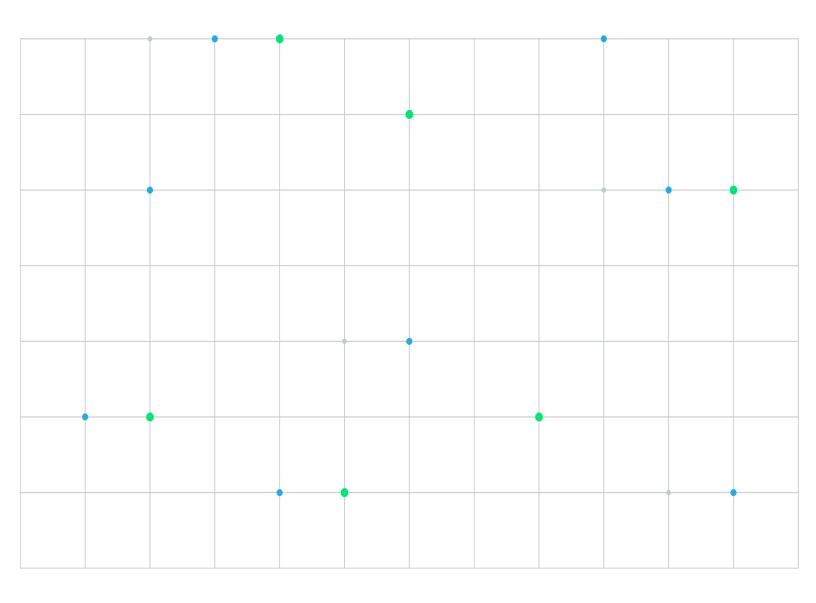


AutoCert+ EBS Order Entry User Manual

19 October 2022



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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 AutoCert+ EBS Order Entry 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. Complete the steps detailed in the "Process Summary: EBS New Release Testing Setup" topic.
- 2. Log into the automated certification tool.
- 3. Review general AutoCert+ test suite navigation and general interview information.
- 4. Navigate to the AutoCert+ EBS Conflated TCPtest suite.
 - a. Select a Company Name.
 - b. For Market, select EBS.
 - c. For Purpose, select Order Entry.
 - d. Select an Application System.
 - e. For Test Suite, select EBS Order Entry
- 5. Select an **SenderComp** and select **ASSIGN**.
- 6. Complete the Interview for this test suite.
- 7. Complete applicable test cases.
 - Session Layer Tests
 - Business Layer Tests
 - Failover Tests
- 8. Complete the certification process from the Post Certification tab.

What's New

The list below illustrates the updates made to the AutoCert+ EBS Order Entry Help system.

Date	Торіс	Description
October 19, 2022	GFS Limit Order FAK Limit Order FOK Order	Updated test description to reference tag 1797- OrderEventExecID as unique ID for each fill
October 7, 2022	Format	Website and PDF format changes only.
September 12, 2022	Interview	Updated interview question responses for "Will your system support Non-Deliverable Forwards (NDF)?"
March 9, 2022	Processing Message Gaps of More than 2500 Messages	Updated screenshots and step 1 for pre-registered and on-demand procedures.
August 10, 2021	Self Match Prevention with Administrative SelfMatchPreventionID	Renamed from "Self Match Prevention Instruction Support" and updated screenshots.
March 31, 2021	All	Initial publication.

Interview

The interview consists of a series of questions about your trading application. Based on your responses, certain tests are required and others are optional. You must complete the pre-certification interview before running the test cases.

 \triangle Warning: In order to perform certification testing for MSGW failover with fault tolerance, you must test during the New Release Weekly Failover Testing Windows.

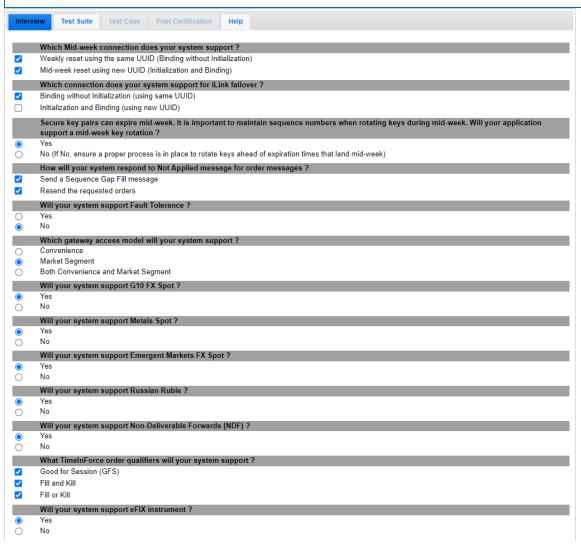


To complete the interview:

Answer each question and select "Complete" when finished.



Note: The image below only shows a portion of the interview.



	Will your system support Price Discretion Order attribute ?
	Yes
0	No
	Will your system support Order Cancel before Order Acknowledge without OrderID ?
	Yes
_	No
0	NO
	Will your system support Cancel Replace functionality ?
	Yes
0	No
	Will your system use the Cancel Replace with In-Flight-Mitigation (IFM) functionality ?
	Yes
<u> </u>	
0	No
	Will your system support Cancel Replace before Order Acknowledge without OrderlD ?
	Yes
0	No
	Will your system support Minimum Quantity functionality ?
<u> </u>	Yes
0	No
	Will your system support Display Quantity functionality ?
	Yes
0	No
	How will your quotem condicates 2
	How will your system send orders?
0	Manual
0	ATS
	Semi Automated
	Does your system support Order Status functionality ?
<u> </u>	Yes
Õ	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 Instrument
~	Instrument
	Do you support a graceful log off ? (NOTE: Cancel on Conclusion is invoked with a graceful log off)
<u> </u>	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. Cancel on Conclusion (CoC) is the auto-elimination of all working orders when a session Terminates and disconnects gracefully.
	This is a mandatory feature on all iLink 3, Ai and EBSW sessions and only applies to EBS Markets and eFIX Matching Service instruments.
	Acknowledge
0	Not Acknowledge
	Will your system support Self Match Prevention ?
	Yes
Ö	No
	How does your application register Administrative Information ? (check all that apply)
✓	Pre-Registration (Service Gateway)
✓	On-Demand
	Relevant to trading ON MTF instruments only - Tag 5290-Executor and tag 36023-IDMShortcode are available in New Release for customer testing. To
	Relevant to trading on me instantiation of 19 and 230-Lecturo and tay 30023-common code are evaluated to the values are not regulared to be facilitate client development and certification, in New Release the presence of these tags will be validated but the values are not required to be
	registered. In production, CME Globex will validate the short code presence, and reject if the short code is not a registered value.
<u> </u>	Acknowledge
0	Not Acknowledge
Con	plete

Session Layer Tests

This section contains information on the Session Layer tests.

Connection Tests

This section contains information on the Connection tests.

Primary Gateway Connection Enforcement

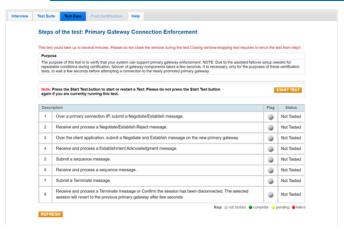
The purpose of this test is to verify that your system can support primary gateway enforcement.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. Select the START TEST button.



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

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 a Primary Gateway Connection Enforcement test:

- 1. Over a primary connection IP, submit a Negotiate/Establish message.
- 2. Receive and process a Negotiate Reject/Establish Reject message.
- 3. Over the client application, submit a Negotiate and Establish message on the new primary gateway.
- 4. Receive and process an 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 <u>Terminate</u> message or confirm the session has been disconnected. The selected session will revert to the previous primary gateway.

