

IBM Predictive Customer Intelligence
Version 1.0.0

*Behavior Based Customer Insight for
Banking Solution Guide*



Note

Before using this information and the product it supports, read the information in "Notices" on page 45.

Product Information

This document applies to IBM Predictive Customer Intelligence Version 1.0.1 and may also apply to subsequent releases.

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Introduction

The IBM Behavior Based Customer Insight for Banking solution gives you the information and insight that you need to provide proactive service to your customers.

Audience

This guide is intended for administrators and users of the Behavior Based Customer Insight for Banking solution. It provides information on installation, configuration, and use of the Behavior Based Customer Insight for Banking solution.

Finding information

To find product documentation on the web, including all translated documentation, access IBM® Knowledge Center (<http://www.ibm.com/support/knowledgecenter>).

Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products. Some of the components included in the Behavior Based Customer Insight for Banking have accessibility features. For more information, see Appendix A, “Accessibility features,” on page 23.

Behavior Based Customer Insight for Banking HTML documentation has accessibility features. PDF documents are supplemental and, as such, include no added accessibility features.

Forward-looking statements

This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of IBM.

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Chapter 1. Overview

The IBM Behavior Based Customer Insight for Banking solution works with IBM Predictive Customer Insight.

Important: Before you install the solution, IBM Predictive Customer Insight must be installed on your system.

The solution includes reporting and dashboard templates, sample predictive models, and application interfaces for integration with operational systems. It uses banking data related to transactions, accounts, customer information, and location to divide customers into segments based on their spending and saving habits and predicts the probability of various life events. By anticipating customer needs, the solution enables banks to deliver personalized, timely, and relevant offers. For example, It can send alerts and targeted offerings and provide insights that help banks to develop direct marketing campaigns. It also helps customers of the bank to manage their finances.

What need does the solution address for banks?

Banks have a large amount of data related to their clients. However, they lack the capacity to use the data to quickly gain insight into the needs of their clients. With greater insights provided by the solution, banks are able to anticipate customer needs and deliver timely, relevant offers. This results in greater convenience for clients, increased client loyalty, and higher revenues for the bank.

An exposed API allows banks to embed the solution into their portals or desktops.

The solution can be embedded in a bank's systems

Published APIs can be used to embed the solution into a bank's existing portals and desktops. This provides bankers and clients with insights through familiar interfaces.

Capabilities of the solution

The solution provides the following capabilities:

Behavior based segmentation

Client data is analyzed and clients are assigned to segments based on their past behavior. Algorithms are used to analyze information such as clients' funding frequency and sources, transaction frequency, and types of assets held. This helps bankers to understand each client and provide personalized advice to that client.

Alerts for propensity to overdraft

Analytics are used to identify overdraft propensity for each client. By using historical cash flow patterns, the solution identifies clients who are likely to overdraft on their accounts. This insight is used to develop optimal financial recommendations for each client.

Demographic Peer-grouping

The solution identifies peer-groups for individual customers based on such things as age, marital status, and income. Opportunities are identified based on an individual's peer group. Out-of-the-box interactive dashboards provide bankers and clients with easy access to these insights.

A summary of benefits for banks

The Behavior Based Customer Insight for Banking solution provides banks with the following benefits:

- Improved customer experience and greater customer loyalty
- Tailored offers for products and services
- More advanced risk and rebalancing alerts
- Greater inflows and client-advisor interaction
- Increase in cross-sell and assets invested
- Reduced outflows and attrition

Chapter 2. Installation and configuration

The IBM Behavior Based Customer Insight for Banking solution is for use with IBM Predictive Customer Intelligence.

The installation and configuration of the solution involves going to Passport Advantage, downloading the solution, and then configuring the various parts of it within your environment.

Prerequisites

Before you install the Behavior Based Customer Insight for Banking there are prerequisites that must be met.

The following conditions must be met before the application is installed:

- IBM Predictive Customer Intelligence is installed and configured.
- You have a Linux system that you can install to. The application installer works only on Linux.
- You understand your existing environment so that you can determine where you want the various components of the application to reside.
- You have administration rights and the ability to copy files between computers.

Contents of the download package

The Behavior Based Customer Insight for Banking package, which you download from Passport Advantage, contains several parts.

The following parts are included in the package:

- Solution installer
- DB2 databases
- SPSS project streams, models, and rules
- Cognos BI reports, Framework Manager models, and Dynamic cube models
- EAR file that contains the REST APIs

Overview of the installation and configuration process

This is an overview of the general tasks that you must perform to install and configure the Behavior Based Customer Insight for Banking solution.

You will need to perform the following tasks:

1. On the server from which you want to install the solution, download the tar.gz file from IBM Passport Advantage.
2. Plan where you want the various parts of the solution to reside.
3. Open the ports that are required for the installation. You can do this by running the firewall.sh script, manually opening the ports on the installation node, or disabling the firewall. You will also have to open ports on the other node computers that are used for the solution.
4. On the installation computer, run the setup.sh file to install the solution installer.

5. Run the solution installer to deploy files to the locations that you specify.
6. Create the DB2 database on the data node computer.
7. Import the SPSS project streams, models, and rules on the Predictive Analytics node computer.
8. Configure the data view for SPSS models on the Predictive Analytics node computer.
9. Install the Cognos content on the BI node computer.
10. Copy the Framework Manager model to a Microsoft Windows computer.
11. Install the EAR file.

Planning the installation and configuration of the solution

Before installing the solution, you must decide which computers you want the various parts of the solution to reside on.

You must ensure that no application is listening on the ports that will be used during the installation of the solution.

Downloading the solution

You must download the Behavior Based Customer Insight for Banking solution from IBM Passport Advantage.

Before you begin

Before you can install the package from Passport Advantage, you must have a Passport Advantage account and be entitled to the package.

About this task

Passport Advantage contains package repositories. Instead of downloading the package from Passport Advantage and creating a repository locally, you access the repository on Passport Advantage.

Procedure

1. Set the Passport Advantage preference to connect to Passport Advantage.
2. Download the tar.gz file.
3. Move the tar file to the Linux node from which you want to run the installation.
4. Uncompress the tar file.

Modifying the sudoers file for the user who runs the installation

To run the Behavior Based Customer Insight for Banking installation, you must be either **root** user or have **sudo** permission on each node computer, and you must disable `requiretty` during the installation.

To install with **sudo** user permissions, you must also add the user to the sudoers file.

Procedure

1. Log in as **root** user.
2. Enter the following command to open the sudoers file for editing:

- ```
visudo -f /etc/sudoers
```
3. Locate the following line:  
`Defaults requiretty`
  4. Press the I key to insert text.
  5. Type a number sign (#) in front of `Defaults requiretty` to comment out the line. For example, the line should appear as  
`#Defaults requiretty`
  6. If you run the installer as a user with **sudo** user permissions, go to the end of the file, and add the following line for your user:  
`username ALL=(ALL) NOPASSWD: ALL`
  7. Press the Esc key, and enter `:wq` to save and close the file.
  8. Repeat these steps on each computer on which you install a Behavior Based Customer Insight for Banking node.

---

## Computer firewall settings required for the installation

The solutions installer requires bidirectional communication with each node when you install a server component or server artifact component, and your firewall can interfere with this communication.

To ensure this bidirectional communication, you must configure your firewall settings for the installation. Alternatively, you can temporarily disable your firewall during the installation.

A script is provided to open all necessary ports on the installation node. You can either use the `firewall.sh` script, open the nodes manually, or disable the firewall settings.

In addition to opening ports on the installation node computer, there are some ports that must also be opened on each computer to which content from the solution will be copied.

### Disabling firewall settings during installation (optional)

If you choose to temporarily disable your computer's firewall during the installation of the IBM Behavior Based Customer Insight for Banking application, ensure that you enable the firewall on each node after the installation is complete

#### About this task

**Important:** If you disable your computer's firewall during the installation, you must still ensure that the required ports are opened on each node computer when you restart your firewall.

#### Procedure

1. Log on to the computer as the root user or as a user with sudo permissions.
2. Type the following command:  
`/etc/init.d/iptables stop`
3. Repeat these steps on each computer on which you install a node and on the server from which you are running the installation.

## What to do next

After the installation is complete, on each node, type `/etc/init.d/iptables start` to restart your firewall.

## Configuring your firewall settings on the installation node computer by using the Firewall script

You can run the `firewall.sh` script to open the ports on the installation node.

### About this task

The `firewall.sh` script will open the following ports on the solution installer node:

- 8080 incoming
- 443 incoming
- 9683 incoming
- 22 outgoing

### Procedure

1. Log on to the computer that contains the solution installer node as the root user or as a user with sudo permissions.
2. Back up your existing firewall settings by typing the following command:  
`/etc/init.d/iptables save`.
3. Run the `firewall.sh` script.

## Manually configuring firewall settings on the installation node

If you prefer not to use the `firewall.sh` script, you can manually configure your firewall settings on the installation node.

### Procedure

1. As the root user or as a user with sudo permissions, log on to the computer that contains the solution installer node .
2. Back up your existing firewall settings by typing the following command: `./etc/init.d/iptables save`
3. On the computer that contains the solution installer node, add rules for the ports that are required by the installer by typing the following commands:  

```
iptables -I INPUT -p tcp --dport 8080 -j ACCEPT
iptables -I OUTPUT -p tcp --sport 8080 -m state --state RELATED,ESTABLISHED -j ACCEPT

iptables -I INPUT -p tcp --dport 443 -j ACCEPT
iptables -I OUTPUT -p tcp --sport 443 -m state --state RELATED,ESTABLISHED -j ACCEPT

iptables -I INPUT -p tcp --dport 9683 -j ACCEPT
iptables -I OUTPUT -p tcp --sport 9683 -m state --state RELATED,ESTABLISHED -j ACCEPT

iptables -I OUTPUT -p tcp --dport 22 -j ACCEPT
iptables -I INPUT -p tcp --sport 22 -m state --state RELATED,ESTABLISHED -j ACCEPT
```

## Configuring firewall settings on other computers that will contain content from the solution

On all node computers to which content from the application will be copied, the ports 443, 9683, and 8080 must be opened for the installation process.

