Bloomberg API Demo Tool v3 User Guide

Version: 1.4
Last Updated: 12/27/2018

Bloomberg
FOR ENTERPRISE

Bloomberg API Demo Tool User Guide

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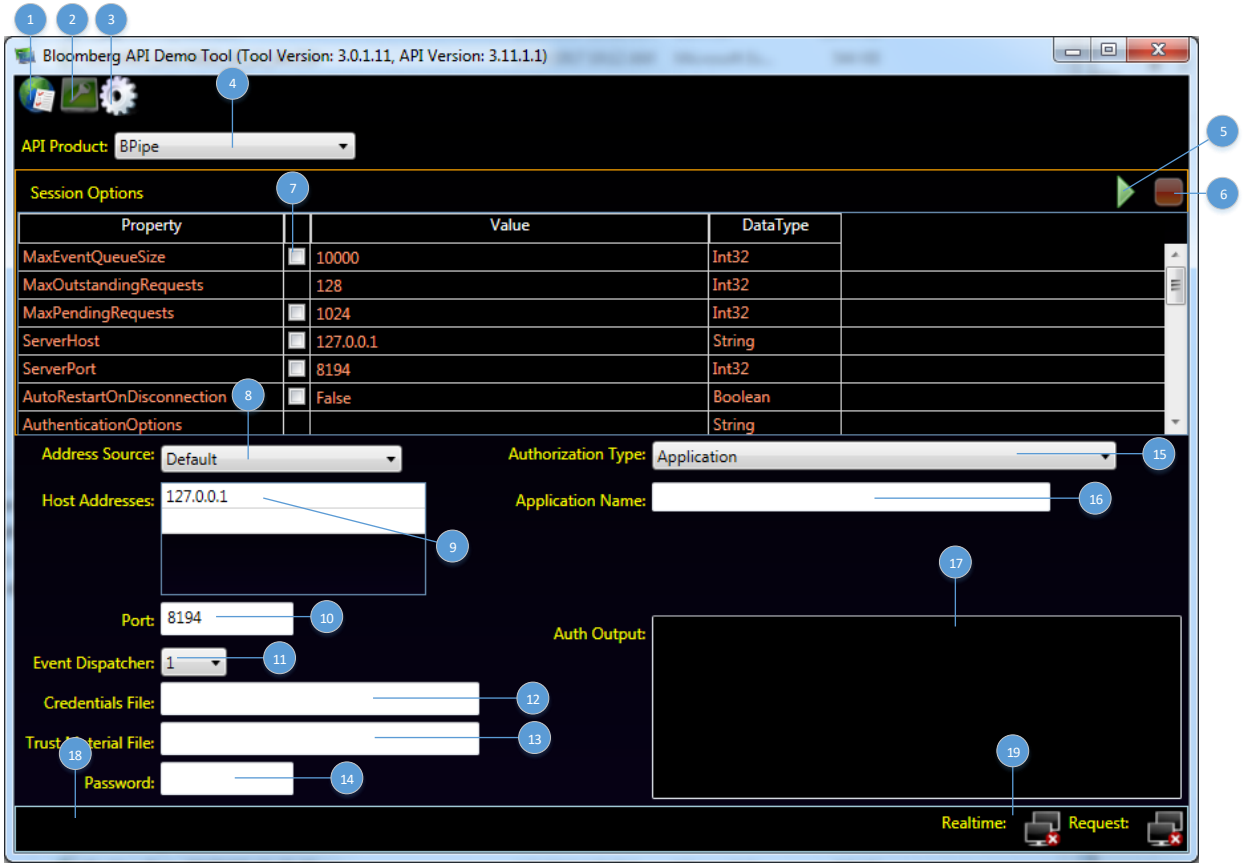
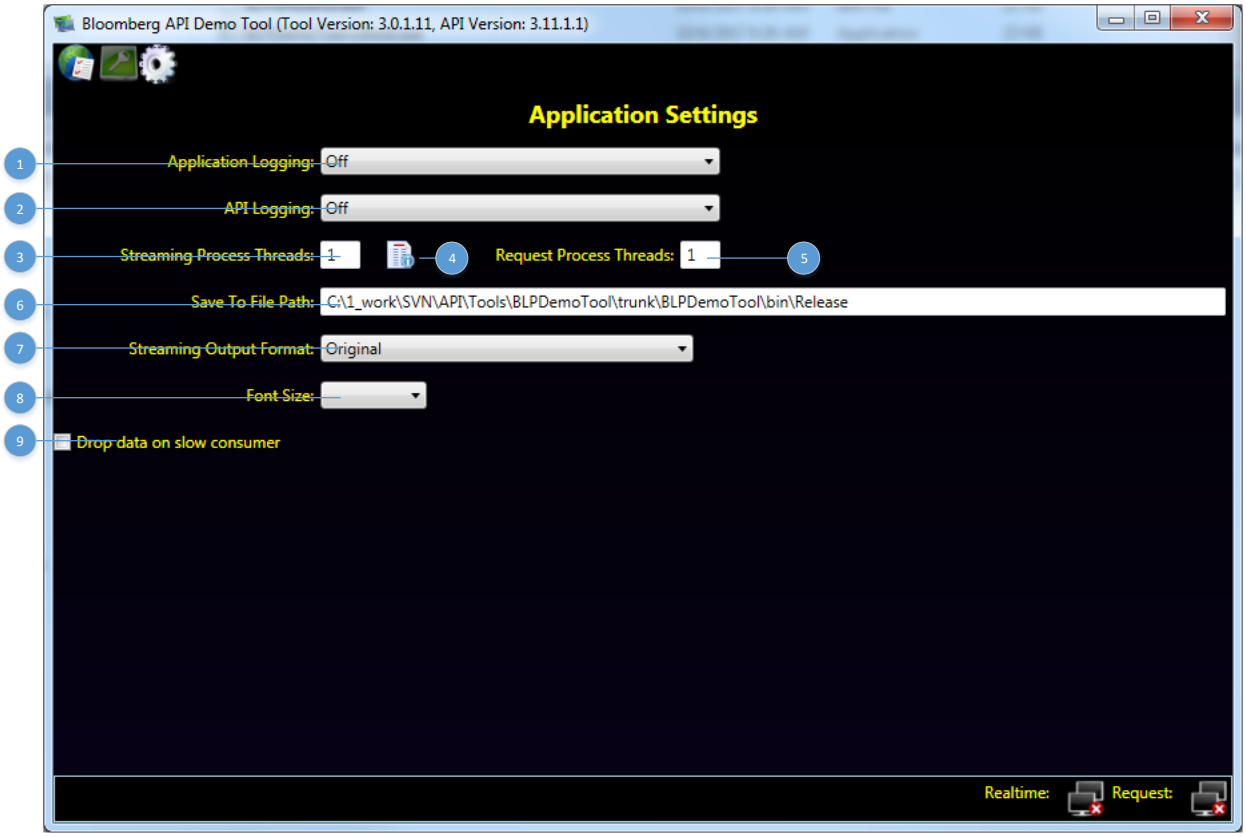
Product Session Configuration



1. BLPAPI session connection screen.
2. B-Pipe/Server API user and application authentication screen.
3. Demo Tool logging and other setup options.
4. Select B-Pipe (default), Server API, Desktop API or NSS (New Security Setup).
5. Start session connection.
6. Stop session connection.
7. Select checkbox to edit Session Option.
8. Select between “Default”/”Stored Addresses” and “Config file” (only available if bbcomm.cfg is detected). Note that editing “Config file” address will not change the bbcomm.cfg address setting nor will it persist addresses for next application startup. Only “Stored Addresses” will persist addresses for next startup.
9. Edit, add or delete host addresses. Select row and press delete key to remove.
10. Host port.
11. Number of event dispatcher to use for session.
12. Credential file path and file name. This file is generated by an EMRS administrator for a specific BPipe instance. The credential file will have .pk12 extension.
13. Trust Material file path and file name. This file will be downloaded by an EMRS administrator. The file will have .pk7 as the extension.
14. The EMRS administrator must create a password when generating the credential file in item 12. The same password must be provide in the password textbox.
15. Authentication types (B-Pipe/Server API only): Application, User (OS_LOGON), User (Directory Service), User (OS_LOGON) and Application, User (Directory Service) and Application, AuthId and IP and EMRS ID and IP.

16. Required authentication information will change depending on #12 selection. (B-Pipe/Server API only)
17. Authentication status will be display in textbox. (B-Pipe/Server API only)
18. Demo Tool status bar. Hover mouse over left side of status bar for past 8 status messages.
19. Real-time and Request session connection status.

Application Settings



1. Application log settings. Possible settings are: Off, Error, Warning, Information, Verbose and All.
2. BLPAPI log settings. Possible settings are: Off, Error, Warning, Info and Verbose.
3. Number of application threads to create for processing streaming data. This setting must be set prior to session start and the maximum number of threads is 100.
4. Streaming process threads status view.
    a. Grid columns:
        i. Thread # - thread ID.
        ii. App Queued Messages – current number of messages in process thread queue.
        iii. Total Message Count – total number of messages processed.
        iv. API Event Queue Time – time message was in BLPAPI event queue. SessionOptions.RecordSubscriptionsDataReceiveTime must be set for this feature. API event queue time = (time message extracted from API event queue) – (Message.TimeReceived).
        v. Current App Latency – time application took to completely process the current message.

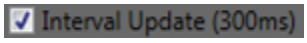
vi. Maximum App Latency – maximum application latency processing a message during the life time of the session.
vii. Dropped Messages – number of messages dropped by application. This feature can be turn on checking "Drop data on slow consumer event" checkbox. Note: Message will be drop from the application's message queue. The application will still need to pull the events off the BLPAPI event queue to catchup.

5. Number of application threads to create for processing request/response requests. This setting must be set prior to session start and the maximum number of threads is 10.
6. Path to save log and output files.
7. Streaming output format setting will control how the data are written to the file.
    a. Original will write message as is from the BLPAPI
    b. SingleLine will write message in one single line
    c. Delimited will write message in to a single line with subscribed data separated by a comma or user defined delimiter. This is best used when there is only a single security per output file. The number of security per file depends on number of subscription and number of application's process threads. The number of application process threads must be greater or equal to the number of subscriptions.
8. Change application font size.
9. Checking the "Drop data on slow consumer event" checkbox will drop all messages from the application's message queue. The application will still need to pull the events off the BLPAPI event queue to catchup. Data processing will resume when a slow consumer clear is received from the BLPAPI.

Streaming Real-time Subscription Tab

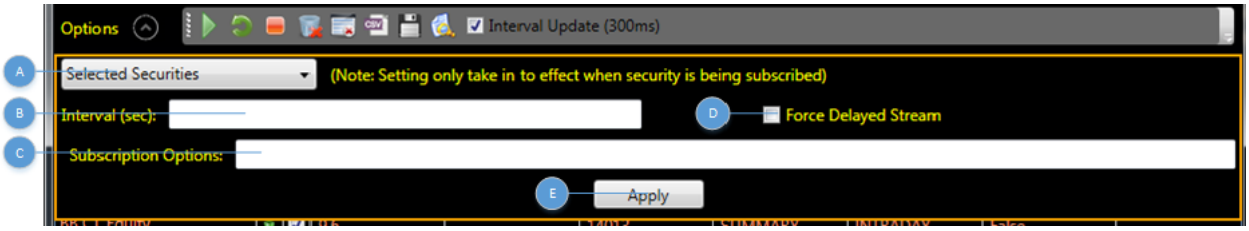
Subscriptions are ideal for data that changes frequently and/or at unpredictable intervals. Instead of repeatedly polling for the current value, the application gets the latest value as soon as it is available without spending time and bandwidth if there have been no changes. Default service used for subscription is "/blp/mktdata". The default service can be override by prefixing the service to the security (Example: "/blp/mktvwap/ticker/IBM US Equity").

1. Streaming tab allow users to subscribe to real-time streaming data.
2. Streaming tab Toolbar.
   - A. Play button – This button will start subscription to all the selected securities that are not subscribed.
   - B. Re-subscribe button – This button will re-subscribe to all the selected subscribed securities.
   - C. Stop button – This button will stop all the selected subscriptions.
   - D. Delete button – This button will delete all selected securities that are not subscribed.
   - E. Restore default Fields button – This button will delete all fields and restore default fields.
   - F. Clear data button – This button will clear all the selected securities data cells.
   - G. Export to CSV button – This button will export all the selected securities to a CSV file.
   - H. Load securities/fields from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Another way to load securities/fields is to drag and drop from a text editor to any area inside the tool's grid.
   - I. API data log button – This button will display the most recent API messages.
   - J. Generate code button – This button will generate complete C++, Java, C#.NET and Python example code with the selected securities and fields.

K.  Check this checkbox will update the grid every 300ms when there are updates. Unchecking this checkbox will update the grid directly once there is an update.

L.  Check the "Use Service" checkbox will allow the user to override the default service set in the SessionOptions DefaultSubscriptionService property setting. All subsequent subscriptions will have the provided service prefixed to the security prior to making the subscription. Hover over the security to see the subscription string used for the subscription.

3. Scroll tabs to the right.
4. Scroll tabs to the left.
5. Show/hide subscription options settings.



A. Securities to apply subscription options to.
   i. "New Security Only" – This will only apply options to new security being added.
   ii. "Selected Securities" – This will apply options to selected securities in the grid.
   iii. "All Securities" – This will apply options to all securities in the grid.

B. Subscription interval setting. Example: 0.5 is 500 milliseconds, 1.0 is 1 second. This is equivalent to putting "interval=0.5" in "Subscription Options" textbox in item C.

