

Member Access using UTP-DIRECT protocol NYSE Euronext Testing Guide

July 2009 – V 2.0

VERSION HISTORY

Version Number	Date	Source Documents Used	Reasons for issuing a New Version	Sections changed
V 0.5	9 January 2009			-
V 2.0	July 2009	Appendix Client Order ID Policy	Length of ClOrdID has extended from 4 to 8 bytes	<ul style="list-style-type: none"> - Added section on ClOrdID and prefixes management. - Added section « Trading Functions »

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I- SLE CONNECTIVITY

CYCLE C01: LOG-ON MANAGEMENT

CYCLE C02: RESTART MANAGEMENT

CYCLE C03: RETRANSMISSION MANAGEMENT

CYCLE C04: ADMINISTRATIVE MESSAGES MANAGEMENT

CYCLE C05: CLORDID MANAGEMENT

CYCLE C01: LOG-ON MANAGEMENT

CYCLE OBJECTIVES:

This cycle tests an SLE's ability to receive and interpret the messages sent when a log-on attempt fails.

CYCLE PREPARATION:

- Exchange ensures that the SLE is logged off.
- Customers check their connections and make sure that the SLE is not logged on.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1. Log-on failure due to invalid sequence number	Customer initiates an SLE log-on with a lastsequenum higher than expected	<ul style="list-style-type: none"> • SLE should interpret correctly log-on reject. SLE should not keep retrying as long as customer has not corrected the problem.
2. Log-on failure due to invalid SLE Id.	Customer initiates an SLE log-on with an invalid SLE Id	<ul style="list-style-type: none"> • SLE should interpret correctly log-on reject. SLE should not keep retrying as long as customer has not corrected the problem.
3. Log-on failure due to port mismatch	Customer initiates an SLE log-on using the port of a different SLE. (Applicable only if customer owns several SLEs)	<ul style="list-style-type: none"> • SLE should interpret correctly log-on reject. SLE should not keep retrying as long as customer has not corrected the problem.
4. Log-on failure due to already existing connection	Customer initiates a second SLE log-on after already having established a first place log-on with the same SLE ID	<ul style="list-style-type: none"> • SLE should interpret correctly log-on reject. SLE should not keep retrying as long as customer has not corrected the problem.

CYCLE DETAILED INSTRUCTIONS:

UNIT 1: LOG-ON FAILURE DUE TO INVALID SEQUENCE NUMBER

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to begin test.		
Customer	Customer initiates an SLE log-on with LastMsgSeqNum higher than last received.	SLE ID valid LastMsgSeqNum higher than last message received.	Log-on (A) Log-on Reject (j) : field RejCode.

COMPLETION CRITERIA:

- SLE receives and interprets log-on rejection. SLE should not keep retrying as long as customer has not corrected the problem.

UNIT 2: LOG-ON FAILURE DUE TO INVALID SLE ID.

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to begin the test.		
Customer	Customer initiates an SLE log-on with invalid SLE Id.	SLE ID invalid LastMsgSeqNum equal to last message received	Log-on (A) Log-on Reject (j): field RejCode.

COMPLETION CRITERIA:

- SLE receives and interprets log-on rejection. SLE should not keep retrying as long as customer has not corrected the problem.

UNIT 3: LOG-ON FAILURE DUE TO PORT MISMATCH (*)
INSTRUCTIONS:

(*) this test is applicable only if the customer owns several connections.

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to initiate an SLE log-on.		
Customer	Customer initiates an SLE log-on using the port of another SLE that he owns.	SLE ID valid Port invalid	Log-on (A) Log-on Reject (j): field RejCode

COMPLETION CRITERIA:

- SLE receives and interprets log-on rejection. SLE should not keep retrying as long as customer has not corrected the problem.

UNIT 4: LOG-ON FAILURE DUE TO ALREADY EXISTING CONNECTION
INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to initiate an SLE log-on.		
Customer	Customer initiates a first SLE log-on with valid sequence number.	SLE ID invalid LastMsgSeqNum equal to last message received	Log-on (A)
Customer	Customer initiates a second SLE log-on with valid sequence number.	SLE ID invalid LastMsgSeqNum equal to last message received	Log-on (A) Log-on Reject (j) : field RejCode

COMPLETION CRITERIA:

- SLE receives and interprets log-on rejection. SLE should not keep retrying as long as customer has not corrected the problem.

CYCLE C02: RESTART MANAGEMENT

CYCLE OBJECTIVES:

This cycle tests the software's ability to restart data transmission correctly.

CYCLE PREPARATION:

- Exchange ensures that the SLE is disconnected.
- Customers check their connections and make sure that the SLE is not logged on.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1. SLE Beginning of the day restart.	Customer initiates SLE Beginning of the Day restart and then sends the first message of the day.	<ul style="list-style-type: none"> • SLE session restarts correctly. • SLE receives all Beginning of Day unsolicited messages. • SLE data flow correct.
2. SLE Customer initiated Logout N° 1	Customer initiates SLE Logout message.	<ul style="list-style-type: none"> • SLE session terminates correctly.
3. SLE Restart after Customer initiated Logout N°1	After an SLE customer has initiated the logout process, the customer restarts the SLE. The Exchange then sends an unsolicited message.	<ul style="list-style-type: none"> • SLE session restarts correctly. • SLE receives unsolicited message. • SLE data flow correct.
4. SLE Customer initiated Logout N° 2	Customer initiates SLE logout.	<ul style="list-style-type: none"> • SLE session terminates correctly. • SLE data flow correct.
5. SLE Restart after Customer initiated Logout N° 2	After an SLE customer has initiated the logout process, the Exchange sends an unsolicited message then invites customer to restart the SLE. The customer then sends a message.	<ul style="list-style-type: none"> • SLE session restarts correctly. • SLE receives pending message. • SLE transmits message. • SLE data flow correct.
6. Exchange initiated Logout N° 1	Exchange initiates SLE logout.	<ul style="list-style-type: none"> • SLE session terminates correctly. • SLE data flow correct.
7. SLE Restart after Exchange initiated Logout N° 1	After an Exchange initiated logout, the SLE logs on and initiates an SLE connection. The Exchange sends an unsolicited message. The SLE processes the message.	<ul style="list-style-type: none"> • SLE session restarts correctly. • SLE receives unsolicited message. • SLE transmits message. • SLE data flow correct.

8. Exchange initiated Logout N° 2	Exchange initiates SLE logout	<ul style="list-style-type: none"> • SLE session terminates correctly. • SLE data flow correct.
9. SLE Restart after Exchange initiated Logout N° 2	After the Exchange has initiated an SLE logout, the Exchange sends an unsolicited message then invites the customer to restart the SLE. The customer then sends a message.	<ul style="list-style-type: none"> • SLE session restarts correctly. • SLE receives pending message. • SLE transmits message. • SLE data flow correct.

CYCLE DETAILED INSTRUCTIONS:

UNIT 1: SLE BEGINNING OF THE DAY RESTART.

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Customer	Customer initiates an SLE beginning of day restart	LastMsgSeqNum equal to 0	Log-on (A)
Exchange	Exchange sends unsolicited messages		
Customer	Customer sends 1 message.		New Order (D)
Exchange	Exchange checks reception of message.		
Exchange	Exchange checks SLE reception data flow.		

COMPLETION CRITERIA

- SLE session restarts correctly.
- SLE transmits the first message since Beginning of the Day.
- SLE data flow correct.

UNIT 2: SLE 'CUSTOMER INITIATED' LOGOFF N° 1**INSTRUCTIONS:**

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Customer	Customer logs the SLE off		
Exchange	Exchange checks SLE session has been terminated correctly.		

COMPLETION CRITERIA

- SLE session terminates correctly.

UNIT 3: SLE RESTART AFTER 'CUSTOMER INITIATED' LOGOUT N° 1
INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Customer	Customer initiates an SLE restart	LastMsgSeqNum equal to last message received	Log-on (A)
Exchange	Exchange checks SLE restart handshaking.	LastMsgSeqNum within customer log-on LastMsgSeqNum within CCG binary log-on	Log-on (A)
Exchange	Exchange sends 1 unsolicited message	CCG bin MsgSeqNum incremented with one	
Customer	Customer confirms receipt of the unsolicited message.	SLE processes the incoming message	
Exchange	Exchange confirms SLE is up and running.		

COMPLETION CRITERIA

- SLE session restarts correctly.
- SLE receives unsolicited message.
- SLE data flow correct.

UNIT 4: SLE 'CUSTOMER INITIATED' LOGOFF N°2**INSTRUCTIONS:**

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Customer	Customer logs the SLE off		
Exchange	Exchange checks that the SLE session has terminated correctly.		

COMPLETION CRITERIA

- SLE session terminates correctly.