## Procedure

1. On each of the computers to which content for the solution will be copied, add rules for the ports that are required by the installer by typing the following commands:

```
iptables -I OUTPUT -p tcp --dport 443 -j ACCEPT
iptables -I INPUT -p tcp --sport 443 -m state --state RELATED,ESTABLISHED -j ACCEPT
iptables -I OUTPUT -p tcp --dport 9683 -j ACCEPT
iptables -I INPUT -p tcp --sport 9683 -m state --state RELATED,ESTABLISHED -j ACCEPT
iptables -I OUTPUT -p tcp --dport 8080 -j ACCEPT
iptables -I INPUT -p tcp --sport 8080 -m state --state RELATED,ESTABLISHED -j ACCEPT
```
2. Type the following command to save your firewall settings:

```
/etc/init.d/iptables save
```
3. Type the following command to restart your firewall:

```
/etc/init.d/iptables restart
```
4. Verify that your changes have been applied by using the following command:

```
iptables -L
```

The added port will appear in the list.
5. Repeat these steps on each computer on which you will install an IBM Behavior Based Customer Insight for Banking node.

---

## The solution installer

The solution installer provides automation that will help you to install the solution.

The Industry Solution Installer runs on the latest versions of Chrome and Firefox. It is not tested on Safari and will not run on Internet Explorer.

The Industry Solution provides the following functionality:

- Deploys the required files to defined nodes.
- Allows you to start with a new configuration or with a configuration that you previously saved.
- Provides automated validation.
- Provides electronic license acceptance.
- Provides automated clean-up of installed files if the license is declined.

The `setup.sh` script will install `nodejs`, `chef client`, and `chef server`. It will extract and upload the cookbooks, and will set up everything so that `chef` can be used to install the software.

The `setup.sh` script takes the following five arguments (the fifth argument is a password, and if omitted, it will be prompted for):

```
sh setup.sh <username> <first name> <last name> <e-mail> <password>
```

Where

`username`: The username to create in `chef server` (can be used to logon to the `chef server`) Must be all lowercase characters.

`first name`: The first name of the user created in `chef` (for display purposes only)

`last name`: The last name of the user created in `chef` (for display purposes only)

e-mail: A valid e-mail address for notifications from chef server

password: password for the user created in chef (optional: will prompt for password if not included on the command line).

## Running the industry solution installer

You can now run the Industry Solution Installer to deploy files to the correct nodes. Nodes are the target computers onto which you will deploy the software.

### Before you begin

Ensure that you know the following information for each of the nodes that will be used in your solution and that you have opened the necessary ports. It is not necessary that DataStage be installed and configured before running the solution installer. However, a designated DataStage server must exist to deploy content to.

- Host name or IP address
- Password of the root user ID or a user ID and password that has sudo permissions

### About this task

In this task, you create an installation configuration for your solution by dragging nodes onto a canvas and then dragging components into the nodes.

**Important:** The Industry Solution Installer will run on the latest versions of Chrome and Firefox. It will not run on Internet Explorer and it is untested on Safari.

### Procedure

1. Run the setup shell script `setup.sh`.
2. After the solution installer finishes, a browser window should open. If a browser is not installed, a URL will be displayed from which you can connect to the UI. The default URL is `https://solution_installer_node/UI/Index.html`.
3. Click **New Configuration**  
If you have a configuration that was previously saved, you can start from that.
4. From the Mandatory Content List pane, select **Node**.  
A visual representation of an empty node is displayed on the canvas.
5. In the Property Editor, type a name for the node, and in the **Host Name** box, specify the server on which the node will reside.  
For example, you might create a node named BI Node.
6. Enter a user name for a user with sudo access and a password.  
If you click **Validate** before all the mandatory content is added, a message indicates that the node is not valid. For example, if you validate the BI Node before adding Cognos BI Content, then a message indicates that the node is not yet valid.
7. From the Optional Content List drag any content that you want to add into the appropriate node. The reason that this content is optional is because you may already have some of the necessary components. For example, you might already have InfoSphere Information Server installed, in which case you do not need to copy that software to a server.

8. For every node that you want to add content to, define the node and then drag content objects onto the appropriate node.  
For the solution, you should have a BI node, an Information Server node, and a Netezza node.
9. Click **Validate**.
10. After all nodes are defined, the contents are specified, and each node has been validated, click **Run**.

---

## Creating the database

Before you can use the IBM Behavior Based Customer Insight for Banking solution, you must create a database.

### About this task

You run one script to create the database, and then run another script to populate the database. The installer will have copied the zipped file to your data node computer.

### Procedure

1. Log on to the data node computer as root user.
2. On the data node computer, if the compressed file is not already decompressed, then decompress it.
3. Open a terminal window, and go to the directory where the content files were decompressed.
4. Type the following command to change the permissions for the files: `chmod -R 755 *sh`
5. Change to the database instance owner. For example:  
`su db2inst1`
6. In the uncompressed folder, run `sh ./Install_DB.sh`.
7. Run `sh ./Load_Data.sh`.

### What to do next

Verify that the tables are created and the data is successfully loaded into the input tables by checking the `out.log` file, which is in the `db2inst1` home directory. In the log file, search for rows were rejected. The value should be zero. If it is not, there are data load issues.

---

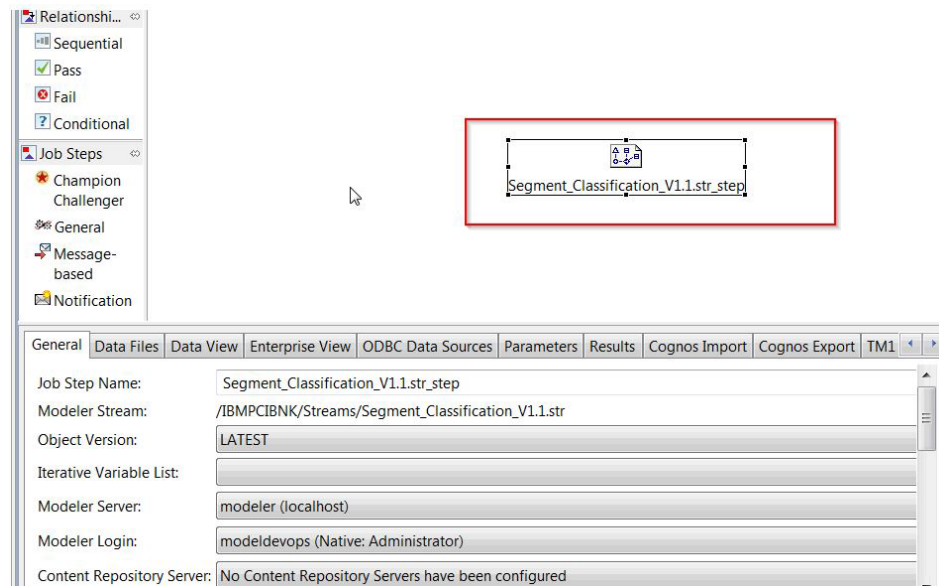
## Importing IBM SPSS project streams, models, and rules

IBM SPSS project streams, models, rules, and other artifacts are contained in a repository export file (.pes) for the IBM Behavior Based Customer Insight for Banking solution. If you want to modify or view these artifacts, you must copy the export file to the computer where IBM SPSS Collaboration and Deployment Services Deployment Manager is installed, and open the file.

### Procedure

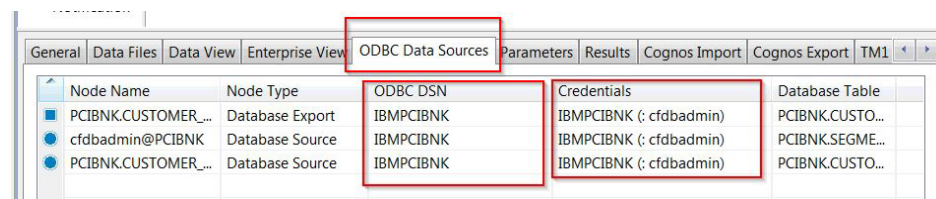
1. Copy the .pes file to the computer where IBM SPSS Collaboration and Deployment Services Deployment Manager is installed.
2. In IBM SPSS Collaboration and Deployment Service Deployment Manager, right-click **Content Repository**, and click **Import**.

3. Browse to the .pes file
4. Select the following options:
  - Resolve conflicts globally
  - Add new version of target item or rename source item, Use labels from source.
  - Continue import even if some objects cannot be imported due to locking conflicts.
  - Resolve Invalid Version Conflicts, Import.
  - Resource Definitions, Recommended - Import if there are no Duplicate ID conflicts or Duplicate Name conflicts.
5. Click **OK**.
6. Under **Resource definitions / Credentials**, create a new credential named IBMPCIBNK.
7. Under **Resource definitions / Data Sources**, create a new datasource named IBMPCIBNK.
8. After the .pes file is imported to the CnDS, open the job and click on the step listed in the job.



Make sure that **Modeler Server** and **Modeler Server** fields are set to the correct definitions.

9. Click the ODBC Data Sources tab, and make sure that ODBC DSN and credentials are set to the newly created data source and credential.



## Results

Content folders and resource definitions are added to the repository alongside any existing content.



