OPEN API

Core user guide

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Related Documents

Document Name
Core Developer Guide
Enterprise User Guide
Enterprise Developer Guide
Publishing User Guide
Publishing Developer Guide
Reference Guide — Bloomberg Services and Schemas

Contents

1. About This Guide

The Core API User Guide is designed to help explain the concepts behind the Bloomberg L.P. API. Other guides will detail Bloomberg products and coding to the API.

The Bloomberg API uses an event-driven model. The interface is thread-safe and thread-aware, giving applications the ability to utilize multiple processors efficiently. The Bloomberg API automatically breaks large results into smaller chunks and can provide conflated streaming data to improve bandwidth usage and the latency of applications.

The Bloomberg API supports runtime downloadable schemas for the services it provides and methods to query these schemas at runtime. Thus the Bloomberg API can support additional services without additions to the interface. It also makes writing applications that can adapt to changes in services or entirely new services simple.

2. API Capabilities

2.1. REQUEST/RESPONSE

Data is requested by issuing a Request and is returned in one or more Messages—based on response size. A wide variety of Requests is available from reference to historic. Some of these features are not available to all users on all products.

2.2. SUBSCRIPTION

For most services, a Subscription is created that results in an initial starting value for all fields requested, followed by a stream of updates as the values change until the Subscription is explicitly cancelled (unsubscribed) by the application.

2.3. PUBLISHING

The Bloomberg API allows customer applications to publish page-based, record-based data, as well as any other client-designed data. This data can then be consumed as per any Bloomberg-provided data. Customer data can be published for distribution within the customer's enterprise, contributed to the Bloomberg infrastructure, distributed to others or used for warehousing. This is done via the suitable Bloomberg Platform product. Publishing applications might simply broadcast data or they can be "interactive," responding to feedback from the infrastructure about the currently active Subscriptions from data consumers. Contributions and local Publishing/Subscribing via the Bloomberg Platform are outside the scope of this course and will be discussed in their own course.

3. Symbology

3.1. NOMENCLATURE

Access to data via the API is keyed by a topic. This topic may only contain alpha numerics, non-leading spaces and '***/***'.

All topics begin with "***//***" followed by provider name, a "/", the provider service name, a "/" and the unique Identifier within that particular service.

The API allows setting a default provider name and service name in which case just the unique identifier can be used. For example, "`//blp/mktdata/IBM US Equity`" can be accessed as "`IBM US Equity`" if "`//blp/mktdata`" is set as default.

3.2. SYMBOLOGY FOR BLOOMBERG SECURITIES

Subscriptions and Requests for data can access financial instruments, "securities", by a number of identifiers for the same security. A security must conform to the following syntax:

/<Identifier Type>/<Identifier Value>[@Provider| Pricing Source] <Yellow Key>

<Identifier Type>	One of the following: • ticker • cusip • isin • sedol1/sedol2 • buid • bbgid • bsym • cats • cins • common • sicovam • svm • wpk
<Identifier Value>	Unique identifier value according to <Identifier Type>. For /ticker—this is the Ticker name and is required.
[Provider]	Optional mnemonic that has contributed pricing for the given security preceded by a "@". If <Provider> is not specified, a default value may apply depending on product.
[Pricing Source]	Optional, generally two-character mnemonic for the data source where the security is traded. For example, in the Equities Business, the Data Source is the Exchange.
<Yellow Key>	Text equivalent of one of the Bloomberg yellow function keys: • Govt • Corp • Mtge • M-Mkt • Muni • Pfd • Equity • Comdy • Index • Curncy

The default identifier type for a security is the Bloomberg Ticker format, for example, "IBM US Equity". This would be equivalent to "/ticker/IBM US Equity". Since all data is provided on services, this can be fully expanded to "//blp/mktdata/ticker/IBM US Equity".

☞ *For reference data, it would be "//blp/refdata/ticker/IBM US Equity".*

3.3. AGENCY SECURITY IDENTIFIER USAGE

Several agencies provide identifiers for Bloomberg to disseminate to users who have arrangements with these agencies, many of them may be used to reference a unique security although agency coverage maybe limited. In addition, Bloomberg provides its own unique identifier in addition to its descriptive nomenclature.

ISIN is used to search for International Securities Identification Numbering System (ISIN) codes for corporate and government securities. All data is supplied by GIAM, an organization of numbering agencies that provides a central place for security identification codes. ISIN is an internal function for QC purposes.

The Committee on Uniform Securities Identification Procedures (CUSIP) identifier is assigned by the CUSIP Service Bureau for U.S. and Canadian companies. It consists of nine alpha-numeric characters. The first six characters identify the issuer, the following two identify the issue and the final character is a check digit.

3.3.1. BLOOMBERG OPEN SYMBOLOGY

- UNIQUE, NON-CHANGING identifier that covers all GLOBAL financial instruments— available through Bloomberg's website, with no restrictions on usage and free of charge.
- Based on same identifiers used in Bloomberg Professional service, Enterprise Data Products.
- Identifiers can be used for research, trading and mapping. Bloomberg will continue to update, build and administer the BSYM identifiers to ensure their accuracy and effectiveness.

3.3.2. ISIN

A 12-character identifier assigned by the local national numbering agency. The **I**nternational **S**ecurities **I**dentification **N**umber (ISIN) consists of a two-letter country code, followed by the nine character alphanumerical national security identifier and a check digit (for example: US4592001014).

Equity Options: ISIN is supported for BMF, South Korea and certain European equity option exchanges only.

API: current value available.

3.3.3. CUSIP (ID_CUSIP)

This is the security identification number for the U.S. and Canada. The Committee on Uniform Security Identification Procedures (CUSIP) number consists of nine alpha-numeric characters (for example: 459200101). The first six characters identify the issuer, the following two identify the issue and the final character is a check digit.

Comdty: The Ticker will be returned.

Index: For some indices, the Ticker will be returned.

Loans: Loan CUSIP assigned via the public CUSIP feed only.

3.3.4. SEDOL

Stock **E**xchange **Daily O**fficial **L**ist number (SEDOL) issued by the London Stock Exchange to identify foreign stocks, especially those that are not actively traded in the U.S. and do not have a CUSIP number. SEDOL numbers issued prior to March 8, 2004, have seven digits. SEDOLs issued after this date have seven alphanumeric characters, with the first character always a letter. This SEDOL is associated with the country listed in the field SEDOL1 ISO Country (ID208, SEDOL1_COUNTRY_ISO).

A security can have multiple SEDOL numbers assigned to it. The order in which the various SEDOL fields (ID_SEDOL1, ID_SEDOL2, ID_SEDOL3, ID_SEDOL4 and ID_SEDOL5) are populated does not have any real significance. It simply depends on the order in which they are assigned by the SEDOL Master file.

API: current value available.

3.4. LOADING A SECURITY

Securities are the financial instruments that users can analyze with the use of functions. To analyze a security, users must first load the security and then run a function.

There are several ways to load a security:

1. **Command Line Autocomplete**: In the command line, start typing the issuer name or a keyword for the security a user wants to load, and then select a match from the list that appears.

Figure 1: Command Line Autocomplete

For example, to load BAC 6.625 12/31/49 <Pfd>, enter BANK OF AMERICA in the command line, then select the security that is desired from the list of suggestions.

☞ *Note: To refine the list of security matches to those most relevant to a specific market sector, press the associated <Yellow Key>.*

2. **Security Finder (SECF)**: To search Bloomberg's database of security tickers using basic lookup criteria, enter SECF <GO>. For preferred securities, select the FI tab, then select the Pfd sub-tab.

Figure 2: Preferred Security

3. **(Ticker) <Yellow Key> <GO>**: To directly load a security if the user already knows the Ticker, enter the Ticker in the command line, press the security's yellow market sector key, then press <GO>.

For example, to directly load the HSBC Holdings preferred security with a coupon of 8% and a perpetual maturity, enter HSBC 8 12/31/49 <Pfd>.

***Note**: On Bloomberg, preferred securities with a perpetual maturity use 12/31/49 as a maturity date.*

4. **Additionally**, shortcuts are available to help users quickly load securities.

Shortcuts

In addition to the methods above, to load any type of security on Bloomberg, shortcuts and tips designed specifically to assist in finding securities are available.