UNIT 5: SLE RESTART AFTER 'CUSTOMER INITIATED' LOGOUT N° 2
INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange sends 1 unsolicited message		
Exchange	Exchange advises the customer to start the test.		
Customer	Customer restarts the SLE.	LastMsgSeqNum equal to last message received	Log-on (A)
Exchange	Exchange checks SLE restart handshaking.	LastMsgSeqNum within customer log-on LastMsgSeqNum within CCG binary log-on	Log-on (A)
Customer	Customer confirms receipt of pending message	CCG bin MsgSeqNum incremented with one	
Customer	Client sends 1 order message	Customer MsgSeqNum incremented with one	New Order (D)
Exchange	Exchange confirms receipt of order message.	Exchange processes the incoming message	
Exchange	Exchange confirms SLE is up and running.		

COMPLETION CRITERIA

- SLE session restarts correctly.
- SLE receives pending message.
- SLE sends message.
- SLE data flow correct.

UNIT 6: SLE 'EXCHANGE INITIATED' LOGOFF N° 1

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Exchange	Exchange logs the SLE off		
Customer	Customer confirms that the SLE session has terminated correctly.		

COMPLETION CRITERIA

- SLE session terminates correctly.

UNIT 7: SLE RESTART AFTER 'EXCHANGE INITIATED' LOGOUT N° 1
INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Customer	Customer restarts the SLE.	LastMsgSeqNum equal to last message received	Log-on (A)
Exchange	Exchange checks SLE restart handshaking.	LastMsgSeqNum within customer log-on LastMsgSeqNum within CCG binary log-on	Log-on (A)
Exchange	Exchange sends 1 unsolicited message	CCG bin MsgSeqNum incremented with one	
Customer	Customer confirms receipt of the unsolicited message.	SLE processes the incoming message	
Exchange	Exchange confirms SLE is up and running.		
Customer	Client sends 1 order message	Customer MsgSeqNum incremented with one	New Order (D)
Exchange	Exchange confirms receipt of order message.	Exchange processes the incoming message	
Exchange	Exchange confirms SLE is up and running.		

COMPLETION CRITERIA

- SLE session restarts correctly.
- SLE receives unsolicited message.
- SLE data flow correct.

UNIT 8: SLE 'EXCHANGE INITIATED' LOGOFF N° 2

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Exchange	Exchange logs the SLE off		
Customer	Customer confirms that the SLE session has terminated correctly.		

COMPLETION CRITERIA

- SLE session terminates correctly.
- SLE data flow correct.

UNIT 9: SLE RESTART AFTER 'EXCHANGE INITIATED' LOGOUT N° 2

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange sends 1 unsolicited message.		
Exchange	Exchange advises the customer to start the test.		
Customer	Customer restarts the SLE.	LastMsgSeqNum equal to last message received	Log-on (A)
Exchange	Exchange checks SLE restart handshaking.	LastMsgSeqNum within customer log-on LastMsgSeqNum within CCG binary log-on	Log-on (A)
Customer	Customer confirms receipt of pending message.	CCG bin MsgSeqNum incremented with one	
Customer	Client sends 1 order message.	Customer MsgSeqNum incremented with one	New Order (D)
Exchange	Exchange confirms receipt of order message.	Exchange processes the incoming message	
Exchange	Exchange confirms SLE is up and running.		

COMPLETION CRITERIA

- SLE session restarts correctly.
- SLE receives pending message.
- SLE sends message.
- SLE data flow correct.

CYCLE C03: RETRANSMISSION MANAGEMENT

CYCLE OBJECTIVES:

This cycle tests the software's ability to replay data reception correctly.

CYCLE PREPARATION:

- Exchange ensures that the SLE is disconnected.
- Customers check their connections and make sure that the SLE is not logged on.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1. SLE Beginning of the day reception replay	Customer initiates SLE Beginning of the Day restart (ie set LastMsgSeqNum equal to 0)	<ul style="list-style-type: none"> • SLE session restarts correctly. • SLE receives all Beginning of Day unsolicited messages. • SLE data flow correct.
2. SLE intraday reception replay	After the SLE customer has initiated the logout process, the customer initiates SLE restart from a specific LastMsgSeqNum. The Exchange the resends messages from the requested LastMsgSeqNum	<ul style="list-style-type: none"> • SLE session restarts correctly. • SLE receives resent messages. • SLE data flow correct.

CYCLE DETAILED INSTRUCTIONS:

UNIT 1: SLE BEGINNING OF THE DAY RECEPTION REPLAY

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Customer	Customer initiates an SLE beginning of day restart	LastMsgSeqNum equal to 0	Log-on (A)
Exchange	Exchange resend messages.		
Customer	Customer confirms retransmission of message.		

COMPLETION CRITERIA

- SLE session restarts correctly.
- SLE receives retransmission of all messages since Beginning of the Day.
- SLE data flow correct.

UNIT 2: SLE INTRADAY RECEPTION REPLAY.
INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to start the test.		
Customer	Customer initiates a SLE beginning of day restart.	LastMsgSeqNum equal to a specific MsgSeqNum	Log-on (A)
Exchange	Exchange resend messages.		
Customer	Customer confirms retransmission of message.		

COMPLETION CRITERIA

- SLE session restarts correctly.
- SLE receives retransmission of all messages since Beginning of the Day since the specific MsgSeqNum.
- SLE data flow correct.

CYCLE C04: ADMINISTRATIVE MESSAGES MANAGEMENT

CYCLE OBJECTIVES:

This cycle tests the software's ability to send messages

CYCLE PREPARATION:

- Exchange ensures that the SLE is disconnected.
- Customers check their connections and make sure that the SLE is not logged on.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1. Periodic reception of heartbeats	Customer establishes connection without sending any messages for a period of time	<ul style="list-style-type: none"> • SLE receives heartbeats periodically
2. Test request sent by customer	Customer establishes connection without sending any messages for a period of time	<ul style="list-style-type: none"> • SLE receives heartbeat reply from CCG
3. Test request sent by CCG	Customer establishes connection without sending any message for a period of time	<ul style="list-style-type: none"> • SLE replies with heartbeat

CYCLE DETAILED INSTRUCTIONS:**UNIT 1- PERIODIC RECEPTION OF HEARTBEATS**

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to begin test		.
Customer	Customer initiates an SLE start	LastMsgSeqNum equal to last message received	Log-on (A)
Customer	Customer confirms receipt of periodic reception of heartbeats		HeartBeat (0)

COMPLETION CRITERIA:

- SLE receives heartbeats periodically

UNIT 2- TEST REQUEST SENT BY CUSTOMER
INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to begin test		.
Customer	Customer initiates an SLE start	LastMsgSeqNum equal to last message received	Log-on (A)
Customer	Customer provokes emission of Test Request		Test Request (1)
Exchange	Exchange confirms receipt of Test Request		
Customer	Customer confirms receipt of heartbeat		

COMPLETION CRITERIA:

- SLE receives heartbeat reply from CCG.

UNIT 3- TEST REQUEST SENT BY EXCHANGE
INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Exchange	Exchange advises the customer to begin test		.
Customer	Customer initiates an SLE start	LastMsgSeqNum equal to last message received	Log-on (A)
Exchange	Exchange sends a Test Request		Test Request (1)
Customer	Customer confirms receipt of Test Request		
Exchange	Exchange confirms receipt of heartbeat		

COMPLETION CRITERIA:

- SLE reply with heartbeat correctly.

CYCLE C05: CLORDID MANAGEMENT

CYCLE OBJECTIVES:

There are three different types of configuration available for an SLE using the UTP-Direct protocol: The ProtocolVersion 1, ProtocolVersion 1 and 2 or ProtocolVersion 2.

Via ProtocolVersion 1, the SLE can only send orders using a ClOrdID of 4 bytes.

Via ProtocolVersion 1 and 2, the SLE can send orders using a ClOrdID of 4 bytes or 8 bytes.

Via ProtocolVersion 2, the SLE can only send orders using a ClOrdID of 8 bytes.

This cycle is split into three sections:

- The first cycle concerns connection and disconnection.
- The second cycle concerns Service Bureau access via an ASP.
- The third cycle concerns regular client access.

The term “Regular Access” is used in the following case: When a firm contracts directly its own and exclusive order entry access means with NYSE Euronext, the Firm Trading Solution type is called Regular Access.

The term “Service Bureau Access” is used in the following case: When a 3rd party customer, also named Service Bureau, contracts order entry access means with NYSE Euronext to act as an order carrier on behalf of several firms, the Firm Trading Solution type is called Service Bureau Access.

The ClOrdID value assigned to any given order must be unique for the Firm across all available connections.

To ensure for a given firm there is no conflict among its several CCG accesses, the exchange has put in place a "mandatory prefix policy" for a Service Bureau Access and highly recommends an optional "instance prefix policy" for Service Bureau Access and Regular Access.

Regular Access: must specify a ClOrdID value in the positive number range.

▪ Service Bureau:

– Must specify a ClOrdID value in the negative number range.