Beginning of Week Logon

The purpose of this test is to verify that the client system can:

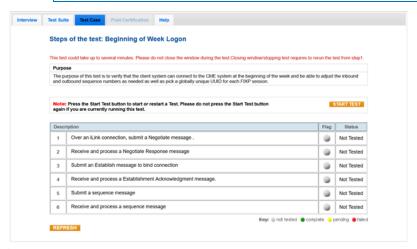
- connect to the CME system at the beginning of the week
- adjust the inbound and outbound sequence numbers as needed
- · pick a globally unique UUID for each FIXP session

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



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

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 a 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. Select **Yes** or **No** to indicate whether your system received and processed the <u>Establishment Acknowledgment</u> message.
- 5. Submit a <u>Sequence</u> message.
- 6. Receive and process a Sequence message.

Mid-Week Connection (Binding without Initialization)

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 adjust the inbound and outbound sequence numbers as needed.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

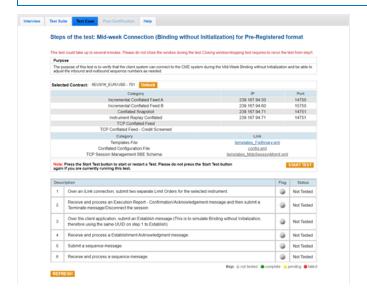


Note: DO NOT select the **START TEST** button once the test is in progress.

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

Pre-Registered or On-Demand Format

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



To run a Mid-Week Connection (Binding without Initialization) test:

- 1. Over an iLink connection, submit two separate Limit orders for the selected outright instrument.
- 2. Receive and process an Execution Report Confirmation/Acknowledgement message and then submit a <u>Terminate</u> message or disconnect the session.
- 3. Over the client application, submit an Establish message using the same UUID from step 1.
- 4. Select **Yes** or **No** to indicate whether your system received and processed the <u>Establishment Acknowledgment</u> message.
- 5. Submit a Sequence message.
- 6. Receive and process a Sequence message.

Mid-Week Connection (Initialization and Binding) with New UUID

The purpose of this test is to verify that the client system can:

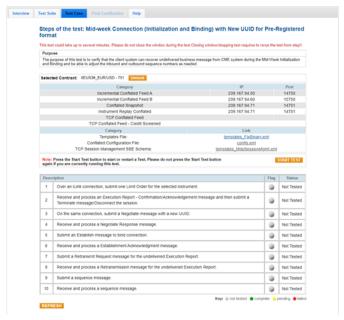
- recover undelivered business messages from the CME system during the mid-week initialization and binding
- adjust the inbound and outbound sequence numbers as needed
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

Pre-Registered or On-Demand Format

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





To run a Mid-Week Connection (Initialization and Binding) with New UUID test:

- 1. Over an ilink connection, submit one Limit order for a selected outright instrument.
- 2. Receive and process an Execution Report Confirmation/Acknowledgement Execution Report New Order message and then submit a Terminate message or disconnect the session.
- 3. On the same segment, 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. Select Yes or No to indicate whether your system received and processed the Establishment Acknowledgment message.
- 7. Submit a Retransmit Request message for the undelivered Execution Report.
- 8. Select Yes or No to indicate whether your system received and processed the Retransmission message for the undelivered Execution Report.
- 9. Submit a Sequence message.
- 10. Receive and process a Sequence message.

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.



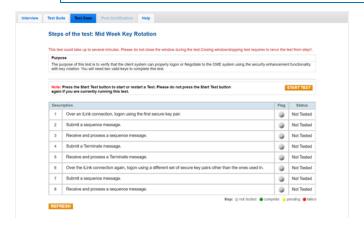
Note: You will need two valid keys to complete this test.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. Select the START TEST button.



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

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 complete the Mid-Week Key Rotation (MSGW) 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 or disconnect the session.
- 5. Receive and process a Terminate message.
- 6. Over the iLink connection again, logon using a different set of secure key pairs other than the ones used in step 1.
- 7. Submit a Sequence message.
- 8. Receive and process a Sequence message.

Re-Setting UUID

The purpose of this test is to verify that, in the event of customer application failure, the application system can reset the UUID intra-session on the same trading day to force synchronization of sequence numbers to and from the exchange.

Note: Re-Negotiate with a new UUID should be used only when the customer is unable to re-sync out-of-sync sequence numbers (required).

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. Select the START TEST button.
 - Note: DO NOT select the START TEST button once the test is in progress.
 - Note: If a test is not proceeding to the next step, selecting the Refresh button (REFRESH) below the test steps may resolve the issue.

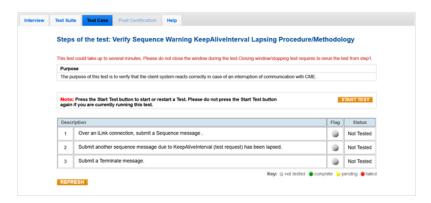


To run a Re-Setting UUID test:

- 1. Over an iLink connection, submit an Establish message.
- 2. Select Yes or No to indicate whether your system received and processed the Terminate message.
- 3. On the same segmen, 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. Select **Yes** or **No** to indicate whether your system received and processed the <u>Establishment Acknowledgment</u> 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 the case of an interruption of communication with CME.



- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. Select the **START TEST** button.
 - Note: DO NOT select the START TEST button once the test is in progress.

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 a Verify Sequence Warning KeepAliveInterval Lapsing Procedure/Methodology test:

- 1. Over an iLink connection, submit a Sequence message.
- 2. Submit another Sequence message due to the KeepAliveInterval (test request) lapsing.
- 3. Submit a Terminate message or terminate the session.

Warning: This test creates a sequence number gap that could interfere with the logon process of your next test.

Message Gap Tests

This section contains information on the Message Gap tests.

Receiving and Processing Multiple Gaps

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

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

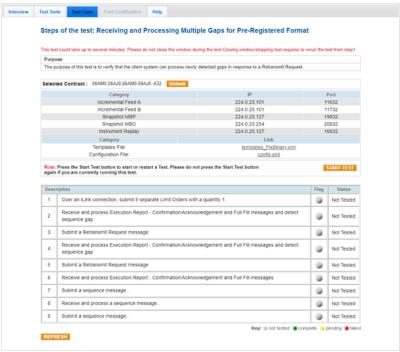


Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered or On-Demand Format

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





To run a Receiving and Processing Multiple Gaps test:

- 1. Over an iLink connection, submit 5 separate Limit Orders with a quantity of 1.
- 2. Receive and process <u>Execution Report New Order</u> and <u>Execution Report Trade Outright [39=2 (Filled)]</u> and detect a sequence gap.
- 3. Submit a Retransmit Request message.

- 4. Receive and process Execution Report New Order and Execution Report Trade Outright [39=2 (Filled)] and detect sequence gap.
- 5. Submit a Retransmit Request message.
- 6. Receive and process Execution Report New Order and Execution Report Trade Outright [39=2 (Filled)].
- 7. Submit a Sequence message.
- 8. Receive and process a Sequence message.
- 9. Submit a Sequence message.

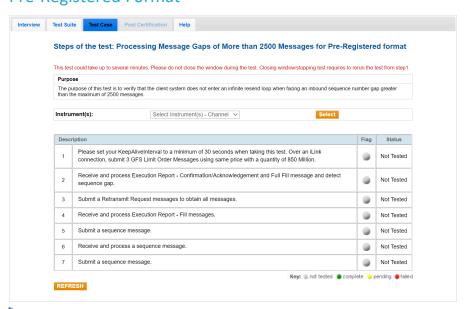
Processing Message Gaps of More than 2500 Messages

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.

