




DATA LICENSE WEB SERVICES

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Data License Web Services	0
Preface: About this Document	5
Purpose	5
Audience	5
Conventions Used	5
Font	5
Terminology	5
Overview of DLWS	6
Introduction	6
Supported Platforms and Languages	6
Platforms	6
Programming Languages	6
Specifications	6
Architecture	7
Application Development	8
Pre-Requisites	8
Authentication	9
WSDL	9
Tools to Assist in Development	9
Sample Code	9
Account Settings	10
Linked Accounts	10
Un-Linked Accounts	10
The DLWS Product	11
Per Security Web Service	12
Header	12
Data Items (Fields)	25
Securities	26
Wildcards (Macros)	28
Macrotypes	28
Macro Overrides	30
Security Types	32
Secondary Qualifiers	34
Macro Return Codes:	43
Responses	44
Get Corrections	46
Overrides	48
Get Fields	50
Get Data	54
Instrument Level Status Codes	54
Applicable getdata header options	55
submitGetDataRequest Request	55
submitGetDataRequest Sample Request	55
submitGetDataRequest Response	56
submitGetDataRequest Sample Response	56
retrieveGetDataResponse Request	57
retrieveGetDataResponse Sample Request	57
retrieveGetDataResponse Sample Response	57

retrieveGetDataResponse Sample Response.....	58
Single Point History	60
Overrides	61
Response Level Status Codes.....	62
Bulk Fields	63
Bulk Field Sample	63
Bond Quote Composite	64
BVAL Prices in Data License	66
What is BVAL?.....	66
BVAL via Data License.....	66
BVAL Header Options	66
BVAL Tier 1	67
BVAL Tier 2.....	68
BVAL via Standard PCS Request	68
BVAL Header Options.....	68
BVAL Field Sets / Macros.....	70
Historical BVAL Prices	72
Get History	72
Single-Point History	73
Historical Pricing Fields	74
BVAL Return Codes	75
Get History	76
Instrument Level Return Codes	80
Applicable Get History Request Options.....	80
Get History Fields.....	80
Performance	85
submitGetHistoryRequest Request.....	86
submitGetHistoryRequest Sample Request	86
submitGetHistoryRequest Response	86
submitGetHistoryRequest Sample Response	87
retrieveGetHistory Request	87
retrieveGetHistoryResponse Sample Request	87
retrieveGetHistoryResponse Response.....	87
retrieveGetHistoryResponse Sample Response.....	88
Get Quotes.....	92
Instrument Level Return Codes	92
Applicable Get Quotes Request Options	92
Performance	93
submitGetQuotesRequest Request	93
submitGetQuotesRequest Sample Request.....	93
submitGetQuotesRequest Response	93
submitGetQuotesRequest Sample Response.....	94
retrieveGetQuotesResponse Request	94
retrieveGetQuotesResponse Sample Request	94
retrieveGetQuotesResponse Response	94
retrieveGetQuotesResponse Sample Response.....	95
Get Allquotes.....	98

Instrument Level Return Codes	98
Applicable GetAllQuotes Request Options	99
Performance	99
submitGetAllQuotesRequest Request	99
submitGetAllQuotesRequest Sample Request.....	99
submitGetAllQuotesRequest Response	100
submitGetAllQuotesRequest Sample Response	100
retrieveGetAllQuotesResponse Request.....	100
retrieveGetAllQuotesResponse Sample Request	100
retrieveGetAllQuotesResponse Response.....	101
retrieveGetQuotesResponse Sample Response	102
Get Company	104
Instrument Level Return Codes	104
Applicable Get Company Request Options	104
Field Set Macro.....	105
submitGetCompanyRequest Request	105
submitGetCompanyRequest Sample Request.....	105
submitGetCompanyRequest Response.....	106
submitGetCompanyRequest Sample Response	106
retrieveGetCompanyResponse Request	106
retrieveGetCompanyResponse Sample Request.....	106
retrieveGetCompanyResponse Response	107
retrieveGetCompanyResponse Sample Response.....	108
submitGetCompanyRequest Sample Request, including Field Sets	108
retrieveGetCompanyResponse Sample Request, including Field Sets	109
Get Actions	112
Instrument Level Return Codes	115
Applicable GetActions Request Options.....	116
submitGetActionRequest Request	116
submitGetActionsRequest Sample Request.....	116
submitGetActionsRequest Response	117
submitGetActionsRequest Sample Response.....	117
retrieveGetActionsResponse Request.....	117
retrieveGetActionsResponse Sample Request	118
retrieveGetActionsResponse Sample Response.....	118
retrieveGetActionsResponse Sample Response	119
Get Fundamentals.....	122
Key Features	122
Program Specific Header Options	122
Security Level Overrides	122
Instrument Level Return Codes	123
submitGetFundamentalsRequest Request	124
submitGetFundamentalsRequest Sample Request.....	124
submitGetFundamentalsRequest Response	124
submitGetFundamentalsRequest Sample Response.....	124
retrieveGetFundamentalsResponse Request	125
retrieveGetFundamentalsResponse Sample Request.....	125

retrieveGetFundamentalsResponse Sample Response.....	125
retrieveGetActionsResponse Sample Response	126
Scheduled Requests	128
submitScheduledRequest Sample Request	128
submitScheduledRequest Sample Response	128
retrieveScheduledResponse Sample Request.....	129
retrieveScheduledResponse Sample Response.....	129
Canceling Scheduled Requests.....	130
submitCancelRequest Sample Request	130
submitCancelRequest Sample Response	131
retrieveCancelResponse Sample Request	131
retrieveCancelResponse Sample Response	131
Bloomberg Identifiers	133
Appendix A: Frequently Asked Questions.....	134
Appendix B: Best Practices	135
Appendix C: Sample Index Symbols	136
Appendix D: Lookup Tables	137
submitGetDataRequest Sample Request.....	137
retrieveGetDataResponse Sample Response	138
Production Support and Technical Assistance	139
North America	139
Europe, Africa, Middle East	139
Mexico, Central & South America	139
Australia.....	139
Japan.....	139
Singapore.....	139
Hong Kong	139
Data Support	140

Preface: About this Document

Purpose

This document introduces Data License Web Services and serves as a guide for customers interested in using the Data License Web Services Product.

Audience

This technical document is intended for use by Bloomberg customers and prospects interested in learning more about this new class of service being offered under Data License Web Services. Specifically, it is appropriate for technical project managers, database experts, network administrators, and software developers at customer sites who wish to understand the integration process.

Conventions Used

Font

Text that represents code is **bold and monospaced (Courier New)**.

Terminology

Term	Definition
DL	Bloomberg Data License provides Enterprise level access to Bloomberg's reference data products
DLWS	Data License Web Services provide a programmatic interface to a subset of Bloomberg's data for use in client applications
Client	A Java, .Net or C/C++ based application that runs on the customer's network and consumes DLWS data
Internet	The "public" internet as opposed to Bloomberg's private IP network
Provisioning	The process by which a new customer account is created by Bloomberg. This includes assigning customer account identification and privileging clients for DLWS products.
SOAP	Simple Object Access Protocol. SOAP is an XML-based protocol used for the exchange of information over the web.
WSDL	Web Services Description Language. WSDL is an XML-based language used to describe web services. Specifically, it describes how to access the service and what operations are available.

Overview of DLWS

Introduction

Data License Web Services (DLWS) provide a programmatic interface to Bloomberg's reference data for use in client applications. DLWS is a middle-of-the-road solution in Bloomberg's Data Services product line. The Data License products allow clients to obtain a wide selection of data for a portfolio of securities. Client applications can subscribe to streaming price data in real-time with Bloomberg's broadcast solution, the B-Pipe. However, B- Pipe does not allow clients to access Bloomberg's world-class reference data. DLWS allow client applications to obtain reference data and pricing data for a reasonable-size basket of securities on an on-demand basis via an API interface in a secure manner.

Supported Platforms and Languages

The Bloomberg DLWS is architecture agnostic and consumers of the data may run on any platform provided SOAP and XML processing libraries exist.

Client-side code has been tested with the following programming languages and on the following platforms.

Platforms

- Windows
- Red Hat Linux 9
- Sun Solaris 2.4
- IBM AIX

Programming Languages

- Java (1.6)
- C# (Microsoft .NET runtime)

While the system will probably work on any number of platforms and with different programming languages than those listed above, Bloomberg does not actively test with them and support may be limited.

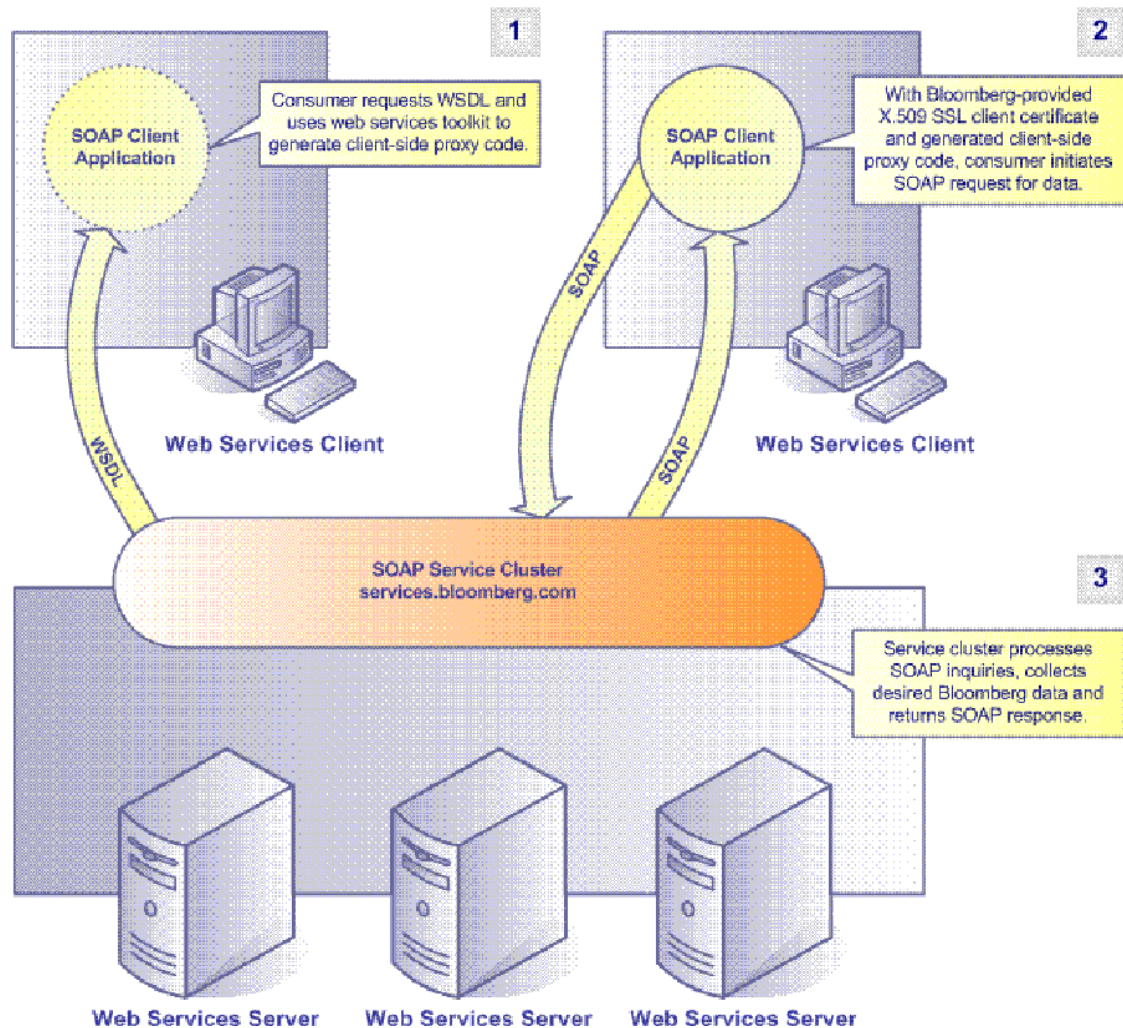
Specifications

The specifications listed below are used in Data License Web Services:

- WSI Basic Profile 1.1
- SOAP 1.1
- WSDL 1.1
- HTTP 1.1

Architecture

The following diagram is useful for understanding the high level architecture of DLWS from a client's perspective. The bottom section of the diagram represents the Bloomberg network where Data License Web Services is deployed. The top portion represents the internet including the client's network. In step 1, the client makes an HTTPS connection to retrieve the WSDL. Toolkits are available to generate proxy code from the WSDL. In step 2, client applications developed in Java, .Net or C make a secure connection over HTTPS to consume DLWS via request/response SOAP messages.



Application Development

Pre-Requisites

To integrate and obtain data from DLWS, the following items are needed:

Requirement	Description	Purpose
Bloomberg Provisioning for DLWS products	The customer must be first provisioned by Bloomberg to request DLWS products. This step involves creating a unique customer account number, privileging the account for the desired products and issuing an x509 security certificate.	<p>The customer account number will be used by Bloomberg for metering and billing purposes.</p> <p>Privileging the account will allow the client to choose the products for which to receive data.</p> <p>The certificate will be used for client authentication and authorization.</p>
JDK 1.5 JVM (For Java)	Java based clients must install the latest JVM that is distributed with JDK1.5. Although the service is compatible with earlier versions of JDK.	Java clients will execute on this runtime environment for consuming Data License Web Services.
Toolkit for Web Services development	Install a toolkit for use in development of client applications. See section on application development.	A toolkit can be used to generate proxy code to call web services.
Client Development	A client application must be developed using the contract defined by the WSDL. Sample client programs are provided for reference purpose.	This client will be used to connect to the server and consume DLWS.
Security certificate keystore	Install the certificate keystore, which is a binary file provided by Bloomberg, at a known directory.	The keystore is a binary file that contains the private and public encryption keys used to authenticate client connections and establish a secure channel with the DLWS service.

Authentication

As a consumer of the web service, a customer must obtain a signed X.509 v3 certificate to authenticate. Bloomberg will issue this certificate in the PKCS12 format, specifying certain account information in the “Company Name.” This process can be coordinated with your Sales Representative when you activate your DLWS account.

Once you have a signed certificate, you can connect to the web service. Connecting over HTTPS involves a two-way handshake, in which you must verify the server and the server must verify you.

WSDL

Bloomberg DLWS publishes its API through Web Services Description Language (WSDL) documents. The URL is:

URL

<https://software.bloomberg.com/datalicensewp/dlws.wsdl>

Tools to Assist in Development

Toolkits are available for various programming languages that can be used to quickly develop applications to consume DLWS. Tools provided by the toolkit of your choice can be used to generate stub code from a WSDL. However, for more flexibility and possibly better performance, lower-level API calls can also be used when writing a web service client.

In the sample Java client provided by Bloomberg, the wscompile tool (available with Su's Java Web Services Development Pack) is utilized to generate proxy code.

Sample Code

Bloomberg provides sample client code for customers to use as a starting point for writing applications. Currently, Bloomberg provides code in Java and C# .NET. Sample client packages can be provided upon request.

Please note that Bloomberg is providing this code as an example for clients to build their applications. Bloomberg LP makes no guarantees as to the production quality of the sample code.

Account Settings

Linked Accounts

DLWS clients whose firms subscribe to the BLOOMBERG PROFESSIONAL™ service have the option of linking their data license account to their BLOOMBERG terminal to take advantage of personal defaults (for example, third party pricing for fixed income). This can be hard-coded for a permanent link by contacting our technical support desk, or this can be done on a case-by-case basis by amending the request header.

To link to a terminal, the following lines need to be added to the header:

```
<ns:usernumber>?</ns:usernumber>
<ns:ws>?</ns:ws>
<ns:sn>?</ns:sn>
```

A customer can locate the numbers needed above by entering IAM<GO> on the Bloomberg Terminal. The number after "User" is the USERNUMBER. The first part of the number following "S/N:" (before the hyphen) is the SN and the second part of "S/N" (after the hyphen) is the WS number. If linking to a BBA (Bloomberg Anywhere) terminal, only the USERNUMBER should be included in the header of the request. Including the SN and WS could negatively impact the processing of the request.

Note: If you receive the following return in your output, please contact your account representative for assistance:

SN and/or user number not in the same firm as dlxxxxxx

Un-Linked Accounts

Requests not linked to a Bloomberg terminal will follow the Data License defaults.

Futures trading session default is PIT. Users who do not want PIT should specify the session with the security ticker, for example CLA COMB Comdt or CLA ELEC Comdt in the security list for the Combined or Electronic trading session data.

The DLWS Product

Bloomberg offers the Per Security product through Data License Web Services. Clients should consider the requirements of their applications when deciding to consume Web Services.

Max number of securities per request	5000
Asynchronous	Asynchronous – an initial request is made to request data. The client will make subsequent requests to retrieve the response.
Response time	Response time will vary based on the number of securities, the number and types of fields, and other factors.
Max number of fields per request	500
Method of specifying fields	Fields are passed as part of each request for data.
Quote Composite Data (BOND_QUOTE_COMP) Overrides	Available. Overrides can be specified differently for each security in the request.
Macros	Available. See documentation for details.
Historical Data	Available in the form of historical fields in fields.csv and through Get History. See documentation for details.
Third Party Data Limits	Clients configured to receive unlimited data from the exchange can download third party data. Additionally, clients configured to retrieve a set number of securities can retrieve the appropriate third party data before being blocked. Third party data charges continue to apply.
Scheduled requests	Available scheduling options are daily, weekday, weekend, weekly, and monthly.

Per Security Web Service

The Data License Per Security Product allows a customer to access financial information on a per security basis. Customers can shape a request to meet their information needs and submit it to Bloomberg through a variety of methods. Bloomberg processes these requests and makes the information available for retrieval. This is a very flexible, effective, and timely way to access Bloomberg data.

Bloomberg data is divided into five field types: Security Master or Fundamental descriptive data, End of Day Prices, Derived data, Credit Risk data and Historical Time series data.

The Per Security Web Service (PSWS) is a web service interface to the Per Security product. Currently much of the functionality of the Get Data, Get History, and Get Company programs of the traditional Per Security product is supported.

Header

The following table contains variables or header options that may appear in the header section of request. The second column, "Program Names", lists the program(s), to which the header options apply; if "all programs" is the return, this indicates **getdata**, **gethistory**, **getticks**, **getallticks**, **getquotes**, **getallquotes** and **scheduled**. The third column gives the default value for each header option. The fourth and fifth columns indicate which variables are required and which are optional for the two types of request mechanisms.

Each header option is described in more detail below. Header options must be entered into the request in upper case. Bloomberg Data License may insert comments into the header section of a reply at any time.

Header Option	Program name	Default	Optional
ACTIONS	getactions	all	optional
ACTIONS_DATE	getactions	entry	optional
ADJUSTED	getfundamentals	yes	optional
CLOSINGVALUES	getdata	no	optional ²
CONSOLIDATED	getfundamentals	Yes	optional
CREDITRISK	getcompany	No default	required
DATEFORMAT	getdata	mmddyyyy	optional
DATERANGE	gethistory, getcompany	No default	optional
DATETIMERANGE	getquotes, getallquotes	No default	optional
DERIVED	getdata	no	optional ²
DIFFFLAG	getdata	no	optional
DISPLAYQRMDATE	getquotes, getallquotes	no	optional
ESTIMATES	getdata	no	optional
EXCLUSIVE_PRICING_SRC	getdata, gethistory	no	optional

Header Option	Program name	Default	Optional
FUNDAMENTALS	Getdata	No	optional
HIST_CRNCY	getdata, gethistory	no	optional
HIST_PERIOD	gethistory	Smallest period	optional
HIST_OPTION	gethistory	No default	optional
LOGIN	All programs	No	optional
PORTSECDES	getdata, gethistory	No default	Optional
PRICING_SOURCE	getdata, gethistory	optional	
PROGRAMFLAG	All programs (except scheduled)	one-shot	optional
PRP	getdata, gethistory	No default	optional
QUOTECOMPOSITE	getdata	no	optional ²
QUOTECOMPOSITEHIST	getdata	No default	optional
RUNDATE	All programs	Today	optional
SECID	All programs (except scheduled)	No default ³	optional
SECMASTER	getdata	no	optional ²
SN	All programs	No default	optional
SPECIALCHAR	getdata	decimal	optional
TICKADJUSTDATE	getquotes, getallquotes	no	optional
TICKEXCHLENGTH	getquotes, getallquotes	1	optional
TICKLOCALTZ	getquotes, getallquotes	no	optional
TICKOUTPUTTZ	getquotes, getallquotes	Account timezone	optional
TIME	All programs	No default	optional
USERNUMBER	All programs	No default	optional
VERSION	All programs (except scheduled)	No default	optional
WS	All programs	No default	optional
YELLOWKEY	All programs (except scheduled)	No default	optional

¹ For a list of valid values for SECID, please see Header Section.

² The header options CLOSINGVALUES, DERIVED, QUOTECOMPOSITE, SECMaster or HISTORICAL *must* be selected for getdata requests from their respective categories, otherwise N.S. (Not Subscribed) will be returned instead of data. They need not be selected if data from the category type they represent is not requested.

ACTIONS (optional) - This only applies to the getactions program. This can be used as a filter to request only certain actions or categories of actions.

```
<ns:actions>
<!--Zero or more repetitions:--> <ns:action>?</ns:action>
</ns:actions>
```

For example, it is possible to request a single action type, such as ACQUISITIONS. It is also possible to request a category of actions along with a single action from another category like Distributions and Mergers. For a list of corporate actions, and categories see the Corporate Actions Reference Guide.

ACTIONS_DATE (optional) - This flag only applies to the getactions program. This option allows customers to request corporate actions based on different dates.

```
<ns:actions_date>?</ns:actions_date>
```

Valid values:

entry - The date the corporate action was entered into the Bloomberg database. If DATERANGE is not used, the system will look for actions entered into the database during the previous 24 hours. This is the default value.

effective - The effective date of the corporate action. If DATERANGE is not used, this will default to the current day.

both - This incorporates both the entry and effective options.

ADJUSTED (optional) – This only applies to the getfundamentals program. Provides the ability to request fundamental data that is adjusted for corporate actions such as stock splits, stock dividends, and rights offerings. `<ns:adjusted>true</ns:adjusted>` for adjusted fundamentals and `<ns:adjusted>>false</ns:adjusted>` for non-adjusted fundamentals. The fields that will be affected are per share fields such as (IS_EPS:Earnings Per Share) or dividend fields such as (EQY_DPS Dividends Per Share).

CLOSINGVALUES (optional) . This option

(`<ns:closingvalues>true</ns:closingvalues>`) only applies to the getdata program. It allows customers to request data via fields from the End of Day Pricing category. If `<ns:secmaster>true</ns:secmaster>` is already in the headers section, this option need not be selected. If neither SECMASTER nor CLOSINGVALUES is selected, a getdata request will return **N.S.** for an End of Day Pricing field.

CONSOLIDATED (optional) – This only applies to the getfundamentals program.

`<ns:consolidated>true</ns:consolidated>` is for consolidated and `<ns:consolidated>>false</ns:consolidated>` is for non-consolidated data. For Parent only companies, the Parent data will be returned when CONSOLIDATED=yes is in the request.

CREDITRISK . This header (`<ns:creditrisk>true</ns:creditrisk>`) is required for the getcompany program.

This is optional for the getdata program. `<ns:creditrisk>true</ns:creditrisk>` will allow clients to obtain company level credit risk data via the getdata program. Credit Risk fields that are available via the getdata program can be found in **getFields** where Data License Category is Credit Risk.

CURRENCY (optional) – This option is for the getfundamentals program. It allows users to specify the currency of the fundamental data. The default currency will be as per the company/securities default currency indicated by `<ns:currency>? </ns:currency>`

DATEFORMAT (optional) - `<ns:dateformat>?</ns:dateformat >` controls the format of dates. It defaults to mmddyyyy. There are fourteen optional formats available:

mmddyy	04/28/00	yyddmm	00/28/04	mmyydd	04/00/28
ddmmyy	28/04/00	yyyyddmm	2000/28/04	mmyyyydd	04/2000/28
yyyymmdd	20000428	yymmdd	00/04/28	ddyymm	28/00/04
mmddyyyy	04/28/2000	yyyy/mm/dd	2000/04/28	ddyyyyym	28/2000/04
dd-mmm-yy	28-Apr-00	ddmmyyyy	28/04/2000		

DATERANGE (optional) - This option allows control over the date range used for securities in the getactions, getticks, getallticks, getquotes, getallquotes, getfundamentals, and gethistory programs. The possible uses of this header option are as follows:

Specification format:

```
<ns:daterange>
  <ns:period>
    <ns:start>?</ns:start>
    <ns:end>?</ns:end>
  </ns:period>
</ns:daterange>
```

or

```
<ns:daterange>
  <ns:duration>
    <ns:days>?</ns:days>
  </ns:duration>
</ns:daterange>
```

The first usage has a start and end date specified in the format of yyyy-mm-dd. The second usage specifies the actual number of days (not business days) from the current date. The default is to use `<ns:days>0</ns:days>`; data will be returned for the current day.

DATETIMERANGE (optional) . This option allows control over the date and time range used for securities in the getquotes and getallquotes programs. This option is limited to a single calendar day (i.e. 00:00-23:59). DATETIMERANGE and DATERANGE are mutually exclusive header options.

Specification format:

```
<ns:datetimerange>
```



```

<ns:startDateTime>?</ns:startDateTime>
<ns:endDateTime>?</ns:endDateTime>
<ns:region>?</ns:region>
<ns:dst>?</ns:dst>
</ns:datetimerange>

```

Both **startDateTime** and **endDateTime** take in xs:DateTime objects, specified as *yyyy-mm-ddThh:mm:ss*. **Region** can be specified either as a TZDF number, or in the cases of New York, London, or Tokyo as NY, LO, or TO respectively.

By default, daylight savings time (DST) is observed for dates in the daylight savings time period. To specify times in standard time for a date where DST is observed, set **dst** to false. This is the only situation where the **dst** option has any effect.

DERIVED (optional) - This option only applies to the getdata program, and allows customers to request data via fields from the Derived Data category. Without **<ns:derived>true</ns:derived>** in the headers section, a getdata request for Derived Data fields will return N.S.

DIFFFLAG (optional) - **<ns:diffflag>?</ns:diffflag>** controls the Bloomberg output being sent back to the customer. It is applicable to scheduled responses (see the PROGRAMFLAG variable later in this section) using the getdata program **ONLY**. Bloomberg can send only the changes from the previous reply. DIFFFLAG defaults to “no” and has the following valid values:

false - This means that *all* output (unmodified) will be sent to the customer.

true – The response generated will contain the output of the UNIX “diff” utility. In cases where something has changed, this “diff” will provide full records from the previous reply and the current reply. New securities will be apparent, as there will be no previous record. Deleted securities will be apparent, as there will be no current security. The customer can reconstruct the current reply response by combining the previous responses with the changes that Bloomberg has sent. Bloomberg only recommends this option if users are familiar with the UNIX “diff” utility and are confident they can reconstruct the response.

Smaller – The output retrieved will be compared against the most recently generated data using the UNIX diff utility and the smaller of the two responses (the current response and the diff’ed output) is returned

changes - As with the **yes** option, the UNIX diff utility will be used to compare the previous responses to the current response. In this case, the response sent to the customer will contain only additional securities and securities that have received an update. The full record of each security will be sent. Deletes will not be represented.

DISPLAY_PRICING_SRC (optional) – This option is available in gethistory for Corp, Pfd, Govt, Muni and Mtge securities. If this option is used, the PRICING_SOURCE will be returned in the output. For example:

```

<ns:display_pricing_src>?</ns:display_pricing_src>

```

DISPLAYQRMDATE (optional) – This option is available for getquotes and getallquotes. This option controls the date for each tick. Set to “true”, the date will mirror the trade dates on the QR/QRM functions on the BLOOMBERG PROFESSIONAL™ service. For example:

<ns:displayqrmdate>true</ns:displayqrmdate >

ESTIMATES (optional) – This option is available for getdata and needs to be set to true in order for Bloomberg Estimates (BEst) and Bloomberg Dividend Forecast (BDVD) fields to populate. These fields are assigned a Data License Category of “Estimates”.