AND

– Must start all ClOrdID values with the unique 3-digit number prefix assigned to the Service Bureau by the exchange.

Recommended Instance prefix:

Regular Access: The 2 leading digits of decimal (base 10) representation, keeping in mind the “mandatory prefix policy” constraint

▪ Service Bureau: The next 2 digits of decimal (base 10) representation after the 3-character Service Bureau

Important notes:

- 1- “Software Vendors” and “In-house” developers must be able to extend the instance prefix size for a Firm which has more instances than the 2-character prefix available combinations can cover.
- 2- “Software Vendors” and “In-house” developers must be able to encode Instance prefix as numerical if a Firm requires UTP-Direct vs UTP-FIX 4.2 compatibility.

1. CYCLE PREPARATION FOR CONNECTION AND DISCONNECTION:

- The Exchange and Customer agree which setup the SLE will be using during the test
- Customers check their connections and make sure their SLE is able to log in.

CYCLE DESCRIPTION FOR SLE CONFIGURED FOR VERSION 1:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1a. Connection version 1	<ul style="list-style-type: none"> • Customer connects with ProtocolVersion 1 • Customer sends an order with ProtocolVersion 1 and ClOrdID in 4 bytes 	<ul style="list-style-type: none"> • Customer confirms he is able to connect • Exchange confirms the ClOrdID has a length of 4 bytes
1b. Rejection version 2	<ul style="list-style-type: none"> • Customer connects with ProtocolVersion 2 • Customer sends an order with ProtocolVersion 2 and ClOrdID in 8 bytes 	<ul style="list-style-type: none"> • Customer confirms the SLE is able to connect • Customer confirms the connection is dropped when the order is sent with a ProtocolVersion 2
2. Drop copy	<ul style="list-style-type: none"> • Customer connects the drop copy channel with ProtocolVersion 1 • Customer sends an order via a different connection using version 2 and ClOrdID in 8 bytes 	<ul style="list-style-type: none"> • Customer confirms that he’s aware that a Drop copy configured for version 1 is not able to receive executions for an SLE that is using a configuration for version 2

CYCLE DESCRIPTION FOR SLE CONFIGURED FOR VERSION 1 AND 2:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1a. Connection version 1	<ul style="list-style-type: none"> • Customer connects with ProtocolVersion 1 • Customer sends an order with ProtocolVersion 1 and ClOrdID in 4 bytes 	<ul style="list-style-type: none"> • Customer confirms he is able to connect • Exchange confirms the ClOrdID has a length of 4 bytes
1b. Connection version 2	<ul style="list-style-type: none"> • Customer connects with ProtocolVersion 2 • Customer sends an order with ProtocolVersion 2 and ClOrdID in 8 bytes 	<ul style="list-style-type: none"> • Customer confirms the connection is • Exchange confirms the ClOrdID has a length of 8 bytes
2a. Drop copy version 1	<ul style="list-style-type: none"> • Customer connects the drop copy channel with 	<ul style="list-style-type: none"> • Customer confirms that he’s aware that a Drop copy

	ProtocolVersion 1 <ul style="list-style-type: none"> Customer sends an order via a different connection using version 2 and ClOrdID in 8 bytes 	connected for version 1 is not able to receive executions for an SLE that is using a configuration for version 2
2b. Drop copy version 2	<ul style="list-style-type: none"> Customer connects the drop copy channel with ProtocolVersion 2 Customer sends an order via a different connection using version 1 and ClOrdID in 4 bytes 	<ul style="list-style-type: none"> Customer confirms that he's aware that a Drop copy configured for version 2 is able to receive executions for an SLE that is using a configuration for version 1 The extra bytes will be filled with zeros

CYCLE DESCRIPTION FOR SLE CONFIGURED FOR VERSION 2:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1a. Connection version 1	<ul style="list-style-type: none"> Customer connects with ProtocolVersion 1 Customer sends an order with ProtocolVersion 1 and ClOrdID in 4 bytes 	<ul style="list-style-type: none"> Customer confirms the SLE is able to connect Customer confirms the connection is dropped when the order is sent with a ProtocolVersion 1
1b. Connection version 2	<ul style="list-style-type: none"> Customer connects with ProtocolVersion 2 Customer sends an order with ProtocolVersion 2 and ClOrdID in 8 bytes 	<ul style="list-style-type: none"> Customer confirms the SLE is able to connect Exchange confirms the ClOrdID has a length of 8 bytes
2b. Drop copy	<ul style="list-style-type: none"> Customer connects the drop copy channel with ProtocolVersion 2 Customer sends an order via a different connection using version 1 and ClOrdID in 4 bytes 	<ul style="list-style-type: none"> Customer confirms that he's aware that a Drop copy configured for version 2 is able to receive executions for an SLE that is using a configuration for version 1 The extra bytes will be filled with zeros

1. CYCLE PREPARATION FOR SERVICE BUREAU ACCESS USING VERSION 2:

- In case of an ASP, exchange verifies that the prefix has been configured
- Customer checks their connections and make sure their SLE is able to log in.

CYCLE DESCRIPTION FOR SERVICE BUREAU ACCESS (MANDATORY FOR ASP's):

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1a. Order entry for prefix	Customer sends order with valid prefix using ProtocolVersion 2	<ul style="list-style-type: none"> Customer confirms acknowledgment of order Exchange confirms the ClOrdID has a length of 8 bytes Exchange confirms ClOrdID has a negative value Exchange confirms ClOrdID has the correct prefix

1b. Order entry for different prefix	Customer sends order with prefix 002 using ProtocolVersion 2	<ul style="list-style-type: none"> Exchange confirms the ClOrdID has a length of 8 bytes Exchange confirms ClOrdID has a negative value Exchange confirms ClOrdID has the prefix 002 Customer confirms the connection is dropped due to the invalid prefix that is sent in the order
2a. Order entry for prefix and instance 01	Customer sends order with valid prefix and instance 01 and using ProtocolVersion 2	<ul style="list-style-type: none"> Customer confirms acknowledgment of order Exchange confirms the ClOrdID has a length of 8 bytes Exchange confirms ClOrdID has a negative value Exchange confirms ClOrdID has the correct prefix Exchange confirms ClOrdID contains the instance 01
2b. Order entry for prefix and instance 02	Customer sends order with valid prefix and instance 02 and using ProtocolVersion 2	<ul style="list-style-type: none"> Customer confirms acknowledgment of order Exchange confirms the ClOrdID has a length of 8 bytes Exchange confirms ClOrdID has a negative value Exchange confirms ClOrdID has the correct prefix Exchange confirms ClOrdID contains the instance 02
3. Incorrect prefix	Customer sends order with invalid prefix and using ProtocolVersion 2	<ul style="list-style-type: none"> Customer confirms rejection of order
4. Migration of UTP Direct to FIX 4.2 (optional test)	<ul style="list-style-type: none"> Customer sends order with protocol UTP Direct using ProtocolVersion 2 Customer modifies order with protocol FIX 4.2 UTP via a different connection 	<ul style="list-style-type: none"> Customer confirms he can modify the order (to complete this scenario the ClOrdID sent via FIX 4.2 needs to contain only numeric characters) Exchange confirms the ClOrdID has a length of 8 bytes

2. CYCLE PREPARATION FOR REGULAR ACCESS USING VERSION 2:

- The Exchange and the customer agree if the customer will be using an Instance per access
- Customers check their connections and make sure their SLE is able to log in.

CYCLE DESCRIPTION FOR REGULAR ACCESS:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
2a. Order entry for two bytes	Customer sends order with instance 01 and uses ProtocolVersion version 2	<ul style="list-style-type: none"> Customer confirms acknowledgment of order Exchange confirms ClOrdID has a positive value

		<ul style="list-style-type: none"> • Exchange confirms ClOrdID contains the instance 01
2b. Order entry for two bytes	Customer sends order with instance 02 and uses ProtocolVersion version 2	<ul style="list-style-type: none"> • Customer confirms acknowledgment of order • Exchange confirms ClOrdID has a positive value • Exchange confirms ClOrdID contains the instance 02
3a. Order entry for three bytes	Customer sends order with instance 001 and uses ProtocolVersion version 2	<ul style="list-style-type: none"> • Customer confirms acknowledgment of order • Exchange confirms ClOrdID has a positive value • Exchange confirms ClOrdID contains the instance 001
3b. Order entry for three bytes	Customer sends order with instance 002 and uses ProtocolVersion version 2	<ul style="list-style-type: none"> • Customer confirms acknowledgment of order • Exchange confirms ClOrdID has a positive value • Exchange confirms ClOrdID contains the instance 002
4. Migration of FIX 4.2 to UTP-Direct (optional test)	<ul style="list-style-type: none"> • Customer sends order with protocol UTP-Direct • Customer modifies order with protocol FIX 4.2 via a different connection 	<ul style="list-style-type: none"> • Customer confirms he can modify the order (to complete this scenario the ClOrdID needs to contain only numeric characters)

II- SLE PROFILE

CYCLE P01: TRADING SUBSCRIPTION MANAGEMENT - UNSOLICITED MESSAGES

CYCLE P02: TRADING SUBSCRIPTION MANAGEMENT - SOLICITED MESSAGES

CYCLE P03: MULTI-MARKET SUBSCRIPTION

CYCLE P04: MULTI-MEMBER SUBSCRIPTION (SERVICE BUREAU/ASP ONLY)

CYCLE P01: TRADING SUBSCRIPTION MANAGEMENT – PRIVATE UNSOLICITED MARKET MESSAGES

CYCLE OBJECTIVES:

This cycle tests an SLE’s ability to receive and interpret private unsolicited market messages from all subscribed trading systems.

