



Open Banking Accelerator

Quick Start

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This document outlines basic tasks required to get up and running using the Open Banking Accelerator

Revision History

Version	Date	Author	Comments
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1 Preface

1.1 Purpose of Document

The following document describes the steps required to get up and running with the Open Banking Accelerator. It also outlines how to use the signature demo in order to illustrate how the Accelerator works.

1.2 Scope

This document outlines the following:

- Required software
- Installation requirements
- Post-install steps
- Running the demo
- Using the simulator
- Recommended demo scripts

1.3 Referenced Documents

Document	Reference

2 Overview

2.1 Business Scenario

There have been fundamental changes in the financial services industry over the past few years. This has been driven by a combination of new regulatory requirements and enabling technologies that give customers better rights over their personal information.

Open Banking typically gives consumers the right to access certain data about themselves and have this information safely transferred to trusted third parties. It is part of a move towards an Open API Economy that will span multiple industries, not just financial services. It is related to data privacy initiatives like GDPR and Open Data, but is also driven by regulatory requirements like PSD2 in the UK and CDR in Australia.

2.2 Concepts

2.3 Benefits and Business Value

The benefits to customers is two-fold. Firstly, it reduces the friction of changing financial service providers, which ultimately leads to better service and greater competition. It also gives access to new and innovative financial products and services including better financial tools.

2.4 Technical Scenario

The Accelerator show how customer financial data can be aggregated from disparate data sources and then cleansed and governed in a master data management repository. Transactions flow through the system and uses the master data to enrich and contextualize individual customer transactions. Then lightweight fraud detection and personalized offer rules are applied and suitable actions taken in response.

The demonstration uses the Australian CDR format for master data, but other formats such as PSD2 could be added as an additional virtualization layer.

2.5 Components

Customer master data is captured from a number of sources via APIs. In this demonstration the integration component is implemented in TIBCO Streaming and it will pull bank products and details from 4 major Australian banks through their publicly available APIs. This data is then mastered in TIBCO EBX™ where it can be cleansed and governed. Additional customer master data is stored in various repositories in EBX™.

This master data is then captured and virtualized, combined with data from other sources using TIBCO Data Virtualization. This data is then available for internal systems to access and apply.

The main business rules engine is also implemented using TIBCO Streaming as the Event Manager. This captures a stream of financial transactions, enriches it using the virtualized data and then stores it in a live repository. A data science model is applied against the transaction stream to determine the likelihood that a given transaction is fraudulent and if it exceeds a configurable level it will be flagged for investigation. In addition, the full customer context pulled from the virtualization platform and then

analysed by the offer platform to make personalized offers to the customer for products that they may be interested in.

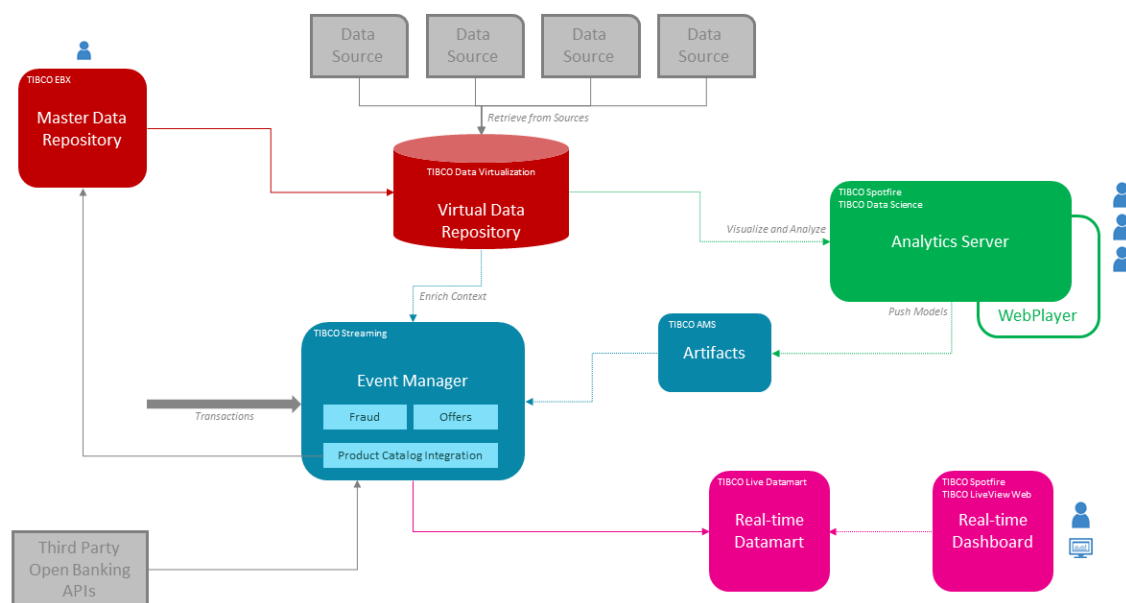


Figure 1: Accelerator Component Diagram

3 Installation

3.1 Deployment Environment

Before installing the Accelerator, the following deployment decisions need to be made:

How will the Accelerator be deployed?	
Bare metal or AWS instance	<p>Suitable for development, demo, and runtime uses</p> <p>Requires appropriate hardware and base operating system configured and running</p>

Running the Accelerator in a production environment will require a detailed analysis of network size and anticipated volumes. This is out of scope for this document and TIBCO PSG should be engaged in such an exercise. For the purposes of getting the demo up and running, the following are guideline minimum recommended configurations.

For **bare metal deployment**, the minimum configuration is:

Operating System	<p>Windows 10/2019 64-bit</p> <p>Linux is an option, but has not been tested</p>
CPU	Minimum 8 cores, more will give better performance
Memory	Minimum 24GB, more will give better performance
Disk	Minimum 70GB

For **AWS** deployment, the minimum configuration is:

AMI	Microsoft Windows Server 2019/SQL Server 2017 Standard
Instance Type	<p>m4.2xlarge</p> <p>8 vCPUs, 32GB RAM</p>
Storage	70GB
Security	Open port 10080 for operations dashboard

3.2 Distribution

The Accelerator distribution is a ZIP file that comprises a workspace directory once extracted. Extract the file to the location `C:\workspace\OpenBanking`. This location is referred to as `<WORKSPACE_HOME>` through the remainder of this document. It is possible to extract to a different location, but the default configuration and scripts will require modification to support this.

The following directory structure is created under `<WORKSPACE_HOME>`:

Table 1: Accelerator Components

Directory	Description	Role
ams	TIBCO Artifact Management Server configuration and storage	Dev/Run
data	Configuration files and reference data	Run
dist	Distribution artifacts	Run
ebx	EBX™ database repository	Run
doc	PDF documentation	Dev/Run
scripts	Scripts used to install and start Accelerator components	Run
src	Source code for all the Accelerator components	Dev/Run
test	Test data and test cases	Run

3.3 Software Dependencies

The Accelerator has the following runtime software dependencies. The following components are mandatory for all installation types:

Table 2: Mandatory Software Dependencies

Software	Source
TIBCO® Data Virtualization Server 8.3.0	TIBCO eDelivery
TIBCO EBX™ 5.9.10	TIBCO eDelivery
TIBCO Spotfire® Analyst 10.10.1	TIBCO eDelivery
TIBCO Spotfire® Server 10.10.2	TIBCO eDelivery
TIBCO® Streaming 10.6.1	TIBCO eDelivery
TIBCO® Artifact Management Server 1.6.1	TIBCO eDelivery

Note that the versions specified here were current as of date of release of the Accelerator on TIBCO Community. In most cases using later versions will work ok, but the installation scripts will need to be adjusted and code will need to be recompiled on the newer versions.

The following third-party software is also required.

Table 3: Third-Party Mandatory Software Dependencies

Software	Source
Apache Tomcat 8.5.57	https://tomcat.apache.org
H2 Database Engine 1.4.200	http://www.h2database.com

OpenJDK 11.0.7	https://openjdk.java.net/install
Microsoft Visual C++ 2010 Redistributable Package	https://www.microsoft.com

3.4 Build Options

For bare metal and AWS installations there are two build options:

1. Scripted build using ANT script
2. Manual build, high-level instructions provided below

3.5 Database Preparation

It is assumed that Microsoft SQL Server has already been installed and is working correctly before applying either the scripted or manual build.

The database must be configured to allow Microsoft SQL Server login, and the sa account must be enabled with a password of *tibco123!*. You may use other passwords, but the scripts will need to be altered. Follow these steps to enable these configurations.

1. Load Microsoft SQL Server Management Studio
2. Using *Windows Authentication* connect to the database engine
3. In the Object Explorer navigate to **Security > Logins > sa**
4. Right-click on the **sa** user and select **Properties**
5. On the General tab set a password
6. On the Status tab set Login to *Enabled*
7. Click **OK** to close
8. In the Object Explorer right click on the database engine, the root node of the tree, and select **Properties**
9. Select **Security**
10. Set **Server Authentication** to *SQL Server and Windows Authentication mode*
11. Click **OK** to close. Click **OK** again to the restart warning.
12. Disconnect the Object Explorer
13. In the Services console restart the *SQL Server (MSSQLSERVER)* service
14. Back in Microsoft SQL Server Management Studio, connect the Object Explorer again this time using *SQL Server Authentication* login as the *sa* user with the password you specified above

3.6 Visual C++ 2010 Preparation

Microsoft Visual C++ 2010 Redistributable Package is required for TIBCO Data Virtualization. After installing this package the machine must be rebooted before TIBCO Data Virtualization can be installed so this installation should be completed manually before starting either the manual or scripted install instructions for the Accelerator.

Table 4: Required Visual C++ Install Downloads

Software	Filename	Location
Microsoft Visual VC++ 2010 Redistributable	vcredist_x64.exe	Microsoft Website

3.7 Scripted Build Using Ant

3.7.1 Pre-requisites

Before executing this build, download and install the following required third-party software:

Table 5: Scripted Build Mandatory Software Dependencies

Software	Source
OpenJDK 11.0.7	https://openjdk.java.net/install
Apache Ant 1.10.5	https://ant.apache.org

Configure the ant.bat to point to your Java installation and ensure it runs correctly.

3.7.2 Downloads

The Accelerator distribution package must be downloaded as a ZIP file from TIBCO Community.

Table 6: Required Scripted Install Downloads – Distribution

Software	Filename	Location
Open Banking Accelerator 1.0.0	OpenBanking_1.0.0.zip	TIBCO Community

The distribution includes an installation script that installs and configures the base software. The script is located in the distribution package at `<WORKSPACE_HOME>/scripts/ant/installation/win/install.xml`. To use this script, complete the following steps:

1. Create a directory, `C:\installation` and then `C:\installation\packages`. It is possible to use other directory names, but the install.xml will need to be modified to support this.
2. Place the full Accelerator distribution ZIP in `C:\installation\packages`, unextracted.
3. From the Accelerator distribution extract only `scripts/ant/installation/win` and place this entire directory in `C:\installation` in a directory called `ant`. Your directory structure should look like this:



Name	Date modified	Type	Size
 ant	12/5/2016 9:58 AM	File folder	
 packages	12/5/2016 9:55 AM	File folder	

Figure 2: Scripted Install Directory Structure

4. Download the required TIBCO software from eDelivery, Support, and Community. Place each of these in the `C:\installation\packages` directory

Table 7: Required Scripted Install Downloads – TIBCO Software

Software	Filename	Location
TIBCO Data Virtualization Server 8.3.0	TIB_tdv_server_8.3.0_win_x86_64.exe	eDelivery

EBX™ 5.9.10	TIB_ebx_5.9.10.zip	eDelivery
Spotfire® Analyst 10.10.1	TIB_sfir-analyst_10.10.1_single_user_win.zip	eDelivery
Spotfire® Server 10.10.2	TIB_sfir_server_10.10.2_win.zip	eDelivery
Spotfire® Deployment 10.10.1	TIB_sfir_deploy_10.10.1.zip	eDelivery
TIBCO Streaming 10.6.1	TIB_str_10.6.1_win_x86_64.msi	eDelivery
TIBCO Artifact Management Server 1.6.1	TIB_str_ams_1.6.1_win_x86_64.msi	eDelivery


- Download the required third-party software. Place each of these in the *C:\installation\packages* directory

Table 8: Required Scripted Install Downloads – Third-Party Software

Software	Filename	Location
Apache Tomcat 8.5.57	apache-tomcat-8.5.57.zip	Apache Tomcat Website
H2 Database Engine 1.4.200	h2-2019-10-14.zip	H2 Website

3.7.3 Install

- Open a command prompt and change to the directory *C:\installation\ant*.