---

## Configuring the data view for IBM SPSS models

To configure the data view, IBM SPSS® Modeler must be connected to the IBM Behavior Based Customer Insight for Banking database through an ODBC data source connection.

If your IBM Predictive Customer Intelligence environment uses the IBM SPSS Modeler client logged in to a Modeler server, perform the steps on the Predictive Analytics node computer (where IBM SPSS Modeler Server is installed).

If your IBM Predictive Customer Intelligence environment uses the IBM SPSS Modeler Client in a stand-alone environment, perform the steps on the client computer where IBM SPSS Modeler client is installed.

The Behavior Based Customer Insight for Banking solution uses the Analytic Data View and JDBC source connections for accessing IBM Analytical Decision Manager. When the Behavior Based Customer Insight for Banking files are imported through IBM SPSS Collaboration and Deployment Services Deployment Manager, a new version of the Enterprise View is created that contains the tables for the application.

### Procedure

1. Catalog the database on the client computer.
  - a. Click **Start > IBM DB2 > DB2COPY1 (Default) > DB2 Command Window - Administrator**.
  - b. Enter the following command to catalog the database node:  
`db2 catalog tcpip node NODE_NAME remote data_node_name server PORT_NUMBER`  
*NODE\_NAME* can be any value. *PORT\_NUMBER* is 50000 by default.
  - c. Enter the following command to catalog the PCI database:  
`db2 catalog database at node NODE_NAME authentication server`  
You must use the same *node\_name* that you used in the **db2 catalog database** command.
2. Create an ODBC DSN to point to the Behavior Based Customer Insight for Banking database. The database account that is provided in the ODBC connection must be the same user that was used for creating the tables.
3. In the Deployment Manager client, under **Resource Definitions, Credentials**, open the **db2admin** credentials and update the user ID and password to the DB2® administrator account of the data node computer.

---

## Configuring ODBC for IBM SPSS Modeler Server

To use an ODBC data source with IBM SPSS Modeler Server on a Linux operating system, you must configure the environment.

### Procedure

1. Stop the IBM SPSS Modeler Server.
2. Go to the /root/SDAP71 directory.  
The driver files are installed as part of the Behavior Based Customer Insight for Banking Server deployment.
3. Run the setodbcpath.sh script to update the ODBC path in the scripts.
4. Edit the odbc.sh script to add the definition for ODBCINI to the bottom of the script. For example:

```
ODBCINI=/usr/spss/odbc/odbc.ini; export ODBCINI
```

ODBCINI must point to the full file path of the `odbc.ini` file for IBM SPSS Modeler. The `odbc.ini` file lists the ODBC data sources that you want to connect to. A default `odbc.ini` file is installed with the drivers.

5. In the `odbc.ini` file, add the data source and specify the driver in the [ODBC Data Sources] section of the file.

For example, add the data source as:

```
[ODBC Data Sources]
BANKING=IBM DB2 ODBC Driver
```

6. In the `odbc.ini` file, create an ODBC data source connection for the industry accelerator database.

For example, include the following content:

```
[BANKING]
Driver=/opt/ibm/db2/V10.1/lib64/libdb2o.so
DriverUnicodeType=1
Description=IBM DB2 ODBC Driver
ApplicationUsingThreads=1
AuthenticationMethod=0
BulkBinaryThreshold=32
BulkCharacterThreshold=-1
BulkLoadBatchSize=1024
CharsetFor65535=0
#Database applies to DB2 UDB only
Database=BANKING
DefaultIsolationLevel=1
DynamicSections=200
EnableBulkLoad=0
EncryptionMethod=0
FailoverGranularity=0
FailoverMode=0
FailoverPreconnect=0
GrantAuthid=PUBLIC
GrantExecute=1
GSSClient=native
HostNameInCertificate=
IpAddress=IP_Address_of_DB_server
KeyPassword=
KeyStore=
KeyStorePassword=
LoadBalanceTimeout=0
LoadBalancing=0
LogonID=db2inst1
MaxPoolSize=100
MinPoolSize=0
Password=password
PackageCollection=NULLID
PackageNamePrefix=DD
PackageOwner=
Pooling=0
ProgramID=
QueryTimeout=0
ReportCodePageConversionErrors=0
TcpPort=50000
TrustStore=
TrustStorePassword=
UseCurrentSchema=0
ValidateServerCertificate=1
WithHold=1
XMLDescribeType=-10
```

**Important:** You must use the driver library `libdb2o.so` with IBM SPSS Modeler.

Ensure that you set `DriverUnicodeType=1` to avoid buffer overflow errors when you connect to the database.

7. If you are using the 64-bit version of IBM SPSS Modeler Server, define and export `LD_LIBRARY_PATH_64` in the `odbc.sh` script:

```
if ["$LD_LIBRARY_PATH_64" = ""]; then
LD_LIBRARY_PATH_64=<library_path>
else
LD_LIBRARY_PATH_64=<library_path>:$LD_LIBRARY_PATH_64
fi
export LD_LIBRARY_PATH_64
```

Where `<library_path>` is the same as for the `LD_LIBRARY_PATH` definition in the script that was initialized with the installation path. For example, `/usr/spss/odbc/lib`.

**Tip:** You can copy the `if` and `export` statements for `LD_LIBRARY_PATH` in the `odbc.sh` file, append them to the end of the file. Then, replace the `LD_LIBRARY_PATH` strings in the newly appended `if` and `export` statements with `LD_LIBRARY_PATH_64`. Here is an example of the `odbc.sh` file for a 64-bit IBM SPSS Modeler Server installation:

```
if ["$LD_LIBRARY_PATH" = ""]; then
LD_LIBRARY_PATH=/usr/spss/odbc/lib
else
LD_LIBRARY_PATH=/usr/spss/odbc/lib:$LD_LIBRARY_PATH
fi
export LD_LIBRARY_PATH
if ["$LD_LIBRARY_PATH_64" = ""]; then
LD_LIBRARY_PATH_64=/usr/spss/odbc/lib
else
LD_LIBRARY_PATH_64=/usr/spss/odbc/lib:$LD_LIBRARY_PATH_64
fi
export LD_LIBRARY_PATH_64
ODBCINI=/usr/spss/odbc/odbc.ini; export ODBCINI
```

Ensure that you export `LD_LIBRARY_PATH_64`, and define it with the `if` loop.

8. Configure IBM SPSS Modeler Server to use the driver. Edit `modelersrv.sh` and add the following line immediately below the line that defines `SCLEMDNAME`:  
`. <odbc.sh_path>`

Where `odbc.sh_path` is the full path to the `odbc.sh` file.

For example: `./usr/spss/odbc/odbc.sh`

Ensure that you leave a space between the first period and the file path.

9. Save `modelersrv.sh`.
10. Configure the IBM SPSS Modeler Server to use the ODBC wrapper named `libspssodbc_datadirect.so`.

- a. Go to the `/usr/IBM/SPSS/ModelerServer/16.0/bin` directory.
- b. Remove the existing `libspssodbc.so` soft link by using the following command:

```
rm -fr libspssodbc.so
```

- c. Link the new wrapper to `libspssodbc.so` by using the following command:

```
ln -s libspssodbc_datadirect_utf16.so libspssodbc.so
```

11. Configure the `db2cli.ini` file in `<db2_instance_home>/sqllib/cfg/db2cli.ini` to add the sections for each database.

```
[PCIBMK]
Database=BANKING
Protocol=TCPIP
```

```
DriverUnicodeType=1
Port=50000
Hostname=ip or hostname
UID=username
PWD=password
```

12. Save `odbc.ini`.

## What to do next

To test the connection, do the following steps:

1. Restart IBM SPSS Modeler Server.
2. Connect to IBM SPSS Modeler Server from a client.
3. Add a database source node to the canvas.
4. Open the node and verify that you can see the data source names that you defined in the `odbc.ini` file.

For additional information and troubleshooting tips for connecting to data sources, see the SPSS Modeler documentation ([www.ibm.com/support/knowledgecenter/SS3RA7\\_16.0.0](http://www.ibm.com/support/knowledgecenter/SS3RA7_16.0.0))

---

## Deploying the IBM Cognos content

For IBM Cognos Business Intelligence, you must catalog the database, create a data source connection, and then deploy the content files for the IBM Behavior Based Customer Insight for Banking solution.

## Preparing the IBM Cognos content

You must move the IBM Cognos® Framework Manager content for the IBM Behavior Based Customer Insight for Banking solution to the Cognos Deployment folder.

The Solution installer only supports copying content to Linux nodes. If you are modifying the Framework Manager model, it must be copied to a Windows computer. Instructions for doing this by using the browser's download capabilities are included in the SolutionInstaller > NodeRoot > Downloads > IS\_<Solution\_Name>\_1.0 folder, in a file called IS\_<SolutionName>\_1.0\_ClientDeployment Files.txt.