Users can use the following shortcuts and tips to find and load securities:

- **(Unique Identifier) <Yellow Key> <GO>**: To directly load a security if a user already knows a unique identifier assigned to the security, such as a Committee on Uniform Security Identification Procedures (CUSIP) number, an International Securities Identification Number (ISIN) or a Bloomberg ID (BBGID), enter the identifier in the command line, press the yellow key, then press <GO>.
- For example, to load the preferred security assigned CUSIP 060505344, enter 060505344 <Pfd> <GO>.
- **ID (Unique Identifier) <GO>**: To directly load a security if a user already knows a unique identifier assigned to the security, such as a Committee on Uniform Security Identification Procedures (CUSIP) number, an International Securities Identification Number (ISIN) or a Bloomberg ID (BBGID), in the command line enter ID followed by the identifier, then press <GO>.
- For example, to load the preferred security assigned CUSIP 060505344, enter ID 060505344 <GO>.

☞ The ID (Unique Identifier) shortcut applies to all fixed income securities with unique identifiers.

3.5. YELLOW KEYS

Bloomberg segregates securities into different sectors identified by shortcut keys on the keyboard. Historically, these keys were yellow on a Bloomberg-provided keyboard, so this nomenclature is sometimes called “Yellow Key”.

Yellow Keys are used to create the Bloomberg Symbology and can be denoted as “Parsekeyable”.

Yellow key is one of the following:

Yellow Key	Shortcut	Description
Govt	*<F2>*	Government Bonds
Corp	*<F3>*	Corporate Bonds, CDS
Mtge	*<F4>*	Mortgages
M-Mkt	*<F5>*	Money market
Muni	*<F6>*	Municipals and state bonds
Pfd	*<F7>*	Preferred securities
Equity	*<F8>*	Equities
Comdty	*<F9>*	Commodities & Futures
Index	*<F10>*	Generic interest rates, Economic indices such as CPI, GDP, Equity, Indices
Curncy	*<F11>*	Foreign currency

☞ *Note that Yellow Keys are case sensitive and must be spelled exactly like the above.*

Defaults to change the default behavior are available on the Terminal for all products, with the exception of B-PIPE applications.

3.5.1. [GOVT] — GOVERNMENT SECURITIES

Bloomberg’s suite of Sovereign <Govt> functionality allows users to analyze government bonds, country-specific debt and related derivatives for a complete picture of the rates environment. User can use Bloomberg's real-time rates monitors and sovereign yield curve analytics to track sovereign spreads, value fixed income securities relative to government bonds and evaluate the course of interest rates. Bloomberg’s Library of Generic Tickers strings together the yield histories of on-the-run and off-the-run bonds, allowing users to analyze yield trends over time.

Perpetual bonds are currently set up with maturity year 2049.

Creating a Parsekeyable for a: 10-Year US Treasury, maturing in May 2024, coupon 2.5, source BVAL

Issuer x Coupon x Maturity x Provider x Yellow Key

T 2.5 05/15/24 @BVAL **Govt**

3.5.1.1. [GOVT] EXAMPLES

Identifier	Terminal	API
Parsekeyable**:**	EK709657@BVAL Govt	//blp/mktdata/ticker/EK709657@BVAL Govt
BBGID:	BBG007Z1JW11@BVAL Govt	//blp/mktdata/bbgid/BBG007Z1JW11@BVAL
ISIN:	US38148LAC00@BVAL Govt	//blp/mktdata/isin/US38148LAC00@BVAL
CUSIP:	38148LAC@BVAL Govt	//blp/mktdata/cusip/38148LAC@BVAL
SEDOL:	BVGCLY7@BVAL Govt	//blp/mktdata/sedol/BVGCLY7@BVAL

3.5.1.2. [GOVT] LOOKUP

Govt TK <GO>	To find government bonds
SRCH <GO>	Bond Search (Not available on limited functionality Terminal)

3.5.1.3. [GOVT] DEFAULTS

FMPS <GO>	Pricing source per bond classes
PDFG <GO>	Default settings for Govt Bonds

3.5.2. [CORP]

Bloomberg's suite of Credit <Corp> functionality provides an integrated fixed income platform to support user's workflow from idea generation to execution. Access to market-moving news, research and economic data combined with real-time market monitors, yield curve analytics and fundamental data provide a broad market perspective that can help shape the user's investment strategies and trigger new trade ideas.

CDS
Issuer x CDS x Currency x Debt Type x Tenor x Pricing Source x Yellow Key

MS	CDS	USD	SR	5Y	CBVAL	Corp
BARC	CDS	EUR	SUB	5Y	CBVAL	Corp

CDS Indices (iTraxx)
Type x (Currency or Grade) x CDSI x Series x Tenor x Pricing Source x Yellow Key

ITRX	EUR	CDSI	GEN	5Y	CBVAL	Corp
CDX	IG	CDSI	S12	5Y	CBVAL	Corp

CDS and CDS indices are covered by both <Corp> or <Curncy> as follows:

CDS/CDS Indices	Description
MS CDS USD SR 5Y CBVAL Corp or CMWD1U5 CBVAL Curncy	Morgan Stanley CDS USD Senior 5-Year, Source CBVAL
ITRX EUR CDSI GEN 5Y Corp or ITRXEBE Curncy	Markit iTraxx Europe Generic 5-year CDS Index

3.5.2.1. [CORP] EXAMPLES

Identifier	Terminal	API
Parsekyable:	EK709657@BVAL Corp	//blp/mktdata/ticker/EK709657@BVAL Corp
BBGID:	BBG007Z1JW11@BVAL Corp	//blp/mktdata/bbgid/BBG007Z1JW11@BVAL
ISIN:	US38148LAC00@BVAL Corp	//blp/mktdata/isin/US38148LAC00@BVAL
CUSIP:	38148LAC@BVAL Corp	//blp/mktdata/cusip/38148LAC@BVAL
SEDOL:	BVGCLY7@BVAL Corp	//blp/mktdata/sedol/BVGCLY7@BVAL

3.5.2.2. [CORP] LOOKUP

The functions SECF <GO> and TK <GO> are frequently used to conduct security lookups.

CORP <GO>	To find corporate bonds
MRKT <GO>	Contributor's page

3.5.2.3. [CORP] DEFAULTS

FMPS <GO>	Pricing source per bond classes
CDSD <GO>	Pricing source for CDS and CDS indices

3.5.3. [MTGE]

Bloomberg's suite of Mortgage <Mtge> functionality provides an integrated Platform to support a user's workflow from idea generation to decision making. Access to market-moving news, research and economic data combined with real-time market monitors and interest rate analytics provide the broad market perspective that can help shape the user's investment strategies and trigger new trade ideas.

The security type that is on the Mtge yellow key is mainly mortgage-backed securities. Within this category are Residential MBS (RMBS), ABS, Commercial MBS (CMBS), CDO, CLO, Pools, Generic and TBAs (to be announced).

☞ *Note that the most of Mortgage Tickers are currently available to Bloomberg users only on B-PIPE, with the data being available through Data License. Mortgage data is available via Server API.*

Asset Class	Identifier Format
ALL	**CUSIP x Yellow Key** 312945LM8 **Mtge**
CMO/ABS	**Issuer x Year – Series x Class x Yellow Key** FNR 2012-3 NP **Mtge**
Pool	**Pool Ticker x Pool Number x Yellow Key** FG A96632 **Mtge**
Generic	**Ticker x Coupon x Age* or Production Year x Yellow Key** FGLMC 3.5 2011 **Mtge**
Age can be specified as Blank (Aggregate), S (Seasoned), N (Non-seasoned), M (Moderately Seasoned)	
TBA	**Ticker x Coupon x MM/YY x Yellow Key** FNCL 2 3/15 **Mtge**

3.5.3.1. [MTGE] EXAMPLES

Identifier	Terminal	API
Parsekyable:	EK709657@BVAL Mtge	//blp/mktdata/ticker/EK709657@BVAL Mtge
BBGID:	BBG007Z1JW11@BVAL Mtge	//blp/mktdata/bbgid/BBG007Z1JW11@BVAL
ISIN:	US38148LAC00@BVAL Mtge	//blp/mktdata/isin/38148LAC@BVAL
CUSIP:	38148LAC@BVAL Mtge	//blp/mktdata/cusip/38148LAC@BVAL
SEDOL:	BVGCLY7@BVAL Mtge	//blp/mktdata/sedol/BVGCLY7@BVAL

3.5.3.2. [MTGE] LOOKUP

Mtge **TK** <GO> —This is a Mortgage Ticker lookup where the user can find a list of Tickers for Pool, Agency CMO, Generic and TBAs.

