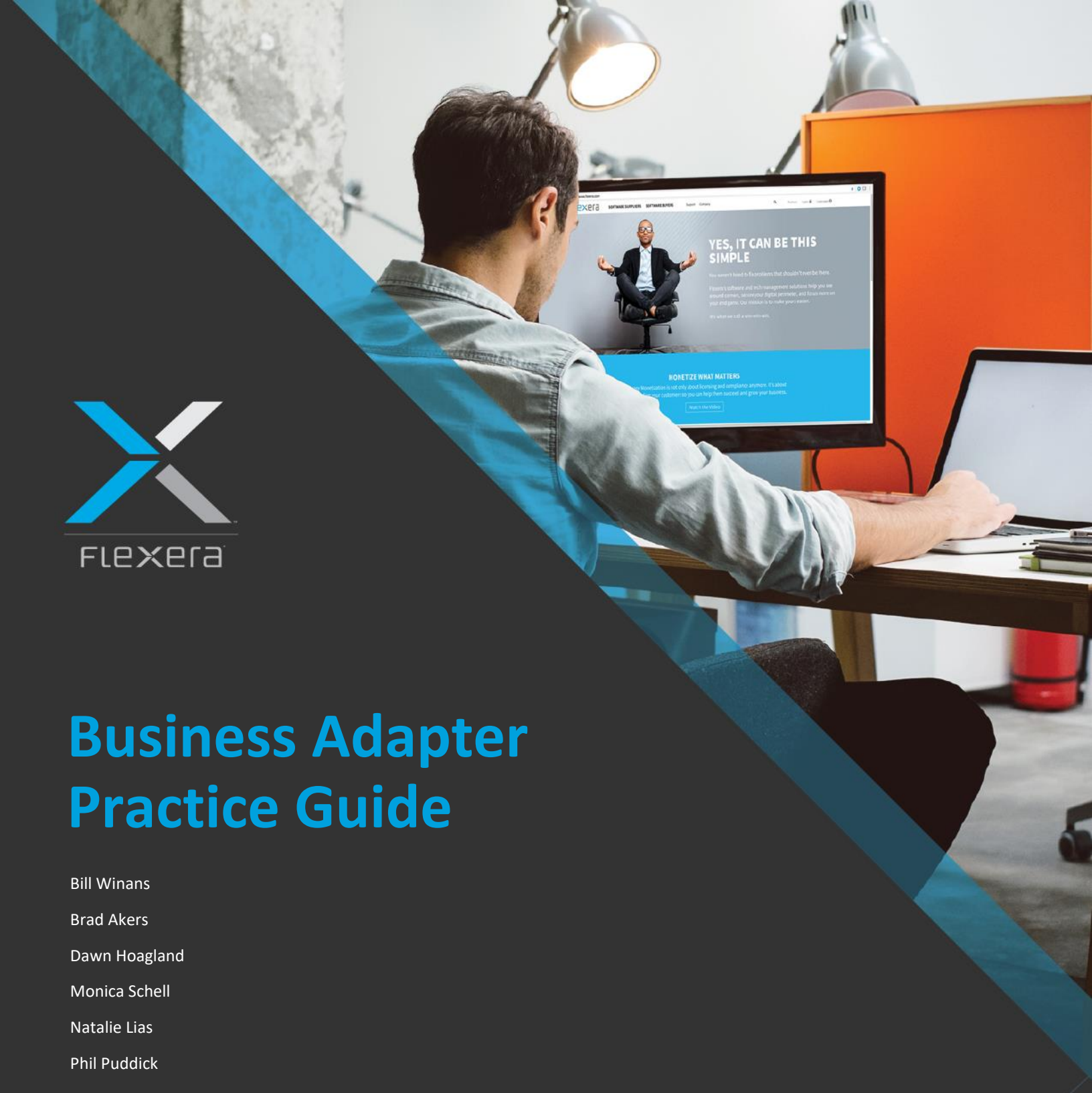

Business Adapter Practice Guide

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BUSINESS ADAPTER PRACTICE GUIDE

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Note: *Before using this guide, please read the Legal Information*

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Preface

Authors

This practice guide was produced by a team of experts from around the world:

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Brad Akers is a Principal Services Consultant working for Flexera since 2014. He has worked in ITAM and ITSM, working with both BMC and Flexera for a variety of customers. Today Brad specializes in helping customer setup, maintain, and verify their Software Asset Management program.

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Special thanks to Flexera's Professional Services and Sales Engineering departments for the continuous support and resources!

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Feedback

Your feedback is important!

We know working with Business Adapters is complex. While this practice guide covers many strategies and approaches, you will undoubtedly find more scenarios and situations to handle than can be adequately covered here.

Please send relevant comments to EnterpriseSolutionsStrategy@flexera.com or learning@flexera.com.

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Scope

This guide is a supplement to the SLO Practice Guide that describes the requirements and best practice use of business adapters for FlexNet Manager Suite. This document is the standard for all business adapter configurations, regardless of On-Premises or Cloud FlexNet Manager Suite deployments.

This Practice Guide provides details on the following aspects:

- Installing Business Adapter Studio
- Staging adapters
- Design business adapters
- Create business adapters
- Automate business adapters
- Migrating FlexNet Manager Suite data using adapters

A practical understanding of how to use FlexNet Manager Suite for general activities is required.

YES, IT CAN BE THIS SIMPLE!

Business Data Mapping

Before development of the business adapter can commence, data requirements need to be established to ensure the technical design aligns with the adapter's business requirements. Data must be mapped for each business adapter. To ensure that data element mapping is completed successfully for all Flexera record types, leverage the Business Adapter Mapping Template collateral (posted alongside this practice guide). The version is current as of FlexNet Manager Suite 2017 R2.

The data mapping template contains all available fields in FlexNet Manager Suite for each of the different data types that can be created or modified by a business adapter. Business data owners will often provide an extract or sample of the data that is to be imported into FlexNet Manager Suite. Although the business adapter developer can take his or her best interpretation of the valid use and intent of each field, a broader discussion and education session between the business data owner and the business adapter developer is typically required to ascertain the best match for each field from the data source to the target field within FlexNet Manager Suite.

Once the Business Adapter Mapping template has been completed and agreed upon by both the business data owner and the business adapter developer, business adapter development can begin, by transforming and importing the data into FlexNet Manager Suite. It is important to have formal agreement and signoff at this stage to prevent discrepancies and rework after development has commenced.

Enterprise Group Structuring

The most time-consuming component of data mapping is determining an agreed upon structure for the three enterprise group hierarchies (Locations, Corporate Units, and Cost Centers). Enterprise Groups are extremely pervasive throughout FlexNet Manager Suite and are also difficult to change after they have been set. Hence, business adapter developers should take care to create them correctly, to avoid time consuming modifications.

The three Enterprise Group hierarchies are used to logically categorize Assets, Contracts, Inventory Devices, Users, Purchases, and Licenses within FlexNet Manager Suite. This enables easier reporting, allows for internal charge backs, and rolls up physical and financial assets and other objects to a common level.

If the company expects to frequently undergo acquisitions or divestitures, it is usually desirable to explicitly set the top level of the enterprise groups hierarchy to be the company itself, rather than its top-level organizations. This method allows newly acquired or divested companies to exist in parallel with the parent company, with separated reporting as required to support the acquisition or divestiture process.

An example location structure is as follows:

Location:

- *Corporation Name*
  - *Region*
    - *Country*
      - *State/Province (optional)*
        - *City*
          - *Campus*
            - *Building/Address*
              - *Floor*
                - *Cubicle*

With this structure as an example, the business data owner can review the data to see which columns they can report on hierarchically and provide sufficient data to support it. While some environments have organizations in flux, with a future projected or theoretical hierarchy, it is important to use only hierarchies that can be currently populated with existing data. Otherwise, the data will not import correctly.