C. Subscription options can be manually enter in to this textbox.

D. Check the checkbox to force an exchange entitled subscription to the delayed stream.

E. Click to apply options to securities.

6. Enter security in to textbox and press the  button to add security in to the grid.
7. Enter field in to textbox and press the  button to add a new field column on to the grid.
8. Press the  button remove field from the grid.
9. Security column on the grid. Hover mouse over security cell will display tooltip with subscription options and subscription string when the security is subscribed. Securities can be added to the grid by drag and drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited.
10. Subscription status column. This column will display an icon indicating the status of the subscription. Hover over icon for description of status.
11. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
12. Subscription data area of the grid.
13. Display number of securities are in the grid.
14. Display number of securities are currently subscribed.
15. Check the "Output to File" checkbox will output all subscription data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each security will output to the assigned data processing thread output file when the subscription was initiated.

Snapshot Template Request (B-Pipe and Server API Only)

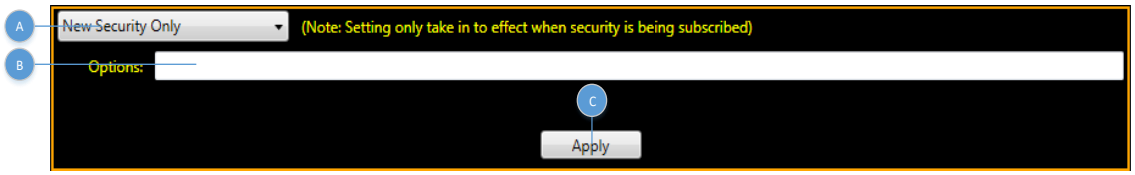
This feature will allow an application to create a snapshot template for a specific topic and real-time fields. The snapshot template will initiate a subscription and persist a last value data cache on the B-Pipe or Server API process. No update from the subscription will be send to the application which created the snapshot template until a snapshot request is sent from the application to B-Pipe or Server API. The B-Pipe or Server API data will be send to the application in PARTIAL_RESPONSE/RESPONE event(s).

1. Streaming tab allow users to subscribe to real-time streaming data.
2. Streaming tab Toolbar.
   - A. Play button – This button will create Snapshot template for all the selected securities that does not have active template.
   - B. Re-create Snapshot Template button – This button will re-create Snapshot template to all the selected securities with active template.
   - C. Request snapshot data button – This button will send snapshot request for all the selected securities with active template.
   - D. Stop button – This button will stop all the selected securities with active template.
   - E. Delete button – This button will delete all selected securities that does not have active template.
   - F. Restore default Fields button – This button will delete all fields and restore default fields.
   - G. Clear data button – This button will clear all the selected securities data cells.
   - H. Export to CSV button – This button will export all the selected securities to a CSV file.

I.  Load securities/fields from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Another way to load securities/fields is to drag and drop from a text editor to any area inside the tool's grid.

J.  API data log button – This button will display the most recent API messages.

3. Show/hide subscription options settings.



A. Securities to apply subscription options to.
   i. "New Security Only" – This will only apply options to new security being added.
   ii. "Selected Securities" – This will apply options to selected securities in the grid.
   iii. "All Securities" – This will apply options to all securities in the grid.

B. Options to apply to security. The option(s) can be interval=1.0 and/or delayed. Example: interval=0.5,delayed

C. Click to apply options to securities.

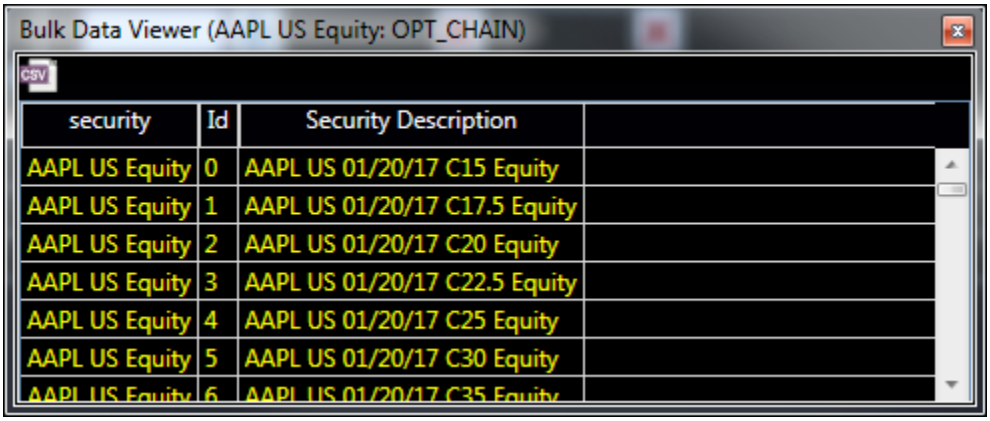
4. Enter security in to textbox and press the  button to add security in to the grid.
5. Enter field in to textbox and press the  button to add a new field column on to the grid.
6. Press the  button remove field from the grid.
7. Security column on the grid. Hover mouse over security cell will display tooltip with subscription options and subscription string when the security is subscribed. Securities can be added to the grid by drag and drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited.
8. Snapshot template status column. This column will display an icon indicating the status of the template. Hover over icon for description of status.
9. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
10. Snapshot data area of the grid.
11. Display number of securities are in the grid.
12. Display number of securities are currently have template.
13. Check the "Output to File" checkbox will output all snapshot data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each security will output to the assigned data processing thread output file when the template was initiated.

Reference Data Request Tab

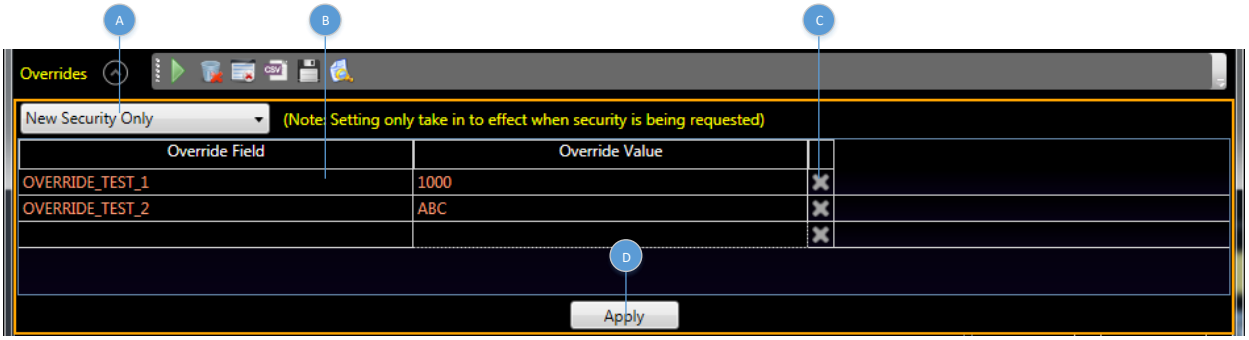
The ReferenceDataRequest request type retrieves the current data available for a security/field pair. A list of fields is available via the Bloomberg Professional service function "**FLDS <GO>**" or by using the API fields service (see "Fields Service Tab").

1. Reference data tab.
2. Request tab Toolbar.
   A. Play button – This button will create ReferenceDataRequest with all selected securities. Securities with overrides are sent in separate request from securities without overrides. Securities with the same overrides are group in to a single request.
   B. Delete button – This button will delete all selected securities that are not subscribed.
   C. Clear data button – This button will clear all the selected securities data cells.
   D. Export to CSV button – This button will export all the selected securities to a CSV file.
   E. Restore default Fields button – This button will delete all fields and restore default fields.
   F. Load securities/fields from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Another way to load securities/fields is to drag and drop from a text editor to any area inside the tool's grid.
   G. API data log button – This button will display the most recent API messages.
3. Enter security in to textbox and press the button to add security in to the grid.
4. Enter field in to textbox and press the button to add a new field column on to the grid.
5. Press the button remove field from the grid.
6. Security column. Hover mouse over security will show overrides applied. Nothing will show when the security has no override.

7. Request status column. This column will display an icon when there is an error for the security. Hover over icon for description of status.
8. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
9. "Bulk Data" display in the cell will indicate the field return data too large to fit in the cell. Double click on the cell to view the bulk data.



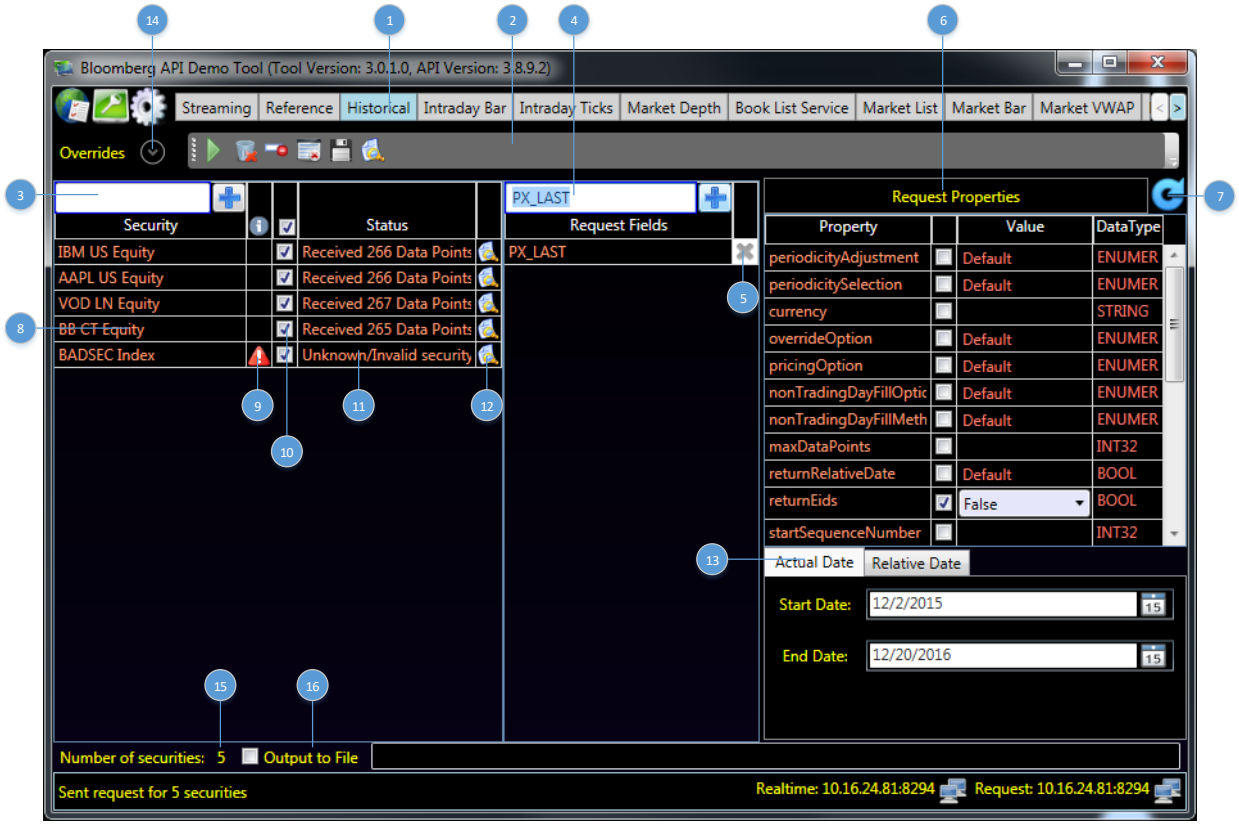
10. Request property grid. Note that any property with [] after the name is an array element. It can have one or more values. The values are comma delimited.
11. Restore request property grid to default values.
12. The ✚ will indicate the sequence element allow more than one instance of the same sequence element. Press ✚ button to add another instance of the sequence element to the request property. The child element will have a '*' in front of the property name. A '**' in front of the property name will indicate it's a child of the child element.
13. Show/hide request overrides setting.



   A. Securities to apply overrides to.
      i. "New Security Only" – This will only apply overrides to new security being added.
      ii. "Selected Securities" – This will apply overrides to selected securities in the grid.
      iii. "All Securities" – This will apply overrides to all securities in the grid.
   B. Enter override fields and values.
   C. Remove override row from grid.
   D. Apply overrides to securities.
14. Display number of securities are in the grid.
15. Check the "Output to File" checkbox will output all requests and responses data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each request will output to the assigned data processing thread output file when the request was created.

Historical Data Request Tab

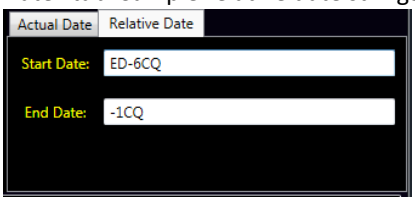
The HistoricalDataRequest Request object enables the retrieval of end-of-day data for a set of securities and fields over a specified period, which can be set to daily, monthly, quarterly, semiannually or annually. At least one security and one field are required along with start and end dates.



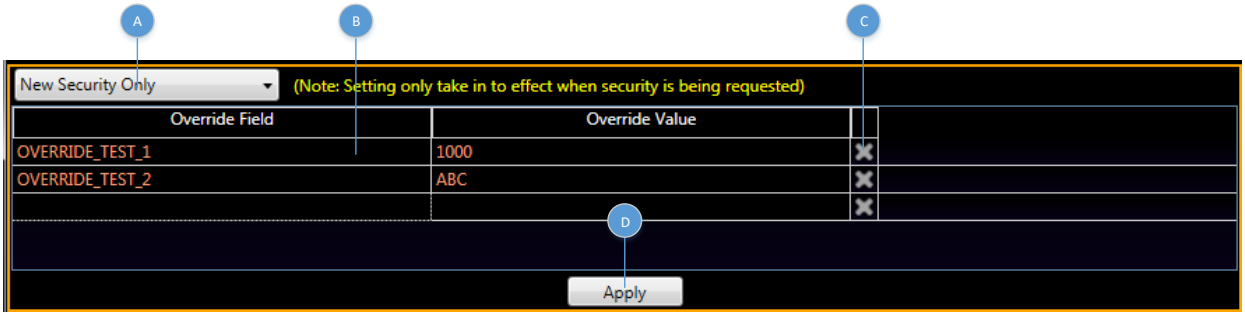
1. Historical data request tab.
2. Request tab Toolbar.
   - A. Play button – This button will create HistoricalDataRequest with all selected securities, fields columns,
   - B. Delete button – This button will delete all selected securities that are not subscribed.
   - C. Restore default Fields button – This button will delete all fields and restore default fields.
   - D. Clear data button – This button will clear all the selected securities data cells.
   - E. Load securities/fields from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Another way to load securities/fields is to drag and drop from a text editor to any area inside the tool's grid.
   - F. API data log button – This button will display the most recent API messages.
3. Enter security in to textbox and press the button to add security in to the security grid.
4. Enter field in to textbox and press the button to add a new field on to the field grid.
5. Press the button remove field from the grid.
6. Request property grid. Note that any property with [] after the name is an array element. It can have one or more values. The values are comma delimited.
7. Restore request property grid to default values.