3.5.3.3. [MTGE] DEFAULTS

MDF <GO>— Mortgage default settings.

3.5.4. [M-MKT] — MONEY MARKET

This is an international market for dealers who trade short-term government and corporate financial instruments like bankers' acceptances, commercial paper, negotiable certificates of deposit or Treasury bills. These instruments are considered the safest and most liquid of investments. This segment of the financial market trades financial instruments with high liquidity and very short maturities. The money market is used by participants as a means for borrowing and lending in the short term—from several days to just under a year.

This covers short-term government and corporate debts such as bankers' acceptance, certificate of deposit, commercial paper, medium-term notes, bank notes, deposit notes, time deposits, short-term loans.

Issuer x Type x Yellow Key

CCEINC CP **M-Mkt**

3.5.4.1. [M-MKT] EXAMPLES

Description	Terminal	API
Coca-Cola Enterprises, Commercial Paper	CCEINC CP M-Mkt	//blp/mktdata/ticker/CCEINC CP M-Mkt
Bank of America, Bank Note	BACNA BN M-Mkt	//blp/mktdata/ticker/BACNA BN M-Mkt
Bank of Western Australia, Term Deposits	RIBKWA TDR M-Mkt	//blp/mktdata/ticker/RIBKWA TDR M-Mkt

3.5.4.2. [M-MKT] LOOKUP

MMPL <GO> — Money Market Security Menu. The function PGM <GO> is also frequently used to look up money market programs.

3.5.4.3. [M-MKT] DEFAULTS

None.

3.5.5. [MUNI]

The <MUNI> yellow key is specifically dedicated to U.S. municipal bonds. Most of the munis are only available to Bloomberg users on B-PIPE; the data is available via Data License. Municipal data is available via Server API.

Muni	Description
969737BS Muni	Williamson County, IL. Build America Bonds-Taxable-Alt rev source B-direct pmt
59259YBZ Muni	MET Transport Auth NY Revenue Build America Bonds
249174MQ Muni	Denver City & Country SCH Dist #1, Taxable-SER C-Build America Bonds Direct Pmt to issuer

8-character CUSIP Number x Yellow Key

969737BS **Muni**

3.5.5.1. [MUNI] EXAMPLES

Identifier	Terminal	API
Parsekyable:	EK709657@BVAL Muni	//blp/mktdata/ticker/EK709657@BVAL Muni
BBGID:	BBG007Z1JW11@BVAL Muni	//blp/mktdata/bbgid/BBG007Z1JW11@BVAL
ISIN:	US38148LAC00@BVAL Muni	//blp/mktdata/isin/US38148LAC00@BVAL
CUSIP:	38148LAC@BVAL Muni	//blp/mktdata/cusip/38148LAC@BVAL
SEDOL:	BVGCLY7@BVAL Muni	//blp/mktdata/sedol/BVGCLY7@BVAL

3.5.5.2. [MUNI] LOOKUP

MSRC <GO> — A Muni Search (not available on limited functionality Terminal). The function SMUN <GO> is also frequently used to conduct security lookups.

3.5.5.3. [MUNI] DEFAULTS

PDFI <GO> —The Municipal Bond system default.

3.5.6. [PFD] — BLOOMBERG'S PREFERREDS PLATFORM

Bloomberg's suite of Preferreds <Pfd> functionality provides an integrated platform to support user's workflow from idea generation to execution. Access to market-moving news, research and economic data combined with real-time market monitors and yield curve analytics provide the broad market perspective that can help shape the user's investment strategies and trigger new trade ideas.

Pfd key covers all Preferred shares issued by a corporation. Please note that some Preferred (also called as Preference) shares are covered by Equity key, depending on the characteristics of the security.

If the user already knows an identifier of Preferred, and if unsure of which yellow key the security belongs to, it is best to use "ID" followed by identifier <GO> to load the security on the screen. If user then runs the FLDS <GO> function, the top left of the screen will display the Ticker with Pfd or Equity.

Preferred Share	Description
MS 6 ⅝ 12/31/49 <PFD>	Morgan Stanley Preferred Share, Perpetual, Coupon 6.625

Issuer x Coupon x Maturity x Provider x Yellow Key

MS 6.625 12/31/49 @EXCH **Pfd**

3.5.6.1. [PFD] EXAMPLES

Identifier	Terminal	API
Parsekyable:	EK709657@BVAL Pfd	//blp/mktdata/ticker/EK709657@BVAL Pfd
BBGID:	BBG007Z1JW11@BVAL Pfd	//blp/mktdata/bbgid/BBG007Z1JW11@BVAL
ISIN:	US38148LAC00@BVAL Pfd	//blp/mktdata/isin/US38148LAC00@BVAL
CUSIP:	38148LAC@BVAL Pfd	//blp/mktdata/cusip/38148LAC@BVAL
SEDOL:	BVGCLY7@BVAL Pfd	//blp/mktdata/sedol/BVGCLY7@BVAL

3.5.6.2. [PFD] LOOKUP

PSCH <GO> — Preferred Security Find (not available on limited functionality Terminal)

The yellow market sector keys on the Bloomberg keyboard represent pathways to rich databases of information organized by market sector. The yellow <Pfd> key allows users to load a preferred security for analysis.

The following topics explain how to find, load and search for <Pfd> market securities.

3.5.6.3. [PFD] DEFAULTS

PDFD <GO> — Preferred Default settings.

3.5.7. [EQUITY]

Instruments covered under the Equity key include stocks (listed and OTC), American Depositary Receipts (ADRs)/Global Depositary Receipts (GDRs), closed-ended funds, Exchange-traded funds, options, warrants, open-ended mutual funds and hedge funds.

Equity	Description
VOD LN Equity	Vodafone Group PLC, listed on London Stock Exchange
IBM UN Equity	International Business Machines Corporation, listed on NYSE
SMSD LI Equity	Samsung Electronics Co., LTD, listed on London International
IWM US Equity	iShares Russell 2000 ETF, US Composite
6758 JT Equity	Sony Corp, listed on Tokyo Stock Exchange

Root Ticker x Exchange Code x Yellow Key

SIE GR **Equity**

Most Equity Bloomberg Ticker symbols are based on short alphabetic codes that reflect the company name. This is followed by an identifier that indicates where the instrument is traded.

In most cases, the Ticker symbol is the same as the code used by the Exchange. For this reason, some Bloomberg Ticker codes are numeric, i.e., Japan, Korea, Tokyo, China and Hong Kong.

In all of those cases, the characters preceding the country code are the Ticker root and the characters after are the Exchange code identifier.

Mutual Funds	Description
PIMTRAI ID Equity	PIMCO Total Return Bond Fund
MERGAAI LX Equity	BlackRock Global Funds — Global Allocation Fund
CFODEYI LN Equity	CF Odey Absolute Return Fund
STGLOBS NO Equity	SKAGEN Global Fund

Root Ticker x Exchange Code x Yellow Key

71311998 JP **Equity**

Mutual and hedge fund Tickers on Bloomberg consist of a proprietary 7-character Ticker root symbol code that, as much as possible, is made up of the first characters of the asset management company's name as well as the fund's name. Asian funds tend to have 8-digit numbers as root symbol code. If there are different share classes, then the share class type is also incorporated within the Ticker root symbol. This is again followed by the Exchange code, which for open-ended funds represents the country code of the country of domicile of the fund.

For example:

FIDSPSA LN Equity — Fidelity Investment Funds ICVC – Special Situations Fund – Accumulation (A) Retail Shares
FIDESSY LN Equity — Fidelity Investment Funds ICVC – Special Situations Fund – Accumulation (Y) Retail Shares
FIDSPWA LN Equity — Fidelity Investment Funds ICVC – Special Situations Fund – Accumulation (W) Retail Shares

Certain U.S. hedge funds' data is protected by SEC under Regulation D. To be able to view or consume its data via Bloomberg, customers would need to be registered as Accredited Investors (investors who are financially sophisticated and have a reduced need for the protection provided by certain government filings).

