EVERYTHING EVERYWHERE NORTHFIELD INFORMATION ACCESS CONSOLE (sEENIAC)

User Manual

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NORTHFIELD modeling financial markets worldwide

sEENIAC User Manual

Table of Contents

General Information

This document describes the installation and use of the secure Everything Everywhere Northfield Information Access Console (sEENIAC). sEENIAC is an additional service which calculates Northfield risk data for a very wide range of securities including equity, fixed income and derivative instruments, as well as other optional services that provide detailed analysis of alternative investments such as private equity, directly owned real estate and infrastructure financing. This tool is especially useful for determining risk exposures for those securities not covered in the regularly produced EE model file (exception securities). For more information on the development and history but refer to the following Northfield Newsletter article: http://www.northinfo.com/Documents/240.pdf

Assets available to model through sEENIAC

A. Municipal Bonds

Extract data records (i.e. factor exposures, specific risk per security) from Northfield's municipal bond Everything Everywhere (EE) database.

B. Mortgage Backed Securities (MBS)

Extract data records from Northfield's mortgage pool bond EE database.

C. Mortgage Pass-Through Pools Proxies

For MBS pools not directly covered in the EE risk model's database or modeled through Section B, this proxy calculates risk parameters using analytics similar to those used for regularly distributed MBS pool bonds. Terms and conditions (T&C) for these instruments need to be supplied by the user.

D. Collateralized Mortgage Obligations (CMO) & Asset Backed Securities (ABS)

Process and extract risk parameters for collateralized instruments – CMO and ABS.

E. Fixed Income Securities

Calculate risk parameters for government and corporate bonds using the same analytics used for bonds in the regularly updated EE risk model exposure file. In this case, T&C for these instruments need to be supplied by the user (please consult the relevant Excel template included in the sEENIAC installation package).

F. Derivatives

Calculate risk parameters (factor exposures and specific risk) for derivatives positions with user supplied inputs. The relevant output information (data records, HLD files, composite files) is subsequently ready to be used for a risk analysis or optimization in Northfield's Open Optimizer. Derivative coverage encompasses equity, currency, interest-rate and credit derivatives (please consult the relevant Excel template included with the sEENIAC installation package).

G. Mutual Funds, Hedge Funds and Composite Assets

Process and extract risk parameters for mutual funds and hedge funds of unknown constituents as well as other composites by either uploading user-provided return series or through utilizing Northfield's Allocation Research Toolkit (ART) database.

H. Security Exception handling using cross-reference ID database

A number of exceptions may arise from the use of a different security IDs in the holding files (portfolio, buy list, benchmark, etc) versus the EE database supplied with the regular model update. This would occur for example if the two files had for the same security: a cusip vs. an isin, a ticker vs. a sedol, an 8-digit cusip vs. a 9-digit cusip, etc.

sEENIAC will cross-reference the IDs the user is using to the ones from the database and will return the risk characteristics (factor exposures, specific risk, etc) of the securities in the appropriate EE exposure file format.

Using "eqexcept" request command, the cross database functionality can also accommodate cross reference ID lookup for non-EE models, including Northfield's set of single-country models, regional models and global model.

I. Obtaining Risk Characteristics of Assets based on their monthly Returns

Calculate the risk parameters (factor exposures and specific risk) for those securities (Equity and/or Fixed Income) that are not found in the regularly updated EE risk model exposure file. This process is mainly used for individual equity securities and utilizes EE style regression methodology. Ideally, 60 periods of monthly returns is needed for each security (if fewer than 60 monthly returns are available the missing returns are proxied by the return of an equal weighted index of all assets in the same sector and country as per the methodology described in the EE Model booklet). In certain situations this functionality can be used with Fixed Income instruments for which return series are available, but in general the function described in Section E is the preferred Fixed Income alternative provided that bond T&C are available.

sEENIAC Client Installation Package

Program Applications

sEENIAC is the latest generation of Northfield's EENIAC connectivity tool - sEENIAC - secure EE Information Access Console. sEENIAC features better security (128-bit SSL encryption of all data traffic to and from Northfield EENIAC server), a more robustness connection, and no need for proprietary protocols or port setup.

Please note: sEENIAC only runs from Windows based platforms. Users of other operating systems will need to make several adjustments in order to connect to the sEENIAC system. For example, users will need to create separate connection scripts (e.g. Shell in Unix) that follow the logic of the Windows batch scripts distributed with the sEENIAC client installation

package and utilizing TCP/IP connection tools native to the user's OS (e.g. curl version for Linux).

The sEENIAC client installation package features several elements:

Connection Manager

Connection Manager: Curl.exe
This is the main application which connects to the Northfield server to process data requests.

Connection scripts

client_upload_eft.bat username password asset_file_YYYYMMDD_CCD.csv
Used for processing requests to the sEENIAC server.

client_download_eft.bat username password
Used for retrieving data from the sEENIAC server after an upload request has been made. This script is automatically invoked by the upload script and for most data requests, users need not run this command.

client_download_cmo_eft.bat username password YYYYMMDD
Used for retrieving CMO data from the sEENIAC server after an upload request has been made. This script needs to be run by the user in order to retrieve the output files for CMOs. See Appendix I for monthly schedule of when CMO data is available.

client_download_funds_eft.bat username password
Used for retrieving funds data from the sEENIAC server after an upload request has been made. This script needs to be run by the user in order to retrieve the output files for funds. Depending upon the number of funds to be processed this download file should be run at least 30 minutes after the upload batch has finished processing.

The above connection scripts set the appropriate connection behavior and ensure the transport of input and output files between the user's computer and the sEENIAC server. Generally, these scripts will operate in a setting where client sites have unrestricted HTTPS network access to outside Internet hosts. In the installation section below you can find more information about modifications that will make the software operational in cases where such access is restricted by corporate proxy servers / firewalls.

Installation

The installation is accomplished by extracting the files from the distributed zip file to a folder of your choosing. No further changes to configuration are needed for use as described in this manual.

Folder Structure

Folder location of sEENAC
Location of program files and Excel templates. No restriction on location and name of this folder.

…\input_files

Subfolder for placing asset files for sEENIAC processing requests.

…\output_cmo
Subfolder where files returned from sEENIAC server using the client_download_cmo_eft.bat YYYYMMDD command.

…\output_files
Subfolder which contains files automatically returned from sEENIAC server or from using the client_download_eft.bat command.

…output_funds
Subfolder where files returned from sEENIAC server using the client_download_funds_eft command.

Connection Settings

IP Address & FTP Connection Settings

IP Address: eeniac.northinfo.com / 64.206.31.89

sEENIAC FTP site: ftp://demoweb.northinfo.com 64.206.31.69

We also support FTPS connections (FTP utilizing SSL Encryption), as well as stand-alone PGP encryption over standard FTP. Note: The benefit of the first is that everything is encrypted, including the username and password, and the benefit of the second is that it requires opening only of the standard FTP port.

We provide a client-ready connection script for the HTTPs protocol. Users willing to utilize FTPS or FTP will have to create their own client-side automation, which could be as trivial as cloning the existing Northfield batch scripts into versions that replace the calls to curl.exe commands with calls to command line tools. Please contact your Northfield technical support representative or sales representative for guidance, if needed.

Proxy Server Settings

If your connection to the internet outside of your corporate network passes through a proxy server, some additional configuration is needed. They should be done by your IT department to set the proxy server to forward requests to our servers. For more details, please feel free to have your IT department contact one of our technical support staff.