8. Security column. Hover mouse over security will show overrides applied. Nothing will show when the security has no override.
9. Request status column. This column will display an icon when there is an error for the security. Hover over icon for description of status.
10. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
11. Display status of response(s).
12. Click on icon to view data.

13. Set start and end dates in the “Actual Date” tab or enter relative start and end date string in the “Relative Date” tab. Sample relative date strings are ED-6CQ and -1CQ.



14. Show/hide request overrides setting.



   A. Securities to apply overrides to.
      iv. “New Security Only” – This will only apply overrides to new security being added.
      v. “Selected Securities” – This will apply overrides to selected securities in the grid.
      vi. “All Securities” – This will apply overrides to all securities in the grid.
   B. Enter override fields and values.
   C. Remove override row from grid.
   D. Apply overrides to securities.

15. Display number of securities are in the grid.

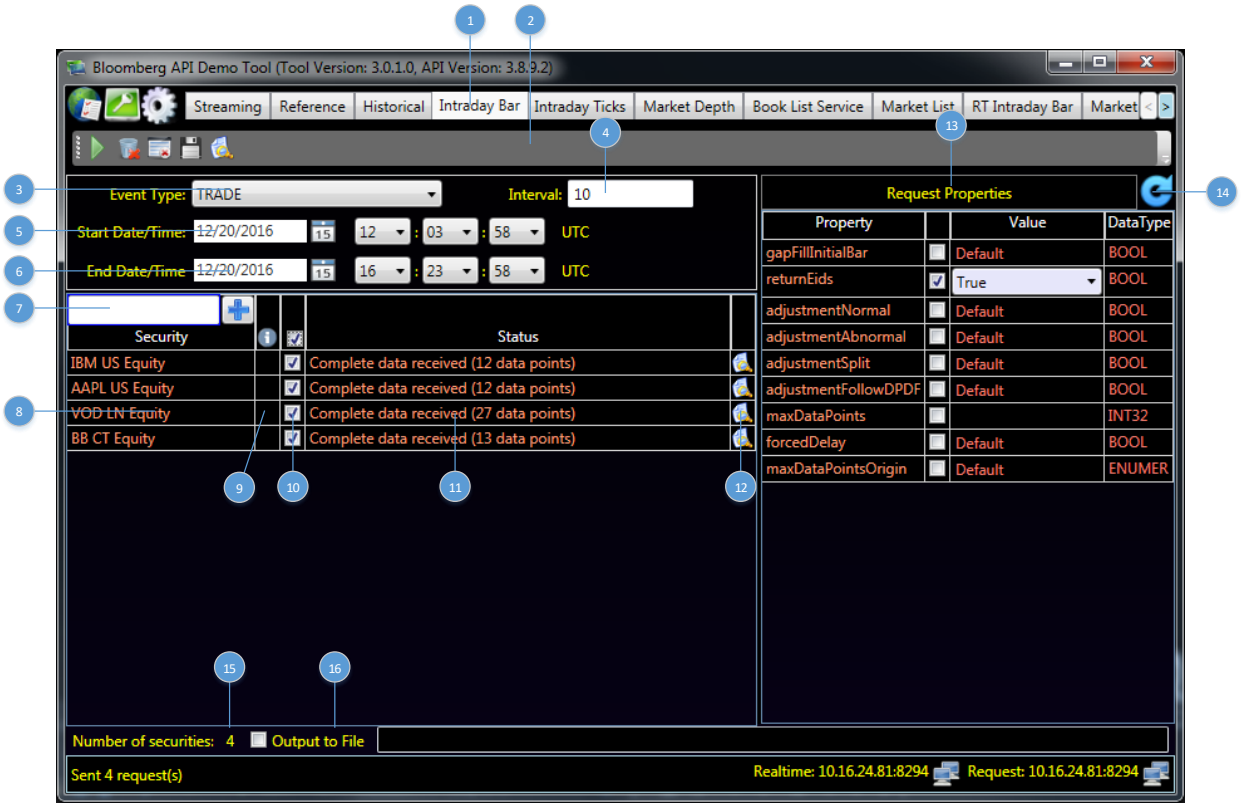
16. Check the “Output to File” checkbox will output all requests and responses data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each request will output to the assigned data processing thread output file when the request was created.

Intraday Bar Data Request Tab

Bloomberg maintains a tick-by-tick history going back 140 business days for all securities where streaming data is available. This intraday data can be used to draw detailed charts, for technical analysis or to retrieve the initial data for a monitoring graph function such as the “GIP <GO>” function on the Bloomberg Professional service.
The Intraday Bar Request enables retrieval of summary intervals for intraday data covering five Event types: TRADE, BID, ASK, BEST_BID and BEST_ASK, over a period of time.

☞ *Note that only one event type can be specified per request.*

Each bar contains OPEN, HIGH, LOW, CLOSE, VOLUME and NUMBER_OF_TICKS. The interval size of the bars can be set from 1 minute to 1,440 minutes (24 hours).
Each IntradayBarRequest can only submit one single instrument. In addition, the Event type, interval, and date/time start and end-points in UTC (Coordinated Universal Time) must be specified.



1. Intraday bar data request tab.
2. Request tab Toolbar.
   A. Play button – This button will create IntradayBarRequest with all selected securities, fields columns,
   B. Delete button – This button will delete all selected securities that are not subscribed.
   C. Clear data button – This button will clear all the selected securities data cells.
   D. Load securities/fields from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Another way to load securities/fields is to drag and drop from a text editor to any area inside the tool’s grid.
   E. API data log button – This button will display the most recent API messages.

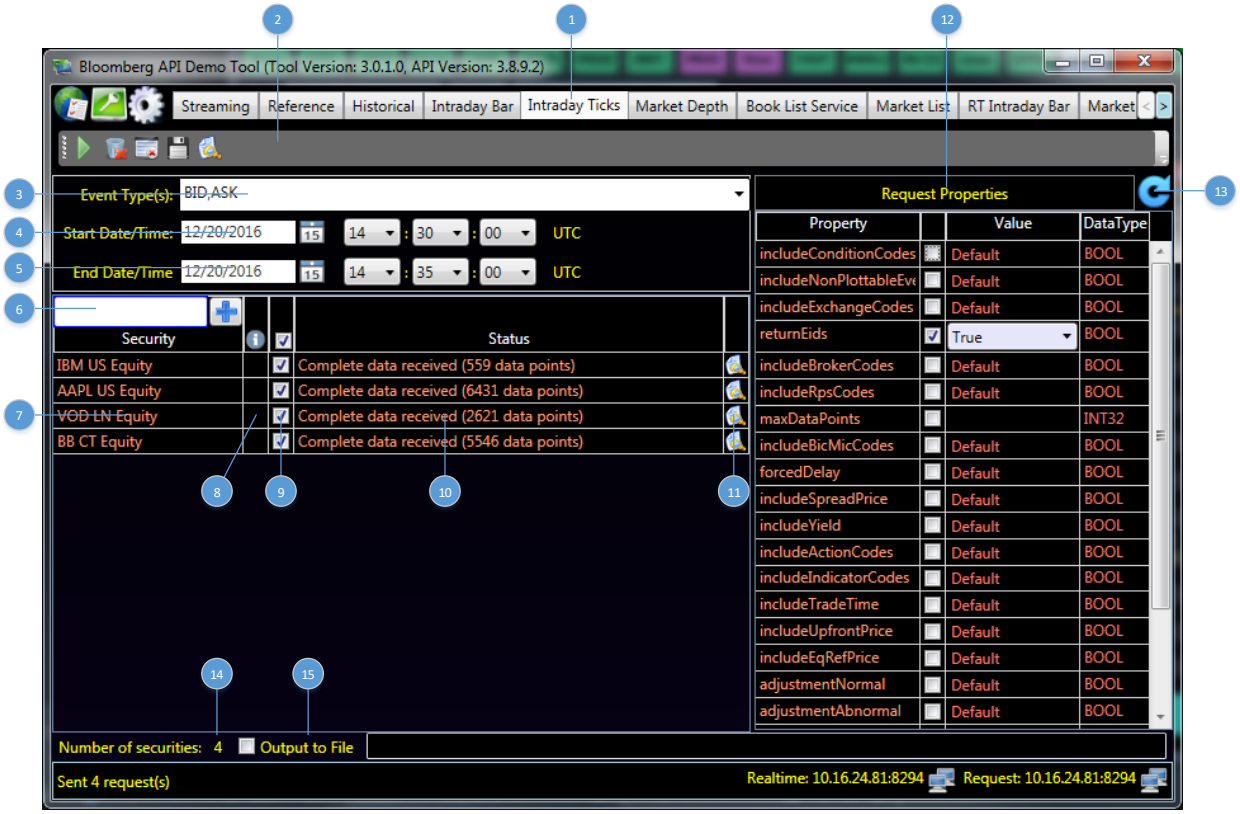
3. Select event type. Only one event type per request.
4. Bar size in minutes. Smallest bar size is 1 minute.
5. Start Date/Time for request. The time is in UTC.
6. End Date/Time for request. The time is in UTC.
7. Enter security in to textbox and press the button to add security in to the security grid.
8. Request status column. This column will display an icon when there is an error for the security. Hover over icon for description of status.
9. Security column.
10. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
11. Display status of response(s).
12. Click on icon to view data.

time	open	high	low	close	volume	numEvents	value
2016-12-20T14:30:00.000	116.74	117.28	116.68	117.17	1876165	6218	219532448
2016-12-20T14:40:00.000	117.165	117.5	117.08	117.35	990699	4471	116225872
2016-12-20T14:50:00.000	117.35	117.38	117.09	117.195	684976	3259	80310144
2016-12-20T15:00:00.000	117.19	117.205	116.86	117.05	678016	2869	79354424

13. Request property grid. Note that any property with [] after the name is an array element. It can have one or more values. The values are comma delimited.
14. Restore request property grid to default values.
15. Display number of securities are in the grid.
16. Check the “Output to File” checkbox will output all requests and responses data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each request will output to the assigned data processing thread output file when the request was created.

Intraday Ticks Data Request Tab

Bloomberg maintains a tick-by-tick history going back 140 business days for all securities where streaming data is available. This intraday data can be used to draw detailed charts, for technical analysis purposes, or to retrieve the initial data for a monitoring graph function (such as the "GIP <GO>" function). The IntradayTickRequest enables retrieval of tick-by-tick history for a single security. In addition, the Event type(s), interval and date/time start and end points in UTC (Coordinated Universal Time) must be specified.



1. Intraday bar data request tab.
2. Request tab Toolbar.
   A. Play button – This button will create IntradayTickRequest with all selected securities, fields columns,
   B. Delete button – This button will delete all selected securities that are not subscribed.
   C. Clear data button – This button will clear all the selected securities data cells.
   D. Load securities from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Another way to load securities is to drag and drop from a text editor to any area inside the tool's grid.
   E. API data log button – This button will display the most recent API messages.
3. Select event types. More than one event type can be selected.
4. Start Date/Time for request. The time is in UTC.
5. End Date/Time for request. The time is in UTC.
6. Enter security in to textbox and press the button to add security in to the security grid.
7. Request status column. This column will display an icon when there is an error for the security. Hover over icon for description of status.

8. Security column.
9. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
10. Display status of response(s).
11. Click on icon to view data.

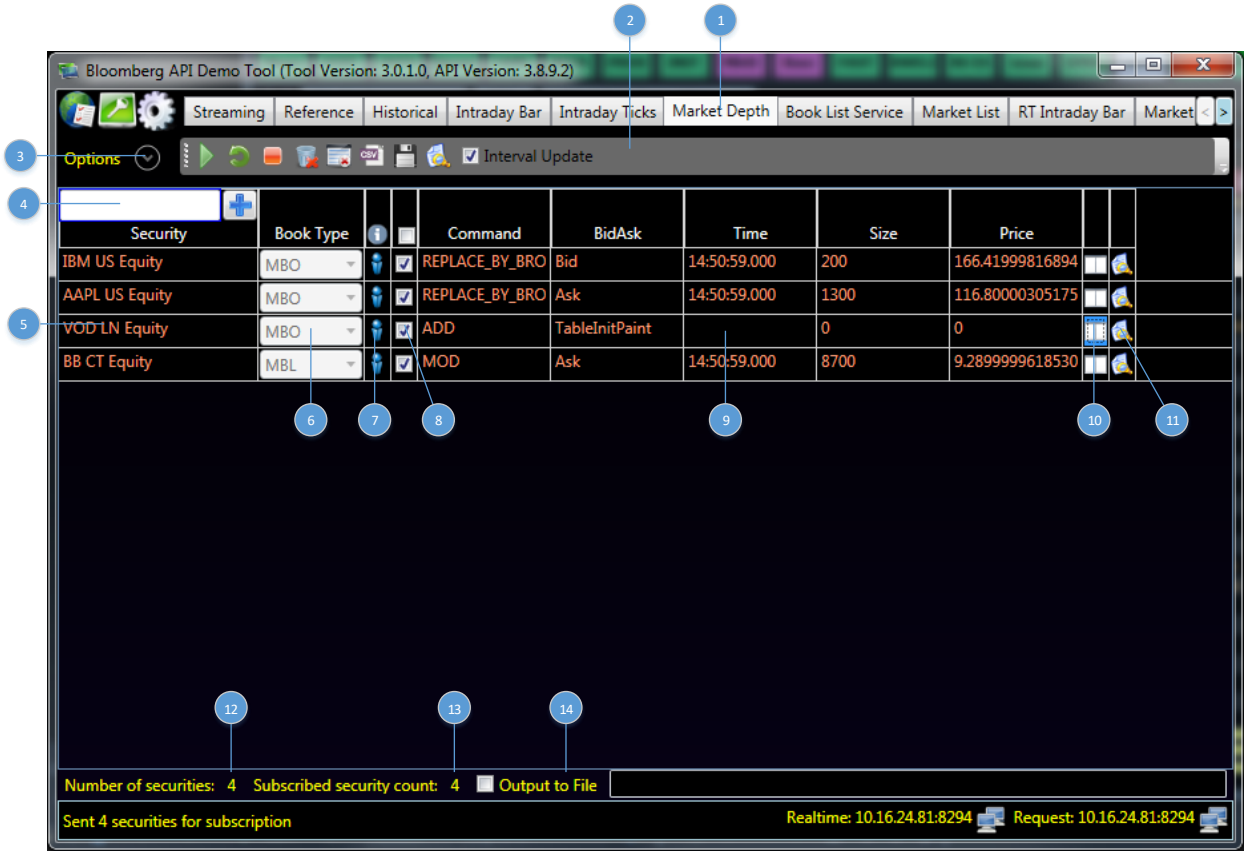
12. Request property grid. Note that any property with [] after the name is an array element. It can have one or more values. The values are comma delimited.
13. Restore request property grid to default values.
14. Display number of securities are in the grid.
15. Check the “Output to File” checkbox will output all requests and responses data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each request will output to the assigned data processing thread output file when the request was created.