- Pre-Registered Format
- On-Demand Format
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.
 - Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered Format

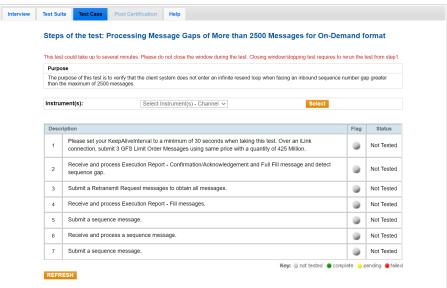


To run a Processing Message Gaps of More than 2500 Messages for Pre-Registered Format test:

1. Please set your KeepAliveInterval to a minimum of 30 seconds when taking this test. Over an iLink connection, submit 3 GFS Limit Order messages using same price with a quantity of 850 million.

- 2. Receive and process an Execution Report New Order and Execution Report Trade Outright [39=2 (Filled)] message and detect a sequence gap.
- 3. Submit a Retransmit Request message to obtain all messages.
- 4. Receive and process an Execution Report Trade Outright [39=2 (Filled)] message.
- 5. Submit a Sequence message.
- 6. Receive and process a Sequence message.
- 7. Submit a Sequence message.

On-Demand Format



To run a Processing Message Gaps of More than 2500 Messages for On-Demand Format test

- 1. Please set your KeepAliveInterval to a minimum of 30 seconds when taking this test. Over an iLink connection, submit 3 GFS Limit Order messages using the same price with a quantity of 425 million.
- 2. Receive and process an Execution Report New Order and Execution Report Trade Outright [39=2 (Filled)] message and detect a sequence gap.
- 3. Submit a Retransmit Request message to obtain all messages.
- 4. Receive and process an Execution Report Trade Outright [39=2 (Filled)] message.
- 5. Submit a Sequence message.
- 6. Receive and process a Sequence message.
- 7. Submit a Sequence message.

Bi-Directional Gap Scenario (Resend Orders) - (Day or FAK/FOK Orders)

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



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

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

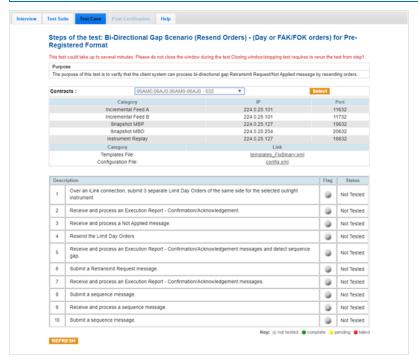


Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered or On-Demand Format

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



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

- 1. Over an iLink connection, submit 3 separate Limit Day orders of the same side for the selected outright instrument.
- 2. Receive and process an Execution Report New Order.
- 3. Receive and process a Not Applied message.
- 4. Resend the Limit Day orders.
- 5. Receive and process Execution Report New Order messages and detect sequence.
- 6. Submit a Retransmit Request message.
- 7. Receive and process Execution Report New Order messages.
- 8. Submit a Sequence message.
- 9. Receive and process a Sequence message.
- 10. Submit a Sequence message.

Bi-Directional Gap Scenario (Sequence Gap Fill) - (Day or FAK/FOK Orders)

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



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

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

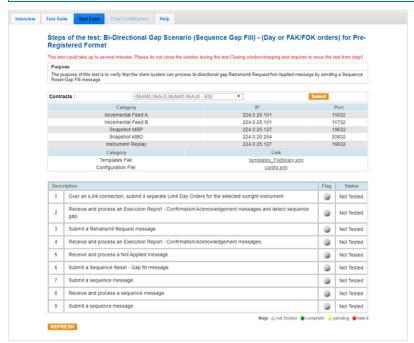


Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered and On-Demand Format

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





To run a Bi-Directional Gap Scenario (Sequence Gap Fill) - (Day or FAK/FOK Orders) fill test:

- 1. Over an iLink connection, submit 4 separate Limit Day Orders for the selected outright instrument.
- 2. Receive and process Execution Report New Order messages and detect sequence gap.
- 3. Submit a Retransmit Request message.
- 4. Receive and process an Execution Report New Order messages.
- 5. Receive and process a Not Applied message.

- 6. Submit a <u>Sequence</u> Reset Gap fill message.
- 7. Submit a Sequence message.
- 8. Receive and process a Sequence message.
- 9. Submit a Sequence message.

Real-Time Message Tests

This section contains information on the Real-Time message tests.

Process Real-Time Messages During a Resend Response from CME Globex

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

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.



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

Pre-Registered or On-Demand Format

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



To run a Process Real-Time Messages During a Resend Response from CME Globex test:

- 1. Over an iLink connection, submit three separate Limit Day Orders for the selected outright instrument.
- 2. Receive and process an Execution Report New Order message and detect sequence gap.
- 3. Submit a Retransmit Request message.
- 4. Receive real-time interleaved messages with Retransmission and process an Execution Report New Order message.
- 5. Submit a Sequence message.
- 6. Receive and process a Sequence message.
- 7. Submit a Sequence message.

Process Real-Time Messages for FAK/FOK During a Resend Response from CME Globex

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



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

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the **Contracts** drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.



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

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

Pre-Registered or On-Demand Format

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





To run a Process Real-Time Messages for FAK/FOK During a Resend Response from CME Globex test:

- 1. Over an iLink connection, submit 3 separate FAK/FOK Orders for the selected outright instrument.
- 2. Receive and process an Execution Report New Order message and detect sequence gap.
- 3. Submit a Retransmit Request message.
- 4. Receive real-time interleaved messages with Retransmission and process an Execution Report New Order message.
- 5. Submit a Sequence message.

- 6. Receive and process a Sequence message.
- 7. Submit a Sequence message.

Business Layer Tests

This section contains information on the Business Layer tests.

Cancel Replace with IFM

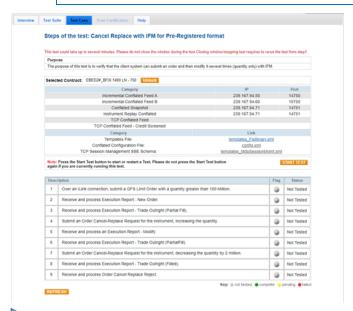
The purpose of this test is to verify that the client system can submit an order and then modify it several times (quantity only) with in-flight mitigation (IFM).

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

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 a Cancel Replace without IFM test:

- 1. Over an iLink connection, submit a GFS Limit Order with a quantity greater than 100 Million.
- 2. Receive and process Execution Report New Order.
- 3. Receive and process Execution Report Trade Outright (Partial Fill).
- 4. Submit an Order Cancel-Replace Request for the instrument, increasing the quantity.
- 5. Receive and process an Execution Report Modify.
- 6. Receive and process Execution Report Trade Outright (PartialFill).
- 7. Submit an Order Cancel-Replace Request for the instrument, decreasing the quantity by 2 million.
- 8. Receive and process Execution Report Trade Outright (Filled).
- 9. Receive and process Order Cancel Replace Reject.

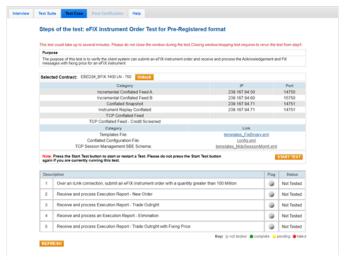
eFix Instrument Order Test

The purpose of this test is to verify the client system can submit an eFix instrument order and receive and process the Acknowledgment and Fill messages with fixing price for an eFix instrument.

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.
 - 0

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

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 an eFix Instrument Order test:

- 1. Over an iLink connection, submit an eFix instrument order with a quantity greater than 100 Million
- 2. Receive and process Execution Report New Order.
- 3. Receive and process Execution Report Trade Outright.
- 4. Receive and process an Execution Report Elimination.
- 5. Receive and process Execution Report Trade Outright with Fixing Price.

eFix instrument Order Fixing Price Recovery Test

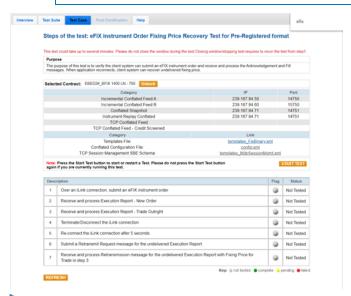
The purpose of this test is to verify the client system can submit an eFix instrument order and receive and process the Acknowledgement and Fill messages. When application reconnects, client system can recover undelivered fixing price.