CYCLE PREPARATION:

- Exchange ensures that the SLE is logged on.
- Customers check their connections and make sure that the SLE is logged on.

CYCLE DESCRIPTION:

System	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
UTP	1. Order cancelled (order cancelled by surveillance)	Customer enters orders. Exchange cancels during the market session all the orders sent by the customer. Customer checks reception of this message for each order still alive in his book.	<ul style="list-style-type: none"> • SLE receives and interprets message (4)
	2. Order cancelled (order expired)	Customer enters an order. The order remains active until the validity date is reached.	<ul style="list-style-type: none"> • SLE receives and interprets message (4) at the beginning of the next trading day
	2. Order eliminated (Corporate action in post session)	Customer enters orders. Exchange cancels all the customer’s orders for a corporate action on that security during the post-market session. Customer checks reception of this message for each order still alive in his book for this security.	<ul style="list-style-type: none"> • SLE receives and interprets message (4)
	3. Remaining Order reject due to collar breach	Customer enters a valid limited order that can be executed but breaches the collar and checks reception of remaining quantity reject.	<ul style="list-style-type: none"> • SLE receives and interprets message (8) following (a) and (2)

	4. Order elimination (IOC order partially executed)	Customer enters an IOC order during continuous session likely to be partially filled. Customer checks reception of partial fill (2) and kill (4).	<ul style="list-style-type: none"> • SLE receives and interprets message (8) following (a) and (2)
UTP	5. Orders elimination (Global cancellation by the member)	Customer enters orders. Member cancels during the market session all his orders for a given security using the global cancellation facility. Customer checks reception of Order killed message for each order still alive in his book for this security.	<ul style="list-style-type: none"> • SLE receives and interprets private unsolicited market messages (4)
	6. Orders elimination (Global cancellation by the Exchange)	Customer enters orders. Exchange cancels all the customer's orders during the market session. Customer checks reception of Order killed message for each order still alive in his book.	<ul style="list-style-type: none"> • SLE receives and interprets private unsolicited market messages (4)
	7. Order Replaced	Customer enters an order during the market session. The Customer then modifies this order. Customer checks the reception of Order Replaced (5) after reception of Order Cancel Replace Ack (E).	<ul style="list-style-type: none"> • SLE receives and interprets private unsolicited market messages (5) that follows solicited message (E)
	8. Execution notice (order partially filled)	Exchange places some liquidity in a given security and invites the customer to enter an order that partially trades. Customer checks reception of one or several partial fill message(s).	<ul style="list-style-type: none"> • SLE receives and interprets private unsolicited market message(s) (2)
	9. Execution notice (order fully filled)	Exchange places some liquidity in a given security and invites the customer to enter an order that fully trades. Customer checks reception of one or several fill message(s).	<ul style="list-style-type: none"> • SLE receives and interprets private unsolicited market message(s) (2)
	10. Trade cancellation.	Customer is involved in a trade. Exchange cancels this trade. Customer checks reception of this message.	<ul style="list-style-type: none"> • SLE receives and interprets private unsolicited market message (C)
	11. Trade creation.	Customer is involved in a trade. Exchange cancels this trade. Exchange creates a new trade.	<ul style="list-style-type: none"> • SLE receives and interprets private unsolicited market message (C) • SLE receives and interprets private unsolicited market message Order Filled (2)

12. Drop Copy channel	Customer connects to a drop copy channel. Customer is involved in a trade. A copy of the trade is sent via the message Extended Response message (x) via the drop copy channel.	<ul style="list-style-type: none"> Drop copy SLE receives and interprets private unsolicited market message (x)
13. Resend of order book	(In case of a fail-over of DC1 to DC2 on the side of NYSE Euronext, the order book can be resent following the fail-over. The resending of the order book will be done via the Extended Response message (x). These messages will be sent for each outstanding order to the SLE that sent the order.) Customer sends several orders. Exchange performs a retransmission of the outstanding orders.	<ul style="list-style-type: none"> SLE receives and interprets private unsolicited market message (x) per outstanding order

CYCLE P03: TRADING SUBSCRIPTION MANAGEMENT – SOLICITED MARKET MESSAGES

CYCLE OBJECTIVES:

This cycle tests an SLE’s ability to receive and interpret solicited market messages from all subscribed trading systems.

CYCLE PREPARATION:

- Exchange ensures that the SLE is logged on.
- Customers check their connections and make sure that the SLE is logged on.

CYCLE DESCRIPTION:

System	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
VENWVL	1. New Order outcome Ack	Customer enters a valid limit order not executed and checks reception of ack message.	• SLE receives and interpret message (a)
	2. Cancel/Replace Request Ack	Customer modifies a valid limit order not executed and checks reception of ack and confirmation messages.	• SLE receives and interpret messages (E) then (5)
	3. Cancel Request Ack	Customer cancels a valid limit order and checks reception ack and confirmation messages	• SLE receives and interpret messages (6) then (4)

System	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
	4. Bulk Cancel Ack	Customer enters a couple of valid orders that remain in the book. Customer sends a Bulk Cancel (F)	<ul style="list-style-type: none"> SLE receives and interprets Bulk Cancel Ack message (K) and a Order Killed message (4) for each order that is cancelled After all orders are cancelled by the matching engine, a second Bulk Cancel Ack message (K) is sent to confirm all orders are cancelled. The total number of cancelled orders can be found in the field TotalAffectedOrders.
	4. Order Reject	Exchange changes the status of an instrument to Forbidden. Customer enters a limit order and checks reception of order rejection.	<ul style="list-style-type: none"> SLE receives and interpret message (8) Customer confirms the status of the rejected order
	4. Order Reject	Customer enters a limit order for another member code and checks reception of order rejection.	<ul style="list-style-type: none"> SLE receives and interprets message (8) Customer confirms the status of the rejected order
	5. Cancel/Replace Reject	Customer enters an order that remains in the book. Exchange changes the status of an instrument to Forbidden. Customer tries to modify the outstanding order and checks reception of replace reject.	<ul style="list-style-type: none"> SLE receives and interprets message (8) Customer confirms the status of the outstanding order and the rejected order
	6. Cancel Reject	Customer enters an order that remains in the book. Exchange changes the status of an instrument to Forbidden. Customer tries to cancel the outstanding order and checks reception of replace reject.	<ul style="list-style-type: none"> SLE receives and interprets message (8) Customer confirms the status of the outstanding order and the rejected order
	7. Bulk Cancel Reject	Customer enters a couple of valid orders that remain in the book. Exchange changes the state of the instrument to Forbidden. Customer sends a Bulk Cancel (F)	<ul style="list-style-type: none"> SLE receives and interprets message (8) Customer confirms the status of the outstanding orders
	7. Generic Response (Liquidity Provider only)	Customer sends a Price Input message	<ul style="list-style-type: none"> SLE receives and interprets message (y)

CYCLE P04: MULTI-MARKET SUBSCRIPTION

CYCLE OBJECTIVES:

This cycle tests the software's ability to receive and interpret incoming market messages from all subscribed trading engines: UTP, NYSE ARCA EUROPE.

CYCLE PREPARATION:

- Exchange ensures that the SLE is logged on.
- Customers check their connections and make sure that the SLE is logged on.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1. Multi-Market Reception.	Customer checks reception of market messages coming from each trading engine customer has subscribed to.	<ul style="list-style-type: none">• SLE receives and interprets unsolicited market messages from each trading engine the customer has subscribed to.
2. Multi-Market Emission.	Customer enters an order for each trading engine customer has subscribed to.	<ul style="list-style-type: none">• SLE transmits orders for each trading engine the customer has subscribed to.

CYCLE P05: MULTI-MEMBER SUBSCRIPTION (SERVICE BUREAU/ASP ONLY)

CYCLE OBJECTIVES:

This cycle tests the SLE’s ability to manage emission and reception of all market messages belonging to each member the SLE is entitled to route to.