3.5.7.1. [EQUITY] EXAMPLES

Underlying Equity

Identifier	Terminal	API
Parsekyable:	IBM UN Equity	//blp/mktdata/ticker/IBM UN Equity
BBGID:	BBG000BLNQ16 Equity	//blp/mktdata/bbgid/BBG000BLNQ16
ISIN:	US4592001014 UN Equity	//blp/mktdata/isin/US4592001014 UN
CUSIP:	459200101 UN Equity	//blp/mktdata/cusip/459200101 UN
SEDOL:	2005973 UN Equity	//blp/mktdata/sedol/2005973
BSYM:	N/A	//blp/mktdata/bsym/UN/IBM

3.5.7.2. [EQUITY] LOOKUP

Search by Company Name

An equity instrument can be located on Bloomberg by using its name and the green <HELP> key, e.g., Bayerische Motoren Werke <HELP>; click on the second option 2) Companies and select the company from the list of securities.

Search by Ticker or Another Identifier (e.g., ISIN, SEDOL, CUSIP, etc.) Symbol

An equity instrument can be located on Bloomberg by using its identifiers.

Start typing, e.g., BMW (ticker)/DE0005190003 (ISIN)/5756029 DE (Sedol)/ 519000 (WPK Number) followed by the primary symbol exchange code **Equity** <GO>.

3.5.7.3. [EQUITY] DEFAULTS

PDFE <GO>	Historical convention defaults and quick links to other settings for equity
DPDF <GO>	Dividend and Corporate Action settings

3.5.8. [COMDTY] — COMMODITY

Bloomberg keeps users on top of the ever-changing commodities market with data, analytic functions, news and research. Bloomberg provides data from a wide range of third-party sources as well as proprietary calculations, such as for fair values, and fast-breaking news that moves markets. The package of analytic functions, fast-moving data and news helps users to mold trading, hedging and investment ideas, which they can then ultimately execute on the Bloomberg electronic trading Platform.

Instruments such as "spot" metals, energy (coal, gas power, etc.), agricultural products, freight, weather and any other instruments are considered to be spot commodities. The majority of Tickers are stored under the Index yellow key, but some instruments are stored under Comdty key: **Comdty**

Spot Commodities	Description
GOLDS Comdty	Gold Spot
CMDIBASS Index	Bloomberg Base Metals Spot Price Comdty Index
CMAGTR Index	UBS Bloomberg CMCI Agriculture USD Total Return
IFTD3DBM Index	Imarex TD3 Bal of Month Arabian Gulf to Japan (VLCC) Shipping Rate $/Day

3.5.8.1. [COMDTY] EXAMPLES

Description	Terminal	API
90DAY EURO$ FUTR Dec15	EDZ5 COMB Comdty	//blp/mktdata/ticker/EDZ5 COMB Comdty
S&P 500 FUTURE Dec15	SPZ5 ELEC Index	//blp/mktdata/ticker/SPZ5 ELEC Index
EURO FX CURR FUT Dec15	ECZ5 PIT Curncy	//blp/mktdata/ticker/ECZ5 PIT Curncy

3.5.8.2. [COMDTY] LOOKUP

MRKT <GO>	Find the landing page of contributor
Auto-complete & Help Key	Type in keyword and auto-complete will suggest Tickers

Bloomberg's Commodities Search functionality is broken down into different databases that cover a wide array of items, such as futures contracts, energy assets, storm and weather coverage, and power data, which users can use to search an extensive list of Tickers and assets. After accessing Tickers, they can develop their analysis with related data, charts, research and news, as well as real-time chat rooms with commodities professionals. Sector-specific monitors and analytics help narrow their focus, so they target exactly the data they need.

The main Commodity Markets (CMDTY) menu provides a summary of key Commodities functionality.

Figure 3: Commodity Markets

Users can drill down to identify the functions best suited to their workflow, from monitors and Ticker search engines to the electronic trading menu where they can access the full set of electronic trading capabilities offered by the Bloomberg Professional service. The path at the top of each menu shows them where they are in the overall menu hierarchy.

Figure 4: Commodity Derivatives

3.5.8.3. [COMDTY] DEFAULTS

The function FEPS <GO> is used to set commodity defaults.

3.5.9. [INDEX] — BLOOMBERG INDEXES

Bloomberg's suite of Index <Index> functionality provides access to a library of Bloomberg and third-party indexes and allows users to create their own custom indexes. Bloomberg's Library of Indexes includes equity indexes, fixed income indexes and indexes relating to a wide variety of statistics, including data as diverse as U.S. GDP, the monthly electricity export from Austria to Czech Republic in GWh, monthly kidnappings in Colombia and more. Users can create their own custom indexes representing spreads, baskets of securities and custom data expressions, and then analyze them using Bloomberg's Analytics.

In addition to Bloomberg's suite of Index functionality, Bloomberg offers a fee-based service focused on custom index creation and index licensing in the fixed income, commodity and currency markets. Bloomberg Indexes creates index-linked solutions for ETF and structured product issuers. Users can license an existing index to use as a benchmark for a fund, or they can work with Bloomberg Indexes to create a custom index using their own methodology. Bloomberg calculates the indexes and distributes them for free on the Terminal to all users. For more information about Bloomberg Indexes, contact the assigned Bloomberg representative.

3.5.9.1. [INDEX] EXAMPLES

Description	Terminal	API
S&P 500 Index	SPX Index	//blp/mktdata/ticker/SPX Index
Dow Jones Industrial Average	INDU Index	//blp/mktdata/ticker/INDU Index
Russell 2000 Index	RTY Index	//blp/mktdata/ticker/RTY Index
NASDAQ 100 Stock Index	NDX Index	//blp/mktdata/ticker/NDX Index

3.5.9.2. [INDEX] LOOKUP

The main Indexes menu provides a summary of key Index functionality.

Figure 5: Indexes menu

Users can drill down to identify the functions best-suited to their workflow, from monitoring equity indexes to building their own custom indexes. The path at the top of each menu shows them where they are in the overall menu hierarchy. **Index**

☞ ***Note**: Users can click "Home" to browse Bloomberg's full set of market sector offerings, products, communication tools and Help resources.*

3.5.9.3. [INDEX] DEFAULTS

The function IDEF <GO> is used to set Index defaults.

3.5.10. [CURNCY] — CURRENCY

Bloomberg FX brings users continuous real-time pricing direct from major banks, brokers and liquidity providers worldwide, enabling complete and accurate price discovery. Bloomberg's pricing coverage spans spot and forward markets, deposits and option volatilities for all traded currencies, including NDF and onshore pricing for restricted currency pairs.

Couple pricing with Bloomberg FX Analytics and users have the ability to compare currency performance on dozens of measures to gauge relative value. They can assess trading strategy performance, analyze economic fundamentals and monetary policy and quickly quantify risk and potential exposure. The FX platform also offers historical and real-time derivatives data, idea generation and scenario analysis, market-standard pricing and structuring tools, and risk management analytics. After conducting their research, users can seamlessly access Bloomberg FX trading Platform, FXGO, which allows them to easily trade spot, forwards, NDFs, options or deposits.

The main Currency Markets menu provides a summary of key FX functionality.

Figure 6: Currency Markets

3.5.10.1. [CURNCY] EXAMPLES

Description	Terminal	API
EURUSD Spot Exchange Rate — Price of 1 EUR in USD	EUR BVAL Curncy	//blp/mktdata/ticker/EUR BVAL Curncy
EUSA2 — EUR SWAP ANNUAL 2 YR	EUSA2 BVAL Curncy	//blp/mktdata/ticker/EUSA2 BVAL Curncy
Markit CDX North America Investment-Grade Index	CDXIG524 CBVAL Curncy	//blp/mktdata/ticker/CDXIG524 CBVAL Curncy

3.5.10.2. [CURNCY] LOOKUP

The function FXTF <GO> is used to look up currencies.