Business Adapter Studio (BAS) imports all data in a flat format, with the levels of the hierarchy denoted by a forward slash sign ("/"). This may cause an issue with the source data however if a "/" already exist, such as with some international mailing addresses. In this case, when building the string, the "/" should be replaced by another character such as "~" or a backslash. The above location hierarchy would be imported in the following format to be properly recognized: "*Corporation Name/Region/Country/State or Province/City/Campus/Building or Address/Floor/Cubicle*" or for the second example using tildes:

Corporation Name~Region~Country~State/Province~City~Campus~Building/Address-Floor~Cubicle"

You define the appropriate delimiter when building the adapter.

Using Location as an example, follow up with the Business Unit and Cost Center hierarchies to further the reporting capabilities. Note that any enterprise group structure can only work if the data exists to support it. For example, one can define a perfect theoretical location hierarchy, but if the source of record for User data does not store data that can be matched to that hierarchy, then user data cannot be assigned to any level of said hierarchy. Similarly, if the enterprise group structure is created manually through the FlexNet Manager Suite UI, no data can be matched to the structure unless corresponding fields in the data source is available for matching as well. For example, a user that needs to be assigned to a "US/Texas/Houston" location can only make the assignment if the user record references Houston, Texas in some way.

FlexNet Manager Suite Staging Adapters

Note: *The following recommendations are used in scenarios where data cleansing is required. This should be considered as a special case scenario and not the default.*

Creating the Staging Database

To load business data into FlexNet Manager Suite, it is a best practice to use a business adapter. If the source data for load into FlexNet Manager Suite needs to be first normalized, then a staging adapter is used to normalize the data, then another adapter is used to bring the data from the staging database into FlexNet Manager Suite.

To utilize a staging adapter, a staging database must first be created. To create the staging database, an account with SA (system administration) privileges will be needed.

Create the FlexNet Manager Suite staging database by leveraging the Flexera Staging database creation script. The script can be found as a collateral included with this guide. Note that it will need to be run with the SQL Server SA account.

For On-Premises environments, the staging database should be a separate database created on the same server as the FlexNet Manager Suite Compliance database. For Cloud environments, the SQL Server selected for the staging database just needs to meet minimal SQL Server requirements, have 40GB free for the data drive, and be accessible from a beacon.

Note: *The database version on line 633 of the FNMSStageCreation.sql file needs to match the stand-alone version of Business Adapter Studio that is installed. To validate that the version of Business Adapter Studio matches, open Business Adapter Studio and navigate to* ***Help>About****. You will see the version displayed in the pop-up.*

Installing Stand-Alone Business Adapter Studio

Once the staging database is created, a stand-alone instance of Flexera Business Adapter Studio will need to be installed on the primary beacon. For on premises, the primary beacon is defined as the beacon located in the same data center as the FlexNet Manager Suite database. For Cloud customers, the primary beacon is the beacon located in the same datacenter as the FlexNet Manager Suite staging database.

To install stand-alone version of Business Adapter Studio (BAS), download the installer from the Flexera Product and License Center 2.0 (PLC 2.0), available via the Flexera Customer Community or Flexera Partner Community. Once the download is complete, copy the zip folder to the chosen primary FlexNet beacon.

To install the Business Adapter Studio, do the following:

1. Unpack the zip folder copied to the beacon
2. Right click on setup.exe and select to run as administrator
3. Follow the installer prompts
4. Manually create the supplemental folders:
    - C:\ProgramData\Flexera Software\Beacon\StagingAdapters
    - C:\ProgramData\Flexera Software\Beacon\StagingAdapters\Source

---

Note: *The stand-alone Business Adapter Studio can only be installed on the C drive in the following directory: "C:\Program Files (x86)\Flexera Software\FNMP Business Adapter Studio".*

Creating the FlexNet Manager Suite Staging Adapter

Overview

After the creation of the FlexNet Manager Suite staging database, populate the staging database with the data from the business data sources. The data from the source will be inserted into a single table in the target staging database. This table will then be the source for the subsequent import into FlexNet Manager Suite.

To accomplish this, the previously installed stand-alone Business Adapter Studio (BAS) will be leveraged. Business Adapter Studio can run as either an embedded component of the FlexNet Manager Suite beacon or as a standalone executable that can be downloaded alongside the FlexNet Manager Suite installers and documentation from the Flexera Product and License Center. Business adapters can be run from any machine that has network line-of-sight to an FlexNet Manager Suite database or staging database. However, it is a best practice to run business adapters from the primary beacon server. In cases where the business data source must be isolated by firewall from the primary beacon server, contact Flexera

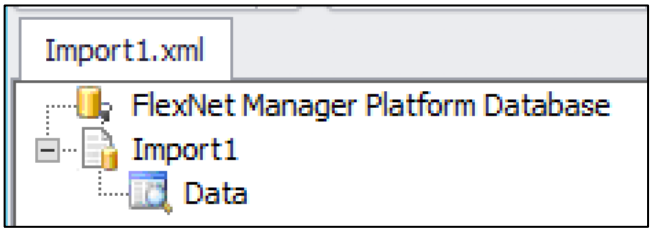
Services or certified Flexera Partner. In general, it is preferred to replicate the data to be available from the primary beacon server.

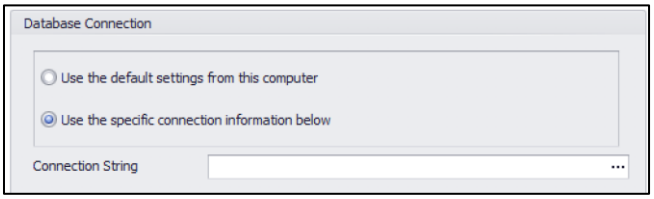
All business adapters are saved as XML files. However, those created from the beacon-embedded version of BAS save within BAS itself and not outwardly into the file system. The stand-alone version of BAS saves the underlying XML files utilizing Windows Explorer.

While the interface for BAS is intentionally similar between both the beacon-integrated version and the standalone executable, the main difference is that the target connection. In the beacon-integrated version you do not need to set the target as the FlexNet Manager Suite Database is defined on the Processing Server. to the FlexNet Manager Suite database is set automatically in the beacon embedded version. The FlexNet Manager Suite database connection needs to be set manually in the standalone executable version.

Setting the Target Staging Database

The first step is to open the stand-alone BAS you just installed (not the embedded one that was included with the beacon), and create a new adapter. Once created, click on the FlexNet Manager Platform node to configure the staging database connection where you will be uploading the data.





You must set the database connection string manually and set to “Use the specific connection information below”. The “Use the default settings from this computer” option only works if the adapter is being run from the FlexNet Manager Suite Application Server, which is not recommended.

