

DataConnect V3 Lite

User Guide

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USING THE MANUAL

Audience

This manual is targeted at the software professional responsible for implementing a DataConnect client. The guide assumes that the reader has basic programming experience with one or more programming languages and has some experience with XML, Document Type Definitions (DTD), https, and ZIP compression format.

DataConnect consists of two products - DataConnect Lite and DataConnect Ultra. This document describes the capabilities of DataConnect Lite (hereafter known as DataConnect). Please refer to the [WebPortfolio DataConnect V3 Ultra User Guide](#) for details on DataConnect Ultra.

Format

The manual is composed of the following sections:

- **[Data Connect Introduction:](#)**
Provides an overview of DataConnect, its features, and its operation. Also provides a list of terms with which users should be familiar and a reference to related documents.
- **[Data Connect Data Specification:](#)**
Defines the data available through DataConnect.
- **[Data Connect Operations:](#)**
Provides a detailed description of all DataConnect Lite operations.
- **[Data Connect Usage Considerations:](#)**
Describes the access, compression and data availability considerations with which users should be familiar when using DataConnect.
- **[Appendices:](#)**
Consists of a number of appendices that include definitions and sample code used in the implementation of DataConnect.

DATACONNECT INTRODUCTION

Product Overview

DataConnect provides an Application Programming Interface (API) to the WebPortfolio service. DataConnect consists of the following two products:

- **DataConnect Lite:**
Enables the retrieval of the financial information for one or more WebPortfolio users.
- **DataConnect Ultra:**
Provides the methods necessary for building a custom application that uses the WebPortfolio service. Includes all capabilities available in DataConnect Lite.

Product Features

The table below summarizes the features currently available in the two DataConnect products.

Functionality	DataConnect Lite	DataConnect Ultra
Access Level		
Individual	v	v
Vendor	v	v
Ability to Retrieve Basic Financial Information		
WebPortfolio User	v	v
Portfolios	v	v
Accounts	v	v
Holdings	v	v
Transactions	v	v
Financial Services	v	v
Securities	v	v
Ability to Retrieve Extended Financial Information		
Financial Services: Online Access Instructions		v
WebPortfolio User: Personal Information		v
Accounts: Access Credentials		v
Operation Styles		
Synchronous	v	v
Asynchronous	v	v
Data Creation and Maintenance		
WebPortfolio Users		v
Portfolios		v
Accounts		v
Additional Operations		
Test account credentials		v
On-demand Account Update (from Financial Service)		v

Product Description

DataConnect supports communication over an Internet connection using the industry-standard https protocol and XML documents. Data returned is compressed in ZIP standard compression format. DataConnect does not provide any client-side SDK or other software for use in developing a DataConnect client. Programming is done directly to https in a programming language of your choice.

DataConnect can be used to construct a User Interface to the WebPortfolio data service. It can also be used in conjunction with other products in the WebPortfolio family as follows:

1. View and edit data for users created via DataConnect using the WebPortfolio Advisor or Investor product.
2. Enter online access credentials for accounts owned by each user using WebPortfolio Advisor, Investor, or Account Access.
3. Administer users created via DataConnect using the WebPortfolio User Administration tool.

DataConnect enables you to enroll, maintain, and unsubscribe WebPortfolio users. You can also create and maintain portfolios and online accounts for those users. Additional functions provide information about the Financial Services supported by WebPortfolio and the types of information needed (online credentials) to gather data for an account at those Financial Services. You may use DataConnect operations to verify that online credentials for an account were entered correctly and to request that data be gathered immediately for an online account (from its Financial Service).

DataConnect can return data for a single WebPortfolio user, a select set of users, or for the entire set of users associated with a particular ByAllAccounts client. These two retrieval styles are characterized as on-demand and bulk, respectively. If you wish to retrieve data for a single user for presentation in another application, you use the on-demand style of access to retrieve data from the WebPortfolio servers at any time of day. If you wish to store and serve WebPortfolio data from your own servers, you use the bulk retrieval style, typically retrieving data from WebPortfolio once a day.

DataConnect operations with potentially lengthy processing times are provided as asynchronous operations. Some operations are available in both synchronous and asynchronous form. The general style of the asynchronous operation is for the DataConnect server to provide a receipt to you for the requested operation and a data expiration time. Later, you submit a request with this receipt to the DataConnect server to request your data. Data is retained for you to retrieve up to the expiration time.

The DataConnect caller is authenticated through a specially assigned User ID and Password. By necessity, DataConnect must make some sensitive information available to you (needed to build a User Interface to these capabilities), so you must restrict access to this assigned User ID and Password to prevent unauthorized access to WebPortfolio users' data.

Terminology

The following are some terms with which to be familiar when using DataConnect:

- **Administrator:**
Person with administrative access to WebPortfolio
- **Advisor:**
Person providing investment management and advice services to Investors
- **Assistant:**
Person who assists the advisor in investment management and client service
- **Consultant:**
Person with whom an Investor shares his financial information, usually to obtain advice
- **DataConnect client:**
Program written by a ByAllAccounts customer that interacts with the DataConnect server
- **End User:**
Person using a User Interface to the WebPortfolio server
- **Firm:**
The ByAllAccounts customer
- **Investor:**
Person with investments; an account holder
- **User:**
An end user who is an Investor, Advisor, Assistant, or Consultant
- **WebPortfolio:**
The entire WebPortfolio service, both front end and back end

Related Documents

The following related documents are available from ByAllAccounts:

- [WebPortfolio DataConnect V3 Ultra User Guide](#): Provides details on DataConnect Ultra Version 3.

DATACONNECT DATA SPECIFICATION

This section defines the data available through DataConnect. The [Data Connect Operations](#) section refers to data defined in this section and provides a detailed description of all DataConnect Lite operations.

The WebPortfolio product family provides for the creation and maintenance of many types of objects. However, not all WebPortfolio Advisor/Investor information can be accessed through DataConnect. The objects available through DataConnect in this release are:

- **[Person:](#)**

An individual known to the WebPortfolio service. A Person has personal information, such as name and email address. The term **User** refers collectively to a Person, his Profile Access, and his Financial Profile. DataConnect supports the following **User** types:

- Investor: One who invests
- Advisor: One who manages investments for an Investor
- Assistant: One who assists an advisor
- Consultant: One who advises on investments

The Consultant in DataConnect V3 is a personal friend, relative, or professional known to the Investor and registered in the service. He has the ability to view that Investor's financial information. Consultants that span Investors and who are known more broadly in the service are not yet supported.

- **[Financial Profile:](#)**

Container that groups the investments (Portfolios, Accounts, Holdings, and Transactions) and settings for a single Investor (see Person). A Financial Profile may be accessed by several individuals, including the Investor (holder of the accounts) and the Advisor.

- **[Profile Access:](#)**

Persons allowed to access Financial Profiles.

- **[Portfolio:](#)**

A collection of investments, usually with an associated investment time horizon, risk tolerance, and target allocation. The Portfolio groups a set of Accounts together for investment planning and analysis. An Account can belong to only one Portfolio.

- **[Account Credential:](#)**

The set of credentials used to access one or more Accounts at a Financial Service. The Account Credential object typically contains the Financial Institution identifier and a login and password to a Financial Institution's web site.

- **[Account:](#)**

A single Account held at a Financial Service. An Account may be online (where account information is available from the Financial Institution online via a web site or data server) or off-line (created and manually maintained by a WebPortfolio user). Online Accounts have an associated Account Credential object that defines the credentials used to access the Account. WebPortfolio gathers data for online Accounts from the Financial Service on a nightly basis.

DataConnect Data Specification (continued)

- **Holding:**
A position in a Security. A Holding is always contained in one Account. A Holding may be related to a marketable Security (see Security) known to WebPortfolio or it may be a named Holding, that is, one which has no related Security, is identified only by name, and may not be generally marketable.
- **Transaction:**
A record of activity in a Holding or Account, such as a buy or sell of a Security. A Transaction is always contained in one Account and may be related to a Holding.
- **Security:**
A financial instrument that can be identified by WebPortfolio. The most common types of Securities are stock, bond, mutual fund, option, and cash. WebPortfolio maintains a single Security master referred to by Holdings and Transactions.
- **FI (Financial Institution or Financial Service):**
A data access service offered by a Financial Institution through which an Investor can view his Account information. A large Financial Institution may provide several different Financial Services with each service providing information for Accounts in a particular segment of business (e.g., Trust Accounts, General Brokerage Accounts, 401(k) Accounts). WebPortfolio maintains a single Financial Service master referred to by all online Accounts.

The objects and aspects of information not available through DataConnect in this release are:

- **Generic Asset:** Off-line assets other than securities (e.g., vehicles and collectibles)
- **Liability:** Off-line liabilities (e.g., mortgages and other types of loans)
- **Alert:** Warning delivered to users on a variety of conditions from security price movement to portfolio exposure
- **Watch List:** List of ticker symbols for securities that a user wishes to track
- **Analytic data:** Data calculated by WebPortfolio, such as personal rate of return for Holdings, Accounts, and Portfolios; also target/actual asset allocation information
- **Historical information:** Historical data (other than Transactions) for Portfolios, Accounts, Holdings, including historical relationships, historical position valuations, and archived Portfolios, Accounts, and positions

In addition, the following objects can be retrieved through DataConnect but cannot be inserted, modified, or deleted through DataConnect:

- **Holdings**
- **Transactions**

Data Model Diagram

People known to the system are kept in the Person object. A Person has a role that identifies his primary use of the service: Investor, Advisor, Assistant, or Consultant. Investor and Advisor users can each have one Financial Profile that holds financial information for their personal accounts. Relationships between people and financial information are stored in the Profile Access object. The Financial Profile is a container of financial information to which different individuals are granted levels of access. An Investor has a relationship to only one Financial Profile - his own. An Advisor can have relationships with multiple Financial Profiles - one is his own, the others belong to Investors for whom he manages investments. An Assistant is assigned to an Advisor and has access to all of the Financial Profiles to which the Advisor has access. This access can be read-only or read-write. One additional type of person is the Consultant. The Consultant has access to one and only one Financial Profile - that of the Investor to whom he provides advice, either directly or indirectly (through the Advisor).

The Financial Profile contains Portfolios, Accounts, Account Credentials, Holdings, and Transactions. Holdings and Transactions may relate to a well-known Security. Accounts may refer to a Financial Service or Financial Institution (FI) supported by WebPortfolio.

Figure 1 - Data Model Diagram on the following page depicts the structure of the data available in DataConnect. The model is presented in Entity-Relationship notation and includes primary key and foreign key designations to enable you to plan for storage and management of the data. Objects are shown as boxes while relationships are shown as arrows. A relationship arrow points to the parent of the relationship (e.g., Holding is the parent of the Holding-Transaction relationship shown in the Data Model Diagram). The data types used in this diagram and in the detailed object definitions that follow are defined in the [Data Types](#) table.