Market Depth Subscription Tab (B-Pipe Only)

The Enterprise Market Depth System (EMDS) is subscription-based and allows users to access a more comprehensive set of market depth data for (supported and entitled securities). It is available to both BPS (Bloomberg Professional service) and non-BPS users.
B-PIPE provides access to the entire list of “Bid” and “Ask” prices that currently exist for an instrument; this list can be known as market depth, order books or simply “Level 2” data. Most exchanges will consider this to be a separate product from their “Level 1” data (general real-time) and will charge additional fees for access to it. Thus a different EID is typically used for “Level 2.”

Generally, the “top of the book,” i.e., the price occupying the top position (position 1) of the order book, is also the “best” bid or ask. The best bid in the order book should generally be lower than the best ask, but it is possible for the ask to be higher than the bid under specific market conditions. If this occurs, then it is known as a “crossed” or “inverted” market (or book). Crossed or inverted markets can and do occur regularly under specific market conditions, most likely when the immediate matching and execution of orders has been restricted. The details of the specific conditions vary by market.
Books have three characteristics in EMDS that define them: the number of positions (rows) in the book (window size), the type of the book and the method used to update the book.

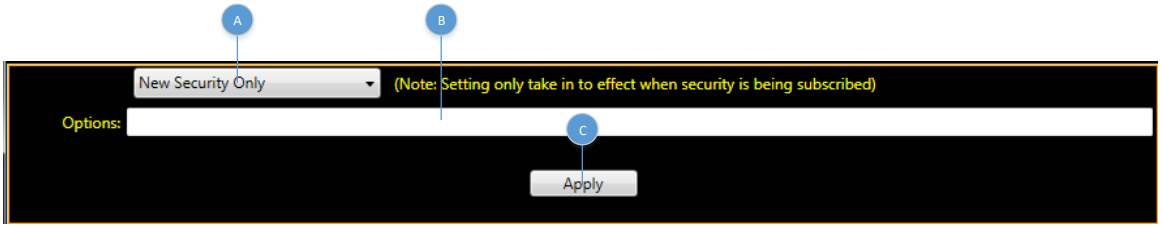
The three types of order books: Market-By-Order (MBO), Market-By-Level (MBL) and Market Maker Quote (MMQ). An exchange that operates an order book may provide only MBL data, only MBO data or both MBO and MBL data. An exchange that operates a market maker quote book will provide MMQ data.
The three order/quote book update methods: Replace-By-Position (RBP), Add-Mod-Delete (AMD) and Replace-By-Broker (RBB).



1. Market Depth tab allow users to subscribe to real-time streaming data.

2. Streaming tab Toolbar.
    A.  Play button – This button will start subscription to all the selected securities that are not subscribed.
    B.  Re-subscribe button – This button will re-subscribe to all the selected subscribed securities.
    C.  Stop button – This button will stop all the selected subscriptions.
    D.  Delete button – This button will delete all selected securities that are not subscribed.
    E.  Clear data button – This button will clear all the selected securities data cells.
    F.  Export to CSV button – This button will export all the selected securities to a CSV file.
    G.  Load securities from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Example format: “IBM US Equity|MBO”,”/cusip/459200101|MBO” or “//blp/mktdepthdata/ticker/AAPL US Equity|MBO”. Another way to load securities is to drag and drop from a text editor to any area inside the tool’s grid.
    H.  API data log button – This button will display the most recent API messages.
    I. 

Check this checkbox will update the grid every 300ms when there are updates. Unchecking this checkbox will update the grid directly once there is an update.
3. Show/hide subscription options settings.

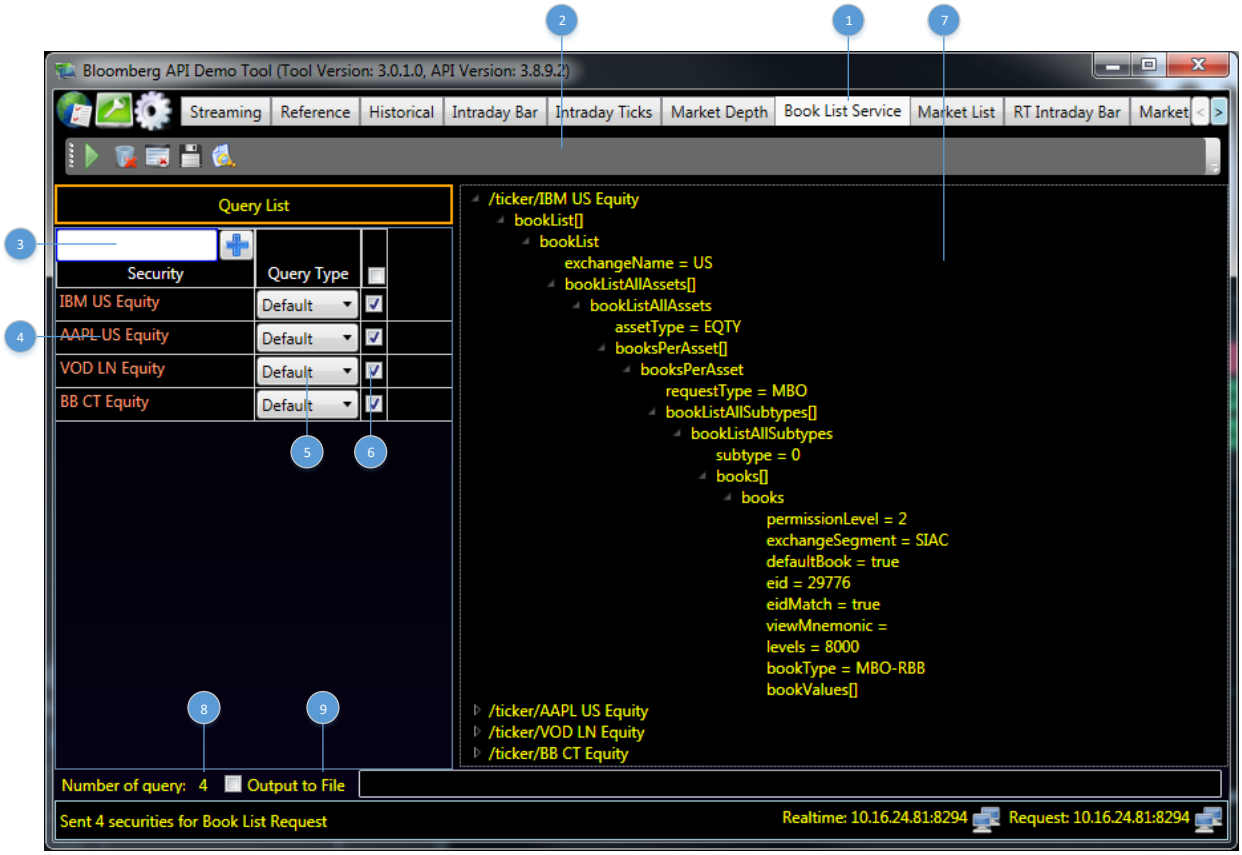


    A. Securities to apply subscription options to.
        i. “New Security Only” – This will only apply options to new security being added.
        ii. “Selected Securities” – This will apply options to selected securities in the grid.
        iii. “All Securities” – This will apply options to all securities in the grid.
    B. Subscription options for the market depth book. Here are some examples of options: view=FULL, view=MEDIAL, view=LIMIED, book=ODD, book=NORMAL, etc. (Note that the available options will depends on the exchanges.)
    C. Click to apply options to securities.
4. Enter security in to textbox and press the  button to add security in to the grid.
5. Security column on the grid. Hover mouse over security cell will display tooltip with subscription options and subscription string when the security is subscribed. Securities can be added to the grid by drag and drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited. Topic format examples: “IBM US Equity|MBO”,”/cusip/459200101|MBO” or “//blp/mktdepthdata/ticker/AAPL US Equity|MBO”.
6. Select type of book.
    A. MBO – Market-by-Order
    B. MBL – Market-by-Level
    C. MMQ – Market Maker Quote
    D. TOP – Top Brokers
7. Subscription status column. This column will display an icon indicating the status of the subscription. Hover over icon for description of status.
8. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.

9. Subscription data area of the grid.
10. Click on icon to view book data for the security.
11. Click on icon to view most recent API message for the security.
12. Display number of securities are in the grid.
13. Display number of securities are currently subscribed.
14. Check the “Output to File” checkbox will output all subscription data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each security will output to the assigned data processing thread output file when the subscription was initiated.

Book List Service Tab (B-Pipe Only)

The market depth data service (//blp/mktdepthdata) provides EPS customers with market depth data streams which they can subscribe to. In order to make a subscription, the client needs to know what books and views are available and whether he is entitled to view these streams or not. The //blp/mktdepthdata service provide a BookListService request which will allow user to query for a security or a list of securities where the response will have the market depth book types, views and other meta-data for each security in the request.



1. Market Depth tab allow users to subscribe to real-time streaming data.
2. Streaming tab Toolbar.
   A.  Play button – This button will start subscription to all the selected securities that are not subscribed.
   B.  Delete button – This button will delete all selected securities that are not subscribed.
   C.  Clear data button – This button will clear all the selected securities data cells.
   D.  Load securities from file button – This button will import securities from a text file with one item per row or comma delimited items. Example format: “IBM US Equity” or”/ticker/AAPL US Equity”. Another way to load securities is to drag and drop from a text editor to any area inside the security list grid.
   E.  API data log button – This button will display the most recent API messages.
3. Enter security in to textbox and press the  button to add security in to the grid.
4. Security column on the grid. Hover mouse over security cell will display tooltip with subscription options and subscription string when the security is subscribed. Securities can be added to the grid by drag and

drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited. Topic format examples: “IBM US Equity” or”/ticker/AAPL US Equity”.

5. Subscription status column. This column will display an icon indicating the status of the subscription. Hover over icon for description of status.
6. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
7. Response data.
8. Display number of securities are in the grid.
9. Check the “Output to File” checkbox will output all requests and responses data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each request will output to the assigned data processing thread output file when the request was created.

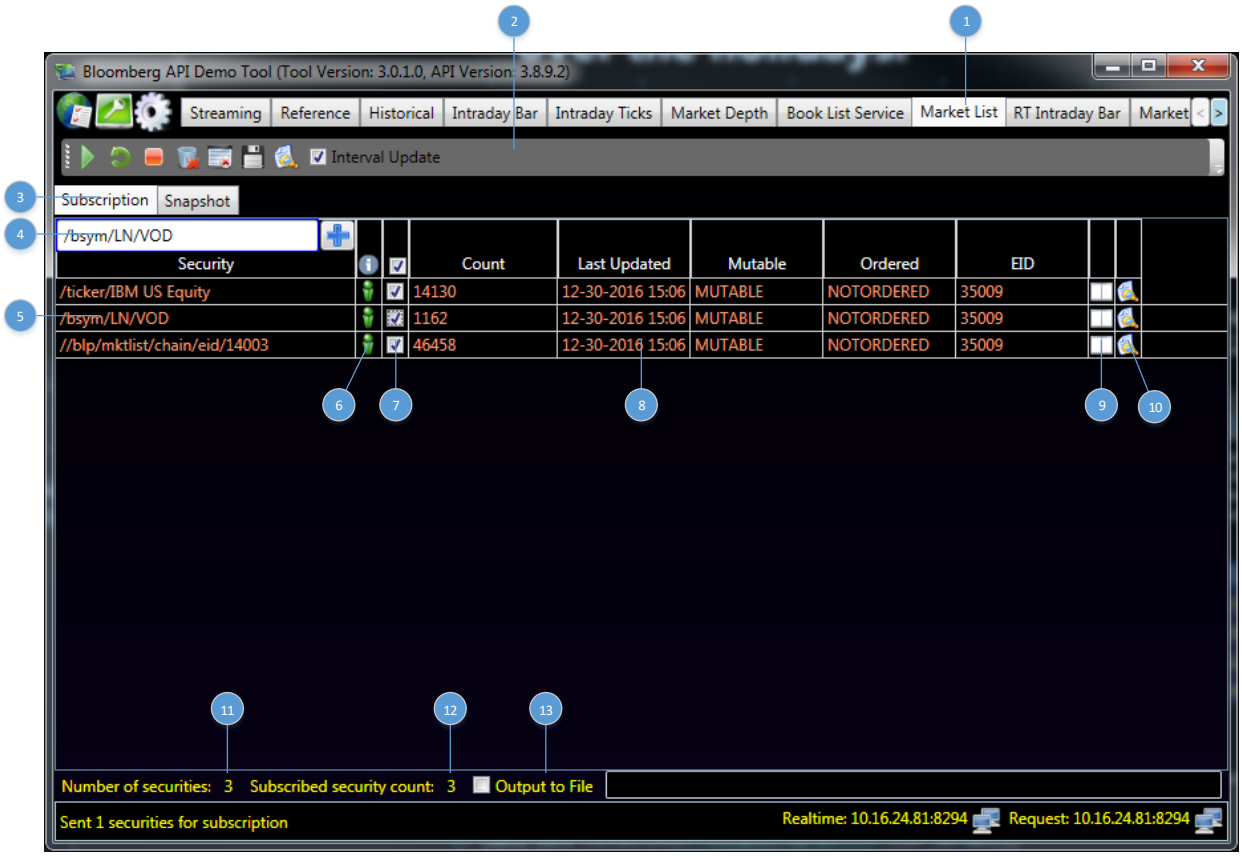
Market List Tab (B-Pipe Only)

The Market List Service (`//blp/mktlist`) is used to perform two types of list data operations. The first is to subscribe to lists of instruments, known as "chains," using the "chain" <subservice name> (i.e., //blp/mktlist/chain). The second is to request a list of all the instruments that match a given topic key using the "secids" <subservice name> (i.e., //blp/mktlist/secids). The //blp/mktlist service is available to both BPS (Bloomberg Professional service) and NONBPS users.