### Procedure

1. Copy the IBM Cognos Framework Manager model file from the computer where you deployed the application to the computer where you installed IBM Cognos Framework Manager, and decompress the file.  
The Framework Manager file is named `\BI\Banking_CustomerInsight_CD.fmd`.
2. If you want to edit the Framework Manager models, you must catalog the Behavior Based Customer Insight for Banking database on the computer where Framework Manager is installed.
  - a. Click Start > IBM DB2 > DB2COPY1 (Default) > DB2 Command Window - Administrator.
  - b. Enter the following command to catalog the database node: `db2 catalog tcpip node NODE_NAME remote data_node_name server PORT_NUMBER NODE_NAME can be any value. PORT_NUMBER is 50000 by default.`

- c. Enter the following command to catalog the PCI database: db2 catalog database BANKING at node NODE\_NAME authentication server. You must use the same node\_name that you used in the DB2 catalog database command.
3. Download IBM Cognos Business Intelligence Cube Designer software from Passport Advantage. Cube Designer requires Framework manager to be installed on the same node as well. Please ensure the same.
4. Go to the location where the installation files were downloaded and extracted and then double-click the issetup.exe file.
5. Select the language to use for the installation. The language that you select determines the language of the user interface. All supported languages are installed. You can change the user interface to any of the installed languages after installation.
6. On the Installation Location panel, select the location where Framework Manager is installed.
7. Accept the defaults on the Component Selection page.
8. Follow the directions in the installation wizard to copy the required files to your computer.  
If you are installing in a directory that contains other IBM Cognos Business Intelligence components, you are prompted to create backup copies of the files that will be replaced.
9. In the Finish page of the installation wizard, complete the following steps:
  - a. If you want to see the log files, click View for the appropriate log file.
  - b. If you want to see late-breaking information about the product, select the check box for IBM Cognos Release Notes.
  - c. Click Finish.
10. After installation is complete, open Cube Designer from **Start > All Programs**.
11. From Cube Designer, import new project and import the .fmd file.  
You can now access the cubes within the package.
12. Right-click a cube and publish the cubes to the Cognos BI environment.

## Creating a data source connection to the database

You must create a data source connection to the Behavior Based Customer Insight for Banking database.

### Procedure

1. Open a web browser.
2. Go to the IBM Cognos BI portal URL.  
For example, go to `http://bi_node_name/ibmcognos/`.
3. On the **Welcome** page, click **Administer IBM Cognos Content**.
4. Click the **Configuration** tab, and click **Data Source Connections**.
5. Click the **New Data Source** button .
6. In the **Name** box, type , and then click **Next**.
7. In the connection page, select **IBM DB2**, ensure that **Configure JDBC connection** is selected, and click **Next**.
8. In the **DB2 database name** field, type .
9. Leave **DB2 connect string** blank.

10. Under **Signons**, select both **Password** and **Create a signon that the Everyone group can use**, and then type the user ID and password for the DB2 instance owner user that you used to create the database, and click **Next**.

**Tip:** To test whether the parameters are correct, click **Test the connection**. After you test the connection, click **OK** to return to the connection page.

11. In the **Server name** box, enter the name or IP address of your data node computer.
12. In the **Port number** box, enter the DB2 port number. The default is 50000.
13. In **Database name**, type .

**Tip:** To test whether the parameters are correct, click **Test the connection**. After you test the connection, click **OK** to return to the connection page.

14. Click **Finish**.

## Deploying the IBM Cognos reports

You must deploy the Behavior Based Customer Insight for Banking reports using IBM Cognos Administration.

### Procedure

1. Open a web browser.
2. Go to the IBM Cognos BI portal URL.
3. On the **Welcome** page, click **Administer IBM Cognos Content**.
4. On the **Configuration** tab, click **Content Administration**.
5. On the toolbar, click the **New Import** button.
6. In the **Deployment Archive** pane, select deployment archive, and click **Next**. The deployment archive is named `ChangeTheVarFileWithTheRightName`.
7. In the **Specify a name and description** pane, accept the default or enter a new name, and click **Next**.
8. In the **Select the public folders and directory content** pane, select all of the packages in the table, leave the **Options** as default, and click **Next**.

**Note:** Ensure that the **Disable after import** option is cleared.

9. In the **Specify the general options** pane, accept the defaults, and click **Next**.
10. On the **Review the summary** page, click **Next**.
11. On the **Select an action** page, select **Save and run once**, and click **Finish**.
12. On the **Run with options** page, accept the defaults, and click **Run**, and then click **OK**.
13. Select **View the details of this import after closing this dialog** and click **OK**.
14. In IBM Cognos Administration, click the **Home** button.  
The Behavior Based Customer Insight for Banking content is available in **Public Folders > Banking\_CustomerInsight\_BIContent**.
15. Rave libraries are also available as part of the solution. They are packaged in the `Banking_CustomerInsight_Rave.zip` file.
16. Go to the IBM Cognos BI portal URL. For example, go to `http://bi_node_name/ibmcognos/`.
17. On the **Welcome** page, click **Administer IBM Cognos Content**.
18. On the **libraries** tab, click the **Import** button .
19. Select the `Banking_CustomerInsight_Rave.zip` file, and click **Import**.

---

## Installing the EAR file

The EAR file contains the REST APIs that allow you to embed the IBM Behavior Based Customer Insight for Banking solution in your existing system.

### Procedure

1. Log in to the WebSphere Application Server Network Deployment administrative console.
2. Load the IS\_Banking\_Solution\_EAR.ear file into one of the Websphere Application Server nodes, either the BI node or the Analytics node.
3. Install the application through WebSphere Application Server.
4. Click the **Applications** link, and then click **Install New Application**.
5. From the Specify the EAR, WAR, JAR, or SAR module to upload and install page, select **Local file system**, and then browse to the location on your system of the EAR file.
6. Start the installed application, IS\_Banking.





---

## Chapter 3. Using the Behavior Based Customer Insight for Banking solution

The solution provides reporting and dashboard templates and sample predictive models.

The following analytics reports are available:

- Home page, which divides customers into segments depending on the data and shows the segment distribution.
- Segmentation details, which provides spending details for each segment.
- Predicted overdraft, which ranks customers from the selected segment in terms of the risk of overdraft.
- Customer details, which provides details for an individual customer.
- Customer detail view, which is a report that is provided to the customer.

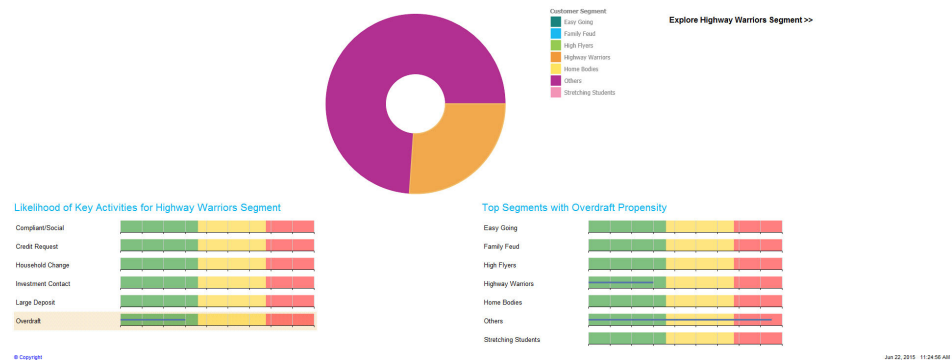
---

### Predicting overdraft

This example, which is fictitious, shows how the solution can be used to predict the probability of overdraft by a client so that the overdraft event can be avoided.

An account manager at the bank, Teresa, wants to determine which clients are at risk of going into overdraft so that she can help them avoid the cost and inconvenience of that event.

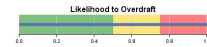
Teresa brings up the home page, shown below, to determine which segments of clients are most at risk of overdraft.



The dashboard shows Teresa that the Road Warrior segment is a segment with a high propensity for overdraft. From the pie chart, she selects the Road Warrior segment, and details for that segment are displayed in the dashboard. Teresa, clicks **Overdraft** to display the following dashboard. It provides a list of clients in the Road Warrior segment that have the highest propensity to go into overdraft along with details of their spending behavior.

Overdraft Predicted ( 6 of 10 )