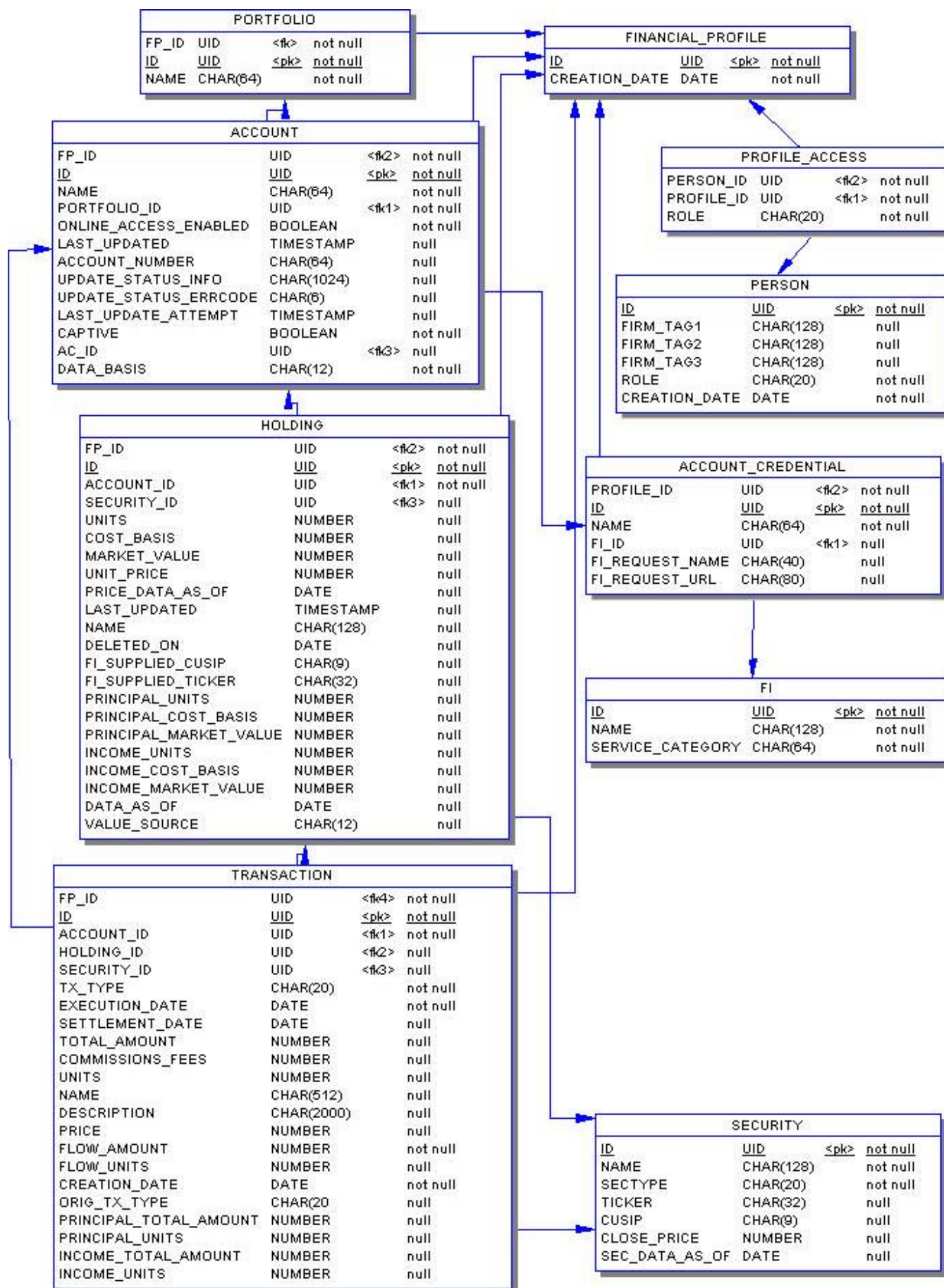


Figure 1 – Data Model Diagram

General Object Information

The following sections define the fields available for each of the data objects available through DataConnect. The following general rules apply to this data:

- Fields designated as required always have values.
- Fields designated as optional may have values.
- The Data Types defined in the table below are used in the following [Object Definitions](#).

Data Types

The following Data Types are the specifications or type definitions that can be assigned to each element of the data objects:

Data Type	Description
BOOLEAN	Value is either 1 (indicating TRUE) or 0 (indicating FALSE).
CHARn	Alphanumeric string containing up to n characters.
DATE	Date in the form YYYYMMDD , where YYYY is a 4-digit year (e.g., 2003), MM is a 2-digit month code from 01 (January) through 12 (December), and DD is a 2-digit day code from 01 to 31.
NUMBER	Amounts, quantities, and prices use this numeric data type that can contain up to 39 numeric characters including the decimal point. Negative values are indicated by a leading minus sign (-). Values that do not represent whole numbers (e.g., 1.3504) include a decimal point to indicate the start of the fractional amount. Values have a maximum of four digits to the right of the decimal point. No punctuation is used to separate thousands, millions, etc.
TIMESTAMP	Provides a full time stamp, including time zone of the DataConnect server. Currently used to communicate data expiration times to DataConnect clients. The timestamp uses the form: YYYYMMDDHHmmSS [{gmt-offset}:{tz-name}] where: YYYY is a 4-digit year (e.g., 2003), MM is a 2-digit month code from 01 (January) through 12 (December), DD is a 2-digit day code from 01 to 31, HH is a 2-digit hour code in 24-hour format (00 through 23), mm is a 2-digit minute code (00 through 59), SS is a 2-digit seconds code (00 through 59) gmt-offset is the number of hours that the time zone is offset from GMT; has a leading + or - tz-name is the name of the time zone (e.g., EST). Example: 20030721143522 [-5:EST] is July 21, 2003 2:35:22 PM, Eastern Standard Time
UID	Unique persistent numeric identifier (Unique ID) ranging from 0 to 999999999999999999. Fields of this data type are either a primary key or a foreign key and are designated as such in the field data type definition. All ID fields have values generated and maintained by ByAllAccounts. An object's ID is persistent across calls to DataConnect (will not change from one day to the next). ID values for a field are monotonically increasing, meaning that ID values assigned to a new object tomorrow are greater than ID values assigned to a new object created today.

Object Definitions

As depicted in Figure 1 - Data Model Diagram, DataConnect consists of the following objects: [Security](#), [FI \(Financial Institution or Financial Service\)](#), [Person](#), [Financial Profile](#), [Profile Access](#), [Portfolio](#), [Account Credential](#), [Account](#), [Holding](#), and [Transaction](#). The tables on the following pages provide detailed descriptions of the fields/tags of these objects, including their data type and whether they are required or optional.

Note: Required information is indicated with a v.

Security

Field	Required	Data Type	Description
ID	v	UID (PKEY)	Unique numeric ID for this Security
NAME	v	CHAR128	Name for this Security (e.g., "Ford Motor Company")
SECTYPE	v	CHAR20	Type of Security, one of: BOND CASH MUTUALFUND OPTION OTHER STOCK
TICKER		CHAR32	Ticker symbol for this Security (e.g., "F"), if available
CUSIP		CHAR9	Committee on Uniform Security Identification Procedures (CUSIP) for this Security (e.g., "345370860"), if available
CLOSE_PRICE		NUMBER	The closing price of the security for the date in SEC_DATA_AS_OF. The INCSECDetail option must be used to have this data included in a DATAGET response.
SEC_DATA_AS_OF		DATE	The date for which CLOSE_PRICE is the closing price of the security. The INCSECDetail option must be used to have this data included in a DATAGET response.
BOND_MATURITY		DATE	The maturity date for a bond.
BOND_COUPON		NUMBER	The coupon rate for the bond expressed as a percentage, e.g. 7.5 or 6.625.
ASSET_CLASS		CHAR64	The asset class of this security, one of: Unclassified Stocks Bonds Cash Real Estate Other The INCSECAC option must be used to have this data included in a DATAGET response.

Security (continued):

Field	Required	Data Type	Description
ASSET_SUBCLASS		CHAR64	<p>The asset subclass of this security, one of:</p> <ul style="list-style-type: none"> Unclassified Large Cap Growth (US) Large Cap Core (US) Large Cap Value (US) Mid Cap Growth (US) Mid Cap Core (US) Mid Cap Value (US) Small Cap Growth (US) Small Cap Core (US) Small Cap Value (US) Large Cap Growth (Emerging Foreign) Large Cap Core (Emerging Foreign) Large Cap Value (Emerging Foreign) Mid Cap Growth (Emerging Foreign) Mid Cap Core (Emerging Foreign) Mid Cap Value (Emerging Foreign) Small Cap Growth (Emerging Foreign) Small Cap Core (Emerging Foreign) Small Cap Value (Emerging Foreign) Large Cap Growth (Developed Foreign) Large Cap Core (Developed Foreign) Large Cap Value (Developed Foreign) Mid Cap Growth (Developed Foreign) Mid Cap Core (Developed Foreign) Mid Cap Value (Developed Foreign) Small Cap Growth (Developed Foreign) Small Cap Core (Developed Foreign) Small Cap Value (Developed Foreign) Unclassified Stocks Invest. Grade Short (US Tax Exempt) Invest. Grade Intermediate (US Tax Exempt) Invest. Grade Long (US Tax Exempt) Medium Grade Short (US Tax Exempt) Medium Grade Intermediate (US Tax Exempt) Medium Grade Long (US Tax Exempt) High Yield Short (US Tax Exempt) High Yield Intermediate (US Tax Exempt) High Yield Long (US Tax Exempt) Invest. Grade Short (US Taxable) Invest. Grade Intermediate (US Taxable) Invest. Grade Long (US Taxable) Medium Grade Short (US Taxable) Medium Grade Intermediate (US Taxable) Medium Grade Long (US Taxable) High Yield Short (US Taxable) High Yield Intermediate (US Taxable) High Yield Long (US Taxable) Invest. Grade Short (Foreign) Invest. Grade Intermediate (Foreign) Invest. Grade Long (Foreign) Medium Grade Short (Foreign)

Field	Required	Data Type	Description
			Medium Grade Intermediate (Foreign) Medium Grade Long (Foreign) High Yield Short (Foreign) High Yield Intermediate (Foreign) High Yield Long (Foreign) Unclassified Bonds Cash Real Estate Hedge Funds Private Equity Investments Options & Futures Precious Metals Natural Resources Other Investments Unclassified Other The INCSECAC option must be used to have this data included in a DATAGET response.

FI (Financial Institution or Financial Service)

Field	Required	Data Type	Description
ID	v	UID (PKEY)	Unique numeric ID for this Financial Service.
NAME	v	CHAR128	Name of this Financial Service. The ID for a Financial Service will not change, but NAME might change should the Financial Institution rename its service.
SERVICE_CATEGORY	v	CHAR64	Category for this Financial Service. The category is used primarily as an aid to help users of WebPortfolio distinguish between different services offered by the same Financial Institution. This field may contain one of the following values (list is subject to change) and may change at any time for a particular Financial Service: Annuity, IRA, and non-Quicken Asset Management Banking Brokerage Brokerage or Mutual Fund Client Endowment Financial Advisor Investment Managed Asset Accounts Mutual Funds Mutual Funds & Brokerage Personal Portfolio Review Private Client Private Wealth Management Strategy Fund Accounts Trust Trust & Investment Trust & Wealth Management Wealth Management

Person

Field	Required	Data Type	Description
ID	v	UID (PKEY)	Unique numeric ID for this Person.
FIRM_TAG1		CHAR128	A string you assign that enables you to identify a WebPortfolio User and correlate it with data in your systems. You can use field in some operations to identify a Financial Profile. If you plan to do this, you should ensure that this field is unique across all of your Persons.
FIRM_TAG2		CHAR128	A string used to classify the User.
FIRM_TAG3		CHAR128	A string used to classify the User.
ROLE	v	CHAR20	One of: INVESTOR, ADVISOR, ASSISTANT, or CONSULTANT.
CREATION_DATE	v	DATE	Date when this Person was created.

Financial Profile

Field	Required	Data Type	Description
ID	v	UID (PKEY)	Unique numeric ID for this Financial Profile
CREATION_DATE	v	DATE	Date when the Financial Profile was created.

Profile Access

Field	Required	Data Type	Description
PERSON_ID	v	UID (FKEY: PERSON.ID)	Unique numeric ID for the Person to whom access is granted.
PROFILE_ID	v	UID (FKEY: FINANCIAL_PROFILE.ID)	Unique numeric ID for the Financial Profile to which access is granted.
ROLE	v	CHAR20	The role the Person has in relation to the profile. One of: INVESTOR, ADVISOR, ASSISTANT, or CONSULTANT

Portfolio

Field	Required	Data Type	Description
FP_ID	v	UID (FKEY: FINANCIAL_PROFILE.ID)	Unique numeric ID for the Financial Profile that contains this Portfolio.
ID	v	UID (PKEY)	Unique numeric ID for this Portfolio
NAME	v	CHAR64	User-assigned name for the Portfolio. Values are case-sensitive and unique across all Portfolios for a User.

Account Credential

Field	Required	Data Type	Description
PROFILE_ID	v	UID (FKEY: FINANCIAL_PROFILE.ID)	ID for the profile that contains the Account Credential.
ID	v	UID (PKEY)	Unique numeric ID for this Account Credential.
NAME	v	CHAR64	User-assigned name for the Account Credential.
FI_ID	*	UID (FKEY: FI.ID)	ID for the Financial Service that the Account Credential accesses.
FI_REQUEST_NAME	*	CHAR40	Used to specify the name of a Financial Institution Service that WebPortfolio does not currently support. When all Account Credentials are provided, a request is made to ByAllAccounts to add support for this service. See related field FI_REQUEST_URL .
FI_REQUEST_URL	*	CHAR80	Used to specify the URL of the login page for a Financial Institution Service that WebPortfolio does not currently support. When all Account Credentials are provided, a request is made to ByAllAccounts to add support for this service. See related field FI_REQUEST_NAME .

Notes:

* = Only one of <**FI_ID**> or (<**FI_REQUEST_NAME**> + <**FI_REQUEST_URL**>) can be provided. If providing FI request information, **FI_REQUEST_NAME** is required and **FI_REQUEST_URL** is optional.