EXCLUSIVE_PRICING_SRC (optional) – This option applies to bonds requested via the getdata and gethistory programs, and allows an exclusive pricing source to be designated when using a PRICING_SOURCE override. If the exclusive source is not available, all fields in the End of Day Pricing and Derived Data field categories will return N.A. for that security. Return code 989 will be returned if the client is not privileged to see the pricing source requested. When EXCLUSIVE_PRICING_SOURCE is set to true, the header option PRICING_SOURCE must also be set. Security level overrides for PRICING_SOURCE are also respected. Security level overrides will take priority over the header option override when they are used concurrently.

The following example will result in prices returning from ONLY the BGN pricing source; where prices from BGN are not available, an N.A. will be returned.

```
<ns:exclusive_pricing_src>true</ns:exclusive_pricing_src>
<ns:pricing_source>BGN</ns:pricing_source>
```

FILINGSTATUS (optional) – This option applies to the getfundamentals program. It allows the user to select the type of filing required. Options are:

- **Mostrecent** for Most Recent (default setting)
- **Prelim** for Preliminary
- **Original** for Original
- **Restated** for Restated
- **ALL** for all of the above filing types, Mostrecent, Preliminary, Original, and Restated

FUNDAMENTALS (optional) – This option applies to the getdata program only and must be set to **<ns:fundamentals>true</ns:fundamentals>**; Without it being set to true, fields with data category Fundamentals will return **N.S.** (Please see Data Dictionary to determine field category).

HIST_CRNCY (optional) – The **<ns:hist_crncy>?</ns:hist_crncy>** option allows for the specification of a desired currency for history requests. It applies only to historical data and can be used in both the getdata and gethistory programs. It is available for use in the getdata program only with the single-point history fields listed in the Getdata

Section. A currency ISO code must be specified. The Bloomberg sub-currency (GBp, ZAr, etc.) codes are not available for use since they are not true ISO codes. This option is not applicable to all securities in all cases.

HIST_PERIOD (optional) – The **<ns:hist_period>?</ns:hist_period>** option sets the periodicity of gethistory requests. The default behavior is to provide the smallest period available for the data requested. Possible valid values are “daily”, “weekly” (Friday), “monthly” (last day of month), “quarterly” (last day of the quarter) and “yearly” (last day of the year).

HIST_OPTION (optional) – The **<ns:hist_option>?</ns:hist_option>** option allows users of the gethistory program to retrieve historical averages for the date range and period specified. The only valid value is “average.” HISTPERIOD must be set to weekly or greater.

HISTORICAL (optional) - This option is for the getdata program only, and needs to be set to true (`<ns:historical>true</ns:historical>`) for Historical Time Series fields; otherwise, **N.S.** will be returned. The following are Historical Time Series fields:

MTG_HIST_WAC	MTG_HIST_COLLAT_BAL
MTG_HIST_DLQ30	MTG_HIST_CPN
MTG_HIST_DLQ60	EQY_DVD_HIST
MTG_HIST_DLQ90	EQY_DVD_HIST_ALL
MTG_HIST_FORECL	EQY_DVD_HIST_SPLITS
MTG_HIST_REO	EQY_DVD_HIST_GROSS
MTG_HIST_WAM	EQY_DVD_ADJUST_FACT
MTG_HIST_ORIG_AMT	EQY_DVD_ADJ_FUND
MTG_HIST_REM_AMT	MTG_HIST_FACT
MTG_HIST_NUM_LOANS	MTG_HIST_PREPAY
MTG_HIST_PREPAY_FRCST_BMED	FACTOR_SCHEDULE

PERIODICITY (optional) – The `<ns:periodicity>?</ns:periodicity>` option applies to the getfundamentals program. This allows the user to select the fundement periods for the responses. Options are:

- **y** returns fundamentals by year (default setting)
- **q** returns fundamentals by quarter
- **s** returns fundamentals by semi-annual periods
- **a** returns all fundamentals periods reported
- **c** returns fundamentals by cumulative quarterly

PORTSECDES (optional) – The `<ns:portsecdes>?</ns:portsecdes>` option may be used to specify the way in which the security description is returned in the response when a PORTFOLIO macro is used. By default, the data in the field SECURITY_DES is returned in the first column, but when this option is set to **adjusted**, the identifier is returned as it appears on the Bloomberg in the portfolio.

PRICING (optional) – The `<ns:pricing>?</ns:pricing>` option only applies to the getdata program and allows customers to request both Pricing - Intraday and Pricing – End of Day data category fields. (Please see the Data Dictionary to determine field category). Without `<ns:pricing>true</ns:pricing>` in the header, a getdata request for Pricing - Intraday and Pricing – End of Day Data fields will return **N.S.**

PRICING_SOURCE (optional) – The `<ns:pricing_source>?</ns:pricing_source>` option may be used to specify a PRICING_SOURCE override rather than overriding individual PRICING_SOURCE in a request. This override will be applied to all securities listed between START_OF_DATA and END_OF_DATA. Third party pricing sources may require linking to a privileged BLOOMBERG PROFESSIONALTM terminal. IF there is no pricing source override and the request is not linked to a specific user, then the following Pricing Source hierarchy is used:

FixedIncome:	Preferreds:	Currency:	Mtge:	Muni:
BGN	EXCH	BGN	BGN	BFV
BFV	BGN	CMFN		
EXCH	BFV			

For example, to request the BGN pricing source, set

`<ns:pricing_source>BGN</ns:pricing_source>`

PROGRAMFLAG (optional) - This flag determines how often to process the request. There are six values currently available. If this option is not specified, it will default to **one-shot**.

`<ns:programflag>oneshot</ns:programflag>` - This specifies that the request is to be run one time and one time only. The request is serviced immediately, unless otherwise specified (see [TIME](#) and [RUNDATE](#) variables).

`<ns:programflag>daily</ns:programflag>` - This specifies that the request is to be processed daily at a certain time (see [TIME](#) variable below).

`<ns:programflag>weekly</ns:programflag>` - This specifies that the request is to be processed weekly, on the same day of the week the initial request was submitted. Time of day can be selected using the [TIME](#) variable.

`<ns:programflag>monthly</ns:programflag>` - This specifies that the request is to be processed monthly, on the same day of the month the initial request was submitted. The day of the month can be selected using the [RUNDATE](#) variable, and time of day can be specified using the [TIME](#) variable.

`<ns:programflag>weekday</ns:programflag>` - This specifies that the request is to be processed on Monday through Friday only. This option can be used in conjunction with [TIME](#) and [RUNDATE](#) variables, and is valid for all programs. It looks at an account's region (New York, London or Tokyo) in order to base the day on the applicable time zone.

`<ns:programflag>weekend</ns:programflag>` - This specifies that the request is to be processed on Saturday and Sunday only. This option can be used in conjunction with [TIME](#) and [RUNDATE](#) variables and is valid for all programs. It looks at an account's region in order to base the day on that time zone.

If the [TIME](#) variable is not used in a scheduled request, the request will immediately process at the time the request is received by Bloomberg, and will thereafter run at **0000** (midnight) of the local region.

PROGRAMNAME (optional) - This names the program to be run by Bloomberg. The following are available programs:

getdata - This program retrieves various data fields from the database(s) for the specified list of securities. See the Getdata Section for further information.

gethistory - This program retrieves various historical data fields from the database(s) for the specified list of securities within the given date range. See the Gethistory Section for further information, including the list of fields available for this program.

getquotes - This program returns every last sale (price level at which trades were executed) time stamped with date, hour, minute and second. Bloomberg currently supports a maximum of 3 trading days of tick data in the Getquotes program. See Getquotes Section.

getallquotes - This program is similar to the getquotes program except that in addition to returning every last sale (price level at which trades were executed), matching ask and bid prices are returned, time stamped with date, hour, minute and second. See Getallquotes Section.

getactions - This program retrieves one day's worth of corporate actions for a specified list of securities (and the issuer of these securities). See Getactions Section.

getcompany – This program returns company/entity level data such as industry classification, country of risk, and country of domicile for a given security/company ID. For the full list of fields available via this program, please see `crisk_fields.csv`.

getfundamentals – This program returns company fundamental data, both current and historical, with the additional ability to select the periodicity of the data. See Getfundamentals Section.

cancel - This program cancels a currently running scheduled request. To cancel, send a second request with `ns:responseld` equal to that of the scheduled response.

scheduled - This program returns a report containing all requests that are currently scheduled. Only the required Header Options noted in the Header Section are needed in a request with `PROGRAMNAME` set to this value. This is always treated as an oneshot request.

PRP (optional) – This is the PRP Setup number. The PRP Setup number can be found on the BLOOMBERG PROFESSIONALTM service. Enter **PRP <GO>** and choose the number of the applicable report, found on the left of the Portfolio Report Table under the column header “RUN”. This option can be used with or without the PORTFOLIO Macro type described in the Wildcards section. Clients also have the option of requesting additional fields in the `<ns:fields>` section. The output will return the additional requested fields, along with those from the PRP setup.

QUOTECOMPOSITE (optional) – This option (`<ns:quotecomposite>true`
`</ns:quotecomposite>`) only applies to the `getdata` program. It allows customers to request the `BOND_QUOTE_COMP` field. Without QUOTE COMPOSITE selected, a request for `BOND_QUOTE_COMP` will return **N.S.**

QUOTECOMPOSITEHIST (optional) - The `<ns:quotecompositehist>?</ns:quotecompositehist>` option is for the `getdata` program only, and needs to be set to true `<ns:quotecompositehist>true`
`</ns:quotecompositehist>`) for the Historical Bond Quote field (`HISTORICAL_BOND_QUOTE`) to populate. There are two mandatory overrides that must be used in conjunction with this header option:

BOND_QUOTE_COMPOSITE_DATE : This is the date for which bond quote historical prices are to return, format `YYYYMMDD`.

BOND_QUOTE_COMPOSITE_TIME: This is the time for which bond quote historical prices are to return, format `HH:MM[:SS]` where `:SS` is an optional parameter. The time is to be specified in the local time of client account region. For accounts linked to a specific Bloomberg Terminal login, the time will be as per the settings on `TZDF<GO>`.

RUNDATE (optional) - This option controls the date on which requests are processed. For requests scheduled with a frequency made available under the `PROGRAMFLAG` option, `RUNDATE` specifies the date on which the job will begin. The date cannot be more than seven days in the future.

The syntax is `<ns:rundate>YYYYMMDD</ns:rundate>`, where `YYYY` is the year including century, `MM` is the month and `DD` is the day. For example, to start a request on June 15, 2005, set

```
<ns:rundate>20050615</ns:rundate>
```

This option can be used in conjunction with the [TIME](#) option. If no `TIME` is specified, the request will start at 00:00 of the date specified, or immediately if the date is current day.

SECID (optional) - This option allows the specification of a default security identifier (see [Data](#)

Items section). If an alternate security identifier is specified for a security, this option is ignored for that security. For example, if the bulk of the securities are being requested by ISIN number, `<ns:secid>ISIN</ns:secid>` may be stated in the header and only the ISIN numbers need to be specified in the data section for each record.

The security identifier must be one of the following:

- AUSTRIAN
- CZECH
- JAPAN
- BB_GLOBAL
- BB_UNIQUE
- DUTCH
- LUXEMBOURG
- BELGIAN
- EUROCLEAR
- SEDOL
- CATS
- FRENCH
- SPAIN
- CEDEL
- IRISH
- CINS
- ISIN
- VALOREN
- COMMON_NUMBER
- ISRAELI
- CUSIP
- WPK (Wertpapier Kenn-Nummer)
- ITALY

If the wrong SECID is provided, the response will contain return code 10 (for “security not found”).

If requesting equity securities by their CUSIP identifiers, it must be specified that the identifier being used is a CUSIP.

When requesting by TICKER, the market sector must be specified; see YELLOWKEY section below.

When both `ns:secid` and `ns:yellowkey` options are specified, `ns:secid` takes precedence. For example, if `<ns:secid>CUSIP</ns:secid>` and `<ns:yellowkey>Mtge</ns:yellowkey>`, if CUSIP 912828KD1 is requested, data will be returned even though it is not a Mtge security.

The length of a security identifier cannot exceed 32 characters. Therefore the value for `<ns:id>` and `<ns:yellowkey>` cannot exceed 32 characters, including spaces. For example: `<ns:id>IBM US</ns:id> <ns:yellowkey>Equity</ns:yellowkey>` =13 characters
We do not include SECID in the security identifier count:
For example: `<ns:id>IBM US</ns:id> <ns:yellowkey>Equity</ns:yellowkey>` and `<ns:secid>TICKER</ns:secid>`=13 characters

SN and **WS** (optional) - These are the serial and workstation numbers of the BLOOMBERG PROFESSIONAL™ service. This information can be found by entering IAM <GO> on the terminal. There are two numbers separated by a "-" after "S/N:" The first number (preceding the hyphen) is the serial number. The second number (following the hyphen) is the workstation number. These options are available to customers to link their terminal permissions to an account on a per request basis.

SECMASTER (optional) - This option (`<ns:secmaster>true</ns:secmaster>`) only applies to the getdata program. It allows customers to request data via fields from both the End of Day Pricing and the Security Master categories. Without SECMASTER selected, a request for Security Master data will return **N.S.** End of Day Pricing should be requested independently with `<ns:closingvalues>true</ns:closingvalues>`.

SPECIALCHAR (optional) - This flag (`<ns:specialchar>?</ns:specialchar>`) controls the output of fractional and decimal fields. Fractions can be returned in price fields for some securities. SPECIALCHAR defaults to decimal.

`<ns:specialchar>decimal</ns:specialchar>` - ASCII decimals; e.g., one half is represented as .5.

`<ns:specialchar>fraction</ns:specialchar>` - ASCII fractions, e.g., one half is represented as 1/2.

TICKEXCHLENGTH (optional) - This option is available for the getquotes and getallquotes programs. Using `<ns:tickexchlength>2</ns:tickexchlength>` will return a two character exchange code instead of the default, which is a single character exchange code. These two character exchange codes are the same codes returned by equities in the EXCH_CODE field. They are available in two lookup tables - LU_EQY_PRIM_EXCH and LU_COMPOSITE_EXCH_CODE.

TICKLOCALTZ - This option is available for the getquotes and getallquotes programs. The default for this option is false, and the default time zone is New York. With `<ns:ticklocaltz>true</ns:ticklocaltz>` in a request, the time zone setting of the client profile linked to the request will determine the time and date returned in the output. **TZDF <GO>** is the function on the BLOOMBERG Professional™ that controls time zone settings. On a request basis, clients can link in their TZDF profiles via the USERNUMBER option. On an account basis clients can contact [technical support](#) and request that a particular UUID be

associated with their account. This option will only work with linked requests. The TICKOUTPUTTZ and TICKLOCALTZ are mutually exclusive header options.

TICKOUTPUTTZ (optional) - This option is available for the getquotes and getallquotes programs. This option determines the time zone of the output received in the response. This setting is independent of the region selected in the DATERANGE and DATETIMERANGE header options. The TICKOUTPUTTZ and TICKLOCALTZ are mutually exclusive header options.

By default, ticks are returned in the same time zone as they are requested. TICKOUTPUTTZ will override the region in the DATETIMERANGE setting. DATETIMERANGE controls the time zone of the input and TICKOUTPUTTZ controls the time zone of the output. For example, you can request to download ticks from 09:00:00 to 17:00:00 NY time and have the output displayed in London time. The header for this scenario would look like this:

```
<ns:datetimerange>

<ns:startDateTime>2010-03-02T09:00:00</ns:startDateTime>
<ns:endDateTime>2010-03-02T17:00:00</ns:endDateTime>
<ns:region>NY</ns:region>
<ns:tickoutputtz>  <ns:timezone>LO</ns:timezone>
</ns:tickoutputtz>
```

By default, daylight savings time (DST) is observed for dates in the daylight savings time period. To specify times in standard time for a date where DST is observed, set **dst** to false. This is the only situation where the **dst** option has any effect.

TIME (optional) - This flag determines the time at which requests are processed. The time will be set according to the local time of the account's sales region - Tokyo, London or New York. If TIME is not specified in a request, it is processed immediately. The format is **<ns:time>HHMM</ns:time>**, where HH is the hour (00 - 23) and MM is the minute (00 - 59). For example, to start a request at 8:35 PM local time, set **<ns:time>2035</ns:time>**; to start a one-shot request at 3:00 PM, set **<ns:time>1500</ns:time>**.

USERNUMBER (optional) - This is the user number of the BLOOMBERG PROFESSIONALTM service login. To find the USERNUMBER, type IAM <GO> on the terminal; the user number is located after USER: in the upper left-hand side of the screen. This allows customers to link their personal Bloomberg terminal defaults (e.g., fixed income pricing sources) to an account on a per request basis. This option is set by adding **<ns:username>?</ns:username>** where ? is the customer's user number to the headers section of the request.

VERSION (optional) - If **<ns:version>new</ns:version>** is specified, the new beta version of the software will be used to process the request. The new beta version of the software is typically moved in weekly. There may be no changes seen for individual Per Security programs. Please note that if this version of the software is requested, the results will not be as reliable as the production version of the software.**WS** (optional) - Please see the [SN and WS](#) option description above

YELLOWKEY (optional) - This option specifies a default market sector (i.e. Govt, Corp, Equity, etc.) that will be used with the security descriptions. If a market sector description is already

appended to the security in the data section, the given value for this option will be ignored. This option is selected by adding `<ns:yellowkey>?</ns:yellowkey>` to the headers section of the request where ? is one of the following:

- Govt
- Corp
- Mtge
- M-Mkt
- Muni
- Pfd
- Equity
- Comdty
- Index
- Curncy

Market sectors are case-sensitive and must be entered as above.

When both `ns:secid` and `ns:yellowkey` options are specified, `ns:secid` takes precedence. For example, if `<ns:secid>CUSIP</ns:secid>` and `<ns:yellowkey>Mtge</ns:yellowkey>`, if CUSIP 912828KD1 is requested, data will be returned even though it is not a Mtge security/.

The length of a security identifier cannot exceed 32 characters. Therefore the value for `<ns:id>` and `<ns:yellowkey>` cannot exceed 32 characters, including spaces.

For example: `<ns:id>IBM US</ns:id> <ns:yellowkey>Equity</ns:yellowkey>`
=13 characters

We do not include SECID in the security identifier count:

For example: `<ns:id>IBM US</ns:id> <ns:yellowkey>Equity</ns:yellowkey>`
and `<ns:secid>TICKER</ns:secid>`=13 characters

Data Items (Fields)

Fields must be listed as follows:

```
<ns:fields>
  <!-- One or more repetitions -->
  <ns:field>Field Mnemonic</ns:field> </ns:fields>
```

A maximum of 500 fields can be specified in any request. Example:

```
<ns:fields>
  <ns:field>PX_LAST</ns:field>
  <ns:field>ID_BB_UNIQUE</ns:field>
</ns:fields>
```

Pricing Source

Third party pricing sources are available via Per Security, however they may require linking to a privileged BLOOMBERG PROFESSIONAL™ terminal. Please see page 14 for details on linking. IF there is no pricing source override and the request is not linked to a specific user, then the following Pricing Source hierarchy is used:

FixedIncome:	Preferreds:	Currency:	Mtge:	Muni:
BGN	EXCH	BGN	BGN	BFV
BFV	BGN	CMPN		
EXCH	BFV			

Securities

Securities must be listed as follows:

```
<ns:instruments>
  <!-- One or more repetitions -->
  <ns:instrument>
    <ns:id>Security Identifier</ns:id>
    <!-- Optional Yellow Key --> <ns:yellowkey>?</ns:yellowkey>
    <!-- Optional Security Identifier Type--> <ns:type>?</ns:type>
  </ns:instrument>
</ns:instruments>
```

There is a maximum of 5,000 securities per request.

<ns:id>: required.

<ns:yellowkey>: This is optional, but recommended. Processing will be faster if a market sector is specified since Bloomberg will know which security database to search first. Market sector must be one of the standard Bloomberg market sectors specified previously in the Header Section under the [YELLOWKEY](#) header description.

<type >: must be one of the identifiers specified previously under the [SECID](#) header description.

It is also possible to identify securities using security descriptions such as Ticker/Coupon/Maturity or Ticker/Exchange; in these cases, the market sector (yellow key) must be specified.

Some security identifiers apply to multiple securities from multiple exchanges. It is possible to specify the security desired by adding exchange code.

*Note: It is important to have two of the above three parameters.

```
<ns:instruments>
  <!--# Intel Corp-->
  <ns:instrument>
    <ns:id>US4581401001 US</ns:id>
    <ns:type>ISIN</ns:type>
  </ns:instrument>
  <ns:instrument>
    <ns:id>US4581401001 US</ns:id>
    <ns:yellowkey>Equity</ns:yellowkey>
    <ns:type>ISIN</ns:type>
  </ns:instrument>
  <ns:instrument>
    <ns:id>INTC US</ns:id>
    <ns:yellowkey>Equity</ns:yellowkey>
  </ns:instrument>
  <!--# T14 11/15/11 Corp-->
  <ns:instrument>
    <ns:id>000863149</ns:id>
    <ns:type>VALOREN</ns:type>
  </ns:instrument>
```

```
<ns:instrument>
  <ns:id>000863149</ns:id>
  <ns:yellowkey>Govt</ns:yellowkey>
  <ns:type>VALOREN</ns:type>
</ns:instrument>
<ns:instrument>
  <ns:id>T14 11/15/11</ns:id>
  <ns:yellowkey>Govt</ns:yellowkey>
</ns:instrument>
</ns:instruments>
```

Comment lines can be included in Requests. Comment lines <!-- will be ignored in processing and be devliered in the same positions in the responses.

Wildcards

This section describes wildcards (or macros), which represent a group or universe of securities. All currently available wildcards for the BLOOMBERG Data License product are discussed here, as well as their usage. The general XML syntax for wildcard usage in a request is:

```
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>?</ns:primaryQualifierType>
    <ns:primaryQualifierValue>?</ns:primaryQualifierValue>
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>?</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>?
    </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>?</ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
  <ns:overrides>
    <ns:override>
      <ns:field>?</ns:field>
      <ns:value>?</ns:value>
    </ns:override>
  </ns:overrides>
</ns:macro>
```

Wildcards are placed in the <ns:instrument></ns:instrument> section of a request. Secondary qualifiers are optional.

*It should be noted that clients will be billed for all securities that are delivered when using a wildcard/macro.

Macrotypes

Macrotype	Description	Primary Qualifier	Notes
BOND_SRCH	Bond search	Custom criteria set number	Bond search as set up under the SRCH function on the BLOOMBERG PROFESSIONAL™ service. This includes Corp and Govt. The USERNUMBER header options are required.
EQUITY_SRCH	Equity search	Custom criteria set number	Equity search as set up under the QSRC function on the BLOOMBERG PROFESSIONAL™ service. The USERNUMBER header options are required.*
EXCH	Equity exchanges	Two character exchange code, e.g., UN (New York Stock Exchange)	See Appendix D for information about the Lookup Table that returns a list of exchanges and composite exchanges.
INDEX	Equity indices	Index ticker symbol, e.g., INDU (Dow Jones Industrial Average)	See Appendix C for examples of index ticker symbols.

Macrotype	Description	Primary Qualifier	Notes
PFD_SRCH	Preferred Bond Search	Custom criteria set number	Preferred Bond search as set up under the PSCH function on the BLOOMBERG PROFESSIONAL™ service. The USERNUMBER header options are required.
PORTFOLIO	Your portfolio	The Port # of your portfolio	The USERNUMBER header options are required if your Data License account is not linked to a BLOOMBERG PROFESSIONAL™ service. The PRP header option can be used in conjunction with this macro.
SECTYP	Security type	Security type descriptor, e.g. CORPORATES	See the table below.

*EQUITY_SRCH cannot be used in conjunction with other macros. Separate requests must be submitted.

The above search wildcards enable customers to download a specific search that has been set up via the BLOOMBERG PROFESSIONAL™ functions **SRCH**, which searches all corporate and government bonds, or **PSCH**, which searches all preferred bonds. All that needs to be specified is the Custom Criteria Set of interest. For example, if a client would like to download SRCH criteria set number 3, this would be specified as:

```
<ns:instruments>
  <ns:macro>
    <ns:primaryQualifier>
      <ns:primaryQualifierType>BOND_SRCH
    </ns:primaryQualifierType>
    <ns:primaryQualifierValue>3</ns:primaryQualifierValue>
  </ns:primaryQualifier>
</ns:macro>
</ns:instruments>
```

All bonds that match the given criteria will be returned with the fields that were requested.

The below listed **PORTFOLIO** wildcards enable customers to utilize an existing portfolio's security set. The line format is the same as the bond search. For example,

```
<ns:instruments>
  <ns:macro>
    <ns:primaryQualifier>
      <ns:primaryQualifierType>PORTFOLIO
    </ns:primaryQualifierType>
    <ns:primaryQualifierValue>1523
    </ns:primaryQualifierValue>
  </ns:primaryQualifier>
</ns:macro>
</ns:instruments>
```

would be used to download the securities of a portfolio in PRTU<go> whose Port # was 1523. A Port # can be found on the BLOOMBERG PROFESSIONAL™ service. Enter **PRTU <go>**; the Port #'s are listed to the far right of the "Your Portfolios" table. The PRP header option can be used with the PORTFOLIO macro. For example, PRP=1 will return fields in PRP Setup #1. See Header Section for further details.

WARNING: Shared Portfolio's can be assigned the same number as an existing Portfolio. In this case, you would need to create a new Portfolio and use the newly created Portfolio in your Macro request.

In contrast, the line format for the PORTFOLIO wildcard that applies to BVAL Derivatives Portfolios stored in BVPM<go> is as follows:

```
<ns:instruments>
  <ns:macro>
    <ns:primaryQualifier>
      <ns:primaryQualifierType>PORTFOLIO
    </ns:primaryQualifierType>
    <ns:primaryQualifierValue>BVALOTC:{portfolio name}
    </ns:primaryQualifierValue>
  </ns:primaryQualifier>
</ns:macro>
</ns:instruments>
```

A portfolio name can be found on the BLOOMBERG PROFESSIONAL™ service. Enter BVPM<go> and the portfolio names are all listed in the drop-down box in the top, left-hand corner of the screen. For example, if your portfolio was named "Money Maker," you would construct the wildcard as follows:

```
<ns:instruments>
  <ns:macro>
    <ns:primaryQualifier>
      <ns:primaryQualifierType>PORTFOLIO
    </ns:primaryQualifierType>
    <ns:primaryQualifierValue>BVALOTC:Money Maker
    </ns:primaryQualifierValue>
  </ns:primaryQualifier>
</ns:macro>
</ns:instruments>
```

The Portfolio MACRO also supports overrides. In order to add an override, simply append the override values. For example, to add a date override to the above example, you can use:

```
<ns:instruments>
  <ns:macro>
    <ns:primaryQualifier>
      <ns:primaryQualifierType>PORTFOLIO
    </ns:primaryQualifierType>
    <ns:primaryQualifierValue>BVALOTC:Money Maker
    </ns:primaryQualifierValue>
```

```

</ns:primaryQualifier>
<ns:overrides>
  <ns:override>
    <ns:field>PX_CLOSE_DT</ns:field>
    <ns:value>mm/dd/yy</ns:value>
  </ns:override>
</ns:overrides>
</ns:macro>
</ns:instruments>

```

It is possible to use overrides in conjunction with Macros. For example, if a client is interested in fundamental data for HSI Index for a particular fiscal year, the following Macro and Override combination can be used:

```

<ns:instruments>
  <ns:macro>
    <ns:primaryQualifier>
      <ns:primaryQualifierType>INDEX</ns:primaryQualifierType>
      <ns:primaryQualifierValue>HSI</ns:primaryQualifierValue>
    </ns:primaryQualifier>
    <ns:overrides>
      <ns:override>
        <ns:field>EQY_FUND_YEAR</ns:field>
        <ns:value>2010</ns:value>
      </ns:override>
    </ns:overrides>
  </ns:macro>
</ns:instruments>

```

Important note:

To obtain the unique identifier to use in the **EQUITY_SRCH** macro, login to your Bloomberg terminal, using the login name that has the equity search you wish to use. Then run the function EQS /DL <GO> and select the "My Screens" tab at the bottom of the window. You must use the number in the column headed "ID" against the search name you have created.

