

Pillar Gateway – Frequently Asked Questions

General Configuration & Processing

1. **Question:** Which session level configurations can I set up as defaults that will be persisted day to day? If I make an intraday change via the Session Configuration Request (binary) or Logon Profile (FIX), how long does it take the settings to update and for how long are those changes persisted?

Answer: The Pillar Gateway [Certification Session Request Form](#) and [Production Session Request Form](#) allow the firm to select certain session level default configurations that are persisted from day to day.

If the firm makes an intraday change to any of these settings via the gateway, the new settings are applied after a Session Configuration Acknowledgement (binary) or Logon Response (FIX) is generated. These updated settings will be persisted for that trading day only (or until the next time Pillar restarts, in the event of an intraday session restart). During the trading day, the updated settings are persisted even if the user logs out and logs back in.

To make changes to the overnight defaults, the firm must contact NYSE Group Support with this request.

It is recommended each time they disconnect and reconnect, that the firm refer to the latest Session Configuration Acknowledgement message on the REF or GT stream (binary) or the Logon Session Profile in the Logon Response message (FIX) to confirm the current settings.

2. **Question:** Can I trade all symbols on the connected market from any of my gateway sessions?

Answer: For NYSE Arca Equities, each Pillar Gateway session will have access to all symbols. There is no symbol migration period – the symbols will be immediately available from the new Pillar Gateways, and simultaneously from the legacy UGW gateways during the parallel period.

3. **Question:** How do I send a certain kind of order type?

Answer: FIX and Binary order validation spreadsheets indicating how to send each supported order type are provided along with the Pillar Gateway certification scripts. To request these materials, please contact Firm Testing at firmtesting@nyse.com or 212-896-2830, x2, option 2.

4. **Question:** Can you give an example of Cancel/Replace and Modify order chaining in the Pillar Gateway?

Answer: If accepted, both Cancel/Replace and Modify requests update the ClOrdID of the open order to the ClOrdID of the request. This is true for both the Pillar FIX and Binary protocols.

For example, a new order is entered with ClOrdID-1. Then, a Cancel/Replace request to change the limit price of that order is entered with ClOrdID-2 and OrigClOrdID-1. A subsequent Modify request to reduce the quantity of that order would then be entered with ClOrdID-3 and OrigClOrdID-2. Any further actions on the order (whether Cancel/Replace, Modify, or Cancel) would refer to it with OrigClOrdID-3, and so forth.

The difference is that a cancel/replaced order gets a new OrderID (published to XDP) and loses its ranking on the order book, while a modified order retains its old OrderID and maintains its ranking on the order book.

Binary Protocol – SeqMsgID & FIX Drop Copy

- 5. **Question:** Pillar Binary Gateway strictly enforces that the “seq” portion (sequence number) of the SeqMsgID increases by one with each new message written to the TG stream. If my client side application sequence number gets out of sync and is higher than what Pillar expects, how can I increase the TG stream next expected sequence number without sending business messages?

Answer: Send Sequenced Filler Messages. Each one sent will increase the TG stream’s next expected sequence number by 1.

- 6. **Question:** The Pillar Gateway Binary spec, FIX Drop Copies section, mentions that a hexadecimal/base 16 representation of SeqMsgID is used to populate the ExecID (17) and ExecRefID (19) tags in FIX drop copy messages for those transactions. Can you give an example?

Answer: The FIX tags will be populated with the hexadecimal string representation of the 128-bit SeqMsgID from the corresponding binary message delivered on the GT stream.

Example:

Field	Decimal Format	Hexadecimal Format	Wire Format (Little Endian)
SeqMsgId.StreamID.sess =	167773517	0xA00054D	4D05000A
SeqMsgId.StreamID.value =	218735618	0xD09A402	02A4090D
SeqMsgId.seq =	1234567	0x12D687	87D6120000000000

Full 128-bit hexadecimal string = 0x0A00054D0D09A402000000000012D687

Value sent to FIX drop copy = A00054D0D09A402000000000012D687

Binary Protocol – Reference Data

7. **Question:** Why are reference data messages (e.g. Equities Symbol, MPID, Session Configuration, etc.) published to both the GT and REF streams?

Answer: The REF stream has reference data because any change to that data is reflected as a new message in the streams and it is quicker to recover the REF stream as there are fewer messages compared to GT.