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.



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

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 an eFix instrument Order Fixing Price Recovery test:

- 1. Over an iLink connection, submit an eFix instrument order.
- 2. Receive and process Execution Report New Order.
- 3. Receive and process Execution Report Trade Outright.
- 4. Terminate or disconnect the iLink connection.
- 5. Re-connect the iLink connection after 5 seconds.
- 6. Submit a Retransmit Request message for the undelivered Execution Report.
- 7. Receive and process <u>Retransmission</u> message for the undelivered Execution Report with Fixing Price for Trade in step 3.

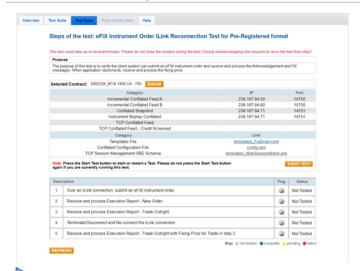
eFix Instrument Order iLink Reconnection Test

The purpose of this test is to verify the client system can submit an eFix instrument order and receive and process the Acknowledgement and Fill messages. When application reconnects, receive and process the fixing price.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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 an eFix Instrument Order iLink Reconnection test:

- 1. Over an iLink connection, submit an eFix instrument order.
- 2. Receive and process Execution Report New Order.
- 3. Receive and process Execution Report Trade Outright.
- 4. Terminate/Disconnect and Re-connect the iLink connection.
- 5. Receive and process Execution Report Trade Outright with Fixing Price for Trade in step 3.

FAK Limit Order

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 using tag 1797-OrderEventExecID as unique ID for each fill.

- submit and cancel an FAK limit order
- · receive and process the Acknowledgment and Fill messages
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

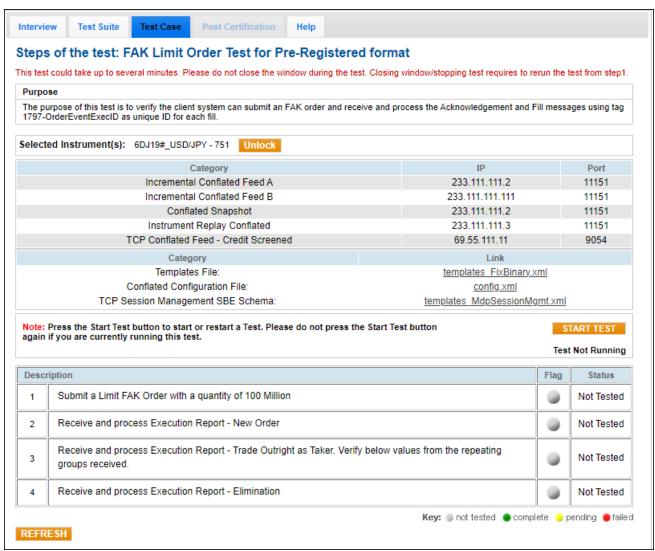


Note: **DO NOT** select the **START TEST** button once the test is in progress.

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

Pre-Registered or On-Demand Format

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



To run an FAK Limit Order test:

- 1. Over an iLink connection, submit an Limit FAK Order message with a quantity of 100 million.
- 2. Select **Yes** or **No** to indicate whether your system received and processed the <u>Execution Report New Order</u> message.
- 3. Enter the following tag values to indicate that your system received and processed the Execution Report Trade
 Outright message as taker.
 - 1797-First OrderEventExecID
 - 1799-First OrderEventPx
 - 1800-First OrderEventQty
 - 1802-First OrderEventText
 - 1797-Second OrderEventExecID
 - 1799-Second OrderEventPx
 - 1800-Second OrderEventQty
 - 1802-Second OrderEventText

. Select	t Yes or No to in	idicate whether you	our system received and processed the Execution Report - Elimination.				

FOK Order

The purpose of this test is to verify the client system can submit an FOK order and receive and process the Acknowledgement and Fill messages using tag 1797-OrderEventExecID as unique ID for each fill.

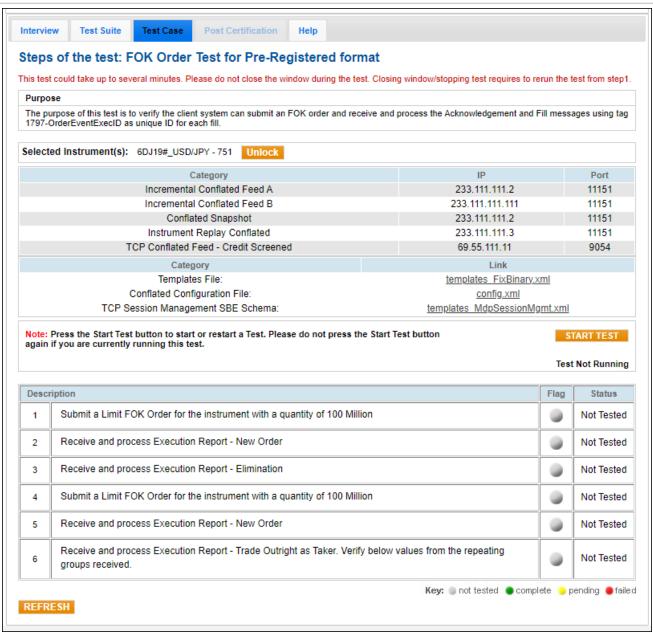
- submit an FOK (Fill or Kill) order
- receive and process the acknowledgment and fill messages
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

Pre-Registered and On-Demand Format

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



To run an FOK Order test:

- 1. Submit a Limit FOK Order for the instrument with a quantity of 100 million.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 3. Select Yes or No to indicate whether your system received and processed the Execution Report Elimination.
- 4. Submit a Limit FOK Order for the instrument with a quantity of 100 million.
- 5. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 6. Enter the following tag values to indicate that your system received and processed the Execution Report Trade

 Outright message as taker.
 - 1797-First OrderEventExecID
 - 1799-First OrderEventPx

- 1800-First OrderEventQty
- 1802-First OrderEventText
- 1797-Second OrderEventExecID
- 1799-Second OrderEventPx
- 1800-Second OrderEventQty
- 1802-Second OrderEventText

Graceful Logoff

The purpose of this test is to verify that the client system can perform a graceful logoff by cancelling all of their pending orders prior to sending a Terminate message.

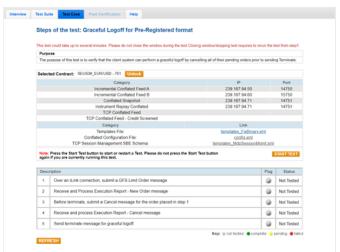
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.
 - 0

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

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

Pre-Registered or On-Demand Format

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



To run a Graceful Logoff test:

- 1. Over an iLink connection, submit a GFS Limit Order message.
- 2. Select **Yes** or **No** to indicate whether your system received and processed the <u>Execution Report New Order</u> message.
- 3. Before terminate, submit a <u>Cancel</u> message for the order placed in step 1.
- 4. Select **Yes** or **No** to indicate whether your system received and processed the <u>Execution Report Cancel</u> message.
- 5. Send a Terminate message for a graceful logoff.

GFS Limit Order Test

The purpose of this test is to verify the client system can submit and cancel a GFS limit order and receive and process the Acknowledgement and Fill messages using tag 1797-OrderEventExecID as unique ID for each fill.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the **Contracts** drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.