Example:

```

<ns:instruments>
  <ns:macro>
    <ns:primaryQualifier>
      <ns:primaryQualifierType>EQUITY_SRCH
      </ns:primaryQualifierType>
      <ns:primaryQualifierValue>8606101
      </ns:primaryQualifierValue>
    </ns:primaryQualifier>
  </ns:macro>
</ns:instruments>

```



```
</ns:macro>
</ns:instruments>
```

Security Types

The following table lists all available primary qualifiers (security type descriptors) for SECTYP.

Security Type	Description	Market Sector
ABS	Asset-backed securities	Mtge
BASIS_SW_CRNCY	Basis swap rates	Curncy
CD_CRNCY	CD rates	Curncy
CMBS	Commercial Mortgage Backed Securities	Mtge
CMO	Collateralized Mortgage Obligations	Mtge
CONVERTS	Convertible bonds [†]	Corp
CONVERTS_PFD	Convertible preferred bonds [†]	Pfd
CONVERTS_UNDERLYING	Underlying securities to convertible bonds [†]	Equity
CONVERTS_PFD_UNDERLYING	Underlying securities to convertible preferred bonds [†]	Equity
CORPORATES	Corporate bonds (includes convertibles) [†]	Corp
CORP_PFD	Corporate preferred bonds	Corp
CORP_PFD_DOMESTIC	Corporate and preferred bonds issued by the U.S. or Canada [†]	Corp, Pfd
CORP_PFD_INTERNATIONAL	Corporate and preferred bonds <i>not</i> issued by the U.S. or Canada [†]	Corp, Pfd
CORP_WARRANT	Corporate Warrants	Corp
CPS_FLRS_CRNCY	Caps/floors rates	Curncy
CROSS_CRNCY	Cross exchange rates	Curncy
DELIVERABLE_BONDS	Deliverable bonds on futures contracts [†]	Comdty
DEPOSIT_CRNCY	Deposit exchange rates	Curncy
EQUITY_INDEX	Equity Indices	Index
EURODOLLAR_BOND	Eurodollar bonds (USD bonds deposited in Europe banks) [†]	Corp
FHLMC_GOLD_POOL	Federal Home Loan Mortgage Corporation securities ("Freddie Mac" gold)	Mtge
FHLMC_POOL	Federal Home Loan Mortgage Corporation securities ("Freddie Mac")	Mtge
FNMA_POOL	Federal National Mortgage Association securities ("Fannie Mae")	Mtge
FORWARD_CRNCY	Forward Currency Rates	Curncy
FRA_CRNCY	Forward Rate Agreements	Curncy
FUT_CHAIN	Futures contracts [†]	Comdty
GNMAII_POOL	Government National Mortgage Association securities ("Ginnie Mae" II)	Mtge
GOVT_AGENCY	U.S. and foreign government agencies [†]	Corp
GOVT_NATIONAL	Non-U.S. government bonds (National) [†]	Corp
GOVT_REGIONAL	Non-U.S. government bonds (Regional) [†]	Corp
LOAN	Corporate Loans	Corp
NDF_CRNCY	Non-deliverable forward rates	Curncy
NDF_SW_CRNCY	Non-deliverable forward swaps	Curncy
ONSH_CRNCY	Onshore forward rates	Curncy
ONSH_SW_CRNCY	Onshore forward swap rates	Curncy
OPT_CHAIN	Equity, future and index option chain [†]	Comdty, Equity, Index
OPT_VOL_CRNCY	Option volatility rates	Curncy
PFD_BOND	Preferred bonds (no convertibles) [†]	Pfd
QUARTER_CRNCY	Quarterly swap rates	Curncy
REPO_CRNCY	Repo rates	Curncy

Security Type	Description	Market Sector
SEMI_CRNCY	Semi-annual swap rates	Curncy
SPOT_CRNCY	Spot exchange rates	Curncy
SUPRA_NATIONAL	Inter-American Development Bank, Supranational & World Bank bonds (includes convertibles) †	Corp
SWAP_CRNCY	Swap currency rates	Curncy
SWAP_SPR_CRNCY	Swap spread rates	Curncy
SWAP_VOL_CRNCY	Swaption volatility rates	Curncy
US_TREASURY	U.S. treasury bonds†	Govt
WHEN_ISSUED	When Issued securities	Corp
WHOLE_LOAN	Whole loan mortgages	Mtge
X_FWD_CRNCY	Cross forward rates	Curncy

† All matured bonds are weeded out of the list of securities returned.

‡ Must be used in conjunction with the secondary qualifier SECURITY_DES. See examples below.

Wildcards are placed between <ns:instruments></ns:instruments> in the request. The usage of wildcards in a request is best illustrated through the following examples:

```

<ns:instruments>
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>INDEX</ns:primaryQualifierType>
    <ns:primaryQualifierValue>INDU
  </ns:primaryQualifierValue>
  </ns:primaryQualifier>
</ns:macro>
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>EXCH</ns:primaryQualifierType>
    <ns:primaryQualifierValue>UN</ns:primaryQualifierValue>
  </ns:primaryQualifier>
</ns:macro>
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>CONVERTS</ns:primaryQualifierValue>
  </ns:primaryQualifier> </ns:macro>
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>GOVT_REGIONAL
  </ns:primaryQualifierValue>
  </ns:primaryQualifier> </ns:macro>
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>US_TREASURY
  </ns:primaryQualifierValue>
  </ns:primaryQualifier> </ns:macro>
</ns:instruments>

```

The first macro given above will return all members of the Dow Jones Industrials (ticker = INDU). The second macro will retrieve all listings on the New York Stock Exchange. The third macro will generate the list of all convertible bonds in the corporate database, and so on.

Wildcards can also be used in gethistory, getticks, getallticks, getquotes, getallquotes and getactions. The following data request returns daily high prices for members of the S&P 500 Index from June 15, 2002 through June 15, 2003:

```
<ns:fields>
  <ns:field>PX_HIGH</ns:field>
</ns:fields>
<ns:instruments>
  <ns:macro>
    <ns:primaryQualifier>
      <ns:primaryQualifierType>INDEX</ns:primaryQualifierType>
      <ns:primaryQualifierValue>SPX</ns:primaryQualifierValue>
    </ns:primaryQualifier>
  </ns:macro>
</ns:instruments>
```

Wildcards are meant to facilitate downloading large groups of related securities and security list maintenance. They are *not* designed to function as a general search engine with highly specific search constraints.

Secondary Qualifiers

Secondary qualifiers can be used to limit or constrain wildcards to a subset of securities. The following table lists all secondary qualifiers and to which macro types/primary qualifiers these apply.

Secondary Qualifier	Description	Macro types/Primary Qualifiers	Notes
ACTIVE_PRICING	Actively priced exchange traded equities	EXCH	Valid values are yes and no, where yes is the default. If yes, only those equities priced in the last 30 days are returned; if no all are returned.
COUNTRY	Country (CDR code)	CONVERTS, CONVERTS_PFD, CONVERTS_PFD_UNDERLYING, CONVERTS_UNDERLYING, CORPORATES, GOVT_AGENCY, GOVT_NATIONAL, GOVT_REGIONAL, EURODOLLAR_BOND, PFD_BOND, SUPRA_NATIONAL	See Appendix D for information about the Lookup Table that returns a list of valid CDR codes for COUNTRY.

Secondary Qualifier	Description	Macro types/Primary Qualifiers	Notes
CPN_TYP	Coupon type	CONVERTS, CONVERTS_PFD, CONVERTS_PFD_UNDERLYING, CONVERTS_UNDERLYING, CORP_PFD_DOMESTIC, CORP_PFD_INTERNATIONAL, CORPORATES, GOVT_AGENCY, GOVT_NATIONAL, GOVT_REGIONAL, EURODOLLAR_BOND, PFD_BOND, SUPRA_NATIONAL, US_TREASURY	The only valid value for CPN_TYP is FLOATING, which will deliver all securities with FLOATER=Y.
CRNCY	Currency (ISO code)	CONVERTS, CONVERTS_PFD, CONVERTS_PFD_UNDERLYING, CONVERTS_UNDERLYING, CORP_PFD_DOMESTIC, CORP_PFD_INTERNATIONAL, CORPORATES, GOVT_AGENCY, GOVT_NATIONAL, GOVT_REGIONAL, PFD_BOND, SUPRA_NATIONAL	See Appendix D for information about the Lookup Table that returns a list of valid ISO codes for CRNCY.
EXCH_TRADED	Exchange traded preferred bonds	CONVERTS, CONVERTS_PFD, CONVERTS_PFD_UNDERLYING, CONVERTS_UNDERLYING, PFD_BOND	The valid values are yes and no. The default is no.
MATURED	Matured Securities	CONVERTS, CONVERTS_PFD, CORPORATES, CORP_PFD_DOMESTIC, CORP_PFD_INTERNATIONAL, EURODOLLAR_BOND, GOVT_AGENCY, GOVT_NATIONAL, GOVT_REGIONAL, PFD_BOND, SUPRA_NATIONAL, US_TREASURY	The valid values are yes and no . The default is no .
NET_CPN	Net coupon for mortgage pools	FHLMC_GOLD_POOL, FHLMC_POOL, FNMA_POOL, GNMAI_POOL, GNMAII_POOL	Any numeric value. A range of values is acceptable.
RATE	Mortgage rate	FHLMC_GOLD_POOL, FHLMC_POOL, FNMA_POOL, GNMAI_POOL, GNMAII_POOL	Valid values are ADJUSTABLE or FIXED.
RATING	Bloomberg composite rating	CONVERTS, CONVERTS_PFD, CONVERTS_PFD_UNDERLYING, CONVERTS_UNDERLYING, CORP_PFD_DOMESTIC, CORP_PFD_INTERNATIONAL, CORPORATES, GOVT_AGENCY, GOVT_NATIONAL, GOVT_REGIONAL, EURODOLLAR_BOND, PFD_BOND, SUPRA_NATIONAL	See the Appendix D for information about the Lookup Table that returns a list of valid Bloomberg composite ratings for RATING. A range of values is acceptable.
SECURITY_DES	Security description	DELIVERABLE_BONDS, FUT_CHAIN, OPT_CHAIN	Security description as recognized by Bloomberg. See Data Items Section.

Secondary Qualifier	Description	Macro types/Primary Qualifiers	Notes
SECURITY_TYP	Security type	EXCH	See a table below for a list of valid security types
SERIES	Series of corporate bond	CONVERTS, CONVERTS_PFD, CONVERTS_PFD_UNDERLYING, CONVERTS_UNDERLYING, CORP_PFD_DOMESTIC, CORP_PFD_INTERNATIONAL, CORPORATES, GOVT_AGENCY, GOVT_NATIONAL, GOVT_REGIONAL, EURODOLLAR_BOND, PFD_BOND, SUPRA_NATIONAL	Any valid series is acceptable, such as 144A.
TICKER	Ticker symbol	CONVERTS, CONVERTS_PFD, CONVERTS_PFD_UNDERLYING, CONVERTS_UNDERLYING, CORP_PFD_DOMESTIC, CORP_PFD_INTERNATIONAL, CORPORATES, GOVT_AGENCY, GOVT_NATIONAL, GOVT_REGIONAL, EURODOLLAR_BOND, PFD_BOND, SUPRA_NATIONAL, US_TREASURY	Any valid ticker symbol is acceptable.
WAC	Weighted average coupon for mortgage pools	FHLMC_GOLD_POOL, FHLMC_POOL, FNMA_POOL, GNMAI_POOL, GNMAII_POOL	Any numeric value. A range of values is acceptable.
WALA	Weighted average loan age for mortgage	FHLMC_GOLD_POOL, FHLMC_POOL, FNMA_POOL, GNMAI_POOL, GNMAII_POOL	Any numeric value. A range of values is acceptable. This is in number of months.
WAM	Weighted average maturity for mortgage pools	FHLMC_GOLD_POOL, FHLMC_POOL, FNMA_POOL, GNMAI_POOL, GNMAII_POOL	Any numeric value. A range of values is acceptable. This is in number of months.

Currently available security types for the secondary qualifier SECURITY_TYP are listed below.

SECURITY_TYP	Description
AMERICATRUST	America's trust
CLOSEENDFUND	Closed end fund
COMMON ¹	Common stock
MONEYMARKET	Money market fund
MUTUAL	Mutual fund
OFFSHOREFUND	Off-shore fund
OPTION	Option
RECEIPT	Receipt
RIGHT	Right
UKTRUST	UK unit trust
UNIT	Unit trust
WARRANT	Warrant

¹ SECURITY_TYP of COMMON will return the securities that were listed on an exchange as of the previous day; for example, if a security is added to an exchange on Monday, it will not be returned under this macro until Tuesday.

Secondary qualifiers use the operators "Equals", "NotEquals", "GreaterThan", and "LessThan". Some examples of secondary qualifiers are:

- All corporate bonds issued by the U.S. in U.S. dollars:

```
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>CORPORATES</ns:primaryQualifierValue>
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>CRNCY</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
    </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>USD
    </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>COUNTRY
    </ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
    </ns:secondaryQualifierOperator> <ns:secondaryQualifierValue>US
    </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
</ns:macro>
```

- All regional government bonds, not issued by Canada, denominated in French francs:

```
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>GOVT_REGIONAL
    </ns:primaryQualifierValue>
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>COUNTRY</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>NotEquals
    </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>CA
    </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>CRNCY
    </ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
    </ns:secondaryQualifierOperator> <ns:secondaryQualifierValue>FRF
    </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
</ns:macro>
```

- All government national bonds issued by China:

```
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>GOVT_NATIONAL
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>COUNTRY</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>CN
  </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
</ns:macro>
```

- All government agency bonds, issued by Belgium, rated AAA:

```
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP
  </ns:primaryQualifierType>
    <ns:primaryQualifierValue>GOVT_AGENCY
  </ns:primaryQualifierValue>
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>RATING
  </ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>AAA
  </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>CRNCY </ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>BE
  </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
</ns:macro>
```

- All U.S. treasuries with “T” as the ticker symbol:

```
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>US_TREASURY
  </ns:primaryQualifierValue>
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>TICKER</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
  </ns:secondaryQualifierOperator>
```

```

        <ns:secondaryQualifierValue>T
      </ns:secondaryQualifierValue>
    </ns:secondaryQualifier>
  </ns:macro>

```

- All common stocks listed on the New York Stock Exchange:

```

<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>EXCH</ns:primaryQualifierType>
    <ns:primaryQualifierValue>UN
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>SECURITY_TYPE
  </ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>COMMON
  </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
</ns:macro>

```

The deliverable bonds, futures contracts and option chain macros require the secondary qualifier SECURITY_DES. For example,

```

<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>DELIVERABLE_BONDS
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>SECURITY_DES
  </ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>Equals
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>USA Comdty
  </ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
</ns:macro>

```

```

-----
<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>OPT_CHAIN
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>SECURITY_DES
  </ns:secondaryQualifierType>

```



```

    <ns:secondaryQualifierOperator>Equals
  </ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>IBM US Equity
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>
</ns:macro>

```

The first macro returns all deliverable bonds for the US long bond future and the second returns all options for IBM's US listing.

Ranges can be specified for the secondary qualifiers NET_CPN, RATING, WAC, WALA and WAM by using the "GreaterThan" and "LessThan" operation as in the following examples:

- Gets corporate bonds that are rated lower than AAA and higher than B1:

```

<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>CORPORATES</ns:primaryQualifierValue>
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>RATING</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>LessThan
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>AAA</ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>RATING</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>GreaterThan
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>B1</ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
</ns:macro>

<ns:macro>
  <ns:primaryQualifier>
    <ns:primaryQualifierType>SECTYP</ns:primaryQualifierType>
    <ns:primaryQualifierValue>GNMAI_POOL</ns:primaryQualifierValue>
  </ns:primaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>NET_CPN</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>GreaterThan
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>6.9</ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
  <ns:secondaryQualifier>
    <ns:secondaryQualifierType>NET_CPN</ns:secondaryQualifierType>
    <ns:secondaryQualifierOperator>LessThan
  </ns:secondaryQualifierOperator>
    <ns:secondaryQualifierValue>8.0</ns:secondaryQualifierValue>
  </ns:secondaryQualifier>
</ns:macro>

```

In general, wildcards are easy to use and expedite the generation of lists of securities of a given group. Some basic syntax rules for wildcards follow.

- Wildcards must begin with a macrotype (e.g., `<ns:primaryQualifierType>INDEX` `</ns:primaryQualifierType>`) followed by the value (e.g. `<ns:primaryQualifierValue>DELIVERABLE_BONDS` `</ns:primaryQualifierValue>`).
- The order of secondary qualifiers (e.g., CRNCY) does not matter.
- Only one type of secondary qualifier can be specified per line (except RATING and Mtge qualifiers). For example,

```
<ns:secondaryQualifier>
  <ns:secondaryQualifierType>COUNTRY
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>Equals
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>CA
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>
<ns:secondaryQualifier>
  <ns:secondaryQualifierType>COUNTRY
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>Equals
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>CH
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>
```

is not allowed, nor is

```
<ns:secondaryQualifier>
  <ns:secondaryQualifierType>CRNCY
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>NotEquals
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>USD
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>
<ns:secondaryQualifier>
  <ns:secondaryQualifierType>CRNCY
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>NotEquals
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>FRF
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>
```

- Either a range of RATINGS can be specified or one RATING can be asked for, but not both. That is, either use

```

<ns:secondaryQualifier>
  <ns:secondaryQualifierType>RATING
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>GreaterThan
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>BBB
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>
<ns:secondaryQualifier>
  <ns:secondaryQualifierType>RATING
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>LessThan
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>AAA
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>

```

OR

```

<ns:secondaryQualifier>
  <ns:secondaryQualifierType>RATING
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>Equals
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>AAA
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>

```

But not:

```

<ns:secondaryQualifier>
  <ns:secondaryQualifierType>RATING
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>Equals
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>BBB
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>
<ns:secondaryQualifier>
  <ns:secondaryQualifierType>RATING
</ns:secondaryQualifierType>
  <ns:secondaryQualifierOperator>GreaterThan
</ns:secondaryQualifierOperator>
  <ns:secondaryQualifierValue>BBB
</ns:secondaryQualifierValue>
</ns:secondaryQualifier>

```

This applies to the mortgage secondary qualifiers NET_CP_N, WAC, WALA and WAM as well.

- A maximum of seven secondary qualifying statements (e.g., `<ns:secondaryQualifier>???</ns:secondaryQualifier>`) are allowed per macro. Any secondary qualifying statement beyond the seventh is ignored.

Macro Return Codes:

Code	Description
0	Good return. No errors occurred.
500	Invalid wildcard (macro).
501	Unknown macrotype.
502	Unknown secondary qualifier.
503	Unknown EXCH.
504	Unknown INDEX.
505	Unknown SECTYP.
506	Unknown CRNCY.
507	Internal database error.
508	Unknown COUNTRY.
509	Internal database error.
510	Invalid operator, i.e. operator other than =, !=, > or < was used.
511	Invalid RATING request
512	Multiple secondary qualifiers of the same type.
513	Invalid CPN_TYP.
514	Invalid Mtge request.
515	Invalid Mtge RATE request.
516	Internal database error.
517	Options not available.
518	Deliverable bonds not available.
519	Futures not available.
520	Search error.
521	Portfolio error.

Responses

This section outlines the basic reply formats for the different programs that can be requested via PROGRAMNAME. Replies have the following general format:

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071
001">
  <env:Body>
    <dlws:retrieveGetDataResponse>
      <dlws:statusCode>
        <dlws:code>???

```

Both the header and field sections are exactly as specified in the request sent by the customer.

<dlws:timestarted>???</dlws:timestarted> - This is the date and time the request began processing on Bloomberg's backend server. Its format is the same as the output of the UNIX date command with no arguments. For example, a request that started processing on May 19 2005 at 11:43:56 EDT would return:

```
<dlws:timestarted>2009-05-19T11:43:56-04:00</dlws:timestarted>
```

<dlws:diffflag>???</dlws:diffflag> - This is only valid for the responses of scheduled "diff" requests. Further information about the variable can be found in the Header Section. For more information about scheduling requests, please see **<ns:programflag>?</ns:programflag>** variable in the Header Section.

<dlws:timefinished>???</dlws:timefinished> - This is the date and time the request finished processing on Bloomberg's backend server. The format is the same as **<dlws:timestarted>???**</dlws:timestarted>.

<dlws:timefinished>2009-05-19T11:46:51-04:00</dlws:timefinished>

Get Corrections

getCorrections list securities that have undergone a historical pricing correction. The corrections will have been entered during the previous day. The corrections will be available on an as needed basis.

Only securities that the client has downloaded within the past two months will be included in the corrections. If the securities that have received corrections are not found in a client's download list, no corrections will be generated.

The format is as follows:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:getCorrectionsRequest>
      <!--Optional:-->
      <ns:responseDate?></ns:responseDate>
    </ns:getCorrectionsRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

<ns:responseDate?></ns:responseDate> is the date in which the corrections are made available.

The following fields are being tracked for price corrections:

BOOK_VAL_PER_SH	INDX_POS_EST_ERN
CNVX_OAS_BID	INDX_PX_SALES
CNVX_OAS_MID	INDX_UNCH_VOL
CUR_MKT_CAP	IS_EPS
DUR_ADJ_ASK	IS_SPECIAL_EPS
DUR_ADJ_BID	MF_BLK_1D
DUR_ADJ_MID	MF_NONBLK_1D
DUR_ADJ_OAS_ASK	INDX_PX_BOOK
DUR_ADJ_OAS_BID	MTG_PREPAY_SPEED
DUR_ASK	MTG_PREPAY_TYP
DUR_BID	MTG_WAL
DUR_MID	NET_INCOME
DVD_HIST	OFF_ON_EXCH_VOLUME
EQY_DVD_HIST_GROSS	OPEN_INT
DVD_SH_LAST	OPEN_INT_TOTAL_CALL
EQY_WEIGHTED_AVG_PX	OPEN_INT_TOTAL_PUT
HIST_CALL_IMP_VOL	PX_ASK
HIST_PUT_IMP_VOL	PX_BID
HISTORICAL_MARKET_CAP	PX_FIXING
INDX_ADJ_PE	PX_HIGH
INDX_ADJ_POSITIVE_PE	PX_LAST
INDX_ADJ_POS_PX_EE	PX_LOW
INDX_ADJ_PX_EE	PX_OPEN

INDX ADV VOL	PX VOLUME
INDX DECL VOL	SPREAD BA CR
INDX GENERAL EST PE	VOLUME TOTAL CALL
INDX GROSS DAILY DIV	VOLUME TOTAL PUT
INDX NET DAILY DIV	YLD CNV ASK
INDX POS ERN	YLD CNV BID

Overrides

A distinguishing feature of the BLOOMBERG Data License getdata product is the ability to override specific fields to return customized values.

When using an override, the value of an overriding field is altered to affect the return of another field. Please note there is a limit of 20 overrides per record. In addition, fields that are not affected by the overriding field will return their normal value.

WARNING: If the override is used improperly, incorrect or unexpected data may be returned, or the request may not process at all.

Request Format:

```
<ns:instruments>
  <ns:instrument>
    <ns:id>XS0142898286</ns:id>
    <ns:yellowkey>Corp</ns:yellowkey>
    <ns:overrides>
      <ns:override>
        <ns:field>SETTLE_DT</ns:field>
        <ns:value>20030615</ns:value>
      </ns:override>
    </ns:overrides>
  </ns:instrument>
</ns:instruments>
```

Sample Request for an override in the getData Program:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetDataRequest>
      <ns:headers>
        <ns:secmaster>true</ns:secmaster>
        <ns:pricing>true</ns:pricing>
        <ns:programflag>oneshot</ns:programflag>
      </ns:headers>
      <ns:fields>
        <ns:field>YLD_CNV_MID</ns:field>
        <ns:field>SETTLE_DT</ns:field>
        <ns:field>PRICING_SOURCE</ns:field>
      </ns:fields>
      <ns:instruments>
        <ns:instrument>
          <ns:id>CT30</ns:id>
          <ns:yellowkey>Govt</ns:yellowkey>
          <ns:overrides>
            <ns:override>
              <ns:field>SETTLE_DT</ns:field>
              <ns:value>20200101</ns:value>
            </ns:override>
          </ns:overrides>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetDataRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

Sample Response for an override in the getData program:

```
<soap:Envelope
xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/">
  <soap:Body>
    <dlws:retrieveGetDataResponse
xmlns="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001" xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>12836b99-f149-4388-946e-30bfe15410a8</dlws:requestId>
      <dlws:responseId>1366002639-108209566</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20130415</dlws:rundate>
        <dlws:secmaster>true</dlws:secmaster>
        <dlws:pricing>true</dlws:pricing>
        <dlws:programflag>oneshot</dlws:programflag>
      </dlws:headers>
      <dlws:fields>
        <dlws:field>YLDCNV_MID</dlws:field>
        <dlws:field>SETTLE_DT</dlws:field>
        <dlws:field>PRICING_SOURCE</dlws:field>
      </dlws:fields>
      <dlws:timestarted>2013-04-15T01:10:58-04:00</dlws:timestarted>
      <dlws:instrumentDatas>
        <dlws:instrumentData>
          <dlws:code>0</dlws:code>
          <dlws:instrument>
            <dlws:id>CT30</dlws:id>
            <dlws:yellowkey>Govt</dlws:yellowkey>
          </dlws:instrument>
          <dlws:data value="2.888"/>
          <dlws:data value="01/01/2020"/>
          <dlws:data value="BGN"/>
        </dlws:instrumentData>
      </dlws:instrumentDatas>
      <dlws:timefinished>2013-04-15T01:11:00-04:00</dlws:timefinished>
    </dlws:retrieveGetDataResponse>
  </soap:Body>
</soap:Envelope>
```

Clients who link to a Bloomberg terminal can use a pricing source override to download prices from a subscribed fixed income pricing source. The override field is PRICING_SOURCE. The below asks for Zions Bank's (ZNBK) price:

```
<ns:instruments>
  <ns:instrument>
    <ns:id>912828DM9</ns:id>
    <ns:yellowkey>Govt</ns:yellowkey>
    <ns:overrides>
      <ns:override>
        <ns:field>PRICING_SOURCE</ns:field>
        <ns:value>ZNBK</ns:value>
      </ns:override>
    </ns:overrides>
  </ns:instrument>
```

The PRICING_SOURCE override will work with fixed income securities (Pfd, Govt or Corp) and Mtge Securities within the **getData** program.

Clients can use a similar method for overriding currency pricing sources. The default currency pricing source for an unlinked per-security account is BGN (Bloomberg Generic). For example, for clients who subscribe to WM/Reuters pricing on the BLOOMBERG PROFESSIONAL™ terminal (provider code WMCO), the following would be used to download WM/Reuters price for the Euro spot rate in a linked per-security request:

```
<ns:instruments>
  <ns:instrument>
    <ns:id>EUR WMCO</ns:id>
    <ns:yellowkey>Curncy</ns:yellowkey>
  </ns:instrument>
```

Currency pricing provider codes can be found on the BLOOMBERG PROFESSIONAL™ service on the **XDF <go>** function.

Get Fields

Data Dictionary

Clients are advised that only fields delivered through **getFields** are supported. Data License does not support any other fields and they are subject to change without notice; thus, clients are advised to request data using the fields specified in this data dictionary. Information provided within this request includes the BLOOMBERG Data License Mnemonic, the Field ID, and a brief description and definition of each field. All Data License fields are assigned a Data License Category.

getFields contains 27 fields in the response. They are described below:

Field ID: The Bloomberg 5 character code unique to each mnemonic.

Field Mnemonic: The Bloomberg Data License Mnemonic.

Description: A short description of each mnemonic.

Data License Category: Below are the Data License categories:

- Security Master
- Derived
- End of Day Pricing
- Historical Time Series
- Estimates
- Quote Composite
- Credit Risk
- Fundamentals

Category: A general classification of the mnemonic within the Data License Category.

Definition: A definition of the mnemonic.

Comdty, Equity, Muni, Pfd, M-Mkt, Govt, Corp, Index, Curncy, Mtge - Indicates all applicable market sectors for each mnemonic.

Standard Width: The standard width of the return value.

Standard Decimal Places: The standard number of decimal places of the return value (if applicable).

Field Type: Indicates the data type. Possible field return types are

- Character
- Real
- Integer
- Price
- Bulk
- Data
- Currency
- Boolean
- Date or Time
- Month/Year

Back Office: Indicates if the field mnemonic is part of the Back Office Product.

Extended Back Office: Indicates if the field mnemonic is part of the Extended Back Office Product.

Production Date: Indicates the date that the field was placed in production.

Current Maximum Width: The maximum width of the return value.

BVAL: when the data returns in the field is BVAL pricing or derived from BVAL pricing, clients are charged BVAL rates as opposed to standard rates.

BVAL Blocked: the field is not available when BVAL is delivered as the pricing source. If BVAL pricing is returned, these fields will return N.D. If another source is returned, the field works as normal.

Data License Category 2: – this is the field category for clients under the new model

- Security Master
- Derived - Intraday
- Derived – End of Day
- Pricing - Intraday
- Pricing – End of Day
- Historical Time Series
- Estimates
- Quote Composite
- Quote Composite History
- Credit Risk
- Fundamentals
- Packaged
- Open Source

PSBOOpt: - Optimization is contingent upon subscription to the appropriate Back Office Module which contains the field.

New data fields are continually added to the Data License product. **getFields** is updated every Monday; it is suggested that clients request the most recent version each Monday to ensure that they have a complete list of all available data fields. The request is processed daily except Saturdays.

The general XML syntax for getFields request is:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:getFieldsRequest>
      <ns:criteria>
        <ns:keyword>?</ns:keyword>
        <ns:mnemonic>?</ns:mnemonic>
        <ns:dlCategories>?</ns:dlCategories>
        <ns:overridable>?</ns:overridable>
        <ns:marketsectors>?</ns:marketsectors>
      </ns:criteria>
    </ns:getFieldsRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

Sample request:

```
soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:getFieldsRequest>
      <ns:criteria>
        <ns:keyword>net value of Increases and decreases in Long-
term Investments</ns:keyword>
        <ns:dlCategories>Security Master</ns:dlCategories>
      </ns:criteria>
    </ns:getFieldsRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

Sample Response:

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
">
  <env:Body>
    <dlws:getFieldsResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>16735070-b2ab-4cd4-a775-
b99e79fe43b4</dlws:requestId>
      <dlws:fields>
        <dlws:field>
          <dlws:id>RR496</dlws:id>
          <dlws:mnemonic>INC_DEC_LT_INVEST</dlws:mnemonic>
          <dlws:description>Inc(Dec) LT Investments
          </dlws:description>
          <dlws:dlCategory>Security Master</dlws:dlCategory>
          <dlws:definition>The net value of Increases and
decreases in Long-term Investments. Available for
```

```

Industrial format only.</dlws:definition>
<dlws:marketsectors>Corp</dlws:marketsectors>
<dlws:marketsectors>Pfd</dlws:marketsectors>
<dlws:marketsectors>Equity</dlws:marketsectors>
<dlws:standardWidth>8</dlws:standardWidth>
<dlws:standardDecimalPlaces>3
</dlws:standardDecimalPlaces>
<dlws:fieldType>real</dlws:fieldType>
<dlws:backoffice>true</dlws:backoffice>
<dlws:extendedBackoffice>false
</dlws:extendedBackoffice>
<dlws:productionDate>1999-01-23</dlws:productionDate>
<dlws:dlCategory2>Fundamentals</dlws:dlCategory2>
<dlws:psBoOpt>false</dlws:psBoOpt>
</dlws:field>
</dlws:fields>
</dlws:getFieldsResponse>
</env:Body>
</env:Envelope>

```

getData

The `getData` program returns requested data items on a given list of securities. Data items fall in one of four field categories: **security master** (e.g., coupon, ticker, call schedule), **derived data** (e.g., yield to maturity, effective duration), **historical time series** and **end of day pricing**. For information regarding a list of available data items, see the “Data Dictionary” section.

The `getData` program contains two web service operations – `submitGetDataRequest` and `retrieveGetDataResponse`. The `submitGetDataRequest` operation is to make a request for data. The `retrieveGetDataResponse` operation is to retrieve the previously requested data from the `submitGetDataRequest` operation. The `retrieveGetDataResponse` operation takes a `responseId` as a parameter. The `responseId` identifies the request previously made to the `submitGetDataRequest` operation. The format of the request and response of these operations will be detailed in the following sections.

The following **return codes** are currently defined:

0	Good return. No errors occurred.
10	Bloomberg cannot find the security as specified
11	Restricted security. Must link to a BLOOMBERG PROFESSIONAL™ terminal with access
988	System Error on security level
989	Unrecognized pricing source
990	System Error (Contact Technical Support)
991	Invalid override value (e.g. bad date or number) or Maximum number of overrides (20) exceeded
992	Unknown override field
994	Permission denied
995	Maximum number of fields exceeded
996	Buffer Overflow (some data for this security is missing)
997	General overtime error (e.g., formatting error)
998	Security identifier type (e.g., CUSIP) is not recognized
999	Unloadable security

This can be found in the sample response. For example return code = 0:

```
<dlws:statusCode>
  <dlws:code>0</dlws:code>
  <dlws:description>Success</dlws:description>
</dlws:statusCode>
```

In addition, it is possible to get a good return code, but have one or more fields where data is not returned. The possible reasons for this are:

- The field is not applicable, such as asking for equity shares outstanding on a U.S. Treasury Bond. Not applicable fields will come back blank.
- The data is missing because Bloomberg does not have the data. When data is not available, the field will return **N.A.**

- The user does not have permission to download the field (e.g., information provided by a 3rd party, or field is not supported for data license). In this case, the field will return **N.D.** (Not Downloadable).
- The user has no contractual agreement to download a certain type of field for a certain security type. In this case, the field will return **N.S.** (Not Subscribed).
- If monthly limits for a test account have been reached, **N.S.** (Not Subscribed) will be returned
- The user has not flagged the proper field category in the request header (SECMaster, PRICING, DERIVED, HISTORICAL, ESTIMATES, FUNDAMENTALS, QUOTE COMPOSITE, HISTORICAL QUOTE COMPOSITE, CREDIT RISK); in this case, the field will return **N.S.** (Not Subscribed)
- Bloomberg does not recognize the field. In this case, the returned value is **FLD UNKNOWN**

Applicable getdata header options

DERIVED	PRICING	SECMaster
DIFFFLAG	PRICING_SOURCE	SN
ESTIMATES	PROGRAMFLAG	SPECIALCHAR
EXCLUSIVE_PRICING_SRC	PROGRAMNAME	TIME
FUNDAMENTALS	PRP	USERNUMBER
HIST_CRNCY	QUOTECOMPOSITE	VERSION
HISTORICAL	QUOTECOMPOSITEHIST	WS
PORTSECD	RUNDATE	YELLOWKEY
	SECID	

submitGetDataRequest Request

A valid call to the `submitGetDataRequest` operation should include the appropriate header options as defined in the above section, fields, and instruments for which data is desired.

submitGetDataRequest Sample Request

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetDataRequest>
      <ns:headers>
        <ns:secmaster>true</ns:secmaster>
      </ns:headers>
      <ns:fields>
        <ns:field>NAME</ns:field>
        <ns:field>TICKER</ns:field>
        <ns:field>CPN</ns:field>
        <ns:field>MATURITY</ns:field>
      </ns:fields>
      <ns:instruments>
        <!--Requesting the T14 Govt bond in 4 different ways-->
```



```

<ns:instrument>
  <ns:id>912810CY2</ns:id>
  <ns:type>CUSIP</ns:type>
</ns:instrument>
<ns:instrument>
  <ns:id>US912810CY20</ns:id>
  <ns:type>ISIN</ns:type>
</ns:instrument>
<ns:instrument>
  <ns:id>000863149</ns:id>
  <ns:type>VALOREN</ns:type>
</ns:instrument>
<ns:instrument>
  <ns:id>T14 11/15/11</ns:id>
  <ns:yellowkey>Govt</ns:yellowkey>
</ns:instrument>
<!--Coupon and Maturity do not apply to equities, so
blanks are returned-->
<ns:instrument>
  <ns:id>IBM US</ns:id>
  <ns:yellowkey>Equity</ns:yellowkey>
</ns:instrument>
<!--FirmABC is not a valid security, return code 10 and NO
data is returned-->
<ns:instrument>
  <ns:id>FirmABC</ns:id>
  <ns:yellowkey>Equity</ns:yellowkey>
</ns:instrument>
</ns:instruments>
</ns:submitGetDataRequest>
</soapenv:Body>
</soapenv:Envelope>

```

submitGetDataRequest Response

The response of the `submitGetDataRequest` operation of the Per Security web service will return a status code, a status description, a `requestId`, and a `responseId`. The `responseId` must be included in a subsequent call to the `retrieveGetDataResponse` operation to retrieve the requested data. The `requestId` uniquely identifies a web service request. This id should be provided to Bloomberg for any support related issues.

submitGetDataRequest Sample Response

```

<env:Envelope
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/200 71001"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Body>
    <dlws:submitGetDataResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>

```

```

        </dlws:statusCode>
        <dlws:requestId>021c2073-8514-4b11-9587-82b5260e5e2a
        </dlws:requestId>
        <dlws:responseId>1309526405-10834245</dlws:responseId>
    </dlws:submitGetDataResponse>
</env:Body>
</env:Envelope>

```

retrieveGetDataResponse Request

The `retrieveGetDataResponse` request takes a `responseId` that identifies a previous `submitGetDataRequest` request. For recurring requests, a `responseData` can also be provided to retrieve data from previous days. Responses are available for up to five days.

retrieveGetDataResponse Sample Request

A sample `retrieveGetDataResponse` request:

```

<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberq.com/datalicense/dlws/ps/20071_001">
    <soapenv:Header/>
    <soapenv:Body>
        <ns:retrieveGetDataRequest>
            <ns:responseId>1309526405-10834245</ns:responseId>
            <!--Optional:-->
            <ns:responseData>2008-02-13</ns:responseData>
        </ns:retrieveGetDataRequest>
    </soapenv:Body>
</soapenv:Envelope>

```

retrieveGetDataResponse Sample Response

This section outlines the basic response format for the `getData` program.

Open Soap Envelope:

```

<env:Envelope
xmlns:dlws="http://services.bloomberq.com/datalicense/dlws/ps/200_71001"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">

```

Open Soap Body: <env:Body>

Open Response: <dlws:retrieveGetDataResponse>

Status Code:

```

<dlws:statusCode>
    <dlws:code></dlws:code>
    <dlws:description></dlws:description>
</dlws:statusCode>

```

Headers Section including specified headers: <dlws:headers> </dlws:headers>

Fields Section with specified fields: <dlws:fields> </dlws:fields>

Time the job started running: <dlws:timestarted> </dlws:timestarted>

Data Section with data for each security:

<dlws:instrument-datas> </dlws:instrument-datas>

Time the job finished running:

<dlws:timefinished> </dlws:timefinished>

Close of response: </dlws:retrieveGetDataResponse>

Close of Soap Body: </env:Body>

Close of Soap Envelope: </env:Envelope>

retrieveGetDataResponse Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071
001">
```

```
<env:Body>
```

```
<dlws:retrieveGetDataResponse>
```

```
<dlws:statusCode>
```

```
<dlws:code>0</dlws:code>
```

```
<dlws:description>Success</dlws:description>
```

```
</dlws:statusCode>
```

```
<dlws:requestId>021c2073-8514-4b11-9587-82b5260e5e2a
```

```
</dlws:requestId>
```

```
<dlws:responseId>1309526405-10834245</dlws:responseId>
```

```
<dlws:headers>
```

```
<dlws:rundate>20110701</dlws:rundate>
```

```
<dlws:programflag>oneshot</dlws:programflag>
```

```
<dlws:secmaster>true</dlws:secmaster>
```

```
</dlws:headers>
```

```
<dlws:fields>
```

```
<dlws:field>NAME</dlws:field>
```

```
<dlws:field>TICKER</dlws:field>
```

```
<dlws:field>CPN</dlws:field>
```

```
<dlws:field>MATURITY</dlws:field>
```

```
</dlws:fields>
```

```
<dlws:timestarted>2011-07-01T09:20:38-04:00
```

```
</dlws:timestarted>
```

```
<dlws:instrumentDatas>
```

```
<dlws:instrumentData>
```

```
<dlws:code>0</dlws:code>
```

```
<dlws:instrument>
```

```
<dlws:id>912810CY2</dlws:id>
```

```
</dlws:instrument>
```

```

        <dlws:data value="US TREASURY N/B"/>
        <dlws:data value="T"/>
        <dlws:data value="14.000000"/>
        <dlws:data value="11/15/2011"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>O</dlws:code>
        <dlws:instrument>
            <dlws:id>US912810CY20</dlws:id>
        </dlws:instrument>
        <dlws:data value="US TREASURY N/B"/>
        <dlws:data value="T"/>
        <dlws:data value="14.000000"/>
        <dlws:data value="11/15/2011"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>O</dlws:code>
        <dlws:instrument>
            <dlws:id>000863149</dlws:id>
        </dlws:instrument>
        <dlws:data value="US TREASURY N/B"/>
        <dlws:data value="T"/>
        <dlws:data value="14.000000"/>
        <dlws:data value="11/15/2011"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>O</dlws:code>
        <dlws:instrument>
            <dlws:id>T14 11/15/11</dlws:id>
            <dlws:yellowkey>Govt</dlws:yellowkey>
        </dlws:instrument>
        <dlws:data value="US TREASURY N/B"/>
        <dlws:data value="T"/>
        <dlws:data value="14.000000"/>
        <dlws:data value="11/15/2011"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>O</dlws:code>
        <dlws:instrument>
            <dlws:id>IBM US</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:data value="INTL BUSINESS MACHINES CORP"/>
        <dlws:data value="IBM"/>
        <dlws:data value=""/>
        <dlws:data value=""/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>10</dlws:code>
        <dlws:instrument>
            <dlws:id>FiDnABC</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>

```

```

        </dlws:instrument>
        <dlws:data value="" />
        <dlws:data value="" />
        <dlws:data value="" />
        <dlws:data value="" />
    </dlws:instrumentData>
</dlws:instrumentDatas>
<dlws:timefinished>2011-07-01T09:20:41-04:00
</dlws:timefinished>
</dlws:retrieveGetDataResponse>
</env:Body>
</env:Envelope>

```

Single-Point History

Single-point history fields allow clients to retrieve data on a given historical date. The following single-point history fields may be used with the getdata program (note that the delimiter here is a colon):

BHIS_CLOSE_ON_PX:n:P	Closing Bid Price
BHIS_CLOSE_ON_PX:n:Y	Closing Bid Yield
MHIS_CLOSE_ON_PX:n:P	Closing Price
MHIS_CLOSE_ON_PX:n:Y	Closing Yield
AHIS_CLOSE_ON_PX:n:P	Closing Ask Price
AHIS_CLOSE_ON_PX:n:Y	Closing Ask Yield
HIS_HIGH_ON_PX:n:P	High Price
HIS_HIGH_ON_PX:n:Y	High Yield
HIS_LOW_ON_PX:n:P	Low Price
HIS_LOW_ON_PX:n:Y	Low Yield
HIS_VOL_ON_PX:n:P	Volume
N_DAYS_AGO_PX:n	Date "n" days ago

Except for N_DAYS_AGO_PX, “n” in the above formats can be either number of days (greater than 0) or a date (excluding today). If “n” is specified as a number of days, it means the number of days from today excluding weekends. Note the “P” or “Y” at the end of the field indicates a price or yield, respectively. All of these fields fall under the End-of-Day pricing category, not the History category.

For example:

BHIS_CLOSE_ON_PX:5:P	Bid Price, 5 days ago
AHIS_CLOSE_ON_PX:19971217:P	Ask Price on 12/17/97
N_DAYS_AGO_PX:2	Date 2 days ago

The HIST_CRNCY header option can be used with these fields to override currency. Please see Header Section for details.

Note: it is only possible to request Single-Point History fields for 4 unique dates within a single request. If more than 4 dates are desired, an alternative is to utilize the gethistory program.

Overrides

A distinguishing feature of the BLOOMBERG Data License getdata product is the ability to perform calculation overrides to return personalized analytic values. This allows clients to submit data that can leverage BB standard models and calculation servers.

The value of an overriding field is altered to affect the return of another field. There is a limit of nine overrides per record. Fields that are not affected by the overriding field will return their normal value.

WARNING: If the override is used improperly, incorrect or unexpected data may be returned, or the request may not process at all.

Clients who link to a Bloomberg terminal can use a pricing source override to download prices from a subscribed fixed income pricing source. The override field is PRICINGSOURCE. The below asks for Zions Bank's (ZNBK) price:

```
<ns:instrument>
  <ns:id>912828DM9</ns:id>
  <ns:yellowkey>Govt</ns:yellowkey>
  <ns:overrides>
    <ns:override>
      <ns:field>PRICING_SOURCE</ns:field>
      <ns:value>ZNBK</ns:value>
    </ns:override>
  </ns:overrides>
```

`</ns:instrument>`

The PRICING_SOURCE override will work only with fixed income securities (Pfd, Govt or Corp) within the **getdata** program.

Response Level Status Codes

The following response level status codes are currently defined:

Code	Description
0	Indicates operation was successful.
100	Indicates the response data is not yet ready; try back again.
200	Error processing the request (Contact Technical Support).
300	Authorization failure (Contact Technical Support).

Bulk Fields

A bulk field is a data type used to encapsulate multi-dimensional (matrix) data such as call schedules, put schedules, option chains, prepayment vectors, index members, etc. Bulk data is modeled as a two dimensional array. The data element for a bulk field will include an attribute **isArray** (set to true) to declare it a bulk field and an attribute to specify the number of **rows** in the bulk data. Each row will have a **bulkarray** element with an attribute to specify the number of **columns** for that row. Each of the bottom level data elements will have a **type** and **value** attribute. The **type** attribute identifies the data type of the data value. The following table lists the potential values for **type**:

Bulk Field Data Element Number	Field Type	Description/Example
1	Character	100BP, APPLE COMPUTERS
2	Numeric	55000, 1234.4321
3	Price	Format according to SPECIALCHAR flag
4	Security	IBM US Equity
5	Date	Format according to DATEFORMAT flag
6	Time	hh:mm:ss, 13:25:42
7	Date/Time	Can be either.
8	Bulk	A self-defining data type used to encapsulate multi-dimensional (matrix) data.
9	Month/Year	12/96
10	Boolean	„Y" or „N"
11	Currency	USD, United States Dollar
12	Integer	1000, 550000, -3
13	Real	3.6, 1234.3340

Bulk Field Sample

Below is a sample bulk response for the TOP_ANALYST_PERFORM_RANK_TRR bulk field:

```
<dlws:data isArray="true" rows="2">
  <dlws:bulkarray columns="6">
    <dlws:data value="TW" type="Character"/>
    <dlws:data value="DM" type="Character"/>
    <dlws:data value="1st" type="Character"/>
    <dlws:data value="27.5" type="Real"/>
    <dlws:data value="overweight" type="Character"/>
    <dlws:data value="20080307" type="Date"/>
  </dlws:bulkarray>
  <dlws:bulkarray columns="6">
    <dlws:data value="DB" type="Character"/>
    <dlws:data value="CW" type="Character"/>
    <dlws:data value="1st" type="Character"/>
    <dlws:data value="27.6" type="Real"/>
    <dlws:data value="buy" type="Character"/>
    <dlws:data value="20080307" type="Date"/>
  </dlws:bulkarray>
</dlws:data>
```



```

    </dlws:bulkarray>
</dlws:data>

```

Bond Quote Composite

The Data License Bond Quote Composite offers a composite view of bids and asks for all contributed pricing sources to which a client is entitled. This program was developed as an efficient service for snapshot valuations of contributed pricing levels for a custom group of bonds.

Bond Quote Composite data is returned within the bulk field **BOND_QUOTE_COMP**. Request headers must contain:

```

<ns:header>
  <ns:secmaster>true</ns:secmaster>
  <ns:quotecomposite>true</ns:quotecomposite>
</ns:header>

```

The field will return, in order, Pricing Source Abbreviation, Pricing Source Name, Time Stamp, Date Stamp, Bid Price, Ask Price, Bid Yield, Ask Yield, Bid Size, Ask Size and Executable Indicator (Y or N). If there is no price available for today, a maximum 7 days of historical quotes is returned.

Data requests are processed upon receipt; the resulting responses are delivered in half-hour intervals, provided the request is uploaded 15 minutes prior. For example, a request that is posted at 1:10pm will be delivered at 1:30pm.

Sample Bond Quote Composite Request

```

<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetDataRequest>
      <ns:headers>
        <ns:secmaster>true</ns:secmaster>
        <ns:quotecomposite>true</ns:quotecomposite>
      </ns:headers>
      <ns:fields>
        <ns:field>BOND_QUOTE_COMP</ns:field>
      </ns:fields>
      <ns:instruments>
        <ns:instrument>
          <ns:id>459200AT</ns:id>
          <ns:yellowkey>Corp</ns:yellowkey>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetDataRequest>
  </soapenv:Body>
</soapenv:Envelope>

```

Sample Bond Quote Composite Response

```

<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:retrieveGetDataResponse>

```

```

<dlws:statusCode>
  <dlws:code>0</dlws:code>
  <dlws:description>Success</dlws:description>
</dlws:statusCode>
<dlws:requestId>3ee6d334-69b6-44d5-8983-e24f14a358b4
</dlws:requestId>
<dlws:responseId>1308317414-1051891127</dlws:responseId>
<dlws:headers>
  <dlws:rundate>20110617</dlws:rundate>
  <dlws:programflag>oneshot</dlws:programflag>
  <dlws:secmaster>true</dlws:secmaster>
  <dlws:quotecomposite>true</dlws:quotecomposite>
</dlws:headers>
<dlws:fields>
  <dlws:field>BOND_QUOTE_COMP</dlws:field>
</dlws:fields>
<dlws:timestarted>2011-06-17T09:30:58-04:00
</dlws:timestarted>
<dlws:instrumentDats>
  <dlws:instrumentData>
    <dlws:code>0</dlws:code>
    <dlws:instrument>
      <dlws:id>459200AT</dlws:id>
      <dlws:yellowkey>Corp</dlws:yellowkey>
    </dlws:instrument>
    <dlws:data value=""/>
  </dlws:instrumentData>
</dlws:instrumentDats>
<dlws:timefinished>2011-06-17T09:31:08-04:00
</dlws:timefinished>
</dlws:retrieveGetDataResponse>
</env:Body>
</env:Envelope>

```

BVAL Prices in Data License

What is BVAL?

Bloomberg Valuation Service - BVAL, represents a new standard for data transparency and quality in asset valuation. The service combines a unique market insight, sophisticated quantitative models and data from over 4,000 contributing sources, to produce credible and defensible valuations. BVAL also produces a unique metric, the BVAL Score, which reflects the quantity and strength of the market input data used to generate the BVAL valuation.

BVAL via Data License

BVAL evaluated pricing for fixed income securities is available via the Data License Web Service infrastructure. All fixed income fields previously available in the BVAL-BVAM infrastructure are now available in BVAL via DLPS.

BVAL Header Options

To receive BVAL pricing in getdata, specific header options must be set:

```
<ns:bvaltier>
<ns:bvalsnapshot>
<ns:bvalsnapshotdate>
```

<ns:bvaltier> should be set to 1 or 2, depending on which Tier is being requested.

<ns:bvalsnapshot> accepts the following values, which correspond to the available snapshot times:

Snapshot Code	Description
ny3pm	New York 3PM
ny4pm	New York 4 PM
lo3pm	London 3 PM
lo4pm	London 4 PM
to3pm	Tokyo 3 PM
to4pm	Tokyo 4 PM

<ns:bvalsnapshotdate> is the date, specified as **yyyymmdd**, for which the price will be retrieved from the snapshot specified. The snapshot date is required when specifying a particular BVAL snapshot.

Snapshot Date validation will be performed as follows:

- If Snapshot date > today's date, HOLD request
- If Snapshot date < today's date, REJECT Request
- If Snapshot date = today's date, PROCESS request if it was submitted two hours prior to selected snapshot; otherwise REJECT

The following is a sample request incorporating the new BVAL Tier and Snapshot headers:

```
<soapenv:Envelope
```

```

xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetDataRequest>
      <ns:headers>
        <ns:closingvalues>true</ns:closingvalues>
        <ns:derived>true</ns:derived>
        <ns:programflag>weekday</ns:programflag>
        <ns:secid>CUSIP</ns:secid>
        <ns:secmaster>true</ns:secmaster>
        <ns:bvaltier>2</ns:bvaltier>
        <ns:bvalsnapshot>ny4pm</ns:bvalsnapshot>
        <ns:bvalsnapshotdate>201103</ns:bvalsnapshotdate>
      </ns:headers>
      <ns:fieldsets>
        <ns:fieldset>
          <ns:fieldmacro>BVAL_BOND</ns:fieldmacro>
        </ns:fieldset>
      </ns:fieldsets>
      <ns:fields>
        <ns:field>AMT_OUTSTANDING</ns:field>
      </ns:fields>
      <ns:instruments>
        <ns:instrument>
          <ns:id>122014AE</ns:id>
        </ns:instrument>
        <ns:instrument>
          <ns:id>879240AN</ns:id>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetDataRequest>
  </soapenv:Body>
</soapenv:Envelope>

```

Program Name:

BVAL prices are currently available only via the getData program.

Program Flag

“Oneshot” should be used for requests that you want to run one time only. Clients can also opt to receive scheduled pricing responses at a frequency of their choosing: weekday, weekly, monthly.

Tier 1

All 3PM and 4PM snapshots as well as the London 12PM snapshot will be available for Tier 1

clients and only BVAL prices will be returned. In order for clients to receive pricing for a given snapshot, requests must be submitted 2 hours prior to the requested snapshot time. For example, if you request a NY4PM pricing, you will have to submit your request by 2PM. If a snapshot date is selected and the request is submitted after the 2 hour cutoff, the request will be rejected. If no date or a future date is selected, the request will be held and processed the following day.

Once a submitted request is deemed to have met the date and time restrictions, the submission will be validated. The results of this validation are available via the **getPortfolioValidation** program. This response will indicate whether or not those IDs are valid on the Bloomberg database. If there is an error, the response will detail the reason why the request was rejected. The response will be generated within minutes after a request is submitted. For successful submissions, clients will receive pricing within 45 minutes after their selected snapshot.

If there is no BVAL price for a security on a given day, no price will be returned and be indicated by "N.A." in the response.

The fields listed below in **Field Sets/Macros** section are available for Tier 1 clients. Clients can select macros to get the entire list or choose fields individually.

Tier 2

All 3PM and 4PM snapshots as well as the London 12PM snapshot will be available for Tier 2 clients. As in Tier 1, clients must submit their requests 2 hours prior to the snapshot to receive pricing for that snapshot. Tier 2 requests will **start** to be processed 2.5 hours from the snapshot requested and will be delivered within 3 hours of that snapshot. Tier 2 requests go through the same validation process as Tier 1 requests, i.e., response will be generated.

The same BVAL fields from the Field Sets/Macros are available in Tier 2. In addition, these fields can be comingled with all Data License fields. Security level PCS overrides are also available.

If there is no BVAL price for a security on a given day, no price will be returned and be indicated by "N.A." in the response.

BVAL via Standard PCS Request

Tier 2 BVAL prices can also be received via a standard PCS request, that is, outside of the BVAL Enable/Tier Requests. BVAL PCS requests are processed immediately and clients will receive the latest BVAL price available within Tier 2 time restrictions. Clients are able to specify a snapshot time within the pricing source and can also run scheduled requests.

1. If no snapshot is selected (PRICING_SOURCE=BVAL), the most recent Tier 2 BVAL price will be returned. For example, a request submitted at 2:30 PM NY time will return BVAL prices from the same day's 4PM London (11AM NY time) snapshot.
2. If snapshot is selected (PRICING_SOURCE=BVAL:NY4PM) a request submitted at 2:30 PM NY time will be the BVAL prices from the previous day's NY4PM snapshot. You would need to submit a request after 6:30PM in order to receive the current day's NY4PM pricing.
3. If linking to a Bloomberg terminal, the snapshot price returned will match the user's default settings. In order to link, please refer to the "Linking to A Bloomberg Terminal" section in this manual.

- a. To set defaults, run BVAL <GO> on any security, then 98 <GO>

As is standard with PCS requests, older prices may be returned in those instances where there is no BVAL price on a given day for a bond that previously had a BVAL price.

1. If PRICING_SOURCE=BVAL and EXCLUSIVE_PRICING_SRC = true, it is possible that a BVAL price from a previous snapshot will be returned.
2. If PRICING_SOURCE=BVAL and EXCLUSIVE_PRICING_SRC = false, it is possible a price from a previous snapshot may be returned, from either BVAL or a different PCS depending on the individual client's PCS hierarchy setup.

BVAL clients can use any of the four PCS (pricing source) codes:

BVAL (latest BVAL)

BVT4 (Tokyo 4pm)

BVL4 (London 4pm)

BVN4 (NY 4pm)

* Please note: Muni and Mtge only use BVAL and BVN4

Below is a sample PCS request:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetDataRequest>
      <ns:headers>
        <ns:closingvalues>true</ns:closingvalues>
        <ns:derived>true</ns:derived>
        <ns:secid>CUSIP</ns:secid>
        <ns:secmaster>true</ns:secmaster>
        <ns:exclusive_pricing_src>true
        </ns:exclusive_pricing_src>
        <ns:pricing_source>BVAL:NY4PM</ns:pricing_source>
      </ns:headers>
      <ns:fields>
        <ns:field>PX_BID</ns:field>
        <ns:field>BVAL_BID_SCORE</ns:field>
      </ns:fields>
      <ns:instruments>
        <ns:instrument>
          <ns:id>197677AG</ns:id>
        </ns:instrument>
        <ns:instrument>
          <ns:id>459200AM</ns:id>
        </ns:instrument>
        <ns:instrument>
          <ns:id>620076AH</ns:id>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetDataRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

Field Sets/Macros

As mentioned above, BVAL via DL pricing allow clients to select from four Field Sets/Macros: BVAL_ALL, BVAL_BOND, BVAL_MTGE and BVAL_MUNI. BVAL_ALL contains all available BVAL fields. The other three macros consist of subsets of the fields in BVAL_ALL and are best used when portfolios contain only securities of the corresponding asset class. They are specified for getData requests in the following manner.