	<p>The Ant script MUST be run as Administrator so ensure that the command prompt is opened with Administrator privileges.</p>
---	---

- Run Ant using the command:

```
ant -buildfile install.xml install
```

- The script should run to completion and return *SUCCESS*. Unfortunately not all steps can be completed automatically so the script will prompt the user with manual tasks to complete. Note that the entire install will take quite some time to complete.

The steps the script will execute are:

- Install Apache Tomcat to the Java tools directory (*C:\java\tools*)
- Install H2 to the Java tools directory (*C:\java\tools*)
- Install EBX™ to TIBCO_HOME (*C:\tibco*)
- Install Spotfire® Server to TIBCO_HOME (*C:\tibco*)
- Install Spotfire® Node Manager to TIBCO_HOME (*C:\tibco*)
- Create a Spotfire® Bootstrap
- Setup initial Spotfire® configuration and send it to the database
- Enable anonymous users
- Create the sfadmin user and promote to Administrator group

10. Start the Spotfire® Server service and the Spotfire® Node Manager service
11. Install the Spotfire® SDN
12. Install the Node Manager SDN
13. **Prompt** the user to login to the Spotfire® web interface and do the following:
 - a. Trust any untrusted nodes
 - b. Install Automation Services service
 - c. Install Web Player service
14. Restart the Spotfire® and Node Manager services
15. Configure anonymous login permissions
16. Install GeoAnalytics library in Spotfire® Server
17. Install Spotfire® Analyst to TIBCO_HOME (C:\tibco)
18. Install TIBCO Data Virtualization Server to TIBCO_HOME (C:\tibco)
19. Install TIBCO Streaming to TIBCO_HOME (C:\tibco)
20. Install TIBCO Artifact Management Server to TIBCO_HOME
21. Extract the Accelerator distribution to the workspace
22. Install EBX™ product ebx.jar, ebx-dataservices.war, ebx-dma.war, ebx-manager.war, ebx-root-1.0.war, ebx-ui.war, ebx.war into the local Maven repository
23. Install EBX™ addons ebx-cs-commons-lib.jar and ebx-cs-commons-web.war into the local Maven repository
24. Install TIBCO Data Virtualization JDBC driver csjdbc.jar into the local Maven repository
25. Import TIBCO Data Virtualization resources into the local server
26. Build EBX™ runtime project
27. Build TIBCO Streaming fragments and applications

3.8 Manual Build

If you do not use the script to install the base software then a manual installation will be required. The high-level steps are outlined below. These are not meant to replace the relevant production installation documentation but to supplement this to allow installing an environment that will match the default Accelerator configuration.

Before proceeding, download the required packages outlined in the Scripted Installation section above.

3.8.1 Install Apache Tomcat

1. Extract the package *apache-tomcat-8.5.57.zip* into the Java tools directory *C:/java/tools*

3.8.2 Install H2

1. Extract the package *h2-2019-10-14.zip* into the Java tools directory *C:/java/tools*
2. Rename the extracted directory from *h2* to *h2-1.4.200*

3.8.3 Install EBX™

1. Extract the package *TIB_ebx_5.9.10.zip* into a temporary directory
2. Create a new directory under TIBCO_HOME, *C:/tibco/ebx/5.9.10*
3. Copy *ebx.software/lib* from the temporary directory into *C:/tibco/ebx/5.9.10*
4. Copy *ebx.software/webapps* from the temporary directory into *C:/tibco/ebx/5.9.10*

3.8.4 Install Spotfire® Server

1. Extract the package *TIB_sfire_server_10.10.1_win.zip* into a temporary directory
2. Go to this directory and open the script located at *scripts\mssql_install\create_databases.bat*
3. Update the following variables:

CONNECTIDENTIFIER	Hostname for your machine
ADMINNAME	sa
ADMINPASSWORD	The password you set earlier for the sa user
SERVERDB_NAME	spotfire_server
SERVERDB_USER	spotfire
SERVERDB_PASSWORD	spotfire

4. Run the script *scripts\mssql_install\create_databases.bat*
5. Check the log file for any errors
6. Back in the extracted temporary directory run *setup-win64.exe*
7. Accept the license agreement
8. Select the option *Download and install third party components*
9. Accept the third party components license agreement
10. Change the installation directory to *c:\tibco\tss\10.10.1*
11. Select the *Create Windows Service* option
12. Configure the following for the server frontend:

Spotfire® server frontend port	28080
---------------------------------------	-------

13. Configure the following for the server backend:

Backend registration port	29080
Backend communication port (TLS)	29443

14. Finalize the installation
15. Select *Launch the configuration tool* and **Finish**
16. Back in the extracted temporary directory run *nm-setup.exe*
17. Accept the license agreement
18. Change the installation directory to *C:\tibco\tsnm\10.10.2*
19. Configure the following for the node manager:

Node Manager registration port	39080
Node Manager communication port (TLS)	39443

20. Configure the following for the Spotfire® server:

Server name	Hostname for your machine
Server backend registration port	29080
Server backend communication port (TLS)	29443

21. Keep the defaults for trusted network names
22. Finalize the installation
23. Select *Exit the installation wizard* and **Finish**

3.8.5 Configure Spotfire® Server

1. If you did not launch the configuration tool at the end of the installation, run this tool now using
`C:\tibco\tss\10.10.2\tomcat\spotfire-bin\uiconfig.bat`
2. Select **Create new bootstrap file...** under the **Connect to Database** section
3. Configure the following in **Edit Bootstrap** under the **Database connection** section

Driver template	MSSQL Microsoft
Hostname	localhost
Identifier (SID/database/service)	spotfire_server
Username	sa
Password	The password you configured earlier
URL	jdbc:sqlserver://localhost:1433;DatabaseName=spotfire_server

4. Click **Test Connection**
5. Configure the following under the **Other settings** section:

Configuration tool password	Choose a password
Confirm tool password	Confirm the password

6. Click **Save Bootstrap** and then **OK**
7. Select the **Configuration** tab at the top
8. Select the **Configuration Start** node in the tree and configure the following:

Authentication	BASIC Database
User directory	Database

9. Select the **Configuration Start > Domain** node in the tree and configure the following:

Default domain	SPOTFIRE
-----------------------	----------

10. Select the **Configuration Start > Anonymous Authentication** node in the tree and configure the following:

Enable anonymous authentication	Yes
--	-----

11. Click **Save configuration...** button at the bottom. Select the *Database* option and then **Next**. Enter a comment then click **Finish**. Click **OK** to the restart confirmation.
12. Select the **Administration** tab at the top
13. Under **Create new user** configure the following:

Choose a username	sfadmin
Choose a password	sfadmin
Confirm password	sfadmin

14. Click the **Create** button and then click **OK** to the confirmation.
15. Above in the **Users** list select the *sfadmin* user and click **Promote >**
16. Close the Configuration Tool
17. In the Services console start the TIBCO Spotfire® 10.10.2 service
18. In the Services console start the TIBCO Spotfire® Node Manager 10.10.2 service
19. Open a Windows command prompt and change to *c:\tibco\tss\10.10.2\tomcat\spotfire-bin* directory
20. Run the following command

```
config.bat enable-user --username=ANONYMOUS\guest
```

21. Enter the tool password you configured above when prompted
22. You should get the result **Successfully updated the status of user 'guest@ANONYMOUS' to enabled: true**

3.8.6 Configure Spotfire® Server Nodes and Services

1. Extract the package *TIB_sfired_deploy_10.10.1.zip* into a temporary directory
2. Connect to Spotfire® Server in Chrome:

Url	http://localhost:28080/spotfire
Username	sfadmin
Password	sfadmin

3. Click on **Deployment and Packages**
4. Select the *Production* option under **Deployment areas**
5. Under **Software packages** click the **Add packages** button
6. Click **Choose File** and navigate to *Spotfire.Dxp.sdn* which will be located in the temporary directory you extracted *TIB_sfired_deploy_10.10.1.zip* and then *Products\TIBCO Spotfire Distribution*.
7. Click **Upload**. Installation will take some time.
8. Click **Validate** and then **OK**
9. Click **Save** and then **Save** again. Saving will take some time.
10. Under **Software packages** click the **Add packages** button

11. Click **Choose File** and navigate to *Spotfire.Dxp.NodeManager.sdn* which will be located in the temporary directory you extracted *TIB_sfired_server_10.10.2_win.zip*.
12. Click **Upload**. Installation will take some time.
13. Click **Validate** and then **OK**
14. Click **Save** and then **Save** again. Saving will take some time.
15. Click the **TIBCO Spotfire®** logo in the upper right corner to return to the main page
16. Click on **Nodes and Services**
17. Click the **Untrusted Nodes** tab
18. Select the node and click **Trust Nodes** and then **Trust**.
19. Wait until the node then becomes visible in the left-hand pane under **Network components**. This may take a while.
20. Under **Network components** select *Nodes* under **Select a view**
21. Select the node
22. In the bottom right click the **Install new service** button. Configure the following:

Deployment area	Production
Capability	Automation Services
Configuration	Default
Number of Instances	1
Port	9501
Name	Automation Services

23. Click **Install and start**
24. In the bottom right click the **Install new service** button again. Configure the following:

Deployment area	Production
Capability	Web Player
Configuration	Default
Number of Instances	1
Port	9501
Resource Pool	None
Name	Web Player

25. In the Services console restart the TIBCO Spotfire® Node Manager 10.10.2. service

3.8.7 Install Spotfire® Analyst

1. Extract the package *TIB_sfired-analyst_10.10.1_single_user_win.zip* into a temporary directory

2. Under *Products/TIBCO Spotfire Installer* run *setup-single-user-10.10.1.exe*
3. Accept the license agreement
4. Enter the following :

Server URL	http://localhost:28080
-------------------	------------------------

5. Finalize the installation
6. Close the installer
7. Run TIBCO Spotfire® (show login dialog) menu item in Windows
8. Enter the following:

Server	http://localhost:28080
Username	sfadmin
Password	sfadmin

9. Click **Log In**
10. When the update dialog appears, select **Update Now**
11. Enter the login details again and click **Log In**
12. Close the command prompt
13. Click **Close** back in Spotfire® Analyst

3.8.8 Install TIBCO Data Virtualization Server

1. Run the package *TIB_tdv_server_8.3.0_win_x86_64.exe*
2. Accept the license agreement
3. Set the destination folder to *C:\tibco\tdv-server\8.3*
4. Configure the following for the application password:

TDV Server Application Password	Choose a password
Re-enter Password	Confirm the password

5. Configure the following for the base port:

Base Port	9410
Repository Password	Choose a password
Re-enter Password	Confirm the password