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

AutoCert+ EBS Order Entry Interview **Test Suite** Test Case Post Certification Help Steps of the test: GFS Limit Order Test for Pre-Registered 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 fro The purpose of this test is to verify the client system can submit and cancel a GFS limit order and receive and process the Acknowledgement and I messages using tag 1797-OrderEventExecID as unique ID for each fill. Selected Instrument(s): 6DJ30#_USD/JPY - 751 Unlock IΡ Category Incremental Conflated Feed A 233.111.111.2 11 Incremental Conflated Feed B 233.111.111.111 11 233.111.111.2 Conflated Snapshot 11 Instrument Replay Conflated 233.111.111.3 11 TCP Conflated Feed - Credit Screened 69.55.111.11 9(Category Link Templates File: templates FixBinary.xml Conflated Configuration File: config.xml TCP Session Management SBE Schema: templates MdpSessionMgmt.xml Note: Press the Start Test button to start or restart a Test. Please do not press the Start Test button START again if you are currently running this test. Test Not F

Description		Flag	S
1	Over an iLink connection, submit a GFS Limit Order message with a quantity greater than 100 million		Not
2	Receive and Process Execution Report - New Order message		Not
3	Receive and process Execution Report - Trade Outright. Verify below values from the repeating groups received.	•	Not
4	Receive and process Execution Report - Trade Outright as Maker	0	Not
5	Submit an Order Cancel Request message for the remaining quartity left on the original order submitted	0	Not
6	Receive and process Execution Report - Cancel message	0	Not
7	Submit a GFS Limit Order for the instrument	0	Not
8	Receive and process an Execution Report - Elimination		Not
		-	

REFRESH

To run a GFS Limit Order test:

Key: In not tested of complete in pending

- 1. Over an iLink connection, submit a GFS Limit Order message with a quantity greater than 100 million
- 2. Receive and Process Execution Report New Order message
- 3. Enter the following tag values to indicate that your system received and processed the Execution Report Trade
 Outright message.
 - first tag 1797-OrderEventExecID
 - first tag 1799-OrderEventPx
 - first tag 1800-OrderEventQty
 - first tag 1802-OrderEventText
 - second tag 1797-OrderEventExecID
 - second tag 1799-OrderEventPx
 - second tag 1800-OrderEventQty
 - second tag 1802-OrderEventText
- 4. Receive and process Execution Report Trade Outright as Maker.
- 5. Submit an Order Cancel Request message for the remaining quantity left on the original order submitted.
- 6. Receive and process Execution Report Cancel message.
- 7. Submit a GFS Limit Order for the instrument.
- 8. Receive and process an **Execution Report Elimination**.

iLink Order Mass Status Request for All Working Orders for an Instrument

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

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

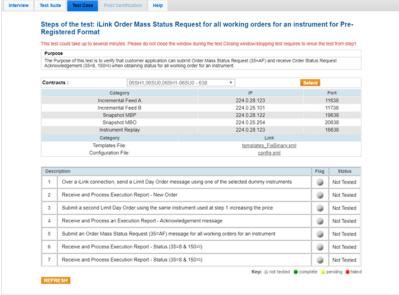


Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered or On-Demand Format

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





To run an iLink Order Mass Action Request for all Working Orders for an Instrument test:

- 1. Over a iLink connection, send a <u>Limit Day Order</u> message using one of the selected dummy instruments.
- 2. Select "Yes" or "No" to indicate whether or not your system processed the Execution Report New Order.
- 3. Submit a second Limit Day Order using the same instrument used at step 1 increasing the price.
- 4. Select Yes or No to indicate whether your system received and processed the Execution Report New Order message.
- 5. Submit an Order Mass Status Request (35=AF) message for all working orders for an instrument.
- 6. Enter the following tag values to indicate that your system received and processed the Execution Report Status (35=8 & 150=I):

- tag 39-OrdStatus
- tag 912-LastRptRequested
- tag 584-MassStatusReqID
- 7. Enter the following tag values to indicate that your system received and processed the Execution Report Status (35=8 & 150=I):
 - tag 39-OrdStatus
 - tag 912-LastRptRequested
 - tag 584-MassStatusReqID

iLink Order Mass Status Request for All Working Orders for an Instrument Group

This test verifies that you can submit an (Order Mass Status Request (tag 35-MsgType=AF) and receive an Order Status Request acknowledgment (35-8, 150-I) when requesting the current state of all working orders for an instrument group.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

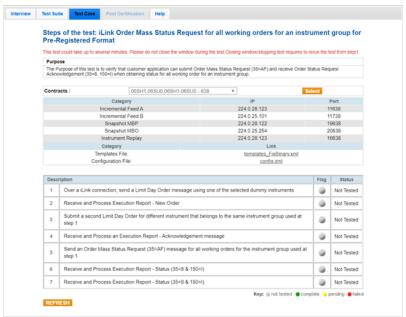


Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered or On-Demand Format

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





To run an iLink Order Mass Status Request for All Working Orders for an Instrument Group test:

- 1. Over a iLink connection, send a Limit Day Order message using one of the selected dummy instruments.
- 2. Select "Yes" or "No" to indicate whether your system processed the Execution Report New Order.
- 3. Submit a second Limit Day Order for different instrument that belongs to the same instrument group used at step 1.
- 4. Select "Yes" or "No" to indicate whether your system processed the Execution Report New Order message.
- 5. Send an Order Mass Status Request (35=AF) message for all working orders for the instrument group used at step 1.

- 6. Enter the values from the following tags to confirm that your system received and processed the Execution Report-Status (35=8 & 150=I).
 - Tag 39-OrdStatus
 - Tag 912-LastRptRequested
 - Tag 584-MassStatusReqID
- 7. Enter the values from the following tags to confirm that your system received and processed the Execution Report Status (35=8 & 150=I).
 - Tag 39-OrdStatus
 - Tag 912-LastRptRequested
 - Tag 584-MassStatusReqID

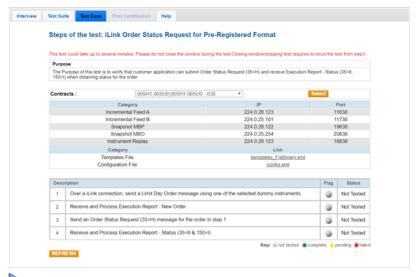
iLink Order Status Request

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

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.
 - Note: DO NOT select the START TEST button once the test is in progress.
 - **Note:** If a test is not proceeding to the next step, selecting the Refresh button (REFRESH) below the test steps may resolve the issue.

Pre-Registered or On-Demand Format

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



To run an iLink Order Status Request test:

- 1. Over a iLink CGW connection, send a Limit Day Order message using one of the selected dummy instruments.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 3. Send an Order Status Request (35=H) message for the order in step 1.
- 4. Enter the tag 39-OrdStatus value to indicate that your system received and processed the Execution Report Status (35=8 & 150=1).

Manage Minimum Quantity

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

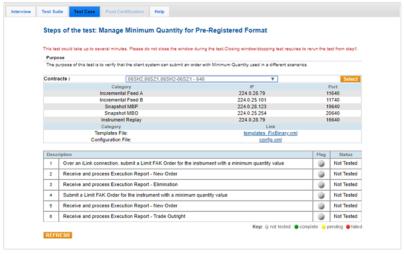
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

Pre-Registered or On-Demand Format

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





To run a Manage Minimum Quantity test:

- 1. Over an iLink connection, submit a Limit FAK Order for the instrument with a minimum quantity value.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 3. Select **Yes** or **No** to indicate whether your system received and processed the <u>Execution Report Elimination</u>.
- 4. Submit a Limit FAK Order for the instrument with a minimum quantity value.
- 5. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 6. Select Yes or No to indicate whether your system received and processed the Execution Report Trade Outright.