The syntax of the Market List subscription string is as follows:

//<service owner>/<service name>/<subservice name>/<topic>

Where <topic> is comprised of "<topic type>/<topic key>" and <subservice name> is either "chain" or "secids."



1. Market List tab.
2. Market List Toolbar.
   A. Play button – This button will start subscription to all the selected securities that are not subscribed.
   B. Re-subscribe button – This button will re-subscribe to all the selected subscribed securities.
   C. Stop button – This button will stop all the selected subscriptions.
   D. Delete button – This button will delete all selected securities that are not subscribed.
   E. Clear data button – This button will clear all the selected securities data cells.
   F. Load securities from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Example format: "/ticker/IBM US Equity",

"/bsym/LN/VOD", "//blp/mktlist/chain/eid/14003" or "//blp/mktlist/chain/source/UN;secclass=Equity". Another way to load securities is to drag and drop from a text editor to any area inside the tool's grid.

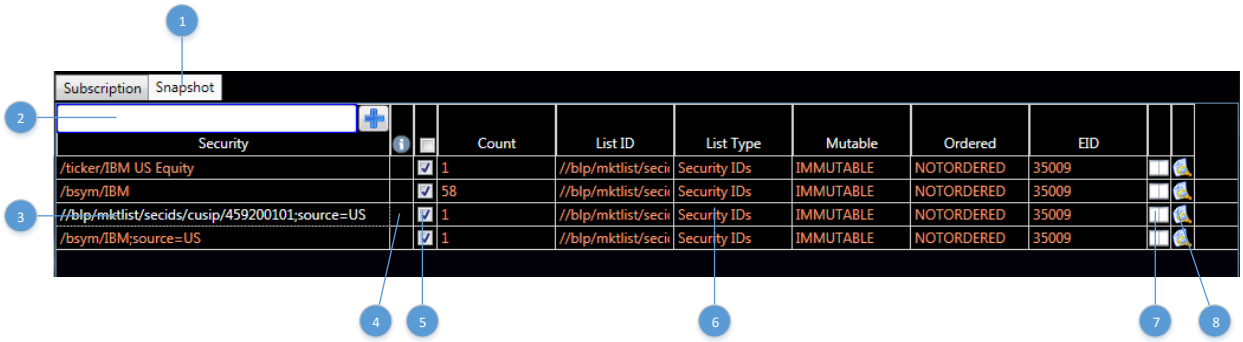
G.  API data log button – This button will display the most recent API messages.

H. 

Check this checkbox will update the grid every 300ms when there are updates. Unchecking this checkbox will update the grid directly once there is an update.

3. Market List Subscription (chain) and Snapshot (secids) features selection.
4. Enter security in to textbox and press the  button to add security in to the grid.
5. Security column on the grid. Hover mouse over security cell will display tooltip with subscription string when the security is subscribed. Securities can be added to the grid by drag and drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited. Topic format examples: "/ticker/IBM US Equity", "/bsym/LN/VOD", "//blp/mktlist/chain/eid/14003" or "//blp/mktlist/chain/source/UN;secclass=Equity".
6. Subscription status column. This column will display an icon indicating the status of the subscription. Hover over icon for description of status.
7. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
8. Subscription data area of the grid.
9. Click on icon to view Market List data for the security.
10. Click on icon to view most recent API message for the security.
11. Display number of securities are in the grid.
12. Display number of securities are currently subscribed.
13. Check the "Output to File" checkbox will output all subscription data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each security will output to the assigned data processing thread output file when the subscription was initiated.

Market List Snapshot



1. Market List Snapshot (secids) feature.
2. Enter security in to textbox and press the  button to add security in to the grid.
3. Security column on the grid. Hover mouse over security cell will display tooltip with subscription string when the security is subscribed. Securities can be added to the grid by drag and drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited. Topic format examples: "/ticker/IBM US Equity", "/bsym/IBM", "/bsym/IBM;source=US" or "//blp/mktlist/secids/cusip/459200101;source=US".
4. Snapshot status column. This column will display an icon indicating the status of the request. Hover over icon for description of status.

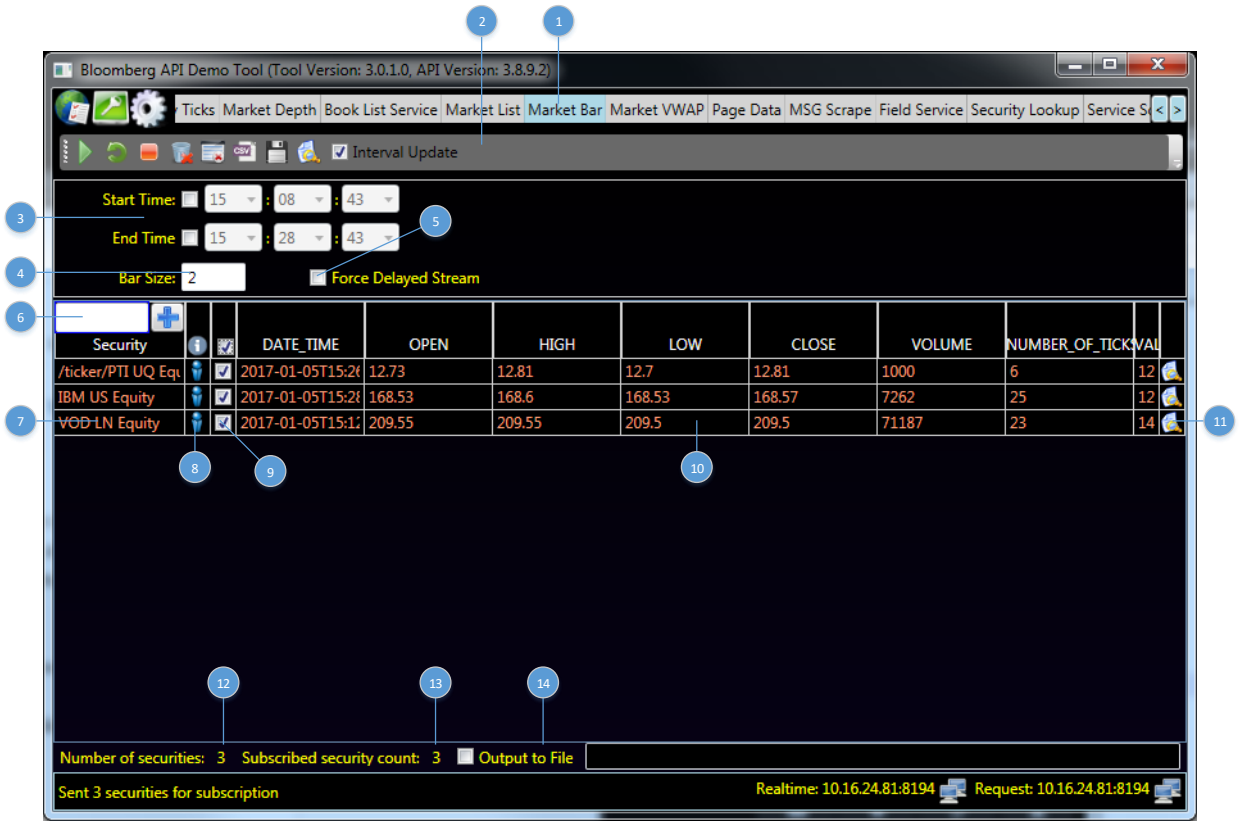
5. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
6. Snapshot summary data area.
7. Click on icon to view Market List data for the security.
8. Click on icon to view most recent API message for the security.

Market Bar Subscription Tab

The Market Bar Service ("`//blp/mktbar`") provides streaming (real-time and delayed) intraday bars. This service provides the functionality to obtain intraday bars for trade volume, number of ticks, open, close, high, low and time of last trade. The service is aimed at clients wishing to retrieve HIGH/LOW prices for a specified time interval in streaming format. A subscription to a market bar requires the service to be explicitly specified in the topic. For example:

"//blp/mktbar/ticker/VOD LN Equity"
"//blp/mktbar/isin/GB00B16GWD56 LN"

The only field that can be submitted for this service is LAST_PRICE.



1. Market Bar tab.
2. Market Bar Toolbar.
   - A. Play button – This button will start subscription to all the selected securities that are not subscribed.
   - B. Re-subscribe button – This button will re-subscribe to all the selected subscribed securities.
   - C. Stop button – This button will stop all the selected subscriptions.
   - D. Delete button – This button will delete all selected securities that are not subscribed.
   - E. Clear data button – This button will clear all the selected securities data cells.
   - F. Load securities from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Example format: "/ticker/IBM US Equity", "VOD LN Equity" or "/cusip/02079K107". Another way to load securities is to drag and drop from a text editor to any area inside the tool's grid.

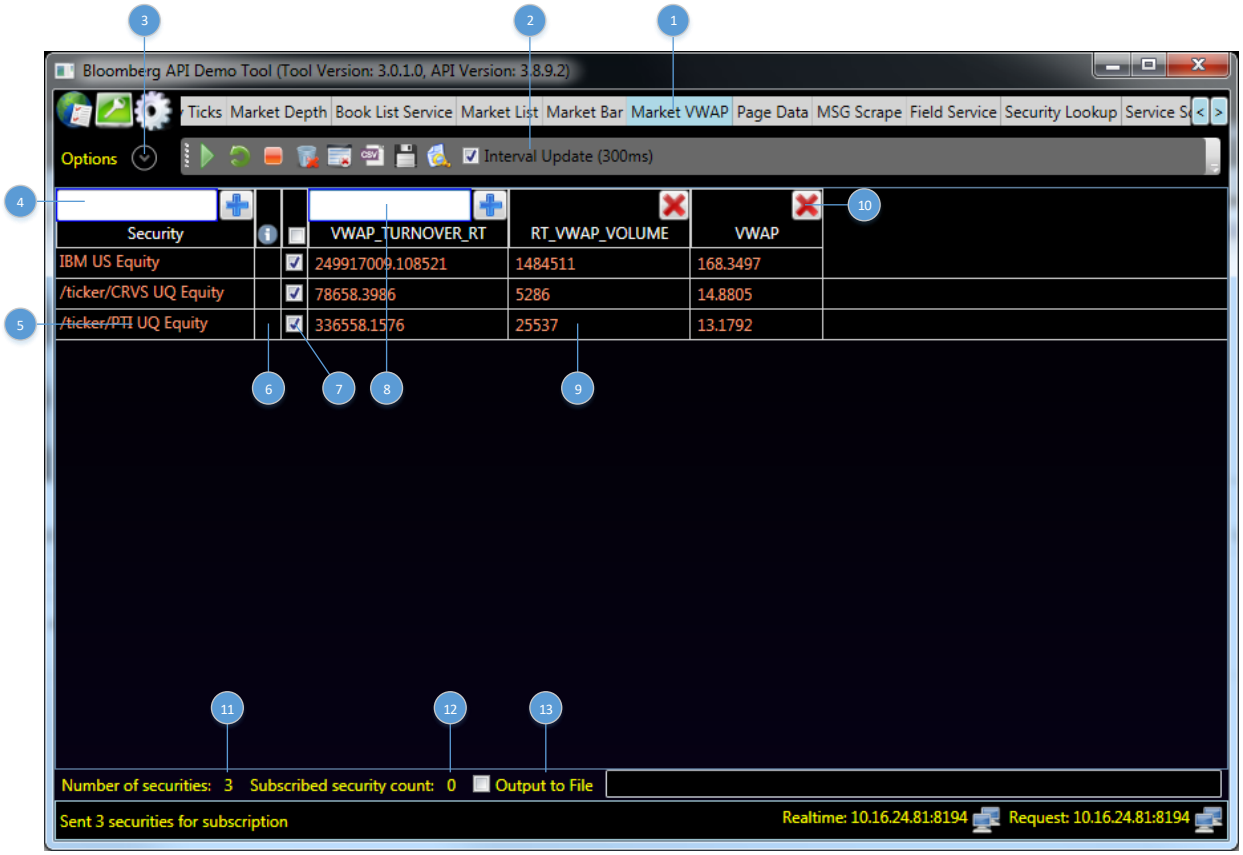
G.  API data log button – This button will display the most recent API messages.

H.  Check this checkbox will update the grid every 300ms when there are updates. Unchecking this checkbox will update the grid directly once there is an update.