Account

Field	Required	Data Type	Description
FP_ID	v	UID (FKEY: FINANCIAL_PROFILE.ID)	Unique numeric ID for the Financial Profile that contains this Account.
ID	v	UID (PKEY)	Unique numeric ID for this Account.
NAME	v	CHAR64	User-assigned name for the Account. Values are case-sensitive and unique across all Accounts for a user.
PORTFOLIO_ID	v	UID (FKEY: PORTFOLIO.ID)	ID for the Portfolio to which this Account belongs.
ONLINE_ACCESS_ENABLED	v	BOOLEAN	TRUE (1) if this Account has sufficient online access credentials for WebPortfolio to gather data from the Financial Service identified for this Account; FALSE (0) in all other cases. This field is READ-ONLY.
LAST_UPDATED		TIMESTAMP	Date/time on which data for this Account was (successfully) last retrieved from the associated Financial Institution (may not be available for the off-line accounts). This field is READ-ONLY.
ACCOUNT_NUMBER		CHAR64	Alphanumeric string used to identify this Account at the Financial Service where this Account is held.
UPDATE_STATUS_INFO		CHAR1024	The status (textual description) of the last attempt to download this Account from the Financial Institution. This field is READ-ONLY.

Account (continued)

Field	Required	Data Type	Description
UPDATE_STATUS_ERRCODE		CHAR6	Error code for the result of the last attempt to download this Account from the Financial Institution. Please see Appendix D: Account Update Status Error Codes for valid values. This field is READ-ONLY.
LAST_UPDATE_ATTEMPT		TIMESTAMP	Date/time of the last access test or update attempt for this Account. This field is READ ONLY.
CAPTIVE	v	BOOLEAN	If TRUE , then the Advisor managing this Account for the Investor considers this Account to contain captive assets (assets under management).
AC_ID		UID (FKEY: ACCOUNT_CREDENTIAL.ID)	ID for the Account Credential object that provides the credentials for accessing the Account at its Financial Service.
DATA_BASIS	v	CHAR12	States whether the data in the account is SETTLEMENT (value "SETTLEMENT") basis or TRADE basis (value "TRADE"). This field is READ-ONLY. Accounts will default to TRADE basis and can only be configured to SETTLEMENT basis manually by BAA operations.

Holding

Field	Required	Data Type	Description
FP_ID	v	UID (FKEY: FINANCIAL_PROFILE.ID)	Unique numeric ID for the Financial Profile that contains this Holding.
ID	v	UID (PKEY)	Unique numeric ID for this Holding
ACCOUNT_ID	v	UID (FKEY: ACCOUNT.ID)	ID for the Account that contains this Holding.
SECURITY_ID		UID (FKEY: SECURITY.ID)	ID for Security owned by this Holding.
UNITS		NUMBER	Units of the Security held.
COST_BASIS		NUMBER	Financial service-supplied or user-supplied cost basis for the Holding (Note: This is a total basis not a per-share basis).
MARKET_VALUE		NUMBER	Total market value of this Holding as retrieved from the Financial Institution or entered by the user.
UNIT_PRICE		NUMBER	Price of the Security.
PRICE_DATA_AS_OF		DATE	Date for which UNIT_PRICE is valid.
LAST_UPDATED		TIMESTAMP	Date/time on which the data for this Holding was last updated with information from the Financial Service. Absent for Holdings maintained manually by the user.
NAME		CHAR128	The holding's name (typically identifies the security) as provided by Financial Service or entered by the user (offline accounts).
DELETED_ON		DATE	If present then this holding is a <i>sold-off</i> holding (no longer active in the account). This is the date on which the holding was removed from the account.
FI_SUPPLIED_CUSIP		CHAR9	If the Financial Service supplied a CUSIP for this Holding it is given here.
FI_SUPPLIED_TICKER		CHAR32	Any ticker or candidate ticker that the Financial Service supplied for this Holding.

Holding (continued)

Field	Required	Data Type	Description
PRINCIPAL_UNITS		NUMBER	Principal units as reported by the Financial Institution.
PRINCIPAL_COST_BASIS		NUMBER	Principal cost basis as reported by the Financial Institution.
PRINCIPAL_MARKET_VALUE		NUMBER	Principal market value as reported by the Financial Institution (e.g. PRINCIPAL CASH market value).
INCOME_UNITS		NUMBER	Income units as reported by the Financial Institution.
INCOME_COST_BASIS		NUMBER	Income cost basis as reported by the Financial Institution.
INCOME_MARKET_VALUE		NUMBER	Income market value as reported by the Financial Institution (e.g. INCOME CASH market value).
DATA_AS_OF		DATE	The date which the holding data is 'as of' as reported by the Financial Institution. If the Financial Institution does not report a date then this field will be empty (tag not provided).
VALUE_SOURCE	v	CHAR12	<p>The source of the market value for this holding. May be one of the following strings: FI, WPAPPROX, USER.</p> <ul style="list-style-type: none"> FI - the market value was collected from the Financial Institution. WPAPPROX – WebPortfolio approximated the market value using the units reported by the Financial Institution and a closing security price obtained from a third party. USER – the user edited the market value.

Holding (continued)

Field	Required	Data Type	Description
ACCRUED_INCOME		NUMBER	Value of the income that has accrued to the holding but has not yet been distributed.
CURRENCY_CODE		CHAR3	ISO 4217 currency code for MARKET_VALUE and UNIT_PRICE
FI_SUPPLIED_CURRENCY		CHAR64	Currency identifier for MARKET_VALUE and UNIT_PRICE as provided by the Financial Institution.
FI_SUPPLIED_SEDOL		CHAR7	Security's SEDOL as provided by the Financial Institution.
FI_SUPPLIED_ISIN		CHAR12	Security's ISIN as provided by the Financial Institution.
COUPON		NUMBER	The interest payment rate of a debt instrument.
MATURITY_DATE		DATE	The date a debt instrument becomes due and pays in full.
ORIGINAL_FACE		NUMBER	The original face or par value for a security that amortizes or accretes (e.g., a mortgage). For such securities the "current face" is available in the UNITS field.
ACCRUED_INCOME_BASE		NUMBER	Value of the income in the base currency that has accrued to the holding but has not yet been distributed.
ACCRUED_INCOME_LOCAL		NUMBER	Value of the income in the local currency that has accrued to the holding but has not yet been distributed.
CURRENCY_CODE_BASE		CHAR3	ISO 4217 currency code of the base currency of the account as determined from the FI_SUPPLIED_CURRENCY_BASE field.
CURRENCY_CODE_LOCAL		CHAR3	ISO 4217 currency code of the local currency of the holding as determined from the FI_SUPPLIED_CURRENCY_LOCAL field.
FI_SUPPLIED_CURRENCY_BASE		CHAR64	The base currency of the account as provided by the Financial Institution.
FI_SUPPLIED_CURRENCY_LOCAL		CHAR64	The local currency of the holding as provided by the Financial Institution.
EXCHANGE_RATE_LOCAL_TO_BASE		NUMBER	The local-to-base exchange rate as provided by the Financial Institution.
EXCHANGE_RATE_LOCAL_TO_USD		NUMBER	The local-to-USD exchange rate as provided by the Financial Institution.

Holding (continued)

Field	Required	Data Type	Description
MARKET_VALUE_BASE		NUMBER	The market value of the position converted to the base currency of the account.
MARKET_VALUE_LOCAL		NUMBER	The market value of the position in the local currency of the holding.
PRINCIPAL_MARKET_VALUE_BASE		NUMBER	The principal portion of the market value of the position in the base currency of the account.
PRINCIPAL_MARKET_VALUE_LOCAL		NUMBER	Principal market value as reported by the Financial Institution (e.g. PRINCIPAL CASH market value).
INCOME_MARKET_VALUE_BASE		NUMBER	Income market value as reported by the Financial Institution (e.g. INCOME CASH market value).
INCOME_MARKET_VALUE_LOCAL		NUMBER	Income market value as reported by the Financial Institution (e.g. INCOME CASH market value).
UNIT_PRICE_BASE		NUMBER	The price of the position converted to the base currency of the account.
UNIT_PRICE_LOCAL		NUMBER	The price of the position in the local currency of the holding
ASSET_CLASS		CHAR64	The asset class of this holding, one of: Unclassified Stocks Bonds Cash Real Estate Other The INCHOLDAC option must be used to have this data included in a DATAGET response.
ASSET_SUBCLASS		CHAR64	The asset class of this holding. Possible values can be found in the Security object definition table. The INCHOLDAC option must be used to have this data included in a DATAGET response.

Transaction

Field	Required	Data Type	Description
FP_ID	v	UID (FKEY: FINANCIAL_PROFILE.ID)	Unique numeric ID for the Financial Profile that contains this Transaction.
ID	v	UID (PKEY)	Unique numeric ID for this Transaction.
ACCOUNT_ID	v	UID (FKEY: ACCOUNT.ID)	ID of the Account on which this Transaction represents activity.
HOLDING_ID		UID (FKEY: HOLDING.ID)	ID for the Holding on which this Transaction represents activity.
SECURITY_ID		UID (FKEY: SECURITY.ID)	ID for the Security for which this Transaction represents activity.
TX_TYPE	v	CHAR20	Type of Transaction. Please see the list that follows this table for valid values.
EXECUTION_DATE	v	DATE	Date on which this Transaction was executed.
SETTLEMENT_DATE		DATE	Date on which this Transaction was settled.
TOTAL_AMOUNT		NUMBER	Total \$ value associated with this Transaction (may be negative).
COMMISSIONS_FEES		NUMBER	Commission and/or fees associated with this Transaction.
UNITS		NUMBER	Number of units (of security) involved in this Transaction.
NAME		CHAR512	Either the name of the Security or a short description of the Transaction.
DESCRIPTION		CHAR2000	Either the name of the Security and/or a longer description of the Transaction.
PRICE		NUMBER	Per share price of the Security for purposes of this Transaction.
FLOW_AMOUNT	v	NUMBER	Total amount of the cash flow for this transaction relative to the cash balance of the account.
FLOW_UNITS		NUMBER	Normalized units for the transaction. Whereas UNITS contains the units value directly from the Financial Institution and may have great variations in sign within a given transaction type, FLOW_UNITS contains this same units value but normalized by transaction type (e.g. Withdrawal will always have negative FLOW_UNITS).

Transaction (continued)

Field	Required	Data Type	Description
CREATION_DATE	v	DATE	Date when this Transaction object was created in WebPortfolio.
ORIG_TX_TYPE		CHAR20	Transactions reported as a reversal or cancellation by the Financial Institution will have the original transaction type code for in this field. Please see the list that follows this table for valid values.
FI_SUPPLIED_CUSIP		CHAR9	Security's CUSIP as provided by the Financial Institution.
FI_SUPPLIED_TICKER		CHAR32	Security's Ticker as provided by the Financial Institution.
PRINCIPAL_TOTAL_AMOUNT		NUMBER	Principal amount of the transaction as reported by the Financial Institution.
PRINCIPAL_UNITS		NUMBER	Principal units of the transaction as reported by the Financial Institution.
INCOME_TOTAL_AMOUNT		NUMBER	Income amount of the transaction as reported by the Financial Institution.
INCOME_UNITS		NUMBER	Income units of the transaction as reported by the Financial Institution.
CONTRACTUAL_SETTLEMENT_DATE		DATE	The date by which the transaction must contractually settle as provided by the Financial Institution.
POST_DATE		DATE	The date that the transaction posted as provided by the Financial Institution.

Transaction (continued)

Field	Required	Data Type	Description
CURRENCY_CODE		CHAR3	ISO 4217 currency code for the TOTAL_AMOUNT.
FI_SUPPLIED_CURRENCY		CHAR64	Currency identifier supplied by the Financial Institution for TOTAL_AMOUNT.
TOTAL_AMOUNT_LOCAL		NUMBER	The amount of the transaction in the local currency
FI_SUPPLIED_ISIN		CHAR12	Security's ISIN as provided by the Financial Institution.
FI_SUPPLIED_SEDOL		CHAR7	Security's SEDOL as provided by the Financial Institution.
FI_SUPPLIED_TX_TYPE		CHAR64	Text provided by the Financial Institution that describes the type of activity that this transaction represents.
FI_SUPPLIED_TX_TYPE2		CHAR64	Secondary text provided by the Financial Institution that describes the type of activity that this transaction represents.
FI_SUPPLIED_TX_TYPE_CODE		CHAR16	Transaction type code or abbreviation provided by the Financial Institution.
CURRENCY_CODE_BASE		CHAR3	ISO 4217 currency code for the account's base currency.
CURRENCY_CODE_LOCAL		CHAR3	ISO 4217 currency code for TOTAL_AMOUNT_LOCAL and UNIT_PRICE_LOCAL.
FI_SUPPLIED_CURRENCY_BASE		CHAR64	Currency identifier supplied by the Financial Institution for TOTAL_AMOUNT_BASE.
FI_SUPPLIED_CURRENCY_LOCAL		CHAR64	The local currency of the transaction as provided by the institution.
EXCHANGE_RATE_LOCAL_TO_BASE		NUMBER	The local-to-base exchange rate as provided by the Financial Institution.
EXCHANGE_RATE_LOCAL_TO_USD		NUMBER	The local-to-USD exchange rate as provided by the Financial Institution.