6. Configure the following for the database cache:

Database Cache Password	Choose a password
Re-enter Password	Confirm the password

7. Click **Next** to install
8. Finalize the installation

3.8.9 Install TIBCO Streaming and TIBCO Live Datamart

1. Run the *TIB_str_10.6.1_win_x86_64.msi* installer
2. Accept the license agreement
3. Change the installation directory to *C:\TIBCO\sb-cep\10.6*
4. Finalize the installation
5. Unpack the following files into the Maven repository located at *<USER_HOME>/.m2/repository*

str-10.6.1-maven-build-sdk.zip
str-10.6.1-platform-sdk-windowsx64.zip
str-10.6.1-product-artifacts-repo.zip
str-10.6.1-product-artifacts-repo-offline-projects.zip
str-10.6.1-runtime-sdk.zip
str-10.6.1-tibco-versions-sdk.zip

6. Run the *TIB_str_ams_1.6.1_win_x86_64.msi* installer
7. Accept the license agreement
8. Change the installation directory to *C:\TIBCO\sb-cep\10.6*
9. Finalize the installation

3.8.10 Install Accelerator

1. Extract the distribution package into the directory *C:\workspace*. This will create a directory *C:\workspace\OpenBanking* which will be referred to at *<WORKSPACE_HOME>* in the remainder of this document.
2. Install EBX™ product jars and wars into your local Maven repository using the following commands from a StreamBase® Command Prompt:

```

mvn install:install-file -Dfile=C:\tibco\ebx\5.9.10\lib\ebx.jar -
DgroupId=com.tibco.ebx.core -DartifactId=ebx-lib -Dversion=5.9.10 -Dpackaging=jar
mvn install:install-file -Dfile=C:\tibco\ebx\5.9.10\webapps\wars-packaging\ebx-
dataservices.war -DgroupId=com.tibco.ebx.core -DartifactId=ebx-dataservices -
Dversion=5.9.10 -Dpackaging=war
mvn install:install-file -Dfile=C:\tibco\ebx\5.9.10\webapps\wars-packaging\ebx-dma.war -
DgroupId=com.tibco.ebx.core -DartifactId=ebx-dma -Dversion=5.9.10 -Dpackaging=war
mvn install:install-file -Dfile=C:\tibco\ebx\5.9.10\webapps\wars-packaging\ebx-
manager.war -DgroupId=com.tibco.ebx.core -DartifactId=ebx-manager -Dversion=5.9.10 -
Dpackaging=war
mvn install:install-file -Dfile=C:\tibco\ebx\5.9.10\webapps\wars-packaging\ebx-root-
1.0.war -DgroupId=com.tibco.ebx.core -DartifactId=ebx-root-1.0 -Dversion=5.9.10 -
Dpackaging=war
mvn install:install-file -Dfile=C:\tibco\ebx\5.9.10\webapps\wars-packaging\ebx-ui.war -
DgroupId=com.tibco.ebx.core -DartifactId=ebx-ui -Dversion=5.9.10 -Dpackaging=war
mvn install:install-file -Dfile=C:\tibco\ebx\5.9.10\webapps\wars-packaging\ebx.war -
DgroupId=com.tibco.ebx.core -DartifactId=ebx-web -Dversion=5.9.10 -Dpackaging=war

```

3. Install EBX™ product add-on jar and war into your local Maven repository using the following commands from a StreamBase® Command Prompt:

```
mvn install:install-file -Dfile=C:\workspace\OpenBanking\ebx\addons\ebx-cs-commons-lib.jar -DgroupId=com.tibco.ebx.cs.commons -DartifactId=ebx-cs-commons-lib -Dversion=0.7.1 -Dpackaging=jar
mvn install:install-file -Dfile=C:\workspace\OpenBanking\ebx\addons\ebx-cs-commons-web.war -DgroupId=com.tibco.ebx.cs.commons -DartifactId=ebx-cs-commons-web -Dversion=0.7.1 -Dpackaging=war
```

4. Install TIBCO Data Virtualization JDBC driver csjdbc.jar into your local Maven repository using the following command from a StreamBase® Command Prompt:

```
mvn install:install-file -Dfile=C:\tibco\tdv-server\8.3\apps\server\lib\csjdbc.jar -DgroupId=com.tibco.dv -DartifactId=csjdbc -Dversion=8.3.0 -Dpackaging=jar
```

5. Import the TIBCO Data Virtualization artifacts into the local server using the following command from a command prompt.

```
C:\tibco\tdv-server\8.3\bin\pkg_import.bat -server localhost -port 9410 -pkgfile C:\workspace\OpenBanking\dist\tdv\open_banking.car -user admin -password tdvadmin -encryptionPassword tdvadmin
```

6. Build the EBX™ source workspace by executing the following command from a StreamBase® Command Prompt:

```
mvn -f C:\workspace\OpenBanking\src\ebx\openbanking-ebx\pom.xml clean install
```

Alternatively, load the `<WORKSPACE_HOME>/src/ebx` source directory into StreamBase Studio™ as a new workspace, and then run *maven clean install* on the top level openbanking-ebx project.

7. Build the TIBCO Streaming source workspace by executing the following command from a StreamBase® Command Prompt:

```
mvn -f C:\workspace\OpenBanking\src\sb\openbanking-main\pom.xml clean install
```

Alternatively, load the `<WORKSPACE_HOME>/src/sb` source directory into StreamBase Studio™ as a new workspace, and then run *maven clean install* on the top level project, or run the *install-full.launch* launcher.

4 Starting Up

4.1 Bare Metal and AWS

Scripts to start the various components are located in `<WORKSPACE_HOME>/scripts/win`. The scripts for starting Dashboard and Event Manager all accept a parameter to indicate what action to execute:

- `install` – install and start a node
- `start` – start a node that has been installed and node coordinator is running
- `restart` – start a node that has been installed but node coordinator is not running
- `stop` – stop a node
- `remove` – stop and remove a node
- `terminate` – stops the node coordinator
- `showlog` – display log file

Normally to start an application you use the **install** command, and to stop it use the **remove** command.

The TIBCO Artifact Management Server script is simple with no parameters required.

Before trying to start the components ensure that there is a working directory prepared and available. In the default Accelerator scripts this will be located at `<WORKSPACE_HOME>/./tmp/nodes`.



If the components have been previously started, ensure the working directory for the nodes has been cleared out. If nodes have been started previously and were not cleanly removed, then this directory will have node working files in it and trying to install again will result in a failure.

For example, in the figure below, the directory *OpenBanking* represents `<WORKSPACE_HOME>` and under *tmp/nodes* there are three directories, one for each of Dashboard, Event Manager, and Simulator. In order to start from a clean system, these three sub-directories should be removed.

When trying to remove directories, if the nodes have been started but the machine not rebooted then there may be processes locking the files. Either reboot the machine or stop any DTMEEngine.exe processes present on the machine using Task Manager.

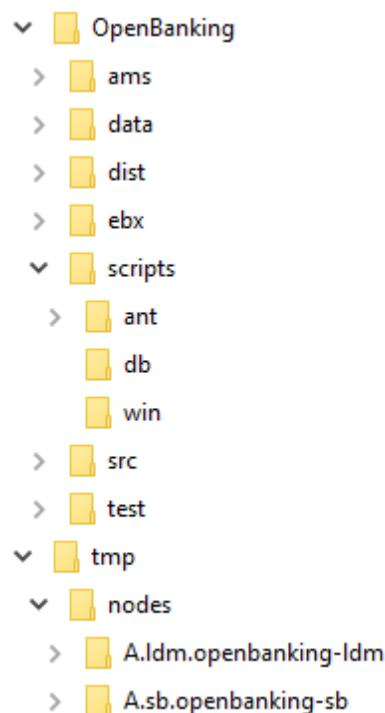



Figure 3: Workspace and Working Directories

Start the components in the following order. All scripts can be executed in parallel, but TIBCO Artifact Management Server must be running before the Event Manager tries to load decision tables and models. Due to the latency involved in starting, normally it will be fine to start in parallel.

	<p>Do not forget to include the install parameter for each command where required.</p>
---	---

Overall, starting TIBCO Live Datamart and TIBCO Streaming may take up to 10 minutes in some cases.

Table 9: Startup Sequence

Step	Component	Script	Remarks
1.	EBX™ H2 Database	01-ebx-h2-cmd.bat	Must be running before starting EBX™ Tomcat
2.	EBX™ Tomcat	02-ebx-cmd.bat	
3.	TIBCO Artifact Management Server	03-ams-cmd.bat	Must be running before Event Manager tries to load artifacts
4.	Dashboard	04-lv-cmd.bat install	Note the install at the end of the command
5.	Event Manager	05-em-cmd.bat install	Note the install at the end of the command

EBX™ H2 Database will be ready when you see something like this in the console.

TCP server running at tcp://172.31.11.150:9092 (others can connect)

EBX™ Tomcat will be ready when you see something like this.

```
2020-09-11 10:23:49,025 UTC INFO    log.kernel 1103:0032 [ebx-boot]
2020-09-11 10:23:49,026 UTC INFO    log.kernel 1103:0032 [ebx-boot] ***** EBX(TM) started and
initialized. *****
2020-09-11 10:23:49,026 UTC INFO    log.kernel 1103:0032 [ebx-boot]
Sep 11, 2020 10:23:49 AM org.apache.tomcat.dbcp.dbcp2.BasicDataSourceFactory getObjectInstance
INFO: Name = EBX_REPOSITORY Ignoring unknown property: value of "JDBC data source for EBXRéo
Repository.

        Attention: if the main configuration specifies the property
        'ebx.persistence.url', then this environment entry will be
        ignored by EBXRéo runtime." for "description" property
Sep 11, 2020 10:23:49 AM org.apache.jasper.servlet.TldScanner scanJars
INFO: At least one JAR was scanned for TLDs yet contained no TLDs. Enable debug logging for
this logger for a complete list of JARs that were scanned but no TLDs were found in them.
Skipping unneeded JARs during scanning can improve startup time and JSP compilation time.
Sep 11, 2020 10:23:49 AM org.apache.catalina.startup.HostConfig deployWAR
INFO: Deployment of web application archive [C:\workspace\OpenBanking\src\ebx\openbanking-
ebx\openbanking-ebx-server\target\tomcat\webapps\ebx-web.war] has finished in [3,289] ms
Sep 11, 2020 10:23:49 AM org.apache.coyote.AbstractProtocol start
INFO: Starting ProtocolHandler ["http-nio-3185"]
Sep 11, 2020 10:23:49 AM org.apache.catalina.startup.Catalina start
INFO: Server startup in 34347 ms
2020-09-11 10:23:55,298 UTC INFO    log.kernel 1103:0032 [ebx-manager-docIndexing] Indexing
EBX(TM) documentation for 'en', /www/common/html/onHelp/advanced/: done in 17009 ms.
2020-09-11 10:23:55,301 UTC INFO    log.kernel 1103:0032 [ebx-manager-docIndexing] Indexing
EBX(TM) documentation for 'fr', /www/fr/html/onHelp/simple/: running...
2020-09-11 10:23:56,678 UTC INFO    log.kernel 1103:0032 [ebx-manager-docIndexing] Indexing
EBX(TM) documentation for 'fr', /www/fr/html/onHelp/simple/: done in 1377 ms.
2020-09-11 10:23:56,680 UTC INFO    log.kernel 1103:0032 [ebx-manager-docIndexing] Indexing
EBX(TM) documentation for 'fr', /www/fr/html/onHelp/advanced/: running...
2020-09-11 10:24:12,731 UTC INFO    log.kernel 1103:0032 [ebx-manager-docIndexing] Indexing
EBX(TM) documentation for 'fr', /www/fr/html/onHelp/advanced/: done in 16051 ms.
2020-09-11 10:24:12,731 UTC INFO    log.kernel 1103:0032 [ebx-manager-docIndexing] Indexing
EBX(TM) documentation done.
```

