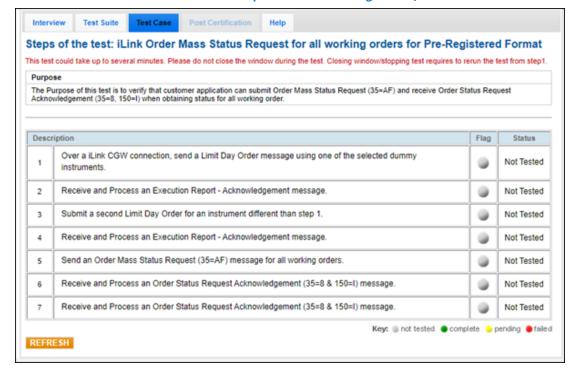
On-Demand format screen



iLink Order Mass Status Request for all working orders for Pre-Registered / On-Demand Format

The Purpose of this test is to verify that customer application can submit Order Mass Status Request (35=AF) and receive Order Status Request Acknowledgement (35=8, 150=I) when obtaining status for all working order.

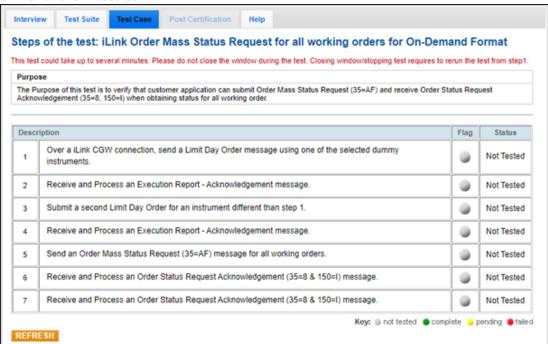
To run the iLink Order Mass Status Request Test for Pre-Registered / On-Demand format:



- 1. Over a iLink CGW connection, send a Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message using one of the selected dummy instruments.
- 2. Receive and Process an Execution Report Acknowledgement (35=8, 39=0) message.
- 3. Submit a second Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for an instrument different than step 1.
- 4. Receive and Process an Execution Report Acknowledgement (35=8, 39=0) message.
- 5. Send an Order Mass Status Request (35=AF) message for all working orders.
- 6. Receive and Process an Order Status Request Acknowledgement (35=8 & 150=I) message.
- 7. Receive and Process an Order Status Request Acknowledgement (35=8 & 150=I) message.

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On-Demand format screen



Support MOSR functionality for a particular market segment tests

The purpose of this test is to verify that client system customer application can submit Order Mass Status Request (35=AF) and receive Order Status Request Acknowledgement (35=8, 150=I) when obtaining status for all working order for a specific market segment.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab. select the linked test.

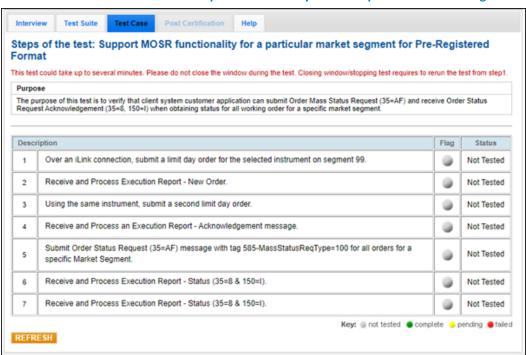


Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

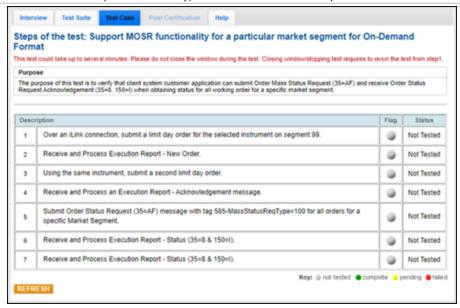
To run the Mass Order Status Request functionality test for a particular market segment test:



Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an iLink connection, submit a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for the selected instrument on segment 99.
- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Using the same instrument, submit a second Limit Day Order (35=D).
- 4. Receive and Process an Execution Report Acknowledgement (35=8, 39=0) message.
- 5. Submit Order Mass Status Request (35=AF) message with tag 585-MassStatusReqType=100 for all orders for a specific Market Segment.
- 6. Receive and Process Execution Report Status (35=8 & 150=I).
- 7. Receive and Process Execution Report Status (35=8 & 150=I).

On-Demand format screen



Quote Request Test

The purpose of this test is to verify that the client system can submit a Quote Request and receive and process the Quote Acknowledgement and RFQ Market Data message.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the Test Suite tab, select the linked test.



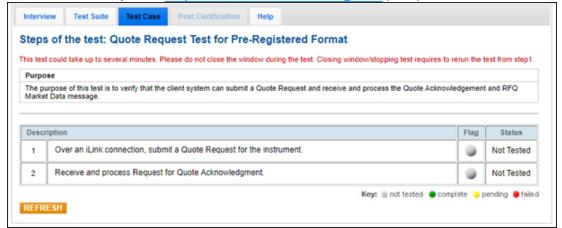
If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

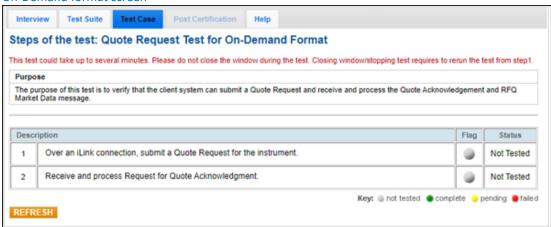


To run the Quote Request Test:

- 1. Over an iLink connection, submit a Quote Request (35=R) for the instrument.
- 2. Receive and process Request for Quote Acknowledgment (35=b).



On-Demand format screen



Pre-registration of administrative information in Service Gateway for Pre-Registered Format

The purpose of this test is to verify the client system can properly connect to Order Entry Service Gateway (OESGW) for submitting both Party Details Definition Request messages and Party Details List Request messages and submit an order with the pre-registered administrative information. Please note for this test the session sequence numbers will be reset to one.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



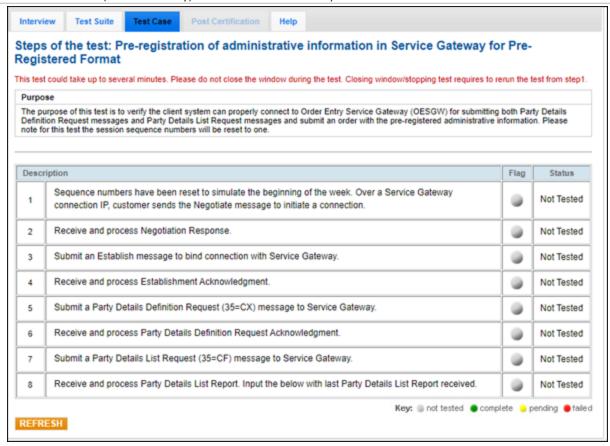
Note:

If a test is not proceeding to the next step, clicking the Refresh button (REFRESH) below the test steps may resolve

Referential information is included for messages sent / received during the test.



