

MSRB RTRS Price Dissemination Services
Specifications Document
January 25, 2008
Version 2.6

The Municipal Securities Rulemaking Board began operating its Real-Time Transaction Reporting System on January 31, 2005. RTRS requires securities dealers in most instances to report their municipal securities transactions to the MSRB within 15 minutes of the time of trade.¹

Municipal securities transactions will be published in real-time messages and in bulk files. The Real-time feed will be sent to subscribers over the Internet or by leased line using MQ Series or a TCP Socket.² RTRS also will make a Day Replay file available containing all the messages sent during the day. Real-time messages will consist of messages about transactions received at RTRS that day, regardless of their trade date, on a “first in first out” basis.

Bulk files also will be made available to subscribers. They will consist of all transactions with a particular trade date. A T+1 Report and a T+5 Report will be posted before 6:00 a.m. each day showing all the reportable transactions with a trade date of the previous day and five business days ago, respectively. It will also be possible to purchase historical data. Bulk files will be made available to subscribers over the Internet via FTP or on CD-ROM.

1. Real-Time Trade Data

RTRS real-time data will be made available by streaming “real-time push.” RTRS will provide both primary and backup service if requested. Each trade message will have a unique Sequential Number and a Broadcast Time indicating when the message was published. The Sequential Number and Broadcast Time for a message will be the same for all subscribers. Modification and cancellation messages submitted by dealers will also be disseminated in real time and will contain a complete set of fields.

Trade messages will be sent in comma-delimited format using numerically tagged fields. Tags that have a null value in a particular trade message will be omitted. This approach provides version independence and allows the possibility for new fields to be added as needed in the future. Messages will have the same format on both the TCP Socket and MQ Series feeds. If a subscriber connects after the day's broadcasting has

¹ Dealers have more time to report transactions in certain cases. These transactions still will be reported to subscribers immediately upon receipt at RTRS.

² Subscribers will be responsible for all telecommunications charges for leased lines.

begun, it is the subscriber's responsibility to request any missed messages. One comprehensive file of all real-time trade messages and the system open and closed messages sent during the day will be made available the next day in the same delimited, tagged format. Sample messages are attached at Appendix A.

To receive real-time trade messages via a TCP Socket, subscribers are responsible for proper firewall configuration. Subscribers must maintain an open Socket connection and must read data from the Socket as trade messages and heartbeats are streamed from the MSRB. Heartbeats will be sent once every 60 seconds in the absence of real-time messages, even during announce system interrupts (*i.e.*, a system interrupt message is broadcast). Heartbeat messages will contain a timestamp but will not have a Sequential Number. Heartbeat messages indicate that the connection is working properly but there are no messages to send. A two-character CRLF will mark the end of each message. If subscribers fail to receive trade messages or heartbeats for more than 120 seconds, the subscriber should assume that there has been a connection failure, close its current connection, and attempt to reconnect to the RTRS dissemination service.

To receive real-time trade messages via MQ Series, subscribers must license and configure their own MQ software. There will be no heartbeats on MQ Series connections. A two-character CRLF will be present on the MQ Series messages also.

2. Replays and Snapshots

If a subscriber detects that a message or a series of messages was missed, the subscriber can request a trade message replay or snapshot. Requesting a message replay will prompt the system to begin re-sending all messages from a specific point in the real-time feed. Requesting a snapshot will prompt the system to re-send only one or more specified messages in a range by Sequential Number. Replay and snapshot requests are for trade messages only; system messages will not be re-sent. Subscribers should receive an error message if a requested Sequential Number is invalid. These requests are available to subscribers using TCP Socket connections only; they are not available to those using MQ Series.

To request a message replay, the subscriber must send a message with the Sequential Number from which they would like the replay to start. A two-character CRLF will mark the end of each message. Trade messages will be re-sent from that Sequential Number forward until the subscriber has caught up to the most recent message. Message replay is only available for the current day's messages. The prior day's messages can only be retrieved from the other files made available. It is important to note that during a replay, a subscriber may receive a trade message with the same Sequential Number a second time. During a replay subscribers should use the Sequential Number and RTRS Control Number to ensure older trade modifications do not overwrite newer trade modifications.