```
<ns:fieldset>
  <ns:fieldmacro>macroName1</ns:fieldmacro>
  <ns:date>optionalDate</ns:date>
</ns:fieldset>
```

<ns:date> Optional. This represents the effective date of when the field set was released into production. This field is of type xs:Date, and is specified as YYYY-MM-DD. Setting this field to a specific date will prevent future releases of field sets from impacting existing requests and responses. The default value is the current date.

It is important to note that selecting more than one macro, BVAL_ALL and BVAL_BOND for example, the fields that exist in both macros (e.g. PX_BID) will be returned TWICE. If clients have portfolios consisting of corporate bonds, municipal bonds and mortgage securities (or any 2 of the 3), the BVAL_ALL macro will be the only one necessary.

Once again, these fields are the only fields available in Tier 1; whereas, Tier 2 can combine these fields with the all other Data License fields. Please note that in order to keep the fieldset static, a date can be added along with the fieldset. Adding the fieldset without the date will give you the most current version with all newly added fields. For example:

FIELDSET=BVAL_BOND will give you the most current version of the fieldset.

FIELDSET=BVAL_BOND|20110430| will give you the version of the fieldset as it existed on April, 30, 2011

BVAL_ALL

ACC_INTEREST_100_BID
CNVX_BID
PX_BID
YLD_CNV_BID
BVAL_SPRD_AAA_BENCHMARK
BVAL_YLD_AAA_BENCHMARK
BVAL_ASSET_CLASS
BVAL_AVERAGE_LIFE
BVAL_BENCHMARK_BID
BVAL_BENCHMARK_BID_YLD
BVAL_DUR_BID
BVAL_I_SPRD_BID
BVAL_N_SPRD_BID
BVAL_OAS_BID_SPRD
BVAL_OAS_VOL_BID

BVAL_BOND

ACC_INTEREST_100_BID
CNVX_BID
PX_BID
YLD_CNV_BID
BVAL_ASSET_CLASS
BVAL_BENCHMARK_BID
BVAL_BENCHMARK_BID_YLD
BVAL_DUR_BID
BVAL_I_SPRD_BID
BVAL_OAS_BID_SPRD
BVAL_OAS_VOL_BID
BVAL_BID_SCORE
BVAL_SPRD_BENCHMARK_BID
BVAL_Z_SPRD_BID
BVAL_OAS_CURVE_ID

BVAL_MTGE

ACC_INTEREST_100_BID
PX_BID
BVAL_ASSET_CLASS
BVAL_AVERAGE_LIFE
BVAL_I_SPRD_BID
BVAL_N_SPRD_BID
BVAL_BID_SCORE
BVAL_BID_YLD_TO_AVG_LIFE
BVAL_Z_SPRD_BID
BVAL_PREPAY_SPEED
BVAL_PREPAY_TYP
BVAL_BEEM
LAST_UPDATE_DT
MATURITY
QUOTE_TYP

BVAL_MUNI

ACC_INTEREST_100_BID
CNVX_BID
PX_BID
YLD_CNV_BID
BVAL_SPRD_AAA_BENCHMARK
BVAL_YLD_AAA_BENCHMARK
BVAL_ASSET_CLASS
BVAL_BENCHMARK_BID_YLD
BVAL_DUR_BID
BVAL_BID_SCORE
BVAL_SPRD_BENCHMARK_BID
BVAL_WORKOUT_DT_BID
BVAL_WORKOUT_PX_BID
LAST_UPDATE_DT
MATURITY

BVAL_ALL

BVAL_BID_SCORE
 BVAL_SPRD_BENCHMARK_BID
 BVAL_WORKOUT_DT_BID
 BVAL_WORKOUT_PX_BID
 BVAL_BID_YLD_TO_AVG_LIFE
 BVAL_Z_SPRD_BID
 BVAL_BEEM
 BVAL_OAS_CURVE_ID
 BVAL_PREPAY_SPEED
 BVAL_PREPAY_TYP
 BVAL_SPRD_BENCHMARK_ID
 LAST_UPDATE_DT
 MATURITY
 QUOTE_TYP
 PX_DISC_BID
 CALLED
 BVAL_DISC_MARGIN_BID
 BVAL_SNAPSHOT
 BVAL_RELEASED_STATE
 PRICING_SOURCE
 BVAL_POOL_SEASONING_ADJUSTMENT
 BVAL_POOL_ODD_LOT_ADJUSTMENT
 BVAL_POOL_LOAN_CHAR_ADJUSTMENT
 BVAL_CMO_BASE_I_SPREAD
 BVAL_CMO_PRICING_STRUCTURE
 BVAL_POOL_TBA_EXECUTABLE_BID_PX
 BVAL_CMO_GNMA_ADJUSTMENT
 BVAL_CMO_COUPON_ADJUSTMENT
 BVAL_CMO_OBSERVATION_COUNT
 BVAL_BREAKEVEN_PRICE
 BVAL_PERCENT_BREAKEVEN_PRICE
 BVAL_WEIGHTED_AVERAGE_BCM_VPR
 BVAL_WEIGHTED_AVERAGE_BCM_CDR
 BVAL_WEIGHTED_AVERAGE_BCM_LSV
 BVAL_PRICING_DOMAIN
 BVAL_EFFECTIVE_NUMBER
 BVAL_STANDARD_DEVIATION
 BVAL_TOTAL_EXECUTABLE_BIDS
 BVAL_TOTAL_EXECUTABLE_ASKS
 BVAL_TOTAL_CONTRIBUTOR_BIDS
 BVAL_TOTAL_CONTRIBUTOR_ASKS

BVAL_BOND

BVAL_SPRD_BENCHMARK_ID
 LAST_UPDATE_DT
 MATURITY
 QUOTE_TYP
 CALLED
 PX_DISC_BID
 BVAL_SNAPSHOT
 BVAL_RELEASED_STATE
 PRICING_SOURCE
 BVAL_PRICING_DOMAIN
 BVAL_EFFECTIVE_NUMBER
 BVAL_STANDARD_DEVIATION
 BVAL_TOTAL_EXECUTABLE_BIDS
 BVAL_TOTAL_EXECUTABLE_ASKS
 BVAL_TOTAL_CONTRIBUTOR_BIDS
 BVAL_TOTAL_CONTRIBUTOR_ASKS

BVAL_MTGE

BVAL_DISC_MARGIN_BID
 BVAL_SNAPSHOT
 BVAL_RELEASED_STATE
 PRICING_SOURCE
 BVAL_POOL_SEASONING_ADJUSTMENT
 BVAL_POOL_ODD_LOT_ADJUSTMENT
 BVAL_POOL_LOAN_CHAR_ADJUSTMENT
 BVAL_CMO_BASE_I_SPREAD
 BVAL_CMO_PRICING_STRUCTURE
 BVAL_POOL_TBA_EXECUTABLE_BID_PX
 BVAL_CMO_GNMA_ADJUSTMENT
 BVAL_CMO_COUPON_ADJUSTMENT
 BVAL_CMO_OBSERVATION_COUNT
 BVAL_BREAKEVEN_PRICE
 BVAL_PERCENT_BREAKEVEN_PRICE
 BVAL_WEIGHTED_AVERAGE_BCM_VPR
 BVAL_WEIGHTED_AVERAGE_BCM_CDR
 BVAL_WEIGHTED_AVERAGE_BCM_LSV

BVAL_MUNI

QUOTE_TYP
 BVAL_SNAPSHOT
 BVAL_RELEASED_STATE
 PRICING_SOURCE
 BVAL_EFFECTIVE_NUMBER
 BVAL_STANDARD_DEVIATION

Historical BVAL Prices

Historical pricing for BVAL is available using any of the following methods:

1. Use Program Name: GetHistory
2. Single-Point History: Use Program Name: GetData
3. PX_CLOSE_1D / 2D / ETC

Please note: GetHistory and single point history are not automatically enabled. Please contact your Sales Representative to have this functionality enabled.

GetHistory

GetHistory is a Program Name option that allows clients to get historical BVAL prices for a range of dates.

Clients must select BVAL as the Pricing Source and select a Snapshot. A start date and an end date must be specified. Refer to the GetHistory section of this document to see the available GetHistory Options.

The following is a sample GetHistory request for BVAL prices:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetHistoryRequest>
      <ns:headers>
        <ns:daterange>
          <ns:period>
            <ns:start>2011-01-31</ns:start>
            <ns:end>2011-03-31</ns:end>
          </ns:period>
        </ns:daterange>
        <ns:pricing_source>BVAL:NY4PM</ns:pricing_source>
        <ns:secid>CUSIP</ns:secid>
      </ns:headers>
      <ns:fields>
        <ns:field>PX_BID</ns:field>
        <ns:field>BVAL_BID_SCORE</ns:field>
      </ns:fields>
      <ns:instruments>
        <ns:instrument>
          <ns:id>039483AJ</ns:id>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetHistoryRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

Single-Point History

Single-point history allows clients to retrieve BVAL prices for one date in time. The getdata program name must be used for single-point history requests. Clients must select BVAL as the Pricing Source and then select a snapshot. Clients can add up to four dates; otherwise, they need to use GetHistory.

The following is a sample Single-Point History request:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetDataRequest>
      <ns:headers>
        <ns:closingvalues>true</ns:closingvalues>
        <ns:secid>CUSIP</ns:secid>
        <ns:secmaster>true</ns:secmaster>
        <ns:pricing_source>BVAL:NY4PM</ns:pricing_source>
      </ns:headers>
      <ns:fields>
        <ns:field>BTHIS_CLOSE_ON_PX:20110331</ns:field>
        <ns:field>MHIS_CLOSE_ON_PX:20110331</ns:field>
        <ns:field>AHIS_CLOSE_ON_PX:20110331</ns:field>
        <ns:field>BVAL_BID_YLD_TO_AVG_LIFE:20110331</ns:field>
        <ns:field>BVAL_BEEM:20110331</ns:field>
        <ns:field>BVAL_PREPAY_SPEED:20110331</ns:field>
        <ns:field>BVAL_SPRD_AAA_BENCHMARK:20110331</ns:field>
        <ns:field>BVAL_YLD_AAA_BENCHMARK:20110331</ns:field>
        <ns:field>BVAL_ASSET_CLASS:20110331</ns:field>
        <ns:field>BVAL_SPRD_BENCHMARK_ID:20110331</ns:field>
        <ns:field>BVAL_OAS_CURVE_ID:20110331</ns:field>
        <ns:field>BVAL_SNAPSHOT:20110331</ns:field>
        <ns:field>BVAL_PREPAY_TYP:20110331</ns:field>
        <ns:field>PX_DISC_MID:20110331</ns:field>
        <ns:field>PX_DISC_BID:20110331</ns:field>
        <ns:field>PX_DISC_ASK:20110331</ns:field>
        <ns:field>BVAL_DISC_MARGIN_BID:20110331</ns:field>
        <ns:field>BVAL_SPRD_AAA_BENCHMARK:20110331</ns:field>
        <ns:field>BVAL_YLD_AAA_BENCHMARK:20110331</ns:field>
        <ns:field>BVAL_AVERAGE_LIFE:20110331</ns:field>
        <ns:field>BVAL_BENCHMARK_BID:20110331</ns:field>
        <ns:field>BVAL_BENCHMARK_BID_YLD:20110331</ns:field>
        <ns:field>BVAL_DUR_BID:20110331</ns:field>
        <ns:field>BVAL_I_SPRD_BID:20110331</ns:field>
        <ns:field>BVAL_N_SPRD_BID:20110331</ns:field>
        <ns:field>BVAL_OAS_BID_SPRD:20110331</ns:field>
        <ns:field>BVAL_OAS_VOL_BID:20110331</ns:field>
        <ns:field>BVAL_Z_SPRD_BID:20110331</ns:field>
        <ns:field>BVAL_BID_SCORE:20110331</ns:field>
        <ns:field>BVAL_SPRD_BENCHMARK_BID:20110331</ns:field>
        <ns:field>BVAL_WORKOUT_DT_BID:20110331</ns:field>
        <ns:field>BVAL_WORKOUT_PX_BID:20110331</ns:field>
      </ns:fields>
    </ns:submitGetDataRequest>
  </ns:Body>
</soapenv:Envelope>
```

```

      <ns:instrument>
        <ns:id>122014AE</ns:id>
      </ns:instrument>
      <ns:instrument>
        <ns:id>139859AB</ns:id>
      </ns:instrument>
      <ns:instrument>
        <ns:id>197677AG</ns:id>
      </ns:instrument>
      <ns:instrument>
        <ns:id>459200AM</ns:id>
      </ns:instrument>
      <ns:instrument>
        <ns:id>620076AH</ns:id>
      </ns:instrument>
    </ns:instruments>
  </ns:submitGetDataRequest>
</soapenv:Body>
</soapenv:Envelope>

```

Historical Pricing Fields

Historical pricing fields can be used in a GetData request to get BVAL prices from the previous day(s) from a snapshot of your choosing.

BVAL Bundled Fields

GROUP 1

PR246	PX_YEST_BID	Yesterday Bid Price
PR247	PX_YEST_MID	Yesterday Mid Price
PR248	PX_YEST_ASK	Yesterday Ask Price
PR249	PX_YEST_CLOSE	Yesterday Close Price
PR250	PX_YEST_OPEN	Yesterday Open Price
PR251	PX_YEST_HIGH	Yesterday High Price
PR252	PX_YEST_LOW	Yesterday Low Price
PR380	PX_YEST_DT	Yesterday Price Date
SP075	OAS_SPREAD_YEST	Yesterday's OAS Spread (bp)

GROUP 2

PR375	PRIOR_CLOSE_BID	Closing Bid Price
PR376	PRIOR_CLOSE_MID	Closing Mid/Trade Price
PR377	PRIOR_CLOSE_ASK	Closing Ask Price
PR378	PX_CLOSE_DT	Date Of Last Close
YL179	PRIOR_CLOSE_BID_YLD	Most Recent Closing Bid Yld
YL180	PRIOR_CLOSE_MID_YLD	Most Recent Closing Mid Yld
YL181	PRIOR_CLOSE_ASK_YLD	Most Recent Closing Ask Yld
QT005	QUOTE_PRIOR_MID	Mid Prior Close
QT006	QUOTE_PRIOR_ASK	Ask Prior Close

GROUP 3

PR050	PX_CLOSE_1D	Closing Price 1 Day Ago
PR415	PX_DT_1D	Date 1 Day Ago
YL154	YLD_1D	Closing Yield 1 Day Ago

GROUP 4

PR053	PX_CLOSE_2D	Closing Price 2 Days Ago
PR416	PX_DT_2D	Date 2 Days Ago
YL155	YLD_2D	Closing Yield 2 Days Ago

GROUP 5

PR431	PX_CLOSE_3D	Closing Price 3 Days Ago
YL232	YLD_3D	Closing Yield 3 Days Ago

GROUP 6

PR493	PX_CLOSE_4D	Closing Price 4 Days Ago
YL233	YLD_4D	Closing Yield 4 Days Ago

GROUP 7

PR056	PX_CLOSE_5D	Closing Price 5 Days Ago
PR417	PX_DT_5D	Date 5 Days Ago
YL156	YLD_5D	Closing Yield 5 Days Ago

GROUP 8

PR059	PX_CLOSE_1M	Closing Price 1 Month Ago
PR141	PX_BID_1M	Bid Price 1 Month Ago
PR142	PX_ASK_1M	Ask Price 1 Month Ago
PR418	PX_DT_1M	Date 1 Month Ago
YL157	YLD_1M	Closing Yield 1 Month Ago

BVAL Return Codes

Possible return codes for BVAL-related requests are:

0	Good return. No errors occurred
10	Bloomberg cannot find security as specified.
11	Restricted Security. Must Link to a BLOOMBERG PROFESSIONAL terminal with access
12	Not supported asset
13	Security has matured
14	Security limit has been exceeded
15	System error (contact Technical Support)
16	No processed
990	Crash (contact Technical Support)

Get History

The Get History program retrieves various historical data fields for the specified list of securities within the given date range. The program can retrieve up to approximately 6000 points (6000 prices if a price field is requested) of data (approximately 20 years of daily data, trading 5 days a week). Similar to the Get Data Program, field mnemonics are specified as a sequence of fields within the Fields element. For a list of available data fields, see the History Fields table on the following page.

For equities, by default, the Get History program will adjust volume and price history for splits. Historical prices are not adjusted for cash dividends. Clients have the option of changing these parameters by linking their requests to a Bloomberg terminal in their firm.

Please see the [DATERANGE](#) section for instructions on establishing a date range.

A date range can be specified to Get History through the DATERANGE element in one of the following ways within the DATERANGE element:

1. Provide a PERIOD specified as start date and end date. Dates should be of type xsd date. Eg:

```
<ns:daterange>
  <ns:period>
    <ns:start>2008-07-23</ns:start>
    <ns:end>2008-07-26</ns:end>
  </ns:period>
</ns:daterange>
```

2. Provide DURATION specified as the actual number of days (not business days) from the current day.

```
<ns:daterange>
  <ns:duration>
    <ns:days>3</ns:days>
  </ns:duration>
</ns:daterange>
```

*Note: Both methods of specifying a date range can not be used within the same request.

The gethistory program can be used in conjunction with wildcards (macros). It is thus possible to ask for bid price, ask price and last trade for all stocks that trade on the London stock exchange from 1990 January 1 to today.

Instrument Level Return Codes

Code	Description
0	Good return. No errors occurred.
-14	Field is not recognized or supported by the getHistory program.
-13	Field is not applicable and is only available for certain types of securities (for example, PX_EVAL_LEGACY will only return for securities redenominated in Euro.)
-12	Field is not available.
-10	Start date > End date.
10	Bloomberg cannot find the security as specified.
11	Restricted Security. Must link to a terminal with access.
990	System Error <u>(Contact Technical Support)</u> .
992	Unknown override field.
994	User does not have permission (contractual) to download history for this security.
995	Maximum number of fields exceeded.
996	Buffer Overflow (some data for this security is missing).
998	Security identifier type (e.g. CUSIP) is not recognized.
999	Unloadable security

Applicable Get History Request Options

DATERANGE	PORTSECDES	SN
DISPLAY_PRICING_SRC	PRICING_SOURCE	TIME
EXCLUSIVE_PRICING_SRC	PROGRAMFLAG	USERNUMBER
HIST_CRNCY	PROGRAMNAME	VERSION
HIST_PERIOD	PRP	WS
HIST_OPTION	RUNDATE	YELLOWKEY
	SECID	

getHistory Fields

The following table is a list of fields currently available for the “gethistory” program. For a more detailed explanation of the fields, please see the Data Dictionary.

Field Mnemonic	Field Description
12MO_CALL_IMP_VOL	12 Month Call Implied Volatility
12MO_PUT_IMP_VOL	12 Month Put Implied Volatility
18MO_CALL_IMP_VOL	18 Month Call Implied Volatility
18MO_PUT_IMP_VOL	18 Month Put Implied Volatility

24MO_CALL_IMP_VOL	24 Month Call Implied Volatility
24MO_PUT_IMP_VOL	24 Month Put Implied Volatility
3MO_CALL_IMP_VOL	3 Month Call Implied Volatility
3MO_PUT_IMP_VOL	3 Month Put Implied Volatility
6MO_CALL_IMP_VOL	6 Month Call Implied Volatility
6MO_PUT_IMP_VOL	6 Month Put Implied Volatility
ASSET_SWAP_SPD_MID	Mid Asset Swap Spread
BN_SURVEY_AVERAGE	BN Survey Average
BN_SURVEY_HIGH	BN Survey High
BN_SURVEY_LOW	BN Survey Low
BN_SURVEY_MEDIAN	BN Survey Median
BN_SURVEY_NUMBER_OBSERVATIONS	BN Survey Number Of Observations
BN_SURVEY_WEIGHTED_AVG	BN Survey Weighted Average
CALL_IMP_VOL_10D	10 Day Call Implied Volatility
CALL_IMP_VOL_30D	30 Day Call Implied Volatility
CALL_IMP_VOL_60D	60 Day Call Implied Volatility
CHG_NET_1D	Price Change 1 Day Net
CHG_NET_1M	Price Change 1 Month Net
CHG_NET_2D	Price Change 2 Day Net
CHG_NET_5D	Price Change 5 Day Net
CHG_PCT_1D	Price Change 1 Day Percent
CHG_PCT_1M	Price Change 1 Month Percent
CHG_PCT_5D	Price Change 5 Day Percent
CNVX_OAS_BID	Bid OAS Convexity
CUR_MKT_CAP	Current Market Cap
DISC_MRGN_ASK	Ask Discount Margin (Benchmark)
DISC_MRGN_BID	Bid Discount Margin (Benchmark)
DISC_MRGN_MID	Mid Discount Margin (Benchmark)
DUR_ADJ_OAS_BID	Bid OAS Effective Duration
DVD_SH_12M	Dividend Per Share 12 Month (Gross)
DVD_SH_LAST	Dividend Per Share Last Net
EQY_DVD_SH_12M_NET	Dividend Per Share 12 Month (Net)
EQY_DVD_YLD_12M	Dividend 12 Month Yld - Gross
EQY_DVD_YLD_12M_NET	Dividend 12 Month Yld - Net
EQY_DVD_YLD_IND	Dividend Indicated Yld - Gross
EQY_SH_OUT	Current Shares Outstanding
EQY_TURNOVER	Equity Turnover / Traded Value
EQY_WEIGHTED_AVG_PX	VWAP (Vol Weighted Average Price)

FUND_CLASS_ASSETS	Class Assets FUND_NET_ASSET_VAL
	Net Asset Value (NAV)
FUND_TOTAL_ASSETS	Fund Total Assets
FUT_AGGTE_OPEN_INT	Aggregate Open Interest
FUT_AGGTE_VOL	Aggregate Volume of Futures Contracts
FUT_NORM_PX	Normalized Future's Price
FUT_PX	Futures Trade Price
HIST_CALL_IMP_VOL	Hist. Call Implied Volatility
HIST_PUT_IMP_VOL	Hist. Put Implied Volatility
INDX_DIVISOR	Divisor
LAST_DPS_GROSS	Dividend Per Share Last (Gross)
LAST_TRADE_ONLY	The Last Actual Trade
MMKT_7D_YIELD	Money Market 7 Day Yield
MOV_AVG_100D	Moving Avg 100 Day
MOV_AVG_10D	Moving Avg 10 Day
MOV_AVG_120D	Moving Avg 120 Day
MOV_AVG_180D	Moving Avg 180 Day
MOV_AVG_200D	Moving Avg 200 Day
MOV_AVG_20D	Moving Avg 20 Day
MOV_AVG_30D	Moving Avg 30 Day
MOV_AVG_40D	Moving Avg 40 Day
MOV_AVG_50D	Moving Avg 50 Day
MOV_AVG_5D	Moving Avg 5 Day
MOV_AVG_60D	Moving Avg 60 Day
OAS_SPREAD_BID	Bid OAS Spread (bp)
OAS_VOL_BID	Bid OAS Volatility
OFF_ON_EXCH_VOLUME	Off And On Exchange Volume
OPEN_INT	Open Interest
OPEN_INT_TOTAL_CALL	Total Call Open Interest
OPEN_INT_TOTAL_PUT	Total Put Open Interest
PE_RATIO	Price Earnings Ratio (P/E)
PUT_IMP_VOL_10D	10 Day Put Implied Volatility
PUT_IMP_VOL_30D	30 Day Put Implied Volatility
PUT_IMP_VOL_60D	60 Day Put Implied Volatility
PX_ASK	Ask Price PX_ASK_ALL_SESSION Ask Price
All Session PX_ASK_POST_SESSION	Ask Price Post-Session
PX_ASK_PRE_SESSION	Ask Price Pre-Session
PX_AT_TRADE_VOLUME	Intraday AT Trade Vol for London Set Stocks
PX_BID	Bid Price
PX_BID_ALL_SESSION	Bid Price All Session

PX_BID_POST_SESSION	Bid Price Post-Session
PX_BID_PRE_SESSION	Bid Price Pre-Session
PX_CANCELLATION	Cancellation Price
PX_CLOSE_1D	Closing Price 1 Day Ago
PX_DISC_ASK	Ask Discount Dollar Price
PX_DISC_BID	Bid Discount Dollar Price
PX_DISC_MID	Mid Discount Dollar Price
PX_FIXING	Fixing Price PX_HIGH
	High Price
PX_HIGH_ALL_SESSION	High Price All Session
PX_HIGH_ASK	High Ask Price
PX_HIGH_BID	High Bid Price
PX_HIGH_POST_SESSION	High Price Post-Session
PX_HIGH_PRE_SESSION	High Price Pre-Session
PX_LAST	Last Price
PX_LAST_ALL_SESSIONS	Last Price All Sessions
PX_LAST_POST_SESSION	Last Price Post-Session
PX_LAST_PRE_SESSION	Last Price Pre-Session
PX_LONDON_MANUAL_VOLUME	London Manual Trade Volume
PX_LOW	Low Price
PX_LOW_ALL_SESSION	Low Price All Session
PX_LOW_ASK	Low Ask Price
PX_LOW_BID	Low Bid Price
PX_LOW_POST_SESSION	Low Price Post-Session
PX_LOW_PRE_SESSION	Low Price Pre-Session
PX_MID	Mid Price
PX_NASDAQ_CLOSE	NASDAQ Official Closing Price
PX_OFF_EXCH_VOLUME	Off-Exchange Volume
PX_OFFICIAL_AUCTION	Official Auction Price
PX_OFFICIAL_CLOSE	Official Closing Price
PX_OPEN	Open Price
PX_OPEN_POST_SESSION	Open Price Post-Session
PX_OPEN_PRE_SESSION	Open Price Pre-Session
PX_SETTLE	Settlement Price
PX_TO_BOOK_RATIO	Price to Book Ratio
PX_TO_CASH_FLOW	Price/Cash Flow
PX_TO_SALES_RATIO	Price to Sales Ratio
PX_VOLUME	Volume
PX_VOLUME_ALL_SESSION	Volume All Session
PX_VOLUME_POST_SESSION	Volume Post-Session
PX_VOLUME_PRE_SESSION	Volume Pre-Session
QUOTE_PRIOR_BID	Bid Prior Close