Proxy Server Connection Scripts

In order to connect through a proxy server you will have to do the following:

1. Install the proxy server script files listed below to your …\sEENIAC main folder

   Upload file:

   - client_upload_eft_proxy_ntlm.bat

   Download files:

- client_download_eft_proxy_ntlm.bat
- client_download_funds_eft_proxy_ntlm.bat
- Client_download_cmo_eft_proxy_ntlm.bat

2. These proxy server script files work through a proxy with the ntlm authentication method. The usage is similar to the existing scripts but there are four more arguments that need to be added after the asset file has been specified:

   <proxy_host> <proxy_port> <proxy_username> <proxy_password>

   For example, the upload process using proxy server should be started by running:

   client_upload_eft_proxy_ntlm.bat username password asset_file proxy_host proxy_port proxy_username proxy_password

   Except for funds and CMOs, the download process is automatic and requires no user intervention. For funds and CMOs the download process should be started by running:

   FUNDS:
   client_download_funds_eft_proxy_ntlm.bat username password proxy_host proxy_port proxy_username proxy_password

   CMOs:
   client_download_cmo_eft_proxy_ntlm.bat username password prev_month_end proxy_host proxy_port proxy_username proxy_password

General Output Files

General error message files and log files:

- errorlog.txt - error report for problems with fund processing
- exceptions.txt - lists funds that were requested in a fund list but were not properly formatted in the ADD file or not available in ART database.
- UnprocessedDerivatives.log - Log file containing information regarding why some derivatives were not processed
- InfoFile.log - general messaging file for exception events on EENIAC server (e.g. wrong date of the asset file, missing currency code in filename, etc.)
- ee_event_log_MMDDYYYY.csv - for exception events with bond proxy, interest rate and credit derivative processing as well as stock and bond regressions processing.
- Output_finished.tag: lists all the files that were created by sEENIAC process

Using sEENIAC:

The general steps in operating the sEENIAC service are uniform across all asset classes as described in the "Assets available to model through sEENIAC" section.

The first step is to prepare an asset file. The first column for each record in the asset file is a request commnad which instructs the sEENIAC system as to which function to engage when processing that record.
The second step is to run the client scripts that will send the user's request to the server. This is done by entering the client script in the command prompt console.
The third and last step is the download of the output data to the user's pc. For most functions this step is automatic, i.e. the sEENIAC server, when finished processing the required data, automatically transfer the necessary files to the user's pc. However, depending on the asset type, a download command may be required to initiate the download process. The functions that require running a download script will be fully described later in this document.
Processing and delivery times on the sEENIAC server will vary depending on many factors including size of asset file and request type.

The asset input file contains information on the type of processing request (request command) that sEENIAC will perform and the necessary data to be processed by sEENIAC.

Step 1: Create an input file ("asset file")

Asset files can be created in any text editor, or in Excel after which you can save the file to a CSV format.

The asset file MUST be created in the following format. Any other format will be rejected by the sEENIAC system:

asset_file_YYYYMMDD_CCD.csv
Where:
YYYYMMDD is the date the client_upload utility is run

CCD is the ISO three digit code of the base currency of the user's portfolio (USD, CHF, GBP, etc). Please see Appendix IV for complete list.
As noted earlier, the first column for each record in the asset file is always the request command which instructs the sEENIAC server as to how that record is processed. More description about which command to use will be described later in this manual.

Step 2: Required location of asset input files: …\input_files

All necessary input files must be saved to the …\input_files folder. These files include:

- **asset file** example: asset_file_YYYYMMDD_CCD.csv
- **optional files** depending on request command used:

- fundlist and ADD files for fund processing (if request includes any such securities).
- holding files for index futures/options (if request includes any such instruments)

The holding file format must be in comma or text delimited with extension ".HLD" consisting of two columns: security identifier (as recognized by EE model) and security weight in percentage.

For example the holdings file, ASX200_Composite.hld, consists of 2 columns: security ID, % weight:

B01BTX7,2.580296
B0141L8,0.199662
B013SX6,0.068766
B00SV00,0.111205

Step 3: Backing up files

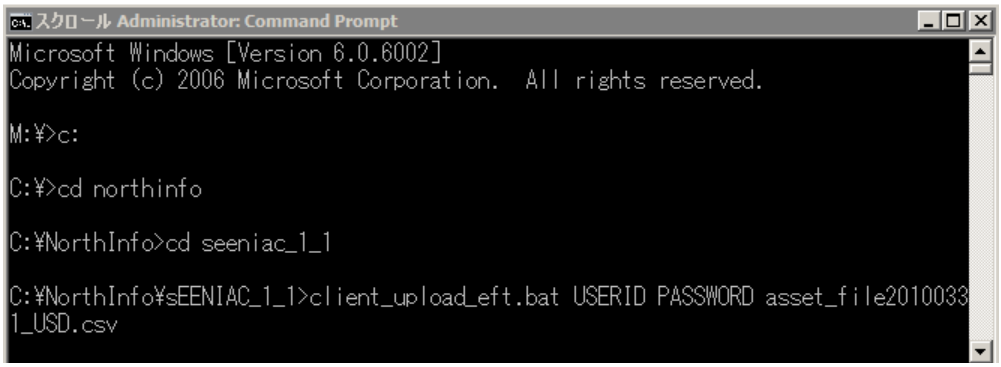
If you would like to save the output files generated from sEENIAC, please save these files in a different directory before processing a new sEENIAC request. *All files stored in the following directories will be automatically deleted by the sEENIAC with each new request:*

…\output_files
…\output_funds
…\output_cmo

Step 4: Run the appropriate client scripts for processing input files

Once the preparation has been completed in Steps 1 – 3, the next step is to run the appropriate client script via the command prompt console. The client script will send the user's request to the sEENIAC server.

From the command prompt, run the client script from the directory that contains the curl.exe and batch (.bat) scripts. You can change directories by using the "cd" command. See below screenshot for an example:



As shown in the screenshot above, enter the necessary client script, username, password and asset file name:

C:\northinfo\sEENIAC_1_1\client_upload_eft.bat username password asset_file_YYYYMMDD_CCD.csv