3.5.10.3. [CURNCY] DEFAULTS

The functions XDF <GO> and XODF <GO> are used to look up currency defaults.

3.5.11. FUTURES (NOT A KEY)

All Exchange-traded futures. In Bloomberg, futures are spread across multiple yellow keys.

F8 Equity — Single-stock futures
F9 Comdty — Commodity futures, bond futures and interest rate futures
F10 Index — Equity Index futures
F11 Curncy — Currency futures (not FX forwards)

Generics vs. Most-active Tickers

As futures roll over from month to month. Bloomberg offers two types of alias Tickers that keep contracts rolling over without clients' needing to change Tickers.

1. **Most-active Tickers** — These Tickers always end with an A, e.g., CLA COMB **Comdty**. They always represent the most-active contract (pointing to the actual contract Ticker rather than generic). "Active" is normally determined based on the number of open interests (exceptions may apply).

2. **Generics** — These Tickers end with numbers starting from 1 (1st contract month), e.g.,. CL1 COMB Comdty. The Ticker will roll to the next contract upon expiry of current contract. When requesting historical data, generics string together contracts based on the generics' settings and go back in history as long as data is available (in contrast, individual contract Tickers would only have historical data up to its first trading date).

Futures	Description
IBMF=Z5 GR Equity	IBM stock future, expiring in Dec 2015, traded at Eurex
CLZ2 COMB Comdty	WTI Crude oil future, expiring in Dec 2022, Day&Night session, traded at NYMEX
TYM5 PIT Comdty	10yr T-bill future, expiring in Jun 2014, Day session, traded at CBT
VGZ4 Index	Euro Stoxx 50 future, expiring in Dec 2014, traded at Eurex
URU5 Curncy	RUB currency future, expiring Dec 2015, traded at RTS
C A ELEC Comdty	Corn future, Active contract, Night session, traded at CME
NG1 COMB Comdty	Natural Gas future, 1st contract month generic, Day&Night session, traded at COT

3.5.11.1. FUTURE CONTRACT CODE

Future codes indicate expiration month or use special codes to distinguish between similar contracts.

Contract Special Code

Most Active	A
Generic Ticker	Ordinal Month of Contract— 1 for 1st
Equity Ticker	=

Contract Month Code

Jan	**F**	**Jul**	**N**
Feb	G	Aug	Q
Mar	H	Sep	U
Apr	J	Oct	V
May	K	Nov	X
Jun	M	Dec	Z

1. Normal futures
   Root Ticker x Month x Year x Session x Yellow Key
   CL Z 5 COMB **Comdty**
2. Most-Active Ticker
   Root Ticker x A x Session x Yellow Key
   CL A COMB **Comdty**
3. Generic Ticker (1st contract month)
   Root Ticker x 1 x Session x Yellow Key
   CL 1 COMB **Comdty**
4. Equity futures
   Root Ticker x = x Month x Year x Exchange x Yellow Key
   IBMF = Z 5 GR **Equity**

Sessions

Many futures have two trading sessions.
PIT = Day Session and ELEC = Night Session. COMB combines both PIT and ELEC. If users need only one Session, they can designate the Session by replacing COMB with either PIT or ELEC.

☞ *Please note that some futures do not have multiple Sessions, and users will not have to specify the Session in the Ticker code.*

3.5.11.2. FUTURES LOOKUP

CT <GO>	Future lookup function**function**
CTM <GO>	Contract Table Menu by Category of Futures
CEM <GO>	Contract Exchange Menu by Exchanges

To access CT, enter (Ticker symbol) (Exchange code) <Equity> CT <GO>.

For example:

- ADM US <Equity> CT <GO>
- IBM US <Equity> CT <GO>

Option chains using the API:

FUT_CHAIN = BDS(Underlying Ticker, “FUT_CHAIN”)
BPIPE & BPOD chain `//blp/mktlist/chain/bpkbl/XXXXXXXXXXXX;secclass=Future`

3.5.11.3. FUTURES DEFAULTS

CDEF <GO> Futures Default

91) Futures Exchange Session Tab

Set preferences on Sessions that users would like to see for each Exchange by default. In real-time products, however, they can and should always designate the Session in the Ticker in the form of COMB, PIT or ELEC.

93) Generic Rolls Tab

This page controls how generic Tickers roll over contracts. Users would mainly use the “Price” section of the page to set how prices for the generic roll over. Press HELP key on the page and go to “Generic Rollovers” on the right-hand side of the page to see what each option means. B-PIPE follows “Relative to Expiration” if authenticating as Non-BPS user, which will roll to the next contract upon expiry of current contract.

Another important component of this page is “Include serial (monthly) contracts”. By selecting this checkbox, serial (monthly) contracts are included. B-PIPE always includes monthly serial contracts.

Example: Generally, Eurodollar (ED1 COB Comdty) contracts trade quarterly (March, June, September, and December).

However, as the contracts get closer to expiration, CBOT adds four monthly contracts. So, if a user selects this checkbox, instead of just Mar, Jun, Sept and Dec, the Eurodollar includes additional monthly contracts.

Thus, a future chain as of June 2014 would look like this:

EDM4	**Jun14**
EDN4	Jul14
EDQ4	Aug14
EDU4	Sep14
EDV4	Oct14
EDX4	Nov14
EDZ4	Dec14
EDH5	Mar15
EDM5	Jun15
EDU5	Sep15
EDZ5	Dec15
……	

3.5.12. OPTIONS (NOT A KEY)

There are two main types of options. **Exchange-listed options** (options on equity, equity index and futures) and **OTC options** (swaptions, options on bonds, etc.). Listed options will be on Equity, Comdty, Index, and Curncy keys. For OTC options, volatility Tickers are available for swaptions, caps/floors and currency ATM/Butterfly/Risk Reversal vols.

F8 Equity — Equity options
F9 Comdty — Commodity future options, bond future options and interest rate future options
F10 Index — Equity index future options
F11 Curncy — Currency futures, swaptions, caps/floors, FX volatility

Examples and Ticker Construction

Options on Equity and Equity index	**Description**
IBM UO 01/15/16 P200 Equity	IBM Put 200 option, expiring in Jan 2016, Chicago Exchange
VIX US 10/22/14 C14 Index	VIX index Call 14 option, expiring in Nov 2014, Composite Exchange
VOD GR 12/16 C200 Equity	Vodafone Call 200 option, expiring in Dec 2016, Eurex

Root Ticker x Exchange Code x Expiry MM/DD/YY (or Expiry M/Y only) x C or P x Strike Price x Yellow Key

IBM	UO	01/15/16	P	200	**Equity**

Options on Futures	**Description**
SPZ5C 1865 COMB Index	S&P 500 Future Comb session Jun contract Call 1865 option, expiring Dec 2015
ESH5C 1840 Index	S&P 500 Mini Future Sep contract Call 1840 option, expiring Mar 2015
JBU4C 145 PIT Comdty	Japanese Gov Bond future June contract Call 145 option, expiring Sep 2014
EDZ5C 98.75 Comdty	Euro$ Future Dec 2015 contract Call 98.75 option, expiring in Dec 2015

Short Code (2 or 3 letters) x Month x Year x C or P x Strike Price x Session x Yellow Key

SP	Z	5	C	1865	COMB	**Index**

Contract Month Code (Same as Futures)

Month	Code	Month	Code
Jan	F	Jul	N
Feb	G	Aug	Q
Mar	H	Sep	U
Apr	J	Oct	V
May	K	Nov	X
Jun	M	Dec	Z

*Option Tickers are kept up to three years after expiry
*Futures year changes in the Ticker code 11 months after expiry
*ISIN not available, even if listed
*For listed options, only "listed options" are available as Tickers; unlisted option Tickers are not created before they are listed.