To request a message snapshot, a subscriber must send a snapshot request message containing the range of Sequential Numbers of the trade messages to be resent. A two-character CRLF will mark the end of each message. Trade messages that are sent

as a result of a snapshot request are sent interspersed with current trade messages. A snapshot request also is available only for the current day's trade messages. It is important to note that after a snapshot request, a subscriber may receive a trade message with a Sequential Number out of order. As with a replay request, subscribers should use the Sequential Number and RTRS Control Number to ensure older trade modifications do not overwrite newer trade modifications.

In addition, a Day Replay file also is made available to subscribers. The Day Replay file contains all the messages broadcast during a business day. The file naming convention for Day Replay file is *Rmdddy.LOG*, where *mmddyy* will represent month, day and year.

3. Login

To begin receiving real-time trade messages, a subscriber must log in. The login message consists of the subscriber's name and a password. A two-character CRLF will mark the end of each message. If the name and password are correct, the first message returned will either be a trade or a heartbeat message. If authentication fails, subscribers should receive a login failure error message; the server then will terminate the connection and the subscriber will need to reconnect.

Subscriber Messages*

Message	Format	Example
Login	1=L,200= <i>username</i> ,201= <i>password</i>	1=L,200=jdoe,201=12345678
Replay	1=R,400= <i>Sequential Number</i>	1=R,400=5021
Snapshot	1=S,300= <i>Beginning Sequential Number</i> ,301= <i>Ending Sequential Number</i>	1=S,300=1472,301=1473

* These Subscriber Messages do not apply to subscribers using Websphere MQ since that product is designed to guarantee delivery of the real-time data messages.

4. Bandwidth Requirements

The maximum size of each real-time message is expected to be less than 500 bytes; an entire daily real-time feed is expected to total less than 25 megabytes. It is also expected that the real-time system will experience sharp peaks of activity. It is recommended, therefore, that subscribers who do not wish to experience occasionally lengthy delays make 256K bandwidth or more available for the real-time feed.

More technical telecommunications information, such as RTRS Internet addresses or information on how to install dedicated, leased lines can be provided to subscribers separately.

5. Bulk Trade Files

In addition to real-time data, the MSRB plans to continue providing a data file each morning covering the trades with the previous day's trade date (T+1 Reports), and a

file covering all trades done with a trade date five business days ago (T+5 Reports).³ T+5 Reports will contain exact par values for those transactions with a par value over \$1 million and were included on the previous T+1 Report with a par value of “1MM+,” as well as any modifications received at RTRS since the T+1 report was produced. RTRS also will make historical data available to purchasers containing transaction data older than T+5 for specified time spans.

Trade data will be made available in the same format as the real-time messages for the convenience of real-time subscribers, or in common comma-delimited format for easy importation into commonly used database and spreadsheet applications. The common comma-delimited format will not be numerically tagged like the real-time messages. Each trade will be the most recent version of the trade in RTRS at the time the file was created (for example, if a trade has been modified only its modification will appear, its previous version will not). Cancelled trades will not be included. Only the trade files produced in the last 10 business days will be available for download at any given time. A written request will need to be submitted to MSRB for trade files not available on the FTP site.

The file naming convention for the data files will be as follows (Note: *ddmmyyyy* will represent day, month, and year in all file names):

T+1 tagged file	T1- <i>ddmmyyyy</i> TGD.TXT
T+1 untagged file	T1- <i>ddmmyyyy</i> .TXT
T+5 tagged file	T5- <i>ddmmyyyy</i> TGD.TXT
T+5 untagged file	T5- <i>ddmmyyyy</i> .TXT
T+20 tagged file	T20- <i>ddmmyyyy</i> TGD.TXT
T+20 untagged file	T20- <i>ddmmyyyy</i> .TXT

6. List of Information Items to Be Disseminated

The specific items that will be disseminated for a trade are:

Message Type

Type of message sent in the real-time broadcast; a trade message, a heartbeat message or a system message. Only used in real-time messages, not in bulk files.