To run the Pre-registration of administrative information in Service Gateway test:



Sequence numbers have been reset to simulate the beginning of the week.

- 1. Over a Service Gateway connection IP, send a Negotiate message to initiate a connection.
- 2. Receive and process Negotiation Response.
- 3. Submit an Establish message to bind connection with Service Gateway.
- 4. Receive and process Establishment Acknowledgment.
- 5. Submit a Party Details Definition Request (35=CX) message to Service Gateway.
- 6. Receive and process Party Details Definition Request Acknowledgment (35=CY).
- 7. Submit a Party Details List Request (35=CF) message to Service Gateway.
- 8. Receive and process Party Details List Report (35=CG). Input the below with last Party Details List Report received.

Cancel on Behalf (COB) using Order Cancel Request

The following instructions illustrate the process to run and complete Cancel on Behalf (COB) using Order Cancel Request tests.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select the linked test.



Note:

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.



To run the Cancel on Behalf (COB) using Order Cancel Request for Pre-Registered / On-Demand Format:

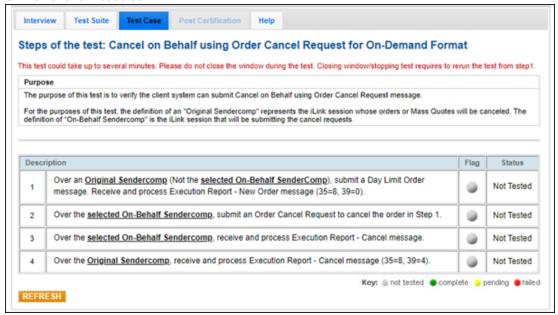
The purpose of this test is to verify the client system can submit Cancel on Behalf using Order Cancel Request message.

For the purposes of this test, the definition of an "Original Sendercomp" represents the iLink session whose orders or Mass Quotes will be canceled. The definition of "On-Behalf Sendercomp" is the iLink session that will be submitting the cancel requests.



- 1. Over an Original Sendercomp (Not the selected On-Behalf SenderComp), submit a <u>Day Limit Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message.
 - Receive and process Execution Report New Order (35=8, 39=0) message.
- 2. Over the selected On-Behalf Sendercomp, submit an Order Cancel Request (35=F) to cancel the order in Step 1.
- 3. Over the selected On-Behalf Sendercomp, receive and process Execution Report Cancel (35=8, 39=4) message.
- 4. Over the Original Sendercomp, receive and process Execution Report Cancel message (35=8, 39=4).

On-Demand format screen



Cancel on Behalf (COB) using Order Mass Action Request

The following instructions illustrate the process to run and complete tests for Cancel on Behalf (COB) using Order Mass Action Request.



To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Cancel on Behalf using Order Mass Action Request by Market Segment ID for Pre-Registered / On-Demand Format
 - <u>Cancel on Behalf using Order Mass Action Request by Instrument Group for Pre-Registered / On-</u> Demand Format
 - Cancel on Behalf using Order Mass Action Request by Instrument for Pre-Registered / On-Demand Format
- 3. Click the **START TEST** button.

Note:DO NOT select the START TEST button once the test is in progress.

If a test is not proceeding to the next step, clicking the Refresh button (REFRESH) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

COB using Order Mass Action Request by Market Segment ID

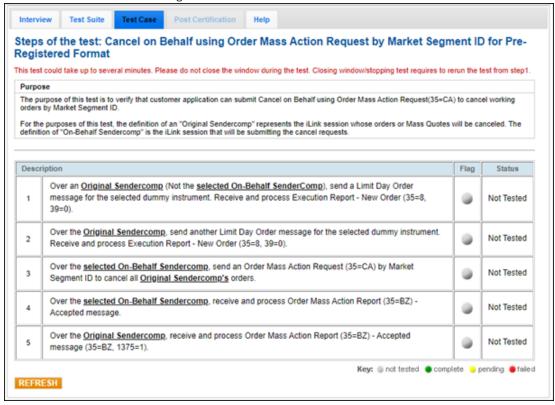
The purpose of this test is to verify that customer application can submit Cancel on Behalf using Order Mass Action Request (35=CA) to cancel working orders by Market Segment ID.

For the purposes of this test, the definition of an "Original Sendercomp" represents the iLink session whose orders or Mass Quotes will be canceled. The definition of "On-Behalf Sendercomp" is the iLink session that will be submitting the cancel requests.



To run the COB using Order Mass Action Request by Market Segment ID test:

This test is used for both Pre-Registered and On-Demand formats. The below instructions show the Pre-Registered format.



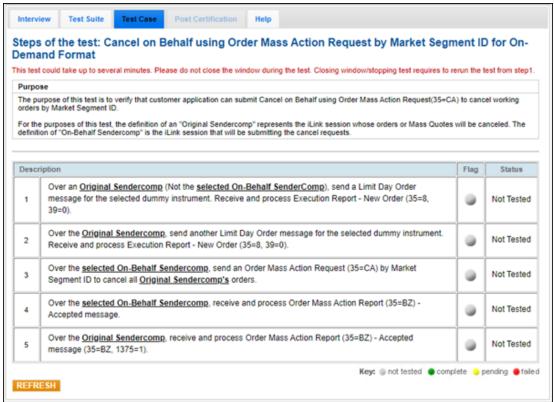
Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an Original Sendercomp (Not the selected On-Behalf SenderComp), send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for the selected dummy instrument.
- 2. Receive and process Execution Report New Order (35=8, 39=0).
- 3. Over the Original Sendercomp, send another <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for the selected dummy instrument. Receive and process Execution Report New Order (35=8, 39=0).

- Over the selected On-Behalf Sendercomp, send an Order Mass Action Request (35=CA) by Market Segment ID (tag 1374-MassActionScope) to cancel (tag 1373-MassActionType) all Original Sendercomp's (tag 9937-OrigOrderUser) orders.
- 5. Over the selected On-Behalf Sendercomp, receive and process Order Mass Action Report (35=BZ) Accepted (tag 1375-MassActionResponse=1) message.
- 6. Over the Original Sendercomp, receive and process Order Mass Action Report (35=BZ) Accepted (tag 1375-MassActionResponse=1) message.