RISK_MID	Mid Risk
RSI_14D	RSI 14 Day
RSI_30D	RSI 30 Day
RSI_3D	RSI 3 Day
RSI_9D	RSI 9 Day
SHORT_INT	Short Interest
SHORT_INT_RATIO	Short Interest Ratio
SHORT_SELL_NUM_SHARES	Short Sell Number Of Shares
SHORT_SELL_TURNOVER	Short Sell Turnover
VOLATILITY_10D	Volatility 10 Day
VOLATILITY_120D	Volatility 120 Day
VOLATILITY_150D	Volatility 150 Day
VOLATILITY_180D	Volatility 180 Day
VOLATILITY_200D	Volatility 200 Day
VOLATILITY_20D	Volatility 20 Day
VOLATILITY_260D	Volatility 260 Day
VOLATILITY_30D	Volatility 30 Day
VOLATILITY_360D	Volatility 360 Day
VOLATILITY_60D	Volatility 60 Day
VOLATILITY_90D	Volatility 90 Day
VOLUME_TOTAL_CALL	Total Call Volume
VOLUME_TOTAL_PUT	Total Put Volume
VWAP_NUM_TRADES	VWAP Number of Trades
VWAP_TURNOVER	VWAP (Turnover)
VWAP_VOLUME	VWAP Volume
WRT_OUTSTANDING	Warrants Outstanding
YLD_ANNUAL_ASK	Ask Annual Yield
YLD_ANNUAL_BID	Bid Annual Yield
YLD_ANNUAL_MID	Mid Annual Yield
YLD_BLENDED_ASK	Ask Blended Yield
YLD_BLENDED_BID	Bid Blended Yield
YLD_BLENDED_MID	Mid Blended Yield
YLD_CHG_NET_1D_NO_BP	Yield Change 1 Day Net (No Bp)
YLD_CHG_NET_2D_NO_BP	Yield Change 2 Day Net (No Bp)
YLD_CHG_NET_5D_NO_BP	Yield Change 5 Day Net (no bp)
YLD_CNV_ASK	Ask Yield To Convention
YLD_CNV_BID	Bid Yield To Convention
YLD_CNV_FROM_HIGH	Yield To Worst Convention From High Price
YLD_CNV_FROM_LOW	Yield To Worst Convention From Low Price
YLD_CNV_MID	Mid Yield To Convention
YLD_CNV_OPEN	Open Yield To Worst Convention
YLD_CUR_ASK	Ask Current Yield
YLD_CUR_BID	Bid Current Yield

YLD_CUR_MID	Mid Current Yield
YLD_PFD_STR_ASK	Ask Preferred Strip Yield
YLD_PFD_STR_BID	Bid Preferred Strip Yield
YLD_PFD_STR_MID	Mid Preferred Strip Yield
YLD_SEMI_ANNUAL_ASK	Ask Semi-annual Yield
YLD_SEMI_ANNUAL_BID	Bid Semi-annual Yield
YLD_SEMI_ANNUAL_MID	Mid Semi-annual Yield
YLD_SOV_SPREAD_ASK	Ask Sovereign Spread
YLD_SOV_SPREAD_BID	Bid Sovereign Spread
YLD_SOV_SPREAD_MID	Mid Sovereign Spread
YLD_STR_ASK	Ask Stripped Yield
YLD_STR_BID	Bid Stripped Yield
YLD_STR_MID	Mid Stripped Yield
YLD_YTC_ASK	Ask Yield To Next Call
YLD_YTC_BID	Bid Yield To Next Call
YLD_YTC_MID	Mid Yield To Next Call
YLD_YTM_ASK	Ask Yield To Maturity
YLD_YTM_BID	Bid Yield To Maturity
YLD_YTM_MID	Mid Yield To Maturity

Performance

The amount of data returned by `getHistory` can be very large. In order to keep the XML file sizes manageable, it is recommended that each request contain a limited quantity of securities. As an upper limit, consider a request of 100 securities and 10 fields with a date range of 10 years. Doubling the number of securities or doubling the number of years each result in double the file size. Increasing the number of fields requested by 10 also results in double the file size. Please use these guidelines as scaling parameters to appropriately construct your requests. We highly suggest submitting multiple requests in parallel to retrieve history for a large number of securities and/or years.

submitGetHistoryRequest Request

A valid call to the `submitGetHistoryRequest` operation should include the appropriate header options as defined in the above section, fields, and instruments for which data is desired.

submitGetHistoryRequest Sample Request A sample oneshot request:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetHistoryRequest>
      <ns:headers>
        <ns:daterange>
          <ns:period>
            <ns:start>2009-05-04</ns:start>
            <ns:end>2009-05-08</ns:end>
          </ns:period>
        </ns:daterange>
      </ns:headers>
      <ns:fields>
        <ns:field>PX_ASK</ns:field>
        <ns:field>PX_BID</ns:field>
      </ns:fields>
      <ns:instruments>
        <ns:instrument>
          <ns:id>US912828KN98</ns:id>
          <ns:type>ISIN</ns:type>
        </ns:instrument>
        <ns:instrument>
          <ns:id>INTC US</ns:id>
          <ns:yellowkey>Equity</ns:yellowkey>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetHistoryRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

submitGetHistoryRequest Response

The response of the `submitGetHistoryRequest` operation of the Per Security web service will return a `statusCode`, a `statusDescription`, a `requestId`, and a `responseId`. The `responseId` must be included in a subsequent call to the `retrieveGetHistoryResponse` operation to retrieve the requested data. The `requestId` uniquely identifies a web service request. This id should be provided to Bloomberg for any support related issues.

submitGetHistoryRequest Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:submitGetHistoryResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>76004fd7-b7c9-443b-9255-4a3f464f0af6</dlws:requestId>
      <dlws:responseId>1309531195-1081414001</dlws:responseId>
    </dlws:submitGetHistoryResponse>
  </env:Body>
</env:Envelope>
```

retrieveGetHistory Request

The `retrieveGetHistoryResponse` request takes a `responseId` that identifies a previous `submitGetHistoryRequest` request.

retrieveGetHistoryResponse Sample Request

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:retrieveGetHistoryRequest>
      <ns:responseId>1309531195-1081414001</ns:responseId>
    </ns:retrieveGetHistoryRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

retrieveGetHistoryResponse Response

This section outlines the basic response format for the get history response.

Open Soap Envelope:

```
<env:Envelope
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
```

Open Soap Body: <env:Body>

Open Response: <dlws:retrieveGetHistoryResponse>

Status Code:

```
<dlws:statusCode>
  <dlws:code></dlws:code>
  <dlws:description></dlws:description>
</dlws:statusCode>
```

Headers Section including specified headers: <dlws:headers> </dlws:headers>

Fields Section with specified fields: <dlws:fields> </dlws:fields>

Time the job started running: <dlws:timestarted> </dlws:timestarted>

Data Section with data for each security. Data for each instrument will include the return code, the specified instrument, the date for which data is returned, a sequence of data elements corresponding to the sequence of fields requested:

```
<dlws:instrumentDatas> </dlws:instrumentDatas>
```

Time the job finished running:

```
<dlws:timefinished> </dlws:timefinished>
```

Close of response:

```
</dlws: retrieveGetHistoryResponse>
```

Close of Soap Body: </env:Body>

Close of Soap Envelope: </env:Envelope>

Both the header and field sections are exactly as specified in the request sent by the customer.

retrieveGetHistoryResponse Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
">
  <env:Body>
    <dlws:retrieveGetHistoryResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>653dc2d2-2494-491d-a0d4-91c47d3969e6
</dlws:requestId>
      <dlws:responseId>1309531195-1081414001</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20110701</dlws:rundate>
        <dlws:programflag>oneshot</dlws:programflag>
        <dlws:daterange>
          <dlws:period>
```

```

        <dlws:start>2009-05-04</dlws:start>
        <dlws:end>2009-05-08</dlws:end>
    </dlws:period>
</dlws:daterange>
</dlws:headers>
<dlws:fields>
    <dlws:field>PX_ASK</dlws:field>
    <dlws:field>PX_BID</dlws:field>
</dlws:fields>
<dlws:timestarted>2011-07-01T10:40:14-04:00
</dlws:timestarted>
<dlws:instrumentDatas>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>US912828KN98</dlws:id>
        </dlws:instrument>
        <dlws:date>2009-05-04</dlws:date>
        <dlws:data value="99.296875"/>
        <dlws:data value="99.28125"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>US912828KN98</dlws:id>
        </dlws:instrument>
        <dlws:date>2009-05-05</dlws:date>
        <dlws:data value="99.1875"/>
        <dlws:data value="99.171875"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>US912828KN98</dlws:id>
        </dlws:instrument>
        <dlws:date>2009-05-06</dlws:date>
        <dlws:data value="99.171875"/>
        <dlws:data value="99.15625"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>US912828KN98</dlws:id>
        </dlws:instrument>
        <dlws:date>2009-05-07</dlws:date>
        <dlws:data value="98.609375"/>
        <dlws:data value="98.59375"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>US912828KN98</dlws:id>

```

```

        </dlws:instrument>
        <dlws:date>2009-05-08</dlws:date>
        <dlws:data value="98.765625"/>
        <dlws:data value="98.75"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>INTC US</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:date>2009-05-04</dlws:date>
        <dlws:data value="16.65"/>
        <dlws:data value="16.63"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>INTC US</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:date>2009-05-05</dlws:date>
        <dlws:data value="16.16"/>
        <dlws:data value="16.15"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>INTC US</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:date>2009-05-06</dlws:date>
        <dlws:data value="16.13"/>
        <dlws:data value="16.12"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>INTC US</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:date>2009-05-07</dlws:date>
        <dlws:data value="15.77"/>
        <dlws:data value="15.72"/>
    </dlws:instrumentData>
    <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
            <dlws:id>INTC US</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:date>2009-05-08</dlws:date>

```



```
        <dlws:data value="15.32"/>
        <dlws:data value="15.3"/>
      </dlws:instrumentData>
    </dlws:instrumentDatas>
    <dlws:timefinished>2011-07-01T10:40:14-04:00
  </dlws:timefinished>
</dlws:retrieveGetHistoryResponse>
</env:Body>
</env:Envelope>
```

Getquotes

This program returns every last sale (price level at which trades were executed) time stamped with date, hour, minute and second. Bloomberg currently supports a maximum of 3 trading days of tick data in the getquotes program, provided the security has been priced for that amount of time. Bloomberg keeps a maximum of 240 trading days of available tick data, provided the security has been priced for that amount of time. There is a limit of 20 million individual ticks. When this limit is reached, the response will truncate at the previous full record and will display return code 606 (indicating tick limit exceeded).

The getquotes program ignores any fields specified between the keywords `<ns:fields></ns:fields>`. Note that the first data point for the getquotes program is the most recent tick, followed by older ticks.

Please see the DATERANGE and DATETIMERANGE sections for instructions on establishing a date and time range. Many data points can potentially be returned for each date. The getquotes program can be used in conjunction with wildcards.

Instrument Level Return Codes

Code	Description
0	Good return. No errors occurred.
10	Bloomberg cannot find the security as specified.
11	Restricted Security. Must link to a BLOOMBERG PROFESSIONAL TM terminal with access
600	Error retrieving tick data.
601	There are no ticks available for this security on the date range requested.
602	Security not found in tick database.
603	Error retrieving tick data.
604	Invalid dates specified.
605	Permission denied.
606	Tick limit has been exceeded.
990	System Error (Contact Technical Support).
994	Permission denied (Contact DL Sales Rep)
995	Maximum number of fields exceeded
996	Buffer Overflow (some data for this security is missing).
998	Security identifier type (e.g. CUSIP) is not recognized.
999	System error (Contact Technical Support)

Applicable Get Quotes Request Options

DATERANGE	PROGRAMNAME	TICKOUTPUTTZ
DATETIMERANGE	PRP	TIME
DISPLAYQRMDATE	RUNDATE	USERNUMBER
PORTSECD	SECID	VERSION
PRICING_SOURCE	SN	WS
PROGRAMFLAG	TICKEXCHLENGTH	YELLOWKEY
	TICKLOCALTZ	

Performance

The amount of data returned by `getquotes` can be very large. The number of quotes in a single day for a heavily traded security can reach up to 100,000. In order to keep the XML file sizes manageable, we have limited the number of quotes available per request to **500,000**. We highly suggest submitting multiple requests in parallel to retrieve quotes for a large number of securities and/or days.

submitGetQuotesRequest Request

A valid call to the `submitGetQuotesRequest` operation should include the appropriate header options as defined in the above section and instruments for which data is desired.

submitGetQuotesRequest Sample Request A sample oneshot request:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetQuotesRequest>
      <ns:headers>
        <ns:daterange>
          <ns:period>
            <ns:start>2011-06-20</ns:start>
            <ns:end>2011-06-20</ns:end>
          </ns:period>
        </ns:daterange>
      </ns:headers>
      <ns:instruments>
        <ns:instrument>
          <ns:id>EDPR PL</ns:id>
          <ns:yellowkey>Equity</ns:yellowkey>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetQuotesRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

submitGetQuotesRequest Response

The response of the `submitGetQuotesRequest` operation of the Per Security web service will return a status code, a status description, a `requestId`, and a `responseId`. The `responseId` must be included in a subsequent call to the `retrieveGetQuotesResponse` operation to retrieve the requested data. The `requestId` uniquely identifies a web service request. This id should be provided to Bloomberg for any support related issues.

submitGetQuotesRequest Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:submitGetQuotesResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>2dd7b8a8-1e1f-439a-bdbb-8ab81b93ea25</dlws:requestId>
      <dlws:responseId>1309532286-1061708124</dlws:responseId>
    </dlws:submitGetQuotesResponse>
  </env:Body>
</env:Envelope>
```

retrieveGetQuotesResponse Request

The `retrieveGetQuotesResponse` request takes a `responseId` that identifies a previous `submitGetQuotesRequest` request.

retrieveGetQuotesResponse Sample Request

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:retrieveGetQuotesRequest>
      <ns:responseId>1309532286-1061708124</ns:responseId>
    </ns:retrieveGetQuotesRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

retrieveGetQuotesResponse Response

This section outlines the basic response format for the get quotes response.

Open Soap Envelope:

```
<env:Envelope
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
```

Open Soap Body: <env:Body>

Open Response: <dlws:retrieveGetQuotesResponse>

Status Code:

```
<dlws:statusCode>
  <dlws:code></dlws:code>
  <dlws:description></dlws:description>
</dlws:statusCode>
```

Headers Section including specified headers: <dlws:headers> </dlws:headers>

Time the job started running: <dlws:timestarted> </dlws:timestarted>

Data Section with data for each security. Data for each instrument will include the return code, the specified instrument, the pricing source, and the quote data.

```
<dlws:instrumentDatas> </dlws:instrumentDatas>
```

Quotes will be encapsulated within <dlws:quotes></dlws:quotes>

A single quote will be represented using attributes:

```
<dlws:quote condCode="FT" dateTime="2010-03-08T19:21:46-05:00"
exCode="P" price="67.55" volume="250"/>
```

The dateTime specified in the quote is a fully validated date with time zone adjustments incorporated.

Time the job finished running: <dlws:timefinished> </dlws:timefinished>

Close of response:

```
</dlws: retrieveGetQuotesResponse>
```

Close of Soap Body: </env:Body>

Close of Soap Envelope: </env:Envelope>

Both the header and field sections are exactly as specified in the request sent by the customer.

retrieveGetQuotesResponse Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
">
```

```
  <env:Body>
    <dlws:retrieveGetQuotesResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>6bb40138-9253-4ae5-bf04-
27b1f52e10b8</dlws:requestId>
      <dlws:responseId>1309532286-1061708124</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20110701</dlws:rundate>
        <dlws:programflag>oneshot</dlws:programflag>
        <dlws:daterange>
          <dlws:period>
            <dlws:start>2011-06-20</dlws:start>
            <dlws:end>2011-06-20</dlws:end>
          </dlws:period>
        </dlws:daterange>
      </dlws:headers>
      <dlws:timestarted>2011-07-01T10:58:24-
04:00</dlws:timestarted>
      <dlws:instrumentDatas>
        <dlws:instrumentData>
          <dlws:instrument>
            <dlws:id>EDPR PL</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
          </dlws:instrument>
          <dlws:pcs>PL</dlws:pcs>
          <dlws:quotes>
            <dlws:quote dateTime="2011-06-20T11:35:00-04:00"
price="4.498" volume="977" exCode="L"
condCode="CA"/>
            <dlws:quote dateTime="2011-06-20T11:35:00-04:00"
price="4.498" volume="2913" exCode="L"
condCode="CA"/>
            <dlws:quote dateTime="2011-06-20T11:35:00-04:00"
price="4.498" volume="3972" exCode="L"
condCode="CA"/>
```

--- quotes removed for brevity ---

```
            <dlws:quote dateTime="2011-06-20T03:23:09-04:00"
price="4.576" volume="1774" exCode="L"
condCode="T"/>
            <dlws:quote dateTime="2011-06-20T03:23:00-04:00"
price="4.576" volume="1773" exCode="L"
condCode="T"/>
```

```
        </dlws:quotes>
        <dlws:code>0</dlws:code>
        </dlws:instrumentData>
    </dlws:instrumentDatas>
    <dlws:timefinished>2011-07-01T10:58:24-04:00
    </dlws:timefinished>
    </dlws:retrieveGetQuotesResponse>
</env:Body>
</env:Envelope>
```

Get Allquotes

This program is similar to the getquotes program except that in addition to returning every last sale (price level at which trades were executed), matching ask and bid prices are returned, time stamped with date, hour, minute and second. Bloomberg keeps a maximum of 240 trading days of available tick data, provided the security has been priced for that amount of time. There is a limit of 20 million individual ticks. When this limit is reached, the response will truncate at the previous full record and will display return code 606 (indicating tick limit exceeded).

For London equities, mid prices are also returned. The program is available for all security types that Bloomberg has tick data for.

To receive NASDAQ Market Maker codes, clients must link their data license to a BLOOMBERG PROFESSIONAL™ service with Nasdaq Level II subscription. In addition, certain exchanges mandate that a client must be subscribed to real-time pricing for the given exchange in order to download bid and ask prices; an example is the New York Stock Exchange. Please reference the section on linking to a Bloomberg terminal. For the format on trades, please see the getquotes program.

Please see the DATERANGE and DATETIMERANGE sections for instructions on establishing a date and time range. Many data points can potentially be returned for each date. The getallquotes program can be used in conjunction with wildcards.

Instrument Level Return Codes

Code	Description
0	Good return. No errors occurred.
10	Bloomberg cannot find the security as specified.
11	Restricted Security. Must link to a BLOOMBERG PROFESSIONAL™ terminal with access
600	Error retrieving tick data.
601	There are no ticks available for this security on the date range requested.
602	Security not found in tick database.
603	Error retrieving tick data.
604	Invalid dates specified.
605	Permission denied.
606	Tick limit has been exceeded.
990	System Error <u>(Contact Technical Support)</u> .
994	Permission denied
995	Maximum number of fields exceeded.
996	Buffer Overflow (some data for this security is missing).
998	Security identifier type (e.g. CUSIP) is not recognized.
999	System Error <u>(Contact Technical Support)</u>

Applicable Getallquotes Request Options

DATERANGE	PROGRAMNAME	TICKOUTPUTTZ
DATETIMERANGE	PRP	TIME
DISPLAYQRMDATE	RUNDATE	USERNUMBER
PORTSECDES	SECID	VERSION
PRICING_SOURCE	SN	WS
PROGRAMFLAG	TICKEXCHLENGTH	YELLOWKEY
	TICKLOCALTZ	

Performance

The amount of data returned by getallquotes can be very large. The number of quotes in a single day for a heavily traded security can reach up to 200,000. In order to keep the XML file sizes manageable, we have limited the number of quotes available per request to **500,000**. We highly suggest submitting multiple requests in parallel to retrieve quotes for a large number of securities and/or days.

submitGetAllQuotesRequest Request

A valid call to the `submitGetAllQuotesRequest` operation should include the appropriate header options as defined in the above section and instruments for which data is desired.

submitGetAllQuotesRequest Sample Request A sample oneshot request:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetAllQuotesRequest>
      <ns:headers>
        <ns:daterange>
          <ns:period>
            <ns:start>2011-06-20</ns:start>
            <ns:end>2011-06-20</ns:end>
          </ns:period>
        </ns:daterange>
      </ns:headers>
    </ns:submitGetAllQuotesRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

```

    <ns:instruments>
      <ns:instrument>
        <ns:id>EDPR PL</ns:id>
        <ns:yellowkey>Equity</ns:yellowkey>
      </ns:instrument>
    </ns:instruments>
  </ns:submitGetAllQuotesRequest>
</soapenv:Body>
</soapenv:Envelope>

```

submitGetAllQuotesRequest Response

The response of the `submitGetAllQuotesRequest` operation of the Per Security web service will return a status code, a status description, a `requestId`, and a `responseId`. The `responseId` must be included in a subsequent call to the `retrieveGetAllQuotesResponse` operation to retrieve the requested data. The `requestId` uniquely identifies a web service request. This id should be provided to Bloomberg for any support related issues.

submitGetAllQuotesRequest Sample Response

```

<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:submitGetAllQuotesResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>b51fc619-1f7f-4ee1-8a7c-2f4d7aae6c1e</dlws:requestId>
      <dlws:responseId>1309534330-1081080667</dlws:responseId>
    </dlws:submitGetAllQuotesResponse>
  </env:Body>
</env:Envelope>

```

retrieveGetAllQuotesResponse Request

The `retrieveGetAllQuotesResponse` request takes a `responseId` that identifies a previous `submitGetAllQuotesRequest` request.

retrieveGetAllQuotesResponse Sample Request

```

<soapenv:Envelope
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">

```

```

<soapenv:Header/>
<soapenv:Body>
  <ns:retrieveGetAllQuotesRequest>
    <ns:responseId>1309534330-1081080667</ns:responseId>
  </ns:retrieveGetAllQuotesRequest>
</soapenv:Body>
</soapenv:Envelope>

```

retrieveGetAllQuotesResponse Response

This section outlines the basic response format for the get quotes response.

Open Soap Envelope:

```

<env:Envelope
xmlns:dlws="http://services.bloomberq.com/datalicense/dlws/ ps/20071001"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">

```

Open Soap Body: <env:Body>

Open Response: <dlws:retrieveGetAllQuotesResponse>

Status Code:

```

<dlws:statusCode>
  <dlws:code></dlws:code>
  <dlws:description></dlws:description>
</dlws:statusCode>

```

Headers Section including specified headers: <dlws:headers> </dlws:headers>

Time the job started running: <dlws:timestarted> </dlws:timestarted>

Data Section with data for each security. Data for each instrument will include the return code, the specified instrument, the pricing source, and the quote data.

```

<dlws:instrumentDatas> </dlws:instrumentDatas>

```

Quotes will be encapsulated within <dlws:quotes></dlws:quotes>

A trade will be represented as:

```

<dlws:quote condCode="CC" dateTime="2010-03-08T20:04:04-05:00">
<dlws:matchedQuote exCode="N" price="67.24" type="T"/>
</dlws:quote>

```

A matched bid/ask will be represented as:

```

<dlws:quote dateTime="2010-03-08T20:00:06-05:00">
  <dlws:matchedQuote exCode="P" price="66.01" type="B" volume="200"/>
  <dlws:matchedQuote exCode="P" price="68.47" type="A"
    volume="300"/>
</dlws:quote>

```

The dateTime specified in the quote is a fully validated date with time zone adjustments incorporated.

Time the job finished running: <dlws:timefinished> </dlws:timefinished>

Close of response:

</dlws: retrieveGetAllQuotesResponse>

Close of Soap Body: </env:Body>

Close of Soap Envelope: </env:Envelope>

retrieveGetQuotesResponse Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:retrieveGetAllQuotesResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>bef24a1b-0d3b-4fae-9816-
50e5d635c6a7</dlws:requestId>
      <dlws:responseId>1309534330-1081080667</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20110701</dlws:rundate>
        <dlws:programflag>oneshot</dlws:programflag>
        <dlws:daterange>
          <dlws:period>
            <dlws:start>2011-06-20</dlws:start>
            <dlws:end>2011-06-20</dlws:end>
          </dlws:period>
        </dlws:daterange>
      </dlws:headers>
      <dlws:timestarted>2011-07-01T11:32:28-04:00</dlws:timestarted>
      <dlws:instrumentDatas>
        <dlws:instrumentData>
          <dlws:instrument>
            <dlws:id>EDPR PL</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
          </dlws:instrument>
          <dlws:pcs>PL</dlws:pcs>
          <dlws:quotes>
            <dlws:quote dateTime="2011-06-20T11:39:12-04:00">
              <dlws:matchedQuote type="B" price="4.498" exCode="L"
volume="5458"/>
              <dlws:matchedQuote type="A" price="4.509" exCode="L"
```

```

        volume="3499"/>
    </dlws:quote>
    <dlws:quote dateTime="2011-06-20T11:39:12-04:00">
        <dlws:matchedQuote type="B" price="4.498" exCode="L"
            volume="5458"/>
        <dlws:matchedQuote type="A" price="4.50" exCode="L"
            volume="9872"/>
    </dlws:quote>
        --- quotes removed for brevity ---

    <dlws:quote dateTime="2011-06-20T01:25:44-04:00">
        <dlws:matchedQuote type="B" price="4.52"
            exCode="L" volume="1500"/>
        <dlws:matchedQuote type="A" price="4.576"
            exCode="L" volume="1846"/>
    </dlws:quote>
</dlws:quotes>
<dlws:code>0</dlws:code>
</dlws:instrumentData>
</dlws:instrumentDatas>
<dlws:timefinished>2011-07-01T11:32:30-04:00
</dlws:timefinished>
</dlws:retrieveGetAllQuotesResponse>
</env:Body>
</env:Envelope>

```

Get Company

The Get Company program retrieves company/entity level data, such as industry classification, country of risk, and country of domicile, for a specified list of securities. For a full list of available fields, please go to the documentation tab on the web portal. Similar to the Get Data Program, field mnemonics are specified as a sequence of fields within the Fields element. Fields can be set explicitly or can be requested via Field Set macros (see below).

This program requires the inclusion of header option **CREDITRISK set to **true**. It also requires that **ID_BB_COMPANY** be included within the fields list. If **ID_BB_COMPANY** is not included, an error report will be generated and no data will be returned.**

Instrument Level Return Codes

Code	Description
0	Good return. No errors occurred.
10	Bloomberg cannot find the security as specified.
11	Security found, but no associated company.
12	Bloomberg cannot find the security and the identifier syntax/format is incorrect
988	System Error on security level
990	System Error (Contact Technical Support).
994	Permission denied (Contact DL Sales Rep)
996	Buffer Overflow (some data for this security is missing).
998	Security identifier type (e.g. CUSIP) is not recognized.
999	Unloadable security

Applicable Get Company Request Options

CREDITRISK	SN	USERNUMBER
PORTSECDES	SPECIALCHAR	VERSION
RUNDATE	TIME	WS
SECID		YELLOWKEY

Field Set Macro

Get Company has a new option, the **fieldset** macro, which offers the ability to include all fields available in the Credit Risk Back Office module without explicitly listing each field individually. It is possible to request fields in addition to those included in the macro by setting the **<ns:fields>** section.

The Field Set Macro is specified in the fieldset section, as follows.