Swaption	Description
BPVEF1 CMPL Curncy	GBP Swaption Black vol ATM 6m x 1y
BPSP011 CMPL Curncy	GBP Swaption Spot Premium ATM 1yr x 1yr
BPNE11 CMPL Curncy	GBP Swaption Normal Vol ATM 1Y x 1Y
EUPGF1 CMPL Curncy	EUR Swaption Implied forward swap rate 6m x 1y
BPCPST5 CMPL Curncy	GBP CAP strike 5 Yr
BPIAM5 CMPL Curncy	GBP Caps/Floors ATM 5y
BPI155 CMPL Curncy	GBP Caps/Floors 1.5% 5y
BPCPAM5 CMPL Curncy	GBP CAP premium strike 5 Yr
BPFLST5 CMPL Curncy	GBP Floors strike 5yr
BPFV0105 CMPL Curncy	GBP Floors premium strike 5yr

Swaption Tickers are on the Curncy key
Depending on Premium/Vol, ATM, Strikes, etc., Tickers differ
2-digit Currency codes x Type of Instruments x Term x Pricing Source x Yellow Key
BP VE F 1 CMPL **Curncy**

Volatility Tickers	Description
CL JUL14 25DP VOL BVOL Comdty	CLN4 Comdty Implied vol for 25 Delta
IBM US APR14 95 VOL BVOL Equity	IBM Apr 14 option 95% moneyness vol

Volatility Tickers are available for listed options by Moneyness or Delta.
Volatility Tickers' format will vary depending on the underlying ticker, therefore, it is best to find them from OVDV <GO>.

Currency Options Volatility	Description
GBPUSDV6M BVAL Curncy	**GBP FX option ATM 6M volatility**
GBPUSD25B6M BVAL Curncy	**GBP FX option Butterfly 25D 6M volatility**
GBPUSD10B6M BVAL Curncy	**GBP FX option Risk Reversal 25D 6M volatility**

Currency pair x Type x Tenor x Pricing Source x Yellow Key
GBPUSD V 6M BVAL **Curncy**

Custom Tickers (created by OVME <GO>, OVML <GO>)
IS1892322 Index Deal ID x Index

3.5.12.1. OPTIONS LOOKUP

Underlying Ticker + OMON **<GO>**	Option monitor — to find options for an underlying Ticker
OSCH **<GO>**	Option search by condition *
Underlying Ticker + OMST **<GO>**	Most active options by underlying asset *
MOSO **<GO>**	Most active options by Exchanges *
OVI **<GO>**	Most active options by volume increase *
CTM **<GO>**	Listed spot options (FX, bond, index, non-equity index, weekly options)
CERT **<GO>**	To find listed certificates and warrants *
WSRC **<GO>**	To find warrants by conditions *
Underlying Ticker + WMON **<GO>**	To find warrants for an underlying Ticker *
Underlying Ticker + OVDV **<GO>**	To find volatility Tickers
WVOL **<GO>**	Major currency volatility matrix *
WVI **<GO>**	Volatility indices *

* *Not available on limited functionality Terminal*

How to view an option chain in Excel:

```
OPT_CHAIN                    =BDS(Underlying ticker, "OPT_CHAIN")

CHAIN_TICKERS                =BDS(Underlying ticker, "OPT_TICKERS")

OPTION_TICKER_BY_MONEYNESS   =BDP( "VOD LN Equity",        "OPTION_TICKER_BY_MONEYNESS",
                                   "EXPIRATION_MONTH_NUMBER=1",
                                   "OPTION_TYPE_OVERRIDE=C",
                                   "LEVEL_MONEYNESS_UNDRLY=100.0")
```

How to view an option chain using the API:

```
//blp/mktlist/chain/bpkbl/XXXXXXXXXXXX;secclass=Options
```

3.5.12.2. OPTIONS DEFAULTS

OPDF <GO>	Derivatives settings, users can change estimate dividend source, curve ID for interest rates, etc.
SWDF <GO>	Curve and contributor preferences

3.5.13. PAGES (NOT A KEY)

Pages are normally provided by contributors. A few page formats are available—a user's Subscription will differ depending on the page format.

Digital Page (i.e., GDCO page)

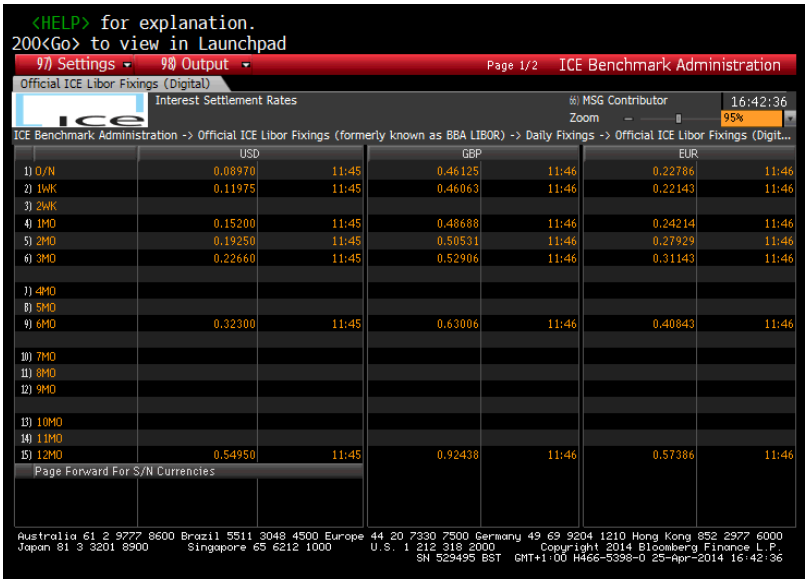

Figure 7: Digital Page

Each data point is tickerized and stores historical data on the Ticker plant. Users can run functions on each Ticker and use the Tickers for API. If a user clicks on the values on the screen, the Ticker code will be listed on the top left of the user's screen. Alternatively, users can use the Pushpin, which is listed at the top right of the GDCO page (green arrow on a "piece of paper" icon) and drag and drop the Pushpin onto the spreadsheet to download all Tickers on the page.

Text Format Data (i.e., GPGX page).

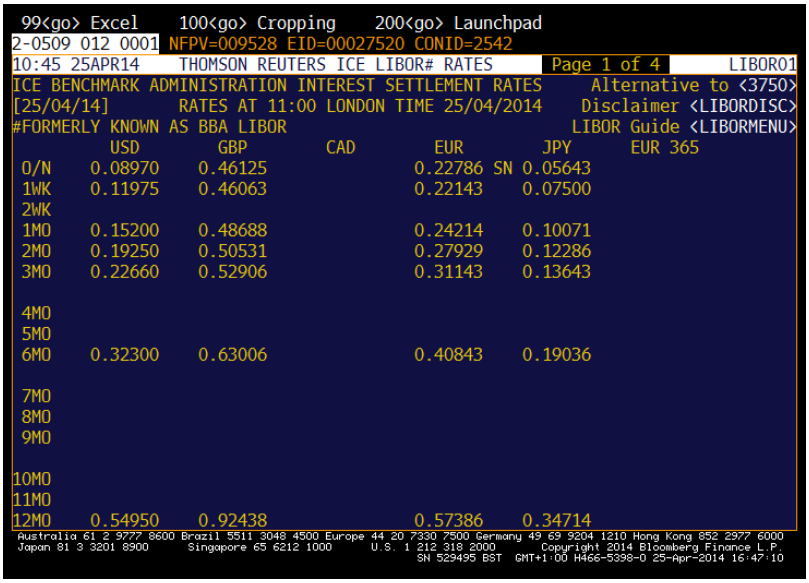

Figure 8: Text Format Data

For a GPGX page, no history is stored, and no Tickers are associated with the page. If users would like to subscribe to the page, they will need the GPGX number, which can be found by pressing the Tab key when on the screen—e.g., GPGX 0509 012 0001 is the page number. The Subscription string would look like: `//blp/pgdata/page/509/12/1`

Users can locate contributor pages from the MRKT <GO> function. Please note that some contributor pages are restricted, and users may not access the page without entitlement. Entitlements are controlled directly by the contributor's administrator , therefore, if a user would like to access a specific page that he or she is not able to view, the user would need to contact the contributor directly. Users can usually find the contact information on the contributor's page itself or hit the <HELP> key on the page, then click on Contact Information on Help page.

3.6. FIELDS

Requests and Subscriptions require the user to specify which fields from the Bloomberg data model to receive. Fields are specified using the field mnemonic. Similar fields are available for Subscriptions and requests; for Subscriptions, the bid price would be “BID”, for a Request, “PX_BID”.