Transaction (continued)

Field	Required	Data Type	Description
PRICE_BASE		NUMBER	The price of the position converted to the base currency of the account.
PRICE_LOCAL		NUMBER	The share price of the security involved in the transaction in the local currency
TOTAL_AMOUNT_BASE		NUMBER	Total amount of the transaction in the Base currency for the account.
PRINCIPAL_TOTAL_AMOUNT_BASE		NUMBER	The principal portion of the amount of the transaction converted to the base currency of the account
PRINCIPAL_TOTAL_AMOUNT_LOCAL		NUMBER	The principal portion of the amount of the transaction in the local currency
INCOME_TOTAL_AMOUNT_BASE		NUMBER	The income portion of the amount of the transaction converted to the base currency of the account
INCOME_TOTAL_AMOUNT_LOCAL		NUMBER	The income portion of the amount of the transaction in the local currency
FI_SUPPLIED_DESCRIPTION		CHAR2000	Transaction description
ACCRUED_INCOME		NUMBER	Accrued Income associated with the transaction. May be valued for bond purchases and sales or for transactions specifically purchasing or selling accrued interest for a bond.
ACCRUED_INCOME_BASE		NUMBER	" in Base currency.
ACCRUED_INCOME_LOCAL		NUMBER	" in Local currency

Notes on Transaction:

- Sold-off Holdings are optionally delivered in a response document. If sold-off holdings are not included in the response, Transactions against sold-off Holdings are still delivered. These Transactions include an **ACCOUNT_ID** but no **HOLDING_ID**. Use the INCHOLDINGSO option of the INCHOLDING aggregate to include sold-off holdings in a DATASET response.
- Valid values for **TX_TYPE** and **ORIG_TX_TYPE** are:

TX_TYPE Value	Description
ATM	ATM debit or credit (depends on signage of amount)
BUY	Buy a Security
CHECK	Check written
CLOSURE	Close a position for an option
CREDIT	Generic credit
DEBIT	Generic debit
DEPOSIT	Deposit
DIRECT_DEBIT	Merchant initiated debit
DIRECT_DEPOSIT	Direct deposit
DIVIDEND	Dividend paid
FEE	Financial Institution fee
INCOME	Investment income is realized as cash into the investment Account
INTEREST	Interest earned or paid (depends on signage of amount)
INVESTMENT_EXPENSE	Miscellaneous investment expense that is associated with a specific Security
JOURNAL	Journal cash or Securities between Sub-Accounts within the same investment Account
MARGIN_INTEREST	Margin interest expense
OTHER	Other
PAYMENT	Electronic payment
POINT_OF_SALE	Point of sale debit or credit (depends on signage of amount)
REINVESTMENT	Reinvestment of income
REPEAT_PAYMENT	Repeating payment/standing order
RETURN_OF_CAPITAL	Return of capital
SELL	Sell a Security
SERVICE_CHARGE	Service charge
SPLIT	Stock or Mutual Fund split
TRANSFER	Transfer cash or Holdings in or out (depends on signage of amount)
WITHDRAWAL	Withdraw funds from Account

Notes on Transaction (continued):

- The following table defines the sign used for the FLOW_AMOUNT and FLOW_UNITS field in transactions. The sign is based on the transaction type. Signs available are:
 - Positive
 - Negative
 - Neutral – used only by FLOW_AMOUNT, this is a flow of 0
 - As is – the sign in the original data from the Financial Institution. This is usually done to preserve the full meaning of the transaction (e.g. transfer in vs. transfer out are not distinguished by type alone, but by type plus unit sign).

TX_TYPE Value	FLOW_AMOUNT Sign	FLOW_UNITS Sign
ATM	As is	As is
Buy	Negative	Positive
Check	Negative	Negative
Closure	Neutral	As is
Credit	Positive	Positive
Debit	Negative	Negative
Deposit	Positive	Positive
Direct Deposit	Positive	Positive
Direct Debit	Negative	Negative
Dividend	Positive	Positive
Fee	Negative	Negative
Income	Positive	Positive
Interest	As is	As is
Investment Expense	Negative	Negative
Journal	As is	As is
Margin Interest	As is	As is
Other	Neutral	As is
Payment	Negative	Negative
Point of Sale	Negative	Negative
Reinvestment	Neutral	Positive
Repeat Payment	Negative	Negative
Return of Capital	Positive	Positive
Sell	Positive	Negative
Service Charge	Negative	Negative
Split	Neutral	As is
Transfer	As is	As is
Withdrawal	Negative	Negative

DATACONNECT OPERATIONS

Overview

This section provides a detailed description of all DataConnect Lite operations.

DataConnect URL

The DataConnect API consists of a single URL invocation point:

<https://www.byallaccounts.net/dataconnect/WPServlet?RequestType=DataConnect>

This URL must be specified exactly (including case). Your request is routed to the appropriate component on ByAllAccounts' servers. You must:

- Use https (http requests are rejected).
- Use a request method type of **POST** (**GET** type requests are rejected).

The data you provide in the **POST**:

- Is the Input Request Document.
- Contains your Login request (with credentials that authenticate you as a valid user of DataConnect).
- Is your data retrieval or data update request.

The DataConnect web server returns a DataConnect response file to you that is compressed using the ZIP compression format.

Protocol

DataConnect complies with the HTTP/V1.1 protocol and requires use of SSL (https). All input request documents must be sent via **POST** over https.

Versioning

This release of DataConnect supports the following version:

<VERSION>VERSION3.0**</VERSION>**

Compression

DataConnect Response documents are always compressed in ZIP format.

General XML Document Information

All DataConnect Request and Response documents must adhere to the following:

- All XML element names must be in upper case. For example, the element **<USER_GROUP>** is correct, while the element **<user_group>** is incorrect.
- Values of elements are not case-sensitive unless specifically noted.
- Each document must include a DTD reference to a publicly available WebPortfolio DataConnect DTD. The DTD to use is defined in subsequent sections. DataConnect validates your request document against the DTD referenced in your document. If the document cannot be validated, an error is returned to you.
- UTF-8, a compressed version of Unicode that uses only a single byte for most common characters, is the character set used for all documents.

Overall Document Structure

Input Request

An input request document has the following overall structure:

```
<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE DATACONNECTRQ PUBLIC
'-//DataConnect DTD//DataConnect//EN'
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRQ.
dtd'>
<DATACONNECTRQ>
  <VERSION>VERSION3.0</VERSION>
  { One login request }
  { One data retrieval or update request }
</DATACONNECTRQ>
```

Output Request

A response document has the following overall structure:

```
<?xml version="1.0" encoding="UTF-8"?>

<!DOCTYPE DATACONNECTRS PUBLIC
'-//DataConnect DTD//DataConnect//EN'
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRS.d
td'>
<DATACONNECTRS>
  <VERSION>VERSION3.0</VERSION>
  { One login response }
  { One data retrieval or update response }
</DATACONNECTRS>
```

Authentication

The DataConnect user must provide a WebPortfolio username and password that is used to authenticate him. If a user requests an operation for which he is not authorized, an error is returned. Please see the following Authorization section for a description of the privileges required to access DataConnect.

A login request must be included as the first request in each DataConnect input request document. Its purpose is to submit credentials for authentication.

Authorization

The type of login (administrative or non-administrative) and the API privilege level of the login are used to determine which operations are available to that login.

Administrative users of the DataConnect API are given access to all WebPortfolio users related to the administrative user's Firm. Advisors are given access to their own data and to the data of their clients. If the Firm's usage model is Investor-managed, Investors are given full access to their own data. If the Firm's usage model is Advisor-managed, the Advisor determines the level of access (if any) that the Investor has to his financial information.

Asynchronous Operation

Potentially, DataConnect's **Get Data** operation can be lengthy because it is primarily used to retrieve a large amount of data (many users, many transactions, etc.). An http connection cannot be maintained for the duration of the operation since it consumes resources unnecessarily and is subject to interruption by a number of factors, including various client and server timeout settings. Therefore, **Get Data** is provided as both a synchronous and an asynchronous operation. The asynchronous operation is distinguished by **_A** at the end of the request and response tags (e.g., **<DATAGETRQ>** is synchronous; **<DATAGETRQ_A>** is asynchronous.). The DataConnect client determines which form to use.

For asynchronous operations, the simple request/response communication sequence used by synchronous operations is replaced with the following steps:

1. DataConnect client sends initial request (**<DATAGETRQ_A>**, etc.).
2. DataConnect server reads and parses initial request. If the request is not valid, an error is returned. If the request is valid, an **Operation Started** status along with a receipt (to retrieve the data later) and an expiration timestamp (point after which the data is no longer retained) are returned. A suggested wait time in milliseconds before issuing the **Claim Data** request is also included in the response.
3. DataConnect server begins processing the request.
4. DataConnect client waits for the number of milliseconds specified in the **<CLAIM_WAIT>** and then sends the subsequent request (**<DATACLAIMRQ>**) including the receipt to determine if the operation is completed. DataConnect server responds with one of the following:
 - Invalid/expired receipt
 - Operation in progress
 - Status and data from the operation
5. Once the client receives data, he should call back the DataConnect server with an Acknowledge Data Receipt request. Upon receipt of this acknowledgement, the DataConnect server removes the data from the temporary data store.

DataConnect clients must accommodate the return of the **Operation Started** status and code to the above scheme in those cases. Once the operation completes, the data resulting from the operation is retained until the expiration time of the receipt. Expiration time is determined on a per operation basis.

The DataConnect client must submit subsequent requests for data resulting from an asynchronous operation from the same IP address as the initial request.

Aggregates

The following aggregates are used in DataConnect:

- **<STATUS>**

The **<STATUS>** aggregate is used to communicate the result status of a requested operation. **<STATUS>** is always returned as part of a response message and contains:

- **<ERRCODE>**: A numeric code that uniquely identifies the error
- **<ERRMSG>**: The text corresponding to **ERRCODE** (Omitted if **<ERRCODE>** indicates the operation was successful)

One or more errors (**ERRCODE+ERRMSG**) can be included in a **<STATUS>** aggregate. Typically, multiple error messages are provided if there are multiple errors in the input request. In most other cases, a single error is provided. In the case where multiple errors are provided, it is safe to treat the first error in the list as the primary error.

- **<FILIST>**

The **<FILIST>** aggregate is used to group one or more **<FI>** elements.

- **<SECURITYLIST>**

The **<SECURITYLIST>** aggregate is used to group one or more **<SECURITY>** elements.

- **<USER_IDENT>**

The **<USER_IDENT>** aggregate is used to provide identifying information for a user by specifying one identifier field value and its type:

- **<PERSON_ID>**
- **<PERSON_FIRM_TAG1>**
- **<PERSON_LOGIN_NAME>**

The **<USER_IDENT>** identifies a Person, and is also used to indirectly identify the Financial Profile for that Person. The Financial Profile for the Person is the profile to which he has a Profile Access relationship with role INVESTOR.

Data Types

In addition to the Data Types defined in the [General Object Information section](#), the following Data Type is used in values of request or response elements:

Data Type	Description
RECEIPTnn	A receipt for an asynchronous operation. The receipt is alphanumeric and can contain up to nn characters.

Operation Profile

In general, each operation consists of a request/response message pair. The request is what is sent to DataConnect to request that the operation be performed. The response is what DataConnect returns to indicate whether the operation was successfully or not, as well as to return any data related to the request.

Operation Summary

The following table contains all DataConnect operations. It includes the purpose of the operation and its associated Request/Response pair.