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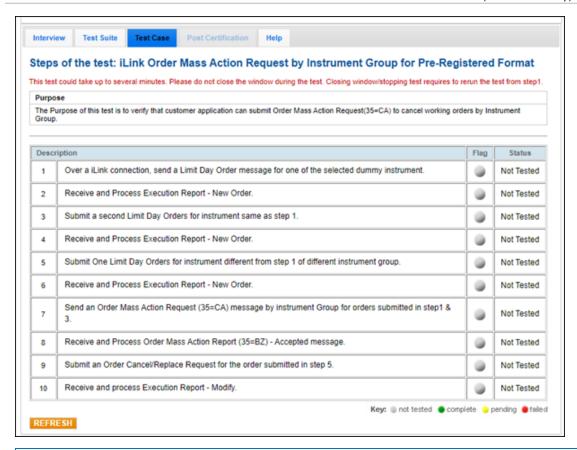
On-Demand Format screen



COB using Order Mass Action Request by Instrument Group

The Purpose of this test is to verify that customer application can submit Order Mass Action Request(35=CA) to cancel working orders by Instrument Group.

This test is used for both Pre-Registered and On-Demand formats. The below instructions show the Pre-Registered format.



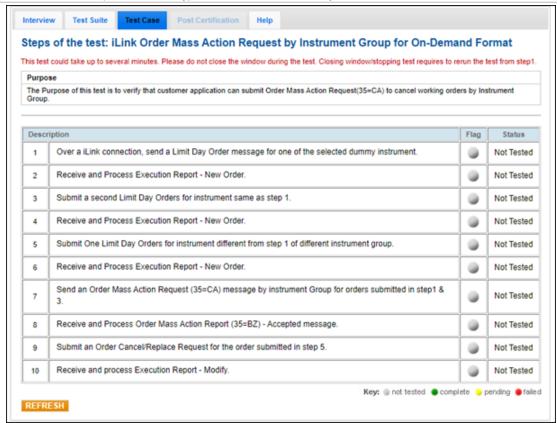


To run the COB using Order Mass Action Request by Instrument Group test:

- 1. Over a iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for one of the selected dummy instrument.
- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Submit a second Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for instrument same as step 1.
- 4. Receive and Process Execution Report New Order (35=8, 39=0).
- 5. Submit One <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for instrument different from step 1 of different instrument group.
- 6. Receive and Process Execution Report New Order (35=8, 39=0).
- 7. Send an Order Mass Action Request (35=CA) message by instrument Group for orders submitted in step 1 & 3.
- 8. Receive and Process Order Mass Action Report (35=BZ) Accepted (tag 1375-MassActionResponse=1) message.
- 9. Submit an Order Cancel/Replace Request for the order submitted in step 5.
- 10. Receive and process Execution Report Modify.

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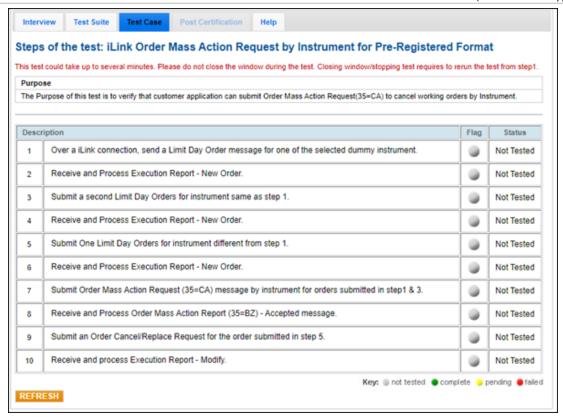
COB using Order Mass Action Request by Instrument

The Purpose of this test is to verify that customer application can submit Order Mass Action Request(35=CA) to cancel working orders by Instrument.



To run the COB using Order Mass Action Request by Instrument test:

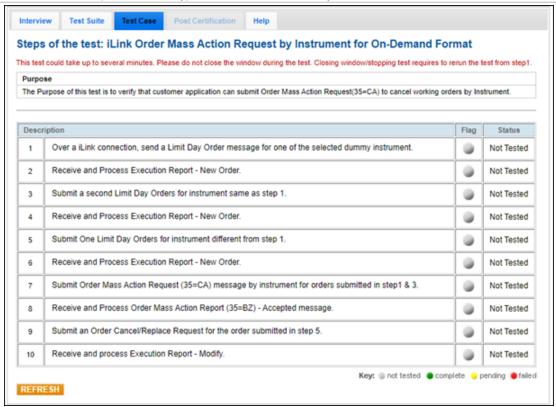
This test is used for both Pre-Registered and On-Demand formats. The below instructions show the Pre-Registered format.



- 1. Over a iLink connection, send a <u>Limit Day Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message for one of the selected dummy instrument.
- 2. Receive and Process Execution Report New Order (35=8, 39=0).
- 3. Submit a second Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for instrument same as step 1.
- 4. Receive and Process Execution Report New Order (35=8, 39=0).
- 5. Submit One Limit Day Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] for instrument different from step 1.
- 6. Receive and Process Execution Report New Order (35=8, 39=0).
- 7. Submit Order Mass Action Request (35=CA) message by instrument for orders submitted in step 1 & 3.
- 8. Receive and Process Order Mass Action Report (35=BZ) Accepted (tag 1375-MassActionResponse=1) message.
- 9. Submit an Order Cancel/Replace Request for the order submitted in step 5.
- 10. Receive and process Execution Report Modify.

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On-Demand format screen



Cancel on Behalf using Quote Cancellation

The following instructions illustrate the process to run and complete tests for Cancel on Behalf (COB) using Quote Cancellation.



To select the test:

- 1. Select a SenderComp from the drop-down and select ASSIGN if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Cancel on Behalf by Quote Cancellation by Cancel All Quotes without Mass Quote Block for Pre-Registered / On-Demand Format
 - Cancel on Behalf by Quote Cancellation by Cancel All Quotes with Mass Quote Block for Pre-Registered / On-Demand Format
 - Cancel on Behalf by Quote Cancellation by Cancel All Quotes with Mass Quote Unblock for Pre-Registered / On-Demand Format
- Click the START TEST button.

Note: DO NOT select the START TEST button once the test is in progress. If a test is not proceeding to the next step, clicking the **Refresh** button (REFRESH) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.

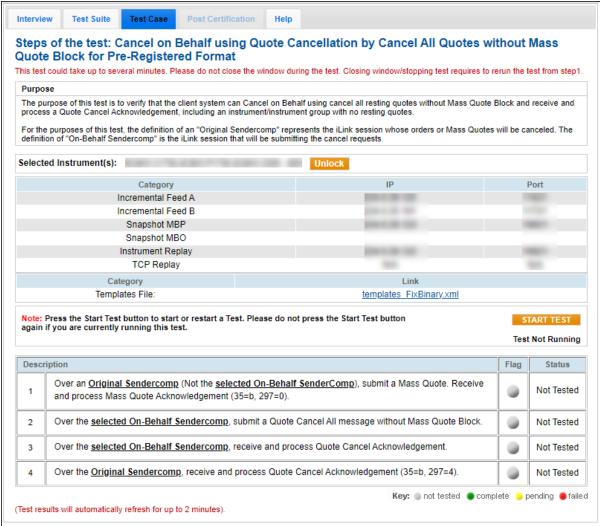
COB using Quote Cancellation by Cancel All Quotes without Mass Quote Block for Pre-Registered / On-Demand Format test



To run the Instrument Level without Mass Quote Block for Pre-Registered / On-Demand Format test:

The purpose of this test is to verify that the client system can Cancel on Behalf using cancel all resting quotes without Mass Quote Block and receive and process a Quote Cancel Acknowledgement, including an instrument/instrument group with no resting quotes.