Filter by: **Overdraft**



**Emerson Dodson**  
 7872 Madison Rd  
 Maple, NY 30904  
 Income: \$ 300,000  
 Assets: \$ 714,000

**Projected Overdraft Details**  
 Transaction Amount: \$28.02  
 Date of Forecasted Overdraft: 2015-05-01



**Jameson Crosby**  
 203 1611 Hill Av  
 Blackfoot, MA 40077  
 Income: \$ 300,000  
 Assets: \$ 723,000

**Projected Overdraft Details**  
 Transaction Amount: \$1,207.36  
 Date of Forecasted Overdraft: 2015-04-01



**Lacy Conemy**  
 4828 Sycamore Rd  
 Income: \$ 300,000  
 Assets: \$ 402,000

**Projected Overdraft Details**  
 Transaction Amount: \$1.00  
 Date of Forecasted Overdraft: 2015-04-01



**Macaulay Tucker**  
 299-3376 Erwin Rd  
 Copley, OH 70003  
 Income: \$ 250,000  
 Assets: \$ 352,500

**Projected Overdraft Details**  
 Transaction Amount: \$83.05  
 Date of Forecasted Overdraft: 2015-04-01



**Mark Gill**  
 830-880 Arroyo Rd  
 Sumner, WA 98885  
 Income: \$ 250,000  
 Assets: \$ 325,000

**Projected Overdraft Details**  
 Transaction Amount: \$21.36  
 Date of Forecasted Overdraft: 2015-05-01



**Quail Wilkins**  
 7933 Vista Ave  
 Morristown, MS 38873  
 Income: \$ 250,000  
 Assets: \$ 325,000

**Projected Overdraft Details**  
 Transaction Amount: \$177.32  
 Date of Forecasted Overdraft: 2015-05-01

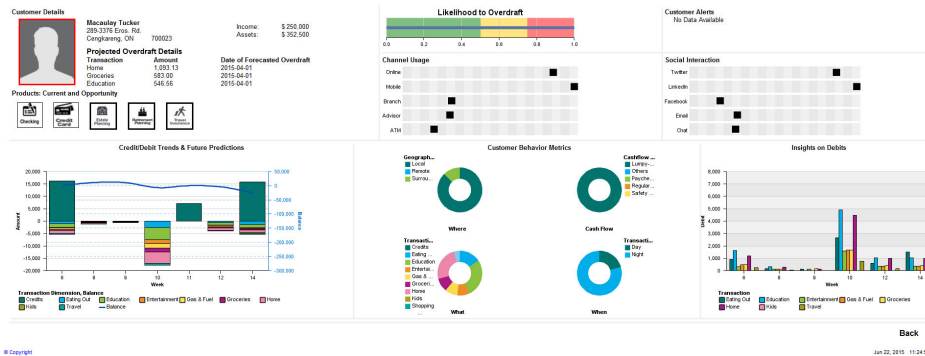
© Copyright

1 2

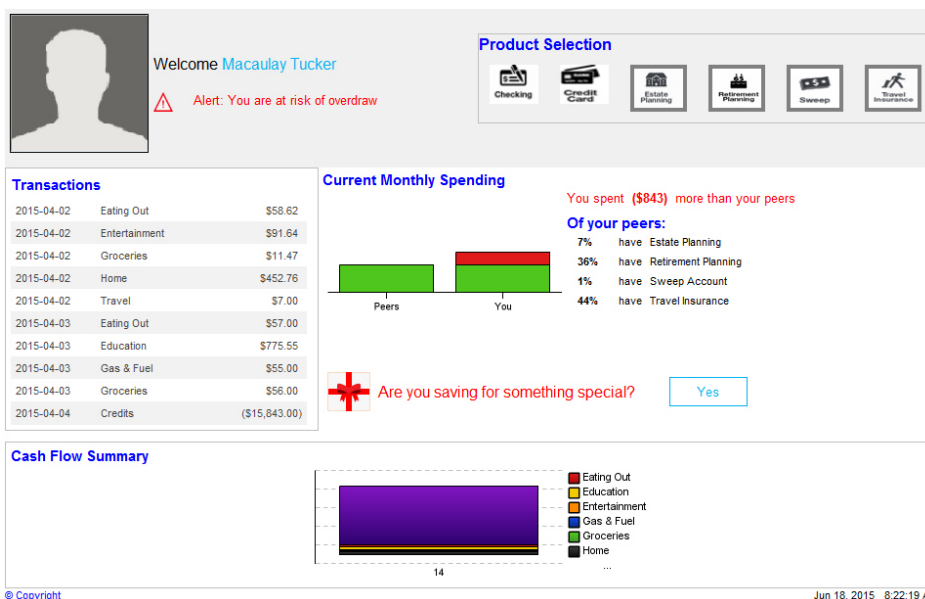
Back

Jun 22, 2015 11:24:58 AM

Teresa selects the client Macaulay Tucker, and the following dashboard is displayed. It provides predictions of when Macaulay is likely to go into overdraft. Teresa uses this information to determine what products and services might help Macaulay to avoid going into overdraft.



A page is sent to Macaulay that alerts him to the probability of an overdraft. It provides him with suggestions for products or services that will help him to avoid this situation. It also makes Macaulay aware of where he is spending his money and how he compares to his peers with regard to spending and financial products.



Macaulay appreciates being warned about the risk of overdraft and contacts Teresa to register for a line of credit.



---

## Appendix A. Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products.

For information about the commitment that IBM has to accessibility, see the IBM Accessibility Center ([www.ibm.com/able](http://www.ibm.com/able)).

IBM Cognos HTML documentation has accessibility features. PDF documents are supplemental and, as such, include no added accessibility features.

### Report output

In IBM Cognos Administration, you can enable system-wide settings to create accessible report output. For more information, see the *IBM Cognos Business Intelligence Administration and Security Guide*. In IBM Cognos Report Studio, you can enable settings to create accessible output for individual reports. For more information, see the *IBM Cognos Report Studio User Guide*. You can access the previously mentioned documents at IBM Knowledge Center (<http://www.ibm.com/support/knowledgecenter>).



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## Appendix B. Troubleshooting

This section contains troubleshooting information for the Behavior Based Customer Insight for Banking installation.

---

### Troubleshooting a problem

Troubleshooting is a systematic approach to solving a problem. The goal of troubleshooting is to determine why something does not work as expected and how to resolve the problem.

Review the following table to help you or customer support resolve a problem.

*Table 1. Troubleshooting actions and descriptions*

| Actions                                                                                                                                                                                                                                                     | Description                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A product fix might be available to resolve your problem.                                                                                                                                                                                                   | Apply all known fix packs, or service levels, or program temporary fixes (PTF).                                                                                                                                       |
| Look up error messages by selecting the product from the IBM Support Portal, and then typing the error message code into the <b>Search support</b> box ( <a href="http://www.ibm.com/support/entry/portal/">http://www.ibm.com/support/entry/portal/</a> ). | Error messages give important information to help you identify the component that is causing the problem.                                                                                                             |
| Reproduce the problem to ensure that it is not just a simple error.                                                                                                                                                                                         | If samples are available with the product, you might try to reproduce the problem by using the sample data.                                                                                                           |
| Ensure that the installation successfully finished.                                                                                                                                                                                                         | The installation location must contain the appropriate file structure and the file permissions. For example, if the product requires write access to log files, ensure that the directory has the correct permission. |
| Review all relevant documentation, including release notes, technotes, and proven practices documentation.                                                                                                                                                  | Search the IBM Knowledge Center to determine whether your problem is known, has a workaround, or if it is already resolved and documented.                                                                            |
| Review recent changes in your computing environment.                                                                                                                                                                                                        | Sometimes installing new software might cause compatibility issues.                                                                                                                                                   |

If the items in the table did not guide you to a resolution, you might need to collect diagnostic data. This data is necessary for an IBM technical-support representative to effectively troubleshoot and assist you in resolving the problem. You can also collect diagnostic data and analyze it yourself.

### Troubleshooting resources

Troubleshooting resources are sources of information that can help you resolve a problem that you are having with an IBM product.

#### Support Portal

The IBM Support Portal is a unified, centralized view of all technical support tools and information for all IBM systems, software, and services.

The IBM Support Portal lets you access all the IBM support resources from one place. You can tailor the pages to focus on the information and resources that you need for problem prevention and faster problem resolution. Familiarize yourself with the IBM Support Portal by viewing the demo videos ([https://www.ibm.com/blogs/SPNA/entry/the\\_ibm\\_support\\_portal\\_videos](https://www.ibm.com/blogs/SPNA/entry/the_ibm_support_portal_videos)).

Find the content that you need by selecting your products from the IBM Support Portal (<http://www.ibm.com/support/entry/portal>).

Before contacting IBM Support, you will need to collect diagnostic data (system information, symptoms, log files, traces, and so on) that is required to resolve a problem. Gathering this information will help to familiarize you with the troubleshooting process and save you time.

## **Service request**

Service requests are also known as Problem Management Reports (PMRs). Several methods exist to submit diagnostic information to IBM Software Technical Support.

To open a PMR or to exchange information with technical support, view the IBM Software Support Exchanging information with Technical Support page (<http://www.ibm.com/software/support/exchangeinfo.html>).

## **Fix Central**

Fix Central provides fixes and updates for your system's software, hardware, and operating system.

Use the pull-down menu to navigate to your product fixes on Fix Central (<http://www.ibm.com/systems/support/fixes/en/fixcentral/help/getstarted.html>). You may also want to view Fix Central help.

## **IBM developerWorks**

IBM developerWorks<sup>®</sup> provides verified technical information in specific technology environments.

As a troubleshooting resource, developerWorks provides easy access to the most popular practices, in addition to videos and other information: developerWorks (<http://www.ibm.com/developerworks>).

## **IBM Redbooks**

IBM Redbooks<sup>®</sup> are developed and published by the IBM International Technical Support Organization, the ITSO.

IBM Redbooks (<http://www.redbooks.ibm.com>) provide in-depth guidance about such topics as installation and configuration and solution implementation.

## **Software support and RSS feeds**

IBM Software Support RSS feeds are a quick, easy, and lightweight format for monitoring new content added to websites.



After you download an RSS reader or browser plug-in, you can subscribe to IBM product feeds at IBM Software Support RSS feeds (<https://www.ibm.com/software/support/rss>).

### **Log files**

Log files can help you troubleshoot problems by recording the activities that take place when you work with a product.

### **Error messages**

The first indication of a problem is often an error message. Error messages contain information that can be helpful in determining the cause of a problem.

---

## **Customer View report shows blank Cashflow or old data**

The data in the transaction table includes the last 10 transactions in April. Sample data provided is current up to April 2015.

The Cashflow report displays the current month. Since the data only extends to April 2015, this table will not show any data until it is populated with data from the current month.



---

## Appendix C. Client data ingestion: SPSS streams

The IBM solution works with IBM Predictive Customer Insight.

Two SPSS streams are provided that enable the client to ingest data into the solution database. The client data in a predefined Comma Separated Value (CSV) file format is provided to the stream as input, and the stream extracts the data from the CSV file and inserts the records into relevant tables in the solution database. The client data can be of the following types:

- Customer demographic details (including contact information)
- Customer transactions data

There are two separate streams for each of the above types of data.

---

### Purpose of the SPSS streams

The SPSS streams act as an important ETL process between the client data and the solution database.

They perform the following operations:

- Extract raw client data from the CSV files
- Transform data according to the solution needs (such as eliminating the unwanted spaces)
- Filter the transformed data and load it into relevant tables in the solution database

By using the streams, clients can easily ingest large sets of data related to customers and their transactions.

The following two streams are provided:

- Banking Customer ETL – Customer demographic details (including contact information)
- Banking Transaction ETL - Customer transactions data

---

### CSV formats

This section provides the CSV formats for both customers and transactions.

**Important:** In the following CSV files, you must replace the NULL values by default values for the streams to work correctly.