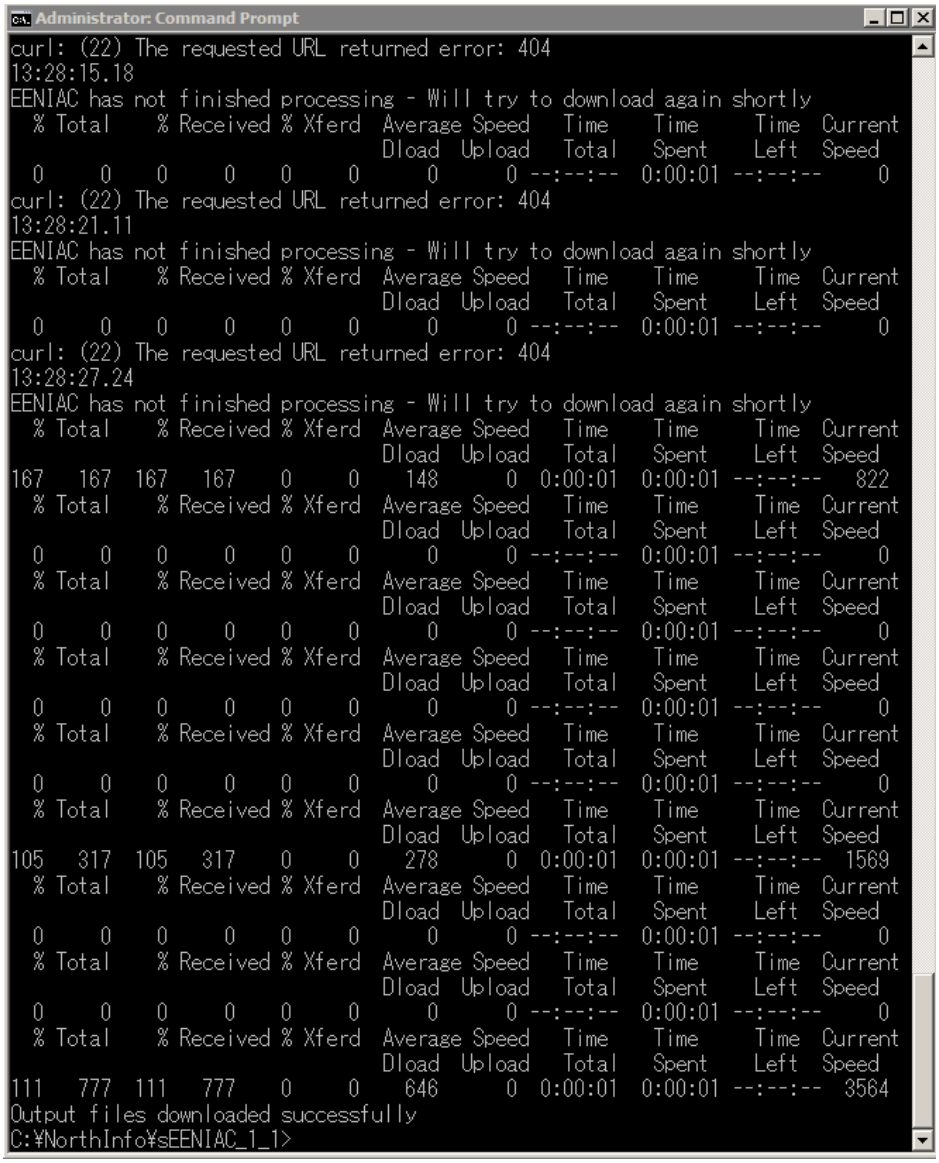
After entering the client script, you will see the script cycle through attempts to download, and it might appear that there is an error, but there is not, this is the correct process as the server is attempts to download at set intervals and completes the process only when output file is ready to be downloaded.

Once the script returns to the "c:\" command prompt the request will be fulfilled. Depending on the type and number of command requests, for most request this can take anywhere from seconds to fifteen minutes.

If the process takes longer than 30 minutes there may be a problem with the asset file format, in that case please terminate the connection by entering "Ctr + Pause/Break" keys on your keyboard and check your asset file and/or holdings files. If the problem continues to persist, please contact Northfield technical support for assistance.

Please note:
"On demand" CMO requests take more time to process, as do a large number of fund processing requests. For this reason, the download of these securities are not automatic and must be initiated by the user.

See screenshot on the next page for example of the connection script.



Step 5: Retrieve output files returned from the sEENIAC server

The last step is the download of the sEENIAC output file(s).

For most sEENIAC requests, the output files will be automatically downloaded to the default download directory:
...\output_files

In addition to the output file an additional file is usually created:
output_finished.txt

This file contains the expected output file for the sEENIAC command used.

As noted previously, the time it takes for the sEENIAC server to process a user input file and for when the user will receive the output file will vary depending on many factors including number of records in the asset file and

the request type. For most cases involving only a handful of securities to be processed, expect the processing time to take approximately 5 minutes. For requests involving hundreds of securities, the processing time could likely take over 10 minutes or more to complete.

Step 6: Assets that are not downloaded automatically from sEENIAC server

For the assets listed below, a download script must be run in order to retrieve output file(s) from the sEENIAC server:

CMOs & ABS:

Download script: client_download_cmo_eft.bat username password YYYYMMDD
Output folder: …\output_cmo

Note:

- CMOs / ABS are only delivered when the monthly EE risk model update is available, even if "on demand" CMO requests are placed days in advance.

Funds (mutual funds, hedge funds, other composites):

Download script: client_download_funds_eft.bat username password
Output folder: …\output_funds

For requests involving hundreds of funds the processing time could take more than an hour.

Due to the processing time requirements for these request types, it is advised that all CMO/ABS are listed in one single asset file and/or all the funds into a second single asset file, respectively. With the help of Windows Scheduler or another scheduler, connection scripts for the upload and download for these types of securities can be scheduled on particular days of the month.

More information is provided in Appendix I on the EE data distribution monthly schedule.

As noted earlier, it is recommended that after the output files are downloaded they be moved to a different folder; since a new sEENIAC request will automatically delete any existing files in the …\output_files, …\output_CMO and …\output_funds folders.

A suggested location to store the output files is the default folder for inputs files for any risk analysis / optimization the user will perform with this data thereafter.

Security Identifiers

For several processes, it is necessary to provide security identifier in the asset file and/or accompanying holdings file. In this case use the security identifier for the appropriate security class as listed below:

US Equities:	8-digit CUSIP
US Bonds	9-digit CUSIP
Non-US Equities	7-digit SEDOL
Non-US Bonds	12-digit ISIN

Any other security type, such as ticker, will be rejected by the sEENIAC process, **except in the case when using "except" or "eqexcept" request command.** These commands serve as a security ID cross reference, so that a user may upload a ticker or local ID code when using these commands. More information on the except and eqexcept commands will be discussed later.

Historical data processing

Historical data for various types of securities is available with sEENIAC.

For derivative securities and proxy bonds, risk exposures are calculated (not retrieved from a database) based on the risk model data as of the request date (the state of the world at that point - yield curve, factor exposures of index constituents, factor covariances, etc.)

For all other historical requests (mbs pools, munis, ID excepts, etc…), the sEENIAC process utilizes the contemporaneous data created at the particular point in time. It does not calculate any exposures for those dates, but rather acquires the appropriate piping to the data sources that have this data.

Risk exposures can now be processed for the following securities and start dates:

Asset Class / sEENIAC command	Start of availability
MBS Pool / mbs_pool	December 2006~
Municipal Bond Data / muni	August 2006~
Derivatives (see EENIAC_template_derivs.xls for list of available derivatives commands)	December 2004~

sEENIAC command	Start of availability
Except	January 2007~
Bondproxy	December 2004~
ret_reg_stock / ret_reg_bond	December 2004~

Historical CMOs are not yet available due the limited processing of past CMOs. Going forward, we will collect CMO bulk processing data, at which point data will become available from the start of the collection date.
Historical processing for funds such as mutual funds, hedge funds will be available at a later date.

Creating the Asset file for historical data

In the asset input file enter any date of the month that proceeds the date of the EE risk model to be used. For example:

asset_file_20100115_USD.csv: for data from 20091231 EE risk model

asset_file_20081001_EUR.csv for data from the 20081130 EE risk model

Asset file format for specific asset types

As noted, asset files can be created in any text editor or in MS Excel but must be saved in comma separated (CSV) file format.

Note: header records are not needed with the asset file; enter data starting with the first row.

Municipal Bonds asset file

Extract data records (i.e. factor exposures, specific risk per security) from Northfield's municipal bond EE database.