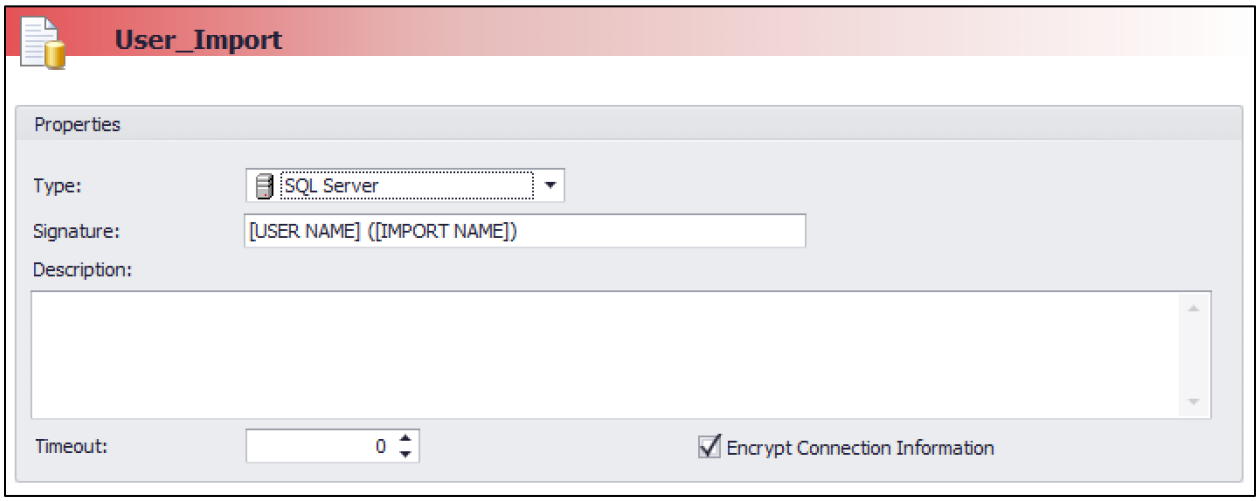
Click on the ellipsis to the right of Connection String to open the database connection wizard. From here, define the location and the name of the staging database as well as the database user credentials. Be sure to click “Test Connection” before saving to ensure the database connection is successful. If there are any concerns of syntax or database instances, use SQL Server Management Studio to log onto the database to test the appropriate connection string.

Once saved, the connection string will be represented in plain text.

Set the Data Source

As a best practice, change the name of the import. You can do this in the left-hand pane by right-clicking on the **Import1** node and selecting **Rename** on the popup menu. For example, if you are importing user data, then you will want to label the import “User_Import”.

While you have the import name node selected, the right side of the screen will reflect this selection by showing the data source configuration details for User_Import.



Business Adapter Studio supports the following source connection types:

- Databases:
  - SQL Server
  - OLE-DB Provider
  - Oracle
  - ODBC
- Directory Services (LDAP)
- Web Service
- Flat Files:
  - CSV
  - Excel (XLS and XLSX)
  - XML

Database connections provide the most flexibility and control over the data to be imported, but access to databases is often restricted for security reasons. Some organizations will allow access to failover systems instead to prevent extraneous load on the Production database. As an alternative to access to these systems, some organizations prefer to provide flat files on a regular cadence. CSV is the preferred flat file type since the Excel file type can introduce complications in formatting and processing. Additionally, XLSX file types require the Microsoft drivers to be installed on the beacon server to successfully open the file.

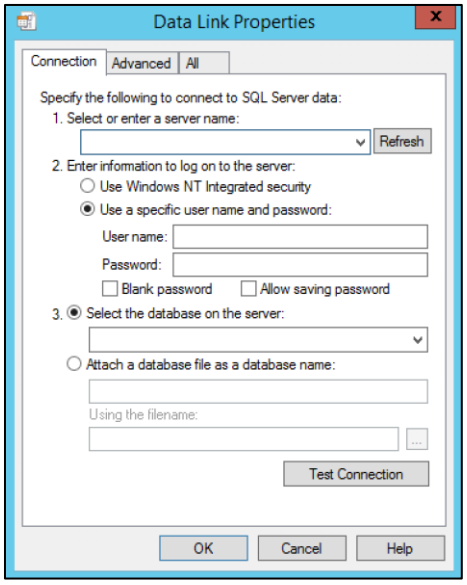
Once the source type has been defined, the connection properties fields will change dynamically based on what type of connection is required (database connection vs file location vs LDAP path)

Data Source: SQL Server

Once selected, you will need to define the connection properties by selecting the ellipsis to the right of the connection box. This opens the database connection wizard, which looks very similar to the wizard used to connect the target staging database.

In the wizard, first enter the hostname of the database server containing the source data. Then select your authentication type (enter the relevant User Name and Password if not utilizing NT authentication) and enter the database instance name. Make sure to test the connection before clicking OK.

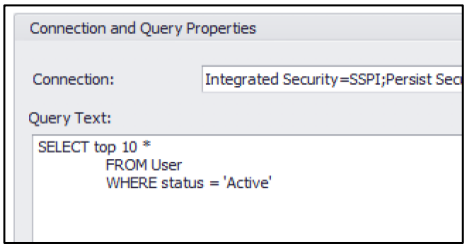
It is important to note that if the option "Use a specific user name and password" is chosen only a local SQL account can be used. To use a domain account WindowsNT must be used.



Once the connection is saved, you must enter the query text. For development and troubleshooting purposes, use SQL Server Management Studio to develop the query before pasting it into BAS, taking advantage of the MS error help and pop-ups. The best practice is to only pull the first 10 records from the data source when initially developing and testing business adapters.

Doing so will avoid loading the staging database with potentially large amounts of incorrect data. Additionally, this reduces the processing time for test imports as the full dataset is not uploaded.

Once you have set the query, retrieve the property list and then check the Data node. To view the sample data set, click the **Load data** button.



It is important to click the **Retrieve Property List** button after any and every change to the query or connection info as the sample data loaded will not update automatically with these changes.

Data Source: Flat File Import

Flat file imports refer to XML, CSV, XLS and XLSX import file formats. While many of these can be uploaded through the FlexNet Manager Suite web UI via a one-off upload, it is best to automate these imports if maintaining and supporting steady state processes for data records.

Note: *For XLSX files, the beacon running the business adapter requires the Microsoft Access Database Engine driver (32 bit) to be installed to read the data file. For all other file types, no additional driver is needed.*

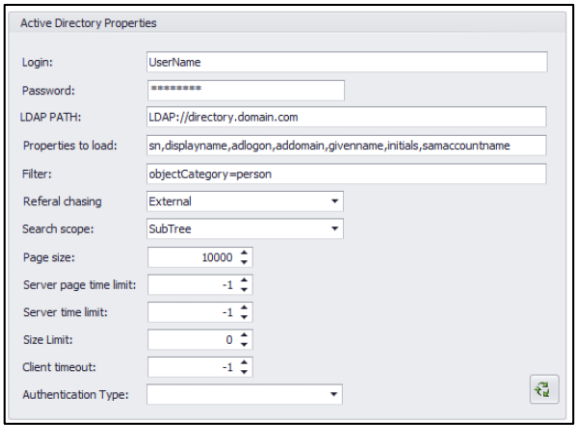
Once the file type is selected, select the file location by using the ellipsis next to File Name. Select the file and click **Open**.

Note: *A UNC path (//SERVER_NAME/) can be used instead of a local address if needed.*

If importing a CSV file, you will need to select the delimiter type. The default delimiter type is Comma delimited. Next, you will need to click **First row contains column names** if there are column headers in use. If the headers are not limited to the first row in the spreadsheet, you can elect to skip the first {number} rows. Lastly, click the **Retrieve column list** icon. Verify the results in the **Data node** Data to confirm the results are posting correctly.

Data Source: Directory Services

Directory Services are typically used when running Active Directory queries. The Directory Services type does not support non-AD LDAP data sources.