TIBCO Artifact Management Server will be ready when the following is logged in the console:

```
Starting the AMS Server...
2020-09-11 10:23:15.221 INFO    (main) Logger configuration file:
file:C:/workspace/OpenBanking/ams/conf/logback.xml
2020-09-11 10:23:16.013 INFO    (main) com.tibco.ep.ams.conf.Configuration:420 - AMS default
configuration file: jar:file:C:/tibco/sb-cep/10.6/ams/lib/artifact-management-server.jar!/AMS-
defaults.conf
2020-09-11 10:23:16.090 INFO    (main) com.tibco.ep.ams.conf.Configuration:420 - AMS main
configuration file: C:\workspace\OpenBanking\ams\conf\AMS.conf
2020-09-11 10:23:16.142 INFO    (main) com.tibco.ep.ams.conf.Configuration:179 - Master secret
decryption: disabled
2020-09-11 10:23:16.298 INFO    (main) com.tibco.ep.ams.conf.Configuration:291 - Database file
path: 'C:\workspace\OpenBanking\ams\db\ams-h2-persistence'
2020-09-11 10:23:16.314 INFO    (main) com.tibco.ep.ams.conf.Configuration:230 - Enabled
AMSPersistenceRealm realm because LocalAuthenticationRealm realm is enabled
2020-09-11 10:23:21.135 INFO    (main) com.tibco.ep.ams.conf.ShiroConfigurator:143 -
Authentication realms: [amsPersistenceRealm]
2020-09-11 10:23:21.732 INFO    (main) com.tibco.ep.ams.AMSServer:517 - AMS Server URL(s):
- http://172.31.11.150:2185 (Intel(R) 82599 Virtual Function)
```

```
2020-09-11 10:23:28.998 INFO (main) com.tibco.ep.ams.AMSServer:459 - AMS server 1.6.1 2020-08-18 18:41:46 UTC started in 12.184 seconds
```

The Dashboard node will be ready when you see something like the following in the console. This is not a complete record of what will be logged, but only key entries that will be observed:

```
2020-09-11 10:22:40.621000+0000 [12888:AsyncLogger] INFO LVInfoInit: Loaded table
Data_Transaction
2020-09-11 10:22:40.770000+0000 [12888:AsyncLogger] INFO LVInfoInit: Loaded table LVAlerts
2020-09-11 10:22:46.120000+0000 [12888:AsyncLogger] INFO LVInfoInit: Loaded table Data_Offer
2020-09-11 10:22:48.129000+0000 [12888:Thread-1580] INFO
com.streambase.liveview.server.core.LiveViewServer: Restoring 0 alert rules from the store
2020-09-11 10:22:48.131000+0000 [12888:AsyncLogger] INFO { Server Started } :

*** All tables have been loaded. LiveView is ready to accept client connections. Total start
time(ms): 147522 ***

2020-09-11 10:22:49.411000+0000 [12888:AsyncLogger] INFO LogConnections: { Server::Connection
} (tupleid=0,connectionid="1CA2284481134909E9A51B3E89545637",connect=true,time=2020-09-11
10:22:49.401+000
0,ClientIP="127.0.0.1")
2020-09-11 10:22:49.577000+0000 [12888:AsyncLogger] INFO LogSubscriptions: {
'Data_Transaction'::Subscription
} (tupleid=0,connectionid="1CA2284481134909E9A51B3E89545637",path="Data_Transaction.DataUn
ionRef1.SnapQueryOut",logicalPath="Data_Transaction.DataUnionRef1.SnapQueryOut",subscribe=true,
time=2020-09-11 10:22:49.576+0000,ClientIP="127.0.0.1")
2020-09-11 10:22:49.726000+0000 [12888:AsyncLogger] INFO LogSubscriptions: {
'Data_Offer'::Subscription
} (tupleid=0,connectionid="1CA2284481134909E9A51B3E89545637",path="Data_Offer.DataUnionRef1.Snap
QueryOut",logicalPath="Data_Offer.DataUnionRef1.SnapQueryOut",subscribe=true,time=2020-09-11
10:22:49.726+0000,ClientIP="127.0.0.1")
2020-09-11 10:22:50.002000+0000 [12888:RingBufferThread - LiveViewStatistics] INFO
com.streambase.liveview.engine.adapter.MonitorSystemTables: Start logging system tables to
C:\workspace\tmp\nodes\A.
ldm.openbanking-ldm\application\engines\default-engine-for-
com.tibco.accelerators.openbanking.openbanking-fragment-dashboard/lv-profile
2020-09-11 10:22:51.051000+0000 [12888:AsyncLogger] INFO LogSubscriptions: {
'LiveViewStatistics'::Subscription
} (tupleid=0,connectionid="1CA2284481134909E9A51B3E89545637",path="LiveViewStatistics.Da
taUnionRef1.SnapQueryOut",logicalPath="LiveViewStatistics.DataUnionRef1.SnapQueryOut",subscribe
=true,time=2020-09-11 10:22:51.051+0000,ClientIP="127.0.0.1")
2020-09-11 10:22:51.090000+0000 [12888:AsyncLogger] INFO LogSubscriptions: {
'LiveViewStatistics'::Subscription
} (tupleid=0,connectionid="1CA2284481134909E9A51B3E89545637",path="LiveViewStatistics.Da
taUnionRef1.ContQueryOut",logicalPath="LiveViewStatistics.DataUnionRef1.ContQueryOut",subscribe
=true,time=2020-09-11 10:22:51.089+0000,ClientIP="127.0.0.1")
```

The Event Manager node will be ready once you see the following:

```
2020-09-11 10:21:36.223000+0000 [12928:Thread- ThreadPool - 1] INFO
com.streambase.sb.sbd.net.StreamBaseHTTPServer: sbd at EC2AMAZ-NO5M8H5:10001; pid=12928;
version=10.6.1_0a0fd7f78f3d4f25851d53e0e55
c97ce2ece3d22; Listening
2020-09-11 10:21:37.343000+0000
[12928:OperatorThread(RC_1_default_WebServices_LoginService_Local_ChangeContextIn.SBD2SBDOutput
:1)] INFO SBD2SBDOutput: Connection up to sb://localhost:10001/default.C
hangeContextIn
2020-09-11 10:21:37.345000+0000
```

```
[12928:OperatorThread(RC_2_default_WebServices_InitService_Local_Initialize.SBD2SBDOutput:1)]
INFO SBD2SBDOutput: Connection up to sb://localhost:10001/default.Initial
izeIn
2020-09-11 10:21:37.345000+0000
[12928:OperatorThread(RC_0_default_WebServices_SetConfigurationService_Local_ConfigurationIn.SB
D2SBDOutput:1)] INFO SBD2SBDOutput: Connection up to sb://localhost:1000
1/default.ConfigurationIn
2020-09-11 10:22:48.895000+0000 [12928:AsyncLogger] INFO EventManager.StartEventManager:
Starting Event Manager application
2020-09-11 10:22:48.909000+0000 [12928:AsyncLogger] INFO Common.Initialize: Using initial
repository FILE default application OB
2020-09-11 10:22:48.949000+0000 [12928:AsyncLogger] INFO
Common.Storage.Configuration.LoadApplication: Loading base configuration for application OB
from repository FILE
2020-09-11 10:22:49.042000+0000 [12928:AsyncLogger] INFO
Common.Storage.Configuration.LoadContext: Loading configuration for application OB context
DEFAULT from repository FILE
2020-09-11 10:22:49.238000+0000 [12928:AsyncLogger] INFO Common.Configuration:
{"ob":{"common":{"context":{"login":{"Password":"tibco123!","Username":"tibco"}}},"eventmanager
":{"InitialContext":"defa
ult"},"simulator":{"TimeCompression":5}}
2020-09-11 10:22:49.238000+0000 [12928:AsyncLogger] INFO EventManager.Main: Initializing Event
Manager
2020-09-11 10:22:49.239000+0000 [12928:AsyncLogger] INFO Data.ClearData: Clearing Data tables,
mode all
2020-09-11 10:22:49.604000+0000 [12928:RingBufferThread -
default.WebServices.GetConfigurationService] INFO WebRequest: Starting web server on port 80
2020-09-11 10:22:49.604000+0000 [12928:RingBufferThread -
default.WebServices.LoadProductsService] INFO WebRequest: Starting web server on port 80
2020-09-11 10:22:49.605000+0000 [12928:RingBufferThread -
default.WebServices.GetEnvironmentService] INFO WebRequest: Starting web server on port 80
2020-09-11 10:22:49.605000+0000 [12928:RingBufferThread - default.WebServices.InitService] INFO
WebRequest: Starting web server on port 80
2020-09-11 10:22:49.605000+0000 [12928:RingBufferThread - default.WebServices.LoginService]
INFO WebRequest: Starting web server on port 80
2020-09-11 10:22:49.606000+0000 [12928:AsyncLogger] INFO EventManager.StartEventManager: Event
Manager application READY
2020-09-11 10:22:49.606000+0000 [12928:RingBufferThread - default.WebServices.PingService] INFO
WebRequest: Starting web server on port 80
2020-09-11 10:22:49.608000+0000 [12928:RingBufferThread -
default.WebServices.SetConfigurationService] INFO WebRequest: Starting web server on port 80
2020-09-11 10:22:49.656000+0000 [12928:RingBufferThread - default.WebServices.LoginService]
INFO WebRequest: Web server started on port 80
2020-09-11 10:22:49.656000+0000 [12928:RingBufferThread -
default.WebServices.SetConfigurationService] INFO WebRequest: Web server started on port 80
2020-09-11 10:22:49.656000+0000 [12928:RingBufferThread - default.WebServices.InitService] INFO
WebRequest: Web server started on port 80
2020-09-11 10:22:49.656000+0000 [12928:RingBufferThread -
default.WebServices.GetConfigurationService] INFO WebRequest: Web server started on port 80
2020-09-11 10:22:49.656000+0000 [12928:RingBufferThread - default.WebServices.PingService] INFO
WebRequest: Web server started on port 80
2020-09-11 10:22:49.656000+0000 [12928:RingBufferThread -
default.WebServices.GetEnvironmentService] INFO WebRequest: Web server started on port 80
2020-09-11 10:22:49.656000+0000 [12928:RingBufferThread -
default.WebServices.LoadProductsService] INFO WebRequest: Web server started on port 80
2020-09-11 10:23:31.126000+0000 [12928:runtime [tid=13284]] INFO DecisionTableManager:
DecisionTableManager Validating activation of artifact 'OpenBanking/Offers.sbdtt@3', type:
'sbdtt', encoding: 'NONE'
2020-09-11 10:23:31.613000+0000 [12928:runtime [tid=12604]] INFO
```

```
com.tibco.ep.sb.ads.internal.CallNotifierDirectedTargetEx: Artifact
[type=SB_DECISION_TABLE,name=OpenBanking/Offers.sbd,version=3] delivered to operator
default.EventManager.ProcessTransactionReport.GenerateOffers.Offers
2020-09-11 10:23:31.677000+0000
[12928:OperatorThread(default.EventManager.ProcessTransactionReport.GenerateOffers.Offers.Decis
ionTableManager:1)] INFO DecisionTableManager: DecisionTableManager Loading artifact
'OpenBanking/Offers.sbd@3', type: 'sbd', encoding: 'NONE'
2020-09-11 10:23:31.684000+0000
[12928:OperatorThread(default.EventManager.ProcessTransactionReport.GenerateOffers.Offers.Decis
ionTableManager:1)] INFO DecisionTableManager: 3 rule(s) loaded in 7 ms from
'AMS://OpenBanking/Offers.sbd@3'
```

5 Demo Start and Control

5.1 Access the Data Virtualization User Interface

Load TDV Studio and connect to the TIBCO Data Virtualization Server to see configured resources.