File format: 3 columns consisting of Request Type, Security ID, ID Type:

Request Type	Security ID	ID Type
Muni	Ex. 36208REP5	cusip (all lower case)

Example contents of municipal bond asset file:

muni,36208REP5,cusip
muni,36208RYV0,cusip
muni,36208TVS6,cusip
muni,36208UUQ8,cusip
muni,36208UUR6,cusip
muni,36208XFN6,cusip
muni,36208XVZ1,cusip
muni,36208YPQ6,cusip

Municipal Bonds output

Output Details:

Output file location: ….\output_files

Output file name: MUNI.csv

Output file format: same as EE risk model exposure file

Append this file to the appropriate month's EE exposure file (.csv file)

MBS Pool asset file

Extracts data records from Northfield's mortgage backed securities pool database.

File format: 3 columns consisting of Request Type, Security ID, ID Type:

Request Type	Security ID	ID Type
Mbspool	Ex. 00104BAC4	cusip (all lower case)

Example contents of mortgage backed securities pool asset file:

mbspool,00104BAC4,cusip
mbspool,00104BAF7,cusip
mbspool,001055AB8,cusip
mbspool,00130HAU9,cusip
mbspool,001765AE6,cusip
mbspool,001765AK2,cusip
mbspool,001765AP1,cusip
mbspool,001765AU0,cusip

MBSPool output

Output Details:

Output file location: ….\output_files

Output file name: MBS.csv

Output file format: same as EE risk model exposure file.

Append this file to the appropriate month's EE exposure file (.csv file)

MBS Pass-Though Securities Proxy

If a particular MBS pool security is not in our database (which contains more than half a million securities) a user may request risk exposure details by proxy-processing. This requires uploading information about general parameters of the MBS security. sEENIAC will map the parameters to those of generic MBS.

File format: 7 columns:

Request Type	Security ID	Term Remaining	Current Net Coupon	Service Fee	Agency Code	Type of Collateral
mbspool_proxy	cusip (all lower case)	131	5.5	0015	GNMA	ARM

1st Column	Request Type	Enter "mbspool_proxy" (in lower case)
2nd Column	Security ID	CUSIP ID of security to be uploaded
3rd Column	Term Remaining	Enter the remaining terms to maturity in Months.
4th Column	Current Net Coupon	Enter current net coupon received by investor (in %)
5th Column	Service Fee	Enter service fee (in %)
6th Column	Agency Code	Enter agency code (see Appendix for details)
7th Column	Type of Collateral	Enter either "ARM" for adjustable rate mortgage pool or "FRM" for fixed rate mortgage pool

Example contents of MBS pool proxy processing asset file:

mbspool_proxy, 334084102,192,5.2,0.55,FNMA,ARM
mbspool_proxy, 334091103,192,7.28,0.75,GNMA2,FRM

MBSPool output

Output Details:

Output file location: ….\output_files

Output file name: MBSPROXY.csv

Output file format: same as EE risk model exposure file.

Append this file to the appropriate month's EE exposure file (.csv file)

CMO & ABS securities

Northfield offers access to the modeling of mortgage- and asset-backed securities beyond mortgage pools. Those collateralized instruments are CMBS, ReREMICS, ABS, and many other types which for brevity we refer to only as CMO types. Due to the nature of the analysis of modeling these instruments they are processed on demand. This is done by uploading the requested CUSIPs at specified times and downloading the processed data at a later specified time.

Depending on the day of the month the asset file is uploaded, the first column must hold the value of "cmo_fore" or "cmo_curr".

When to use "cmo_fore" request type:

Due to the CMO time processing requirements, Northfield provides the ability to pre-process some CMOs, for availability with the standard EE model data update at month end. To use the "cmo_fore" request type, please be sure to upload an asset file by the middle of the current month. Northfield's modeling adjusts the cash flow analysis of those instruments to have the month end as the effective date.

When to use "cmo_curr" request type:

If the contents of the CMO portfolios have changed since the pre-process cutoff date, a file with the portfolio additions can be uploaded to sEENIAC. In this case, the "cmo_curr" request type must be used.

Please see Appendix I for more information on the exact timing of the EE risk model release schedule to determine whether to use the cmo_fore or cmo_curr request types.

File format: 3 columns consisting of Request Type, Security ID and ID Type:

Request Type	Security ID	ID Type
"cmo_fore" or "cmo_curr" (in lower case)	Ex. 330886309	cusip (all lower case)

Example contents of CMO, ABS asset file:

cmo_fore,330886309,cusip
cmo_fore,334084102,cusip
cmo_fore,332204106,cusip

or

cmo_curr,330886309,cusip
cmo_curr,334084102,cusip
cmo_curr,332204106,cusip

Retrieving CMO/ABS output files:

After the cmo_curr update has been completed (or if you did not have any cmo_curr records uploaded, after the standard EE risk model montly update has been completed), you will need to run the following download script:

…\client_download_cmo_eft.bat username password YYYYMMDD

CMO / ABS output

Output Details:

Output file location: ….\output_cmo

Output file name: CMO_YYYYMMDD.csv

Output file format: same as EE risk model exposure file.

Append this file to the appropriate month's EE exposure file (.csv file)

CMO Off the Shelf Extraction

In addition, CMOs can be processed by using the "mbspool" command. This allows clients to access a database of approximately 250,000 CMOs in a few days after the regular EE risk model becomes available. This makes CMO risk exposure more user-friendly and timely. Northfield will continue to support the "cmo_curr" and "cmo_fore" CMO on-demand processing request commands for those clients who require that all their bonds undergo the usual risk exposure procedure for EE model securities.

Note:

- The mbspool command using the EE model methodology to calculates the exposures the CMOs with the largest issuance (most popular).
- After typization of CMOs from 50 basic cashflow structure types, (procedure where simple cashflow types recombine without limitation to form more complex types), proxy parents (bonds that underwent the EE process) are associated with each non-processed (less active) CMO instrument, based on the closest proximity by combined type, coupon, and maturity, and exposures for the proxied bond are interpolated from the parent exposures.
- CMOs / ABS are only delivered when the monthly EE risk model update is available, even if "on demand" CMO requests are placed days in advance.

Fixed Income Securities Processing:

sEENIAC calculates risk parameters for government and corporate bonds using the same analytics used for fixed income securities in the regular EE risk model. In this case, T&C for these instruments need to be supplied by the user.

Please consult the template **sEENIAC_bond_template.xls,** found in the sEENIAC installation package, which demonstrates the required fields and format of the asset file needed to process fixed income securities.

This spreadsheet template assists in preparing the correctly formatted asset file for processing fixed income securities using terms and condition information. The file contains a macro ("main") that when run will confirm the accuracy of the user-supplied information. The macro checks each cell and if there are any input errors, the cells in error will be highlighted in yellow. If there are no errors, the user will be prompted to save the relevant data to an asset file that can then be uploaded to the sEENIAC server for processing. The macro is run by going to the menu bar: Tools | Macro | Macros and running the "Main" macro.

Though it is not necessary to use this Excel tool for preparation of an asset file for government and corporate fixed income securities, it is recommended that new users of sEENIAC use this file as a template until they are comfortable with creating the appropriately formatted file.

The template contains worksheets for a bond's general T&C, information on embedded call / put schedules, sinking fund provisions and convertibility. Please enter information for each bond on all relevant sheets.

Even if an internal automation process is used to generate an asset file with the required information for the fixed income securities, the Excel template is a useful source of information on the format and types of data necessary to process fixed income securities' risk exposures.