Enter the following:

- Login: Username that has read access to AD
- Password: password for the above user
- LDAP PATH: use the *LDAP://* format and get the exact location from the AD administrator

---

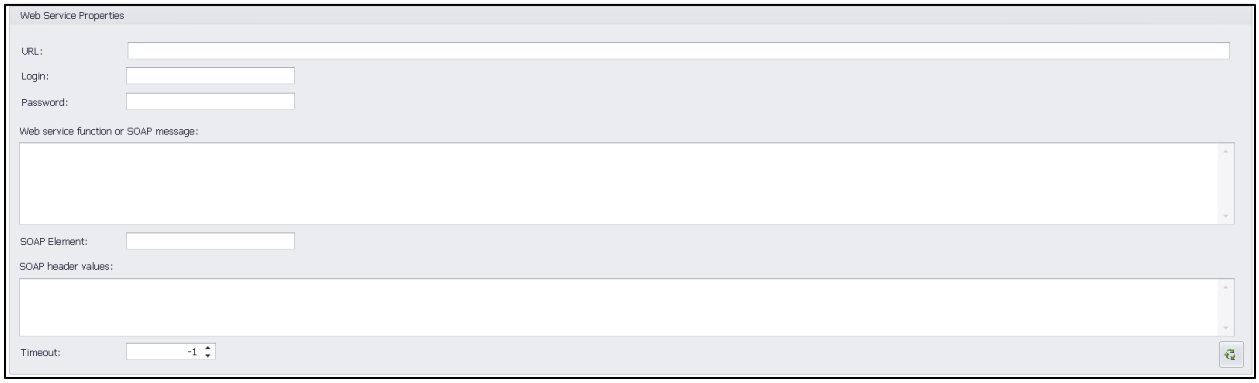
Note: "LDAP://" must be in all caps or the query will fail.

- Properties to load: List the Active Directory data elements to be mapped, separated by a comma, that meet the defined field list identified during data mapping. Due to variances in how different organizations use the fields in AD, work with the AD administrator to map the correct fields.
- Filter: confirm with the AD administrator on the correct filter to be utilized, but if in doubt, use "*objectCategory=**"

Click the **Retrieve property** button and refresh the data in the Data node on the left.

Data Source: Web Service

Web Services can be used to call many different Web API sources.



Enter the following:

- URL: The Web Service address
- Login: Username that has read access to AD
- Password: password for the above user
- Web Service function or SOAP message: Functions or commands to call data required
- SOAP header values: If the SOAP call requires enter headers
- Timeout: By default, -1 will not timeout. If a timeout time is needed set to the appropriate time in seconds

Click the **Retrieve property** button and refresh the data in the Data node on the left.

Data Source: Oracle

For an Oracle database, the 32-bot Oracle ODAC driver must be installed on the beacon server. From the **Imports** section, select type **Oracle** and enter the connection string to connect to the Oracle database. Note that while you can use the ellipsis next to **Connection**, the wizard does not always auto-build the connection string to the exact specifications of the environment. To ensure the connection string does meet the local requirements, make sure to work with the Oracle system administrator to input the correct syntax.

Here is an example connection string:

Password=password123;Persist Security Info=True;User ID=svc-account;Data Source=database.domain

Once the connection string is successful, enter the query using Oracle SQL. Click the **Retrieve property list** icon and verify the results returned in the Data node are as expected.

Data Source: ODBC

For imports from any ODBC database source, select type ODBC and enter the connection string to connect to the database. To ensure the connection string does meet the local requirements, make sure to work with the database system administrator to input the correct syntax.

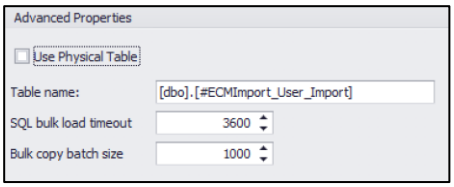
Here is an example connection string:

Password=password123;Persist Security Info=True;User ID=svc-account;Data Source=database.domain

Once the connection string is successful, enter the query using Oracle SQL. Click the retrieve property list icon and verify the results returned in the Data node are as expected.

Configure adapter properties for staging

All data imported from the data source will be stored in a single physical table within the staging database. To support staging the data, the temporary staging table normally used by BAS must be changed to a persistent staging table or "Physical Table" by using the **Advanced Properties** settings under the **Import Node**. Each time the business adapter runs the physical table will be dropped and all data reimported.



To expose the Advanced Properties, click **Tools > Options > Show Advanced Options = Yes** from the navigation bar at the top.

The table name is auto-generated based on the name of the import node and includes a '*#*' symbol only when the **Use Physical Table** checkbox is not selected. The '*#*' symbol dictates that the table will be created and dropped every time the adapter is run. Once checked, the database table will no longer be dropped after the business adapter completes, and so can later be queried and imported.

The data nodes and field mapping portions of BAS are not used in a staging adapter. The required tables do not exist in the staging database.

Automation

Staging adapter XMLs need to be executed in conjunction with the business importer (*MGSBI.exe)* to run.

The business importer is the underlying import engine that the business adapters rely upon and can be found in the install folders of Business Adapter Studio. *MGSBI.exe* can be run from the command line in conjunction with the XML configuration file using the same syntax as the import tests above.

To schedule these imports, use Windows Task Scheduler to execute the appropriate command line code using the service account. Often, this is done using a batch file. Here is an example batch file text:

```
cd c:\BusinessAdapters\
"MGSBI.EXE" "/Import=UserImport" /log=debug
"/configFile=C:\BusinessAdapters\UserAdapter\User_Import.xml"
```

Note: *You will need to ensure that the MGSBI.exe exist in the c:\BusinessAdapters directory for the above example to work. You may also edit the file to point to the predefined MGSBI.exe location mentioned above.*

Selecting and normalizing data from the staging table for import

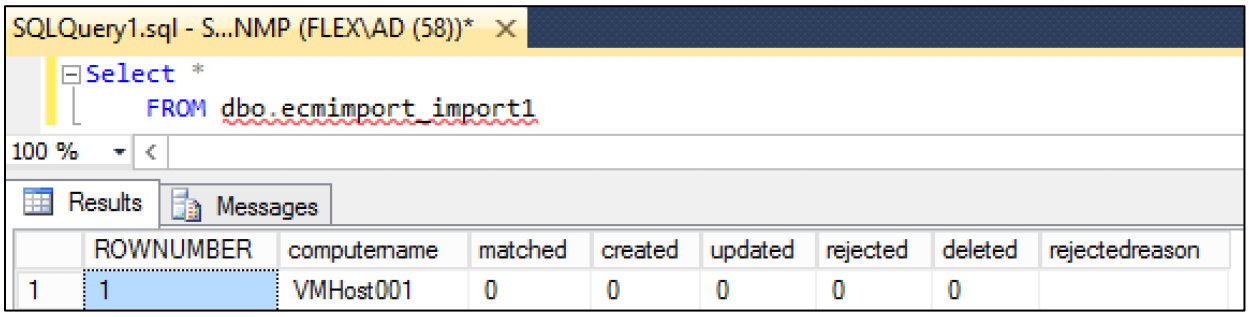
Mapping the data

Before beginning data normalization development, you should understand how the source data maps to the staged normalized data, and how the normalized data will map to FlexNet Manager Suite.

Viewing the staged data

After running the staging import using a physical table, a query tool such as SQL Server Management Studio can be used to query the newly created staging table.

The data imported from the staging table will show several columns that are not present in the source data. The "ROWNUMBER" column and the last 6 columns (matched, created, updated, rejected, deleted, and rejected reason) are reserved field names that are used for logging during the business importer run. These columns should be ignored when creating the select statement to bring the staged data into FlexNet Manager Suite. If the columns appear in the select statement, the adapter will fail, hence why only the relevant columns must be identified in the query and a "*SELECT * FROM*" statement cannot be used.



	ROWNUMBER	computername	matched	created	updated	rejected	deleted	rejectedreason
1	1	VMHost001	0	0	0	0	0	

Manipulating Staged Data

There are many reasons why data should be staged before importing into FlexNet Manager Suite. Often, additional processing is required to normalize or merge data prior to importing. In cases where data from

multiple CSVs needs to be merged, staging and joining the tables is an easy option to achieve this. Alternatively, if data in an Excel file is not standardized/normalized and requires SQL logic to purge and filter irrelevant records, the data must first be staged in a SQL Server database to accept SQL filtering logic.