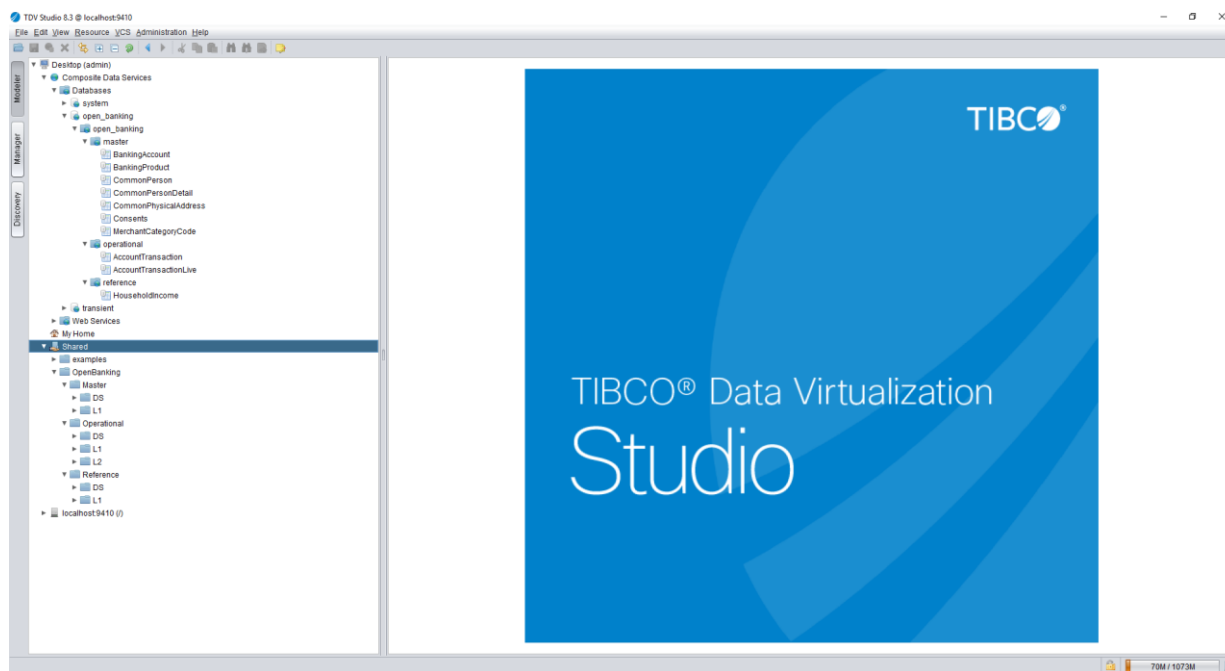


Figure 4: TIBCO Data Virtualization Studio

5.2 Access the EBX™ User Interface

Open a Chrome browser and navigate to the EBX™ login page with the following URL:

- <http://localhost:3185/ebx-ui/ui>

Enter the required credentials to access the EBX™ Home page.

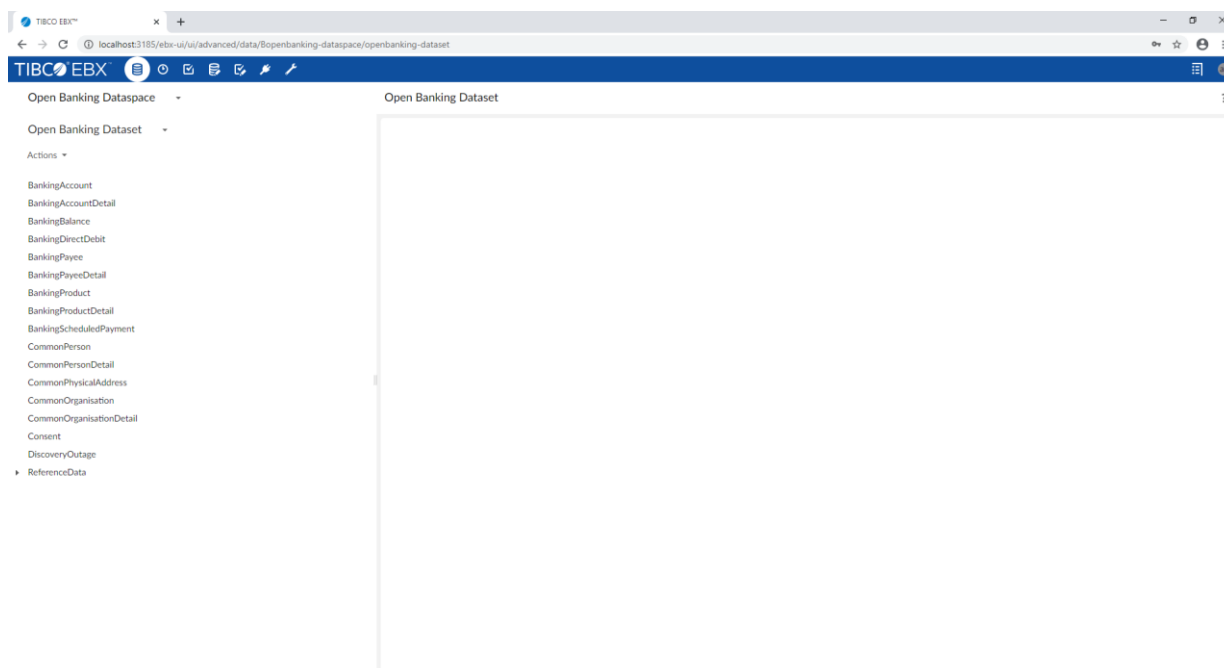


Figure 5: EBX™

Select one of the repositories in the Open Banking Dataset to view the included data.

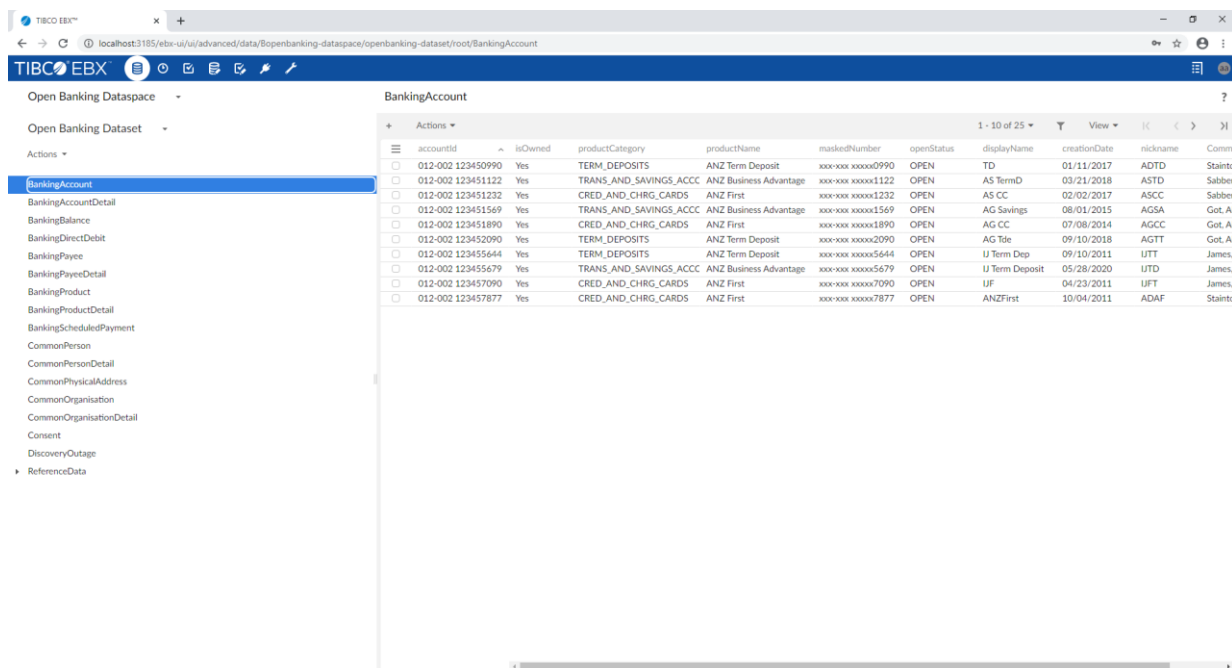
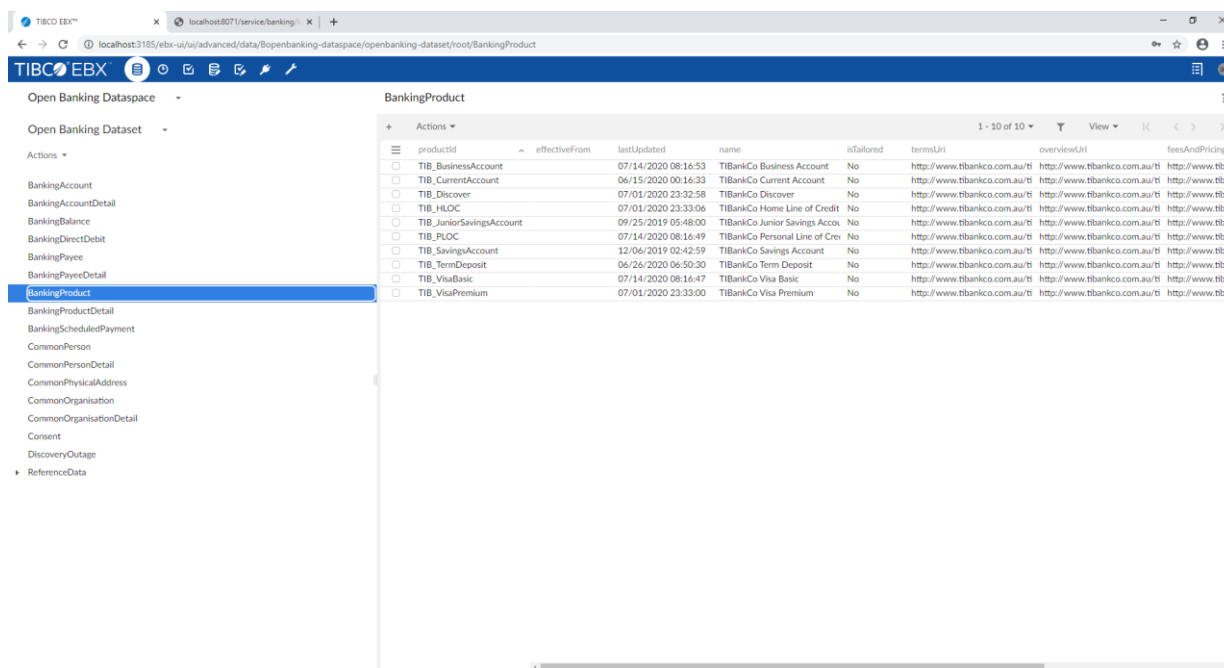


Figure 6: EBX™ – Banking Account

Note that by default the Accelerator is packaged with only minimal Banking Product records.



productid	effectiveFrom	lastUpdated	name	isTailored	termsUri	overviewUri	feesAndPricingUri
TIB_BusinessAccount	07/14/2020 08:16:53		TIBankCo Business Account	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_CurrentAccount	06/15/2020 00:16:33		TIBankCo Current Account	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_Discover	07/01/2020 23:32:58		TIBankCo Discover	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_HLOC	07/01/2020 23:33:06		TIBankCo Home Line of Credit	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_JuniorSavingsAccount	09/25/2019 05:48:00		TIBankCo Junior Savings Account	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_PLOC	07/14/2020 08:16:49		TIBankCo Personal Line of Credit	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_SavingsAccount	12/06/2019 02:42:59		TIBankCo Savings Account	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_TermDeposit	06/26/2020 06:50:30		TIBankCo Term Deposit	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_VisaBasic	07/14/2020 08:16:47		TIBankCo Visa Basic	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti
TIB_VisaPremium	07/01/2020 23:33:00		TIBankCo Visa Premium	No	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti	http://www.tibankco.com.au/ti