³ Subscribers to the T+5 Report also will have access to a T+20 Report that contains transactions showing the effects of any modifications received at RTRS since the T+5 report was produced. Data formats in reports created before RTRS became operational may be those that were in use at the time they were created. Contact the MSRB for technical information about these older reports.

Sequential Number

Unique sequential number of the trade message. If more than one message has been published for a trade due to modification or cancellation, the trade is uniquely identified by the RTRS ID described below.

RTRS Control Number

The RTRS ID for the transaction. This may be used to apply subsequent modifications and cancellations to an initial transaction.

Trade Type Indicator

Type of trade: an inter-dealer trade, a purchase from a customer by a dealer, or a sale to a customer by a dealer.

Transaction Type Indicator

An indicator showing that the message is a new transaction, or modifies or cancels a previously disseminated transaction. Only used in real-time messages, not in bulk files.

CUSIP

The CUSIP number of the issue traded.

Security Description

Text description of the security.

Dated Date

Dated date of the issue traded.

Coupon (if available)

Interest rate of the issue traded. Will be blank for zero-coupon bonds.

Maturity Date

Maturity date of the issue traded.

When-Issued Indicator (if applicable)

Indicates whether the issue traded on or before the issue's initial settlement date.

Assumed Settlement Date (if applicable)

For new issues where the initial settlement date is not known at the time of execution, this field is a date 15 business days after trade date. If this field is populated there will be no data in settlement date.

Trade Date

The date the trade was executed.

Time of Trade

The time of trade execution reported by the dealer.

Settlement Date (if known)

The settlement date of the trade if known. If this field is populated there will be no data in assumed settlement date.

Par Traded

The par value of the trade. Trades with a par amount over \$1 million will show par value as “1MM+” until five days after their trade date.

Dollar Price

The dollar price of the trade.

Yield (if applicable)

The yield of the trade.

Broker’s Broker Indicator (if applicable)

An indicator used in inter-dealer transactions that were executed by a broker’s broker, including whether it was a purchase or sale by the broker’s broker.

Weighted Price Indicator (if applicable)

An indicator that the transaction price was a “weighted average price” based on multiple transactions done at different prices earlier in the day to accumulate the par amount needed to make this transaction.

List Offering Price/Takedown Indicator (if applicable)

An indicator showing that the transaction price was reported as a primary market sale transaction executed on the first day of trading of a new issue:

- by a sole underwriter, syndicate manager, syndicate member or selling group member at the published list offering price for the security (“List Offering Price”); or
- by a sole underwriter or syndicate manager to a syndicate or selling group member at a discount from the published list offering price for the security (“RTRS Takedown Transaction”).

RTRS Publish Date

For real time data, the date the message was published to subscribers. For bulk files, the date the data was produced for the report.

RTRS Publish Time

The time the message was published to subscribers. For bulk files, the time the data was produced for the report.

Version Number

Version number of the message or file format used in the message or file.

7. System Messages

The system will send messages to indicate the daily open and close. Special system messages may be sent if publishing needs to be interrupted. When message publishing is resumed after an interrupt message, the first message subscribers will receive will be a resume message. The close message will also contain the final Sequence Number for the day, a count of trades sent during the day and the total par value of trades sent during the day.

8. RTRS System Hours

RTRS will begin to publish transaction data in real-time each business day beginning at 7:00 a.m. EST. RTRS will continue publishing until all data that was required to be published that day is successfully published. RTRS will send an open message at the start of business each day. RTRS will send a close message to advise subscribers that it is closed for the day.