General Operations		
Login	Authenticates the caller as a WebPortfolio user with sufficient privilege to perform DataConnect functions.	Request: <LOGINRQ> Response: <LOGINRS>
General Error	General Error is a response-only message that is returned when DataConnect is unable to process the input request document because it is empty, malformed, or otherwise fundamentally incorrect.	Request: N/A Response: <GENERALRS>
Asynchronous Helper Operations		
Claim Data	Retrieves data resulting from a previously requested asynchronous operation.	Request: <DATACLAIMRQ> Response: <DATACLAIMRS>
Acknowledge Data Received	Informs the DataConnect server that the data was successfully retrieved and that DataConnect may release the data.	Request: <DATAACKRQ> Response: <DATAACKRS>
Retrieval Operations		
Get Data (Synchronous)	Retrieves personal profiles and financial information for one or more users.	Request: <DATAGETRQ> Response: <DATAGETR>
Get Data (Asynchronous)	Provides the same data retrieval capability as the Synchronous Get Data function.	Request: <DATAGETRQ_A> Response: <DATAGETR_A>

General Operations

This section describes the operations of general utility, including authentication and general error response.

The following items are defined for each DataConnect operation (**Note:** Sections identified as optional are omitted if there is no relevant information for that operation.):

- **Purpose:** Why or for what the operation is used
- **Restrictions:** Limitations or notes on the use of the operation
- **Behavior (optional):** For complex operations, explains in detail the behavior of the operation under different circumstances
- **User Notifications (optional):** User notifications resulting from the function (if any)
- **Request:** Form of the function request
- **Response:** Form of the function response
- **Errors:** Status codes that may be returned in the response
- **Sample XML:** Examples of the operation request and response (**Note:** Ellipses (...) are used in the Sample XML to indicate the presence of additional information not shown.)

Login

Purpose

Authenticates the caller as a WebPortfolio user with sufficient privilege to perform DataConnect API functions.

Restrictions

The following restriction applies to the use of this function:

There must be only one **LOGINRQ** in an input request document and it must be the first request in the document.

Request: <LOGINRQ>

The <LOGINRQ> request can contain the following:

Tag	Required	Field	Description
<LOGIN_NAME>	v	LOGIN_NAME	Login name for a WebPortfolio user with DataConnect API privileges.
<LOGIN_PW>	v	LOGIN_PW	Password that goes with LOGIN_NAME .
<NEW_LOGIN_PW>		NEW_LOGIN_PW	Changes password for LOGIN_NAME to NEW_LOGIN_PW . The current LOGIN_PW must be provided in LOGIN_PW . This option is typically used when LOGIN_PW has expired and must be reset to gain access to DataConnect. If the password change does not succeed, then the LOGINRQ fails and any subsequent requests fail as well.

Response: <LOGINRS>

The <LOGINRS> response can contain the following:

Tag	Required	Field	Description
<STATUS>	v		See <STATUS> aggregate description.

Errors

This operation may return the following errors in the **<STATUS>** portion of the response:

Error Code	Severity	Error Message
56003	Error	The login name or password is incorrect.
56011	Error	Caller's account is disabled. Contact technical support for assistance.
56027	Error	The password has expired.
56803	Error	The new password must be 6 characters or longer.
56811	Error	The new password cannot be a single repeated character.
56819	Error	The new password cannot be all letters or all numbers.
56827	Error	The new password must be different than your old password.

Sample XML

The Login Request is always the first request in an input request document. An additional request to retrieve or update data follows the Login Request.

The following is a sample Login Request:

```
<DATACONNECTRQ>
  <VERSION>VERSION3.0</VERSION>
  <LOGINRQ>
    <LOGIN_NAME>joesmith</LOGIN_NAME>
    <LOGIN_PW>xyz123</LOGIN_PW>
  </LOGINRQ>
  ...
</DATACONNECTRQ>
```

The following is a sample Login Response:

```
<DATACONNECTRS>
  <VERSION>VERSION3.0</VERSION>
  <LOGINRS>
    <STATUS>
      <ERRCODE>0</ERRCODE>
      <ERRMSG>Success</ERRMSG>
    </STATUS>
  </LOGINRS>
  ...
</DATACONNECTRS>
```

General Error

Purpose

General Error is a response-only message that is returned when DataConnect is unable to process the input request document because it is empty, malformed, or otherwise fundamentally incorrect.

Restrictions

None

Response: <GENERALRS>

The <GENERALRS> can contain the following:

Tag	Required	Field	Description
<STATUS>	v		See <STATUS> aggregate description.

Errors

This operation may return the following errors in the <STATUS> portion of the response:

Error Code	Severity	Error Message
65699	Error	> ** Parsing error, line 11 Element "XXXX" does not allow "xxxx" here.
65747	Error	The DataConnect version is unsupported or invalid.
65819	Error	The request was empty

Sample XML

In response to a malformed request, a response similar to the following may be received:

```
<DATACONNECTRS>
  <VERSION>VERSION3.0</VERSION>
  <GENERALRS>
    <STATUS>
      <ERRCODE>65819</ERRCODE>
      <ERRMSG>The request was empty </ERRMSG>
    </STATUS>
  </GENERALRS>
</DATACONNECTRS>
```


Asynchronous Helper Operations

Used in conjunction with asynchronous operations, the operations presented in this section are used to complete the operation. These helper operations provide generic messages for retrieving data resulting from an asynchronous operation and for releasing that data once the DataConnect client receives it.

Claim Data

Purpose

Retrieves data resulting from a previously requested asynchronous operation.

Restrictions

The following restrictions apply to this operation:

The credentials provided in the **<LOGINRQ>** accompanying this operation and the credential used to originally submit the operation request must be identical. If they are not, an error is returned.

Request: **<DATACLAIMRQ>**

The **<DATACLAIMRQ>** can contain the following:

Tag	Required	Data Type	Description
<RECEIPT>	v	RECEIPT64	Receipt previously issued to the DataConnect client for an asynchronous operation.

Response: **<DATACLAIMRS>**

The following is a response to a **<DATACLAIMRQ>** request:

If the asynchronous operation is not completed, a **<DATACLAIMRS>** response, containing the following, is returned:

Tag	Required	Data Type	Description
<STATUS>	v		See <STATUS> aggregate description.
<RECEIPT>	v	RECEIPT64	Receipt provided in request.
<CLAIM_WAIT>			Provided only if <RECEIPT> is valid. Value is the number of milliseconds to wait before reattempting the Claim Data request.

The status typically indicates that the operation is in progress, or it could report that the receipt expired.

If the asynchronous operation is complete, the data returned is the full response for that operation, e.g., **<DATAGETRS>**. (**Note:** In this case, the **<DATACLAIMRS>** response tags are not used.).

Errors

This operation may return the following errors in the **<STATUS>** portion of the response:

Error Code	Severity	Error Message
0	Success	Success
0	Success	Operation started
0	Success	Operation in progress
65570	Error	The operation did not complete in its allotted time
65579	Error	The receipt has expired

Sample XML

The following is a sample request:

```
<DATACONNECTRQ>

  <VERSION>VERSION3.0</VERSION>
  <LOGINRQ>...</LOGINRQ>

  <DATACLAIMRQ>
    <RECEIPT>QWER-0987AF;LKJ</RECEIPT>
  </DATACLAIMRQ>

</DATACONNECTRQ>
```

The following is a sample response:

```
<DATACONNECTRS>

  <VERSION>VERSION3.0</VERSION>
  <LOGINRS>...</LOGINRS>

  <DATACLAIMRS>
    <STATUS>
      <ERRCODE>0</ERRCODE>
      <ERRMSG>Operation in progress</ERRMSG>
    </STATUS>
    <RECEIPT>QWER-0987AF;LKJ</RECEIPT>
    <CLAIM_WAIT>5000</CLAIM_WAIT>
  </DATACLAIMRS>

</DATACONNECTRS>
```

Acknowledge Data Received

Purpose

Informs the DataConnect server that the data was successfully retrieved and that DataConnect can release the data. Upon receiving this request, the DataConnect server removes that data from storage and the receipt is expired regardless of any prior expiration date issued with the receipt.

Restrictions

None

Behavior

This operation exhibits the following behaviors:

1. If the **<DATAACKRQ>** is submitted while the operation corresponding to the receipt is still in progress, an error is returned. The operation must complete prior to retrieving the data and acknowledging data receipt.
2. If the credentials provided in the **<LOGINRQ>** accompanying this operation and these credential differ from those originally used to submit the operation request, an error is returned.

Request: <DATAACKRQ>

The **<DATAACKRQ>** can contain the following:

Tag	Required	Data Type	Description
<RECEIPT>	v	RECEIPT64	Receipt previously issued to the DataConnect client for this asynchronous operation.

Response: <DATAACKRS >

The **<DATAACKRS>** can contain the following:

Tag	Required	Data Type	Description
<STATUS>	v		See <STATUS> aggregate description.
<RECEIPT>	v	RECEIPT64	Receipt provided in request.

Errors

This operation may return the following error in the **<STATUS>** portion of the response:

Error Code	Severity	Error Message
0	Success	Success

Sample XML

The following is a sample request:

```
<DATACONNECTRQ>

  <VERSION>VERSION3.0</VERSION>
  <LOGINRQ>...</LOGINRQ>

  <DATAACKRQ>
    <RECEIPT>QWER-0987AF;LKJ</RECEIPT>
  </DATAACKRQ>

</DATACONNECTRQ>
```

The following is a sample response:

```
<DATACONNECTRS>

  <VERSION>VERSION3.0</VERSION>
  <LOGINRS>...</LOGINRS>

  <DATAACKRS>
    <STATUS>
      <ERRCODE>0</ERRCODE>
      <ERRMSG>Success</ERRMSG>
    </STATUS>
    <RECEIPT>QWER-0987AF;LKJ</RECEIPT>
  </DATAACKRS>

</DATACONNECTRS>
```

Retrieval Operations

This section defines operations for retrieving data from DataConnect.

Get Data (Synchronous)

Purpose

Retrieves personal profiles and financial information for one or more users.

Restrictions

None

Behavior

This operation exhibits the following behaviors:

1. Administrative users are not returned in the response data.
2. The response data is structured so that Securities, Financial Services, and Users are delivered in their own separate aggregate at the beginning of the document. Subsequent data for each User refers to those shared Securities and Financial Services. Data returned for each of these object types is determined by which Users are included in the response set. Specifying **<INCHOLDING/>** or **<INCTX>** does not affect the Securities included in the **<SECURITYLIST>**.

Request: <DATAGETRQ>

The request consists of the following two primary items:

- Type of information to include in the response. Choose from any combination of the following: FI (Financial Institution or Financial Service), Security, User (Person and Profile Access), Financial Profile, Portfolio, Account, Account Credential, Holding, and Transaction. Designate the type of information to include using the <INCxxx> tags.
- Data to include in the response. You can specify data retrieval criteria for a single type of object per request, and you may choose from one of the following object types: User, Financial Profile, Portfolio, or Account. If Transactions are to be included, then you can specify a date range or ID range to constrain the set of Transactions returned.

The type of object you use to constrain the request affects how data for other object types is retrieved. For example, if you retrieve data for a single Account, but elect to receive Security and Portfolio information, then only the Portfolio that contains that Account and the Securities for Holdings in that Account are returned to you.

Designate the data to include in the response using the <GET_DATA_QUERY> element.

The **<DATAGETRQ>** request can contain the following:

Tag	Required	Field	Description
<GET_DATA_QUERY>			See the <GET_DATA_QUERY> aggregate description on the following page. If no GET_DATA_QUERY is provided then all data available to the caller is returned constrained by any Transaction range specified in <INCTX> .
<GETOPTIONS>			Options for data retrieval. See the <GETOPTIONS> Aggregate description following.
<INCSECURITY>			See the <INCSECURITY> Aggregate description following. Provides an option for including security closing prices. If present, specifies that Security information should be included in the response. If absent, Securities are not included in the response.
<INCFI/>			Empty tag: If present, specifies that Financial Service information should be included in the response. If absent, Financial Services are not included in the response.
<INCUSER/>			Empty tag: If present, specifies that Person, Login, and Profile Access information should be included in the response. If absent, this information is not included in the response.
<INCFP/>			Empty tag: If present, specifies that Financial Profile objects should be included in the response. If absent, Financial Profiles are not included in the response.
<INCPORTFOLIO/>			Empty tag: If present, specifies that Portfolios should be included in the response. If absent, Portfolios are not included in the response.
<INCACCTCRED/>			Empty tag: If present, specifies that Account Credentials should be included in the response. If absent, Account Credentials are not included in the response.
<INCAACCOUNT/>			Empty tag: If present, specifies that Accounts should be included in the response. If absent, Accounts are not included in the response.
<INCHOLDING>			See the <INCHOLDING> Aggregate description following. If present, specifies that holdings should be included in the response. The aggregate provides for inclusion of sold-off holdings.
<INCTX>			Note: See the <INCTX> aggregate description on the following page. If present, specifies that Transactions should be included in the response. If absent, Transactions are not included in the response.