3. Start and End Time for the Market Bar subscription. These settings will be apply to selected unsubscribed securities when Play button is pressed. The start and end time must be within the security's session open and end time. Otherwise the subscription will get a SubscriptionFailure message with the description "Bar args not in session". There are four possible settings for start and end time.
   A. Both start and end time are not selected. The subscription start time will be the time of security's session open time and the end time will be security's session close time.
   B. Start time checked and end time unchecked. The subscription will start updating when the start time has been reached. If the start time is in the pass, the time of the subscription will be used. The end time will be the security's session end time.
   C. Start time unchecked and end time checked. The subscription start time will be the security's session open time. The end time will determine when the update will stop. If the end time is in the past, the subscription will update the next day when the session open.
   D. Both start and end time checked. The subscription will start updating when the start time has been reached and updates will stop when the end time has been reached. If the end time is in the past, the subscription will start updating the next day when the start time has been reached.
4. Bar Size is the number of minute(s) for each bar. Minimum bar size is 1 minute and the maximum is 1440 minutes (24 hours).
5. Subscribe selected security with delayed subscription option.
6. Enter security in to textbox and press the  button to add security in to the grid.
7. Security column on the grid. Hover mouse over security cell will display tooltip with subscription string when the security is subscribed. Securities can be added to the grid by drag and drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited. Topic format examples: "/ticker/IBM US Equity", "VOD LN Equity" or "/cusip/02079K107".
8. Subscription status column. This column will display an icon indicating the status of the subscription. Hover over icon for description of status.
9. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
10. Subscription data area of the grid.
11. Click on icon to view Market Bar data for the security.
12. Display number of securities are in the grid.
13. Display number of securities are currently subscribed.
14. Check the "Output to File" checkbox will output all subscription data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each security will output to the assigned data processing thread output file when the subscription was initiated.

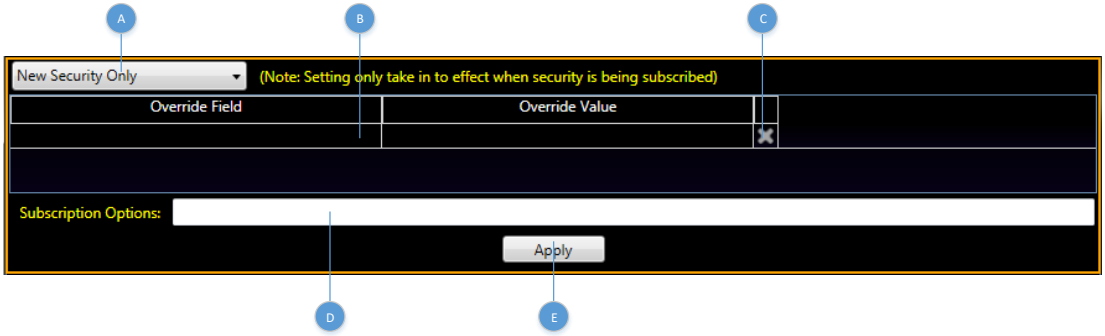
Market VWAP Tab

The Custom **V**olume **W**eighted **A**verage **P**rice (VWAP) Service ("//blp/mktvwap") provides streaming VWAP values for equities. This service allows for a customized data stream with a series of overrides.



1. Streaming tab allow users to subscribe to real-time streaming data.
2. Streaming tab Toolbar.
   - A. Play button – This button will start subscription to all the selected securities that are not subscribed.
   - B. Re-subscribe button – This button will re-subscribe to all the selected subscribed securities.
   - C. Stop button – This button will stop all the selected subscriptions.
   - D. Delete button – This button will delete all selected securities that are not subscribed.
   - E. Clear data button – This button will clear all the selected securities data cells.
   - F. Export to CSV button – This button will export all the selected securities to a CSV file.
   - G. Load securities/fields from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Another way to load securities/fields is to drag and drop from a text editor to any area inside the tool's grid.
   - H. API data log button – This button will display the most recent API messages.
   - I. Interval Update (300ms) Check this checkbox will update the grid every 300ms when there are updates. Unchecking this checkbox will update the grid directly once there is an update.

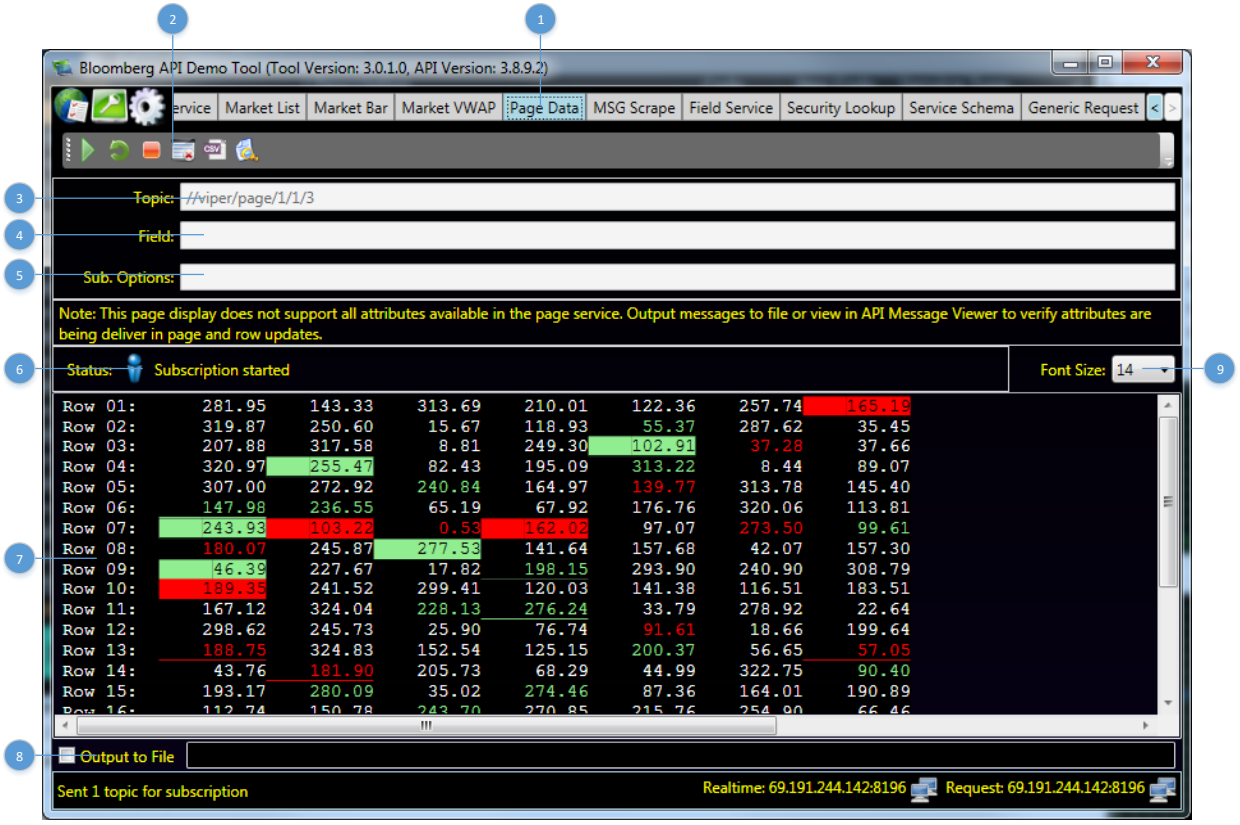
3. Show/hide subscription options settings.



   A. Securities to apply subscription options to.
      i. "New Security Only" – This will only apply options to new security being added.
      ii. "Selected Securities" – This will apply options to selected securities in the grid.
      iii. "All Securities" – This will apply options to all securities in the grid.
   B. Enter override fields and values.
   C. Remove override row from grid.
   D. Subscription options.
   E. Click to apply options to securities.
4. Enter security in to textbox and press the button to add security in to the grid.
5. Security column on the grid. Hover mouse over security cell will display tooltip with subscription options and subscription string when the security is subscribed. Securities can be added to the grid by drag and drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited.
6. Subscription status column. This column will display an icon indicating the status of the subscription. Hover over icon for description of status.
7. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
8. Enter field in to textbox and press the button to add a new field column on to the grid.
9. Subscription data area of the grid.
10. Press the button remove field from the grid.
11. Display number of securities are in the grid.
12. Display number of securities are currently subscribed.
13. Check the "Output to File" checkbox will output all subscription data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each security will output to the assigned data processing thread output file when the subscription was initiated.

Page Data Subscription Tab

The Page Data service of the API provides access to GPGX pages and the data they contain. This is a subscription service that requires that the GPGX number, the monitor number, the page number and the required rows (fields) be provided.
The topic is constructed as follows: 0708/012/0001
where:
0708 is the **GPGX number**
012 is the **monitor number**
0001 is the **page number**



1. Page Data tab allow users to subscribe to real-time streaming page base data.
2. Page data tab Toolbar.
   A. Play button – This button will start subscription to the topic.
   B. Re-subscribe button – This button will re-subscribe to the topic.
   C. Stop button – This button will stop subscription to the topic.
   D. Clear data button – This button will clear the page data area.
   E. Export to CSV button – This button will export page data to a CSV file.
   F. API data log button – This button will display the most recent API messages.
3. Enter page topic string in to textbox. Example topic: //blp/pagedata/708/12/1
4. Enter field string. Example: 1,6-10,15,16
5. Subscription options. Currently there are no option available for page base subscription.
6. Subscription status.
7. Page data area.

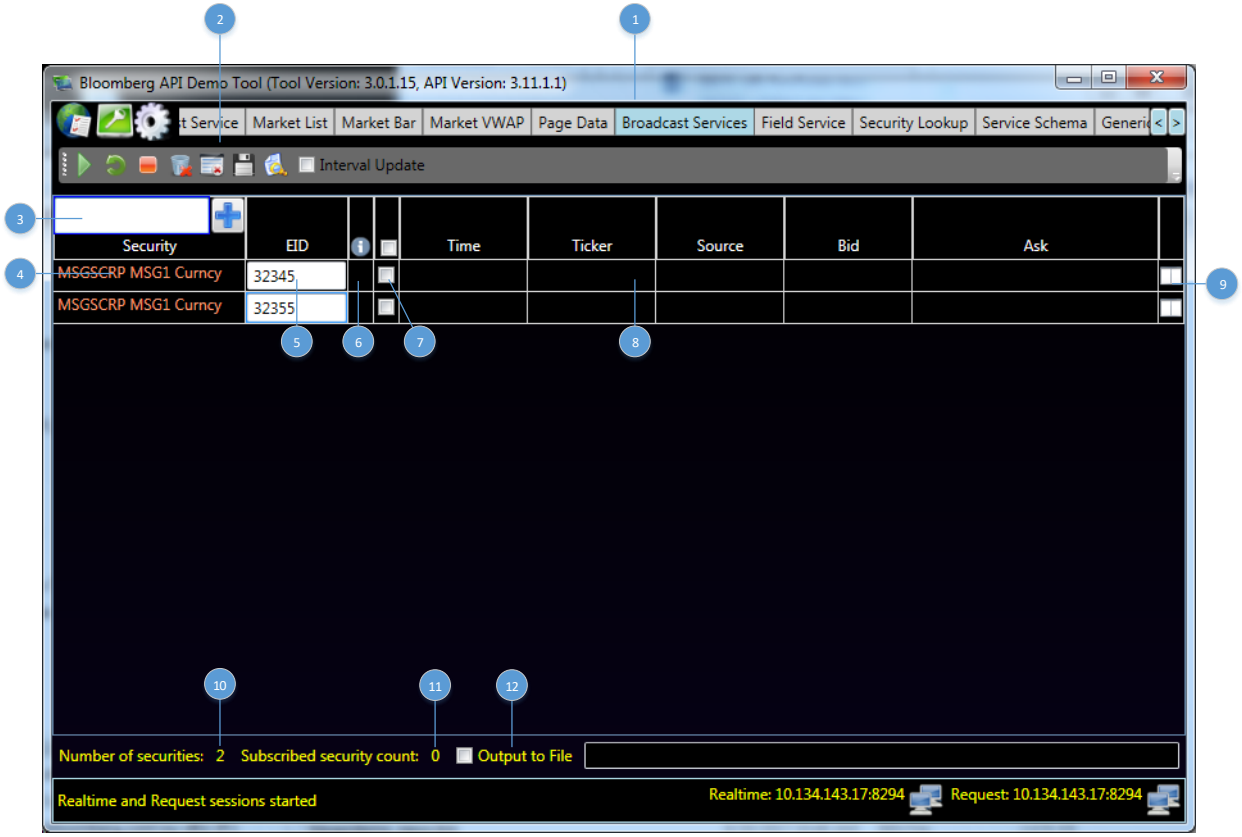
8. Check the “Output to File” checkbox will output all subscription data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each security will output to the assigned data processing thread output file when the subscription was initiated.
9. Change page data area font size.

Broadcast Service Tab (B-Pipe Only)

The Broadcast Service Tab will allow subscriptions to any real-time subscription services when the fully qualified topic string is provided in the "Security" column. EID is not applicable when a fully qualified topic string is provided. The grid is designed for MSG1 scraped service and does not require the fully qualified topic string. The topic string maximum length is 1,000 characters. The output data will only be available from the API viewer and output to file. Example topic string:
//blp/mktdata/IBM US Equity?fields=EID,MKTDATA_EVENT_TYPE,MKTDATA_EVENT_SUBTYPE,IS_DELAYED_STREAM,LAST_PRICE

B-PIPE offers a real-time feed of MSG/IB scraped data. This feed will contain the complete set of mined quotes received on the MSG Minding PCS Group.

The real-time feed will include both verified and not verified price quotes. These are equivalent to GREEN and WHITE quotes on IMGR <GO>. Clients will need to be enabled for a MSG1 account and real-time feeds for these accounts; they will also need to nominate a four-letter mnemonic to represent the feed (PCS). An EID will be created to represent this account (e.g., 44321).