Figure 7: EBX™ – Default Banking Products

A web service is available in the Event Manager that will download Banking Product and Banking Product Details from the following banks using their open, publicly available APIs, and load these into EBX™:

- ANZ
- Commonwealth Bank
- NAB
- Westpac

To load these products, open a browser and access the following URL:

- http://localhost/service/banking/load_products.sb

When loaded successful the page will display as follows:

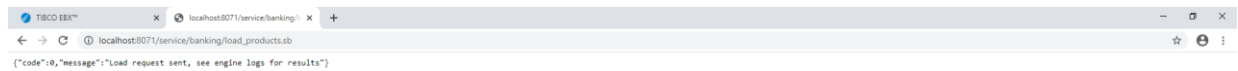


Figure 8: Banking Product Loader Service

Refer to the logs for the Event Manager engine for the details of the products being retrieved and loaded. It will look something like this and will take some time to complete:

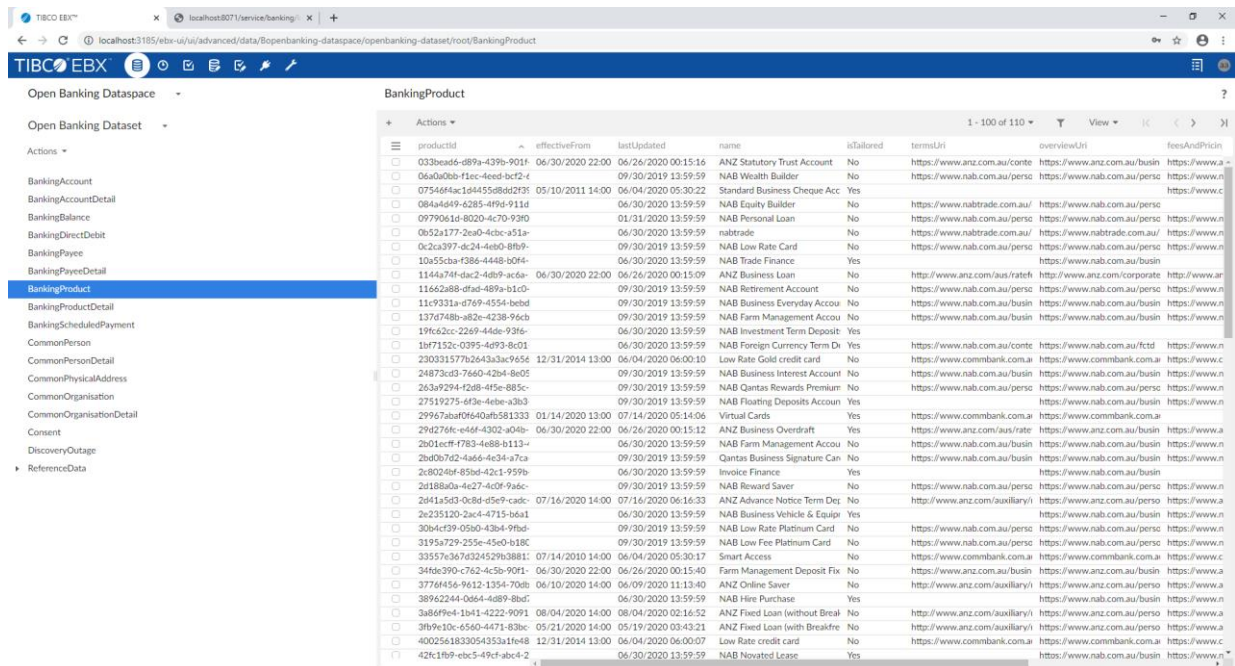
```
2020-09-11 10:55:06.813000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
Product Detail Flexi Loan into EBX
2020-09-11 10:55:11.214000+0000 [12928:AsyncLogger] INFO LogRetrieveProductDetailsComplete:
Completed retrieving product details for product American Express Westpac Altitude Platinum
Card from provider Westpac from url https://digital-api.westpac.com.au/cds-
au/v1/banking/products/CCAmexAltPlat
2020-09-11 10:55:11.214000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
Product Detail American Express Westpac Altitude Platinum Card into EBX
2020-09-11 10:55:15.754000+0000 [12928:AsyncLogger] INFO LogRetrieveProductDetailsComplete:
Completed retrieving product details for product BusinessChoice Everyday Mastercard from
provider Westpac from url https://digital-api.westpac.com.au/cds-
au/v1/banking/products/CCBusLowRate
2020-09-11 10:55:15.754000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
Product Detail BusinessChoice Everyday Mastercard into EBX
2020-09-11 10:55:20.294000+0000 [12928:AsyncLogger] INFO LogRetrieveProductDetailsComplete:
Completed retrieving product details for product Altitude Business Platinum Mastercard from
provider Westpac from url https://digital-api.westpac.com.au/cds-
au/v1/banking/products/CCAltBusPlat
2020-09-11 10:55:20.294000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
Product Detail Altitude Business Platinum Mastercard into EBX
2020-09-11 10:55:24.914000+0000 [12928:AsyncLogger] INFO LogRetrieveProductDetailsComplete:
Completed retrieving product details for product Altitude Business Gold Mastercard from
provider Westpac from url https://digital-api.westpac.com.au/cds-
au/v1/banking/products/CCAltBusGold
2020-09-11 10:55:24.914000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
Product Detail Altitude Business Gold Mastercard into EBX
2020-09-11 10:55:29.493000+0000 [12928:AsyncLogger] INFO LogRetrieveProductDetailsComplete:
Completed retrieving product details for product Altitude Black Card - Reward from provider
Westpac from url https://digital-api.westpac.com.au/cds-
au/v1/banking/products/CCAltBlackRewards
2020-09-11 10:55:29.494000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
```

```

Product Detail Altitude Black Card - Reward into EBX
2020-09-11 10:55:34.074000+0000 [12928:AsyncLogger] INFO LogRetrieveProductDetailsComplete:
Completed retrieving product details for product Altitude Black Card - Qantas from provider
Westpac from url https://digital-api.westpac.com.au/cds-au/v1/banking/products/CCAltBlackQantas
2020-09-11 10:55:34.074000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
Product Detail Altitude Black Card - Qantas into EBX
2020-09-11 10:55:38.653000+0000 [12928:AsyncLogger] INFO LogRetrieveProductDetailsComplete:
Completed retrieving product details for product Low Fee Card from provider Westpac from url
https://digital-api.westpac.com.au/cds-au/v1/banking/products/CCLowFee
2020-09-11 10:55:38.653000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
Product Detail Low Fee Card into EBX
2020-09-11 10:55:43.334000+0000 [12928:AsyncLogger] INFO LogRetrieveProductDetailsComplete:
Completed retrieving product details for product Low Fee Platinum from provider Westpac from
url https://digital-api.westpac.com.au/cds-au/v1/banking/products/CCLowFeePlat
2020-09-11 10:55:43.334000+0000 [12928:AsyncLogger] INFO LoadProductDetails: Loading Banking
Product Detail Low Fee Platinum into EBX

```

Once completed the Banking Product and Banking Product Details repositories in EBX™ will have the additional products downloaded from the banks.



productId	effectiveFrom	lastUpdated	name	isTailored	termsUri	overviewUri	feesAndPrincipals
033bead6-8b9a-439b-901f-06a0a0bb-f1ec-4eed-bcf2-0754664ac1d4455d8d2f3f	06/30/2020 22:00	06/26/2020 00:15:16	ANZ Statutory Trust Account	No	https://www.anz.com.au/conte	https://www.anz.com.au/busin	https://www.a
06a0a0bb-f1ec-4eed-bcf2-0754664ac1d4455d8d2f3f	05/10/2011 14:00	09/30/2019 13:59:59	NAB Wealth Builder	No	https://www.nab.com.au/perso	https://www.nab.com.au/perso	https://www.n
084a4d49-6285-4f9d-911d-0979061d-8020-4c70-9390	06/30/2020 13:59:59	06/04/2020 05:30:22	Standard Business Cheque Acc	Yes	https://www.nabtrade.com.au/	https://www.nab.com.au/perso	https://www.n
084a4d49-6285-4f9d-911d-0979061d-8020-4c70-9390	06/30/2020 13:59:59	01/31/2020 13:59:59	NAB Personal Loan	No	https://www.nab.com.au/perso	https://www.nab.com.au/perso	https://www.n
0852a177-2e0d-4bca-451a-0c2ca397-dc24-4a0d-8b09	06/30/2020 13:59:59	09/30/2019 13:59:59	NAB Low Rate Card	No	https://www.nab.com.au/perso	https://www.nab.com.au/perso	https://www.n
10a55c3a-f386-4448-b0f4-1144a74f-dac2-4d69-acda	06/30/2020 13:59:59	06/30/2020 00:15:09	NAB Trade Finance	Yes	https://www.anz.com.au/ratefi	https://www.anz.com/corporate	https://www.ar
11662a88-dfad-489a-b1c0-11c9331a-d769-4554-babd	09/30/2019 13:59:59	09/30/2019 13:59:59	NAB Retirement Account	No	https://www.nab.com.au/perso	https://www.nab.com.au/perso	https://www.n
137d748b-8e2e-4238-96cb-19f62cc-22d9-44de-939e	09/30/2019 13:59:59	06/30/2020 13:59:59	NAB Business Everyday Accou	No	https://www.nab.com.au/busin	https://www.nab.com.au/busin	https://www.n
19f62cc-22d9-44de-939e-1a7152c-6295-4d93-8e01	06/30/2020 13:59:59	06/04/2020 06:00:10	NAB Farm Management Accou	No	https://www.nab.com.au/busin	https://www.nab.com.au/busin	https://www.n
230331577b2d433ac9a54-24873cd-76a0-42b4-8e0f	12/31/2014 13:00	09/30/2019 13:59:59	NAB Investment Term Deposits	Yes	https://www.nab.com.au/conte	https://www.nab.com.au/ricd	https://www.n
24873cd-76a0-42b4-8e0f-263a9294-d2d8-4f5e-885c	09/30/2019 13:59:59	06/30/2020 13:59:59	NAB Foreign Currency Term Di	Yes	https://www.nab.com.au/conte	https://www.nab.com.au/ricd	https://www.n
27519275-6f3e-4e3e-a3b3-29967ab0f0640af581333	01/14/2020 13:00	07/14/2020 05:14:06	Low Rate Gold credit card	No	https://www.nab.com.au/conte	https://www.nab.com.au/ricd	https://www.n
29d2764c-e46f-4302-a04b-2b01ecf-4783-4e8b-b113	06/30/2020 22:00	06/26/2020 00:15:12	NAB Business Interest Account	No	https://www.nab.com.au/busin	https://www.nab.com.au/busin	https://www.n
2b01ecf-4783-4e8b-b113-2a0d02d-4a6d-4c3d-97ca	06/30/2020 13:59:59	06/30/2020 13:59:59	NAB Qantas Rewards Premium	No	https://www.nab.com.au/perso	https://www.nab.com.au/perso	https://www.n
2a0d02d-4a6d-4c3d-97ca-2c802d8f-856d-42c1-959b	06/30/2020 13:59:59	09/30/2019 13:59:59	NAB Floating Deposits Account	Yes	https://www.commbank.com.au	https://www.commbank.com.au	https://www.c
2c802d8f-856d-42c1-959b-2d188da-4e27-4c0f-9ade	07/16/2020 14:00	07/16/2020 06:16:33	Virtual Cards	Yes	https://www.anz.com.au/rate	https://www.anz.com.au/busin	https://www.a
2d188da-4e27-4c0f-9ade-2e235120-2ac4-4715-bba1	06/30/2020 13:59:59	06/30/2020 13:59:59	ANZ Business Overdraft	Yes	https://www.nab.com.au/busin	https://www.nab.com.au/busin	https://www.n
2e235120-2ac4-4715-bba1-30b4c39f-050d-43b4-9fbd	09/30/2019 13:59:59	09/30/2019 13:59:59	NAB Farm Management Accou	No	https://www.nab.com.au/busin	https://www.nab.com.au/busin	https://www.n
3195a729-255e-45e0-b18c-33557e367d324529b3881	06/30/2020 22:00	06/26/2020 00:15:40	NAB Low Fee Platinum Card	No	https://www.nab.com.au/perso	https://www.nab.com.au/perso	https://www.n
346a390-762-4c5b-909f-377d45a-8612-1354-70db	06/30/2020 13:59:59	06/09/2020 11:13:40	NAB Low Fee Platinum Card	No	https://www.nab.com.au/perso	https://www.nab.com.au/perso	https://www.n
377d45a-8612-1354-70db-38962244-0d64-4d89-8bdc	06/30/2020 13:59:59	06/30/2020 13:59:59	Smart Access	No	https://www.commbank.com.au	https://www.commbank.com.au	https://www.c
38962244-0d64-4d89-8bdc-3a869e4-1b41-4222-9091	08/04/2020 14:00	08/04/2020 02:16:52	Farm Management Deposit Fix	No	https://www.anz.com.au/busin	https://www.anz.com.au/busin	https://www.a
3a869e4-1b41-4222-9091-3fb9e10c-6560-4471-83bc	05/21/2010 14:00	05/19/2020 03:43:21	ANZ Online Saver	No	https://www.anz.com.au/auxiliary	https://www.anz.com.au/perso	https://www.a
3fb9e10c-6560-4471-83bc-40025e1833054353a1fe48	12/31/2014 13:00	06/04/2020 06:00:07	NAB Hire Purchase	Yes	https://www.nab.com.au/busin	https://www.nab.com.au/busin	https://www.n
40025e1833054353a1fe48-42c1b69-ebc5-49cf-abc4-2	06/30/2020 13:59:59	06/30/2020 13:59:59	NAB Fixed Loan (without Break	No	http://www.anz.com/auxiliary	https://www.anz.com.au/perso	https://www.a
			ANZ Fixed Loan (with Breakfri	No	http://www.anz.com/auxiliary	https://www.anz.com.au/perso	https://www.a
			Low Rate credit card	No	https://www.commbank.com.au	https://www.commbank.com.au	https://www.c
			NAB Novated Lease	Yes	https://www.nab.com.au/busin	https://www.nab.com.au/busin	https://www.n