Notes:

- Prices should be supplied as total price. sEENIAC accepts prices (without accrued interest) and adds accrued interest to get what is known as the "dirty" (the real economic) price. The reason for this is that most dealers quote prices without accrued interest (the clean price).
- For bonds issued in Bermuda, Cayman Islands, Netherland Antilles, Luxembourg etc.., it is best to map by geographical proximity. For example, Bermuda and Cayman Islands would map to the United States and the Channel Islands to United Kingdom , since all of these securities will eventually map to English Speaking Region. Netherland Antilles and Luxembourg would map to Europe; (Continental Europe Region). In the EE model, every security falls into one of the five cluster regions, comprising a total of 48 developed and emerging countries. A description of the technique used to arrive at these clusters can be found in appendix C of the EE model documentation.

Fixed Income output

Output Details:

Output file location: ….\output_files

Output file name: BondProxyExposMMDDYYYYc.csv

Output file format: same as EE risk model exposure file.

Append this file to the appropriate month's EE exposure file (.csv file)

Derivatives

sEENIAC calculates risk parameters (factor exposures and specific risk) for derivative positions with user supplied inputs, including relevant files (data records, .HLD files, composite files) to be used later with the Optimizer.

Please consult the template **sEENIAC_template_derivs.xls** which demonstrates the required fields and format of the asset file needed to process derivative securities.

This spreadsheet template assists in correctly formatting necessary input file for processing derivative securities using terms and condition information. The file contains a macro ("main") that when run will confirm the accuracy of the user-supplied information. If there are no errors, the user will be prompted to save the relevant data to an input file that can then be uploaded to the sEENIAC server for processing. The macro is run by going to the menu bar: Tools | Macro | Macro and running the macro named "Main".

As with fixed income securities, it is recommended that new sEENIAC users create asset files with the template until they are comfortable with creating the appropriately formatted asset file directly.

Even if internal automation process is used to generate an asset file with the required information for the derivative securities, the Excel template is a useful source of information on the format and types of data necessary to process derivative securities' risk exposures.

Notes:

- All supplemental holdings files must be in comma separated format, with extension (.hld) consisting of two columns; security ID and weight (weight must be in percent; ie. Enter "2.5" for 2.5%).
- A new security record may need to be created in the EE model exposure file for the DummyID security with all exposures and residual risk values equal to zero.
- The DummyID security in the PortFile gets appended to the client portfolio file. In the PortFile, this "Dummy ID" security is used to offset portfolio value and bring it to the actual value. This is needed because certain derivatives such as futures are in the portfolio with notional value rather than actual economic value. In a futures composite holding file long and short bond values are scaled down by notional and do not add up to 100% the Dummy ID is the difference.

- In the directory of sample bond futures, …\Sample_files\Derivatives\Bond_Futures directory, there are several files that demonstrate the bond futures composite output files: USD-bfutures.hld, EURO-BFUTURES.hld, etc…. These composites consist of a long position, a short position and offsetting DummyID. This DummyID is just the composite reflecting the bond future so that it will end up having the correct exposures. This file will sum up to 100%.

Types of Derivatives covered by sEENIAC

sEENIAC users can process risk exposures for the following derivatives:

Currency Futures / Forwards	Forward Start Call Options
Stock Index Futures / Forwards	Barrier Options
Quanto Index Futures	Asians
Basic Options	Lookbacks
Warrants	Basic Options On Futures
Basic Options On Quantos	IR Options
Barrier Options On Futures	Bond Futures
Barrier Options On Quantos	Options on Bond Futures
Asian Options On Futures	Swaps
Asian Options On Quantos	Swap Futures
Lookback Options On Futures	Swaptions
Lookback Options On Quantos	CDS
IR Futures	Futures on CDS Indices

Derivatives output

Output Details:

Output file location: ….\output_files

Output file names*: IRCRDErivMMDDYYYY.csv – This file is created when processing derivatives such as interest rate and credit derivatives such as bond futures, swaps, CDS, etc…, Append this file to the appropriate monthly EE exposure file (.csv file)

Error file: UnprocessedDerivatives.log -

*Depending on the type of derivatives security to be processed, additional output files may be created… Specifically,

CompFile.csv	Composite asset file in the Optimizer format
.HLD files:	Underlying holdings files of composite asset
DataFile.csv	For equity and currency futures/forwards, also for

options. Append this file to the appropriate month's EE exposure file (.csv file)

PortFile.csv — Contains the security ID and weight which is added to the portfolio file for analysis within the Northfield Optimizer.

See Appendix V for more details on the output files for each type of derivative instrument covered.

Funds, Mutual Funds, Hedge Funds and Composite Assets

While funds and other composites are best modeled using the composite asset feature of the Northfield Open Optimizer (holding files comprising of constituents and the composite asset), constituent information is not always available. This can be true for many hedge funds as well as mutual funds.

If return series are available for those funds or composites, then a methodology based on returns-based style analysis can be used to create data to represent those securities.

The processing of those funds is based on enhanced style analysis techniques (please see http://www.northinfo.com/Documents/508.pdf) which involve a tailored set of style indexes, relevant to the fund's category. This enhanced fund modeling process follows the same methodology used to derive the EE factor exposure of the main fund data set.

Required user files to process fund data:

1. Asset file
2. Monthly total return file ("ADD" file)

There two files need to be placed in the seeniac…\input_files folder before processing.

Asset File (Fund return asset file)
File format: 2 columns consisting of EEniac request type, return series filename:

Request Type	Return Series file name
funds_data	.csv file that must be begin with "ADD"

first column indicates the code for this sEENIAC function, "funds_data".

The second column is the name of the file that contains the funds' return series. This file must be a CSV file and begin with "ADD" in its filename.

Example contents of fund return asset file:
funds_data,ADDMarchIntlFunds.csv
funds_data,ADD_MarchHedgefunds.csv

Note:

- Although a minimum of 18 months of fund return history is needed to adequately create a fund's risk exposures, 60 months of fund history is preferred.

ADD File Format (fund return series)

ADD file format:

*fund returns file will have the following format:

1. Column 1: Fund ID (alphanumeric or any combination of letters/numbers)
2. Column 2: Fund Name (alphanumeric or any combination of letters/numbers)
3. Column 3: Fund Sector. Three options: "EQUITY", "FIXEDINCOME", "BALANCED"
4. Column 4: ISO Currency ID
5. Column 5: Fund return start date: "YYYYMMDD"
6. Column 6: Fund return end date: "YYYYMMDD"
7. Column 7 – Column 66: Fund returns in numerical format ("5.0" for 5%).**

Example contents of ADD return series file:

1001001,Balanced,BALANCED,USD,20071130,20121031,0.69,-0.377,2.336,0.512
1001002,Global Index,EQUITY,USD,20071130,20121031,-4.539,-1.52,-11.69,-0.9
1001003,Japan Index,EQUITY,JPY,20071130,20121031,-3.245,-4.75,-4.56,-1.8
1001004,World Bond Index,FIXEDINCOME,EUR,20071130,20121031,1.791,-0.45

Notes:

- The end period does not have to match the latest EE model data. If returns are not known for the month corresponding to the latest EE model exposure file, then enter the month of the most recent data which is available. As long as the date of the return series end is specified in the ADD file, sEENIAC will process the returns correctly.
- Be sure that the number of monthly returns in the series corresponds to the start date and end date range of months specified in the header

As shown in the examples above, a user can place more than one fund in the ADD file to be modeled by the sEENIAC server, and due to the distributed nature of sEENIAC's fund process, it is recommended that clients place multiple funds in one asst file as opposed to creating multiple asset files.