CYCLE PREPARATION:

- Exchange ensures that the SLE is logged on.
- Customers check their connections and make sure that the SLE is logged on.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1. Multi-Member Emission.	Customer checks reception of market messages belonging to each member the SLE is entitled to route to.	<ul style="list-style-type: none"> • SLE receives and interprets market messages belonging to each member the SLE is entitled to route to.
2. Multi-Member Reception.	Customer enters an order for each member the SLE is entitled to route to.	<ul style="list-style-type: none"> • SLE transmits order for each member the SLE is entitled to route to.
3. Member Versus Subscriber Mapping.	Customer enters an order for two members related to different SLEs.	<ul style="list-style-type: none"> • Each order is routed by the right SLE.

III- TRADING FUNCTIONS

CYCLE T01: INCOMING MESSAGES DATA LAYOUT

CYCLE T02: SIDE OF ORDER

CYCLE T03: VALIDITY TYPE ORDER

CYCLE T04: TYPE OF PRICE

CYCLE T05: MULTI DECIMAL TRADING

CYCLE T06: SPECIAL CONDITIONS

CYCLE T07: COLLAR LOGIC

CYCLE T08: INTERNAL MATCHING SERVICE

CYCLE T01: INCOMING MESSAGES DATA LAYOUT

CYCLE OBJECTIVES:

This cycle tests the ability of a customer’s software to enter orders, modify and cancel messages according to business data layout specifications.

CYCLE PREPARATION:

- Exchange selects two securities: one for the Universal Trading Platform, one for NYSE ARCA Europe (NAE) and convenes with the customer to use them during this cycle. These securities are open and authorized. In order for the customer to receive an acknowledgment from NAE, the member codes needs to be authorized on the platform.

CYCLE DESCRIPTION:

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	RESULT
UTP	1. Order Entry (D)	<ul style="list-style-type: none"> • Customer enters an order. 	<ul style="list-style-type: none"> • Exchange checks that the order entry data layout is correct. 	
	2. Order Modification (G)	<ul style="list-style-type: none"> • Customer enters an order and then modifies it. 	<ul style="list-style-type: none"> • Exchange checks that the order modification data layout is correct. 	
	3. Order Cancellation (F)	<ul style="list-style-type: none"> • Customer enters an order and then cancels it. 	<ul style="list-style-type: none"> • Exchange checks that the order cancellation data layout is correct. 	
	4. Order Global Cancellation (F)	<ul style="list-style-type: none"> • Customer enters orders for a given security and then initiates order global cancellation on this security (Either the ClassID or the Symbol field must be populated). 	<ul style="list-style-type: none"> • SLE receives and interprets Bulk Cancel Ack message (K) and a Order Killed message (4) for each order that is cancelled • After all orders are cancelled by the matching engine, a second Bulk Cancel Ack message (K) is sent to confirm all orders are cancelled. The total number of cancelled orders can be found in the field TotalAffectedOrders. 	
	5. Change of Reference Price (I) *	<ul style="list-style-type: none"> • Customer enters a Change of Reference Price. 	<ul style="list-style-type: none"> • Exchange checks that Change of Reference Price layout is correct. 	

* Message used only by warrants issuers

CYCLE T02: SIDE OF ORDER

CYCLE OBJECTIVES:

This cycle tests an SLE's ability to enter the different types of sides of an order.

CYCLE PREPARATION:

- Exchange selects two securities: one for UTP, one for NYSE ARCA Europe (NAE) and convenes with the customer to use them during this cycle. These securities are open and authorized. In order for the customer to receive an acknowledgment from NAE, the member codes needs to be authorized on the platform.

CYCLE DESCRIPTION:

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	RESULT
UTP	1. Entry of buy order	<ul style="list-style-type: none"> • Customer enters a buy order (side = "1"). 	<ul style="list-style-type: none"> • Exchange checks that the order entered by the customer is a buy order. • SLE receives and interprets correctly the order outcome. 	
	2. Entry of a sell order	<ul style="list-style-type: none"> • Customer enters a sell order (side = "2"). 	<ul style="list-style-type: none"> • Exchange checks that the order entered by the customer is a buy order. • SLE receives and interprets correctly the order outcome. 	
	3. Entry of a cross order	<ul style="list-style-type: none"> • Customer enters a cross order (side = "8", type of price = 2 (Limit) and validity type = 3 (IOC), Execlnst = X (Cross). 	<ul style="list-style-type: none"> • Exchange checks that the order entered by the customer is a cross order. • SLE receives and interprets correctly the two order outcome messages sent by the system and corresponding to each side of the order. 	

CYCLE T03: VALIDITY TYPE OF ORDER

CYCLE OBJECTIVES:

This cycle tests the ability of the customer's software to enter orders with the different validity types offered by the UTP system.

CYCLE PREPARATION:

- Exchange selects two securities: one for UTP, one for NYSE ARCA Europe (NAE) and convenes with the customer to use them during this cycle. These securities are open and authorized. In order for the customer to receive an acknowledgment from NAE, the member codes needs to be authorized on the platform.

CYCLE DESCRIPTION:

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	RESULT
UTP	1. The validity type is Dated by default.	<ul style="list-style-type: none"> • Customer enters an order with a validity type equal to "0" (TimelnForce=0). • The order is not or partially executed at the end of the trading session. 	<ul style="list-style-type: none"> • Exchange checks that the validity date is not filled in. • Customer checks that this order is no more in his book on the following trading day. 	
	2. The validity type is Dated.	<ul style="list-style-type: none"> • Customer enters an order with a validity type equal to "6" (TimelnForce=6). • The order is not or partially executed at the end of its validity period. 	<ul style="list-style-type: none"> • Exchange checks that the validity date of the order is specified and is a valid calendar date. • Customer checks that this order is no more in his book on the day after the validity date. 	
	3. The validity type is IOC (Fill And Kill).	<ul style="list-style-type: none"> • Customer enters an order with a validity type equal to "3" (TimelnForce=3). • The order is executed. 	<ul style="list-style-type: none"> • Exchange checks that the validity date is not filled. • SLE receives and interprets correctly the Order Filled (4). 	
		<ul style="list-style-type: none"> • Customer enters an order with a validity type equal to "3" (TimelnForce=3). • The order is not executed. 	<ul style="list-style-type: none"> • SLE receives and interprets correctly the Order Reject (8). 	

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	RESULT
		<ul style="list-style-type: none"> Customer enters an order with a validity type equal to "3" (TimelnForce=3). The order is partially executed. 	SLE receives and interprets correctly: <ul style="list-style-type: none"> the order Ack (a) the Order Fill (2) the Order Killed (4) concerning the remaining quantity 	
		<ul style="list-style-type: none"> Exchange sends an order that is outside the collars on the buy side Customer enters an order on the sell side at the same price with a validity type equal to "3" (TimelnForce=3). 	<ul style="list-style-type: none"> SLE receives and interprets correctly the Order Reject (8) with the text "No shares available (IOC)". Customer confirms that he understands that the order has been rejected because it would have executed at a price outside the collars 	
	4. The validity type is FOK (Fill Or Kill)	<ul style="list-style-type: none"> Customer enters an order with a validity type equal to "4" (TimelnForce=4). The order is executed for the full quantity. 	<ul style="list-style-type: none"> Exchange checks that the validity date is not filled. SLE receives and interprets correctly the Order Filled (4). 	
		<ul style="list-style-type: none"> Customer enters an order with a validity type equal to "4" (TimelnForce=4). The order is not executed. 	<ul style="list-style-type: none"> SLE receives and interprets correctly the Order Reject (8). 	
		<ul style="list-style-type: none"> Exchange sends an order that is outside the collars on the buy side Customer enters an order on the sell side at the same price with a validity type equal to "4" (TimelnForce=4). 	<ul style="list-style-type: none"> SLE receives and interprets correctly the Order Reject (8) with the text "No shares available (fok)". Customer confirms that he understands that the order has been rejected because it would have executed at a price outside the collars 	
	5. The validity type is VFA (Valid for Auction)	<ul style="list-style-type: none"> Customer sends an order with a validity type equal to "2" (TimelnForce=2) Exchange makes sure that the order won't execute at the next auction 	<ul style="list-style-type: none"> Exchange checks that the validity date is not filled in. SLE receives and interprets correctly the Order Killed (4) following the auction 	
		<ul style="list-style-type: none"> Customer sends an order with a validity type equal to "2" (TimelnForce=2) 	<ul style="list-style-type: none"> Exchange checks that the validity date is not filled in. SLE receives and interprets correctly the execution notice (2) following the auction 	