1. Broadcast Service tab allow users to subscribe to MSG1 scrape or other fully qualified topic string streaming data.
2. Broadcast Service tab Toolbar.
   A. Play button – This button will start subscription to all the selected securities that are not subscribed.
   B. Re-subscribe button – This button will re-subscribe to all the selected subscribed securities.

C.  Stop button – This button will stop all the selected subscriptions.

D.  Delete button – This button will delete all selected securities that are not subscribed.

E.  Clear data button – This button will clear all the selected securities data cells.

F.  Load securities/fields from file button – This button will import securities and fields from a text file with one item per row or comma delimited items. Another way to load securities/fields is to drag and drop from a text editor to any area inside the tool's grid.

G.  API data log button – This button will display the most recent API messages.

H. 

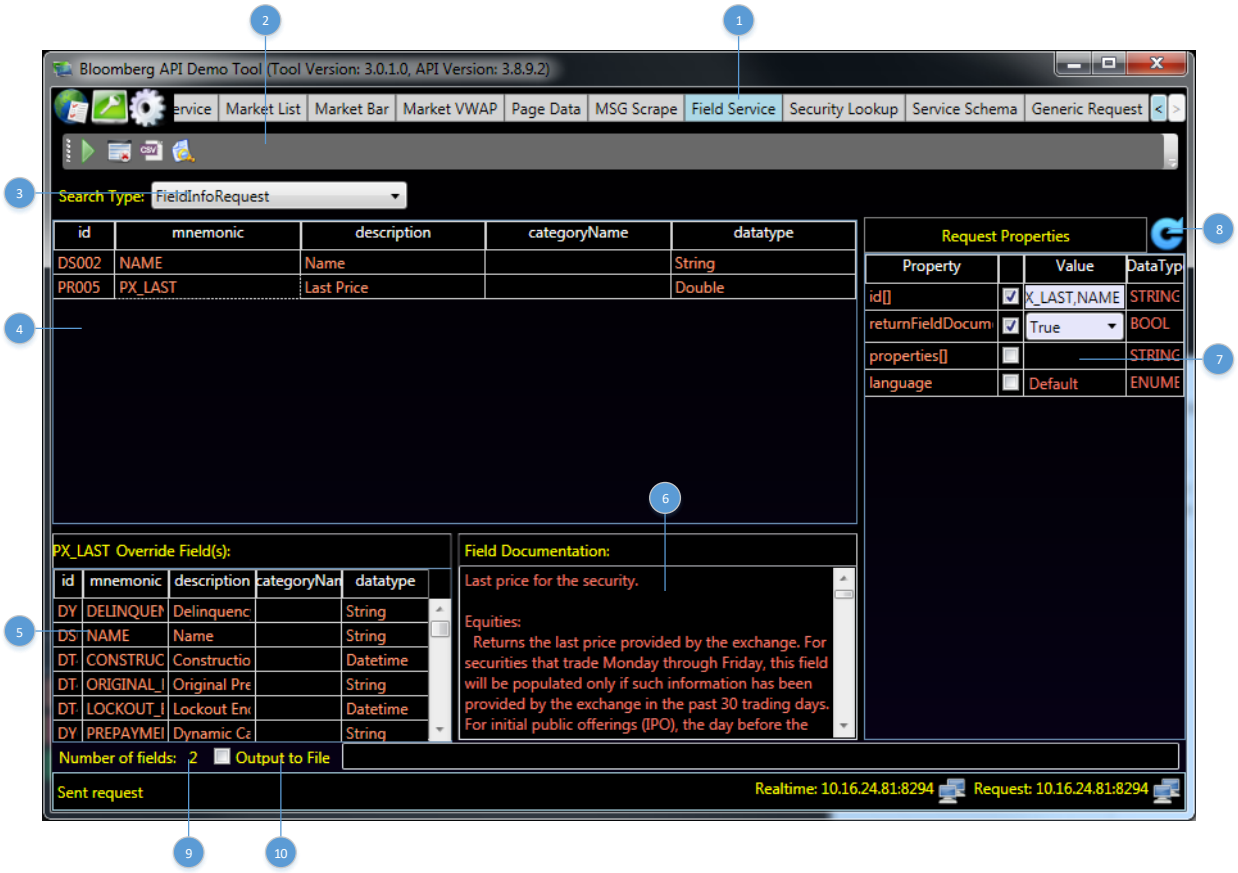
Check this checkbox will update the grid every 300ms when there are updates. Unchecking this checkbox will update the grid directly once there is an update.

3. Enter security or fully qualified topic string in to textbox and press the  button to add security in to the grid. All MSG1 will use "MSGSCRP MSG1 Curncy" as the ticker. The EID provided in the subscription options will be used to identify the specific MSG1 feed the subscription will subscribe to.
4. Security column on the grid. Hover mouse over security cell will display tooltip with subscription options and subscription string when the security is subscribed. Securities can be added to the grid by drag and drop a list from a text editor on to any part of the grid. The format is one item per row or comma delimited.
5. EID is only required for MSG1 Scrape subscription.
6. Subscription status column. This column will display an icon indicating the status of the subscription. Hover over icon for description of status.
7. Security can be individually selected by checking the checkbox on each row. Checking or unchecking the checkbox in the column header will select or deselect all rows in the grid.
8. Subscription data area of the grid.
9. Display subscription data.
10. Display number of securities are in the grid.
11. Display number of securities are currently subscribed.
12. Check the "Output to File" checkbox will output all subscription data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each security will output to the assigned data processing thread output file when the subscription was initiated.

Field Service Tab

The Field Information service provides details and a search capability on fields in the Bloomberg data model using the API Request/Response paradigm. Information can be retrieved in the following ways:

- **Field List Request**: Provides a full list of fields as specified by the field type (e.g., All, Static or RealTime).
- **Field Information Request**: Provides a description of the specified fields in the request.
- **Field Search Request**: Provides the ability to search the Bloomberg data model with a search string for field mnemonics.
- **Categorized Field Search Request**: Provides the ability to search the Bloomberg data model based on categories with a search string for field mnemonics.

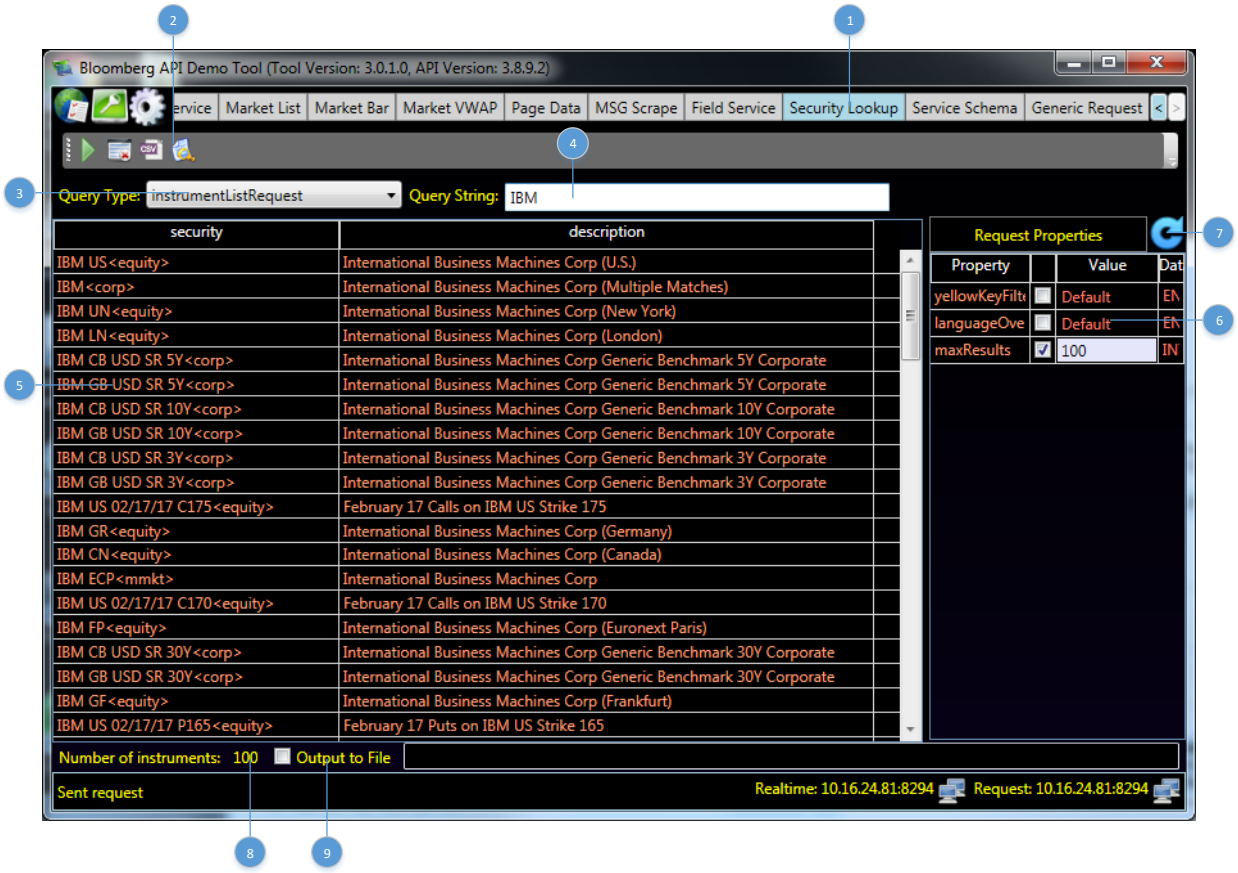


1. Field service tab allow users to search for fields or retrieve field list.
2. Field service tab Toolbar.
   A. Play button – This button will send selected field request.
   B. Clear data button – This button will clear all data in field data grid.
   C. Export to CSV button – This button will export field data grid to a CSV file.
   D. API data log button – This button will display the most recent API messages.
3. Field search request type.
   A. FieldInfoRequest – Request for specific list of field id or mnemonic.
   B. FieldSearchRequest – Partial search for text specified in the "Search Spec:" textbox.

   C. CategorizedFieldSearchRequest – Partial search for text specified in the “Search Spec:” textbox.
   D. FieldListRequest – Request for All, RealTime or Static field list.
4. Field search result grid. Click on row to view override field and description below the result grid.
5. Override field(s) will be shown in this grid when the selected result row field have override fields.
6. Field documentation textbox will show the selected result row field’s documentation if available.
7. Request property grid. Note that any property with [] after the name is an array element. It can have one or more values. The values are comma delimited.
8. Restore request property grid to default values.
9. Display number of fields in the result grid.
10. Check the “Output to File” checkbox will output all requests and responses data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each request will output to the assigned data processing thread output file when the request was created.

Security Lookup Tab

//blp/instruments: The Instruments service is used to perform three types of operations. The first is a Security Lookup Request, the second is a Curve Lookup Request and the third is a Government Lookup Request. Instruments from a common source (e.g., NASDAQ) will share an EID. For example, MSFT UQ Equity and INTC UQ Equity both come from NASDAQ and have EID 14005 (Assuming data requested by an user or application with Level 1 access).



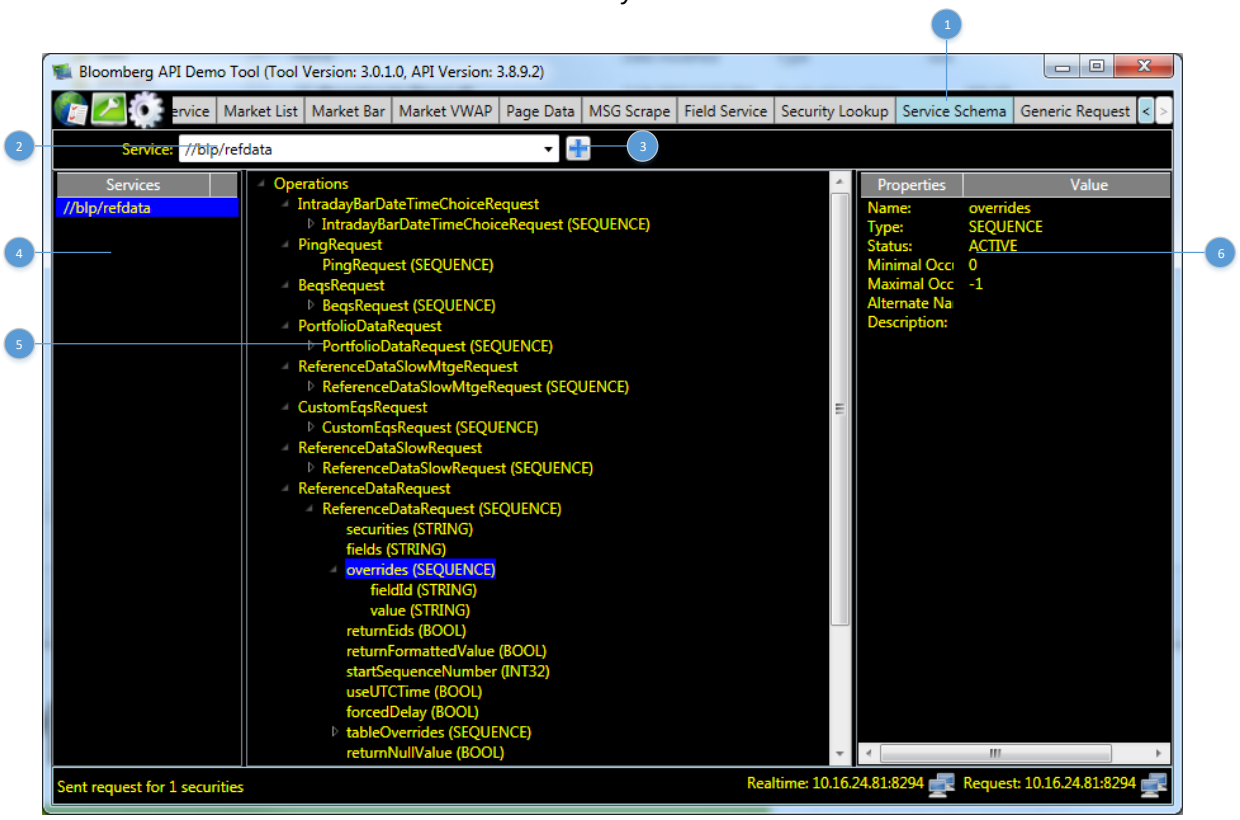
1. Security Lookup tab allow users to search for securities, curve.
2. Security Lookup tab Toolbar.
   A. Play button – This button will send selected request.
   B. Clear data button – This button will clear all data in result data grid.
   C. Export to CSV button – This button will export result data grid to a CSV file.
   D. API data log button – This button will display the most recent API messages.
3. Security Lookup query type are instrumentListRequest, curveListRequest and govtListRequest. Each request type will return list of securities matching the "Query String" provided.
4. "Query String" will be used with the selected query type.
5. Security result grid.
6. Request property grid. Note that any property with [] after the name is an array element. It can have one or more values. The values are comma delimited.
7. Restore request property grid to default values.
8. Display number of fields in the result grid.