For the purposes of this test, the definition of an "Original Sendercomp" represents the iLink session whose orders or Mass Quotes will be canceled. The definition of "On-Behalf Sendercomp" is the iLink session that will be submitting the cancel requests.

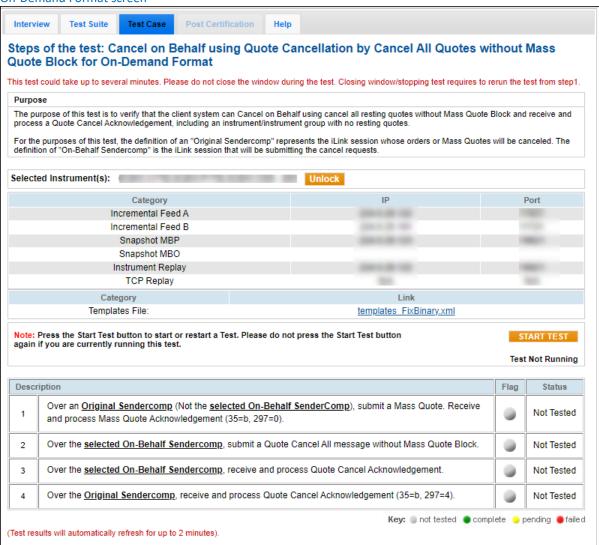


Note: This test is used for both Pre-Registered and On-Demand formats. The above image shows the Pre-Registered version of the test.

- 1. Over an Original Sendercomp (Not the selected On-Behalf SenderComp), submit a Mass Quote (35=i).
- 2. Receive and process Mass Quote Acknowledgement (35=b, 297=0).
- 3. Over the selected On-Behalf (tag 9937-OrigOrderUser) Sendercomp, submit an instrument level <u>Quote Cancel</u> (35=Z) message without *Mass Quote Block* for the Mass Quote submitted in Step 1.
- 4. Over the selected On-Behalf (tag 2807-CancelText) Sendercomp, receive and process a <u>Quote Cancel Acknowledgement</u> (35=b, 297=1,3,4,100).
- 5. Over the Original (tag 9937-OrigOrderUser) Sendercomp, receive and process a Quote Cancel Acknowledgement (35=b, 297=1).

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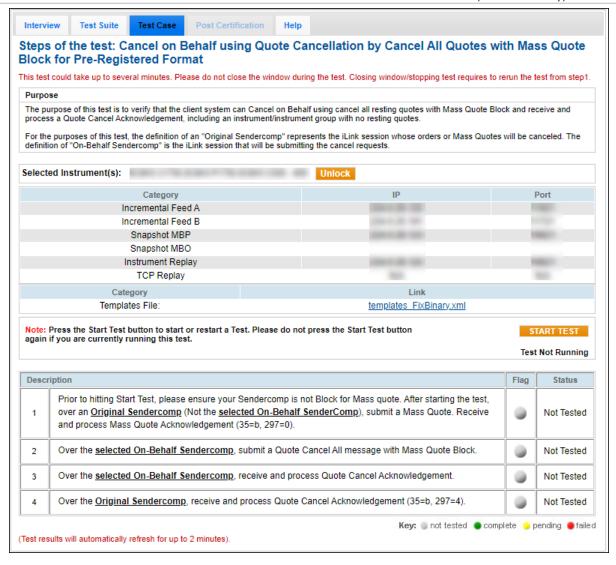
COB using Quote Cancellation by Cancel All Quotes with Mass Quote Block for Pre-Registered / On-Demand Format test



To run the Cancel All Quotes with Mass Quote Block for Pre-Registered / On-Demand Format test:

The purpose of this test is to verify that the client system can Cancel on Behalf using cancel all resting quotes with Mass Quote Block and receive and process a Quote Cancel Acknowledgement, including an instrument/instrument group with no resting quotes.

For the purposes of this test, the definition of an "Original Sendercomp" represents the iLink session whose orders or Mass Quotes will be canceled. The definition of "On-Behalf Sendercomp" is the iLink session that will be submitting the cancel requests.

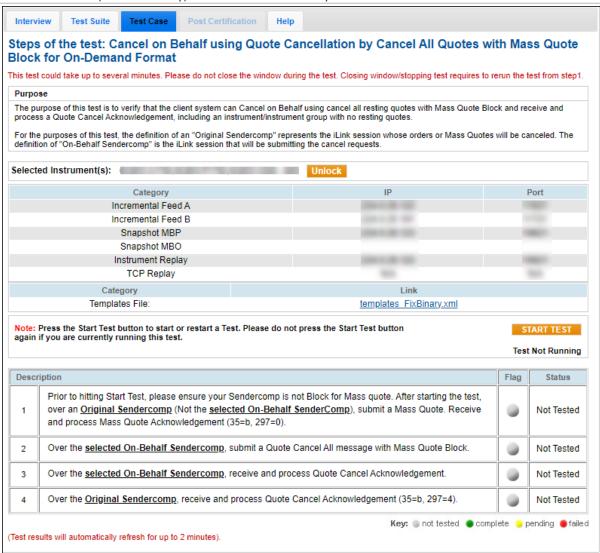


Prior to selecting Start Test, ensure your Sendercomp is not configured to *Block for Mass quote*.

- 1. After starting the test, over an Original Sendercomp (Not the selected On-Behalf SenderComp), submit a Mass Quote (35=i).
- 2. Receive and process Mass Quote Acknowledgement (35=b, 297=0).
- 3. Over the selected On-Behalf Sendercomp, submit a <u>Quote Cancel</u> (35=Z) All (tag 298-QuoteCancelType=4) message with <u>Mass Quote Block</u>.
- 4. Over the selected On-Behalf Sendercomp (tag 2807-CancelText), receive and process Quote Cancel Acknowledgement [35=b (tag 297=1,3,4,100)].
- 5. Over the Original Sendercomp (tag 9937-OrigOrderUser), receive and process Quote Cancel Acknowledgement [35=b (tag 297=4)].