<GET_DATA_QUERY> Aggregate

The **<GET_DATA_QUERY>** aggregate identifies the objects to be retrieved. If omitted, all objects available to the caller are returned. This is combined with the specification of which type of information to include in the response (see **<INCxxx>** elements in the table on the prior page). First, you must choose which type of object you will use to drive your query. Then, you may specify search criteria for one or more objects of that type. The following object types are available (see their corresponding query components in the table below):

- User
- Financial Profile
- Portfolio
- Account

Data included in the response is filtered according to the driving objects. Therefore, if you identify a single Portfolio to be retrieved using **<PORTFOLIO_QUERY>** and you specify the **<INCAccounts/>** element only, your response data includes details for all the Accounts that are members of the specified Portfolio. Similarly, going up the data 'tree', if you specify **<INCUSER/>** instead of **<INCAccounts/>**, the information for the user who 'owns' the Portfolio (i.e., the Portfolio contained in the Financial Profile for that INVESTOR user) is included in the response. The broadest filter you can specify is by User.

<GET_DATA_QUERY> can contain one of the following:

Tag	Required	Field	Description
<USER_QUERY>			Identifies the Users for which data should be retrieved. See USER_QUERY aggregate .
<FINANCIAL_PROFILE_QUERY>		Financial_Profile.ID	Identifies the Financial Profiles for which data should be retrieved. More than one <FINANCIAL_PROFILE> can be included.
<PORTFOLIO_QUERY>		Financial_Profile.ID Portfolio.ID	Identifies the Portfolios within the designated Financial Profile for which data should be retrieved. More than one <PORTFOLIO> can be included.
<ACCOUNT_QUERY>		Financial_Profile.ID Account.ID	Identifies the Accounts within the designated Financial Profile for which data should be retrieved. More than one <ACCOUNT> can be included.

<USER_QUERY> Aggregate

Identifies the set of users to return in the result data. This aggregate contains one of the following:

- **<USER_IDENT>**: Identifies a particular Person for whom data should be retrieved. More than one **<USER_IDENT>** can be given in the **<USER_QUERY>**.
- **<PERSON_ROLE>**: Gives a **ROLE** value for a Person - INVESTOR, ADVISOR, ASSISTANT, or CONSULTANT. Use this to retrieve only certain types of users (e.g., Advisors). If not specified, users of all types (INVESTOR, ADVISOR, CONSULTANT) are returned.
- **<HAVING_ADVISOR>**: Contains a **<USER_IDENT>** (q.v.) for an Advisor. Use this to retrieve data for all Persons who are served by this Advisor. Provide an empty **<HAVING_ADVISOR/>** tag to retrieve persons who are not assigned to an Advisor.

<FINANCIAL_PROFILE_QUERY>, <PORTFOLIO_QUERY>, <ACCOUNT_QUERY> Aggregates

Each of these three aggregates can contain one or more **<ID>s** that identify objects of that type to include in the result data.

A **FINANCIAL_PROFILE_QUERY** identifies the **ID(s)** of the target profiles:

```
<FINANCIAL_PROFILE_QUERY>
  <ID> 145</ID>
  <ID> 553</ID>
</FINANCIAL_PROFILE_QUERY>
```

A **PORTFOLIO_QUERY** identifies a single Financial Profile and one or more Portfolios from that Financial Profile that should be included. The following example requests that data for the Portfolios with **ID** 123 or 125 be included in the result data:

```
<PORTFOLIO_QUERY>
  <FP_ID> 45226</FP_ID>
  <ID> 123</ID>
  <ID> 125</ID>
</PORTFOLIO_QUERY>
```

The **ACCOUNT_QUERY** is very similar to the **PORTFOLIO_QUERY**. It identifies a single Financial Profile and one or more Accounts from that Financial Profile that should be included:

```
<ACCOUNT_QUERY>
  <FP_ID> 45226</FP_ID>
  <ID> 123</ID>
  <ID> 125</ID>
</ACCOUNT_QUERY>
```

<GETOPTIONS> Aggregate

The <GETOPTIONS> aggregate allows the user to specify that only data for captive or non-captive counts is to be included in the response. This tag is optional. GETOPTIONS can contain the following:

- One of the following to control inclusion of captive or non-captive accounts in the response:
 - <CAPTIVEONLY/> - directs that accounts, account credentials, holdings, transactions, and FIs should only be returned in the response if the account (itself or as the related account for account credentials, holdings, transactions, and FIs) is captive (CAPTIVE field is true).
 - <NONCAPTIVEONLY/> - directs that accounts, account credentials, holdings, transactions, and FIs should only be returned in the response if the account (itself or as the related account for account credentials, holdings, transactions, and FIs) is non-captive (CAPTIVE field is false).
- <INCMULTICURR/> - causes multi-currency information to be included for any positions and transactions in the response

<INCSECURITY> Aggregate

The <INCSECURITY> aggregate is used to request that securities be included in the DATAGET response. INCSECURITY can take one of the following forms:

- can be an empty tag, <INCSECURITY/>
- can include a subordinate tag to request that security prices be delivered in the security data:
 <INCSECURITY>
 <INCSECDETAIL/>
 </INCSECURITY>
- Can include a subordinate tag <INCSECAC/> to request that ASSET_CLASS and ASSET_SUBCLASS fields be delivered in the security data:
 <INCSECURITY>
 <INCSECAC/>
 </INCSECURITY>

<INCHOLDING> Aggregate

The <INCHOLDING> aggregate is used to request that holdings be included in the DATAGET response. A holding is either *active* or *sold-off*. Active holdings are those that the Financial Institution reports as present in the account. Sold-off holdings are those that were once present in an account but that the Financial Institution no longer reports as present due to sale, transfer, exchange, or otherwise removal of the position from the account. Sold-off holdings are identified by the presence of a DELETED_ON tag in the holding element that provides the date on which the holding was removed from the account.

The <INCHOLDING> can have one of the following forms:

- Can be the empty tag <INCHOLDING/>. This causes only active holdings to be included in the response.
- Can also include a sub-tag <INCHOLDINGSO> that controls the inclusion of sold-off holdings in the response. Note that active holdings are always included when the INCHOLDING tag is specified regardless of the use of the subordinate INCHOLDINGSO tag. The INCHOLDINGSO tag can take one of the following forms:

- o can be an empty tag, <INCHOLDINGSO/>, would be used as follows:

```
<INCHOLDING>
<INCHOLDINGSO/>
</INCHOLDING>
```

This specifies that sold-off holdings should be included in the response. If the request does not specify the INCTX tag then all sold-off holdings are included in the response. Caution should be taken when using this option as this the number of sold-off holdings could be very large. If the request includes the INCTX tag then only sold-off holdings referenced by transactions included in the response are included.

- o can include a date restriction:

```
<INCHOLDING>
<INCHOLDINGSO>20040101</INCHOLDINGSO>
</INCHOLDING>
```

The date restricts the sold-off holdings included in the response. Only those holdings with a DELETED_ON date on or after the specified date will be included in the response. When this form of INCHOLDINGSO is used no other criteria (such as the presence of an INCTX tag in the DATAGETRO) are used to restrict the sold-off holdings returned in the response.

- Can also include a subordinate tag <INCHOLDAC/> to request that ASSET_CLASS and ASSET_SUBCLASS fields be delivered in the holding data:

```
<INCHOLDING>
<INCHOLDAC/>
</INCHOLDING>
```

<INCTX> Aggregate

The <INCTX> aggregate:

- Can be an empty tag (in which case, **all Transactions** are returned).
- OR**
- Can contain either one of the following to restrict the set of Transactions returned:

Tag	Required	Field	Description
<TX_START_DATE>	v	Transaction.EXECUTION_DATE	See <INCTX> aggregate notes below.
<TX_END_DATE>		Transaction.EXECUTION_DATE	See <INCTX> aggregate notes below.

OR

Tag	Required	Field	Description
<TX_START_ID>	v	Transaction.ID	See <INCTX> aggregate notes below.
<TX_END_ID>		Transaction.ID	See <INCTX> aggregate notes below.

One additional option is available in <INCTX>. The <INCEXINFO/> option in the <INCTX> aggregate causes the inclusion of additional fields that contain descriptive information about the

transaction from the custodian: FI_SUPPLIED_DESCRIPTION, FI_SUPPLIED_TX_TYPE, FI_SUPPLIED_TX_TYPE2, and FI_SUPPLIED_TX_TYPE_CODE.

<INCTX> aggregate notes:

- <TX_START_DATE> and (optionally) <TX_END_DATE> are used to constrain the set of Transactions returned by **EXECUTION_DATE**:
 - The date range is applied to the transaction's **EXECUTION_DATE** field.
 - **YYYYMMDD**: The format used to identify the date, where **YYYY** is a four-digit year such as 2003, **MM** is a two-digit month identifier ranging from 01 (January) to 12 (December), and **DD** is a two-digit day identifier ranging from 01 to 31.
 - If there is a start date but no end date, the end date is set to the day of the API call.
 - The start date must be before or the same as the end date.
 - The date range is inclusive of start date and exclusive of end date. If a start date is specified, then all Transactions with execution dates on or after that date are included. If an end date is also specified, then only Transactions with an execution date before the given end date are included.
- <TX_START_ID> and (optionally) <TX_END_ID> are used to constrain the set of Transactions returned by **Transaction.ID**:
 - **NNN**: A Transaction ID (see **ID** field in the [Transaction section](#) and see UID Data Type description in DataConnect [Data Types section](#)) - a positive integer from 0 to 999999999999999999 (18 digits). No punctuation (such as comma ",", separator or decimal point) should be used in this ID value.
 - If there is start Transaction number but no end Transaction number, then all Transactions with an ID equal to or greater than the ID specified in <TX_START_ID> are returned.
 - The start ID must be less than or equal to the value of the end ID.
 - The ID range is inclusive of the start ID and exclusive of the end ID. If a start ID is specified, then all Transactions with IDs equal to or greater than the start ID are included. If an end ID is also specified, then only Transactions with IDs less than the end ID are included.

Response: <DATAGETRS>

The <DATAGETRS> response can contain the following:

Tag	Required	Field	Description
<STATUS>	v		See <STATUS> aggregate .
<SECURITYLIST>		SECURITY.*	See <SECURITYLIST> aggregate . List contains one or more Securities. Includes Securities referenced by Users included in the response.
<FILIST>		Financial_Service.ID, Financial_Service.NAME, Financial_Service.SERVICE_ CATEGORY	See <FILIST> aggregate . List contains one or more Financial Services. Includes services referenced by the Users in this response.
<USERLIST>		Person.*, Profile_Access.*	See <USER> aggregate . List contains one or more Users.
<FP_DATA>			See <FP_DATA> aggregate . Financial Profile data for the Users selected.

* = indicates **All** fields

The **<FP_DATA>** aggregate contains the financial data for a single WebPortfolio Investor. It can contain the following:

Tag	Required	Field	Description
<FINANCIAL_PROFILE>	v	Financial_Profile.*	See Financial Profile object data definition .
<PORTFOLIO>		Portfolio.*	Can have more than one. See Portfolio object data definition .
<ACCOUNT_CREDENTIAL>		Account_Credential.*	Can have more than one. See Account Credential object data definition .
<ACCOUNT>		Account.*	Can have more than one. See Account object data definition .
<HOLDING>		Holding.*	Can have more than one. See Holding object data definition .
<TRANSACTION>		Transaction.*	Can have more than one. See Transaction object data definition .

* = indicates **All** fields

The **<USER>** aggregate contains the personal and access information for a single WebPortfolio user. It can contain the following:

Tag	Required	Field	Description
<PERSON>	v	Person.*	See Person object data definition .
<PROFILE_ACCESS>		Profile_Access.*	Can have more than one if the Person is an Advisor or Assistant.