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	RESULT
	6. The validity type is VFC (Valid for Closing)	<ul style="list-style-type: none"> Customer sends an order with a validity type equal to "7" (TimeInForce=7) Exchange makes sure that the order won't execute at the closing auction 	<ul style="list-style-type: none"> Exchange checks that the validity date is not filled in. SLE receives and interprets correctly the Order Killed (4) the next trading day 	
		<ul style="list-style-type: none"> Customer sends an order with a validity type equal to "7" (TimeInForce=7) 	<ul style="list-style-type: none"> Exchange checks that the validity date is not filled in. SLE receives and interprets correctly the execution notice (2) following the auction 	
	7. The validity type is GTT (Good Till Time)	<ul style="list-style-type: none"> Customer sends an order with a validity type equal to "6" (TimeInForce=6), ExpireTimeFlag=T and ExpireTime=HHMMSS Exchanges makes sure the order expires and does not execute 	<ul style="list-style-type: none"> SLE receives and interprets correctly the Order ack (A) SLE receives and interprets correctly the Order Killed (4) once the order expires in x seconds 	
		<ul style="list-style-type: none"> Customer sends an order with a validity type equal to "6" (TimeInForce=6) , ExpireTimeFlag=T and ExpireTime=HHMMSS Exchange makes sure the order executes 	<ul style="list-style-type: none"> SLE receives and interprets correctly the Order ack (A) SLE receives and interprets correctly the Order Fill (2) 	
		<ul style="list-style-type: none"> Customer sends an order with a validity type equal to "6" (TimeInForce=6) , ExpireTimeFlag=T and ExpireTime=HHMMSS Customer modifies the outstanding order before it expires or executes 	<ul style="list-style-type: none"> SLE receives and interprets correctly the Order ack (A) Exchange confirms the order was modified 	

CYCLE T04: TYPE OF PRICE

CYCLE OBJECTIVES:

This cycle tests:

- the different types of price offered by the UTP system,
- the related solicited and unsolicited messages.

CYCLE PREPARATION:

- Exchange selects two securities: one for the Universal Trading Platform, one for NYSE ARCA Europe (NAE) and convenes with the customer to use them during this cycle. These securities are open and authorized. In order for the customer to receive an acknowledgment from NAE, the member codes needs to be authorized on the platform.

CYCLE DESCRIPTION:

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
UTP	1. Entry of a "limit order"	<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to "2". 	<ul style="list-style-type: none"> • Exchange checks that the order entry data layout is correct.
	2. Entry of an "opening price order"	<ul style="list-style-type: none"> • Exchange reserves the security. • Customer enters an order with a type of price equal to "K" (Market to Limit). • The order is partially executed at the opening of the security. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> • the reception of the order outcome (A). • the reception of the execution notice (2) in case of partial execution. The opening price order becomes a limit order at the opening price.
		<ul style="list-style-type: none"> • Exchange reserves the security. • Customer enters an order with a type of price equal to "K" (Market To Limit). • The order is fully executed at the opening of the security. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> • the reception of the order outcome (A). • the reception of the execution notice (2).

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
	3. Entry of a "market to limit order"	<ul style="list-style-type: none"> Customer enters an order with a type of price equal to "K" (Market To Limit). There are orders on the opposite side of the market. The order is fully executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> the reception of the order outcome (A), the reception of the execution notice (2).
		<ul style="list-style-type: none"> Customer enters an order with a type of price equal to "K" (Market To Limit). There are orders on the other side of the market. The order is partially executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> the reception of the order outcome (A), the reception of the execution notice (2). The market order to limit order becomes a limit order at the best limit on its side.
	4a. Entry of a "market order" with fully execution.	<ul style="list-style-type: none"> Exchange reserves the security. Customer enters an order with a type of price equal to "1" (Market). 	<ul style="list-style-type: none"> Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly the reception of the order outcome.
		<ul style="list-style-type: none"> Exchange makes sure the instrument is not reserved and in market session. Customer enters an order with a type of price equal to "1" (Market). The order is fully executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> the reception of the order outcome (A), the reception of the execution notice (2).
	4b. Entry of a "market order" with partial execution.	<ul style="list-style-type: none"> Exchange makes sure the instrument is not reserved and in market session. Customer enters an order with a type of price equal to "1" (Market). The order is partially executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> the reception of the order outcome (A), the reception of the execution notice (2).
5. Entry of a "stop Loss order"	<ul style="list-style-type: none"> Customer enters an order with a type of price equal to "3" (Stop) and the trigger price in field StopPx. Exchange enters orders on behalf of another member in order to trigger this order at the opening of the security. The order is not executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> the reception of the order outcome (A), The customer confirms he understands that no second order outcome message is sent when the stop order is triggered. The customer can verify in the market data to identify the status of the stop order 	

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
		<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “3” (Stop) and the trigger price in field StopPx. • Exchange enters orders on behalf of another member in order to trigger this order. • The triggered order is not or partially executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> • the reception of the first order outcome (A), • the reception of an execution notice in case of partial execution.
		<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “3” (Stop) and the trigger price in field StopPx. • Exchange enters orders on behalf of another member in order to trigger this order. • The triggered order is fully executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> • the reception of the first order outcome (A), • the reception of the execution notice (2).
	6. Entry of a “stop Limit order”	<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “4” (Stop Limit) and the trigger price in field StopPx. • Exchange enters orders on behalf of another member in order to trigger this order at the opening of the security. • The order is not executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> • the reception of the order outcome (A), • The customer confirms he understands that no second order outcome message is sent when the stop order is triggered. The customer can verify in the market data to identify the status of the stop order
		<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “4” (Stop Limit) and the trigger price in field StopPx. • Exchange enters orders on behalf of another member in order to trigger this order. • The triggered order is not or partially executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> • the reception of the first order outcome (A), • the reception of an execution notice in case of partial execution.

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
		<ul style="list-style-type: none"> Customer enters an order with a type of price equal to "4" (Stop Limit) and the trigger price in field StopPx. Exchange enters orders on behalf of another member in order to trigger this order. The triggered order is fully executed. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> the reception of the first order outcome (A), the reception of the execution notice (2).
	7. Peg order	<ul style="list-style-type: none"> Exchange makes sure there are no outstanding orders. Customer enters an order with a type of price equal to "P" (Pegged), Execlnst=R, PegDifference=0, Price=empty. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly the rejection message (8) "No NBBO for peg" as there is no outstanding order to peg.
		<ul style="list-style-type: none"> Exchange makes sure there is an outstanding order. Customer enters an order with a type of price equal to "P" (Pegged), Execlnst=R, PegDifference=0, Price=empty. 	Exchange checks that the order entry data layout is correct.
		<ul style="list-style-type: none"> Exchange makes sure there is an outstanding order. Customer enters an order with a type of price equal to "P" (Pegged), Execlnst=R, PegDifference=0, Price=empty. Exchange deletes outstanding order that is pegged. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly the Order Killed message (4) concerning the peg order. Customer confirms he understands the peg order is eliminated due to the fact that the pegged order is no longer in the book.
		<ul style="list-style-type: none"> Exchange makes sure there is an outstanding order. Customer enters an order with a type of price equal to "P" (Pegged), Execlnst=R, PegDifference=0, Price=empty. Exchange executes the total quantity of the peg order. 	Exchange checks that the order entry data layout is correct. SLE receives and interprets correctly: <ul style="list-style-type: none"> the Execution notice (2) concerning the peg order. The Order Killed message (4) concerning the remaining quantity.

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
		<ul style="list-style-type: none"> • Exchange makes sure there is an outstanding order. • Customer enters an order with a type of price equal to "P" (Pegged), Execlnst=R, PegDifference=0, Price=empty. • Exchange executes partially the quantity of the peg order. 	<p>Exchange checks that the order entry data layout is correct.</p> <p>SLE receives and interprets correctly the Execution notice (2) concerning the peg order.</p>
	8. Peg order with max price	<ul style="list-style-type: none"> • Exchange makes sure there is an outstanding order. • Customer enters an order with a type of price equal to "P" (Pegged), Execlnst=R, PegDifference=0, Price=filled. • Exchange executes partially the quantity of the peg order. 	<p>Exchange checks that the order entry data layout is correct.</p> <p>SLE receives and interprets correctly the Execution notice (2) concerning the peg order.</p>

CYCLE T05: MULTI DECIMAL TRADING

CYCLE OBJECTIVES:

This cycle tests the ability of the customer’s software to send and receive messages with a price expressed with 3 and 4 decimal places.

CYCLE PREPARATION:

- Exchange selects two securities: one for the Universal Trading Platform, one for NYSE ARCA Europe (NAE) that allows prices in 3 and 4 decimals and convenes with the customer to use them during this cycle. These securities are open and authorized. In order for the customer to receive an acknowledgment from NAE, the member codes needs to be authorized on the platform.