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COB using Quote Cancellation by Cancel All Quotes with Mass Quote Unblock for Pre-Registered / On-Demand Format test



To run the Cancel All Quotes with Mass Quote Unblock for Pre-Registered / On-Demand Format test:

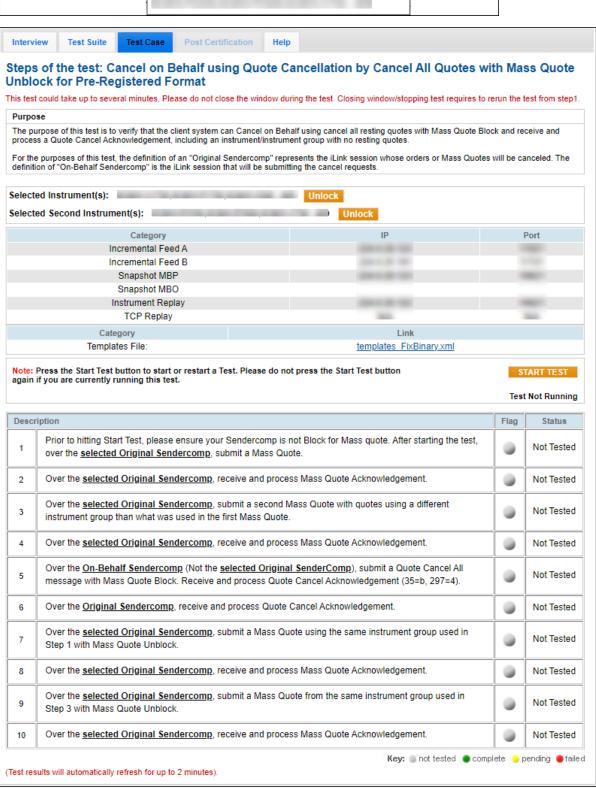
The purpose of this test is to verify that the client system can Cancel on Behalf using cancel all resting quotes with Mass Quote Block and receive and process a Quote Cancel Acknowledgement, including an instrument / instrument group with no resting quotes.

For the purposes of this test, the definition of an "Original Sendercomp" represents the iLink session whose orders or Mass Quotes will be canceled. The definition of "On-Behalf Sendercomp" is the iLink session that will be submitting the cancel requests.

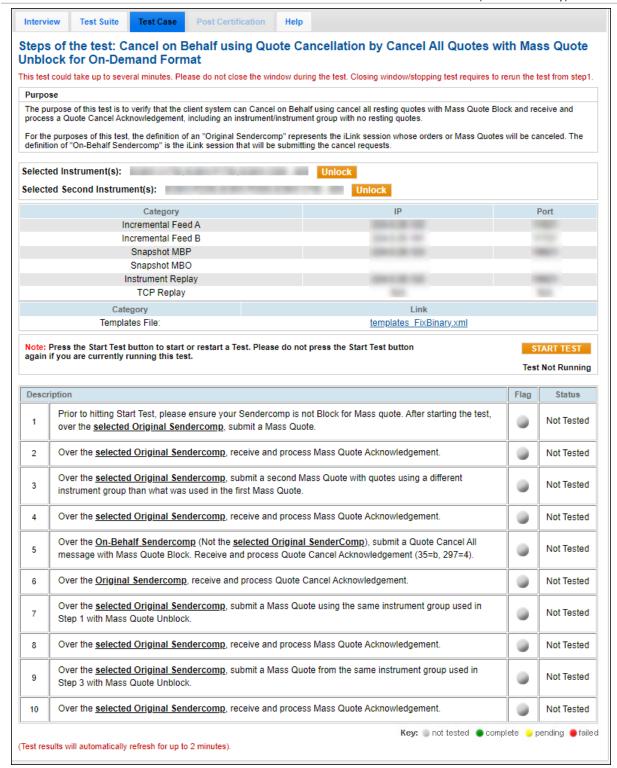
Prior to selecting **Start Test**, ensure your Sendercomp is not configured to *Block for Mass quote*.

Select two instruments from the drop-down menu.





- 1. After starting the test, over the selected Original Sendercomp, submit a Mass Quote (35=i).
- 2. Over the selected Original Sendercomp, receive and process Mass Quote Acknowledgement (35=b, 297=0).
- 3. Over the selected Original Sendercomp, submit a second <u>Mass Quote</u> with quotes using a different instrument group than what was used in the first Mass Quote.
- 4. Over the selected Original Sendercomp, receive and process Mass Quote Acknowledgement (35=b, 297=0).
- 5. Over the On-Behalf Sendercomp (Not the selected Original SenderComp), submit a <u>Quote Cancel</u> (35=Z) All (tag 298-QuoteCancelType=4) message with <u>Mass Quote Block</u>.
- 6. Receive and process Quote Cancel Acknowledgement [35=b (tag 297-QuoteStatus=4)].
- 7. Over the Original Sendercomp (tag 9937-OrigOrderUser), receive and process <u>Quote Cancel Acknowledgement</u> (35=b).
- 8. Over the selected Original Sendercomp, submit a Mass Quote (35=i) using the same instrument group used in Step 1 with Mass Quote Unblock.
- 9. Over the selected Original Sendercomp, receive and process Mass Quote Acknowledgement (35=b),
- 10. Over the selected Original Sendercomp, submit a <u>Mass Quote</u> from the same instrument group used in Step 3 with <u>Mass Quote Unblock</u>.
- 11. Over the selected Original Sendercomp, receive and process Mass Quote Acknowledgement (35=b), back to top On-Demand Format screen



Order Status Request with Cancel on Behalf

The Purpose of this test is to verify that customer application can submit Order Status Request (35=H) and receive Execution Report - Status (35=8, 150=I) when obtaining status for the order with Cancel on Behalf info.

For the purposes of this test, the definition of an "Original Sendercomp" represents the iLink session whose orders or Mass Quotes will be canceled. The definition of "On-Behalf Sendercomp" is the iLink session that will be submitting the cancel requests.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the Test Suite tab, select the linked test.



Note:

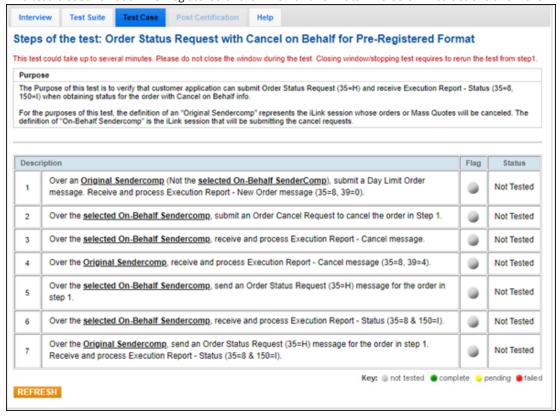
If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

Referential information is included for messages sent / received during the test.