In addition, by adding more than one record in the asset file, a user can process several types of funds at a time, such as international mutual funds and hedge funds.

Retrieving funds output files:

After the asset input file for the funds processing has been uploaded; normally it takes approximately 30 minutes for the EEniac server to calculate the fund risk exposures. After waiting 30 minutes, the user needs to run the following download script to retrieve the output files:

…\client_download_funds_eft.bat username password

The funds' risk exposures will then be downloaded to the …\output_funds directory with the name; eeModelAddendum.csv

Funds output

Output Details:

Output file location:	….\output_funds
Output file name:	eeModelAddendum.csv
Tag filename:	output_funds.tag
Error file / log:	errorlog.txt / exceptions.txt

Output file format: same as EE risk model exposure file.

Append this file to the appropriate month's EE exposure file (.csv file)

The scheduling of the client_download_funds.bat file will depend on the size of the request. If thousands of funds are to be uploaded, it is advisable that the download script should be scheduled for a few days after the uploaded request.

Note:

- The Northfield ART database is updated approximately the same time as the EE monthly risk model data (5th business day of the month). Due to the timing of the ART database update, if one uploads a sEENIAC file carrying a date which after the latest ART data is available, it will be processed using the return series data of the latest month-end ART database file. If the date is before the latest ART data is available, then the request will be processed using the ART database file from the previous month's data. Even if the user is not an ART subscriber and wants to upload his/her own return series, the date of upload will have an impact on the return series of the spanning indices used in the style analysis.

EE Risk Model Security Record Exception Reporting

Using sEENIAC users can extract risk exposures by cross-referencing IDs in the EE database. This primarily happens when a security identifier in the user's project file (portfolio, buy list, benchmark, etc…) is different from the identifier found in the EE risk exposure file.

The asset file for security exception reporting is as follows:

File format: 3 columns consisting of Request Type, Security ID, ID Type

Request Type	Security ID	ID Type*
except	identifier of security to be uploaded	ID type corresponding to identifier entered in 2nd column. (enter in lower case)

*Available ID types:

Security ID	Enter as in ID Type Column
common code (*cedel*/euroclear)	common code
cusip	cusip
duns	duns
isin	isin
sedol	sedol
Securities Identification Code Committee 9-digit code Ex. 346300000 394240000	sicc
U.S tickers	ticker
Tokyo Stock Exchange / Quick code 4 zeros followed by Quick code. Ex. 000006758 000007203	quick
VALOR (Switzerland, Lichtenstein) 4 zeros followed by valor code. Ex: 002489948 003886335	valor

Example contents of security record exception report asset file:

except,001084102,cusip
except,001204106,cusip
except,4263304 ,sedol
except,4325538 ,sedol
except,US36208RYV04,isin
except,US36208TVS67,isin

Exception Reporting output

Output Details:

Output file location: ….\output_files

Output file name: EXCEPT.csv

Output file format: same as EE risk model exposure file.

Append this file to the appropriate month's EE exposure file (.csv file)

Security Record Exception Reporting for other risk models

sEENIAC can be used to extract risk exposures by cross-referencing IDs in Northfield risk models other than the EE risk model.

File format: 4 columns consisting of Request Type, Security ID, ID Type, Risk Model ID

Request Type	Security ID	ID Type*	Model ID*
eqexcept	identifier of security to be uploaded	ID type corresponding to identifier entered in 2nd column. (enter in lower case)	see list below for model name and model ID

Model Name	Model ID
APT	APT
US Fundamental	FND
Global	GLB
Everything Everywhere	EE
United Kingdom	UK
Europe	EURO
Japan	JPN
US Short-Term	USS
Canada	CAN
Switzerland	SWISS
China	CNY
Australia	AUS
Pac-Rim	PACRIM
Asia ex. Japan	ASIA
US & Canada	USCAN

*Available ID types:

Security ID	Enter as in ID Type Column
cusip	cusip
isin	isin
sedol	sedol
U.S tickers	ticker

Example contents of security record exception report asset file:

eqexcept,2588173,sedol,GLB
eqexcept,93114210,cusip,FND
eqexcept,2046251,sedol,FND
eqexcept,2704407,sedol,USS

EqException Reporting output

Output Details:

Output file location: ….\output_files

Output file name: EQEXCEPT.csv

Output file format: same as risk model exposure file specified for the security in the asset file.

Append this file to the appropriate month's risk model exposure file (.csv file)

Note:

- To ensure a consistency of data mapping that increases eventual coverage, it is suggested that you use this function only after you have determined that a security is not covered in the standard EE security risk exposure file.

Equity (Asset) Returns

sEENIAC can be used to calculate data records (i.e. factor exposures, security specific risk) for equity securities that are not found in the EE risk model exposure file.

This process uses EE style regression methodology and requires ideally 60 periods of monthly total returns (including dividends) for each security. In certain situations this functionality can be used with fixed income securities for which return series are available, but it is advisable that users utilize the relevant sEENIAC bond template.

Note:

- We do not advise clients to use this command with funds/index composites. By the nature of the instruments and regressions the coefficients will be spurious and/or unreliable. Using the "funds_data" request command as described earlier in this document is a better method.
- On various occasions we have advised EENIAC users and Northfield clients to be very cautious in using direct factor regression against fund return series data to obtain risk exposures of fund units. The reason for this caution is extensive research that questions the validity of factor exposures of fund units derived in this manner, as well as multicollinearity exhibited in regression factors when the modeled security incorporates many aggregated country and industry characteristics.
- Hereby we reinforce our position to discourage such use. The purpose for which the factor regression function of EENIAC was created was for modeling individual equity (and occasionally fixed income) securities which have, for various reasons, not fallen under the scope of the standard EE risk model coverage.

File format: 3 column header consisting of Request Type, Security ID, Security Name. Followed by 60 monthly periods of security total returns.

Monthly returns need to be in decimal format: i.e. "2.5%" return is represented by ".025".

Request Type	Security ID	Security Name*	Monthly Total Returns**
ret_reg_stock or ret_reg_bond	Identifier code of security to be uploaded	See below for column format details	Columns #4 - #63 (decimal format)

The Security Name field contains several parts separated by semi-colon and given in the following order:

- the ISO code of the currency in which returns of the security are measured – if –999 is entered in this position, USD will be the default currency
- the country of the issuer of the security.
- the ISMA industry code for the issuer of the constituents
- actual name of the security

4th – 63rd Columns: Enter monthly total returns starting with $Return_{(t-59)}$ in column 4 and progress to $Return_{(t)}$ in column 63.

Note:

- The monthly total return fields are the return series of returns, including dividends (as decimal, not per cent values) where the T-59 subscript stands for the month-end return data value from 59 months ago, and the subscript T stands for the most recent month-end return.

- If return history is not available for certain months, do not leave those columns blank, as **63 columns of data are required**. In the case of missing return data, enter "-999" for those periods.

Similar to the conventional Gaussian mixture distribution, missing return series are replaced with sector/regional index return data points and specific risk appropriately adjusted. This gives the ability for clients to add new issues quickly without waiting for longer return series data to accumulate

The request type commands, "ret_reg_stock" and "ret_reg_bond", control whether the term structure factors are going to be included in the regression processing.