9. Check the “Output to File” checkbox will output all requests and responses data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each request will output to the assigned data processing thread output file when the request was created.

Service Schema Tab

The role of the schema is to define the format of requests to the service, as well as the Events returned from that service. Within a service, one or more Event types may exist, each having its own schema. The schema is the shape of the data. For instance, market data is flat, while reference data is nested (like XML).
Each element has the following properties and attributes:

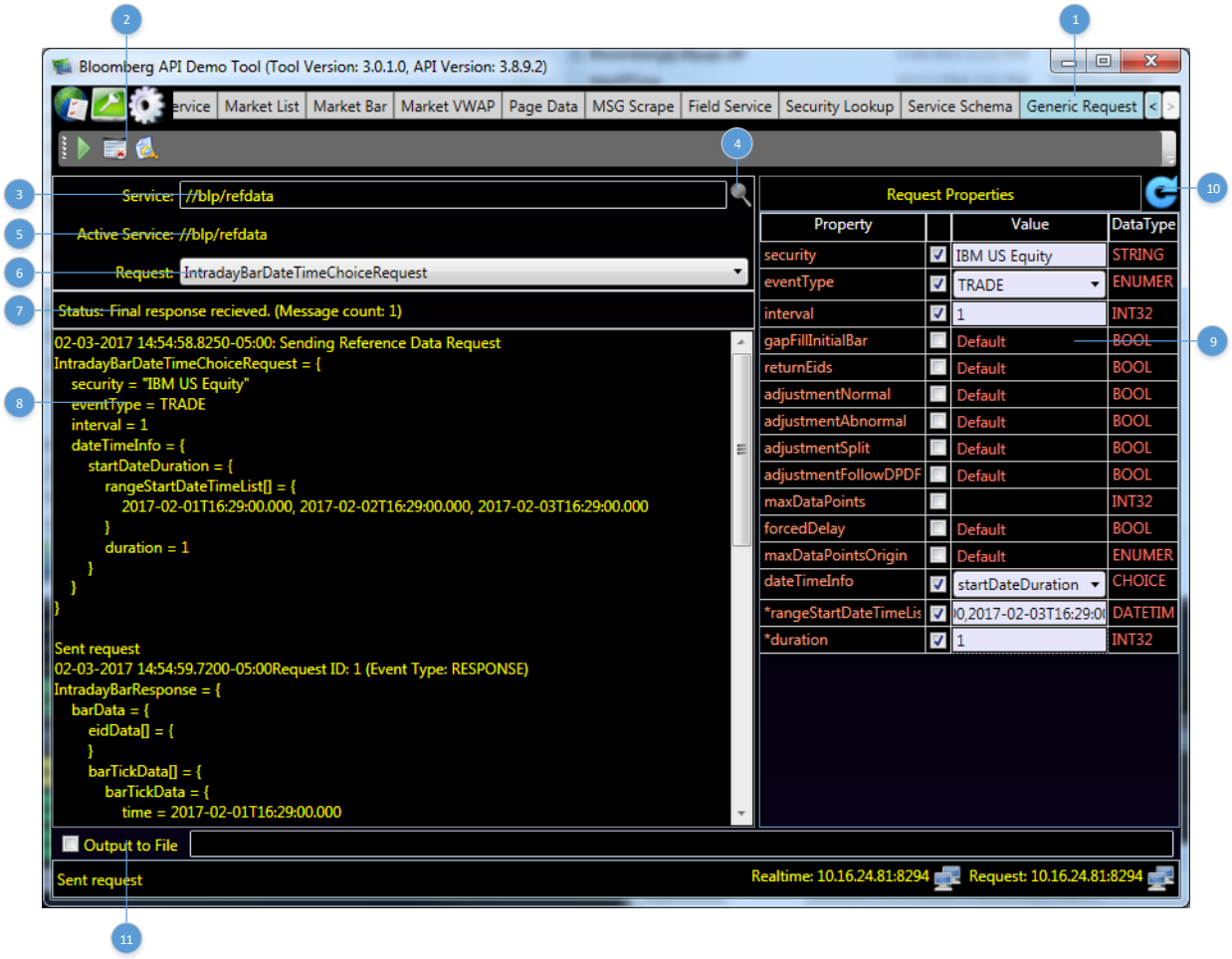
- **Name**: The name of the element.
- **Status**: ACTIVE — Available or INACTIVE — Unavailable
- **Type**: Data type of that element. This includes SEQUENCE (group), ENUMERATION, BOOL, STRING, etc.
- **Minimal Occurrence**: 0 — Optional or 1 — Required
- **Maximal Occurrence**: 1 — Element or -1 — Array



1. Service schema tab allow users to view service schema.
2. Select service or type in valid service.
3. Add service to service list.
4. Service list.
5. Service schema tree view.
6. Select a node in the service schema tree to view the node's properties.

Generic Request Tab

Generic Request tab can be used to make request/response request from a provided service. The selected request will dynamically populate the request properties grid on the right side. The request properties grid will allow the user to configure the required properties before sending the request. The request/response messages will be show on the lower left side.



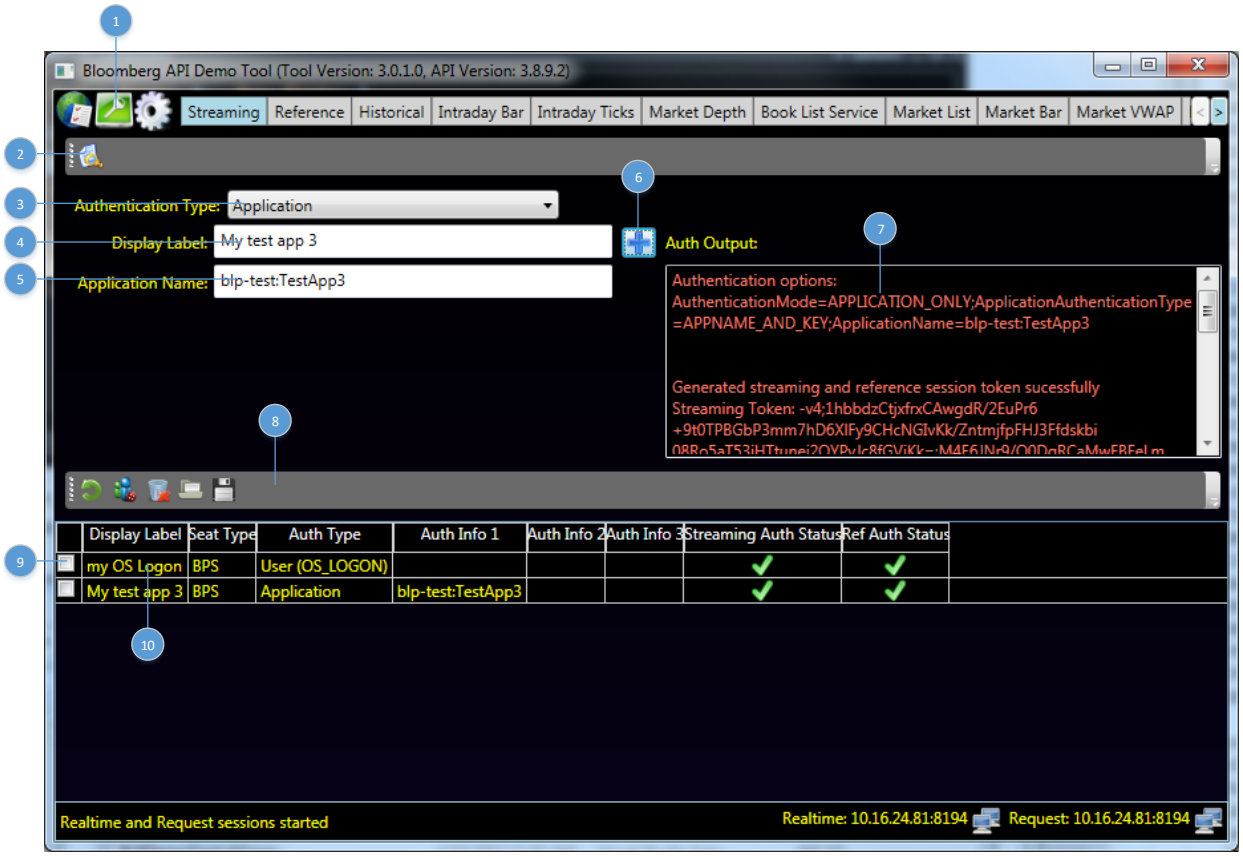
1. Generic Request tab allow user to make request/response on services not available in the Demo Tool.
2. Generic Request tab Toolbar.
   A. Play button – This button will send the request.
   B. Clear data button – This button will clear all data in result text area.
   C. API data log button – This button will display the most recent API messages.
3. Enter service.
4. Open and get service.
5. Current opened service.
6. Select request from service.
7. Request status.
8. Request result text area.
9. Request property grid. Note that any property with [] after the name is an array element. It can have one or more values. The values are comma delimited.

10. Restore request property grid to default values.
11. Check the “Output to File” checkbox will output all requests and responses data to file(s). The number of files created depend on how many data processing threads was set in the Demo Tool Options screen. Each request will output to the assigned data processing thread output file when the request was created.

Authorization (B-Pipe, Server API and DDM Only)

The Authorization screen allow other applications and/or users credentials to be enter to test authentications against a B-Pipe or Server API. User's OS_LOGON and Directory Service authentications must be done on the same machine where the user is logged on.

All successfully authenticated users and applications will be shown on the toolbar of each data tabs that the user/application seat type is authorized to. NON-BPS seat type user/application will not have access to BPS tabs such as Historical, Intraday Bar, Intraday Ticks and Market Bar. NON-BPS seat type user/application will have limited field access in Reference tab.



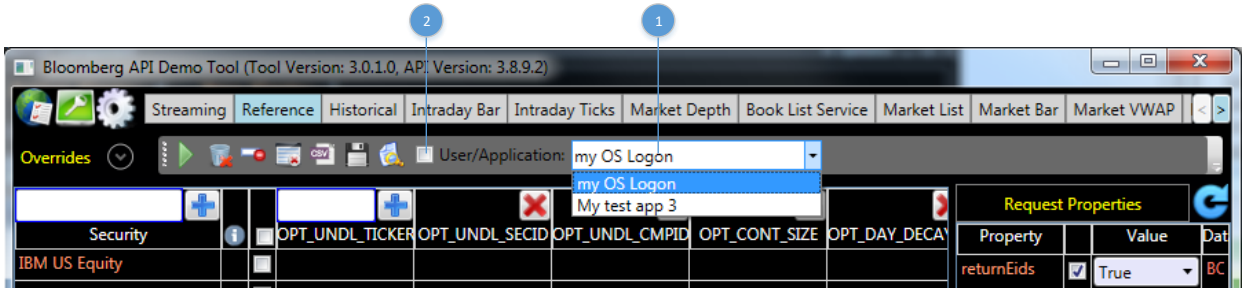
1. User/Application authorization screen button.
2.  API data log button – This button will display the most recent API messages.
3. Select authentication type from the following list: Application, User (OS_LOGON), User (DIRECTORY SERVICE), User (OS_LOGON) and Application, User (Directory Service) and Application, AuthId and IP, EMRSId and IP.
4. Display label is a unique value the user provide to identify the authorized user/application in the data tabs.
5. This section will change depending on which authentication type was selected.
    A. Application – Application Name created in EMRS.
    B. User (OS_LOGON) – No entry is required
    C. User (DIRECTORY SERVICE) – Directory Service property name containing the UserId information created in EMRS. Most common property used is "mail".
    D. User (OS_LOGON) and Application – Provide Application Name.

E. User (Directory Service) and Application – Provide Directory Service property name and Application Name.
F. AuthId and IP – This authentication require user to enter Auth ID (UserId in EMRS) and Display IP (IP of machine where user is viewing the data). Application Name is an optional parameter.
G. EMRSId and IP - This authentication require user to enter EMRS ID (UserId in EMRS) and Display IP (IP of machine where user is viewing the data). Application Name is an optional parameter.
H. UUID and IP – (Server API only) Tis authentication require use to enter their Bloomberg UUID and Display IP (IP of machine where user is viewing the data). Application Name is an optional parameter.

6. Add user button – this will authenticate user/application.
7. Authentication status output.
8. Authentication management toolbar.
   A. Re-authorize button – This button will re-authorize all the selected users/applications.
   B. Cancel authentication button – This button will cancel all the selected users/applications.
   C. Delete button – This button will cancel authorized user/application before deleting selected users/applications.
   D. Load saved users/applications information from disk.
   E. Save users/applications information to disk.
9. Select users/applications.
10. Authentication grid containing users/applications authentication status.

Using Authorized Users/Applications in Requests and Subscriptions

Users and applications successfully authenticated from the Authentication screen will automatically appear in the toolbar. The "User/Application" checkbox must be checked before a user or application credential be used for the next data request.



1. Select user or application from dropdown.
2. Select "User/Application" checkbox to use selected user or application for the next data request.