Real-time transactions submitted to RTRS after 8:00 p.m. Eastern Time will be sent when RTRS begins publishing at 7:00 a.m. Eastern Time the next RTRS business day.⁴ In addition, at 7:00 a.m. RTRS will send modifications showing exact par values for transactions that were initially broadcast with a par value of "1MM+."⁵ Bulk trade files for previous days, will be available at the RTRS Web site each day from 6:00 a.m. to 10:00 p.m. Eastern Time or on CD-ROM, at the option of the subscriber or purchaser.

9. Formats

Trade Message and Bulk Files in Trade Message Format

Field Name	Field ID	Always Present?	Values	Format/Length
Message Type	1	Y (only in used in trade messages)	T - Trade	1 character
Sequential Number	2	Y (only in used in trade messages)		Up to 16 digits
RTRS Control Number	4	Y		Up to 16 characters

⁴ Dealers are required to submit transactions to RTRS in real-time up to 6:30 p.m. Eastern Time (US). RTRS, however, will continue to receive messages until 8:00 p.m. RTRS will continue to broadcast all transactions received until they all have been sent.

⁵ Transactions with a par value exceeding \$1 million will show a par value of "1MM+" until five days after trade date.

Field Name	Field ID	Always Present?	Values	Format/Length
Trade Type Indicator	5	Y	D - Inter-dealer P - Purchase from Customer S - Sale to Customer	1 character
Transaction Type Indicator	6	Y (only in used in trade messages)	I - Instruct M - Modify C - Cancel	1 character
CUSIP	7	Y		9 characters including the checksum digit
Security Description	8	Y		Up to 120 characters of free format text
Dated Date	9	Y		<i>yyyymmdd</i>
Coupon	10	N		Fixed decimal, up to 6 digits <i>nnn.nnn</i>
Maturity Date	11	Y		<i>yyyymmdd</i>
When-Issued Indicator	12	N	Y - When Issued	1 character
Assumed Settlement Date	13	N		<i>yyyymmdd</i>
Trade Date	14	Y		<i>yyyymmdd</i>
Time of Trade	15	Y		<i>hhmmss (24 hour time)</i>
Settlement Date	16	N		<i>yyyymmdd</i>
Par Traded	17	Y		Fixed decimal, up to 12 digits <i>nnnnnnnnnn.nnn</i> or "1MM+"
Dollar Price	18	Y		Fixed decimal, up to 7 digits <i>nnnn.nnn</i>
Yield	19	N		Fixed decimal, up to 6 digits, may be negative <i>[-]nnn.nnn</i>
Broker's Broker Indicator	20	N	S - Broker's Broker sale P - Broker's Broker purchase	1 character
Weighted Price Indicator	21	N	Y - Weighted Price	1 character

Field Name	Field ID	Always Present?	Values	Format/Length
List Offering Price/Takedown Indicator	22	N	Y – List Offering Price/Takedown	1 character
RTRS Publish Date	23	Y		yyyymmdd
RTRS Publish Time	24	Y		hhmmss
Version Number	25	Y		Up to 4 digits, fixed decimal nn.nn

Heartbeat Message Format

Field	Field ID	Always Present?	Values	Format
Message Type	1	Y	H	1 character
Timestamp	3	Y		hhmmss

System Open/Close Message Format

Field	Field ID	Always Present?	Values	Format
Message Type	1	Y	O – Open C - Close I – Interrupted, R - Resumed	1 character
Timestamp	3	Y		hhmmss
Last Sequential Number Sent	100	Y (On Open and Close messages)		Up to 16 digits
Total Day's Trades Sent*	101	Y (On Close message)		Up to 7 digits
Total Day's Par Amount*	102	Y (On Close message)		Up to 14 digits, fixed decimal nnnnnnnnnnnnnn.nn

* Note that the values for “Total Day’s Trades Sent” (Field ID 101) and “Total Day’s Par Amount” (Field ID 102) are the sum for those trades broadcast that day that traded that day (*i.e.*, with that day’s trade date). “Total Day’s Trades Sent” is a sum of those trades, not of their messages (*i.e.*, if there is more than one message for a trade that trade still is counted only once). “Total Day’s Par Amount” is a sum of all the pars for those trades as they stand when the system message is sent (*i.e.*, cancellations and modifications to par amounts on these trades is applied). Neither of these values includes trades broadcast that day but traded before that day.