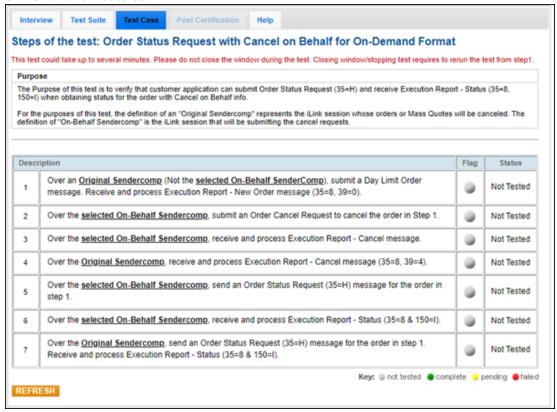
To run the Order Status Request with Cancel on Behalf test:

This test is used for both Pre-Registered and On-Demand formats. The below instructions show the Pre-Registered format.



- 1. Over an Original Sendercomp (Not the selected On-Behalf SenderComp), submit a <u>Day Limit Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=0)] message.
- 2. Receive and process Execution Report New Order message (35=8, 39=0).
- 3. Over the selected On-Behalf Sendercomp, submit an Order Cancel Request (35=F) to cancel the order in Step 1.
- 4. Over the selected On-Behalf Sendercomp, receive and process Execution Report Cancel (35=8, 39=4) message.

- 5. Over the Original Sendercomp, receive and process Execution Report Cancel (35=8, 39=4) message.
- 6. Over the selected On-Behalf Sendercomp, send an Order Status Request (35=H) message for the order in step 1.
- 7. Over the selected On-Behalf Sendercomp (tag 2807-CancelText), receive and process <u>Execution Report Status</u> (35=8 & 150=I).
- 8. Over the Original Sendercomp, send an Order Status Request (35=H) message for the order in step 1.
- 9. Receive and process Execution Report Status (35=8 & 150=I).



Failover Tests

- Failover from primary to backup components
- Failover from primary to backup Components for Mass Quoting Systems

Failover from Primary to Backup Components

The following instructions illustrate the process to run and complete tests for Failover from primary to backup Components.



- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - Failover from primary to backup components (Binding without Initialization) for Pre-Registered / On-Demand Format
 - Failover from primary to backup components (*Initialization and Binding*) for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.

Note:DO NOT select the START TEST button once the test is in progress.

If a test is not proceeding to the next step, clicking the **Refresh** button (**REFRESH**) below the test steps may resolve the issue.

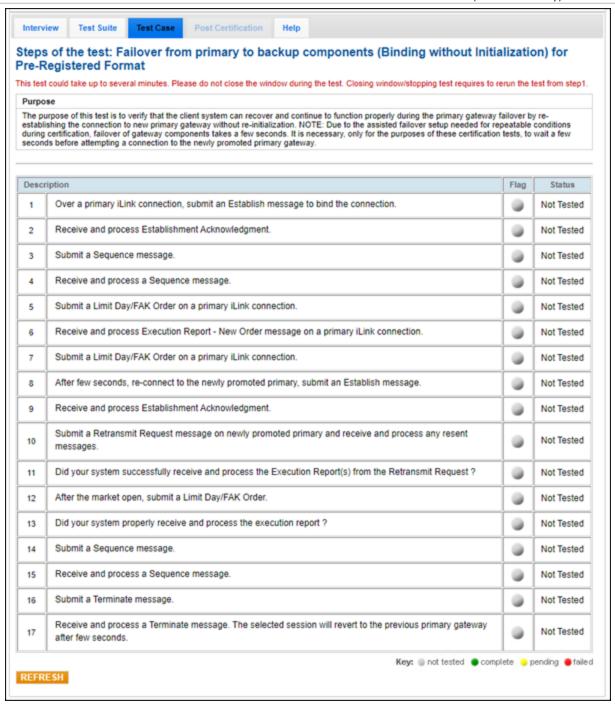
Referential information is included for messages sent / received during the test.

Failover from Primary to Backup - Binding without Initialization

To run the Failover from primary to backup components (Binding without Initialization) for Pre-Registered / On-Demand Format test:

The purpose of this test is to verify that the client system can recover and continue to function properly during the primary gateway failover by re-establishing the connection to new primary gateway without re-initialization.

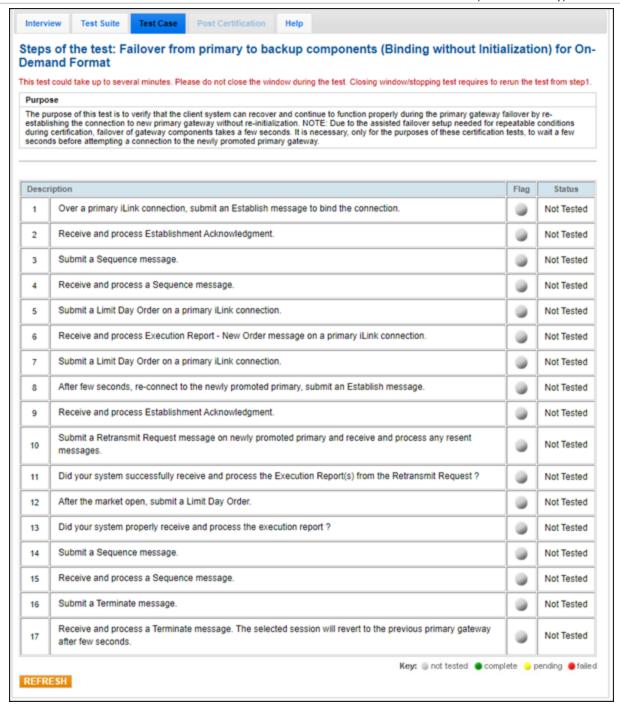
Note: Due to the assisted failover setup needed for repeatable conditions during certification, failover of gateway components takes a few seconds. It is necessary, only for the purposes of these certification tests, to wait a few seconds before attempting a connection to the newly promoted primary gateway.



- 1. Over a primary iLink connection, submit an Establish message to bind the connection.
- 2. Receive and process Establishment Acknowledgment.
- 3. Submit a Sequence message.
- 4. Receive and process a Sequence message.
- 5. Submit a Limit Day / FAK Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)] on a primary iLink connection.

- 6. Receive and process Execution Report New Order message (35=8, 39=0) on a primary iLink connection.
- 7. Submit a Limit Day / FAK Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)] on a primary iLink connection.
- 8. After few seconds, re-connect to the newly promoted primary, submit an Establish message.
- 9. Receive and process Establishment Acknowledgment.
- 10. Submit a Retransmit Request message on newly promoted primary and receive and process any resent messages.
- 11. Did your system successfully receive and process the Execution Report(s) from the Retransmit Request? Select Yes/No.
- 12. After the market open, submit a Limit Day / FAK Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)].
- Did your system properly receive and process the execution report?
 Select Yes/No.
- 14. Submit a Sequence message.
- 15. Receive and process a Sequence message.
- 16. Submit a Terminate message.
- 17. Receive and process a Terminate message.