#### Format for the CSV file input to the Banking Customer ETL

"CITY","COUNTRY","EMAIL","POSTCODE\_AREA","STATE","STREET","FULL\_TELEPHONE\_NUMBER",  
"BIRTH\_DATE","FULL\_NAME","PHOTO","MARITAL\_STATUS","EDUCATION"

CITY > city where the customer lives

COUNTRY > country where the customer lives

EMAIL > customer's email address

POSTCODE\_AREA > postal code of the area where the customer lives

STATE > state where the customer lives

STREET > street address where the customer lives

FULL\_TELEPHONE\_NUMBER > customer's telephone number

BIRTH\_DATE > customer's date of birth

FULL\_NAME > customer's full name  
PHOTO > Link to the customer's photo (URL)  
MARITAL\_STATUS > customer's marital status  
EDUCATION > customer's most recently completed education

### Sample CSV file for customers

```
"CITY","COUNTRY","EMAIL","POSTCODE_AREA","STATE","STREET","FULL_TELEPHONE_NUMBER",
"BIRTH_DATE","FULL_NAME","PHOTO","MARITAL_STATUS","EDUCATION"
"Boston","US","vereen@yahoo.com","04017","MA","11 smith street","8572055850","1989-04-11",
"Shane Vereen","http://hostname/ibmcognos/samples/images/Customer/148.png","Married","Graduate"
```

### Format for the CSV file input to the Banking Transaction ETL

```
"CALENDAR_DATE","NAME","FULL_NAME","BIRTH_DATE","PHOTO","MARITAL_STATUS","EDUCATION",
"DESCRIPTION","NAME","AMOUNT","DESCRIPTION","BALANCE","DESCRIPTION"
```

Notice that in the above format, there are two instances of "NAME" and three instances of "DESCRIPTION".

The first instance of "NAME" relates to the channel name

The second instance of "NAME" relates to the transaction type name. In the stream this is referred as NAME(1).

The first instance of "DESCRIPTION" relates to geographic area description.

The second instance of "DESCRIPTION" relates to transaction time description. In the stream this is referred as DESCRIPTION(1).

The third instance of "DESCRIPTION" relates to cash flow description. In the stream this is referred as DESCRIPTION(2).

CALENDAR\_DATE > date of the transaction  
AMOUNT > transaction amount  
BALANCE > Current statement balance (after the transaction was made)  
BIRTH\_DATE > customer's date of birth  
FULL\_NAME > customer's full name  
PHOTO > Link to the customer's photo (URL)  
MARITAL\_STATUS > customer's marital status  
EDUCATION > customer's most recently completed education

### Sample CSV file (transactions)

In the following sample there are three transactions related to the customer provided in the customer's csv file above.

```
"CALENDAR_DATE","NAME","FULL_NAME","BIRTH_DATE","PHOTO","MARITAL_STATUS","EDUCATION",
"DESCRIPTION","NAME","AMOUNT","DESCRIPTION","BALANCE","DESCRIPTION"
"2014-06-20","Online","Shane Vereen","1989-04-11","http://hostname/ibmcognos/samples/images/Customer",
"Graduate","Remote","Shopping","-79.00000","Day","19851.40757","Regular Sine"
"2014-06-22","Online","Shane Vereen","1989-04-11","http://hostname/ibmcognos/samples/images/Customer",
"Married","Graduate","Remote","Shopping","-777.00000","Day","19074.40757","Regular Sine"
"2014-06-27","Online","Shane Vereen","1989-04-11","http://hostname/ibmcognos/samples/images/Customer",
"Graduate","Remote","Shopping","-200.00000","Day","18874.40757","Regular Sine"
```

---

## Prerequisites for the ETL streams

There are no prerequisites for the Banking Customer ETL stream. However, there are prerequisites for the Banking Transaction ETL stream.

The following prerequisites are required for the Banking Transaction ETL to work:

- The Banking Customer ETL stream must be run first to load the customer details into the `INDIVIDUAL_CUSTOMER_DIMENSION` table. This is because the Banking Transaction ETL stream uses this table to establish relationship between the customer and his transactions.
- Each customer is identified by a distinct key: (`FULL_NAME`, `BIRTH_DATE`, `PHOTO`, `MARITAL_STATUS`, `EDUCATION`). A combination of all these values would uniquely identify a customer. Using this key as a reference, only transactions related to the customers that are loaded through the Banking Customer ETL stream must be provided in the CSV input file for the Banking Transaction ETL stream.
- The `CALENDAR_DATE` provided in the CSV input file must be present in the `CALENDAR_DATE_DIMENSION` table of the banking solution database.
- The channel name (`NAME`) provided in the CSV input file must be present in the `CHANNEL_DIMENSION` table of the banking solution database.
- The transaction type name (`NAME(1)`) provided in the CSV input file must be present in the `TRANSACTION_DIMENSION` table of the banking solution database.
- The geographic area description (`DESCRIPTION`) provided in the CSV input file must be present in the `GEOGRAPHIC_AREA_DIMENSION` table of the banking solution database.
- The transaction time description (`DESCRIPTION(1)`) provided in the CSV input file must be present in the `TRANSACTION_TIME_DIMENSION` table of the banking solution database.
- The cash flow description (`DESCRIPTION(2)`) provided in the CSV input file must be present in the `CASHFLOW_PATTERN_DIMENSION` table of banking solution database.

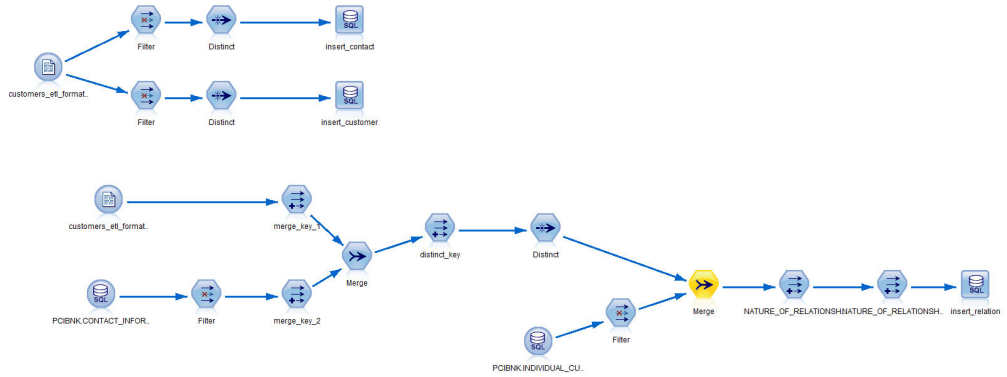
---

## End result of using the ETL streams

This page illustrates the results of the ETL streams.

### Banking Customer ETL

The stream, shown in the following image, filters and loads the input data from the CSV file.

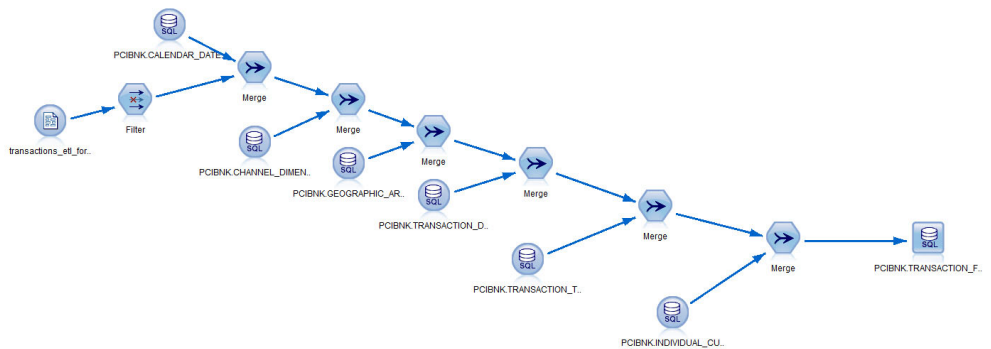


"BIRTH\_DATE", "FULL\_NAME", "PHOTO", "MARITAL\_STATUS", "EDUCATION" are inserted into the INDIVIDUAL\_CUSTOMER\_DIMENSION table. The combination of all these columns forms a distinct key that identifies a particular customer.

"CITY", "COUNTRY", "EMAIL", "POSTCODE\_AREA", "STATE", "STREET", "FULL\_TELEPHONE\_NUMBER" are inserted into the CONTACT\_INFORMATION\_DIMENSION table. The combination of all these columns forms a distinct key that identifies a particular contact. After that, the stream establishes a relationship between a customer and his contacts. This relationship information is stored in the INVOLVED\_PARTY\_CONTACT\_INFORMATION\_BRIDGE table. In total, three tables (INDIVIDUAL\_CUSTOMER\_DIMENSION, CONTACT\_INFORMATION\_DIMENSION and INVOLVED\_PARTY\_CONTACT\_INFORMATION\_BRIDGE) are populated as a result of running this stream.

## Banking Transaction ETL

The stream, shown in the following image, filters and loads the input data from the CSV file.



The stream performs the following steps:

- Merges the data from the transactions csv file with the CALENDAR\_DATE\_DIMENSION table using the CALENDAR\_DATE field and picks up the corresponding CALENDAR\_DATE\_DIMENSION\_IDS.
- Merges the data from the transactions csv file with the CHANNEL\_DIMENSION table using the NAME field and picks up the corresponding CHANNEL\_DIMENSION\_IDS.