Use Case #1: Data will require automated manipulation to fit the FlexNet Manager Suite requirements for Enterprise Groups, and may even come from different sources. Given that each level in an Enterprise Group hierarchy needs to be delimited by a "/" (or alternative delimiter) and that very few data sources already store data in this format, a staging adapter can be used to manipulate a flat file into this usable format. For a location hierarchy, the different hierarchical levels are likely stored as different columns instead of as one field and must therefore be concatenated into a single field with a / denoting the break in each level. If the source data has "/" in it, the character will need to be changed to another delimiter such as ~. If an alternate delimiter is to be used the **Split values on** field of the **Data Transformation** section will need to be updated.

Example Table Headers**:** *|Region|Country|City|*

Example Query with slash: *SELECT Region + '/' + Country + '/' + City as location FROM Table*

Example Query with tilde: *SELECT Region + '~' + Country + '~' + City as location FROM Table*

Use Case #2: The environment utilizes ServiceNow for hardware asset management. The Flexera asset status valid list of values is not the same as the ServiceNow asset status valid list of values. Therefore, for the hardware assets to be loaded into FlexNet Manager Suite, the asset status values need to be translated to the associated Flexera valid value. A select statement from the staged data with an embedded SQL CASE statement is leveraged to complete this translation.

Example Table Header: *Asset Status*

Example Query: *SELECT CASE WHEN [Asset Status] = 'Active' THEN 'Installed' WHEN [Asset Status] = 'Destroyed' THEN 'Disposed' END AS HW_Asset_Status FROM Table*

Use Case #3: The client is importing purchase orders from a purchasing system and the procurement type is not the same valid values as FlexNet Manager Suite. A select statement from the staged data with an embedded SQL Case statement is leveraged to complete this translation.

Example Table Header: *Procurement Type*

Example Query: *SELECT CASE WHEN [Procurement Type] = 'Open' THEN 'In Progress' WHEN [Procurement Type] = 'Done' THEN 'Complete' END AS PO_Type FROM Table*

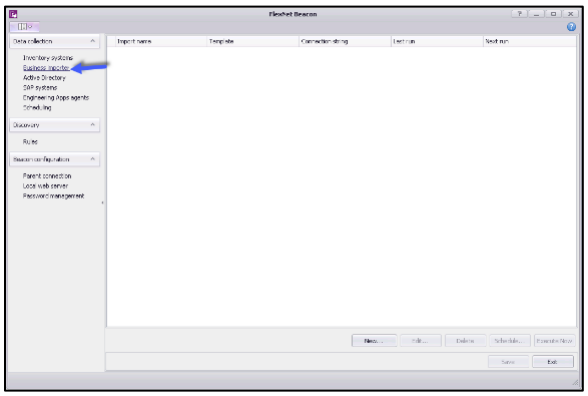
Creating Business Adapters for FlexNet Manager Suite Load in the Beacon UI

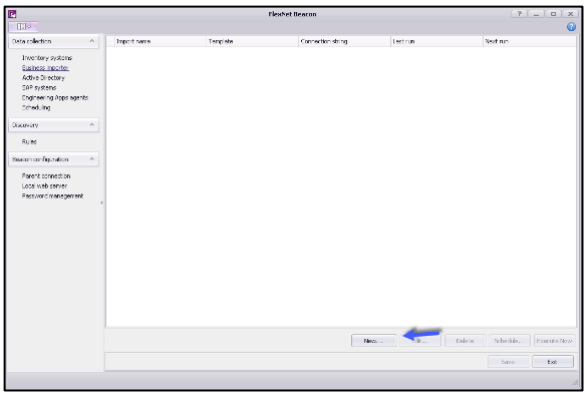
Once the select statement has been created to get the staged data from the staging database, an adapter will need to be created within the BAS version which is embedded in the Beacon User Interface (UI) to

import the data into FlexNet Manager Suite. This process is the same for On-Premises and Cloud environments.

Creating the business adapter

To create a business adapter in the beacon UI, first launch the beacon UI on the primary beacon. Once the beacon is launched, click on the **Business importer** section. To create the adapter, click the **New** button.



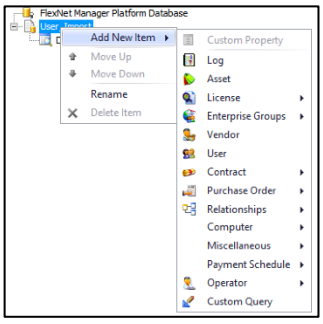


For the adapter template, select **Custom Import**. Provide a name for the adapter in the "Adapter name" field. If the source can be connected to via the account running the beacon engine service use the Windows (current account). If not, use the Windows (specific account) and enter the credentials. Typically, the Flexera service account utilized for the FlexNet Manager Suite implementation is also leveraged for use with the staging business adapters. Once the database is created, DBO (Database Owner) will have sufficient privileges.

When you click save, the beacon-embedded version of Business Adapter Studio will launch. To choose the source, follow the steps in the Data Source: SQL Server section above. Notice that this version of BAS will not require you identify the FlexNet Manager Suite database as the data target since the Beacon handles writing to the database instead of BAS directly.

Configuring the adapter

Right click the **Data node**, select **Add New Item**, and choose each data type to import. Be sure that the data nodes are arranged so that nodes with dependencies follow the nodes they depend on (for example, if you wish to link assets to locations, locations should precede assets in the list of nodes).



These nodes loosely represent tables in the FlexNet Manager Suite database and under each, you will find every field that can be populated in each of those tables. The required fields along with field definitions are documented in the mapping worksheet.

Import Rules

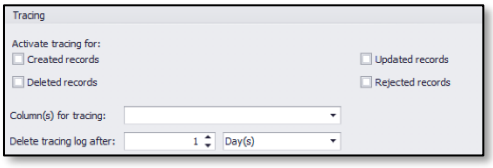
Before you assign the field mappings to each node, you should review the import rules for each node. These can be accessed by clicking on the top-level data type node. When selected, the **Import Rules** for that node are visible and can be edited.

The checkbox “Update existing objects in the database” allows the import to modify existing records in FlexNet Manager Suite based on a unique identifier. The checkbox “Create new object in the database” will add new records to FlexNet Manager Suite. The system checks if a record exists or not by searching for the record’s unique identifier in FlexNet Manager Suite.

If an object is included in the adapter solely to be create a reference for a relationship, for example, Computer records with a relationship to records that are in the “Location” table, leave the “Update existing object in the database” and “Create new object in the database” as unchecked. This is because you are not creating new records in the table, but only looking up values to create a data relationship and identify the Object ID.

Field Mapping

Once you have selected an import node and set the update rules, select one of the fields underneath the node to edit the properties.



- Source: defines the type of data to be imported from the staging database
- Field Value: Pulls field values from the source data
- Fixed Value: Uses a literal that does not change (typically used to set a status to a certain value)

Note: *“SQL Value” is not available in the Beacon-embedded version of BAS because this version of BAS does not write directly to the database.*

- Value: this is a dropdown when the source is set to Field Value but otherwise acts as a free text field for the Fixed value. Most cases will use this to select one of the fields that is being imported from the source data
- Update Rule: Typically goes unchanged from “Never replace an existing value with a blank” but can be changed depending on the business need

Matching > Use this property for matching existing data: This checkbox is required for at least one field per node. “Use this property for matching existing data” allows BAS to compare imported data with existing data in FlexNet Manager Suite to prevent creating duplicate records and allow update of existing matching records in FlexNet Manager Suite. More than one field can be used for matching within a given

node. This may be necessary if one field isn't unique enough. One example may be that you expect a user to have an account on two domains, in which case you might match on UserID and DomainID.