Example contents of equity (asset) return asset file:

ret_reg_stock,45920010,USD;UNITED STATES;IEE;IBM,-0.013,-0.164,-0.008

ret_reg_stock,5497102,EUR;GERMANY;IAM;Volkswagen,-0.017,-0.094,0.109,0.058

ret_reg_bond,06050XQT,USD;UNITED STATES;IFI;Bank,.032,.005,.004,-.018
ret_reg_bond,36960410,USD;UNITED STATES;IID;General Electric Capital,.024,.004,.008

Asset Return output

Output Details:

Output file location: ….\output_files

Output file name: ee_FI_MMDDYYYY.csv for fixed income
Ee_NonFI_MMDDYYYY.csv for equities

Output file format: same as EE risk model exposure file.

Append this file to the appropriate month's EE exposure file (.csv file)

Log file(s): ee_event_log_02282010_FI.csv /
ee_event_log_02282010_NonFI.csv

Important Information for Using the sEENIAC Server

If desired, any of the above request type commands can be combined in a single asset file for faster processing on the sEENIAC server.

How to Utilize Output Files downloaded from sEENIAC Server

Output files from the sEENIAC server, regardless of the function invoked, fall under the following categories:

- Data record: Should be appended to the appropriate EE risk model exposure file (eeYYYYMMDDc.csv) used with the Northfield Open Optimizer.
- Holdings file: Should be copied to folder containing user input files for Optimizer project.
- Partial holdings file: Append to your portfolio file. (mostly used in cases where an offsetting cash position is required for a futures contract)
- Constraint file: Should be copied to folder containing user input files for Optimizer project.
- Composite asset file: If you have an existing composite asset file you should append the composite asset records produced by sEENIAC. If not, simply copy the composite asset file generated by sEENIAC to the default Optimizer user input folder that you use.

Naturally, when you subsequently run an Optimizer project you should supply the appropriate file names of all those inputs.

General Strategy for Handling Exceptions

Following this approach will ensure that you will have the highest success rate for handling exceptions. It follows the principle of cascading exceptions.

Step 1: Start with the Exception report created by the Northfield Open Optimizer.
Step 2: Process the securities using the "except" request type command from the Security Record Exception Reporting section which should return some matching securities.
Step 3: Depending on the type of security that was in the exception report and based on the user's data subscription to sEENIAC, the next step is to further check the exceptions from Step 1 with the Municipal Bond and Mortgage Pool Bonds functions.
Step 4: If terms and conditions are available for the remaining exceptions (bonds or derivatives respectively), apply the Fixed Income and Derivative Securities functions for custom bond and derivative processing, respectively.
Step 5: For the remaining exceptions apply the following functions: Equity (Asset) Return function (custom return series processing), Mutual Fund, Hedge Fund and Composite Asset function, depending on the type of securities in the exception report.
Step 6: As a last step (or set of steps) for any exceptions remaining, re-run the Security Record Exception Reporting function using an alternative ID type which might have available for the particular exception securities.

Note:
The sEENIAC service is provided on an "as-is" basis and its use does not introduce any additional or modify any existing clauses in the contractual agreements between the user and Northfield Information Services, Inc. By using the service, any user implies that they will hold Northfield Information Services, Inc. and its authorized representatives harmless of any damage or loss resulting directly or indirectly from the use of the service.

Northfield staff makes their best effort to ensure the integrity, confidentiality, and security of the clients' investment process. In this regard we will welcome all recommendations that aim to make the service more valuable to our customers. The user of the system should also recognize that the usage and information transmitted through the system can be monitored by Northfield staff for the sole purpose of quality assurance.

Any behavior to intentionally undermine the security and usability of the system will result in revocation of the login credentials of the responsible parties and can potentially have legal consequences. Modifications of existing connection scripts are discouraged, and if needed, users should consult Northfield's technical support staff before enacting such changes.

Contact: For any questions or recommendations please write to:
support@northinfo.com

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Appendix I: Monthly release schedule of Everything Everywhere risk model data

Business Day of Month	Event	Functions Impacted	Note
2	Start of Standard EE update – equities, corporate / government bonds	Standard EE data	
5	Release of Standard EE update data and ART data	Standard EE data, sEENIAC ID cross-reference, sEENIAC corporate/government proxy bond processing, sEENIAC derivative processing, fund processing	Standard model data available through FTP, Web Install, and LiveUpdate; ID cross-reference data available through sEENIAC (code "except"), derivatives available through sEENIAC (see derivative template for codes), and Bond proxy function available through sEENIAC (code "mbond")
5	Start of MBS pool update	MBS pools	
6	End of MBS pool update	MBS pools	Data available through sEENIAC (code "mbspool")
6	Start of MUNI bond update	MUNI bonds	
7	Cutoff for cmo_curr requests	CMO	Last date when requests codes cmo_curr are accepted per latest month-end date
8	End of MUNI bond update	MUNI bonds	Data available through sEENIAC (code "muni")
8	Start of CMO_curr update	CMO	
9	End of CMO_Curr update	CMO	Data available through sEENIAC (no code necessary)
15	Cutoff for cmo_fore requests	CMO	Last date when requests codes cmo_fore are accepted per this month-end date

15	ART database update	Fund processing	Request submitted on and prior to this date are processed with previous to last month end date as last date stamp of return series; requests submitted after this date are processed with latest month end date as the last date stamp of return series.

Appendix II – List of agency codes for MBS Proxy requests

GNMA	GEC - General Electric Credit loan.
FNMA	GEHE - GE Home Eq.
FHLMC	GSM - Goldman Sachs.
GNMA2	GTHE - Greentree Home Equity.
ACLC - Amresco Franchise.	GTMH - Green Tree – Lehman.
ADHE - Advanta HomeEquity.	HDMS - Headlans Mortgage.
ADV - Advanta loan.	IMCH - IMCH HomeEquity.
AFC - Alliance Funding Corp.	IMHE - Impac from impac.
AMRS - Amresco.	IMPC - IMPAC from Bankers Trust.
ASW - American SouthWest Financial.	INM - Independent National Mortgage loan.
BMS - BankAmerica Mortgage.	IRHE - Irwin Home Equity.
BOA - Bank of America.	KSTN - Keystone.
BSM - Bear Stearn WL.	LAS - Lasalle.
BT - Banker's Trust(also Vendee).	MAF - Metropolitan Asset Funding.
CAP - Capstead loan.	MEGO - MEGO Mortgage.
CBS - CBASS / Litton Servicing.	MOR - Morserv.
CHEM - Chemical.	MSC - Merit.
CHHE - Champion Mortgage.	NASC - Nomura Asset Securities.
CMC - CMS Securities loan.	NCC - New Century.
CMF - Chase Mortgage Finance loan.	NFHE - Novastar Home Equity.
CMFT - Chase Trusteed Deals.	NMB - Norwest.
CMHE - Conti Mortgate Home Equity.	PBHE - Provident Bank.
CMS - Citicorp Mortgage Sec.	PHH - PHH / Cendant.
CWC - Coutrywide Conduit loan.	PHM - Prudential Home Mortgage.
CWF - Countrywide Funding loan.	PHPL - PHM Private.
CWHE - Countrywide Home Equity.	PNC - PNC Securities (was sears).
DLJ - DLJ.	RFC - Residential Funding Corp loan.
EMC - EMC Mortgage.	RFHE - Residential Funding Home Equity.
EQHE - Equicredit.	RTC - RTC Whole Loan.
FASI - Financial Asset Serv. Inc.	RYF - Special Ryland-serviced loan.
FBM - First Boston Mortgage.	RYL - Ryland loan.
FLRT - FMAC Loan Receivables Trust.	SASC - SASC from Aurora Servicing.
FMAC - FarmerMac.	SASI - Securitized Asset Services Corp.
FNMF - FNMA Multifamily.	SAST - Saxon Asset Securities.
FNMR - FNM Reremic MultiFamily.	SMS - Sears Mortgage Securities loan.
FNT - FNT.	SPSA - Southern Pacific.
FNWL - FNMA whole loans.	TMS - The Money Store.
FSC - First Security Corp.	VMT - Vendee: VETERANS AFFAIRS.
FUR - First Union.	WF - Wells Fargo.
GCA - Greenwich Capital.	WMM - Washington Mutual Mortgage.