Manage Display Quantity

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)

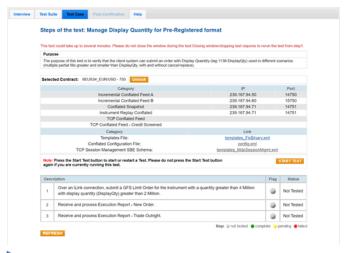
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.



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

Pre-Registered or On-Demand Format

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



To run a Manage Display Quantity test:

- 1. Over an iLink connection, submit a GFS Limit Order for the instrument with a quantity greater than 4 million with display quantity (DisplayQty) greater than 2 million.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 3. Select Yes or No to indicate whether your system received and processed the Execution Report Trade Outright.

Manage Display Quantity with Cancel/Replace

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).

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

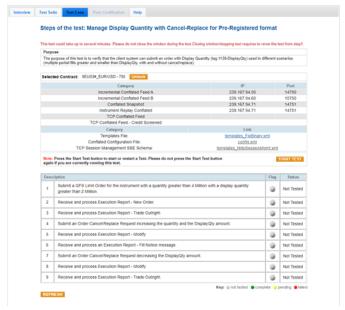


Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered or On-Demand Format

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



To run a Manage Maximum Quantity Display with Cancel/Replace test:

- 1. Submit a GFS Limit Order for the instrument with a quantity greater than 4 million with a display quantity greater than 2 million.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order
- 3. Select Yes or No to indicate whether your system received and processed the Execution Report Trade Outright
- 4. Submit an Order Cancel/Replace Request increasing the quantity and the DisplayQty amount
- 5. Select Yes or No to indicate whether your system received and processed the Execution Report Modify
- 6. Select Yes or No to indicate whether your system received and processed the Execution Report Fill Notice message.

- 7. Submit an Order Cancel/Replace Request decreasing the DisplayQty amount.
- 8. Select **Yes** or **No** to indicate whether your system received and processed the Execution Report Modify.
- 9. Select Yes or No to indicate whether your system received and processed the Execution Report Trade Outright.

Manual Order Indicator for ATS System

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

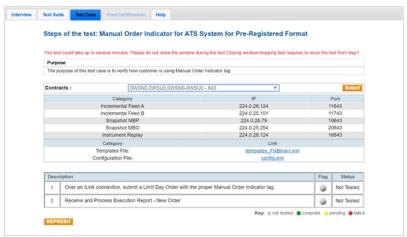
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.



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

Pre-Registered or On-Demand Format

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



To run a Manual Order Indicator for ATS System test:

- 1. Over an iLink connection, submit a Limit Day Order with the proper Manual Order Indicator tag.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.

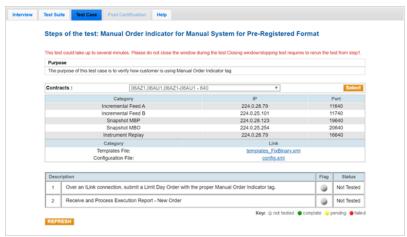
Manual Order Indicator for Manual System

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

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.
 - Note: DO NOT select the START TEST button once the test is in progress.
 - **Note:** If a test is not proceeding to the next step, selecting the Refresh button (REFRESH) below the test steps may resolve the issue.

Pre-Registered or On-Demand Format

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



To run a Manual Order Indicator for Manual System test:

- 1. Over an iLink connection, submit a Limit Day Order with the proper Manual Order Indicator tag.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.

Manual Order Indicator for Semi Automated System

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

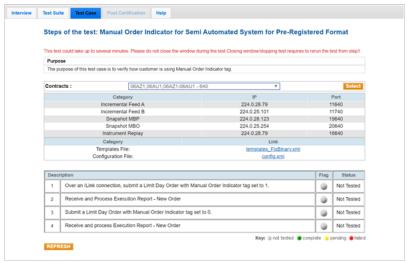
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

Pre-Registered or On-Demand Format

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





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

- 1. Over an iLink connection, submit a <u>Limit Day Order</u> with the Manual Order Indicator (tag 1028-ManualOrderIndicator) set to 1.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 3. Submit a Limit Day Order with Manual Order Indicator tag set to 0.
- 4. Select **Yes** or **No** to indicate whether your system received and processed the Execution Report New Order.

Minimum Quote Life (MQL) - Order Cancel

The purpose of this test is to verify the client system can submit and cancel a GFS limit order and receive and process the Execution Report Pending Cancel.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

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 a Minimum Quote Life (MQL) - Order Cancel test:

- 1. Over an iLink connection, submit a GFS Limit Order message.
- 2. Receive and Process Execution Report New Order message.
- 3. Submit an Order Cancel Request for the instrument within the MQL period.
- 4. Receive and process Execution Report Pending Cancel.
- 5. At the end of MQL period, receive and process Execution Report Cancel message.

Minimum Quote Life (MQL) - Order Cancel Replace

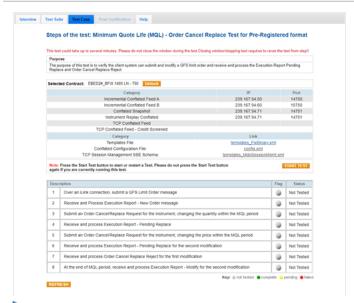
The purpose of this test is to verify the client system can submit and modify a GFS limit order and receive and process the Execution Report Pending Replace and Order Cancel Replace Reject

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the **Contracts** drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

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 a Minimum Quote Life (MQL) - Order Cancel Replace test:

- 1. Over an iLink connection, submit a GFS Limit Order message.
- 2. Receive and Process Execution Report New Order message.
- 3. Submit an Order Cancel/Replace Request for the instrument, changing the quantity within the MQL period.
- 4. Receive and process Execution Report Pending Replace.
- 5. Submit an Order Cancel/Replace Request for the instrument, changing the price within the MQL period.
- 6. Receive and process Execution Report Pending Replace for the second modification.
- 7. Receive and process Order Cancel Replace Reject for the first modification.
- 8. At the end of MQL period, receive and process Execution Report Modify for the second modification.

Multiple Cancel Replace

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 a change of priority in the book.

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

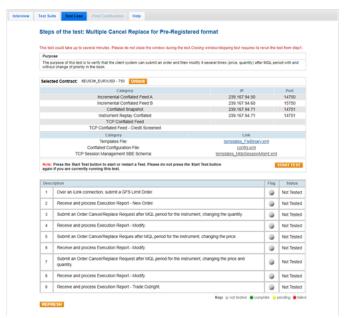


Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered or On-Demand Format

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



To run a Multiple Cancel Replace test:

- 1. Over an iLink connection, submit a GFS limit order.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 3. Submit an Order Cancel/Replace Request after the MQL period for the instrument, changing the quantity.
- 4. Select Yes or No to indicate whether your system received and processed the Execution Report Modify.
- 5. Submit an Order Cancel/Replace Request after the MQL period for the instrument, changing the price.
- 6. Select Yes or No to indicate whether your system received and processed the Execution Report Modify.
- 7. Submit an Order Cancel/Replace Request after the MQL period for the instrument, changing the price and quantity.

- 8. Select Yes or No to indicate whether your system received and processed the Execution Report Modify.
- 9. Select Yes or No to indicate whether your system received and processed the Execution Report Trade Outright.

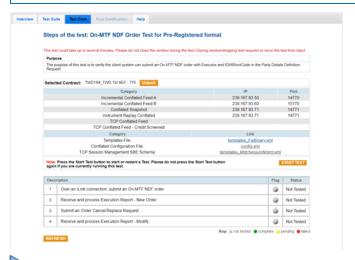
ON-MTF NDF Orders

The purpose of this test is to verify the client system can submit an On-MTF NDF order with Executor and IDMShortCode in the Party Details Definition Request.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.
 - Note: DO NOT select the START TEST button once the test is in progress.
 - **Note:** If a test is not proceeding to the next step, selecting the Refresh button (REFRESH) below the test steps may resolve the issue.