Logging

To enable tracking of rejected records, click on the import node and scroll down to the tracing section. Check the types of records desired for tracing. **Rejected Records** is a common selection because users need to see why certain records are not importing as expected. Through database logging, details are saved at the individual record level. In the **Column(s) for tracing** drop-down field, select a data field that would contain unique record data values from the drop-down list.

Object ID

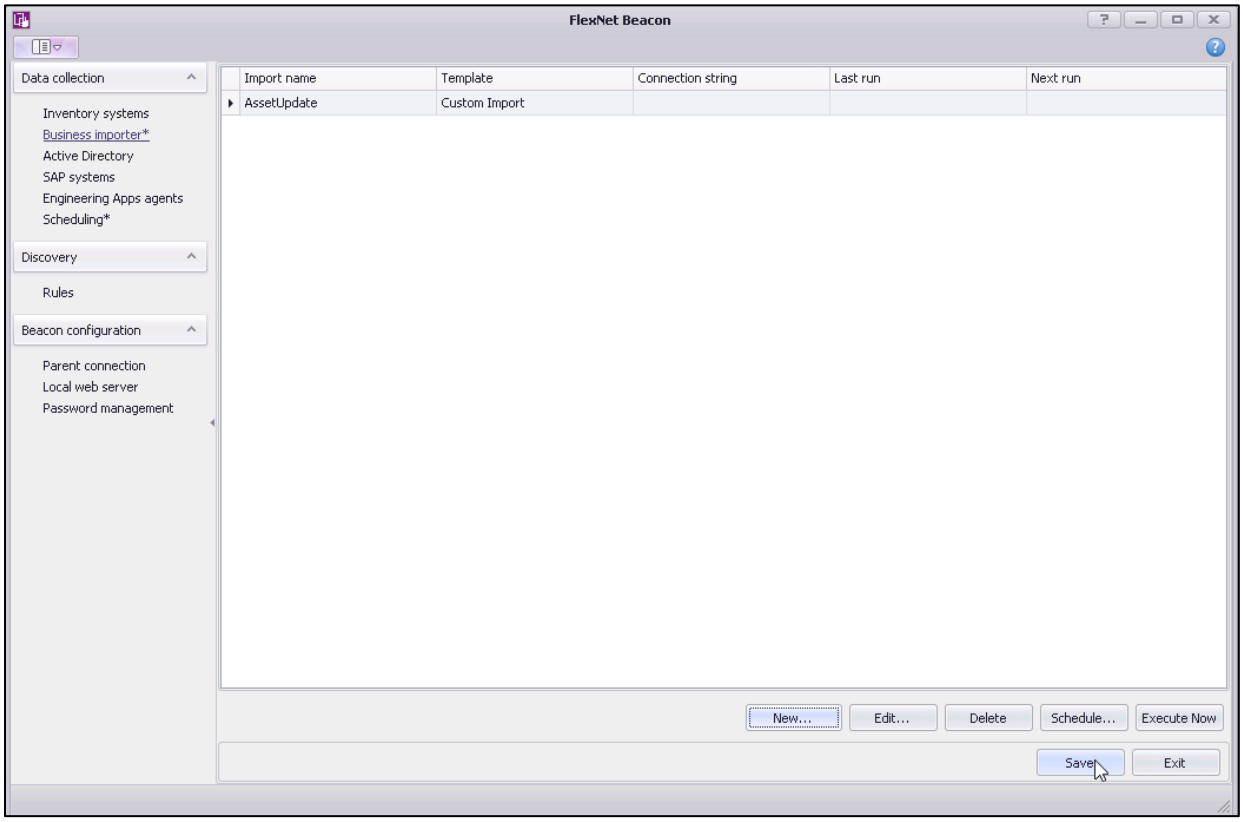
Certain data nodes in BAS will need to interact with and build upon others during processing. This is due to the relational format of the FlexNet Manager Suite database; these nodes act as a foreign key fields to connect the different data nodes. In BAS, these special foreign key fields end with "_ID" (by convention).

An example of where you need these ID fields is the Enterprise Group assignments to other objects, such as Location to Asset or Computer. To set the location on the asset, first create a look up to the Location node by matching on the "Location Name" field, and then reference the location node in the "Asset Node" via the Location_ID field on the Location node.

The enterprise group ID fields such as Location_ID exist in many different node types (User, Asset, Contract, Purchase Order, etc.) and can be referenced multiple times. To reference any node, any reference to it must come below it in the node list, otherwise, its Object_ID will not be selectable.

This order is required because the business adapter code is XML, which is order dependent.

After all fields have been mapped and the business adapter specification is complete, click on the **save** button and close Business Adapter Studio. Click save on the pop up and then save on the beacon UI.



Testing the Business Adapter

Running the adapter on demand

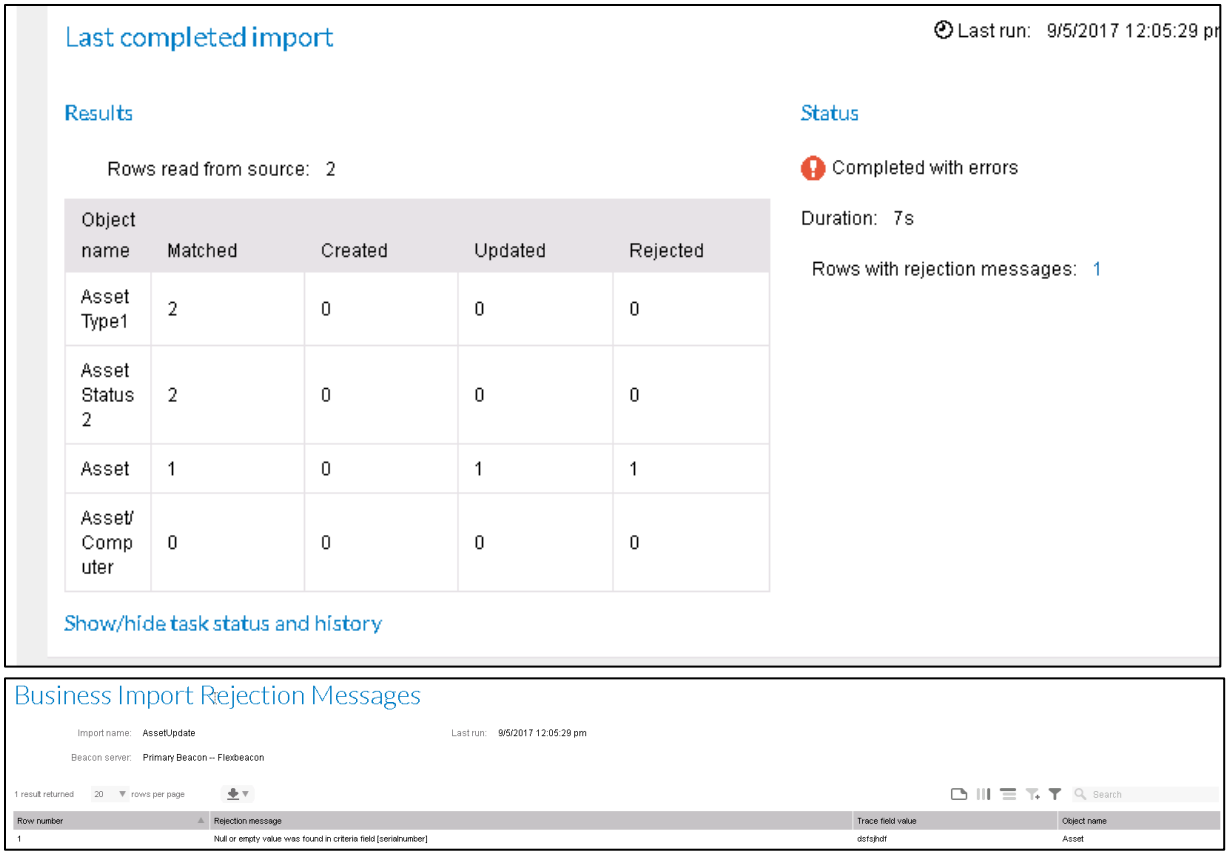
Once the adapter is created, click on the **Execute Now** button in the beacon UI to test the adapter. A pop up will say the adapter is in progress. Click **OK** on the pop up.