Errors

This operation may return any of the following errors in the **<STATUS>** portion of the response:

Error Code	Severity	Error Message
65699	Error	The request is invalid or formatted incorrectly
65707	Error	The date is invalid or formatted incorrectly
65715	Error	The transaction ID range is invalid
65723	Error	The transaction date range is invalid
65731	Error	The transaction start date is invalid
65739	Error	The transaction end date is invalid
65939	Error	The requested user was not found
65947	Error	Caller is not authorized to make this request
66099	Error	The <object name> could not be found
66107	Error	The requested user was not found
66115	Error	The requested user has been unsubscribed. No further operations can be performed on the user

Sample XML

The following is a sample **<DATAGETRQ>** request that gets Financial Services, Portfolios, Accounts, and user information for the Users with **FIRM_TAG1**:

```
<DATACONNECTRQ>
  <VERSION>VERSION3.0</VERSION>

  <LOGINRQ>...</LOGINRQ>

  <DATAGETRQ>
    <GET_DATA_QUERY>
      <USER_IDENT>
        <PERSON_FIRM_TAG1>000111222</PERSON_FIRM_TAG1>
      </USER_IDENT>
    </GET_DATA_QUERY>
  </DATAGETRQ>
</DATACONNECTRQ>
```

The following is a sample of a corresponding **<DATAGETRS>** response:

```
<DATACONNECTRS>

  <VERSION>VERSION3.0</VERSION>
  <LOGINRS>...</LOGINRS>

  <DATAGETRS>
    <STATUS>
      <ERRCODE>0</ERRCODE>
      <ERRMSG>Success </ERRMSG>
    </STATUS>

    <FILIST>
      <FI>
        <ID>21762</ID>
        <NAME>Quality Trust Company </NAME>
        <SERVICE_CATEGORY>Trust </SERVICE_CATEGORY>
      </FI>
      <FI>
        <ID>150</ID>
        <NAME>Copper Mountain Trust CopperLink</NAME>
        <SERVICE_CATEGORY>Private Wealth
        Management </SERVICE_CATEGORY>
      </FI>
    </FILIST>

    <USERLIST>
      <USER>
        <PERSON>
          <ID>22</ID>
          <FIRM_TAG1>000111222</FIRM_TAG1>
          <ROLE>INVESTOR</ROLE>
          <CREATION_DATE>20030717</CREATION_DATE>
        </PERSON>
        <PROFILE_ACCESS>
          <PERSON_ID>22</PERSON_ID>
          <PROFILE_ID>287</PROFILE_ID>
          <ROLE>INVESTOR</ROLE>
        </PROFILE_ACCESS>
      </USER>
    </USERLIST>

    <FP_DATA>
      <PORTFOLIO>
        <FP_ID>287</FP_ID>
        <ID>422</ID>
        <NAME>My Portfolio</NAME>
      </PORTFOLIO>
```


Sample of a corresponding **<DATAGETRS>** response (continued)

```
<ACCOUNT>
  <FP_ID> 287</FP_ID>
  <ID> 122081</ID>
  <NAME> Demo Account 1 - QTC</NAME>
  <PORTFOLIO_ID> 422</PORTFOLIO_ID>
  <ONLINE_ACCESS_ENABLED> 1</ ONLINE_ACCESS_ENABLED >
  <LAST_UPDATED> 20030621113200</LAST_UPDATED>
  <ACCOUNT_NUMBER> A000003</ACCOUNT_NUMBER>
  <UPDATE_STATUS_INFO>
    Update successful on Jun 21, 2003 5:03:31 AM</UPDATE_STATUS_INFO>
  <UPDATE_STATUS_ERRCODE> 0</UPDATE_STATUS_ERRCODE>
  <LAST_UPDATE_ATTEMPT> 20030621113200</LAST_UPDATE_ATTEMPT>
  <CAPTIVE> 0</CAPTIVE>
  <AC_ID> 1456</AC_ID>
</ACCOUNT>
</FP_DATA>
</DATAGETRS>
</DATACONNECTRS>
```

Get Data (Asynchronous)

Purpose

This asynchronous function provides the same data retrieval capability as the **Synchronous Get Data** function. Please refer to the description of that function for details on data retrieval. Only additional tags relating to the asynchronous nature of the function are presented in this section.

Restrictions

1. This function is asynchronous. Please refer to [Asynchronous Operations section](#) for details of using asynchronous functions and to the [Asynchronous Helper Operations section](#) for details of related operations.
2. DataConnect clients use the **<DATACLAIMRQ>** request to retrieve data resulting from an **Asynchronous Get Data** operation.
3. DataConnect clients should send a **<DATAACKRQ>** request to tell the DataConnect server that data from a prior asynchronous operation can be released. If this request is not sent, DataConnect retains the data until it expires.

Request: <DATAGETRQ_A>

Identical to **<DATAGETRQ>** but the operation is processed asynchronously. Please refer to **<DATAGETRQ>** for details.

Response: <DATAGETRS_A>

The **<DATAGETRS_A>** contains the following:

Tag	Required	Data Type	Description
<STATUS>	v		See <STATUS> aggregate description.
<RECEIPT>		RECEIPT64	Receipt for the client to inquire later about the result of this operation. Only issued if <STATUS> is successful.
<RECEIPT_EXP>		TIMESTAMP	Expiration time of <RECEIPT> , including time zone. Only present if <RECEIPT> is present.
<CLAIM_WAIT>		NUMBER	Number of milliseconds to wait before attempting to retrieve the results of the Get Data operation via the Claim Data request. Only present if <RECEIPT> is present.

This response provides the receipt needed to claim, at a later time, the results of the Account access test invoked by another tool (e.g., WebPortfolio). A **<DATACLAIMRQ>** must be subsequently submitted to check on the status of the Account access test and to retrieve the final results of the operation. Once the operation is completed, a **<DATAGETRS>** response containing the requested data is received. Please see the Response section of the **Get Data (Synchronous)** operation (**<DATAGETRQ>**) for the details of the data returned.

Errors

Please refer to the Errors section of the **Get Data (Synchronous)** operation (<DATAGETRQ>).

Sample XML

See the sample code provided in the **Get Data (Synchronous)** section.

DATACONNECT USAGE CONSIDERATIONS

DataConnect Access

Users must be authorized to use DataConnect. When ByAllAccounts deploys the WebPortfolio product, the following items are addressed:

- **Access Credentials:** Selected users are given an Administrative User ID and Password that allow them to retrieve data for their WebPortfolio users using DataConnect. It is the user's responsibility to manage and secure these credentials, since they provide access to a limited set of the Investors' personal and financial information.
- **Access Frequency:** Users are given a choice whether to use the bulk or on-demand styles. If they need to change their usage style, they must contact their ByAllAccounts relationship manager.
- **Access Time:** If users choose bulk access, they must agree upon an expected access time and frequency with ByAllAccounts. If they need to change this agreement, they must contact their ByAllAccounts relationship manager.

Compression

Response documents and error documents returned by DataConnect are always compressed in the ZIP compression format. Users must ensure that their program performs decompression of the returned data.

Data Availability

DataConnect can be invoked at any time. However, new data may not always be available for a User or Account due to the following limitations:

- WebPortfolio may download data from Financial Services only during certain hours of the day (e.g., when the service website is available for access).
- WebPortfolio Account data may only be as current as that available from the Financial Service. Many Financial Services update their online data within specific time intervals.

WebPortfolio cannot guarantee that all accounts are updated with the previous day's information or that a particular account is updated by a particular time of day. WebPortfolio updates account data once a day (during the early morning hours) at the time known to be best for each particular Financial Service. Therefore, there is a suggested "best time" to call the API in order to obtain fresh data. This does not imply that the API cannot be used at other times, only that the new data returned might not be different than the data returned in the previous call. The suggested "best time" depends on the Financial Services being used by the firm.

For bulk usage, it is strongly recommended that you call the API after the suggested "best time" to reduce unnecessary bulk data downloading. The timestamp indicating freshness of the object data is provided on each Account (**Account.LAST_UPDATED**) field, Transaction (**Transaction.CREATION_DATE**) field, and Holding (**Holding.LAST_UPDATED**) field.

APPENDIX A: DATACONNECT ACCESS AND DEFINITIONS

This section provides a quick reference to the DataConnect access point and DataConnect definitions.

The main DataConnect URL (case-sensitive):

<https://www.byallaccounts.net/dataconnect/WPServlet?RequestType=DataConnect>

The DataConnect Document Type definitions URLs (case-sensitive):

- Request DTD:

<http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRQ.dtd>

- Response DTD:

<http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRS.dtd>

APPENDIX B: DATACONNECT DOCUMENT TYPE DEFINITIONS

DataConnect Lite provides two public Document Type Definition (DTD) files (case-sensitive):

- Request DTD:

<http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRQ.dtd>

- Response DTD:

<http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRS.dtd>

APPENDIX C: DATACONNECT ERROR CODES

When errors occur in DataConnect, an error code and accompanying message are generated. These error codes are of the following severity:

- Success
- Informational
- Warning
- Error

Error Code	Severity	Error Message
0	Success	Success
56003	Error	The login name or password is incorrect
56011	Error	Caller's account is disabled. Contact technical support for assistance.
56027	Error	The password has expired
56803	Error	The new password does not meet minimum length requirements.
56811	Error	The new password cannot be a single repeated character.
56819	Error	The new password cannot be all letters or all numbers.
56827	Error	The new password must be different than the old password.
65547	Error	An internal error occurred
65555	Error	One or more required fields are missing
65563	Error	One or more fields exceed their maximum length
65570	Warning	The operation did not complete in its allotted time
65579	Error	The receipt has expired
65699	Error	The request is invalid or formatted incorrectly
65707	Error	The date is invalid or formatted incorrectly
65715	Error	The transaction ID range is invalid
65723	Error	The transaction date range is invalid
65731	Error	The transaction start date is invalid
65739	Error	The transaction end date is invalid
65747	Error	The DataConnect version is unsupported or invalid
65779	Error	The specified ID is not a number
65795	Error	The request referred to unsupported or invalid DTD
65803	Error	The DOCTYPE is missing or incomplete
65819	Error	The request was empty
65947	Error	Caller is not authorized to make this request
65955	Error	DataConnect product is not licensed
66099	Error	The requested data could not be found
66107	Error	The requested user was not found
66129	Informational	Some requested users were not found
66139	Error	The profile was not found
67938	Warning	Response contains partial data set

APPENDIX D: ACCOUNT UPDATE STATUS ERROR CODES

The **Account.UPDATE_STATUS_ERRCODE** field is used to store the status from the most recent account access test or update operation invoked by another tool (e.g., WebPortfolio) and presented in DataConnect. The following table lists the error codes and their associated messages that can be returned in the **UPDATE_STATUS_ERRCODE** field of the [Account object](#). An error category is included to indicate the likely source of each error. A table listing these error categories follows the table below.

Error Code	Problem/Error Category	Error Message
1005	Success (No Problem)	Success.
400	Internal WebPortfolio	Internal Error: Incorrect download command.
401	Financial Service	Internal Error: Incorrect download command authorization.
403	Financial Service	Internal Error: Incorrect download command access.
404	Financial Service	Internal Error: Download target not found.
500	Financial Service	Internal Error: Download command caused server error.
503	Financial Service	The institution's server is not available. Try again later.
1001	Internal WebPortfolio	Unable to parse downloaded data.
1002	Internal WebPortfolio	Internal Error: WebPortfolio server incorrectly configured.
1003	Financial Service or Credential	Unable to navigate remote web site. If this account has worked previously the financial institution's online services may be temporarily unavailable -- if the condition persists beyond a few hours, contact ByAllAccounts Technical Support.
1004	Financial Service or Credential	The data downloaded contained no holding balance or status information. This may be a temporary problem with the institution's server or may indicate a problem in WebPortfolio's support for the web site. If the condition persists, please notify ByAllAccounts Technical Support.
1007	Credential	WebPortfolio is unable to log in to this institution using the credentials you provided. Until the credentials are corrected, WebPortfolio will not log in to your account automatically (to avoid account lockout). Verify the information you entered, including the Financial Institution you selected, in WebPortfolio and try manually updating the account. If the condition persists, please notify ByAllAccounts Technical Support.
2000	Financial Service	The institution's server is not available. Try again later.
2001	Credential	Invalid account number. Check that the number is correct. If the number includes punctuation marks (such as dashes) or blanks, try removing them. See the institution's instructions for more details.
2002	Credential	Unable to access account. If the number includes punctuation marks (such as dashes) or blanks, try removing them. See the institution's instructions for more details.
2003	Credential	The account number is not available to this online login.
2004	Credential	Information not available. This account has been closed.