Figure 9: EBX™ – Downloaded Banking Products

5.3 Access the Spotfire® User Interface

The Spotfire® user interface implements visualizations that combine static data from TIBCO Data Virtualization and live data from TIBCO Live Datamart. It is implemented using a DXP that can be loaded from <WORKSPACE_HOME>/src/spotfire/openbanking-transactions.dxp into Spotfire® Analyst.

The analysis will prompt for entering the TIBCO Data Virtualization username and password to access the data source. Enter the correct credentials here.

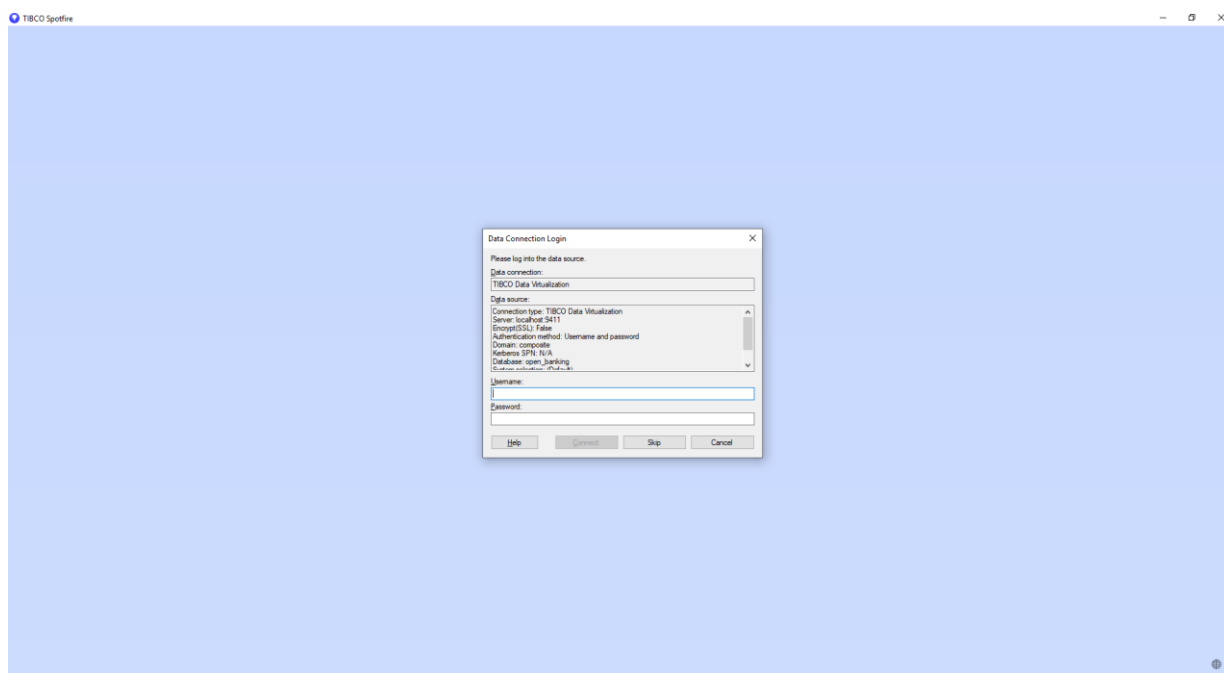


Figure 10: Spotfire® Analyst TIBCO Data Virtualization Credentials Prompt

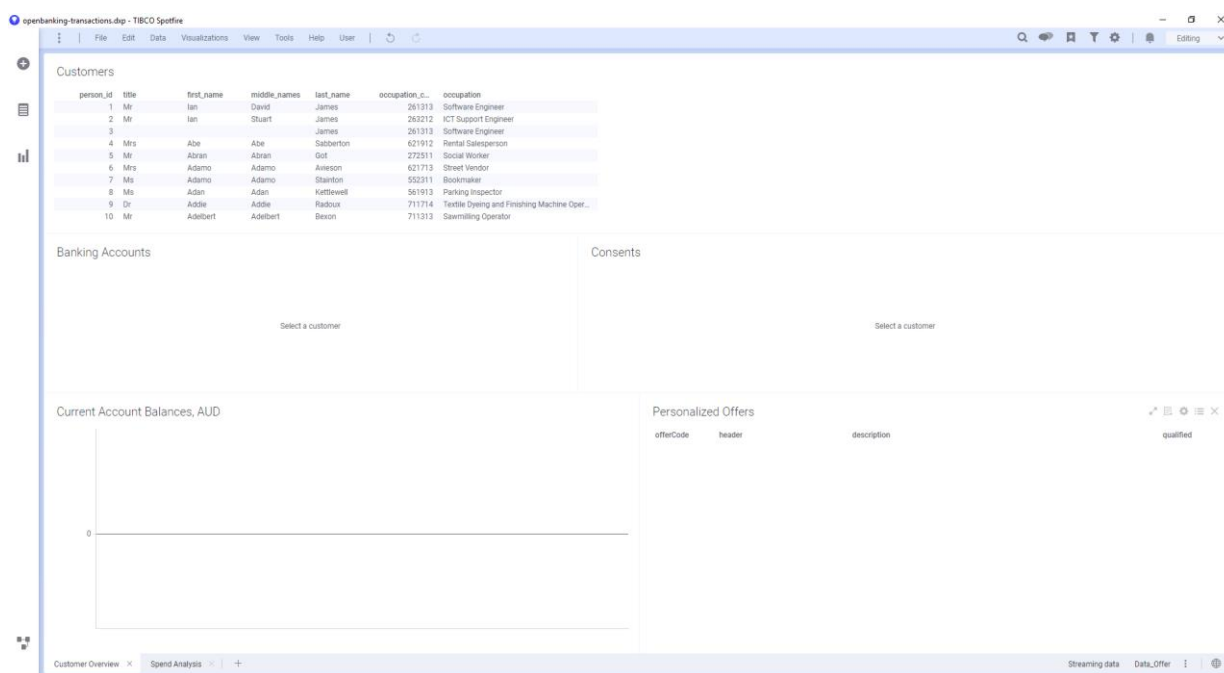


Figure 11: Spotfire® Analyst User Interface

5.4 Simulation Control

The simulation is controlled from StreamBase Studio™. Open up the <WORKSPACE_HOME>/src/sb path as a new workspace in Studio and then import the contents as Existing Maven Projects.

You can start the simulator by running the **start-testharness.launch** launcher in Studio. This will run as an EventFlow fragment.

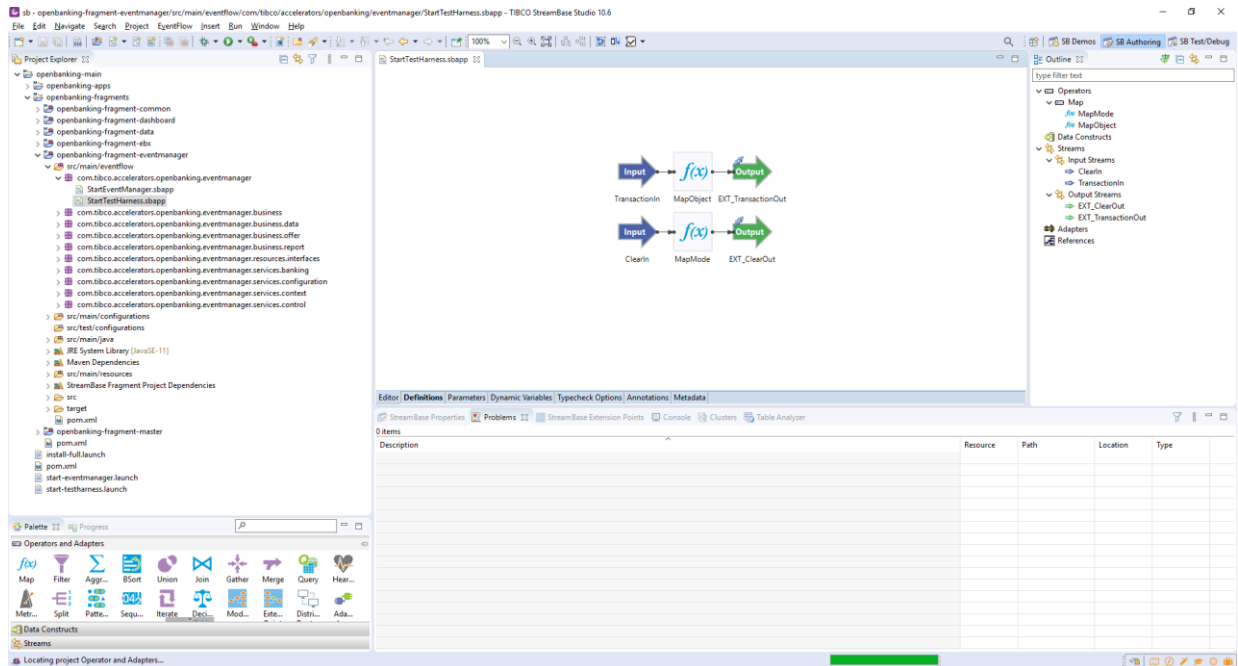


Figure 12: Simulation Control Event Flow

5.5 Start a New Test Case

To start a new test case, run the **start-testharness.launch** launcher as an event flow fragment.