The adapter will put files in "*C:\ProgramData\Flexera Software\Beacon\IntermediateData*" while running and "*C:\ProgramData\Flexera Software\Beacon\IntermediateData\Uploaded*" once completed.

Checking the Adapter completion

To check and see if the adapter ran successfully, log into the FlexNet Manager Suite UI. Navigate to **System** > **Data Inputs** > **Business Data**.

From the Business Data page, the newly created adapter should be present with a status. Click on the ◂ icon to expand the results. If there are any errors, you can click on the **Rows with rejection messages** hyperlink to view the errors.



Scheduling the Adapter

After all testing is complete the adapter should be scheduled to run on a regular basis. This schedule should be agreed upon by the business data owner and business adapter developer.

To create a schedule, click on the scheduling section of the beacon UI. Click on **New**. Give the schedule a name and cadence and click **OK**. Then, click **save** in the beacon UI. Back on the beacon importer page, select the adapter to schedule and click **Schedule**. In the popup window, choose the schedule you created and click **OK**. After clicking **OK**, save within the beacon UI once again, and the schedule for the adapter should appear in the "Next run".

Note: *When running beacon-embedded adapters, the status of the adapter will show in the Web-UI of FlexNet Manager Suite whereas the stand-alone version will not. If the stand-alone adapter breaks, the data in the staging database will not update and no error will show in the FlexNet Manager Suite UI.*

Migrating FlexNet Manager Suite Data

It is possible to move certain data attributes from one FlexNet Manager Suite system to another. This could be due to a system migration such as an On Premises install to a Cloud install or migrating manually created data from a development system to a production system. Types of data that can be moved include: Contracts, Purchase Orders, Assets, Enterprise Groups, and supplemental user data. It is not

possible to move license data around because of the database model. It is important to ensure the data is imported in a method that allows elements to be properly linked. For example, if you are linking Purchase Orders to Hardware Assets you would need to first migrate the purchase orders to ensure they exist. Flexera has created migration adapters for Contracts, Purchase Orders, and Assets, each of which are presented below.

Contract Data

While it is possible to migrate contract data, it is important to note all fields of the contracts will not transfer. For example, Product Use Rights and Responsibilities would need to be manually recreated.

SQL Code

The first step in creating the migration adapter is to create the SQL select statement to pull all contracts out of the current FlexNet Manager Suite system. The script below is based on the 2017 R3 database model. Minor adjustments may need to be made to match other FlexNet Manager Suite versions. If custom fields or values have been created in the On Premises version of FlexNet Manager Suite, normalization may be required before a move to FlexNet Manager Suite Cloud is possible, since FlexNet Manager Suite Cloud does not allow custom values in fields such as Contract Type.

```
Select
CT.ContractNo as ContractNo,
CT.ContractName,
CTT.ContractTypeDefaultValue,
CTS.DefaultValue,
CT.NeverExpires,
CT.StartDate,
CT.EndDate,
CT.PreExpiryDate,
CT.RenewalDate,
CT.Price,
Replace(REPLACE(CTPT.PeriodTypeDefaultValue,'[',''),']','') as PeriodType,
CT.BuyoutCost,
CU.SAMAccountName,
CT.Comments,
Vendor.VendorName,
Location.Path as Location,
CC.Path as CC,
BU.Path as BU,
CAT.Path as Category,
CTM.ContractNo as Master
from Contract as CT
LEFT JOIN ContractType as CTT
ON CTT.ContractTypeID=CT.ContractTypeID
```

```
LEFT JOIN ContractStatus as CTS
ON CTS.ContractStatusID = CT.ContractStatusID
LEFT JOIN PeriodType as CTPT
ON CTPT.PeriodTypeID = CT.PeriodTypeID
LEFT JOIN ComplianceUser as CU
ON CU.ComplianceUserID = CT.ManagerID
LEFT Join Vendor
ON Vendor.VendorID = CT.VendorID
Left Join GroupEx as Location
ON Location.GroupExID=CT.LocationID
Left Join GroupEx as CC
ON CC.GroupExID=CT.CostCenterID
Left Join GroupEx as BU
ON BU.GroupExID=CT.BusinessUnitID
Left Join GroupEx as Cat
ON Cat.GroupExID=CT.CategoryID
LEFT Join Contract as CTM
ON CTM.ContractID = CT.MasterContractID
```

Business Adapter

Once the SQL select statement has been generated, you would use Business Adapter Studio on the beacon to map each column. You will find the .xml file for this adapter as part of the collateral documentation provided with the Practice Guide. This adapter maps out all the available fields for Contracts.

If the Flexera adapter is being used, it should be placed in "*C:/ProgramData/Flexera Software/Beacon/BusinessAdapters*". Once the file is placed, simply open the Beacon UI and execute the adapter. If this is a one-time migration, a schedule is not necessary.

Purchase Order

Migration of Purchase Order data is an important step to standing up a new system or moving to the FlexNet Manager Suite Cloud. It is important to note that the data model for purchase orders has changed in FNMS 2014+ from the 9.2 version. The primary change is a shift from focusing on purchase order headers to purchase order lines. In 2014 plus the purchase order header has been limited to three fields "Purhcase Order Number", "Purhcase Date", and "Vendor".

SQL Code

The first step in creating the migration adapter is to create the SQL select statement to pull all purchase orders out of the current FlexNet Manager Suite system. The script below is based on the 2017 R3 database model. Minor adjustments may need to be made to match other FlexNet Manager Suite versions. If custom fields or values have been created in the On Premises version of FlexNet Manager

Suite, normalization may be required before a move to FlexNet Manager Suite Cloud is possible as FlexNet Manager Suite Cloud does not allow custom values in fields such as Purchase Type.

```
select
PO.PurchaseOrderNo as PurchaseOrderNo,
POD.ItemDescription,
PO.PurchaseOrderDate,
PO.SalesTax,
PO.ShippingAndHandling,
POD.SequenceNumber,
POD.LicensePartNo,
POD.Quantity,
POD.LicenseQuantity,
POD.UnitPrice,
CO.ContractNo,
POD.ShippingDate,
POD.MaintenanceOrServiceAgreement,
POD.EffectiveDate,
POD.ExpiryDate,
Location.Path as Location,
CostCenter.Path as CostCenter,
BusinessUnit.Path as BU,
ShippingLocation.Path as ShipLocation,
POD.RequestDate,
POD.RequestNo,
POD.InvoiceDate,
POD.InvoiceNo,
Replace(REPLACE(PODT.DefaultValue,'[',''),']','') as POType,
Requested.SAMAccountName as Requestor,
Authorized.SAMAccountName as Authorizor,
Processed.SAMAccountName as ProcessedBy,
POD.Comments,
Vendor.VendorName
from PurchaseOrderDetail as POD
left JOIN PurchaseOrder as PO
ON PO.PurchaseOrderID = POD.PurchaseOrderID
left JOIN [Contract] as CO
ON CO.ContractID = POD.ContractID
left JOIN GroupEx as Location
ON POD.LocationID = Location.GroupExID
left JOIN GroupEx as CostCenter
ON POD.CostCenterID = CostCenter.GroupExID
left JOIN GroupEx as BusinessUnit
ON POD.BusinessUnitID = BusinessUnit.GroupExID
```

```
left JOIN PurchaseOrderDetailType PODT
ON PODT.PurchaseOrderDetailTypeID = POD.PurchaseOrderDetailTypeID
left Join ComplianceUser as Requested
on Requested.ComplianceUserID = POD.RequestedByID
left Join ComplianceUser as Authorized
on Authorized.ComplianceUserID = POD.RequestedByID
left Join ComplianceUser as Processed
on Processed.ComplianceUserID = POD.RequestedByID
LEFT Join Vendor
ON Vendor.VendorID = PO.VendorID
left JOIN GroupEx as ShippingLocation
ON PO.ShippingLocationID = ShippingLocation.GroupExID
```