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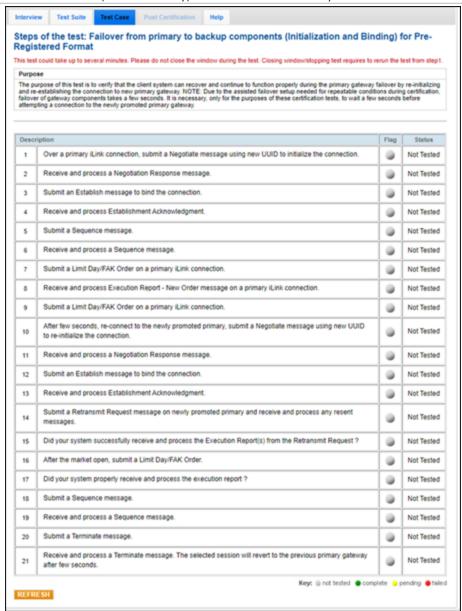


Failover from Primary to Backup - Initialization and Binding Test

To run the Failover from primary to backup components (Initialization and Binding) for Pre-Registered Format test:

The purpose of this test is to verify that the client system can recover and continue to function properly during the primary gateway failover by re-initializing and re-establishing the connection to new primary gateway.

Note: Due to the assisted failover setup needed for repeatable conditions during certification, failover of gateway components takes a few seconds. It is necessary, only for the purposes of these certification tests, to wait a few seconds before attempting a connection to the newly promoted primary gateway.



- 1. Over a primary iLink connection, submit a Negotiate message using new UUID (tag 39001) to initialize the connection.
- 2. Receive and process a Negotiation Response message.
- 3. Submit an Establish message to bind the connection.
- 4. Receive and process Establishment Acknowledgment.
- 5. Submit a Sequence message.
- 6. Receive and process a Sequence message.
- 7. Submit a <u>Limit Day / FAK Order</u> [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)] on a primary iLink connection.
- 8. Receive and process Execution Report New Order (35=8, 39=0) message on a primary iLink connection.

- 9. Submit a Limit Day / FAK Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)] on a primary iLink connection.
- 10. After few seconds, re-connect to the newly promoted primary.
- 11. Submit a Negotiate message using new UUID (tag 39001) to re-initialize the connection.
- 12. Receive and process a Negotiation Response message.
- 13. Submit an Establish message to bind the connection.
- 14. Receive and process an Establishment Acknowledgment.
- 15. Submit a Retransmit Request message on newly promoted primary and receive and process any resent messages.
- 16. Did your system successfully receive and process the Execution Report(s) from the Retransmit Request? Select **Yes/No**.
- 17. After the market open, submit a Limit Day / FAK Order [35=D (tag 40-OrdType=2, tag 59-TimeInForce=3)].
- 18. Did your system properly receive and process the execution report? Select Yes/No.
- 19. Submit a Sequence message.
- 20. Receive and process a Sequence message.
- 21. Submit a Terminate message.
- 22. Receive and process a Terminate message.

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Test Suite Test Case Post Certification Interview Help Steps of the test: Failover from primary to backup components (Initialization and Binding) for On-**Demand Format** This test could take up to several minutes. Please do not close the window during the test. Closing window/stopping test requires to rerun the test from step1. The purpose of this test is to verify that the client system can recover and continue to function properly during the primary gateway failover by re-initializing and re-establishing the connection to new primary gateway. NOTE: Due to the assisted failover setup needed for repeatable conditions during certification, failover of gateway components takes a few seconds. It is necessary, only for the purposes of these certification tests, to wait a few seconds before attempting a connection to the newly promoted primary gateway. Description Status Flag Over a primary iLink connection, submit a Negotiate message using new UUID to initialize the connection. Not Tested 2 Receive and process a Negotiation Response message. Not Tested Submit an Establish message to bind the connection. Not Tested 3 4 Receive and process Establishment Acknowledgment. Not Tested Submit a Sequence message. Not Tested 5 Receive and process a Sequence message. 6 Not Tested Submit a Limit Day/FAK Order on a primary iLink connection. Not Tested Receive and process Execution Report - New Order message on a primary iLink connection. 8 Not Tested Submit a Limit Day/FAK Order on a primary iLink connection. Not Tested 9 After few seconds, re-connect to the newly promoted primary, submit a Negotiate message using new UUID 10 Not Tested to re-initialize the connection. 11 Receive and process a Negotiation Response message. Not Tested Submit an Establish message to bind the connection. Not Tested 12 Receive and process Establishment Acknowledgment. 13 Not Tested Submit a Retransmit Request message on newly promoted primary and receive and process any resent Not Tested messages Did your system successfully receive and process the Execution Report(s) from the Retransmit Request? Not Tested 15 After the market open, submit a Limit Day/FAK Order. Not Tested 16 Did your system properly receive and process the execution report ? Not Tested 18 Submit a Sequence message. Not Tested Receive and process a Sequence message. Not Tested 19 Submit a Terminate message. Not Tested 20 Receive and process a Terminate message. The selected session will revert to the previous primary gateway Not Tested after few seconds Key: In not tested complete pending failed

REFRESH

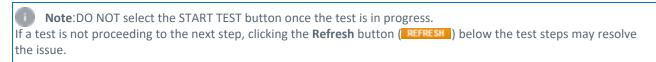
Failover from primary to backup Components for Mass Quoting Systems

The following instructions illustrate the process to run and complete tests for Failover from primary to backup Components for Mass Quoting Systems.



To select the test:

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if not already assigned.
- 2. From the **Test Suite** tab, select from the following linked tests then proceed to the specific instructions.
 - <u>Failover from primary to backup components for Mass Quoting Systems (Binding without Initialization)</u> for Pre-Registered / On-Demand Format
 - Failover from primary to backup components for Mass Quoting Systems (*Initialization and Binding*) for Pre-Registered / On-Demand Format
- 3. Click the START TEST button.



Referential information is included for messages sent / received during the test.

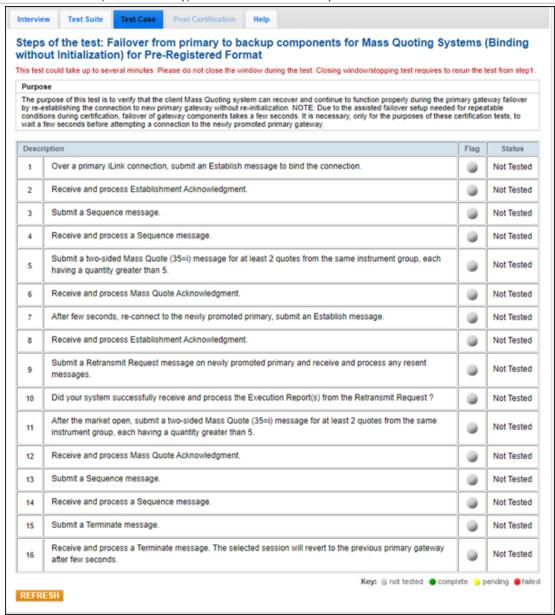
Failover from primary to backup Components for Mass Quoting Systems - Binding without Initialization

The purpose of this test is to verify that the client Mass Quoting system can recover and continue to function properly during the primary gateway failover by re-establishing the connection to new primary gateway without re-initialization.