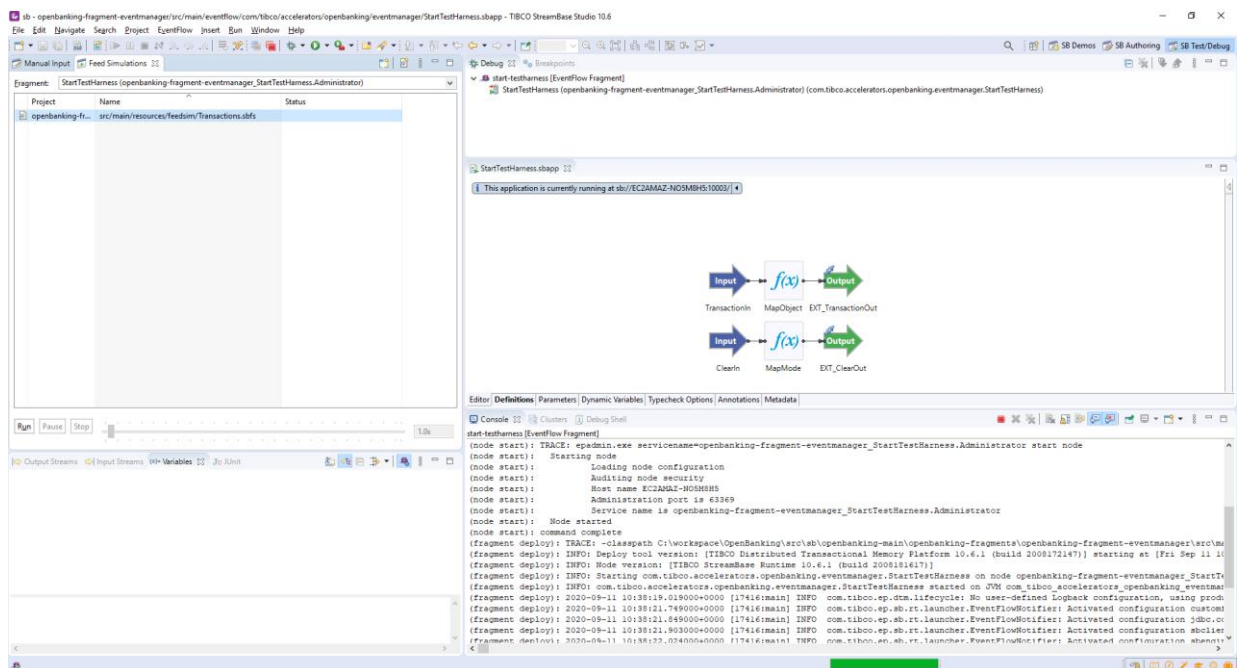


Figure 13: Start New Test

Select and start the *Transactions* feed simulation. The simulation will run and the Spotfire® Analyst Real-time visualizations will update accordingly. Select a Customer from the Customers visualization to display the detailed information for that customer.

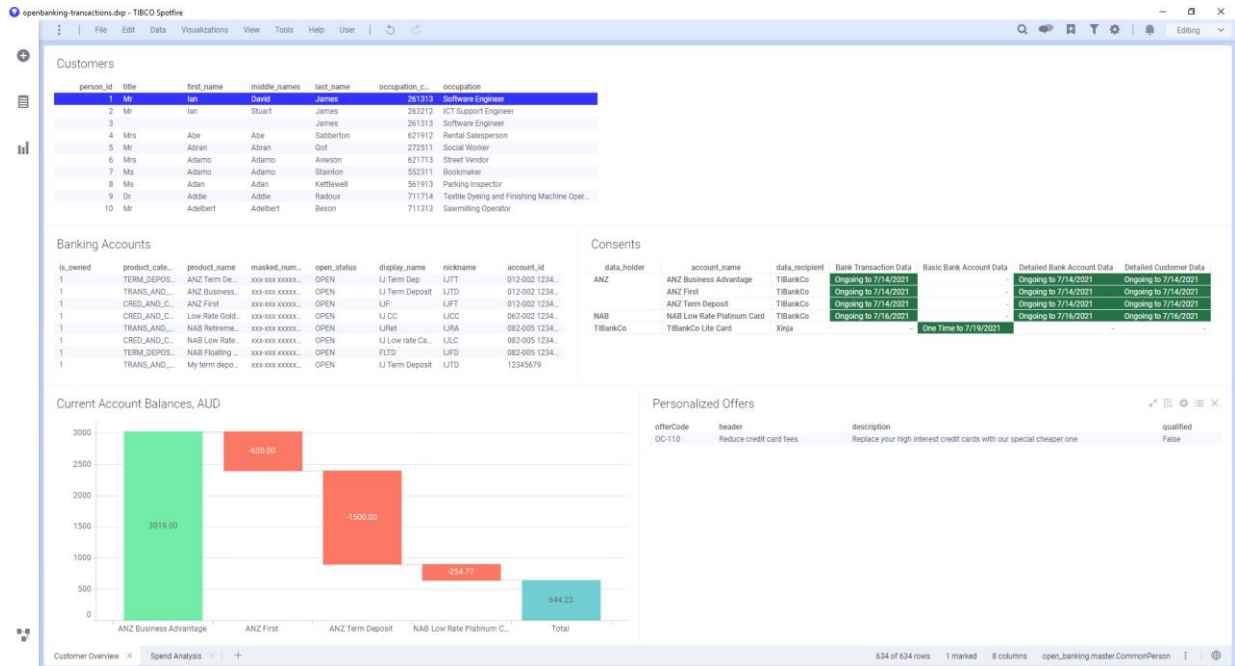


Figure 14: Spotfire® Analyst With Running Simulation – Customer Overview View

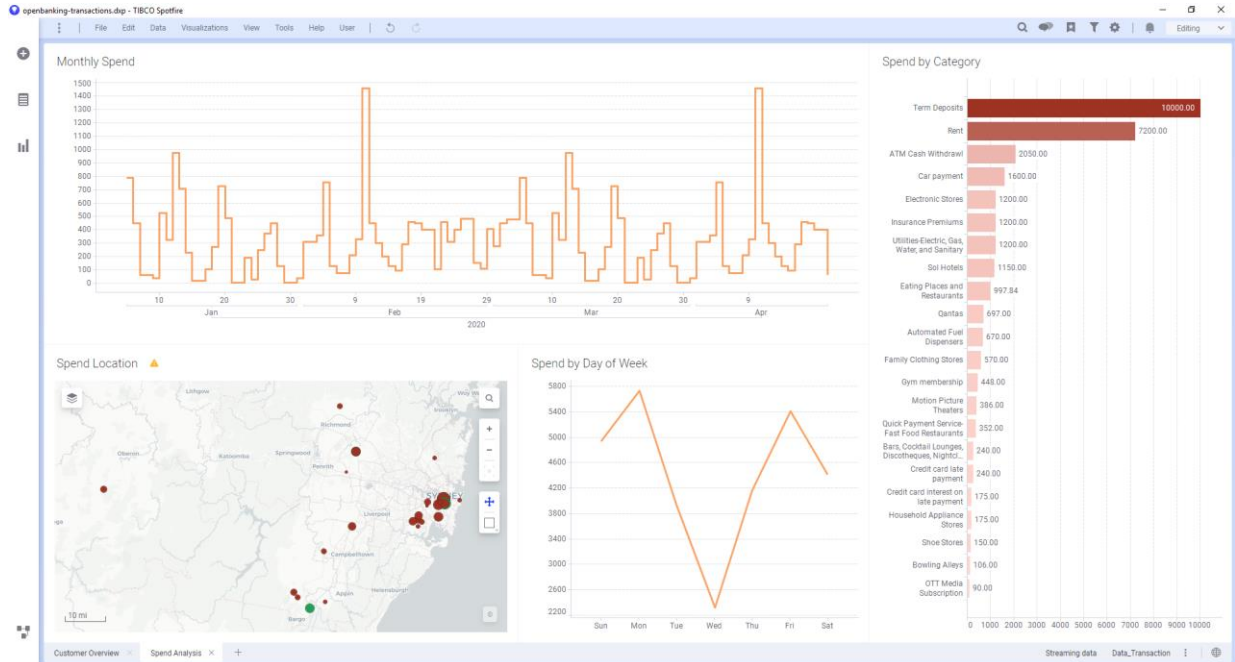


Figure 15: Spotfire® Analyst With Running Simulation – Spend Analysis View

5.6 Loading Third-Party Banking Products

The Accelerator has been configured with a service that will call out to third-party banks that adhere to the Australian CDR standards. It will then load products and product details into EBX™. The providers are configured in a JSON file located at <WORKSPACE_HOME>/data/contexts/default/providers. Note

that both the URLs and the API format may change from the released Accelerator version, so the loading process may fail.

To trigger the load of these products, open a Chrome browser and navigate to the following URL:

- http://localhost/service/banking/load_products.sb

Refer to the Event Manager log for the progress of the loading. Once complete, the products will be available in the EBX™ user interface.

5.7 Clearing Data

To clear all data, send a tuple on the ClearIn input stream. This will clear all transaction data in the system.

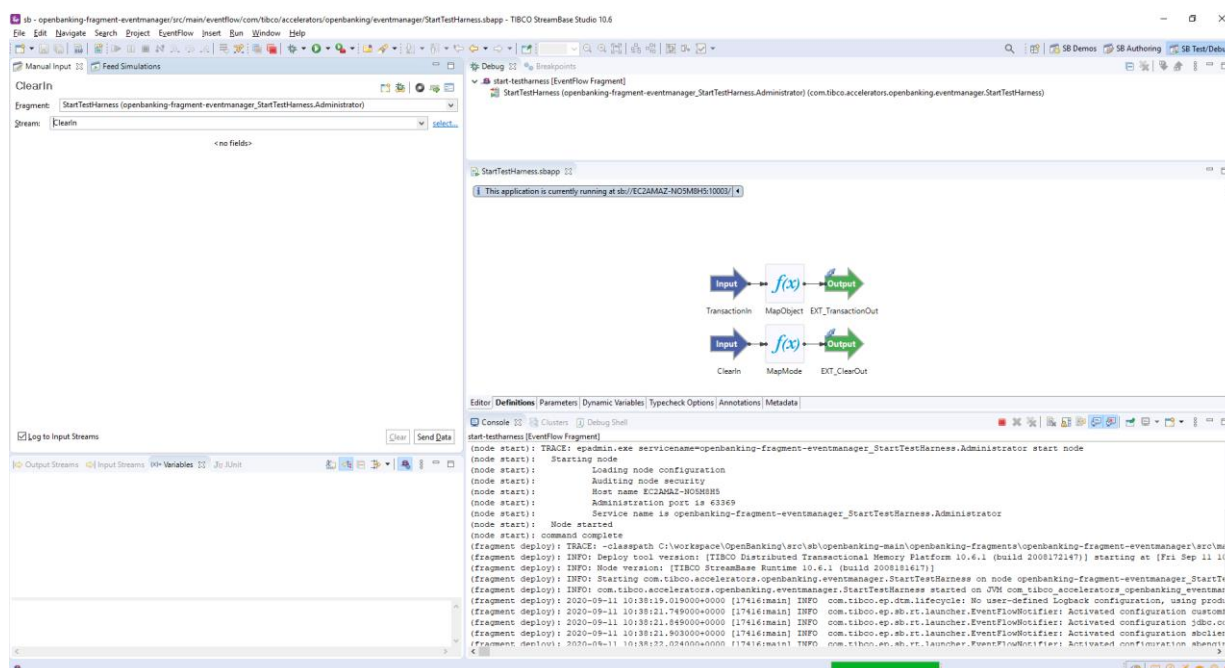


Figure 16: Clear Data

6 Configured Test Cases

6.1 Test Case Inventory

There are no configured test cases for this Accelerator. Run the standard demo as outlined above.

7 Suggested Demo Scripts

7.1 Overview

7.2 Storyboard

7.3 Analytics Dashboard

7.4 Streaming Analytics