Business Adapter

Once the SQL select statement has been generated you would use Business Adapter Studio on the beacon to map each column. You will find the .xml file for this adapter as part of the collateral documentation provided with the Practice Guide. This adapter maps out all the available fields for Purchase Orders.

If the Flexera adapter is being used, it should be placed in "*C:/ProgramData/Flexera Software/Beacon/BusinessAdapters*". Once the file is placed, simply open the Beacon UI and execute the adapter. If this is a one-time migration, a schedule is not necessary.

Hardware Assets

Hardware Assets are an important data element in both the current and historical management of SAM. Hardware Assets show what is currently and was previously present in an environment over time and allows for automated software reclamation.

SQL Code

The first step in creating the migration adapter is to create the SQL select statement to pull all assets out of the current FlexNet Manager Suite system. The script below is based on the 2017 R3 database model. Minor adjustments may need to be made to match other FlexNet Manager Suite versions. If custom fields or values have been created in the On Premises version of FlexNet Manager Suite, normalization may be required before a move to FlexNet Manager Suite Cloud is possible as FlexNet Manager Suite Cloud does not allow custom values in fields such as Asset Status.

```
select
HW.ShortDescription as 'Hostname',
HW.SerialNumber as SerialNmber,
HWT.AssetTypeName,
HW.AssetTag,
MA.SerialNumber as MaseterAsset ,
```

```
Replace(REPLACE(HWS.StatusDefaultValue,'[',''),']','') as HWStatus,
HW.PurchasePrice,
Replace(REPLACE(AM.DefaultValue,'[',''),']','') as AquisitionMode,
Vendor.VendorName,
HW.Manufacturer,
HW.ManufacturerPartNo,
HW.ModelNo,
HW.DeliveryDate,
case
when Replace(REPLACE(HWWT.WarrantyTypeDefaultValue,'[',''),']','') = 'Three
years on site' then 'Three year on site'
else Replace(REPLACE(HWWT.WarrantyTypeDefaultValue,'[',''),']','')
end as Warranty,
HW.WarrantyExpirationDate,
HW.InstallationDate,
HW.RetirementDate,
HW.DisposalDate,
HW.DeletionDate,
HW.InventoryDateManual,
HW.InventoryAgentManual,
HW.RequestNo,
HW.PartNo,
HW.LeaseName,
HW.LeaseNo,
HW.IsLeased,
HW.LeaseStartDate,
HW.LeaseEndDate,
HW.LeaseTerminationDate,
HW.LeasePrice,
Replace(REPLACE(LER.DefaultValue,'[',''),']','') as LeaseEnd,
Replace(REPLACE(LP.PeriodTypeDefaultValue,'[',''),']','') as LeasePeriod,
Replace(REPLACE(ChargePeriod.PeriodTypeDefaultValue,'[',''),']','') as
ChargePeriodType,
HW.LeasePeriodicPayment,
HW.LeaseBuyoutCost,
HW.LeaseComments,
HW.Comments,
CU.SAMAccountName,
HW.ChargeBackPrice,
HW.EndOfLifeRecipient,
Replace(REPLACE(EOLR.DefaultValue,'[',''),']','') as EOLReason,
HW.ResalePrice,
Location.Path as Location,
```

```
CC.Path as CC,
BU.Path as BU,
CAT.Path as Category,
HW.DepreciationCurrentValue,
HW.DepreciationResidualValue,
Replace(REPLACE(DM.DefaultValue,'[',''),']','') as DepricationMethod,
HW.DepreciationPeriod,
HW.DepreciationRate,
HW.WrittenOffValue
from Asset as HW
Left JOIN AssetType as HWT
ON HWT.AssetTypeID = HW.AssetTypeID
Left JOIN AssetStatus as HWS
on HWS.AssetStatusID = HW.AssetStatusID
Left Join AcquisitionMode as AM
ON AM.AcquisitionModeID = HW.AcquisitionModeID
Left Join Vendor
ON Vendor.VendorID = HW.VendorID
Left Join AssetWarrantyType as HWWT
ON HWWT.AssetWarrantyTypeID = HW.AssetWarrantyTypeID
Left JOIN LeaseEndReason as LER
ON LER.LeaseEndReasonID = HW.LeaseEndReasonID
Left Join ComplianceUser as CU
ON CU.ComplianceUserID = HW.AssignToUserID
Left Join EndOfLifeReason as EOLR
ON EOLR.EndOfLifeReasonID = HW.EndOfLifeReasonID
Left Join GroupEx as Location
ON Location.GroupExID=HW.LocationID
Left Join GroupEx as CC
ON CC.GroupExID=HW.CostCenterID
Left Join GroupEx as BU
ON BU.GroupExID=HW.BusinessUnitID
Left Join GroupEx as Cat
ON Cat.GroupExID=HW.CategoryID
LEFT Join PeriodType as LP
ON LP.PeriodTypeID = HW.LeasePeriodTypeID
LEFT Join Asset as MA
ON MA.AssetID=HW.ParentAssetID
LEFT JOIN PeriodType as ChargePeriod
ON ChargePeriod.PeriodTypeID = HW.ChargeBackPeriodTypeID
LEFT Join DepreciationMethod as DM
ON DM.DepreciationMethodID=HW.DepreciationMethodID
```

Business Adapter

Once the SQL select statement has been generated you would use Business Adapter Studio on the beacon to map each column. You will find the .xml file for this adapter as part of the collateral documentation provided with the Practice Guide. This adapter maps out all the available fields for Purchase Orders.

If the Flexera adapter is being used, it should be placed in "*C:/ProgramData/Flexera Software/Beacon/BusinessAdapters*". Once the file is placed, simply open the Beacon UI and execute the adapter. If this is a one-time migration, a schedule is not necessary.

Useful Resources

Flexera's Learning Center

Flexera's Learning Center is the place to go for product enablement & training materials, including the latest Practice Guides! You can access the Learning Center via our Customer Community available to all customers free of charge.

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Flexera is reimagining the way software is bought, sold, managed and secured. We view the software industry as a supply chain, and make the business of buying and selling software more transparent, secure, and effective. Our Monetization and Security solutions help software sellers transform their business models, grow recurring revenues and minimize open source risk. Our Vulnerability and Software Asset Management (SAM) solutions strip waste and unpredictability out of buying applications, helping companies purchase only the software and cloud services they need, manage what they have, and reduce license compliance and security risk. In business for 30+ years, our 1000+ employees are passionate about helping our 80,000+ customers generate millions in ROI every year. Visit us at: **www.flexera.com**

YES, IT CAN BE THIS SIMPLE!

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