```
<ns:fieldset>
  <ns:fieldmacro>macroName1</ns:fieldmacro>
  <ns:date>optionalDate</ns:date>
</ns:fieldset>
```

<ns:fieldmacro>	Macro name . corresponds to Credit Risk BackOffice
<ns:date>	Optional. This represents the effective date of when the field set was released into production. This field is of type xs:Date , and is specified as YYYY-MM-DD. Setting this field to a specific date will prevent future releases of field sets from impacting existing requests and responses. Default is the current date if not specified.

The following **Field Macros** are currently available:

BO_CREDIT_RISK_COMPANY	fields included in credit_risk.out
BO_CREDIT_RISK_FITCH	fields included in credit_risk_fitch.out
BO_CREDIT_RISK_MOODY	fields included in credit_risk_moody.out
BO_CREDIT_RISK_RATINGS1	fields included in credit_risk_ratings1.out
BO_CREDIT_RISK_RATINGS2	fields included in credit_risk_ratings2.out
BO_CREDIT_RISK_SP	fields included in credit_risk_sp.out

The list of fields can be found under the documentation tab on the web portal.

submitGetCompanyRequest Request

A valid call to the **submitGetCompanyRequest** operation should include the appropriate header options as defined in the above section, fields, and instruments for which data is desired.

submitGetCompanyRequest Sample Request A sample oneshot request:

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetCompanyRequest>
      <ns:headers>
        <ns:creditrisk>true</ns:creditrisk>
      </ns:headers>
      <ns:fields>
        <ns:field>ID_BB_COMPANY</ns:field>
        <ns:field>CNTRY_OF_RISK</ns:field>
        <ns:field>IS_ULT_PARENT</ns:field>
      </ns:fields>
    </ns:submitGetCompanyRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

```

</ns:fields>
<ns:instruments>
  <ns:instrument>
    <ns:id>IBM US</ns:id>
    <ns:yellowkey>Equity</ns:yellowkey>
  </ns:instrument>
</ns:instruments>
</ns:submitGetCompanyRequest>
</soapenv:Body>
</soapenv:Envelope>

```

submitGetCompanyRequest Response

The response of the `submitGetCompanyRequest` operation of the Per Security web service will return a `statusCode`, a `statusDescription`, a `requestId`, and a `responseId`. The `responseId` must be included in a subsequent call to the `retrieveGetCompanyResponse` operation to retrieve the requested data. The `requestId` uniquely identifies a web service request. This id should be provided to Bloomberg for any support related issues.

submitGetCompanyRequest Sample Response

```

<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:submitGetCompanyResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>683bddb5-27ed-4cff-baf3-edfe0a7e42f5</dlws:requestId>
      <dlws:responseId>1309541602-105598165</dlws:responseId>
    </dlws:submitGetCompanyResponse>
  </env:Body>
</env:Envelope>

```

retrieveGetCompanyResponse Request

The `retrieveGetCompanyResponse` request takes a `responseId` that identifies a previous `submitGetCompanyRequest` request.

retrieveGetCompanyResponse Sample Request

```

<soapenv:Envelope
  xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>

```



```

    <ns:retrieveGetCompanyRequest>
      <ns:responseId>1309541602-105598165</ns:responseId>
    </ns:retrieveGetCompanyRequest>
  </soapenv:Body>
</soapenv:Envelope>

```

retrieveGetCompanyResponse Response

This section outlines the basic response format for the get company response.

Open Soap Envelope:

```

<env:Envelope
  xmlns:dlws="http://services.bloombergl.com/datalicense/dlws/ ps/20071001"
  xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">

```

Open Soap Body: <env:Body>

Open Response: <dlws:retrieveGetCompanyResponse>

Status Code:

```

<dlws:statusCode>
  <dlws:code></dlws:code>
  <dlws:description></dlws:description>
</dlws:statusCode>

```

Headers Section including specified headers: <dlws:headers>
</dlws:headers>

Fields Section with specified fields: <dlws:fields>
</dlws:fields>

Time the job started running: <dlws:timestarted> </dlws:timestarted>

Data Section with data for each security. Data for each instrument will include the return code, the specified instrument, the date for which data is returned, a sequence of data elements corresponding to the sequence of fields requested:

```

<dlws:instrumentDatas> </dlws:instrumentDatas>

```

Time the job finished running: <dlws:timefinished> </dlws:timefinished>

Close of response:

```

</dlws: retrieveGetCompanyResponse>

```

Close of Soap Body: </env:Body>

Close of Soap Envelope: </env:Envelope>

Both the header and field sections are exactly as specified in the request sent by the customer.

retrieveGetCompanyResponse Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
">
  <env:Body>
    <dlws:retrieveGetCompanyResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>8a78aadf-0621-4bc2-9a47-8c4787e3361c
</dlws:requestId>
      <dlws:responseId>1309541602-105598165</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20110701</dlws:rundate>
        <dlws:programflag>oneshot</dlws:programflag>
        <dlws:creditrisk>true</dlws:creditrisk>
      </dlws:headers>
      <dlws:fields>
        <dlws:field>ID_BB_COMPANY</dlws:field>
        <dlws:field>CNTRY_OF_RISK</dlws:field>
        <dlws:field>IS_ULT_PARENT</dlws:field>
      </dlws:fields>
      <dlws:timestarted>2011-07-01T13:33:45-04:00
</dlws:timestarted>
      <dlws:instrumentDatas>
        <dlws:instrumentData>
          <dlws:code>0</dlws:code>
          <dlws:instrument>
            <dlws:id>IBM US</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
          </dlws:instrument>
          <dlws:data value="100801"/>
          <dlws:data value="US"/>
          <dlws:data value="Y"/>
        </dlws:instrumentData>
      </dlws:instrumentDatas>
      <dlws:timefinished>2011-07-01T13:33:45-04:00
</dlws:timefinished>
    </dlws:retrieveGetCompanyResponse>
  </env:Body>
</env:Envelope>
```

submitGetCompanyRequest Sample Request, including Field Sets

A sample oneshot request including a Field Set. Please note that it is also possible to request fields in addition to those included in the macro by setting the `<ns:fields>` section.

```

<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetCompanyRequest>
      <ns:headers>
        <ns:creditrisk>true</ns:creditrisk>
      </ns:headers>
      <ns:fieldset>
        <ns:fieldmacro>BO_CREDIT_RISK_COMPANY</ns:fieldmacro>
        <ns:date>2009-05-18</ns:date>
      </ns:fieldset>
      <ns:instruments>
        <ns:instrument>
          <ns:id>IBM US</ns:id>
          <ns:yellowkey>Equity</ns:yellowkey>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetCompanyRequest>
  </soapenv:Body>
</soapenv:Envelope>

```

retrieveGetCompanyResponse Sample Response, including Field Sets

```

<env:Envelope
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:retrieveGetCompanyResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>6bf93bc3-24fe-40b2-8e45-991052392d2d</dlws:requestId>
      <dlws:responseId>1309542140-1061063265</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20110701</dlws:rundate>
        <dlws:programflag>oneshot</dlws:programflag>
        <dlws:creditrisk>true</dlws:creditrisk>
      </dlws:headers>
      <dlws:fields>
        <dlws:field>ID_BB_COMPANY</dlws:field>
        <dlws:field>LONG_COMP_NAME</dlws:field>
        <dlws:field>ID_BB_PARENT_CO</dlws:field>
        <dlws:field>LONG_PARENT_COMP_NAME</dlws:field>
        <dlws:field>INDUSTRY_SECTOR</dlws:field>
        <dlws:field>INDUSTRY_GROUP</dlws:field>
        <dlws:field>INDUSTRY_SUBGROUP</dlws:field>
      </dlws:fields>
    </dlws:retrieveGetCompanyResponse>
  </env:Body>
</env:Envelope>

```

```

<dlws:field>CNTRY_OF_DOMICILE</dlws:field>
<dlws:field>CNTRY_OF_INCORPORATION</dlws:field>
<dlws:field>CNTRY_OF_RISK</dlws:field>
<dlws:field>STATE_OF_DOMICILE</dlws:field>
<dlws:field>STATE_OF_INCORPORATION</dlws:field>
<dlws:field>COMPANY_ADDRESS</dlws:field>
<dlws:field>IS_ULT_PARENT</dlws:field>
<dlws:field>OBLIG_INDUSTRY_SUBGROUP</dlws:field>
<dlws:field>ACQUIRED_BY_PARENT</dlws:field>
<dlws:field>COMPANY_TO_PARENT_RELATIONSHIP
</dlws:field>
<dlws:field>ISSUER_NAME_TYPES</dlws:field>
<dlws:field>ID_BB_ULTIMATE_PARENT_CO</dlws:field>
<dlws:field>LONG_ULT_PARENT_COMP_NAME</dlws:field>
<dlws:field>COMPANY_CORP_TICKER</dlws:field>
<dlws:field>ULT_PARENT_CNTRY_OF_RISK</dlws:field>
<dlws:field>ULT_PARENT_TICKER_EXCHANGE</dlws:field>
<dlws:field>ULT_PARENT_CNTRY_INCORPORATION
</dlws:field>
<dlws:field>ULT_PARENT_CNTRY_DOMICILE</dlws:field>
<dlws:field>INDUSTRY_SUBGROUP_NUM</dlws:field>
<dlws:field>COMPANY_LEGAL_NAME</dlws:field>
</dlws:fields>
<dlws:timestarted>2011-07-01T13:42:33-04:00
</dlws:timestarted>
<dlws:instrumentDatas>
  <dlws:instrumentData>
    <dlws:code>0</dlws:code>
    <dlws:instrument>
      <dlws:id>IBM US</dlws:id>
      <dlws:yellowkey>Equity</dlws:yellowkey>
    </dlws:instrument>
    <dlws:data value="100801"/>
    <dlws:data value="International Business
Machines Corp"/>
    <dlws:data value=""/>
    <dlws:data value=""/>
    <dlws:data value="Technology"/>
    <dlws:data value="Computers"/>
    <dlws:data value="Computer Services"/>
    <dlws:data value="US"/>
    <dlws:data value="US"/>
    <dlws:data value="US"/>
    <dlws:data value="NY"/>
    <dlws:data value="NY"/>
    <dlws:data isArray="true" rows="6">
      <dlws:bulkarray columns="1">
        <dlws:data value="One New Orchard Road"
type="Character"/>
      </dlws:bulkarray>
      <dlws:bulkarray columns="1">
        <dlws:data value="" type="Character"/>

```

```

        </dlws:bulkarray>
        <dlws:bulkarray columns="1">
            <dlws:data value="Armonk"
                type="Character"/>
        </dlws:bulkarray>
        <dlws:bulkarray columns="1">
            <dlws:data value="NY" type="Character"/>
        </dlws:bulkarray>
        <dlws:bulkarray columns="1">
            <dlws:data value="10504-1722"
                type="Character"/>
        </dlws:bulkarray>
        <dlws:bulkarray columns="1">
            <dlws:data value="United States"
                type="Character"/>
        </dlws:bulkarray>
    </dlws:data>
    <dlws:data value="Y"/>
    <dlws:data value="Computer Services"/>
    <dlws:data value="N"/>
    <dlws:data value=""/>
    <dlws:data value="Company,Tenant"/>
    <dlws:data value="100801"/>
    <dlws:data value="International Business
Machines Corp"/>
    <dlws:data value="IBM"/>
    <dlws:data value="US"/>
    <dlws:data value="IBM US"/>
    <dlws:data value="US"/>
    <dlws:data value="US"/>
    <dlws:data value="251"/>
    <dlws:data value="International Business
Machines Corporation"/>
</dlws:instrumentData>
</dlws:instrumentDatas>
<dlws:timefinished>2011-07-01T13:42:33-04:00
</dlws:timefinished>
</dlws:retrieveGetCompanyResponse>
</env:Body>
</env:Envelope>

```

getActions

For each security in the request, the getactions program will return corporate actions that apply to that security and its issuer. For example, specifying **IBM US Equity** in a getactions request will return actions specific to that common stock (e.g., a cash dividend) as well as actions specific to International Business Machines (e.g., an acquisition). The getactions program can be used in conjunction with wildcards.

By default, Bloomberg matches the securities in the request with corporate actions that were entered into the Bloomberg databases in the 24 hours previous to the start of a request's processing. The **ACTIONS_DATE** header option can be used to match the securities against corporate actions that became effective on the date of the request.

Additional header options for Corporate Actions:

- **ACTIONS** - used to specify action types or action categories. By default, the getactions program will return all applicable corporate actions for the securities listed in the request. However, it is possible to filter on certain corporate actions or categories of corporate actions by using the **ACTIONS** header option. Note: The available categories are CORPORATE_EVENTS, CAPITAL_CHANGE and DISTRIBUTIONS.
 - Corporate actions are divided into three categories: corporate events, capital change and distributions. The Data License Corporate Actions Reference Guide provides a list of all corporate actions that fall under these categories. The guide also provides a list of data items (fields) returned for each action together with definitions, field mnemonics and field types.
- **DATERANGE** - can be used to retrieve actions (based on entry date, effective date, or both) up to a maximum of seven days prior to the request date. A "day" is in a New York time day, midnight to midnight. Additionally, actions that will become effective on a future date can be requested. Specifying a date range which extends past the seven previous days will return actions only within the seven day window. Clients can request corporate actions data for up to one year in the future. **ACTIONS_DATE** will need to be set to effective for future date requests. NOTE: *The output for a future date request will contain only those actions available at the time of the request.* Additional actions may be entered into the Bloomberg Corporate Action database after the output is provided.

For details about the above options, please see the **Header** Section.

Corporate actions are divided into three categories: corporate events, capital change and distributions. The Data License Corporate Actions Reference Guide provides a list of all corporate actions that fall under these categories. The guide also provides a list of data items (fields) returned for each action together with definitions, field mnemonics and field types.

Please go to the the documentation tab on the web portal for the fields returned for each action type.

By default, the getactions program will return all applicable corporate actions for the securities listed. However, it is possible to filter on certain corporate actions or categories of corporate actions by using the ACTIONS header variable (see Header Section). Note: The available categories are CORPORATE_EVENTS, CAPITAL_CHANGE and DISTRIBUTIONS.

Format:

```
<dlws:instrumentData>
  <dlws:code>?</dlws:code>
  <dlws:instrument>
    <dlws:id>?</dlws:id>
    <dlws:yellowkey>?</dlws:yellowkey>
    <dlws:type>?</dlws:type>
  </dlws:instrument>
  <dlws:standardFields>
    <dlws:companyId>?</dlws:companyId>
    <dlws:securityId>?</dlws:securityId>
    <dlws:actionId>?</dlws:actionId>
    <dlws:mnemonic>?</dlws:mnemonic>
    <dlws:flag>?</dlws:flag>
    <dlws:companyName>?</dlws:companyName>
    <dlws:secIdType>?</dlws:secIdType>
    <dlws:secId>?</dlws:secId>
    <dlws:currency>?</dlws:currency>
    <dlws:marketSectorDes>?</dlws:marketSectorDes>
    <dlws:bbUnique>?</dlws:bbUnique>
    <dlws:announceDate>mm/dd/yyyy</dlws:announceDate>
    <dlws:effectiveDate>mm/dd/yyyy</dlws:effectiveDate>
    <dlws:amendDate>mm/dd/yyyy</dlws:amendDate>
  </dlws:standardFields>
    <dlws:data field="?" value="?" />
    <dlws:data field="?" value="?" />
    <dlws:data field="?" value="?" />
    .....
</dlws:instrumentData>
```

Bloomberg Field	Field Description	Field Type (Standard Width)
<dlws:code>? </dlws:code>	Return code	Integer (4)
<dlws:instrument> <dlws:id>?</dlws:id> <dlws:yellowkey>? </dlws:yellowkey> <dlws:type>?</dlws:type> </dlws:instrument>	Security identifier used in the request	Character (32)
<dlws:companyId>? </dlws:companyId>	Number that uniquely identifies a company	Integer (8)

Bloomberg Field	Field Description	Field Type (Standard Width)
<code><dlws:securityId>?</code> <code></dlws:securityId></code>	Number that in combinations with Bloomberg Company ID such as Acquisition this field is set to 0.	Integer (8)
<code><dlws:actionId>?</code> <code></dlws:actionId></code>	A unique action identifier assigned to corporate actions. An update or delete of an action will have the same Action ID as the initial entry of the action. Additionally, acquisitions and divestitures have the same Action ID. These IDs can be seen in the CACT <go> screen of the BLOOMBERG Professional.	Integer (10)
<code><dlws:mnemonic>?</code> <code></dlws:mnemonic></code>	Mnemonic for corporate action	Character (18)
<code><dlws:flag>?</dlws:flag></code>	Status of the action at the moment of the request. Returns N for an action that has been entered and has received no subsequent update, U for an action that has been updated since its entry, and D for a deleted action. NOTE 1: Clients should load actions with the first appearance of an Action ID whether the flag is an N or a U. NOTE 2: If D is returned as a Flag, CP_DELETE_REASON will be provided the only non-standard field for the action. Possible returns are 1 for CANCEL and 2 for MISTAKE. NOTE 3: If an action appears for the first time with a D flag, clients should not load the action.	Character (4)
<code><dlws:companyName>?</code> <code></dlws:companyName></code>	Name of the company	Character (80)
<code><dlws:secIdType></code> <code></dlws:secIdType></code>	Type of security ID. For Bonds: CUSIP, ISIN, BBID (Bloomberg ID), BB_GLOBAL, BB_UNIQUE; For Equities, CUSIP, ISIN, VALOREN, SEDOL, BELGIAN, WPK, SICOVAM, FONDS, BB_BLOGAL, BB_UNIQUE. The system will return the first available identifier type within this hierarchy.	Character (16)
<code><dlws:secId>?</code> <code></dlws:secId></code>	The security ID.	Character (30)
<code><dlws:currency>?</code> <code></dlws:currency></code>	Currency of security (ISO code)	Character (4)

Bloomberg Field	Field Description	Field Type (Standard Width)
<code><dlws:marketSectorDes>?</code> <code></dlws:marketSectorDes></code>	The name of the market sector yellow key on the BLOOMBERG™ Professional Service that the security is located under.	Character (6)
<code><dlws:bbUnique>?</code> <code></dlws:bbUnique></code>	A unique number assigned by Bloomberg to all securities.	Character (30)
<code><dlws:announceDate></code> <code>mm/dd/yyyy</code> <code></dlws:announceDate></code>	Date when the corporate action is announced.	Date (10)
<code><dlws:effectiveDate></code> <code>mm/dd/yyyy</code> <code></dlws:effectiveDate></code>	Date when the corporate action becomes effective. The field will return a value of "N.A." for the following actions when they are in "To Be Announced" status (CP_INDICATOR=T): DVD_CASH DVD_STOCK STOCK_SPLT SPIN_RIGHTS_OFFER	Date (10)
<code><dlws:amendDate></code> <code>mm/dd/yyyy</code> <code></dlws:amendDate></code>	Date when the corporate action was updated. Valid only when <Flag> is "U", otherwise it will be "N.A."	Date (10)
<code><dlws:data field="#1" value="#1"/></code> <code><dlws:data field="#2" value="#2"/></code> <code><dlws:data field="#N" value="#N"/></code>	Mnemonic identifying data elements #1 ... #N	Varies by action

Return Codes:

The following return codes are currently defined:

- 0 Good return. No errors occurred.
- 10 Bloomberg cannot find the security as specified.
- 11 Restricted Security. Must link to a BLOOMBERG PROFESSIONAL™ terminal with access
- 300 No corporate actions were found for given security.
- 400 Corporate actions are not applicable for requested security (e.g., CMO)
- 990 System Error (Contact Technical Support)
- 994 Permission denied.
- 995 Maximum number of fields exceeded.
- 996 Buffer Overflow (some data for this security is missing).
- 998 Security identifier type (e.g., CUSIP) is not recognized.
- 999 Unloadable security

Applicable getactions header options

ACTIONS	PROGRAMNAME	TIME
ACTIONS_DATE	PRP	USERNUMBER
DATERANGE	RUNDATE	VERSION
PORTSECDES	SECID	WS
PROGRAMNAME	SN	YELLOWKEY

submitGetActionRequest Request

A valid call to the `submitGetActionsRequest` operation should include the appropriate header options as defined in the above section and instruments for which data is desired.

submitGetActionsRequest Sample Request

A sample oneshot request:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetActionsRequest>
      <ns:headers>
        <ns:actions>
          <!--Looking for Tiker Changes on the specified
          securities-->
          <ns:action>CHG_TKR</ns:action>
        </ns:actions>
        <!--Returning actions based on BOTH entry and effective
        dates-->
        <ns:actions_date>both</ns:actions_date>
        <ns:daterange>
          <ns:period>
            <ns:start>2011-07-15</ns:start>
            <ns:end>2011-07-25</ns:end>
          </ns:period>
        </ns:daterange>
      </ns:headers>
      <ns:instruments>
        <!--Three equities and one unknown security-->
        <!--The two below securities had actions within this date
        range-->
        <!--A return code of 300 indcates there is no corporate
        action for this security-->
        <ns:instrument>
          <ns:id>3928 HK</ns:id>
          <ns:yellowkey>Equity</ns:yellowkey>
        </ns:instrument>
        <ns:instrument>
```

```

        <ns:id>SECT US</ns:id>
        <ns:yellowkey>Equity</ns:yellowkey>
    </ns:instrument>
    <ns:instrument>
        <ns:id>IBM</ns:id>
        <ns:yellowkey>Equity</ns:yellowkey>
    </ns:instrument>
    <!--A return code of 10 indicates that Bloomberg did not
    recognize the security-->
    <ns:instrument>
        <ns:id>FIRMABC</ns:id>
        <ns:yellowkey>Equity</ns:yellowkey>
    </ns:instrument>
</ns:instruments>
</ns:submitGetActionsRequest>
</soapenv:Body>
</soapenv:Envelope>

```

submitGetActionsRequest Response

The response of the `submitGetActionsRequest` operation of the Per Security web service will return a `status code`, a `status description`, a `requestId`, and a `responseId`. The `responseId` must be included in a subsequent call to the `retrieveGetActionsResponse` operation to retrieve the requested data. The `requestId` uniquely identifies a web service request. This id should be provided to Bloomberg for any support related issues.

submitGetActionsRequest Sample Response

```

<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071
001">
    <env:Body>
        <dlws:submitGetActionsResponse>
            <dlws:statusCode>
                <dlws:code>0</dlws:code>
                <dlws:description>Success</dlws:description>
            </dlws:statusCode>
            <dlws:requestId>ef4ec027-bec3-4ea1-82ba-
3415daff9df0</dlws:requestId>
            <dlws:responseId>1309543918-1061250575</dlws:responseId>
        </dlws:submitGetActionsResponse>
    </env:Body>
</env:Envelope>

```

retrieveGetActionsResponse Request

The `retrieveGetActionsResponse` request takes a `responseId` that identifies a previous `submitGetActionsRequest` request. For recurring requests, a `responseData` can also be provided to retrieve data from previous days. Responses are available for up to five days.

retrieveGetActionsResponse Sample Request

A sample `retrieveGetActionsResponse` request:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:retrieveGetActionsRequest>
      <ns:responseId>1309543918-1061250575</ns:responseId>
    </ns:retrieveGetActionsRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

retrieveGetActionsResponse Sample Response

This section outlines the basic response format for the get actions program.

Open Soap Envelope:

```
<env:Envelope
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
```

Open Soap Body: `<env:Body>`

Open Response: `<dlws:retrieveGetActionsResponse>`

Status Code:

```
<dlws:statusCode>
  <dlws:code></dlws:code>
  <dlws:description></dlws:description>
</dlws:statusCode>
```

Headers Section including specified headers: `<dlws:headers>`
`</dlws:headers>`

Time the job started running: `<dlws:timestarted>`
`</dlws:timestarted>`

Data Section with data for each security: `<dlws:instrument-datas>`
`</dlws:instrument-datas>`

The data for each security will contain: `<dlws:standardFields>`
`</dlws:standardFields>`

Followed by:

`<dlws:data field="name" value="xxx"/>` Which makes use of XML attribute tags

Time the job finished running: `<dlws:timefinished>`
`</dlws:timefinished>`

Close of response: </dlws:retrieveGetActionsResponse>

Close of Soap Body: </env:Body>

Close of Soap Envelope: </env:Envelope>

retrieveGetActionsResponse Sample Response A sample

retrieveGetActionsResponse response:

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
">
```

```
  <env:Body>
    <dlws:retrieveGetActionsResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>b3d73240-5a84-4626-acad-6a659419fe1e
      </dlws:requestId>
      <dlws:responseId>1309543918-1061250575</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20110701</dlws:rundate>
        <dlws:programflag>oneshot</dlws:programflag>
        <dlws:actions>
          <dlws:action>chg_tkr</dlws:action>
        </dlws:actions>
        <dlws:actions_date>both</dlws:actions_date>
        <dlws:daterange>
          <dlws:period>
            <dlws:start>2011-07-15</dlws:start>
            <dlws:end>2011-07-25</dlws:end>
          </dlws:period>
        </dlws:daterange>
      </dlws:headers>
      <dlws:timestarted>2011-07-01T14:12:24-04:00
      </dlws:timestarted>
      <dlws:instrumentDatas>
        <dlws:instrumentData>
          <dlws:code>300</dlws:code>
          <dlws:instrument>
            <dlws:id>3928 HK</dlws:id>
            <dlws:yellowkey>Equity</dlws:yellowkey>
          </dlws:instrument>
          <dlws:standardFields>
            <dlws:companyId>7897155</dlws:companyId>
            <dlws:securityId>1000</dlws:securityId>
          </dlws:standardFields>
        </dlws:instrumentData>
        <dlws:instrumentData>
          <dlws:code>300</dlws:code>
```

```

        <dlws:instrument>
          <dlws:id>SECT US</dlws:id>
          <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:standardFields>
          <dlws:companyId>10758925</dlws:companyId>
          <dlws:securityId>99103</dlws:securityId>
        </dlws:standardFields>
      </dlws:instrumentData>
      <dlws:instrumentData>
        <dlws:code>300</dlws:code>
        <dlws:instrument>
          <dlws:id>IBM</dlws:id>
          <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:standardFields>
          <dlws:companyId>100801</dlws:companyId>
          <dlws:securityId>1000</dlws:securityId>
        </dlws:standardFields>
      </dlws:instrumentData>
      <dlws:instrumentData>
        <dlws:code>10</dlws:code>
        <dlws:instrument>
          <dlws:id>FIRMABC</dlws:id>
          <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:standardFields>
          <dlws:companyId>0</dlws:companyId>
          <dlws:securityId>0</dlws:securityId>
        </dlws:standardFields>
      </dlws:instrumentData>
    </dlws:instrumentDatas>
    <dlws:timefinished>2011-07-01T14:12:27-04:00
    </dlws:timefinished>
  </dlws:retrieveGetActionsResponse>
</env:Body>
</env:Envelope>

```

Corporate actions are divided into three categories: Corporate Events, Capital Change, and Distributions. A list of data items (fields) returned for each action together with a definition, a field mnemonic, and a field type can be obtained in the documentation tab on the web portal.

Note: Bloomberg can add new action types as well as new fields to a specific action at any time. Clients will be notified of changes prior to the effective date so that accommodations for code change can be made.