- Merges the data from the transactions csv file with the GEOGRAPHIC\_AREA\_DIMENSION table using the DESCRIPTION field and picks up the corresponding GEOGRAPHIC\_AREA\_DIMENSION\_IDS.
- Merges the data from the transactions csv file with the TRANSACTION\_DIMENSION table using the NAME field and picks up the corresponding TRANSACTION\_DIMENSION\_IDS.
- Merges the data from the transactions csv file with the TRANSACTION\_TIME\_DIMENSION table using the DESCRIPTION field and picks up the corresponding TRANSACTION\_TIME\_DIMENSION\_IDS.
- Merges the data from the transactions csv file with the INDIVIDUAL\_CUSTOMER\_DIMENSION table using the key: (FULL\_NAME, BIRTH\_DATE, PHOTO, MARITAL\_STATUS, EDUCATION) and picks up the corresponding INDIVIDUAL\_CUSTOMER\_DIMENSION\_IDS.
- Finally, it inserts the above primary keys along with the corresponding AMOUNT and BALANCE fields into the TRANSACTION\_FACT table as a result of running this stream.





## Appendix D. JDBC connection to WebSphere Application Server

The IBM Behavior Based Customer Insight for Banking solution provides a set of RESTful APIs to allow you to create applications to programmatically execute operations. If you're using Websphere Application Server as your database, you must set up a JDBC connection to the server. The provided instructions and procedures are based on WAS v8.5.5.

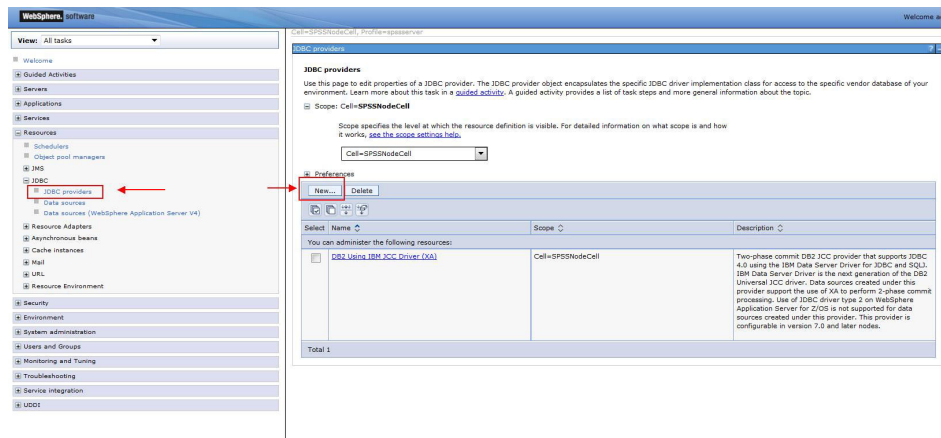
To set up your JDBC connection, you must complete the following tasks, in order:

1. "Configure the JDBC provider"
2. "Create an authentication alias" on page 36
3. "Configure the JDBC data source" on page 37

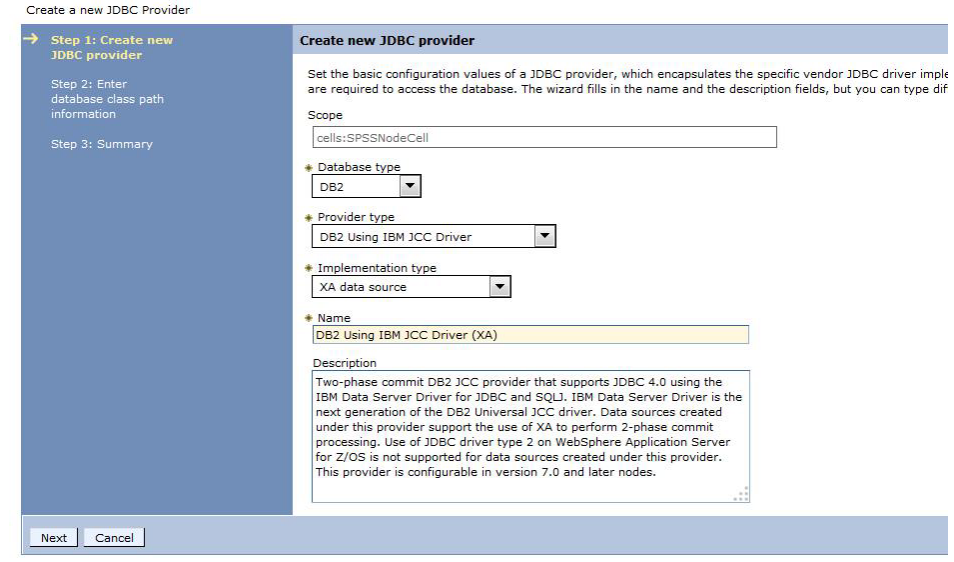
### Configure the JDBC provider

In this section, you'll set up the DB2 using IBM J2CC Driver (XA) for your JDBC connection.

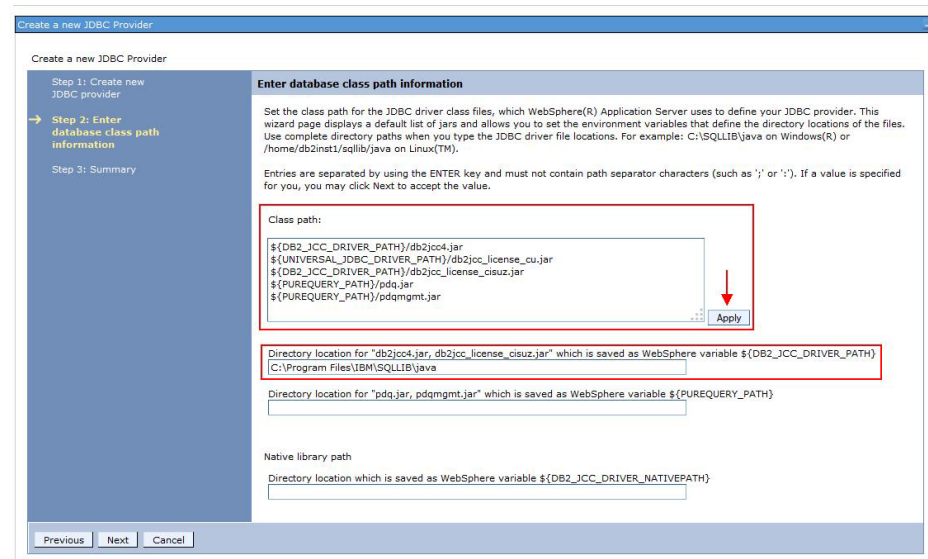
1. Log in to the WebSphere Application Server console.
2. Navigate to the JDBC providers section.



3. If you already have the *DB2 Using IBM J2CC Driver (XA)* setup, proceed to "Create an authentication alias" on page 36. Otherwise, create a new JDBC provider by clicking **New...**, as highlighted in the image.
4. Enter the JDBC provider details as per the following image, then click **Next**.



5. Use the default *Class path* settings, as shown in the following image, and click **Apply**.

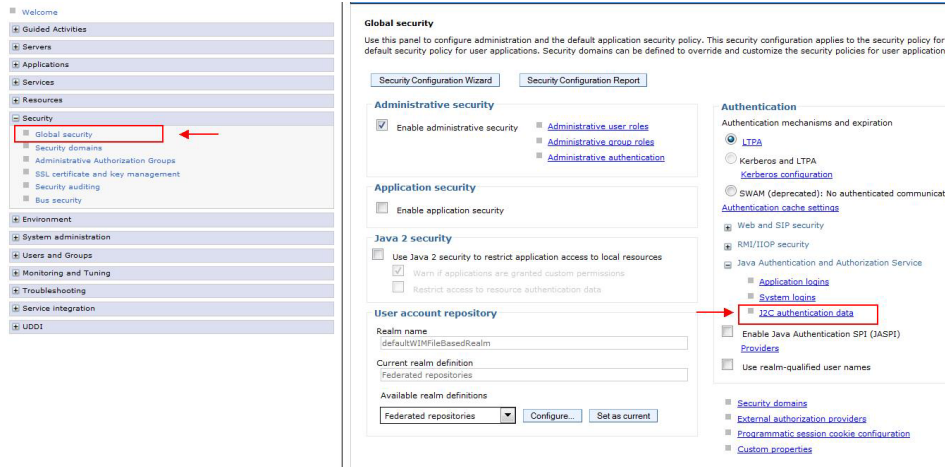


6. Specify the directory location where the db2jcc4.jar and db2jcc\_license\_cisuz.jar files are present on the server. The jar files are included in the WebSphere installation package.
7. Click **Next**.
8. Review the summary page and click **Finish**.

## Create an authentication alias

In this section, you'll specify the authorized users (IDs and passwords) who have access to the database.

1. From the WAS console, go to the **Global Security** section and click **J2C authentication data**.

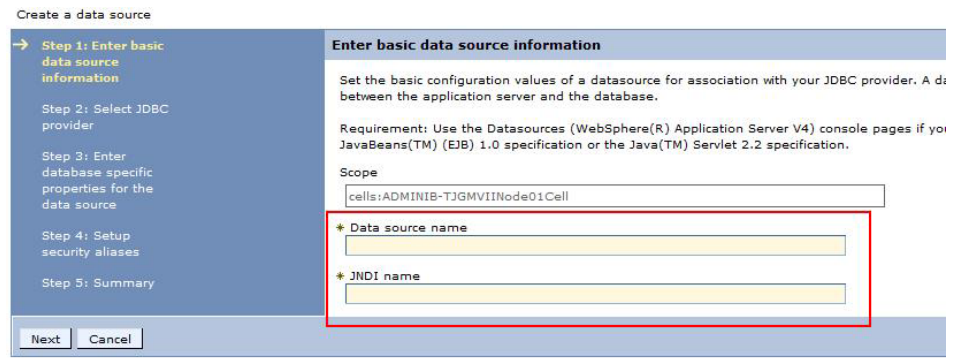


2. Click **New...**
3. In the next page, enter an arbitrary **Alias** name. Enter the User ID and Password that you use to connect to your database. The Description field is optional.
4. Click **Apply** and then **OK**.