Note: Due to the assisted failover setup needed for repeatable conditions during certification, failover of gateway components takes a few seconds. It is necessary, only for the purposes of these certification tests, to wait a few seconds before attempting a connection to the newly promoted primary gateway.



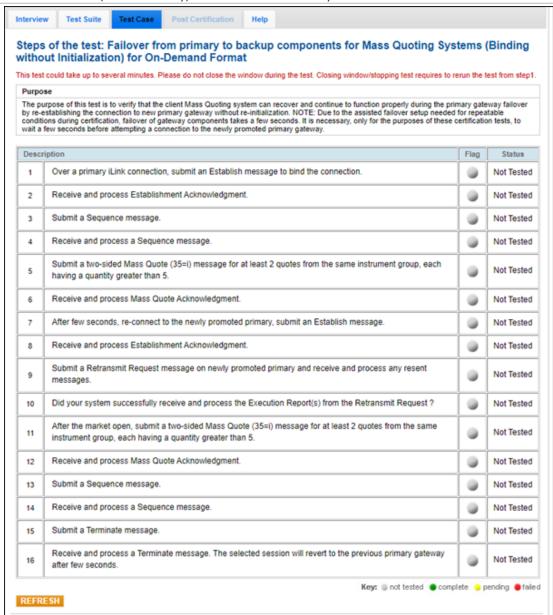
To run the Failover from primary to backup components for Mass Quoting Systems (Binding without Initialization) test:



- 1. Over a primary iLink connection, submit an Establish message to bind the connection.
- 2. Receive and process Establishment Acknowledgment.
- 3. Submit a Sequence message.
- 4. Receive and process a Sequence message.
- 5. Submit a two-sided Mass Quote (35=i) message for at least 2 quotes from the same instrument group, each having a quantity (→134-BidSize / →135-OfferSize) greater than 5.
- 6. Receive and process Mass Quote Acknowledgement (35=b, 297=0,5).
- 7. After few seconds, re-connect to the newly promoted primary, submit an Establish message.
- 8. Receive and process Establishment Acknowledgment.

- 9. Submit a Retransmit Request message on newly promoted primary and receive and process any resent messages.
- 10. Did your system successfully receive and process the Execution Report(s) from the Retransmit Request? Select Yes/No.
- 11. After the market open, submit a two-sided <u>Mass Quote</u> (35=i) message for at least 2 quotes from the same instrument group, each having a quantity (→134-BidSize/→135-OfferSize) greater than 5.
- 12. Receive and process Mass Quote Acknowledgement (35=b, 297=0,5).
- 13. Submit a Sequence message.
- 14. Receive and process a Sequence message.
- 15. Submit a Terminate message.
- 16. Receive and process a Terminate message.

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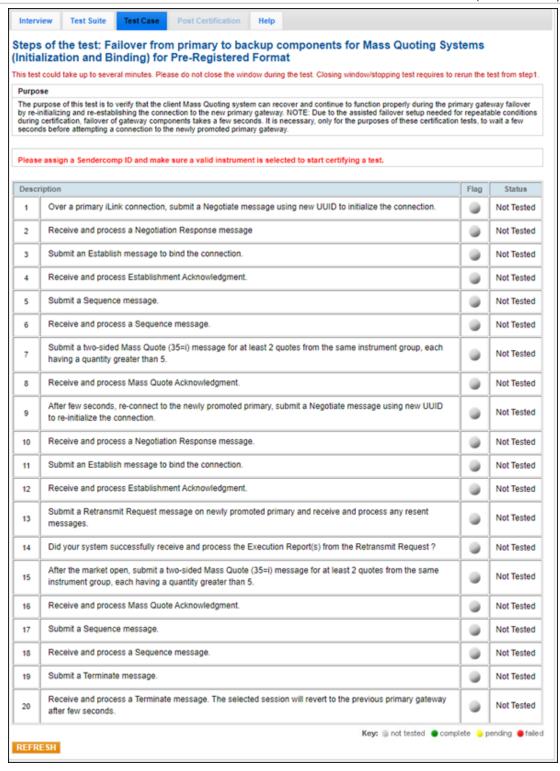


Failover from primary to backup Components for Mass Quoting Systems - Initialization *and* Binding Tests

The purpose of this test is to verify that the client Mass Quoting system can recover and continue to function properly during the primary gateway failover by re-initializing and re-establishing the connection to the new primary gateway.

Note: Due to the assisted failover setup needed for repeatable conditions during certification, failover of gateway components takes a few seconds. It is necessary, only for the purposes of these certification tests, to wait a few seconds before attempting a connection to the newly promoted primary gateway.

To run the Failover from primary to backup components for Mass Quoting Systems (Initialization and Binding) test:



- 1. Over a primary iLink connection, submit a Negotiatemessage using new UUID (tag 39001) to initialize the connection.
- 2. Receive and process a Negotiation Response message

- 3. Submit an Establish message to bind the connection.
- 4. Receive and process Establishment Acknowledgment.
- 5. Submit a Sequence message.
- 6. Receive and process a Sequence message.
- 7. Submit a two-sided Mass Quote (35=i) message for at least 2 quotes from the same instrument group, each having a quantity (→134-BidSize / →135-OfferSize) greater than 5.
- 8. Receive and process Mass Quote Acknowledgement (35=b, 297=0,5).
- 9. After few seconds, re-connect to the newly promoted primary.
- 10. Submit a Negotiate message using new UUID (tag 39001) to re-initialize the connection.
- 11. Receive and process a Negotiation Response message.
- 12. Submit an Establish message to bind the connection.
- 13. Receive and process Establishment Acknowledgment.
- 14. Submit a Retransmit Request message on newly promoted primary and receive and process any resent messages.
- 15. Did your system successfully receive and process the Execution Report(s) from the Retransmit Request? Select Yes/No.
- 16. After the market open, submit a two-sided <u>Mass Quote</u> (35=i) message for at least 2 quotes from the same instrument group, each having a quantity (→134-BidSize/→135-OfferSize) greater than 5.
- 17. Receive and process Mass Quote Acknowledgement (35=b, 297=0,5).
- 18. Submit a Sequence message.
- 19. Receive and process a Sequence message.
- 20. Submit a Terminate message.
- 21. Receive and process a Terminate message.

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