3.6.1. LOOKING UP BLOOMBERG FIELDS USING FLDS <GO>

Information about available fields can be retrieved programmatically using the Bloomberg API Field Information Service (“`//blp/apiflds`”) or FLDS <GO> on the Bloomberg Professional service.

Please complete the following quick tutorial using FLDS <GO>:

```
The first screen when {FLDS <GO>} is run will display FIELD SEARCH.

FLDS <GO> provides the ability to query the API Data Dictionary as well as view static
values for each queried field.

Load “IBM US Equity” on the quote line of the Terminal and execute {FLDS <GO>}.

The security will be displayed in the top-left field, the field below will be empty.
Enter the query string (e.g., enter “pricing fields” and press {<GO>}. The result set is
displayed in the table below that field.

Some of the field mnemonics are displayed in white text. This denotes a real-time
subscription field as opposed to the orange-text fields, which are static-request fields.

Clicking on one of the rows will display that field’s information as well as modify the
values for any override field and allow you to view the values of all related/reactive
fields.

Select “Mid Price (decimal)”. Along the top is displayed that field’s CALCRT number
(PR998), its equivalent mnemonic (PX_DEC_MID) and its description.

Below that section will be displayed: a list of all of the overrides and reactive and
relative (also used with) fields. In this area “what-if” scenarios can be performed by
changing the value of any override field(s) and seeing how such change impacts the value
of the reactive field, which, in this case, is PX_DEC_MID.
```

3.7. PARAMETER OVERRIDES

Some Request and Subscription fields allow parameters that override default behavior; these are commonly referred to as “overrides” in the Bloomberg Terminal and the API, and noted as “Ovrd Value” in FLSD <GO>.

Overrides can be used to change the basis on which Bloomberg calculates a derived field. This can be used to perform “what if?” analyses. For example, override the bid price of a bond (PX_BID) and request the bid yield to maturity (YLD_YTM_BID) based on the value supplied for the bid price.

Retrieve information about which fields react when a particular field is overridden programmatically by using the Bloomberg API Field Information Service, “`//blp/apiflds`” or use FLDS <GO> on the Bloomberg Professional service.

A maximum of 20 overrides can be specified in a single Request. The overrides are specified in the Request as an array of name/value pairs.

3.8. HISTORICAL DATES

Actual Dates

These represent explicit dates such as “10/12/2011” or “20111012”, both of whichresolve to October, 12, 2011.

Relative Dates

The syntax of the Relative Date is: [A][+/-nCU], where

[A] is the Anchor Date and [+/-nCU] is the Offset from the Anchor Date. Both parts are optional and the date is the result of applying the specified Offset to the specified Anchor. If the Anchor Date is omitted, then the current date is used. If the Offset is omitted, then no offset is applied to the Anchor. An empty string is equal to the current date.

In the Offset, +/- defines the direction of the Offset, n is a non-negative integer multiplier, C is a Calendar Type, and U is a Period Unit. The integer multiplier in the Offset is optional.

Anchor

The Anchor can be specified in any of the following formats:

- <YYYY><MM><DD> format. The valid range is from 19000101 to 99991231.
- The symbol ED is only valid in a start date and represents the supplied end date Anchor.
- The symbol SD is only valid in an end date and represents the supplied start date Anchor.
- <C><U><n><YYYY>, where:
  - <C> represents the calendar type, which can be either C (calendar) or F (fiscal).
  - <U> represents the period unit, which can be either Q (quarterly), S (semiannually) or Y (yearly).
  - <n> represents a valid integer value for the specified period unit. So, for Quarterly, <n> must be 1, 2, 3, or 4. For Semi-annually, <n> must be either 1 or 2. For Yearly, <n> must be 1 or it may be omitted.
  - <YYYY> represents the year. The valid range is from 1900 to 9999.

Offset

An Offset must always be in the form <+|->[n]<C><U>, where:

- The first character is always a plus (+) or minus (-) sign to indicate the direction of the Offset from the Anchor date.
- The second character (<n>) is an optional multiplier. It must be between 0 and 32767; if it is not specified, the default is 0.
- The third character, <C> is either A (actual), C (calendar) or F (fiscal). For Actual or Calendar types, the fourth character, <U>, is either D (daily), W (weekly), M (monthly), Q (quarterly), S (semiannually) or Y (yearly). For Fiscal calendar types, the fourth character, <U>, is Q (quarterly), S (semiannually) or Y (yearly).

If the Actual Calendar type is used, the Offset is applied precisely with no “rounding”. For example, +2AW from a Tuesday will result in the Tuesday two weeks hence. +1AM from the 16th will result in the 16th of the following month. If using the Calendar or Fiscal calendar types, the resulting date is rounded down to the last active date of the previous period. For example, +1CW from a Tuesday will result in the Friday of the same week, +1CM from the 16th will result in the last active day of that month, +CM from the 16th will result in the last active day of the previous month.

4. Subscription Options

Subscriptions are ideal for data that changes frequently and/or at unpredictable intervals. Instead of repeatedly polling for the current value, the application gets the latest value as soon as it is available without wasting network bandwidth or system and application resources.

Subscriptions on some services result in an initial starting value for all fields requested followed by a stream of updates as the values change until the Subscription is explicitly cancelled by the application.

Each Subscription is for a single security. Subscriptions pass Identity objects to get permissioned data. While this is not required for Desktop API, this is recommended to allow later usage of that code with other products with minimal changes.

Subscriptions can have multiple fields that are specified in a string, for example:

```
"LAST_PRICE, ASK, BID"
```

Subscriptions can have options:

```
interval = x
```

This will intervalize the Subscription stream by conflating the data to x number of seconds between updates. The value of x may be specified as a decimal, for example, .5 will update every half second

```
delayed
```

This forces a real-time stream to use the delayed steam if available. For Desktop API and Server API, a delayed stream will be used if not permissioned for the real-time stream.

☞ *For additional information, refer to the "Core Developer Guide".*

5. Schema

The Bloomberg API is service-based. Requests, Subscriptions and other functionality are provided by services. The services provided by Bloomberg L.P. are all in the form "`//blp/<servicename>`".

The role of the schema is to define the format of Requests to a service, as well as the Events returned from that service. Within a service, one or more Event types may exist, each having its own schema. The schema will also define the shape of the data. For instance, market data is flat, while reference data is nested (like XML).

Each schema element has the following properties and attributes:

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

A schema describes the structure of a service. It provides a list of fields and sub-Messages with their attributes. It defines the Request details and overrides and may describe the structure of responses.

Data Distribution Management schemas allow client-defined schemas for use in local Publishing and contributions.

Every service has its own schema:

- //blp/refdata — Service for reference data
- //blp/mktdata — Service for market data
- //blp/mktbar — Service for market bar data

☞ *For additional information, refer to the "Reference Services and Schemas Guide".*

6. Bloomberg API Products

6.1. B-PIPE

B-PIPE leverages the Bloomberg distribution platform and managed entitlements system. It allows clients to connect applications providing solutions that work with client proprietary and third-party applications. B-PIPE also provides tools such as EMRS (**E**ntitlements **M**anagement and **R**eporting **S**ystem) to permission data to entitled users only. Client applications will use the Bloomberg entitlements system to ensure distribution of data only to appropriately entitled users.

B-PIPE is a managed solution and requires the Bloomberg Appliance except for development installations, which are often hosted on a client's 64-bit Red Hat Enterprise Linux machine. The Bloomberg Appliance resides physically at the client but behind Bloomberg's firewall. It runs a highly tuned Linux environment, is scaled according to a client's specific throughput requirements and is continuously monitored and managed by Bloomberg.

A Bloomberg workstation is used by the client to monitor the state of Bloomberg data distribution and management using a GUI and tools provided by Bloomberg. The Bloomberg Appliance Monitoring System (BAMS) is accessible by internal administrators and support staff.

In addition to the real-time/delayed streaming data available via the Desktop API and Server API products, BPS users requesting data via the B-PIPE product will also have access to full market depth, market list and source reference streaming data. Non-BPS customers will have access to a limited set of reference data fields and no access to premium fields or historical end-of-day and intraday data.

6.2. DDM

DDM is a managed service that extends beyond traditional industry solutions for market data distribution by providing real-time/delayed streaming and historical market data, as well as local Publishing, contributions and trusted entitlements. It is a complete high-volume, low-latency service for end users and applications—it displays throughout an entire financial firm.