Error Message Format

Field	Field ID	Always Present?	Values	Format
Message Type	1	Y	E - Error	1 character
Timestamp	3	Y		<i>hhmmss</i>
Error Type	500	Y	L – Login failure I – Invalid sequential number requested for replay or snapshot.	1 character

10. Business Continuity

The MSRB maintains a hot-site from which it will provide real-time feed subscribers with a second source for the feed in the event that it can no longer be broadcast from the RTRS primary site. Subscribers will be provided with the IP addresses of the servers at both the production and disaster recovery sites. These sites will be running in parallel as much as possible, however the sequence numbers of the messages distributed from each site and the total number of messages distributed from each site may not match due to differences in processing speeds at each site. The final state of each trade at the end of the day will be identical between the sites.

Should a subscriber elect to connect to only one of the sites at a time, in the event of a communications failure for any reason, it will be the subscriber's responsibility to change their active connection and submit a Replay Request to obtain any missed messages. The Day Replay File and Bulk Report Files will continue to be available at the RTRS FTP servers. The RTRS FTP servers maintain redundant services that are transparent to the end user when the connection is made using fully qualified DNS names.

11. Contact Information

Questions about this document may be directed to:

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(703) 797-6600

Appendix A

Sample System Messages

System Open

1=O, 3=073000, 100=5467995

Trade Message

1=T, 2=1976323, 3=093001, 4=123, 5=D, ...

Heartbeat

1=H, 3=095325

System Close

1=C, 3=183000, 100=98760043, 101=28765, 102=12543982000.00

System Interrupted

1=I, 3=104704

System Resumed

1=R, 3=145632

Sample Subscriber Messages

Login

LOGIN, XYZ, Muni

Replay Request

REPLAY, 1265

Snapshot Request

RESEND, 2651, 2656

Sample Error Messages

Login Failure

1=E, 3=073000, 500=L

Invalid Sequential Number requested for replay or snapshot

1=E, 3=104232, 500=I

RTRS Subscriber Reports

	Trades included	Modifications	Cancellations	Par Shown
Real-time feed	All sent to RTRS that day by 8:00 p.m. regardless of trade date	All sent to RTRS and all previously submitted trades where par now can be disseminated	All sent to RTRS	“1MM+” for trades over \$1 million par and less than T+5
Day Replay (a copy of all messages broadcast real-time throughout one day)	All sent to RTRS that day by 8:00 p.m. regardless of trade date	All sent to RTRS and all previously submitted trades where par now can be disseminated	All sent to RTRS	“1MM+” for trades over \$1 million par and less than T+5 on day originally broadcast
T+1 Report	T+1 trade dates only	Latest version of trade only	No	“1MM+” for trades over \$1 million par
T+5 Report (includes a separate T+20 report)	T+5 trade dates only	Latest version of trade only	No	All
Historical Data (trades older than T+5)	T+x through y only (timespan requested)	Latest version of trade only	No	All

Timeline (all times are Eastern Time)

By 6:00 a.m.

Heartbeat for the day’s real-time feed will begin.

T+1 and T+5 reports are made available.

7:00 a.m. to 7:30 a.m.

Real-time feed: RTRS generated modifications for trades previously submitted where par can now be disseminated.

Real-time feed: All new trade messages submitted to RTRS since 8:00 p.m. system close on the last business day.

7:30 a.m. until finished (after 8:00 p.m.)

Real-time feed: All new trade messages submitted to RTRS between 6:30 p.m. and 8:00 p.m. system close.

Heartbeats end for the day after system close message.

By Midnight

Day Replay file for that day.