CYCLE DESCRIPTION:

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
	1. Order entry with a price of 3 decimals	<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “2” of 3 decimals. 	<ul style="list-style-type: none"> • Exchange checks that the order entry data layout is correct. • Customer confirms the format of the price in the order outcome message (A).
	2. Order entry with a price of 4 decimals	<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “2” of 4 decimals. 	<ul style="list-style-type: none"> • Exchange checks that the order entry data layout is correct. • Customer confirms the format of the price in the order outcome message (A).
	3. Order entry on an instrument with a specific tick table	<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “2” of 4 decimals that respects the tick table. 	<ul style="list-style-type: none"> • Customer confirms the different levels of the tick table.
	4. Order entry with a wrong price on an instrument with a specific tick table	<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “2” of 4 decimals that does not respect the tick table. 	<ul style="list-style-type: none"> • Customer confirms the reception of an error message.
	5. Order modification (G)	<ul style="list-style-type: none"> • Customer enters an order with a type of price equal to “2” of 4 decimals. • Customer modifies the price. 	<ul style="list-style-type: none"> • Exchange verifies the layout of the modification message (G). • Customer confirms the format of the price in the order outcome message (A).

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
	6. Price Input (for market maker only)	<ul style="list-style-type: none"> Customer sends a Price Input message (l) for an instrument for which it is market maker. 	<ul style="list-style-type: none"> Exchange verifies the layout of Price Input message (l). Customer confirms the reception of the Generic Response message (y).
	7. Order elimination	<ul style="list-style-type: none"> Customer enters an order with a type of price equal to "2" of 3 decimals. Exchange eliminates the message. 	<ul style="list-style-type: none"> Customer confirms the reception of the Order Killed message (4).
	8. Trade creation	<ul style="list-style-type: none"> Exchange creates a trade with a price of 4 decimals on behalf of the customer. 	<ul style="list-style-type: none"> Customer confirms the reception of the Trade creation message (2) and the price of the trade.
	9. Trade cancellation	<ul style="list-style-type: none"> Exchange cancels a trade on behalf of the customer. 	<ul style="list-style-type: none"> Customer confirms the reception of the Trade Bust message (C) and the details of the trade that has been cancelled.

CYCLE T06: ACCOUNT TYPE ORDER

CYCLE OBJECTIVES:

This cycle tests:

- The different types of order account offered by the UTP system
- The related solicited and unsolicited messages.

The results of this test do not confirm whether or not a customer is able to reconcile trades with their clearing partner. NYSE Euronext strongly recommends that customers carry out end to end tests with their clearing partner.

CYCLE PREPARATION:

- Exchange selects two securities: one for the Universal Trading Platform, one for NYSE ARCA Europe (NAE) and convenes with the customer to use them during this cycle. These securities are open and authorized. In order for the customer to receive an acknowledgment from NAE, the member codes needs to be authorized on the platform.

CYCLE DESCRIPTION:

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
UTP	1. Entry of a Client account type order	<ul style="list-style-type: none"> • Customer enters a Customer account type order (Rule80A = "1") 	<ul style="list-style-type: none"> • Exchange checks that the order entry data layout is correct
	2. Entry of a House account type order	<ul style="list-style-type: none"> • Customer enters a Customer account type order (Rule80A = "2") 	<ul style="list-style-type: none"> • Exchange checks that the order entry data layout is correct
	3. Entry of a market maker (ie liquidity provider) account type order	<ul style="list-style-type: none"> • Customer enters a Customer account type order (Rule80A = "6") 	<ul style="list-style-type: none"> • Exchange checks that the order entry data layout is correct
	4. Entry of a Related Party type order	<ul style="list-style-type: none"> • Customer enters a Customer account type order (Rule80A = "7") 	<ul style="list-style-type: none"> • Exchange checks that the order entry data layout is correct

CYCLE T07: SPECIAL CONDITIONS

CYCLE OBJECTIVES:

- This cycle tests the customer software’s ability to enter special conditions.

CYCLE PREPARATION:

- Exchange selects two securities: one for the Universal Trading Platform, one for NYSE ARCA Europe (NAE) and convenes with the customer to use them during this cycle. These securities are open and authorized. In order for the customer to receive an acknowledgment from NAE, the member codes needs to be authorized on the platform.

CYCLE DESCRIPTION:

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	RESULT
UTP	1. Order with a minimum quantity	<ul style="list-style-type: none"> • Customer enters an order with a minimum quantity (MinQty). There are no orders on the opposite side of the market. 	<ul style="list-style-type: none"> • SLE receives and interprets a rejection message (8) with the notice “No shares available” 	
		<ul style="list-style-type: none"> • Customer enters an order with a minimum quantity (MinQty). The state of market permits this minimum quantity to be filled immediately; the remaining quantity of the order remains in the book. 	SLE receives and interprets: <ul style="list-style-type: none"> • an order outcome indicating that the order is in the book (A), • an execution notice for the quantity immediately filled (2). 	
		<ul style="list-style-type: none"> • Exchange enters an order at a limit price on the buy side that is outside the collars. • Customer enters an order at the same price on the sell side with a minimum quantity (MinQty). 	<ul style="list-style-type: none"> • SLE receives and interprets a rejection message (8) with the notice “No shares available (MinQty)” • Customer confirms he understands his order is rejected due to the fact that it would have executed at a price outside the collars 	
	2a. Iceberg order (Reserve order)	<ul style="list-style-type: none"> • Customer enters an order with a disclosed quantity (MaxFloor). 	<ul style="list-style-type: none"> • SLE receives and interprets order outcome and execution notice if executed. 	

	2b. Iceberg order in combination with certain other type of order	<ul style="list-style-type: none"> • Customer enters an order with a disclosed quantity (MaxFloor) and type of price of either Stop, Market To Limit or a cross order 	<ul style="list-style-type: none"> • SLE receives and interprets a rejection message (8) with the notice "MaxFloor forbidden for this OrdType" 	
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CYCLE T07: COLLAR LOGIC

CYCLE OBJECTIVES:

This cycle tests new possible scenarios in which an order could execute at a price outside the thresholds of a security. Please note that there are two types of Trading Safeguards on the Universal Trading Platform: Collar logic and Threshold mechanism

Collar logic: If a new order can be executed upon entry, but the matching price hits a collar, the remaining quantity of that order is rejected. However the firm can force the collar crossing by reactivating the rejected order within a short time period using a Cancel/Replace Order (G) with the same price and quantity and the confirmation indicator set. Collars are therefore adjusted around the hit collar before the confirmed order is processed. In this situation, the firm must provide both the OrigClOrdID and OrderID fields in the Cancel/Replace Order (G) message.

Threshold mechanism: If a new order can be executed upon entry, but the matching price hits a collar, the remaining quantity of that order is accepted and the instrument changes automatically to a Halted status. The Universal Trading Platform will automatically try to reopen the instrument in a few minutes.

CYCLE PREPARATION:

- Exchange selects two securities: one for the Universal Trading Platform, one for NYSE ARCA Europe (NAE) and convenes with the customer to use them during this cycle. These securities are open and authorized. In order for the customer to receive an acknowledgment from NAE, the member codes needs to be authorized on the platform.

CYCLE DESCRIPTION:

SYSTEM	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	
1. Order outside “collar” is rejected	<ul style="list-style-type: none"> Exchange enters an order outside the collars. Exchange requests the customer to match it. Client does not send any confirmation message in response to the rejection within x seconds. 	SLE receives and interprets the following messages: <ul style="list-style-type: none"> Order Outcome message (A) an error notice message (8) with the reject reason “Rejected for collar” 	
2. Partial execution outside collars	<ul style="list-style-type: none"> Exchange enters an order within the collars on the sell side. Exchange enter an order on the same side outside the collars on the sell side. Exchange requests the customer to hit both orders with a single order. In response to the Error Notice (8) the client sends a Cancel/Replace Order message (G) including same price and remaining quantity of the second execution within x seconds. 	SLE receives and interprets the following messages: <ul style="list-style-type: none"> Order Outcome message (A) An Execution notice message (2) informing of a partial execution A rejection notice (8) with the reject reason “Rejected for collar” Exchange confirms the sending of the Cancel/Replace Order message (G) SLE receives and interprets the following messages: <ul style="list-style-type: none"> Cancel/Replace Request Ack (E) Order Replaced (5) An Execution notice message (2) informing of the execution of the remaining quantity 	
3. Full execution outside collars	<ul style="list-style-type: none"> Exchange enters an order outside the collars. Exchange requests the customer to hit the total quantity of the outstanding order. In response to the Error Notice (8) the client sends a Cancel/Replace Order message (G) including same price and remaining quantity of the second execution within x seconds. 	SLE receives and interprets the following messages: <ul style="list-style-type: none"> Order Outcome message (A) A rejection notice (8) with the reject reason “Rejected for collar” Exchange confirms the sending of the Cancel/Replace Order message (G) SLE receives and interprets the following messages: <ul style="list-style-type: none"> Cancel/Replace Request Ack (E) Order Replaced (5) An Execution notice message (2) informing of the execution 	