The same messages are also published to the GT stream to make the stream complete with reference data as well as order related messages so that the data can be interpreted and stitched together without changing streams.

8. **Question:** The specification indicates that the firm should read request all the queued messages on their GT or REF streams at start of day. If I specify a very large number as the end range, how do I tell when I have drained the entire queue of messages?

Answer: The StreamAvail message (published every second) will indicate the next available sequence number on the stream. When the number of drained messages = the next available sequence number – 1, all messages have been delivered.

9. **Question:** I understand that the SymbolID integer values used in the Pillar Binary gateway match the SymbolIDs used in XDP market data. If I am currently an XDP market data subscriber and use the nightly symbol index mapping XML file, do I need to read the Equities Symbol Reference Data messages provided in my gateway REF and GT streams on a daily basis?

Answer: It is recommended that firms read the reference data messages provided in the gateway for a couple of reasons. First, the XML symbol file only provides the mapping between ticker symbol and SymbolID whereas the Equities Symbol Reference Data message provides additional information such as max order price, round lot size, listed market, etc.

Second, it ensures that the firm will get the latest data in the unlikely event that changes/corrections occur to the symbol reference data after the previous night's XML file was published, or a symbol is added intraday.

10. **Question:** Do SymbolIDs ever change for a security?

Answer: SymbolIDs generally do not change for a given security, except for certain corporate actions that are applied the night before the action takes effect.

11. **Question:** What is the business purpose of the Minimum Price Variant (MPV) Class and Level reference data I receive in my REF and GT streams at start of day?

Answer: For NYSE Arca Equities, each of 5 classes corresponds to a Tick Pilot group. The Class message provides the Retail Price Improvement order type MPV and the Limit Up/Limit Down (LULD) MPV for the security.

Each class has a corresponding Level message as well, containing various price levels as applicable. Each level has a "Price" field which describes a limit price range for order entry. For example, Price "0.00" refers to the limit price level between \$0.00 and less than \$1.00. Price "1.00" refers to the price level equal to or greater than \$1.00. The "Quoting MPV" field for each price level governs limit price validation for orders entered within that price range.

Binary Protocol – Other

12. **Question:** Can I set a session level default configuration for Throttle Preference (queue orders or reject orders when throttled)?

Answer: No, there is no default for this setting and it is not persisted once a stream is closed. Instead, throttle preference must be specified in the Pillar Stream Protocol when opening a TG stream via the "Open" request message. Once the stream is open, the setting may then be changed intraday by sending a Session Configuration Request. This is designed to provide the firm with full intraday control over throttle handling. For more details, see the "Session Configuration Request/Acknowledgment" sections of the Pillar Gateway Binary Protocol Specification.

13. **Question:** How do I calculate and populate the various "length" fields in variable length messages?

Answer: Variable length messages can contain more than one payload, each of which has its own MsgHeader.

- Each instance of a "MsgHeader" contains a "length" field which must be populated with the sum of that MsgHeader itself + all message payload/add-ons that follow that header
- Each variable length message has a "minimum length" specified in the "MsgHeader" field of the first payload
- Throughout the specification, optional add-on fields are shown as a minimum of 4 bytes in the field, because every add-on begins with a 4 byte MsgHeader. If not intending to send an add-on, the firm should not populate these bytes. Instead, send only the preceding fields that add up to the minimum length
- Example A – Total message length, New Order Single/Cancel Replace Request without any add-ons = 73 bytes
- Example B – Total message length, New Order Single/Cancel Replace Request with the OptionalOrderAddOn - Equities Customer = 114 bytes

14. **Question:** The specification indicates that if I send a New Order Single/Cancel-Replace Request with the OptionalOrderAddOn - Equities Customer, it will only be returned on the Order Ack and not on any other message types (i.e. not echoed back on the Execution Report or Cancel/Cancel-Replace/Modify Reject and UROUT). Why is this?

Answer: Correct. This is because the Equities Customer add-on simply includes additional order attributes. In keeping with the philosophy of this binary protocol to keep GT stream order activity messages as efficient as possible, order attributes are returned on the initial Order Ack but not subsequent activity.

Document Version History

<u>Date</u>	<u>Document Version #</u>	<u>Change Summary</u>
February 23, 2017	1.0	Initial version of the document.