DDM enables clients to publish their own data within their firm or externally to their customers. Published data is distributed locally to entitled subscribers anywhere within a site. Optionally, the published data can also be simultaneously sent to a Bloomberg Data Center for storage in managed, high-speed, in-memory caches and persistent databases. This is known as Contributions. Once data is published into the managed Bloomberg environment, that data is available to individuals or applications anywhere in the firm as long as the appropriate permissions have been granted.

Bloomberg's data management and distribution are offered through the Bloomberg Appliance, the same infrastructure that delivers the Bloomberg B-PIPE data feed. Depending upon which product a client has purchased, various types of Appliances are available.. Note: no equivalent development instance is available for DDM to be hosted on the customer's Linux server as is the case for B-PIPE.

Key features include:

- Historical databases with market data history per instrument—an intraday tick-by-tick history may be retained for days or weeks; or closing prices may be retained for days or weeks; or closing prices may remain available for years.
- Bloomberg-provided trusted **E**ntitlements **M**anagement & **R**eporting **S**ystem (EMRS). Bloomberg data Subscriptions and publications are protected by strong service-based entitlements.
- Distribution for internal use or for select clients.
- Low-latency local Publishing.
- Launchpad Page Monitor allows client-generated as well as Bloomberg-supplied data to be displayed within a single Launchpad window on the Bloomberg Professional service.
- Intraday tick and historical data storage with access through the Bloomberg Professional service analytics and APIs.

- Reliable, redundant and scalable service.
- Management, Monitoring and Capacity Planning using BAMS (**B**loomberg **A**ppliance **M**onitoring **S**ystem).

6.2.1. B-PIPE/PLATFORM PACKAGES

Bloomberg offers the following B-PIPE and Platform packages:

B-PIPE with Services

Bloomberg's B-PIPE is a fast, normalized, reliable and cost-effective consolidated real-time market data feed for Enterprise use. B-PIPE is delivered as a managed service, leveraging Bloomberg's high-performance technology and content to offer unsurpassed functionality and data coverage. B-PIPE can be integrated with a client's existing platform and entitlements system or directly into client's applications. Bloomberg offers a managed feed adapter for Thomson Reuters™ market data platform to easily integrate B-PIPE.

B-PIPE over Platform

Deploy and manage a B-PIPE feed with Bloomberg's distribution service, leveraging Bloomberg's technology and infrastructure complemented with transparent 24/7 monitoring and alerting features (BAMS). The Bloomberg entitlements management and reporting system (EMRS) is used to manage end-user application entitlements, providing value-added administrative and reporting features.

B-PIPE over Platform with Services

A combination of the above two B-PIPE products that allows clients to use dynamic symbology mapping.

Bloomberg Professional Service (BPS) User Data over Platform

BPS user data and Bloomberg analytics are available to Bloomberg Professional service subscribers who use Platform.

Local Publishing over Platform (DDM)

Publishing internal data using the Bloomberg Platform (DDM) allows traders, sales, research analysts and others at a client firm to integrate internal data into their Bloomberg desktop application "Launchpad" or Bloomberg's Excel add-in or internal applications. The Launchpad Page Monitor allows client-generated as well as Bloomberg-supplied data to be displayed within a single Launchpad window on the Bloomberg Professional service. The Bloomberg Excel add-in allows Publishing of internally derived data, creating a fully supported Publishing and Subscription desktop solution. Pub-Sub additionally allows server-based Publishing through the Bloomberg Open API (BLPAPI).

Contributions over DDM

This utilizes DDM for the contribution of internal data into Bloomberg for controlled distribution to customers. This fully supported infrastructure reduces overhead and is integrated with the Bloomberg Professional Excel add-in. Platform Contributions can support virtually any field in the Bloomberg API and utilize the BLPAPI for desktop- or server-based Publishing.

6.3. SERVER API

The Bloomberg Server API is a server-based product that allows integrating up to six third-party applications (approved by Bloomberg) depending on product level. (Server API and ServerAPI Plus have up to three applications; Server API Premium has up to six). Bloomberg Server API allows the retrieval of streaming real-time and/or delayed data, reference data, historical data, intra-day data and Bloomberg-derived data. All data retrieved from Bloomberg via the Server API must be controlled and disseminated to valid Bloomberg Anywhere users only. Data cannot be distributed beyond the application and the Bloomberg Anywhere user community. Furthermore, it cannot be used to update downstream systems or databases for Enterprise use. The API provides the necessary mechanism for client applications to perform the required permissioning logic to verify exchange entitlements and user-specific authorization checks. The Server API is a suite of products that includes:

Single-Server API

It is intended for use solely with a single approved registered third-party application (e.g., Sophis, Murex, Front Arena, etc.). Single-Server API has a data tier of up to 500 securities a month. Only for third-party-approved applications (not for in-house applications). They MUST be registered with a third party.

Server API

Server API allows Bloomberg Professional service and end-user applications to obtain data from the Bloomberg Data Center for up to 5,000 securities. Note that Server API cannot be plugged in to black box applications.

Server API Plus

Server API Plus is identical to Server API with the additional option of using EMRS to manage entitlements and BAMS to monitor hardware and software. It can be installed either on customer hardware or managed on a Bloomberg Appliance.

Server API Premium

High-end version of Server API that allows up to 10,000 unique streaming securities a month and 3m static hits a day.

Managed products have the Server API process residing on the Bloomberg Appliance; unmanaged products have that process hosted on a dedicated host server. Both Single Server API and Server API are unmanaged products; both the Server API Plus and Server API Premium products can either be managed or unmanaged.

The Server API allows end-user applications running on a Bloomberg Professional service–licensed PC to obtain data from the Bloomberg Data Center via a connection to a Server API process. It provides clients with better use of network resources when compared with the Bloomberg Desktop API, which shares the same libraries. Server API end-users do not connect to a local BBComm process running on a local PC. Instead, the Server API applications either connect in Single-User Mode or Multi-User Mode.

6.4. DESKTOP API

The Desktop API is used when the end-user application resides on the same machine as the installed Bloomberg Professional service and connects to the local Bloomberg Communications Server (BBComm) to obtain data from the Bloomberg Data Center.

7. API Features

7.1. INTERVALIZATION

Intervalization occurs when an application makes an interval-based Subscription for tick data by setting its “interval” option to a specific value between one-tenth of a second (.10) and 86,400 seconds (24 hours). It is possible to specify an interval in situations where either the application doesn’t need to receive every single tick or is having trouble processing the incoming tick data fast enough and falling behind.

All incoming ticks sent from the Bloomberg API infrastructure populate the communication server’s cache and then, at the “interval” specified, a summary of any of the updated fields since the last summary are sent to the subscribing application. The Bloomberg communication server is bbcomm for Desktop API, serverapi for Server API and the apics process for B-PIPE. These are the last hops before the client application.

In Intervalization, the communication server sends SUMMARY/INTERVAL messages at the specified interval. QUOTE or TRADE market Event–type Messages will never be sent.

7.2. API CONFLATION

The Bloomberg API infrastructure will only conflate Subscription data when requested with the “interval” option. Conflation is performed to save bandwidth from the Bloomberg API infrastructure to the communication server. If multiple Subscriptions exist for the same security across a range of intervals, the API will have a single Subscription from the Bloomberg infrastructure, which is then “intervalized” as appropriate and distributed to individual subscribers.

If making an interval-based Subscription for quote ticks (BID and/or ASK), the Bloomberg API infrastructure will conflate the data at that interval and send the conflated bid/ask ticks to the communication server, which will then apply the Intervalization. This involves sending SUMMARY/INTERVAL Messages to the subscribing application at the specified interval. Note: only bid/ask data is subject to conflation. Trade data is never conflated, but it will be intervalized if an interval is specified.

Although the Bloomberg API infrastructure only conflates bid/ask data when an interval is specified in a Subscription, all bid/ask data is conflated by the Bloomberg Ticker Plant when subscribing to delayed data. In other words, the data is received by the Bloomberg API infrastructure pre-conflated.

The Desktop API and Server API will have automatic access to delayed data when available, whereas B-PIPE requires explicit permission for access.