## Configure the JDBC data source

In this section, you'll configure your JDBC data source and test the connection.

1. From the WAS console, go to the **Data Sources** section and click **New...**
2. In the next page, enter an arbitrary **Data source name**.
3. Enter "jdbc/pcibnk" in the **JNDI name** field. The **JNDI name** is used by the REST API to connect to the database.



4. Click **Next**.
5. Choose **Select an existing JDBC provider**. Select the JDBC provider that you created in the first task. Click **Next**.
6. Provide the **Database name** that you wish to access. Provide the **Server name** that you wish to connect to and the **Port number**. The remaining details can retain their default settings. Click **Next**.

Create a data source

Step 1: Enter basic data source information

Step 2: Select JDBC provider

→ Step 3: Enter database specific properties for the data source

Step 4: Setup security aliases

Step 5: Summary

**Enter database specific properties for the data source**

Set these database-specific properties, which are required by the database vendor JDBC driver to support the connection through the data source.

| Name            | Value |
|-----------------|-------|
| * Driver type   | 4     |
| * Database name |       |
| * Server name   |       |
| * Port number   | 50001 |

Use this data source in container managed persistence (CMP)

Previous Next Cancel

7. Set the authentication alias that you created earlier, then click **Next**.

Create a data source

Step 1: Enter basic data source information

Step 2: Select JDBC provider

Step 3: Enter database specific properties for the data source

→ Step 4: Setup security aliases

Step 5: Summary

**Setup security aliases**

Select the authentication values for this resource.

Authentication alias for XA recovery  
(none)

Component-managed authentication alias  
(none)

Mapping-configuration alias  
(none)

Container-managed authentication alias  
(none)

Note: You can create a new J2C authentication alias by accessing one of the current wizard selections will be lost.

[Global J2C authentication alias](#)  
[Security domains](#)

Previous Next Cancel

8. Verify the summary information and click **Finish**.
9. When you're prompted to save the server configuration changes, click **Save**.
10. Select the JDBC data source that you have created and click **Test connection**. If successful, a message will appear indicating that a successful connection was established.

---

## Appendix E. REST API reference

The IBM Behavior Based Customer Insight for Banking solution provides a set of RESTful APIs to allow you to create applications to programmatically invoke operations and extend industry solutions capabilities.

The representational state transfer (REST) API provides provides a lightweight interface that uses HTTP requests to communicate to the server. The APIs can be used to extract and aggregate data for further processing in other systems. All supported resources are listed in the following sections and are actionable using a GET operation.

The URLs used to issue REST commands must adhere to the US-ASCII character set, including reserved and restricted characters. For example, a space must be URL-encoded as "%20".

**Note:** For additional information on the API, please reference the provided Javadocs that are included in the installation package. Information on the data model is posted at the following location:

Industry Solutions techdoc <http://www.ibm.com/support/docview.wss?uid=swg27046047>

---

### **/isbanking/rest/CustomerBehaviorInsights/{customerid}/Transactions**

This resource returns a list of activities for a particular customer along with the predicted transactions related to each activity.

#### **/isbanking/rest/CustomerBehaviorInsights/{customerid}/Transactions**

Transactions are ordered by confidence(descending), date (ascending) and amount (ascending) in that preference. In this case, by default first 3 transactions are returned per each activity as shown in the sample JSON below. Additional details such as customerid, segment, and activitytype are also returned.

Sample JSON response:

```
{
 "segment": "Highway Warriors",
 "customer_id":17,
 "activities": [
 {
 "transactions":[
 {
 "amount":"-176.19",
 "confidence":49,
 "type":"Home",
 "date":"01-May-2015"
 },
 {
 "amount":"-80.67",
 "confidence":49,
 "type":"Eating Out",
 "date":"01-May-2015"
 },
 {

```

```

 "amount": "-52.14",
 "confidence": 49,
 "type": "Travel",
 "date": "01-May-2015"
 },
],
 "activity_type": "overdraft"
}
]
}

```

### Example:

<baseurl>/isbanking/rest/CustomerBehaviorInsights/6/Transactions

For each activity of customer with id 6, his transactions are ordered by confidence(descending), date (ascending), and amount (ascending) in that preference. The above example returns a set of first 3 transactions for each activity.

## **/isbanking/rest/CustomerBehaviorInsights/{customerid}/Transactions?pagestart={value}&pagesize={value}**

This use case returns a list of activities, controlled by pagestart and pagesize, for a particular customer along with the predicted transactions related to each activity.

### **/isbanking/rest/CustomerBehaviorInsights/{customerid}/Transactions?pagestart={value}&pagesize={value}**

Transactions are ordered by confidence (descending), date (ascending) and amount (ascending) in that preference. Additional details such as customerid, segment, and activitytype are also returned. The **pagestart** parameter specifies the transaction to start from and **pagesize** specifies how many transactions to return.

### Example:

<baseurl>/isbanking/rest/CustomerBehaviorInsights/6/Transactions?pagestart=5&pagesize=10

For each activity of customer with id 6, the transactions are ordered by confidence(descending), date (ascending), and amount (ascending) in that preference. The above example returns a set of 10 transactions starting from 5th transaction for each activity.

## **/isbanking/rest/CustomerBehaviorInsights/{customerid}/Transactions?activitytype={value}**

This resource returns a list of transactions for a particular customer that is related to a particular activity.

### **/isbanking/rest/CustomerBehaviorInsights/{customerid}/Transactions?activitytype={value}&pagestart={value}&pagesize={value}**

Transactions are ordered by confidence (descending), date (ascending) and amount (ascending) in that preference. The number of transactions returned is controlled by **pagestart** and **pagesize** parameters. If no parameter is specified first 3

transactions are returned by default. Additional details such as customerid, segment, and activitytype are also returned.

Sample JSON response:

```
{
 "segment": "Highway Warriors",
 "transactions": [
 {
 "amount": "-176.19",
 "confidence": 49,
 "type": "Home",
 "date": "01-May-2015"
 },
 {
 "amount": "-80.67",
 "confidence": 49,
 "type": "Eating Out",
 "date": "01-May-2015"
 },
 {
 "amount": "-52.14",
 "confidence": 49,
 "type": "Travel",
 "date": "01-May-2015"
 }
],
 "activity_type": "overdraft",
 "customer_id": 17
}
```

### Example:

```
<baseurl>/isbanking/rest/CustomerBehaviorInsights/6/
Transactions?activitytype =overdraft&pagestart=5&pagesize=10
```

For the customer with id 6 and whose activitytype is “overdraft”, their transactions are returned and ordered by confidence (descending), date (ascending), and amount (ascending) in that preference. The above example returns a set of 10 transactions starting from 5th transaction.

---

## **/isbanking/rest/CustomerBehaviorInsights/Transactions/ {activitytypevalue}**

This resource returns a list of transactions of each customer falling under a particular activity.

### **/isbanking/rest/CustomerBehaviorInsights/Transactions/ {activitytypevalue}**

Transactions are ordered by confidence(descending), date (ascending) and amount (ascending) in that preference. In this case, by default first 3 transactions are returned per each activity as shown in the sample JSON below. Additional details such as customerid, segment, and activitytype are also returned.

Sample JSON response:

```
{
 "customers": [
 {
 "customer_id": 1,
 "transactions": [
```

```

 {
 "amount": "-73.14",
 "confidence": 33,
 "type": "Entertainment",
 "date": "01-May-2015"
 },
 {
 "amount": "-57.77",
 "confidence": 33,
 "type": "Gas & Fuel",
 "date": "01-May-2015"
 },
 {
 "amount": "-54.33",
 "confidence": 33,
 "type": "Home",
 "date": "01-May-2015"
 }
],
 {
 "customer_id": 2,
 "transactions": [
 {
 "amount": "-522.56",
 "confidence": 39,
 "type": "Home",
 "date": "01-May-2015"
 },
 {
 "amount": "-155.71",
 "confidence": 39,
 "type": "Gas & Fuel",
 "date": "01-May-2015"
 },
 {
 "amount": "-147.99",
 "confidence": 39,
 "type": "Groceries",
 "date": "01-May-2015"
 }
]
 }
]
}

```

### Example:

<baseurl>/isbanking/rest/CustomerBehaviorInsights/Transactions/overdraft?pagestart=5&pagesize=10

For each customer, their respective transactions are ordered by confidence (descending), date (ascending), and amount (ascending) in that preference. The above example returns a set of 10 transactions starting from 5th transaction for each customer under the “overdraft” activity.

---

## **/isbanking/rest /ProductMatching/{customerid}/ProposedProducts**

This resource returns the products predicted by the analytics engine, for a particular customer. based on the products bought by his peer group.



## **/isbanking/rest /ProductMatching/{customerid}/ ProposedProducts**

Transactions are returned as a percentage of peers who bought a particular product. Results are sorted by peer percentage in descending order.

Sample JSON response:

```
{
 "customer_id":15,
 "products":[
 {
 "id":5,
 "name":"Travel Insurance",
 "peer percentage":21
 },
 {
 "id":7,
 "name":"Estate Planning",
 "peer percentage":5
 },
 {
 "id":4,
 "name":"Sweep Account",
 "peer percentage":1
 }
]
}
```

### **Example:**

```
<baseurl>/isbanking/rest/ProductMatching/6/ProposedProducts?pagestart=3
&pagesize=10
```

For customer with id 6, all the predicted products are ordered by peer percentage (descending). The above example returns a set of 10 products starting from 3rd product.



---

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