Pre-Registered or On-Demand Format

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



To run an ON-MTF NDF Orders test:

- 1. Over an iLink connection, submit an On-MTF NDF order.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- Note: The next 2 steps are only required for client systems that support Order Cancel-Replace functionality
- 3. Submit an Order Cancel/Replace Request.
- 4. Select Yes or No to indicate whether your system received and processed the Execution Report Modify.

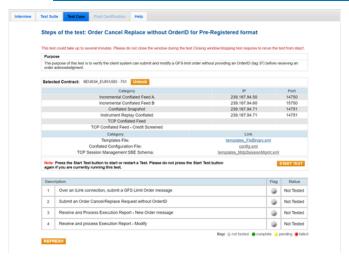
Order Cancel Replace without OrderID

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

- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.
 - 0

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

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 an Order Cancel Replace without OrderID test:

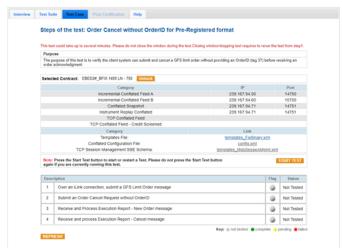
- 1. Over an iLink connection, submit a GFS Limit Order message.
- 2. Submit an Order Cancel Request without OrderID.
- 3. Receive and Process Execution Report New Order message.
- 4. Receive and process Execution Report Cancel message.

Order Cancel without OrderID

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

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the **START TEST** button.
 - Note: DO NOT select the START TEST button once the test is in progress.

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 an Order Cancel without OrderID test:

- 1. Over an iLink connection, submit a GFS Limit Order message.
- 2. Submit an Order Cancel Request without OrderID.
- 3. Receive and Process Execution Report New Order message.
- 4. Receive and process Execution Report Cancel message.

Pre-Registration of Administrative Information in Service Gateway

The purpose of this test is to verify the client system can properly connect to the 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.



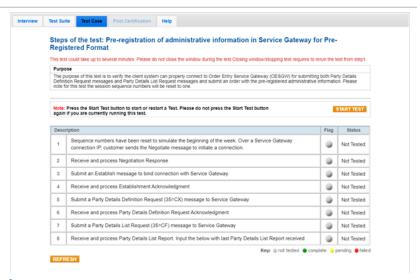
Note: For this test the session sequence numbers will be reset to one.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. Select the **START TEST** button.



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

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 a Pre-Registration of Administrative Information in Service Gateway test:

- 1. Sequence numbers have been reset to simulate the beginning of the week. 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 the connection with the Service Gateway.
- 4. Receive and process Establishment Acknowledgment.
- 5. Submit a Party Details Definition Request (35=CX) message to Service Gateway.
- 6. Enter the tag 1505-PartyDetailsListRequestID value to indicate that your system received and processed the PartyDetails Definition Request Acknowledgment.
- 7. Submit a Party Details List Request (35=CF) message to Service Gateway.
- 8. Enter the following tag values to indicate that your system received and processed the Party Details List Report:
 - tag 1512-TotNoParties
 - tag 893-LastFragment

Price Discretion

The purpose of this test is to verify the client system can submit an order with Price Discretion and receive and process the Acknowledgement and Fill messages

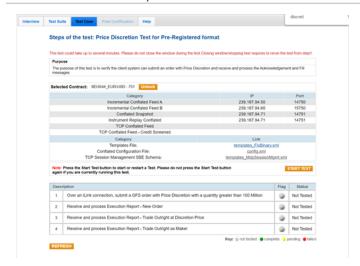
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

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

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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 a Price Discretion test:

- 1. Over an iLink connection, submit a GFS order with Price Discretion with a quantity greater than 100 Million
- 2. Receive and process Execution Report New Order.
- 3. Receive and process Execution Report Trade Outright at Discretion Price.
- 4. Receive and process Execution Report Trade Outright as Maker.

Processing Rejects

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

- Pre-Registered or On-Demand Format
- Pre-Registered or On-Demand Format (FAK Only)
- 1. Select a SenderComp from the drop-down and select ASSIGN if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.

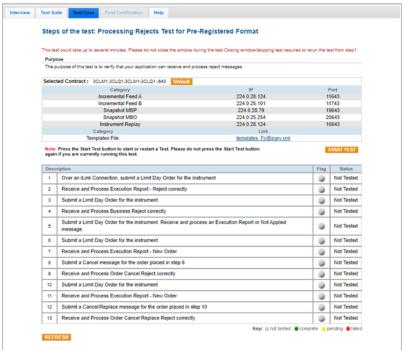


Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered or On-Demand Format

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





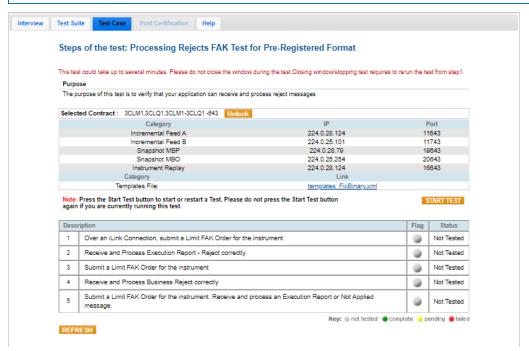
To run a Processing Rejects test:

- 1. Over an iLink connection, submit a Limit Day Order for the instrument.
- 2. Select **Yes** or **No** to indicate whether your system received and processed the Execution Report Reject correctly.
- 3. Submit a Limit Day Order for the instrument.

- 4. Select Yes or No to indicate whether your system received and processed the Business Reject correctly.
- 5. Submit a Limit Day Order for the instrument. Receive and process the Execution Report or Not Applied message.
- 6. Submit a Limit Day Order for the instrument.
- 7. Select **Yes** or **No** to indicate whether your system received and processed the **Execution Report New Order**.
- 8. Submit an Order Cancel Request message for the order placed in step 5.
- 9. Select Yes or No to indicate whether your system received and processed the Order Cancel Reject correctly.
 - Note: The remaining steps are only required for client systems that support Order Cancel-Replace functionality.
- 10. Submit a Limit Day Order for the instrument.
- 11. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 12. Submit a Order Cancel/Replace Request message for the order placed in step 9.
- 13. Select Yes or No to indicate whether your system received and processed the Order Cancel Replace Reject correctly.

Pre-Registered or On-Demand Format (FAK Only)

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



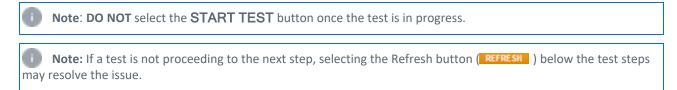
To run a Processing Rejects FAK test:

- 1. Over an iLink connection, submit a Limit FAK Order for the instrument.
- 2. Select Yes or No to indicate whether your system received and processed the Execution Report Reject correctly.
- 3. Submit a Limit FAK Order for the instrument.
- 4. Select Yes or No to indicate whether your system received and processed the Business Reject correctly.
- 5. Submit a Limit FAK Order for the instrument. Receive and process the Execution Report or Not Applied message.

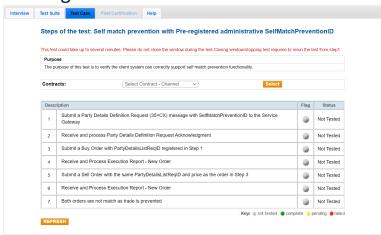
Self Match Prevention with Administrative SelfMatchPreventionID

The purpose of this test is to verify the client system can correctly support self match prevention functionality.