<p>4. Incorrect confirmation message</p>	<ul style="list-style-type: none"> • Exchange enters an order within the collars on the sell side. • Exchange enter an order on the same side outside the collars. • Exchange requests the customer to hit both orders in one single order. • In response to the Error Notice (8) the client sends a Cancel/Replace Order message (G) including same price and wrong remaining quantity of the second execution within x seconds. 	<p>SLE receives and interprets the following messages:</p> <ul style="list-style-type: none"> • Order Outcome message (A) • An Execution notice message (2) informing of a partial execution • A rejection notice (8) with the reject reason "Price outside the collars" <p>Exchange confirms that the Cancel/Replace Order (G) does not correspond to the remaining quantity of the order.</p> <p>SLE receives and interprets the rejection message (8)</p>	
<p>5. Multiple confirmation messages</p>	<ul style="list-style-type: none"> • Exchange enters an order on the sell side at a price that is more than 10% outside the collars. • Exchange requests the customer to hit the order. • In response to the Error Notice (8) the client sends a Cancel/Replace Order message (G) each time a rejection message (8) with text "Rejected for collar" is sent. 	<p>SLE receives and interprets the following messages:</p> <ul style="list-style-type: none"> • Order Outcome message (A) • A rejection notice (8) with the reject reason "Rejected for collar" <p>Customer sends Order Modification Message (G)</p> <p>SLE receives and interprets the following messages:</p> <ul style="list-style-type: none"> • Cancel/Replace Request Ack (E) • Order Replaced (5) • A Rejection notice (8) <p>Customer sends again a Order Modification Message (G)</p> <p>SLE receives and interprets the following messages:</p> <ul style="list-style-type: none"> • Cancel/Replace Request Ack (E) • Order Replaced (5) • A Rejection notice (8) <p>This process repeats itself until the SLE receives and interprets the execution notice (2)</p>	

<p>6. Order elimination following modification</p>	<ul style="list-style-type: none"> • Exchange enters an order on the sell side at a price outside the collars. • Customer enters an order on the buy that does not match and remains in the market. • Customer modifies the outstanding order at a price that could match with the order of the Exchange. • The modification of the order is rejected for “Rejected for collar”. The customer does not confirm the rejected order. 	<p>The customer confirms that he understands that the outstanding order and the modified order are no longer in the book. SLE receives and interprets the following messages for the original order:</p> <ul style="list-style-type: none"> • Order Outcome message (A) <p>SLE receives and interprets the following messages for the modification:</p> <ul style="list-style-type: none"> • Cancel/Replace Request Ack (E) • Rejection message (8) 	
<p>7. Confirmation of Cancel/Replace order</p>	<ul style="list-style-type: none"> • Exchange enters an order on the sell side at a price outside the collars. • Customer enters an order on the buy that does not match and remains in the market. • Customer modifies the outstanding order at a price that could match with the order of the Exchange. • The modification of the order is rejected for “Rejected for collar”. The client’s application confirms the rejected order. 	<p>The customer confirms that he understands that the outstanding order and the modified order are no longer in the book. SLE receives and interprets the following messages for the original order:</p> <ul style="list-style-type: none"> • Order Outcome message (A) <p>SLE receives and interprets the following messages for the modification:</p> <ul style="list-style-type: none"> • Cancel/Replace Request Ack (E) • Rejection message (8) <p>SLE receives and interprets the following messages for the second modification:</p> <ul style="list-style-type: none"> • Cancel/Replace Request Ack (E) • Order Replaced (5) • Order Fill (2) 	

CYCLE T08: INTERNAL MATCHING SERVICE

CYCLE OBJECTIVES:

The Internal Matching Service (IMS) is an optional service that members can subscribe to. Introduced following the implementation of MIFID, IMS aims to optimize order execution on equity instruments. When a member has opted for the service the priority mechanism will be Price -> Member Firm ID -> Timestamp that ensures best execution directly in the order book.

In the evening, following the closure of the market, the internal matched trades will be retransmitted to allow members to reconcile their trades with their back office and clearing partner.

This cycle tests software ability to distinguish internal matched trades and external matched trades in case ISVs choose to offer this service.

CYCLE PREPARATION:

- Exchange verifies if the member code of the customer is activated for the Internal Matching Service.
- Exchange selects an UTP security and convenes with customer to use it during this cycle.
- This security is open and authorized.

CYCLE DESCRIPTION:

SYSTEM	UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA	RESULT
UTP	1. Execution notice (2)	<ul style="list-style-type: none"> Membercode needs to be authorized for the Internal Matching Service. Customer and exchange enter several orders on the buy and sell side. Exchange verifies that there are trades with prices of 3 and 4 decimals matched internally if possible. 	<ul style="list-style-type: none"> SLE receives and interprets private unsolicited market messages. Customer confirms the number of internal matched trades via the field "IMSCompID" Customer confirms the reception of trades with prices of 3 and 4 decimals 	
	2. Cross	<ul style="list-style-type: none"> Customer sends a cross order. 	<ul style="list-style-type: none"> SLE receives and interprets private unsolicited market messages. Customer confirms he is able to distinguish a cross and an internal matched order 	

III- HIGH AVAILABILTY

CYCLE H01: CCG BINARY FAIL-OVER MANAGEMENT

CYCLE H01: CCG BINARY FAIL-OVER MANAGEMENT

CYCLE OBJECTIVES:

This cycle tests the software's ability to recover following a CCG fail-over:

- ability to detect messages received in duplicate
- ability to resend or not resend orders sent gap, in accordance with the customer order retransmission policy.

Customer application will need to implement precautionary measures, to address the event of CCG fail-over. Basically, Customer application will need to detect the likelihood of outbound messages (messages received by customer) being duplicated and to deal with the likelihood of inbound messages (messages sent by customer) having gaps.

From the customer perspective, these precautionary measures are as follows:

During fail-over period:

- Even though the fail-over period is very short (typically a few seconds), a customer may choose to access his previously entered orders from any of his other surviving connections, e.g. customer may choose to issue a bulk cancel by specifying the username of the current fail-over connection with field CancelByLocationID.

After failover period:

- Messages Received: Customer Application must be able to detect any duplicate messages sent by CCG Binary
- Messages sent: Customer Application must be able to detect any gap by checking LastMsgSeqNum contained in log-on response from CCG. The gap must then be dealt with according to Customer policy, ie, choice between resending messages or not.
If the Customer chooses to resend, the Universal Trading Platform will reject any duplicates - thanks to ClOrdID uniqueness

Regarding outbound messages (messages received by customer) duplication detection methods, Customer Application will need to use the following field, dependant upon message type:

- Order Fill (2): DeliverToCompID, Symbol, UTPExID, Side
- Bust Correct (C): DeliverToCompID, Symbol, UTPExID
- Generic Response (y): DeliverToCompID, Symbol, OrigMsgType, OrigMsgSeqNum
- All other received messages: DeliverToCompID, Symbol, ClOrdID, OrderID.

CYCLE PREPARATION:

- Exchange ensures that the SLE is connected.
- Customers check their connections are up and running.
- Exchange invites customer to send orders in a sustained manner, then immediately provokes a fail-over of CCG binary.

CYCLE DESCRIPTION:

UNIT Number	ACTIONS REQUIRED	UNIT COMPLETION CRITERIA
1. Log-on handshake recovery	Customer reconnects his SLE immediately	<ul style="list-style-type: none"> • SLE reconnects correctly
2. Reception recovery	CCG resumes transmission of messages	<ul style="list-style-type: none"> • SLE resumes reception correctly and is able to detect any application message duplication
3. Emission recovery	SLE resumes transmission of messages	<ul style="list-style-type: none"> • SLE resumes emission correctly and is able to detect and deal with any orders sent gap.

CYCLE DETAILED INSTRUCTIONS:

UNIT 1- LOG-ON HANDSHAKE RECOVERY

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Customer	Customer initiates an SLE start	LastMsgSeqNum equal to last message received	Log-on (A)
Customer	Customer confirms that the SLE is up and running	LastMsgSeqNum within customer log-on LastMsgSeqNum within CCG binary log-on	Log-on (A)
Exchange	Exchange checks SLE restart handshaking.	LastMsgSeqNum within customer log-on LastMsgSeqNum within CCG binary log-on	Log-on (A)

COMPLETION CRITERIA:

- SLE reconnects correctly.

UNIT 2- RECEPTION RECOVERY

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Customer	Customer checks data received and confirms that the software is able to detect any duplicate application messages.	MsgSeqNum	.

COMPLETION CRITERIA:

- SLE resumes reception correctly and is able to detect any application message duplication.

UNIT 3- EMISSION RECOVERY

INSTRUCTIONS:

Side	Instructions	Data Key Fields	Data Layout Reference
Customer	Customer checks orders sent gap	LastMsgSeqNum within CCG log-on	Log-on (A)
Customer	Customer checks whether the SLE has resent the gap or not according to the customer retransmission policy.		.
Exchange	Exchange checks if customer has sent any duplicate orders.	MsgSeqNum	

COMPLETION CRITERIA:

- SLE resumes emission correctly and is able to detect and deal with any orders sent gap, in accordance with the customer order retransmission policy.

ANNEX1- FAIL-OVER RECOVERY DATA KINEMATICS

