



CONSOLIDATED QUOTATION SYSTEM AND CONSOLIDATED TAPE SYSTEM
BINARY **MULTICAST OUTPUT** FAQ
Version 1.0 – February 21, 2017

The Consolidated Tape System (CTS) and Consolidated Quotation System (CQS) are making modifications to move from the current ASCII messaging formats to new Binary messaging formats. For more Binary modification details, refer to the CTA Multicast Output Binary Formats notification announcements at www.ctaplan.com selecting the Announcements option.

Binary Parallel Production Data Dissemination

- 1. Will there be new Multicast IP Addresses associated with the Binary messaging production implementation?**
 - No. Existing Multicast IP Address will be used upon implementation of the new Binary messaging formats.

- 2. Will CQS and CTS disseminate both the ASCII and Binary formats concurrently during the production day? Will production 'like' data be disseminated during the Parallel Binary messaging formats testing period? What are the Multicast IP Addresses which will be used for the Multicast Output Parallel Binary testing period?**
 - Yes. CQS and CTS will support a parallel Binary messaging formats production testing period whereby ASCII and Binary Data will be disseminated over a separate sub-sets of Multicast Lines.

 - The Dedicated Multicast IP Addresses in support of the CQS and CTS Parallel Binary messaging formats testing period are highlighted in the Common Multicast IP Distribution Network Specification which can be accessed at www.ctaplan.com selecting the Tech Specs option.

 - CQS Parallel Binary messaging formats will be disseminated over two (2) multicast lines.

 - CTS will be disseminated over three (3) multicast lines during the course of the production day.

- 3. How long will support be in place for the Multicast Output Parallel Binary testing period?**
 - Once dissemination of CQS and CTS Parallel Binary messages commences, they will be supported until immediately preceding the implementation of the CQS and CTS new Binary formats.

 - It is recommended that Data Subscribers use this parallel testing opportunity to complete their testing and ensure their readiness for the implementation of the new CQS and CTS Binary message formats.



Temporary Dual Network ASCII/Binary Test Data During Non-Production Hours

4. How will both ASCII/Binary Message Formats be disseminated during non-production hours (e.g. weeknights/Saturdays)?

- Weeknights and Saturdays (upon request only), existing CQS and CTS Production Multicast IP Addresses will disseminate Binary test data and Temporary Dual Network Test Group Multicast IP Addresses will disseminate ASCII test data, over all lines. The Temporary Dual Network Test Group Multicast IP Addresses are highlighted in the Common Multicast IP Distribution Network Specification which can be accessed at www.ctaplan.com selecting the Tech Specs option.

5. Will the Temporary Dual Network Test Group Multicast IP Addresses be utilized upon implementation of CQS and CTS Binary Message formats?

- No. The Temporary Dual Network Test Group Multicast IP Addresses were only used to facilitate ASCII dissemination during non-production hours and will be decommissioned when Binary formats are implemented.

Weeknight Binary Test Data Replay Files

6. Will weeknight Binary test data replay files continue to be supported during the Binary Parallel Test Period?

- Yes. In addition to the CTS and CQS Parallel Binary messaging formats testing period, CTS and CQS Binary test data replay files are available weeknights during the testing window of 9:00 pm – 9:15 pm ET over the [Playback Test Data Test Group Assignments](#) throughout the implementation of CTS and CQS Binary formats. The Playback Test Data Test Group Multicast IP Addresses are listed in the Common Multicast IP Distribution Network Specification which can be accessed at www.ctaplan.com selecting the Tech Specs option.

7. Why does the weeknight Binary Test Replay File contain Message Header Timestamps set to '0'?

- The Message Header Timestamp is set to '0' for testing purposes only and can be used to further identify these messages as test messages, not production messages.



Message Formats

- 8. In order to process all the messages in a block, a subscriber must correctly deduce the length of each message based on the message category and type. Can a 'Message Length' field be added to the Message Header?**
- Yes. In order to explicitly identify the length of each message, a 'Message Length' field has been added to the Message Header.
- 9. Why did the CTS '@' Sale Condition code indicating a 'Regular Sale' eliminated?**
- To maintain consistency with the representation of a 'Regular Sale' Condition in both the Short and Long Trade message formats, as a 'Regular Sale' and a condition-less trade are two ways of describing a 'Regular Sale' the '@' code was eliminated and a 'Regular Sale' will be represented as 'space'.
- 10. What is the relationship between the new CQS 'Special Long Quote' and the old 'FINRA BBO Appendage'?**
- Presently, CQS calculates the FINRA Best Bid and Best Offer (BBO) which is then appended to messages as required. Effective with the implementation of the new CQS Binary Message formats, the FINRA ADF will be calculating their own FINRA BBO and will provide the BBO information in the new 'Special Long Quote' message Best Bid/Best Offer related fields. As the FINRA BBO is included in the 'Special Long Quote' message, the FINRA BBO Appendage is no longer required.
- 11. Why were fields such as 'Currency Indicator' and 'Temporary Suffix' eliminated?**
- Fields which are no longer required to be supported either due to non-usage; are no longer required, or the value can be derived from the 'data type' (e.g., the first byte of a signed integer identifies a positive/negative value), were ~~agreed to be~~ eliminated.
- 12. Bond messages have not been disseminated in production over the CQS and CTS Multicast feeds in years, why are they being supported in Binary?**
- The CTA Plan which Participants have filed with the SEC for the dissemination of last sale prices includes Bonds. Until Participants file an amendment to the CTA Plan to omit Bonds, CQS and CTS will continue to support Bond messaging and processing, in the event Bonds will be used in the future.
- 13. In what scenario can a negative Participant Reference Number be used?**
- In instances when the SIP generates a message on behalf of a Participant, in order to avoid duplicating a Participant's already used Participant Reference Number during the production day, the SIP will use a negative Participant Reference Number.