- · Pre-Registered Format
- On-Demand Format
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



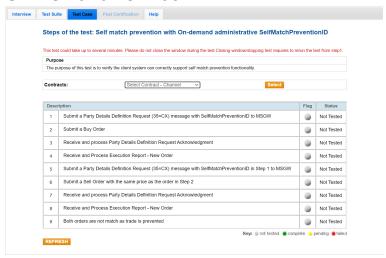
Pre-Registered Format



To run a Self Match Prevention with Pre-Registered Administrative SelfMatchPreventionID test:

- 1. Submit a Party Details Definition Request (35=CX) message with SelfMatchPreventionID to the Service Gateway.
- 2. Select **Yes** or **No** to indicate whether your system received and processed the <u>Party Details Definition Request</u> Acknowledgment..
- 3. Submit an iLink Buy Order with the PartyDetailsListRegID registered in Step 1.
- 4. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- $5. \ \ Submit\ an\ iLink\ Sell\ Order\ with\ the\ same\ PartyDetailsListReqID\ and\ price\ as\ the\ order\ in\ step\ 3.$
- 6. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 7. Select **Yes** or **No** to indicate whether the orders are matched.

On-Demand Format



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 a Self Match Prevention with On-Demand Administrative SelfMatchPreventionID test:

- 1. Submit a Party Details Definition Request (35=CX) message with SelfMatchPreventionID to the MSGW.
- 2. Submit an iLink Buy Order.
- 3. Select **Yes** or **No** to indicate whether your system received and processed the <u>Party Details Definition Request</u> Acknowledgment.
- 4. Select **Yes** or **No** to indicate whether your system received and processed the **Execution Report New Order**.
- 5. Submit a Party Details Definition Request (35=CX) message with SelfMatchPreventionID from step 1 to the MSGW.
- 6. Submit an iLink Sell Order with the same price as the order in step 2.
- 7. Select **Yes** or **No** to indicate whether your system received and proTcessed the Party Details Definition Request Acknowledgment.
- 8. Select Yes or No to indicate whether your system received and processed the Execution Report New Order.
- 9. Select **Yes** or **No** to indicate whether the orders are matched.

Support MOSR Functionality for a Particular Market Segment

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

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

Pre-Registered or On-Demand Format

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



To run a Support MOSR Functionality for a Particular Market Segment test:

- 1. Over an iLink connection, submit a Limit Day order for the selected instrument.
- 2. Select **Yes** or **No** to indicate whether your system received and processed the <u>Execution Report New Order</u>.
- 3. Using the same instrument, submit a second Limit Day order.
- 4. Select Yes or No to indicate whether your system received and processed the Execution Report New Order message.
- 5. Submit Order Status Request (35=AF) message with tag 585-MassStatusReqType=100 for all orders for a specific Market Segment.

- 6. Enter the following tag values to indicate that your system received and processed the Execution Report Status (35=8 & 150=I) using the FIRST Order Mass Action Report received:
 - tag 39-OrdStatus
 - tag 912-LastRptRequested
 - tag 584-MassStatusReqID
- 7. Enter the following tag values to indicate that your system received and processed the Execution Report Status (35=8 & 150=I) using the LAST Order Mass Action Report received:
 - tag 39-OrdStatus
 - tag 912-LastRptRequested
 - tag 584-MassStatusReqID

Failover Tests

This section contains information on the Failover tests.

Failover from Primary to Backup Components (Binding without Initialization)

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 a primary gateway without re-initialization.

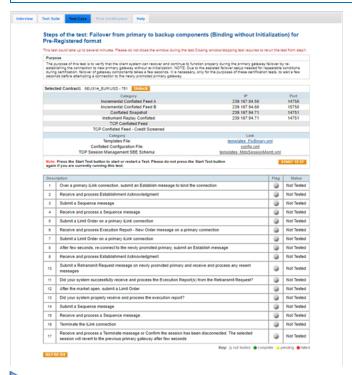
NOTE: Due to the assisted failover setup needed for repeatable conditions during certification, failover of gateway components takes a few seconds. It is necessary, only for the purposes of these certification tests, to wait a few seconds before attempting a connection to the newly promoted primary gateway.

- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.
 - Note: DO NOT select the START TEST button once the test is in progress.

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

Pre-Registered or On-Demand Format

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



To run a Failover from Primary to Backup Components (Binding without Initialization) test:

- 1. Over a primary iLink connection, submit an Establish message to bind the connection.
- 2. Receive and process the Establishment Acknowledgment message.
- 3. Submit a Sequence message.
- 4. Receive and process a Sequence message.
- 5. Submit a Limit Order on a primary MSGW connection.
- 6. Select **Yes** or **No** to indicate whether your system received and processed the <u>Execution Report New Order</u> message on a primary connection.
- 7. Submit a Limit Order on a primary ilink connection.
- 8. After a 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. Select **Yes** or **No** to indicate whether your system received and processed the Execution Report(s) from the Retransmit Request.
- 12. After the market open, submit a Limit Day Order.
- 13. Select Yes or No to indicate whether your system received and processed the Execution Report New Order?
- 14. Submit a Sequence message.
- 15. Receive and process a Sequence message.
- 16. Terminate the iLink session.
- 17. Receive and process a Terminate message or Confirm the session has been disconnected. The selected session will revert to the previous primary gateway after few seconds

Failover from Primary to Backup Components (Initialization and Binding)

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 the new primary gateway.

NOTE: Due to the assisted failover setup needed for repeatable conditions during certification, failover of the gateway from primary to backup components (Initialization and Binding) 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.

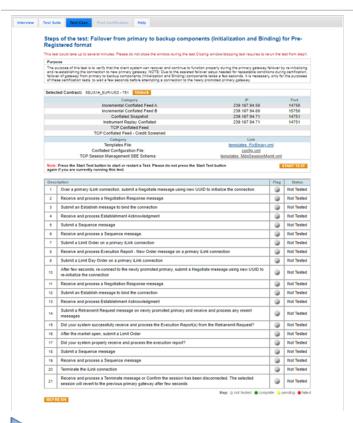
- 1. Select a **SenderComp** from the drop-down and select **ASSIGN** if a SenderComp is not already assigned.
- 2. From the Contracts drop-down, select the desired contract if the contract is not already locked.
- 3. Select the START TEST button.



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

Pre-Registered or On-Demand Format

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



To run a Failover from Primary to Backup Components (Initialization and Binding) test:

- 1. Over a primary iLink connection, submit a Negotiate message using new UUID to initialize the connection.
- 2. Receive and process a Negotiation Response message.
- 3. Submit an Establish message to bind connection.
- 4. Receive and process the **Establishment Acknowledgment**.
- 5. Submit a Sequence message.
- 6. Receive and process a Sequence message.
- 7. Submit a Limit Order on a primary iLink connection.
- 8. Select **Yes** or **No** to indicate whether your system received and processed the <u>Execution Report New Order</u> message on a primary iLink connection.
- 9. Submit a Limit Day Order on a primary iLink connection.
- After a few seconds, re-connect to the newly promoted primary: Submit a Negotiate message using a new UUID to reinitialize the connection.
- 11. Receive and process a Negotiation Response message.
- 12. Submit an Establish message to bind the connection.
- 13. Receive and process the Establishment Acknowledgment.
- 14. Submit a Retransmit Request message on newly promoted primary and receive and process any resent messages.
- 15. Select **Yes** or **No** to indicate whether your system received and processed the Execution Report(s) from the Retransmit Request.
- 16. After the market open, submit a Limit Order.
- 17. Select Yes or No to indicate whether your system received and processed the execution report?

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- 18. Submit a Sequence message.
- 19. Receive and process a Sequence message.
- 20. Terminate the iLink connection.
- 21. Receive and process a Terminate message or confirm the session has been disconnected. The selected session will revert to the previous primary gateway after few seconds.