The chart below lists all available actions for each category:

Corporate Action Categories		
Corporate Events	Capital Change	Distributions

Name Change	Spin-off	Cash Dividends
Domicile Change	Bankruptcy Filing	Stock Dividend
State of Incorporation Change	Stock Buyback	Stock Split
Round Lot Change	Equity Offering	
Ticker Symbol Change	Debt Redemption Call	
ID Number Change	Debt Offering/Increase	
Equity Delisting	Debt Offering/New	
Change in Listing	Par Value Change	
Equity Listing	Debt Redemption Sinker	
Currency Quotation Change	Acquisition	
Reconvention	Divestiture	
Redenomination	Installment Call – Partial Pay	
Shareholder Meeting	Reclassification	
	Debt Repurchase	
	Debt Redemption/Put	
	Exchange Offers	
	Variable Principle Redemption	
	Pay in Kind	
	Rights Offering	
	Conversion Price Refix	
	Funged Issues	
	Extendible Issues	

The ACTION_DATE flag can be used with a getactions request to modify whether the response will return actions based on effective date, entry date, or both.

Get Fundamentals

The Get Fundamentals program offers a comprehensive solution for the delivery of company financial data.

Key Features

- Ability to request Original, Preliminary, Restated or Most Recent company financial data
- Request certain periods or all company financials historically
- Option to request adjusted or unadjusted fundamental data affected from stock splits, stock dividends, rights offerings (either rights or entitlements)
- View fundamental for different periodicities i.e. Annual, Semi-annual, Quarterly
- See data for the parent company or the consolidated company
- 20 years of historical fundamental data available
- Override the currency of the fundamental data

FISCAL_YEAR_PERIOD is **mandatory** in the `<ns:fields>` section. If this field is omitted, the request will fail to process.

Program Specific Header Options

ACTIONS	PROGRAMNAME	TIME
ACTIONS_DATE	PRP	USERNUMBER
DATERANGE	RUNDATE	VERSION
PORTSECD	SECID	WS
PROGRAMNAME	SN	YELLOWKEY

Security Level Overrides

Security Level overrides

- The following header options are supported on security level
CONSOLIDATED
CURRENCY
PERIODICITY

Format:

```
<dlws:instrumentDatas>
  <dlws:instrumentData>
    <dlws:code>0</dlws:code>
    <dlws:instrument>
      <dlws:id>JPM US</dlws:id>
      <dlws:yellowkey>Equity</dlws:yellowkey>
    </dlws:instrument>
    <dlws:data value="2010 A"/>
    <dlws:data value="349.149"/>
  </dlws:instrumentData>
</dlws:instrumentDatas>
```


Getfundamentals-specific field note:

- **FISCAL_YEAR_PERIOD** is *mandatory* in the START-OF-FIELDS and END-OF-FIELDS section. If this field is omitted, the request will fail to process.
- Requests may only be made by using identifiers that refer to Equity securities. The correct ticker and exchange code where fundamentals are stored is returned via the data field **EQY_FUND_TICKER**.

Instrument Level Return Codes

Code	Description
0	Good return. No errors occurred.
10	Bloomberg cannot find the security as specified.
11	Restricted Security. Must link to a BLOOMBERG PROFESSIONAL™ terminal with access.
200	FISCAL_YEAR_PERIOD is required in the context of getfundamentals
300	No fundamental data was found for the requested security for the given date range, filing status etc.
988	System Error on security level.
989	Unrecognized pricing source.
990	System Error (<u>Contact Technical Support</u>).
991	Invalid override value (e.g., bad date or number)
992	Unknown override field
993	Maximum number of overrides (20) exceeded
994	Permission denied
995	Maximum number of fields exceeded.
996	Buffer Overflow (some data for this security is missing).
997	General override error (e.g., formatting error)
998	Security identifier type (e.g. CUSIP) is not recognized.
999	Unloadable security

submitGetFundamentalsRequest Request

A valid call to the `submitGetFundamentalsRequest` operation should include the appropriate header options as defined in the above section and instruments for which data is desired.

submitGetFundamentalsRequest Sample Request A sample oneshot request:

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetFundamentalsRequest>
      <ns:headers>
        <ns:daterange>
          <!--Optional:-->
          <ns:period>
            <ns:start>2007-01-01</ns:start>
            <ns:end>2009-06-30</ns:end>
          </ns:period>
        </ns:daterange>
        <ns:secid>TICKER</ns:secid>
      </ns:headers>
      <ns:fields>
        <ns:field>FISCAL_YEAR_PERIOD</ns:field>
        <ns:field>IS_EPS</ns:field>
        <ns:field>SALES_REV_TURN</ns:field>
        <ns:field>EBITDA</ns:field>
      </ns:fields>
      <ns:instruments>
        <ns:instrument>
          <ns:id>IBM US</ns:id>
          <ns:yellowkey>Equity</ns:yellowkey>
        </ns:instrument>
      </ns:instruments>
    </ns:submitGetFundamentalsRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

submitGetFundamentalsRequest Response

The response of the `submitGetFundamentalsRequest` operation of the Per Security web service will return a status code, a status description, a `requestId`, and a `responseId`. The `responseId` must be included in a subsequent call to the `retrieveGetFundamentalsResponse` operation to retrieve the requested data. The `requestId` uniquely identifies a web service request. This id should be provided to Bloomberg for any support related issues.

submitGetFundamentalsRequest Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071
```

```
001">
  <env:Body>
    <dlws:submitGetFundamentalsResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>1fd7e8af-79f4-4213-b5b7-e164a44a5bf8
      </dlws:requestId>
      <dlws:responseId>1309544876-1051469188</dlws:responseId>
    </dlws:submitGetFundamentalsResponse>
  </env:Body>
</env:Envelope>
```

retrieveGetFundamentalsResponse Request

The `retrieveGetFundamentalsResponse` request takes a `responseId` that identifies a previous `submitGetFundamentalsRequest` request. For recurring requests, a `responseDate` can also be provided to retrieve data from previous days. Responses are available for up to five days.

retrieveGetFundamentalsResponse Sample Request

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberq.com/datalicense/dlws/ps/2007100
1">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:retrieveGetFundamentalsRequest>
      <ns:responseId>1309544876-1051469188</ns:responseId>
    </ns:retrieveGetFundamentalsRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

retrieveGetFundamentalsResponse Sample Response

This section outlines the basic response format for the get fundamentals program.

Open Soap Envelope:

```
<env:Envelope
xmlns:dlws="http://services.bloomberq.com/datalicense/dlws/ps/200 71001"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
```

Open Soap Body: <env:Body>

Open Response: <dlws:retrieveGetFundamentalsResponse>

Status Code:

```
<dlws:statusCode>
  <dlws:code></dlws:code>
  <dlws:description></dlws:description>
```

</dlws:statusCode>

Headers Section including specified headers: <dlws:headers> </dlws:headers>

Time the job started running: <dlws:timestarted> </dlws:timestarted>

Data Section with data for each security: <dlws:instrument-datas>
</dlws:instrument-datas>

Time the job finished running: <dlws:timefinished> </dlws:timefinished>

Close of response: </dlws:retrieveGetFundamentalsResponse>

Close of Soap Body: </env:Body>

Close of Soap Envelope: </env:Envelope>

retrieveGetFundamentalsResponse Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001"
">
  <env:Body>
    <dlws:retrieveGetFundamentalsResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>892a1b7f-217b-4627-8881-364118cdf113
      </dlws:requestId>
      <dlws:responseId>1309544876-1051469188</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20110701</dlws:rundate>
        <dlws:programflag>oneshot</dlws:programflag>
        <dlws:daterange>
          <dlws:period>
            <dlws:start>2007-01-01</dlws:start>
            <dlws:end>2009-06-30</dlws:end>
          </dlws:period>
        </dlws:daterange>
        <dlws:secid>TICKER</dlws:secid>
      </dlws:headers>
      <dlws:fields>
        <dlws:field>FISCAL_YEAR_PERIOD</dlws:field>
        <dlws:field>IS_EPS</dlws:field>
        <dlws:field>SALES_REV_TURN</dlws:field>
        <dlws:field>EBITDA</dlws:field>
      </dlws:fields>
      <dlws:timestarted>2011-07-01T14:28:26-04:00
      </dlws:timestarted>
```

```

<dlws:instrumentDatas>
  <dlws:instrumentData>
    <dlws:code>0</dlws:code>
    <dlws:instrument>
      <dlws:id>IBM US</dlws:id>
      <dlws:yellowkey>Equity</dlws:yellowkey>
    </dlws:instrument>
    <dlws:data value="2008 A"/>
    <dlws:data value="9.070"/>
    <dlws:data value="103630.000"/>
    <dlws:data value="21388.000"/>
  </dlws:instrumentData>
  <dlws:instrumentData>
    <dlws:code>0</dlws:code>
    <dlws:instrument>
      <dlws:id>IBM US</dlws:id>
      <dlws:yellowkey>Equity</dlws:yellowkey>
    </dlws:instrument>
    <dlws:data value="2007 A"/>
    <dlws:data value="7.320"/>
    <dlws:data value="98786.000"/>
    <dlws:data value="18717.000"/>
  </dlws:instrumentData>
</dlws:instrumentDatas>
<dlws:timefinished>2011-07-01T14:28:26-04:00
</dlws:timefinished>
</dlws:retrieveGetFundamentalsResponse>
</env:Body>
</env:Envelope>

```

Scheduled Requests

In the case of scheduled requests, data is made available on a daily, weekday, weekend, weekly, or monthly basis (see the **PROGRAMFLAG** option in the Header Section). To retrieve scheduled data, a call can be made to the **retrieveGetDataResponse** at the expected delivery time providing the **responseId** returned from the original call to the **submitGetDataRequest** operation. A **responseDate** can also be provided to ensure data is being returned for the appropriate date.

Multiple scheduled requests can be set up. A different **responseId** will be generated for each unique request. Responses will be generated as scheduled until cancelled by the user.

Two operations are available view **existing scheduled requests** within the Per Security Web Service. **submitScheduledRequest** and **retrieveScheduledResponse**. Sample requests and responses are provided below:

submitScheduledRequest Sample Request

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitScheduledRequest/>
  </soapenv:Body>
</soapenv:Envelope>
```

submitScheduledRequest Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:submitScheduledResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>27e52fb8-8533-4e60-90fc-a5824a7d4411</dlws:requestId>
      <dlws:responseId>1309545070-1061700533</dlws:responseId>
    </dlws:submitScheduledResponse>
  </env:Body>
</env:Envelope>
```

retrieveScheduledResponse Sample Request

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:retrieveScheduledRequest>
      <ns:responseId>1309545070-1061700533</ns:responseId>
    </ns:retrieveScheduledRequest>
  </soapenv:Body>
</soapenv:Envelope>
```

retrieveScheduledResponse Sample Response

```
<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
  <env:Body>
    <dlws:retrieveScheduledResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>900262da-f3a7-49da-9636-e542c3bf67e0</dlws:requestId>
      <dlws:responseId>1309545070-1061700533</dlws:responseId>
      <dlws:fileDatas>
        <dlws:fileData>
          <dlws:headers>
            <dlws:getdataHeaders>
              <dlws:yellowkey>Govt</dlws:yellowkey>
              <dlws:secid>CUSIP</dlws:secid>
              <dlws:time>0400</dlws:time>
              <dlws:derived>true</dlws:derived>
              <dlws:programflag>daily</dlws:programflag>
              <dlws:secmaster>true</dlws:secmaster>
              <dlws:closingvalues>true</dlws:closingvalues>
            </dlws:getdataHeaders>
          </dlws:headers>
          <dlws:fields>
            <dlws:field>ID_CUSIP</dlws:field>
            <dlws:field>SHORT_NAME</dlws:field>
            <dlws:field>MTG_FACTOR</dlws:field>
            <dlws:field>CUR_FACTOR</dlws:field>
            <dlws:field>PX_DIRTY_BID</dlws:field>
            <dlws:field>INT_ACC_DT</dlws:field>
            <dlws:field>CPN</dlws:field>
```

```

        <dlws:field>MATURITY</dlws:field>
        <dlws:field>CRNCY</dlws:field>
        <dlws:field>PX_DISC_BID</dlws:field>
        <dlws:field>PX_BID</dlws:field>
        <dlws:field>PRICING_SOURCE</dlws:field>
    </dlws:fields>
    <dlws:instruments>
        <dlws:instrument>
            <dlws:id>*XS0455124106</dlws:id>
            <dlws:yellowkey>Govt</dlws:yellowkey>
        </dlws:instrument>
        <dlws:instrument>
            <dlws:id>01306ZCB5</dlws:id>
            <dlws:yellowkey>Govt</dlws:yellowkey>
        </dlws:instrument>
    </dlws:instruments>

```

--- quotes removed for brevity ---

```

        <dlws:instrument>
            <dlws:id>TRDI5580</dlws:id>
            <dlws:yellowkey>Index</dlws:yellowkey>
        </dlws:instrument>
    </dlws:instruments>
    <dlws:responseId>bb01</dlws:responseId>
    <dlws:time>01:00:00</dlws:time>
</dlws:fileData>
</dlws:fileDatas>
</dlws:retrieveScheduledResponse>
</env:Body>
</env:Envelope>

```

Canceling Scheduled Requests

It is possible to cancel one or more scheduled jobs through the `submitCancelRequest` operation. The request for this operation must include the `responseId` elements matching those of the original call to the `submitGetDataRequest` operation. The cancellation of the scheduled job can be confirmed using the `retrieveCancelRequest`.

submitCancelRequest Sample Request This request is trying to cancel one scheduled request:

```

<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberg.com/datalicense/dlws/ps/20071001">
    <soapenv:Header/>
    <soapenv:Body>
        <ns:submitCancelRequest>
            <ns:responseId>1309545070-1061700533</ns:responseId>
            <ns:headers>
                <ns:programflag>monthly</ns:programflag>
            </ns:headers>
        </ns:submitCancelRequest>
    </soapenv:Body>
</soapenv:Envelope>

```



```

        </ns:headers>
    </ns:submitCancelRequest>
</soapenv:Body>
</soapenv:Envelope>

```

submitCancelRequest Sample Response

```

<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloombergl.com/datalicense/dlws/ps/20071
001">
    <env:Body>
        <dlws:submitCancelResponse>
            <dlws:statusCode>
                <dlws:code>0</dlws:code>
                <dlws:description>Success</dlws:description>
            </dlws:statusCode>
            <dlws:requestId>dabea7ec-16c6-400b-b176-cb6faa395028
            </dlws:requestId>
            <dlws:responseId>1309545612-106376780</dlws:responseId>
        </dlws:submitCancelResponse>
    </env:Body>
</env:Envelope>

```

retrieveCancelRequest Sample Request

```

<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloombergl.com/datalicense/dlws/ps/2007100
1">
    <soapenv:Header/>
    <soapenv:Body>
        <ns:retrieveCancelRequest>
            <ns:responseId>1309545612-106376780</ns:responseId>
        </ns:retrieveCancelRequest>
    </soapenv:Body>
</soapenv:Envelope>

```

retrieveCancelResponse Sample Response

```

<env:Envelope xmlns:env="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:dlws="http://services.bloombergl.com/datalicense/dlws/ps/20071
001">
    <env:Body>
        <dlws:retrieveCancelResponse>
            <dlws:statusCode>
                <dlws:code>0</dlws:code>
                <dlws:description>Success</dlws:description>
            </dlws:statusCode>
            <dlws:requestId>8e2f652a-170d-47d5-acfa-a1c710f864dc
            </dlws:requestId>
            <dlws:headers>

```

```
        <dlws:programflag>monthly</dlws:programflag>
    </dlws:headers>
    <dlws:cancelResponseStatus>
        <dlws:responseId>1309545070-1061700533
        </dlws:responseId>
        <dlws:cancelStatus>CANCELLED</dlws:cancelStatus>
    </dlws:cancelResponseStatus>
</dlws:retrieveCancelResponse>
</env:Body>
</env:Envelope>
```

Bloomberg Identifiers

ID_BB_GLOBAL - The Bloomberg Global ID can be used as a key field to link or join securities across files. It is a 12 digit alpha-numeric, randomly generated identifier for every security on Bloomberg.

- The BBGID is allocated once the security is added to the system.
- The BBGID is never reused and remains with the security (in perpetuity).
- The BBGID does not change as a result of any corporate action.
- The BBGID will be stored in field ID135 (ID_BB_GLOBAL). In addition for Equity securities (excluding Equity Options), the Composite/Security Level BBGID will be stored in field ID145 (COMPOSITE_ID_BB_GLOBAL).
- The BBGID does not change as a result of any corporate action.

ID_BB_UNIQUE - The Bloomberg Unique ID can be used as a key field to link or join securities across requests. It is a unique identifier for every security and will never be reused. It is an automatically generated number for Fixed Income, Index, Currency, Municipal, Equity and Mortgage securities. An exception to this is Equity Options. The Unique ID is derived from other security-level data for Equity Options.

- ID_BB_UNIQUE is unique to a specific security and not the company. If there is more than one ticker for a company within a country, each will have its own ID_BB_UNIQUE. If there is more than one country listing, each will have its own ID_BB_UNIQUE.
- ID_BB_UNIQUE should be used to track a change to a security's CUSIP identifier, since such an action occurs often, especially for Collateralized Mortgage Obligations.
- The combination of ID_BB_UNIQUE and ID_BB_COMPANY should be used to identify an individual security for Mortgages, Munis, and Indices.

ID_BB_COMPANY - The Bloomberg Company ID can be used to link or join securities of the same company across requests. The combination of ID_BB_COMPANY and ID_BB_SECURITY identifies an individual security for Munis, Equities, Corporates, Governments and Preferreds. The combination of ID_BB_COMPANY and ID_BB_UNIQUE identifies an individual security for Mortgages and Indices.

ID_BB_SECURITY - The Bloomberg Security ID should be used in combination with ID_BB_COMPANY in order to distinguish between securities of the same company for Munis, Equities, Corporates, Governments and Preferreds. ID_BB_SECURITY is a randomly assigned number.

By using these identifiers, the user is able to link all securities with the same issuer or company name whether it is an equity or debt instrument.

bysm.bloomberg.com

Bloomberg is making their robust identifiers, BSYMs (originally developed for the BLOOMBERG PROFESSIONAL service and Bloomberg's enterprise data products) available through Bloomberg's website at no charge to users, with no material impediments on use. Users would be able to use the identifiers for a variety of uses including trading, research, and mapping. Bloomberg will continue to update, build, and administer its identifiers to ensure they continue to serve as effective symbols for the broad uses required in today's financial markets.

This site can be used to locate tickers/identifiers that can be utilized in a Data License requests

Appendix A: Frequently Asked Questions

Question: What is DLWS?

Answer: Data License Web Services (DLWS) provide a programmatic interface to Bloomberg reference data for use in client applications.

Question: Who is DLWS for?

Answer: DLWS is for clients who wish to write applications to obtain Bloomberg reference and pricing data for a reasonably sized basket of securities in a secure manner.

Question: How do I get access to DLWS?

Answer: Contact your Data License Sales Representative when you're ready to sign up for DLWS. An account will be created and you will be issued .x509 certificate required for authentication.

Question: My certificate has been compromised. Can I have it reissued?

Answer: When a certificate has been compromised, contact your Data License Representative immediately. The certificate will be revoked and a new certificate will be issued.

Question: I have received an email informing me my certificate is about to expire. What does this mean and what should I do?

Answer: Certificates signed by Bloomberg are provided to DLWS clients for client authentication. After a certificate has expired, access to all DLWS products will be denied. In an attempt to avoid any service outage for our clients, Bloomberg will notify both the primary and secondary DLWS contacts via email one month before certificate expiration. Upon receiving this email, the client should contact the Data License Installs team to have a new certificate issued.

Question: Can I use my Bloomberg profile and privileging settings for DLWS?

Answer: Customers who are also Bloomberg terminal users have the ability to link their terminal profile and privileging settings to a DLWS account via a Bloomberg UUID. Accounts not linked to a UUID will have the DLWS default profile and privileging settings.

Question: Can I develop commercial applications using DLWS?

Answer: The development of commercial applications using DLWS will be handled on a case by case basis. Speak to your Data License Sales Representative for more information.

Question: The default HTTPS port is closed. How do I use DLWS in this case?

Answer: Contact your network administrator. This port must either be opened or an HTTP proxy must be used to allow DLWS traffic. Sample code is provided for this.

Appendix B: Best Practices

- We strongly recommend that you look at the provided sample code before writing your own applications.
- We encourage you to keep your contact information up to date to receive Data License Notices regarding changes to the product. Changes to the WSDL will affect client code. DL will send out a notice prior to making any changes to the WSDL or product and will support the last three versions of each web service operation.
- Each product has a max basket size. Do not exceed this amount as the additional instruments will not be processed.
- PSWS operations to retrieve responses have an optional responseDate element. This element should always be used with recurring requests to ensure data for the appropriate date is being retrieved.
- When calling operations that support a basket of instruments, it is more efficient to pass an array of instruments than to make multiple requests each having one instrument.
- For operations that support a basket of instruments, every effort is made to process as many requests as possible - even if some requests fail. For example, if a client sends in a request for information about 10 instruments, but one of them has a typo, the service will return 9 valid responses and response indicating an error. Client code should check the status code for each instrument in the basket.
- Always check for soap faults and status codes returned by DLWS and implement logic to handle them.
- DLWS has been tested on several platforms using various languages and toolkits. Our web services are WSI compliant. Any interoperability issues should be reported to Bloomberg.

Appendix C: Sample Index Symbols

Index Symbol	Name
INDU	DOW JONES INDUS. AVG
SPX	S&P 500 INDEX
CCMP	NASDAQ COMPOSITE INDEX
SPTSX	S&P/TSX COMPOSITE INDEX
MEXBOL	MEXICO BOLSA INDEX
IBOV	BRAZIL BOVESPA INDEX
SX5E	ESTX 50 € Pr
UKX	FTSE 100 INDEX
CAC	CAC 40 INDEX
DAX	DAX INDEX
IBEX	IBEX 35 INDEX
FTSEMIB	FTSE MIB INDEX
AEX	AEX-Index
OMX	OMX STOCKHOLM 30 INDEX
SMI	SWISS MARKET INDEX
NKY	NIKKEI 225
HSI	HANG SENG INDEX
AS51	S&P/ASX 200 INDEX

Appendix D: Lookup Tables

Lookup tables are special fields that may be found in the Data Dictionary (fields.csv); please see Data Dictionary Section. All the Lookup tables begin with “LU”. These return all possible values for the fields that they are associated with, for the specified market sector (yellow key). For example, the following request will return all possible values for EXCH_CODE

submitGetDataRequest Sample Request

```
<soapenv:Envelope
xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns="http://services.bloomberq.com/datalicense/dlws/ps/20071_001">
  <soapenv:Header/>
  <soapenv:Body>
    <ns:submitGetDataRequest>
      <ns:headers>
        <ns:programflag>oneshot</ns:programflag>
        <ns:secmaster>true</ns:secmaster> </ns:headers>
      <ns:fields>
        <ns:field>LU _ EXCH _ CODE</ns:field>
      </ns:fields>
      <ns:instruments>
        <ns:instrument>
          <ns:id>IBM US Equity</ns:id> </ns:instrument>
        </ns:instruments>
      </ns:submitGetDataRequest>
    </soapenv:Body>
  </soapenv:Envelope>
```

retrieveGetDataResponse Sample Response

```

<env:Envelope
xmlns:dlws="http://services.bloomberg.com/datalicense/dlws/ps/200 71001"
xmlns:env="http://schemas.xmlsoap.org/soap/envelope/">
  <env:Body>
    <dlws:retrieveGetDataResponse>
      <dlws:statusCode>
        <dlws:code>0</dlws:code>
        <dlws:description>Success</dlws:description>
      </dlws:statusCode>
      <dlws:requestId>be3bb5fd-911e-44f9-b9ba-097e8c691953
</dlws:requestId>
      <dlws:responseId>1268336745-77487173</dlws:responseId>
      <dlws:headers>
        <dlws:rundate>20100311</dlws:rundate>
        <dlws:programflag>oneshot</dlws:programflag>
        <dlws:secmaster>true</dlws:secmaster>
      </dlws:headers>
      <dlws:fields>
        <dlws:field>LU _ EXCH _ CODE</dlws:field>
      </dlws:fields>
      <dlws:timestarted>2010-03-11T14:46:08- 05:00</dlws:timestarted>
      <dlws:instrumentDatas> <dlws:instrumentData>
        <dlws:code>0</dlws:code>
        <dlws:instrument>
          <dlws:id>IBM US</dlws:id>
          <dlws:yellowkey>Equity</dlws:yellowkey>
        </dlws:instrument>
        <dlws:data isArray="true" rows="476">
          <dlws:bulkarray columns="2">
            <dlws:data type="Character" value="Z1"/> <dlws:data
type="Character" value="AIAF"/> </dlws:bulkarray>

            --- exchange list truncated for brevity ---

            <dlws:bulkarray columns="2">
              <dlws:data type="Character" value="ZL"/> <dlws:data
type="Character" value="Zambia"/> </dlws:bulkarray>
              <dlws:bulkarray columns="2">
                <dlws:data type="Character" value="ZH"/>
                <dlws:data type="Character" value="Zimbabwe"/>
              </dlws:bulkarray>
            </dlws:data>
          </dlws:instrumentData>
        </dlws:instrumentDatas> <dlws:timefinished>2010-03-
11T14:46:12- 05:00</dlws:timefinished>
      </dlws:retrieveGetDataResponse>
    </env:Body>
  </env:Envelope>

```


Production Support and Technical Assistance

North America

Support Type	Contact Information
Connection/FTP, File Processing, Software, Encryption	1-212-318-2000
Data Content	Web-based support (see section below)

Europe, Africa, Middle East

Support Type	Contact Information
Connection/FTP, File Processing, Software, Encryption	+44-20-7330-7500
Data Content	Web-based support (see section below)

Mexico, Central & South America

Support Type	Contact Information
Connection/FTP, File Processing, Software, Encryption	+1-212-318-2000
Data Content	Web-based support (see section below)

Australia

Support Type	Contact Information
Connection/FTP, File Processing, Software, Encryption	+612-9777-1243
Data Content	Web-based support (see section below)

Japan

Support Type	Contact Information
Connection/FTP, File Processing, Software, Encryption	+81-3-3201-8989
Data Content	Web-based support (see section below)

Singapore

Support Type	Contact Information
Connection/FTP, File Processing, Software, Encryption	+65-6212-1492
Data Content	Web-based support (see section below)

Hong Kong

Support Type	Contact Information
Connection/FTP, File Processing, Software, Encryption	+852-2977-6130
Data Content	Web-based support (see section below)

Data Support

Clients can contact Data License Customer Support by utilizing our web-based customer service model. **The group that is dedicated to monitoring queries submitted in this manner handles all questions and/or concerns regarding data content only. Questions of a technical nature need to be addressed directly by the above support desks.**

Below are the steps clients will need to take in order to access our Support team.

1. The first step is to create a login for your account. This can be done at:
<http://www.bloomberg.com/datasolutions>
 On this page, click on "Request an additional account"
2. Next, enter the information on the Registration page. User name can be any name of your choice. You must provide a valid Data License account number and/or BVAL account number. (Please note: Bloomberg Login and CUST# are not needed).
3. Once your login request has been approved, you will receive an email providing your username and temporary password. Go to: <http://www.bloomberg.com/datasolutions> and login using this username/password combination. At this point, you will be prompted to create a new password and select an account verification question and answer in the event that you should happen to forget your password in the future.
4. Now you can submit questions. Once you log in, simply click on the "Post Query" tab, select your product and type in your question. You can choose a Topic and/or Language if you choose. You can also attach any files that may be necessary for the Support teams to review in order to effectively research your question(s). If you wish to have any of your colleagues subscribed to your inquiry, simply add their email address in the Subscribe E-mails box at the bottom of the page. Once completed, click on Submit and your inquiry will be sent to one of our Data Solution Customer Support representatives.
5. You can also view any unresolved and/or resolved queries that have been submitted by your account by clicking on the View Queries tab. You can click on the Summary of the question you would like to review. From here, you can view any correspondence between you and the Support team in the Notes section. To add additional comments, you can type in the **"Please add new note"** section. Note: Clients will receive an email any time a Support representative updates your question.
6. You can review resolved queries in the same manner – by clicking on the Summary of the desired query. If you would like to dispute the answer provided or would like further clarification, simply check the **"If you would like to dispute the ticket please check here"** box, add your note, then click Submit.
7. Click on the "My Account" tab to view information pertaining to your login.