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Fallback from Binary to ASCII:

14. Are CQS and CTS Data Subscribers expected to process both the current (existing) ASCII formats and the new Binary formats after the implementation of the Binary formats?

- Yes. It is a requirement that Data Subscribers have the capability to process both ASCII and Binary formats for fallback purposes during the transitional period. CQS and CTS will support both the new Binary formats and the old ASCII formats for a transitional period of at least two weeks allowing for a rapid fallback. In the event of fallback, Subscribers that are unable to process both Binary and ASCII formats may cease to receive CQS and/or CTS multicast data.

15. Will there be any published notification when CQS and/or CTS fallback from Binary to ASCII?

- Yes, but only after the event. If a system(s) issue occurs necessitating a fallback, the affected system will revert to ASCII formats immediately and Data Subscribers will cease to receive the new Binary formats over the affected system.
- After a fallback, a CTA notification will be published stating CQS and/or CTS has executed a fallback from the Binary formats to ASCII formats. Only Data Subscribers who have subscribed at www.ctaplan.com to receive CTA Notifications and Alerts will receive CTA announcements. If you are not subscribed, visit and subscribe to CQS and CTS announcements and alerts at www.ctaplan.com.

16. When a decision is made to fallback to ASCII, will both CQS and CTS fallback simultaneously?

- Fallback of either CQS and/or CTS is dependent upon the occurring issue at the time. The decision to fallback CQS and/or CTS will be made on a case by case basis. If only one system is affected, a fallback of only that system would take place.
- Once a system fallback occurs, the ASCII format will continue to be disseminated for the remainder of the trading day. Further notification will be published if Binary or ASCII formats will be generated the following trading day.
- Dependent on the issue experienced, a failover to the Backup Data Center may be required and ASCII messages will be disseminated from the Backup Data Center.



Fallback from Binary to ASCII (continued)

17. How will a CQS or CTS intraday fallback be handled?

- Upon a fallback from Binary to ASCII, the current production Multicast IP Addresses will publish the ASCII formats. Additionally, Data Subscribers will no longer receive a Block Header Version character (0x00); the ASCII block text will contain a Start of Header (SOH) control character (x01) which indicates the beginning of the block.
- A Reset Message Sequence Number message will be disseminated containing a number greater than the highest Block Sequence Number previously disseminated. A Message Sequence Number gap will be observed as a result of the fallback.

18. Following an intraday CQS and CTS fallback, what is the logic to populate ‘Output Sequence Number of Transaction Being Adjusted’ for trade corrections and cancels (i.e., Message Sequence Number was eliminated in Binary and replaced with Block Sequence Number and Message ID).

- SIAC will maintain an internal message sequence number associated with each message within the block and will populate the “Output Sequence Number of Transaction Being Adjusted” with this sequence number to facilitate correction/cancel processing during the Binary/ASCII transition period.

19. Will Fallback testing be supported as part of the Industry tests?

- Yes. Binary data will be disseminated for the first part of the test after which a fallback will be exercised for both CQS and CTS and following the fallback only ASCII data will be disseminated for the remainder of the test.

Retransmission Processing Following a Fallback

20. Following a fallback, how will Retransmissions be processed?

- After an intraday fallback from Binary to ASCII, CQS and CTS retransmissions will be disseminated in ASCII format only. Requests for Retransmissions originally disseminated in Binary format will need to be requested based on the Block Sequence Number.

Binary Formats Implementation

22. Will both the CQS and CTS Binary Message formats be implemented on the same day?

- Yes. At the request of Data Subscribers and following the same methodology used with previous implementations that affect both CQS and CTS (e.g., implementation of new CQS and CTS Message Headers on the same day).



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Documentation / Additional Information

23. Where can I access the latest CQS and CTS Multicast Output Specifications?

- The CQS and CTS Multicast Output ASCII (current production) and Binary (future implementation) Specifications can be accessed at: www.ctaplan.com selecting the Tech Specs option.

24. Who do I contact for additional information?

- For questions regarding the CQS and CTS Multicast feeds, please send an email to CQS-CTS-OPRA@siac.com.