Appendix III – Description of ISO Currency Codes

ARS	Argentine Peso	KRW	South Korean Won
ATS	Austrian Schilling	KWD	Kuwait Dinar
AUD	Australian Dollar	LKR	Sri Lanka Rupee
BDT	Bangladesh Taka	LTL	Lithuanian Litas
BEF	Belgian Franc	LUF	Luxembourg Franc
BHD	Bahraini Dinar	LVL	Latvian Lats
BRL	Brazilian Real	MAD	Moroccan Dirham
CAD	Canadian Dollar	MTL	Maltese Lira
CHF	Swiss Franc	MXN	Mexican Peso
CLP	Chilean Peso	MYR	Malaysian Ringgit
CNY	China Renminbi	NLG	Netherlands Guilder
COP	Colombian Peso	NOK	Norwegian Krone
CYP	Cyprus Pound	NZD	New Zealand Dollar
CZK	Czech Koruna	OMR	Oman Rial
DEM	German Deutschemark	PEN	Peruvian New Sol
DKK	Danish Krone	PHP	Philippines Peso
EEK	Estonian Kroon	PKR	Pakistan Rupee
EGP	Egyptian Pound	PLN	Polish Zloty
ESP	Spanish Peseta	PTE	Portuguese Escudo
EUR	Euro	QAR	Qatari Rial
FIM	Finnish Markka	RON	Romanian New Leu
FRF	French Franc	RUB	Russian Rouble
GBP	British Pounds	SAR	Saudi Arabian Riyal
GRD	Greek Drachma	SEK	Swedish Krona
HKD	Hong Kong Dollar	SGD	Singapore Dollar
HUF	Hungarian Forint	SIT	Slovenian Tolar
IDR	Indonesian Rupiah	SKK	Slovakia Koruna
IEP	Irish Punt	THB	Thailand Baht
ILS	Israeli Shekel	TND	Tunisian Dinar
INR	Indian Rupee	TRY	Turkish New Lira
IRR	Iran Rial	TWD	Taiwan Dollar
ISK	Icelandic Krona	USD	U.S. Dollar
ITL	Italian Lira	VEF	Venezuelan Bolivar Fuerte
JOD	Jordanian Dinar	ZAR	South African Rand
JPY	Japanese Yen		

Appendix IV – Derivatives Output Details

Derivative Instrument	Representation	Output Files
Currency Futures / Forwards	A record to be appended to the master EE exposures file	1. DataFile.csv (exposures record) 2. PortFile.csv (offseting "cash" to be added to main portfolio file)
Stock Index Futures / Forwards	1. A holding file (extension hld) to be placed in the Northfield Optimizer inputs directory 2. A record in the composite assets file.	1. PortFile.csv (offseting "cash" to be added to main portfolio file) 2. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 3. CompFile.csv - a set of records to be appended to the main composite asset file
Quanto Index Futures	1. A holding file (extension hld) to be placed in the Northfield Optimizer inputs directory 2. A record in the composite assets file.	1. PortFile.csv (offseting "cash" to be added to main portfolio file) 2. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 3. CompFile.csv - a set of records to be appended to the main composite asset file
Basic Options	1. For currency options - a record to be appended to the exposures file. 2. For equity options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency options are listed

Warrants	A holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file
Forward Start Call Options	1. For currency options - a record to be appended to the exposures file. 2. For equity options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency options are listed
Barrier Options	1. For currency options - a record to be appended to the exposures file. 2. For equity options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency options are listed
Asians	1. For currency options - a record to be appended to the exposures file. 2. For equity options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency options are listed

Lookbacks	1. For currency options - a record to be appended to the exposures file. 2. For equity options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency options are listed
Basic Options On Futures	1. For currency futures options - a record to be appended to the exposures file. 2. For equity futures options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency futures options are listed
Basic Options On Quantos	1. For currency futures options - a record to be appended to the exposures file. 2. For equity futures options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency futures options are listed
Barrier Options On Futures	1. For currency futures options - a record to be appended to the exposures file. 2. For equity futures options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency futures options are listed

Barrier Options On Quantos	1. For currency futures options - a record to be appended to the exposures file. 2. For equity futures options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs direc-tory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency futures options are listed
Asian Options On Futures	1. For currency futures options - a record to be appended to the exposures file. 2. For equity futures options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency futures options are listed
Asian Options On Quantos	1. For currency futures options - a record to be appended to the exposures file. 2. For equity futures options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency futures options are listed
Lookback Options On Futures	1. For currency futures options - a record to be appended to the exposures file. 2. For equity futures options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs directory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency futures options are listed

Lookback Options On Quantos	1. For currency futures options - a record to be appended to the exposures file. 2. For equity futures options - a holding file (extension hld) to be placed in the Northfield Optimizer inputs direc-tory, plus a record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file 3. DataFile.csv - exposure file apendate where currency futures options are listed
IR Futures	A record to be appended to the master EE exposures file	1. IRCRDErivMMDDYYYY.csv (exposures record) 2. PortFile.csv (offseting "cash" to be added to main portfolio file)
IR Options	A record to be appended to the master EE exposures file	1. IRCRDErivMMDDYYYY.csv (exposures record)
Bond Futures	1. A holding file (extension hld) to be placed in the Northfield Optimizer inputs directory 2. A record in the composite assets file.	1. PortFile.csv (offseting "cash" to be added to main portfolio file) 2. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 3. CompFile.csv - a set of records to be appended to the main composite asset file
Options on Bond Futures	1. A holding file (extension hld) to be placed in the Northfield Optimizer inputs directory 2. A record in the composite assets file.	1. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 2. CompFile.csv - a set of records to be appended to the main composite asset file
Swaps	A record to be appended to the master EE exposures file	1. IRCRDErivMMDDYYYY.csv (exposures record)

Swap Futures	A record to be appended to the master EE exposures file	1. IRCRDErivMMDDYYYY.csv (exposures record)
Swaptions	A record to be appended to the master EE exposures file	1. IRCRDErivMMDDYYYY.csv (exposures record)
CDS	1. A holding file (extension hld) to be placed in the Northfield Optimizer inputs directory 2. A record in the composite assets file.	1. PortFile.csv (offseting "cash" to be added to main portfolio file) 2. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 3. CompFile.csv - a set of records to be appended to the main composite asset file
Futures on CDS Indices	1. A holding file (extension hld) to be placed in the Northfield Optimizer inputs directory 2. A record in the composite assets file.	1. PortFile.csv (offseting "cash" to be added to main portfolio file) 2. A holding file with a name corresponding to the ID of the position provided by the user and extension .hld 3. CompFile.csv - a set of records to be appended to the main composite asset file

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