Appendix D: Account Update Status Error Codes (continued)

Error Code	Error Category	Error Message
2005	Credential	This account does not allow data to be downloaded. Contact your financial institution.
2018	Internal WebPortfolio	Internal error: The specified server ID does not exist.
2019	Internal WebPortfolio	Internal error: Duplicate <TRNUID> .
2020	Internal WebPortfolio	Internal error: Unparseable date time.
2021	Internal WebPortfolio	Internal error: Message set version not supported.
2023	Internal WebPortfolio	Internal error: The specified FITID/BILLID does not exist.
2025	Internal WebPortfolio	Internal error: <BRANCHID> required for this country system.
12250	Internal WebPortfolio	The institution does not support investment transaction download.
12251	Internal WebPortfolio	The institution does not support investment position download.
12252	Internal WebPortfolio	The institution does not support downloading investment positions for the specified date.
12253	Internal WebPortfolio	The institution does not support open order download.
12254	Internal WebPortfolio	The institution does not support investment balances download.
15000	Credential	The next account access must specify a new online password. See the institution's instructions for more details.
15500	Credential	Unable to log in. Either the online login or password is incorrect. See the institution's instructions for more details.
15501	Credential	Unable to log in. Your online login was being accessed from elsewhere. The institution does not support concurrent access.
15502	Credential	Unable to log in. Your online access is locked out by the institution. Contact your financial institution.
15505	Internal WebPortfolio	Internal error: Country system not supported
15506	Internal WebPortfolio	Internal error: No information requested.
15507	Credential	Unable to log in. You must supply a new password. See the institution's instructions for more details.

Appendix D: Account Update Status Error Codes (continued)

Category codes are used to classify the error codes returned in the **UPDATE_STATUS_ERRCODE** field of the [Account object](#). They indicate the likely source of the error.

Problem/Error Category	Description
Credential	<p>Error codes in this category indicate a problem with the online access credentials for the account, including:</p> <ul style="list-style-type: none">• ACCOUNT_LOGIN, ACCOUNT_PIN, ACCOUNT_NUMBER (or other credential information) incorrect• Insufficient information to log in (e.g., new password must be provided on first log in)• Account not properly enabled for online access at the financial service <p>Often requires action by the end user to correct.</p>
Financial Service	<p>The financial service is unavailable or responding in an abnormal way. Try the operation again later. If the error persists, contact ByAllAccounts Technical Support.</p>
Internal WebPortfolio	<p>Infrequently occurring, these errors indicate an internal WebPortfolio error and should be reported to ByAllAccounts Technical Support.</p>
Success	<p>Successful result</p>

APPENDIX E: SAMPLE CALL TO THE API

The following is a program fragment written in the Java programming language. It uses the capabilities available in the Java 2 programming environment (Java 1.3 Runtime). This fragment demonstrates the invocation of the DataConnect URL, posting of a request document to that URL, receipt of a response stream, and the writing of that compressed data (ZIP) to a file.

The compressed file produced by the fragment:

- Can be read using a tool capable of decompressing data in ZIP compression format (such as WinZip® or GNU gzip)
- Should be given a file extension of .zip
- Will contain a single XML file with the response data or an error response document
- Will be named **WpGetDatammddhhmi.xml** where **mmddhhmi** is a date and time (**mm**=month, **dd**=day, **hh**=hour, **mi**=minute)

```
...
import java.io.ByteArrayOutputStream;
import java.io.File;
import java.io.FileInputStream;
import java.io.FileOutputStream;
import java.io.FileReader;
import java.io.InputStream;

import java.net.HttpURLConnection;
import java.net.URL;
...

try {
// Configure for use of https

    System.setProperty(
"java.protocol.handler.pkgs", "com.sun.net.ssl.internal.www.protocol");
    java.security.Security.addProvider( new com.sun.net.ssl.internal.ssl.Provider());

// open the URL to DataConnect
//
String contactUrl =
    "https://www.byallaccounts.net/dataconnect/WPServlet?RequestType=DataCon
nect";

String inputFileName = "myRequest.xml"; // my request document

URL url = new URL(contactUrl);
HttpURLConnection urlc = (HttpURLConnection)url.openConnection();

urlc.setDoOutput (true);
urlc.setUseCaches (false);
urlc.setRequestProperty ("Content-Type", "text/xml; charset=UTF-8");
urlc.setRequestProperty ("Accept-Encoding", "zip");
urlc.setRequestMethod ("POST");
ByteArrayOutputStream byteStream =
    (ByteArrayOutputStream)urlc.getOutputStream();
```

Appendix E: Sample Call to the API (continued)

```
// write the request document (POST it) to the DataConnect URL

    FileReader fileReader = new FileReader(new File(inputFileName));
    int next=fileReader.read();
    while ( next != (-1) )
    {
        byteStream.write(next );
        next=fileReader.read();
    }
    byteStream.flush();

// create the file to store the response - response data will be compressed in ZIP format

    String outputFileName = "responseFile";

    FileOutputStream reply = new FileOutputStream(File.createTempFile(outputFileName,
".zip"));
    InputStream input = urlc.getInputStream();

// read compressed bytes from the response write them to our file

    int received = input.read();
    while (received != (-1))
    {
        reply.write(received);
        received=input.read();
    }
    input.close();
    reply.close();

} catch (Exception e) {
    // report exception
}
...
```

APPENDIX F: SAMPLE ERROR RESPONSE DOCUMENTS

This section presents three common error Response Documents and includes suggested actions for correcting them.

See [Appendix B: DataConnect Document Type Definitions](#) for the Request and Response DTD files.

Example 1:

Error Message: The DOCTYPE is missing or incomplete.

Possible Error: No DTD definition provided for DATACONNECTRQ in Request Document

Error Received:

You receive the following error in response to a Request Document:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE DATACONNECTRS PUBLIC '-//DataConnect DTD//DataConnect//EN'
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRS.d
td'>
```

```
<DATACONNECTRS>
  <VERSION>VERSION3.0</VERSION>
  <GENERALRS>
    <STATUS>
      <ERRCODE>65803</ERRCODE>
      <ERRMSG>The DOCTYPE is missing or incomplete</ERRMSG>
    </STATUS>
  </GENERALRS>
</DATACONNECTRS>
```

Appendix F: Sample Error Response Documents (continued)

Example 1 (continued)**Your Input:**

You provided a Request Document to DataConnect similar to the following:

```
<?xml version="1.0" encoding="UTF-8"?>
<DATACONNECTRQ>
  <VERSION>VERSION3.0</VERSION>
  <LOGINRQ>
    <LOGIN_NAME>mylogin</LOGIN_NAME>
    <LOGIN_PW>mypassword1234</LOGIN_PW>
  </LOGINRQ>
  <DATAGETRQ>
    <GET_DATA_QUERY>
      <USER_IDENT>
        <PERSON_FIRM_TAG1>000111222</PERSON_FIRM_TAG1>
      </USER_IDENT>
      <USER_IDENT>
        <PERSON_FIRM_TAG1>435242</PERSON_FIRM_TAG1>
      </USER_IDENT>
    </GET_DATA_QUERY>
    <INCFI/>
    <INCPORTFOLIO/>
    <INCAccount/>
  </DATAGETRQ>
</DATACONNECTRQ>
```

Appendix F: Sample Error Response Documents (continued)

Example 1 (continued)**Suggested Action:**

The error indicates that in attempting to parse the Request Document, the parser had no DTD definition for the first element, **DATACONNECTRQ**. The reason for the error is that the Request did not provide a **DOCTYPE** reference to identify the DTD to use to validate the document. Correct the Request Document to include the **DOCTYPE**.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE DATACONNECTRQ PUBLIC "-//DataConnect DTD//DataConnect//EN"
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteR
Q.dtd'>

<DATACONNECTRQ>
  <VERSION>VERSION3.0</VERSION>
  <LOGINRQ>
    <LOGIN_NAME>mylogin</LOGIN_NAME>
    <LOGIN_PW>mypassword1234</LOGIN_PW>
  </LOGINRQ>
  <DATAGETRQ>
    <GET_DATA_QUERY>
      <USER_IDENT>
        <PERSON_FIRM_TAG1>000111222</PERSON_FIRM_TAG1>
      </USER_IDENT>
      <USER_IDENT>
        <PERSON_FIRM_TAG1>435242</PERSON_FIRM_TAG1>
      </USER_IDENT>
    </GET_DATA_QUERY>
    <INCFI/>
    <INCPORFOLIO/>
    <INCAACCOUNT/>
  </DATAGETRQ>
</DATACONNECTRQ>
```

Appendix F: Sample Error Response Documents (continued)

Example 2:

Error Message: Element "DATAGETRO" does not allow "get_data_query" here.

Possible Error: Lower case lettering used in element name

Error Received:

You receive the following error in response to a Request Document:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE DATACONNECTRS PUBLIC '-//DataConnect DTD//DataConnect//EN'
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteR
S.dtd'>

<DATACONNECTRS>
  <VERSION> VERSION3.0</VERSION>
  <LOGINRS>
    <STATUS>
      <ERRCODE>0</ERRCODE>
      <ERRMSG> Success</ERRMSG>
    </STATUS>
  </LOGINRS>
  <GENERALRS>
    <STATUS>
      <ERRCODE>65699</ERRCODE>
      <ERRMSG> Element "DATAGETRO" does not allow "get_data_query" here </ERRMSG>
    </STATUS>
  </GENERALRS>
</DATACONNECTRS>
```


Appendix F: Sample Error Response Documents (continued)

Example 2 (continued)

Your Input:

You provided a Request Document to DataConnect similar to the following:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE DATACONNECTRQ PUBLIC "-//DataConnect DTD//DataConnect//EN"
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRQ.
dtd'>
  <DATACONNECTRQ>
    <VERSION>VERSION3.0</VERSION>
    <LOGINRQ>
      <LOGIN_NAME>mylogin</LOGIN_NAME>
      <LOGIN_PW>mypassword1234</LOGIN_PW>
    </LOGINRQ>
    <DATAGETRQ>
      <get_data_query>
        <USER_IDENT>
          <PERSON_LOGIN_NAME>marysmith</PERSON_LOGIN_NAME>
        </USER_IDENT>
      </ get_data_query >
      <INCPORFOLIO/>
    </DATAGETRQ>
  </DATACONNECTRQ>
```

Suggested Action:

The error indicates that the element **get_data_query** is not allowed within **DATAGETRQ**. The reason for the error is that element names are case-sensitive. Always use upper case element names for DataConnect. Correct the error in the Request Document by using

GET_DATA_QUERY instead of **get_data_query**.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE DATACONNECTRQ PUBLIC "-//DataConnect DTD//DataConnect//EN"
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRQ.
dtd'>
  <DATACONNECTRQ>
    <VERSION>VERSION3.0</VERSION>
    <LOGINRQ>
      <LOGIN_NAME>mylogin</LOGIN_NAME>
      <LOGIN_PW>mypassword1234</LOGIN_PW>
    </LOGINRQ>
    <DATAGETRQ>
      <GET_DATA_QUERY>
        <USER_IDENT>
          <PERSON_LOGIN_NAME>marysmith</PERSON_LOGIN_NAME>
        </USER_IDENT>
      </GET_DATA_QUERY>
      <INCPORFOLIO/>
    </DATAGETRQ>
  </DATACONNECTRQ>
```

Appendix F: Sample Error Response Documents (continued)

Example 3:

Error Message: The requested user was not found

Possible Error: Error in spelling the user's name

Error Received:

You receive the following error in response to a Request Document:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE DATACONNECTRS PUBLIC "-//DataConnect DTD//DataConnect//EN"
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteR
S.dtd'>

<DATACONNECTRS>
  <VERSION> VERSION3.0</VERSION>
  <LOGINRS>
    <STATUS>
      <ERRCODE>0</ERRCODE>
      <ERRMSG> Success</ERRMSG>
    </STATUS>
  </LOGINRS>
  <DATAGETRS>
    <STATUS>
      <ERRCODE>66107</ERRCODE>
      <ERRMSG>The requested user was not found</ERRMSG>
    </STATUS>
  </DATAGETRS>
</DATACONNECTRS>
```

Appendix F: Sample Error Response Documents (continued)

Example 3 (continued)**Your Input:**

You provided a Request Document to DataConnect to retrieve the user MARYSMITH, but misspelled the user's login name:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE DATACONNECTRQ PUBLIC '-//DataConnect DTD//DataConnect//EN'
'http://www.byallaccounts.net/WebPortfolio/com/baa/dtd/v3/DataConnectLiteRQ.
dtd'>

  <DATACONNECTRQ>
    <VERSION>VERSION3.0</VERSION>
    <LOGINRQ>
      <LOGIN_NAME>mylogin</LOGIN_NAME>
      <LOGIN_PW>mypassword1234</LOGIN_PW>
    </LOGINRQ>
    <DATAGETRQ>
      <GET_DATA_QUERY>
        <USER_IDENT>
          <PERSON_LOGIN_NAME>marysmit</PERSON_LOGIN_NAME>
        </USER_IDENT>
      </GET_DATA_QUERY>
      <INCPORFOLIO/>
    </DATAGETRQ>
  </DATACONNECTRQ>
```

Suggested Action:

Check and correct the spelling of the user's login name in the Request Document (i.e., marysmith in this example).